CICS Transaction Server for z/OS
Version 4 Release 2

Resource Definition Guide

SC34-7181-01

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Note

Before using this information and the product it supports, read the information in "Notices" on page 883.

This edition applies to Version 4 Release 2 of CICS Transaction Server for z/OS (product number 5655-S97) and to all subsequent releases and modifications until otherwise indicated in new editions.

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Preface

What this book is about

This book tells you how to define the characteristics of your data processing resources to your CICS® system. It describes four methods of resource definition:
- Online definition (CEDA)
- Batch definition (DFHCSDUP)
- Automatic installation (autoinstall)
- Macro definition

You can also use EXEC CICS CREATE commands, which are described in *CICS System Programming Reference*; and CICSPlex® SM Business Application Services (BAS) commands, which are described in *CICSPlex System Manager Managing Business Applications*.

Who should read this book

This book is for those responsible for defining resources to CICS.

What you need to know to understand this book

This book assumes that you have a basic understanding of CICS concepts and facilities. You must also be familiar with your own system and the resources to be defined and maintained.

Notes on terminology

When the term "CICS" is used without any qualification in this book, it refers to the CICS element of CICS Transaction Server for z/OS®.

"CICS/ESA" is used for IBM® Customer Information Control System/Enterprise System Architecture.

Other abbreviations that may be used for CICS releases are as follows:
- CICS/MVS Version 2 Release 1 and subsequent modification levels—CICS/MVS 2.1
- CICS/ESA Version 3 Release 3—CICS/ESA 3.3
- CICS/ESA Version 4 Release 1—CICS/ESA 4.1.

MVS™ refers to the operating system, which is a base element of z/OS.

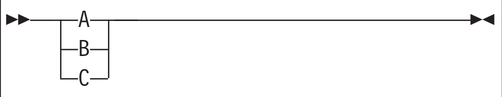
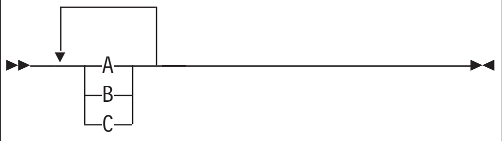
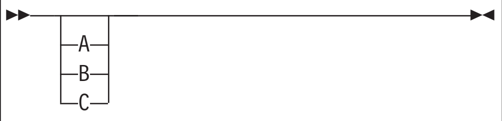
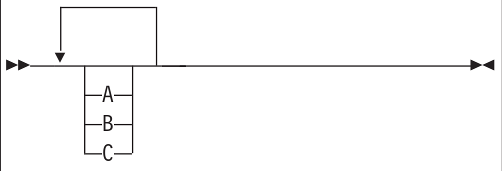
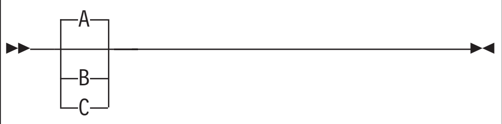
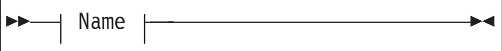
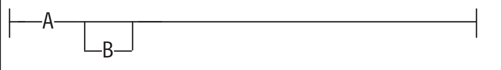
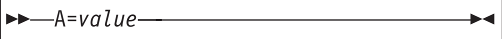
Use of the dollar symbol ($)

In the character sets given in this book, the dollar symbol ($) is used as a national currency symbol and is assumed to be assigned the EBCDIC code point X'5B'. In some countries a different currency symbol, for example the pound symbol (£), or the yen symbol (¥), is assigned the same EBCDIC code point. In these countries, the appropriate currency symbol should be used instead of the dollar symbol.

Syntax notation

Syntax notation specifies the permissible combinations of options or attributes that you can specify on CICS commands, resource definitions, and many other things.

The conventions used in the syntax notation are:

Notation	Explanation
	Denotes a set of required alternatives. You must specify one (and only one) of the values shown.
	Denotes a set of required alternatives. You must specify at least one of the values shown. You can specify more than one of them, in any sequence.
	Denotes a set of optional alternatives. You can specify none, or one, of the values shown.
	Denotes a set of optional alternatives. You can specify none, one, or more than one of the values shown, in any sequence.
	Denotes a set of optional alternatives. You can specify none, or one, of the values shown. **A** is the default value that is used if you do not specify anything.
 **Name:** 	A reference to a named section of syntax notation.
	**A**= denote characters that should be entered exactly as shown. *value* denotes a variable, for which you should specify an appropriate value.

Changes in CICS Transaction Server for z/OS, Version 4 Release 2

For information about changes that have been made in this release, please refer to *What's New* in the information center, or the following publications:

- *CICS Transaction Server for z/OS What's New*
- *CICS Transaction Server for z/OS Upgrading from CICS TS Version 4.1*
- *CICS Transaction Server for z/OS Upgrading from CICS TS Version 3.2*
- *CICS Transaction Server for z/OS Upgrading from CICS TS Version 3.1*

Any technical changes that are made to the text after release are indicated by a vertical bar (|) to the left of each new or changed line of information.

Part 1. Resource definition

Resource definition is the process in which you specify the resources that will be used by a CICS region, and by applications running in the region.

Chapter 1. An overview of resource definition

To run your system, you need to supply CICS with information about your system resources, including software resources such as programs and data, and hardware resources such as terminals, printers, and telecommunications links. Many of the properties of these resources are variable, so you can choose the particular functions and combinations of resources that your business needs.

Every resource is defined with a set of *attributes*. The attributes are the properties of the resource, telling CICS, for example, whether a file can be updated, what security level should be given to a transaction, or the remote systems with which CICS can communicate.

Methods for defining resources

You can define most resources to CICS using several different methods.

CICS Explorer
You can use the CICS Explorer to define, install, and manage resources. If CICS Explorer is connected to a CICS system, definitions are stored in the CICS system definition (CSD) file, and are installed into an active CICS system from the CSD file.If CICS Explorer is connected to CICSPlex SM, definitions are stored in the CICSPlex SM data repository and can be installed either automatically, during CICS initialization, or dynamically, into a running CICS system.

CICSPlex SM Business Application Services
You can use CICSPlex SM Business Application Services (BAS) to define and manage resources. Definitions are stored in the CICSPlex SM data repository and can be installed either automatically, during CICS initialization, or dynamically, into a running CICS system. For information on CICSPlex SM BAS, see *CICSPlex System Manager Managing Business Applications*.

Resource definition online (RDO)
This method uses the CICS-supplied online transactions CEDA, CEDB, and CEDC. Definitions are stored in the CSD file, and are installed into an active CICS system from the CSD file.

Application bundles
You can deploy an application into CICS as a bundle and use the BUNDLE resource to create and manage the associated CICS resources. When you install a BUNDLE resource, CICS creates the required application resources dynamically. CICS also maintains a relationship with each of the resources so that you can enable or disable the application using the BUNDLE resource, rather than managing each application resource individually. The BUNDLE resource that represents the application is stored in the CSD file. The resources that are created dynamically when you install a BUNDLE resource are not stored in the CSD file.

DFHCSDUP offline utility
This method allows you to make changes to definitions in the CSD file by means of a batch job submitted offline. The definitions are stored in the CSD file.

Automatic installation (autoinstall)

Autoinstall minimizes the need for a large number of definitions, by dynamically creating new definitions based on a "model" definition provided by you.

System programming, using the EXEC CICS CREATE commands

You can use the EXEC CICS CREATE commands to create resources independently of the CSD file. For further information, see the *CICS System Programming Reference*.

System programming, using the EXEC CICS CSD commands

You can use the EXEC CICS CSD commands to manage resource definitions in the CSD file from a user-written program. EXEC CICS CSD commands can perform all of the functions of CEDA except CEDA CHECK.

Macro definition

You can use assembler macro source to define resources that cannot be stored on the CSD. The definitions are stored in assembled control tables in a program library, from which they are installed during CICS initialization.

You must use macro instructions to define non-VTAM networks and terminals, non-VSAM files, databases, and resources for monitoring and system recovery.

Which methods you use depends on the resources you want to define. Table 1 shows you the methods you can use for each resource. Table 2 on page 6 suggests some of the things you should consider when deciding which definition method to use.

Table 1. Resources and how you can define them to the running CICS system

Resource	CICS Explorer	CICSPlex SM BAS	RDO/EXEC CICS CREATE and EXEC CICS CSD commands	Application bundles	DFHCSDUP	Autoinstall	Macro
Atom documents	Yes	Yes (ATOMDEF)	Yes (ATOMSERVICE)	Yes	Yes	No	No
Bundles	Yes	Yes (BUNDDEF)	Yes (BUNDLE)	N/A	Yes	No	No
Capturespec	No	No	No	No	Yes	No	No
Connections	Yes	Yes (CONNDEF)	Yes (CONNECTION)	No	Yes	LUTYPE 6.2 only	No
CorbaServers	Yes	Yes (EJCODEF)	Yes (CORBASERVER)	No	Yes	No	No
DB2® Connections	Yes	Yes (DB2CDEF)	Yes (DB2CONN)	No	Yes	No	No
DB2 entries	Yes	Yes (DB2EDEF)	Yes (DB2ENTRY)	No	Yes	No	No
DB2 transactions	Yes	Yes (DB2TDEF)	Yes (DB2TRAN)	No	Yes	No	No
Deployed jar files	Yes	Yes (EJDJDEF)	Yes (DJAR)	No	Yes	No	No
Document template	Yes	Yes (DOCDEF)	Yes (DOCTEMPLATE)	No	Yes	No	No
Enqueue models	Yes	Yes (ENQMDEF)	Yes (ENQMODEL)	No	Yes	No	No
Event binding	Yes	No	No	No	Yes	No	No
FEPI node lists	No	Yes (FENODDEF)	No	No	No	No	No
FEPI pool definitions	No	Yes (FEPOODEF	No	No	No	No	No
FEPI property sets	No	Yes (FEPRODEF	No	No	No	No	No
FEPI target lists	No	Yes (FETRGDEF)	No	No	No	No	No

Table 1. Resources and how you can define them to the running CICS system (continued)

Resource	**CICS Explorer**	**CICSPlex SM BAS**	**RDO/EXEC CICS CREATE and EXEC CICS CSD commands**	**Application bundles**	**DFHCSDUP**	**Autoinstall**	**Macro**
Files (BDAM)	No	No	No	No	No	No	Yes (DFHFCT)
Files (VSAM)	Yes	Yes (FILEDEF)	Yes (FILE)	No	Yes	No	No
IPIC connections	Yes	Yes (IPCONDEF)	Yes (IPCONN)	No	Yes	Yes	No
Journals	Yes	Yes (JRNLDEF)	No	No	No	Yes	No
Journal models	Yes	Yes (JRNMDEF)	Yes (JOURNALMODEL)	No	Yes	No	No
LIBRARY resources	Yes	Yes (LIBDEF)	Yes (LIBRARY)	No	Yes	No	No
Local shared resource (LSR) pools	Yes	Yes (LSRDEF)	Yes (LSRPOOL)	No	Yes	No	No
Map sets	Yes	Yes (MAPDEF)	Yes (MAPSET)	No	Yes	Yes	No
Partition sets	Yes	Yes (PRTNDEF)	Yes (PARTITIONSET)	No	Yes	Yes	No
Partners	Yes	Yes (PARTDEF)	Yes (PARTNER)	No	Yes	No	No
Pipelines	Yes	Yes (PIPEDEF)	Yes (PIPELINE)	No	Yes	No	No
Process types	Yes	Yes (PROCDEF)	Yes (PROCESSTYPE)	No	Yes	No	No
Profiles	Yes	Yes (PROFDEF)	Yes (PROFILE)	No	Yes	No	No
Programs	Yes	Yes (PROGDEF)	Yes (PROGRAM)	No	Yes	Yes	No
Recoverable service elements	No	No	No	No	No	No	Yes (DFHRST)
Request models	Yes	Yes (RQMDEF)	Yes (REQUESTMODEL)	No	Yes	No	No
Sessions	Yes	Yes (SESSDEF)	Yes (SESSIONS)	No	Yes	No.	No
TCP/IP services	Yes	Yes (TCPDEF)	Yes (TCPIPSERVICE)	No	Yes	No	No
Temporary storage (defined by macro)	No	No	No	No	No	No	Yes (DFHTST)
Temporary storage models (resource definition)	Yes	Yes (TSMDEF)	Yes (TSMODEL)	No	Yes	No	No
Terminals (non-VTAM®)	No	No	No	No	No	No	Yes (DFHTCT)
Terminals (VTAM)	Yes	Yes (TERMDEF)	Yes (TERMINAL)	No	Yes	Yes	No
Transactions	Yes	Yes (TRANDEF)	Yes (TRANSACTION)	No	Yes	No	No
Transaction classes	Yes	Yes (TRNCLDEF)	Yes (TRANCLASS)	No	Yes	No	No
Transient data queues	Yes	Yes (TDQDEF)	Yes (TDQUEUE)	No	Yes	No	No
Typeterms	Yes	Yes (TYPTMDEF)	Yes (TYPETERM)	No	Yes	No	No
URI maps	Yes	Yes	Yes (URIMAP)	No	Yes	No	No
Web services	Yes	Yes	Yes (WEBSERVICE)	No	Yes	No	No
WebSphere® MQ connection	Yes	Yes (MQCONDEF)	Yes (MQCONN)	No	Yes	No	No
Xmltransform	No	No	No	No	Yes	No	No

Table 2. Methods of resource definition

Method	Description	Advantages	Disadvantages
CICS Explorer	Using the CICS Explorer you can define, alter, and install resources in a running CICS system.	• Intuitive and easy to use interface • Integration point for other CICS tools • Centralized resource definition • Logical scoping • Distributed resource installation	FEPI resources cannot be defined with CICS Explorer.
CICSPlex SM BAS	Using BAS, you can create, maintain, and install CICS resources in a running CICS system. For full information, see the *CICSPlex System Manager Managing Business Applications*.	• Centralized resource definition • Logical scoping • Distributed resource installation	None
RDO	This method uses the CEDA transaction, which allows you to define, alter, and install resources in a running CICS system.	RDO is used while CICS is running, so allows fast access to resource definitions.	Because CEDA operates on an active CICS system, care should be taken if it is used in a production system. Use some form of auditing as a control mechanism.
EXEC CICS CREATE system commands	This method allows you to add CICS resources to a CICS region without reference to the CSD file.	It enables configuration and installation of CICS resources for large numbers of CICS regions from a single management focal point. It also allows you to write applications for administering the running CICS system.	CREATE commands neither refer to nor record in the CSD file. The resulting definitions are lost on a cold start, and you cannot refer to them in a CEDA transaction.
EXEC CICS CSD system commands	This method updates resources on the CSD file, which means you can define, alter, and install resources in a running CICS system.	You can write applications customized to your environment that can manage the CSD and installed resources. Resources updated by this method can be referred to by CEDA.	Requires more work to implement than some other methods.
DFHCSDUP	DFHCSDUP is an offline utility that allows you to define, list, and modify resources using a batch job. DFHCSDUP can be invoked as a batch program or from a user-written program running either in batch mode or under TSO. Using the second method, you can specify up to five user exit routines within DFHCSDUP.	• You can modify or define a large number of resources in one job. • You can run DFHCSDUP against a non-recoverable CSD file while it is being shared between CICS regions using RLS access mode.	• You cannot install resources into an active CICS system. • You cannot make updates via DFHCSDUP against a recoverable CSD file that is being accessed in RLS mode.

Table 2. Methods of resource definition (continued)

Method	Description	Advantages	Disadvantages
Application bundles	This method applies to application resources only. It uses the bundle deployment support in CICS to create the application resources and maintains a relationship to enable and disable all resources together.	• You do not have to create all of the required resources for an application manually. • You can change the availability of applications available by updating one resource.	• You cannot browse the contents of a bundle using CEMT. • A limited set of application resources are supported.
Autoinstall	This applies to VTAM terminals, LU6.2 sessions, IPIC connections, journals, programs, mapsets, and partitionsets. You set up "model" definitions using either RDO or DFHCSDUP. CICS can then create and install new definitions for these resources dynamically, based on the models.	If you have large numbers of resources, much time is needed to define them, and if they are not all subsequently used, storage is also wasted for their definitions. Using autoinstall reduces this wasted time and storage.	You must spend some time initially setting up autoinstall in order to benefit from it.
Macro	Using this method, you code and assemble macro instructions to define resources in the form of tables.	Where possible, use the other methods.	• You can change the definitions contained in the tables while CICS is running, but you must stop and restart CICS if you want it to use the changed tables. • You must do time-consuming assemblies to generate macro tables.

Using the CSD and control tables together

In some cases, you can use resources that are defined in the CSD with resources that are defined in control tables.

About this task

1. On an initial or cold start, you can mix file control resources that are defined in the CSD with those that were defined using DFHFCT macros. BDAM file definitions are loaded from the DFHFCT load module first, then the definitions for other types of files are loaded from the RDO groups specified in the GRPLIST system initialization parameter. When CICS is running, you can use CEDA commands to add more file resource definitions.
2. You can also mix terminal resource definitions for BSAM sequential devices and logical device codes (LDCs) that are defined in a TCT with resource definitions for SNA LUs that are defined using RDO.

   However, avoid duplicate terminal IDs, because a TCT entry using the same terminal ID (TRMIDNT in the TCT) as an SNA LU in the CSD (TERMINAL name in the CSD), prevents CICS installing the z/OS Communications Server definition.
3. For temporary storage queues, you can use TSMODEL resource definitions in combination with a temporary storage table (TST). To combine a TST with TSMODEL resources:
   - Specify a TST suffix using the TST system initialization parameter.

- Assemble the TST load module with the MIGRATE option. If the TST is not assembled with the MIGRATE option, CICS loads the TST only and does not provide any RDO support for temporary storage queues, and any attempts to install TSMODEL resource definitions are rejected.

If you use both a TST and TSMODEL resource definitions, the use of the TST is limited to support for temporary storage data sharing queues that are referenced by an explicit SYSID option specified on a temporary storage EXEC CICS command, and also the use of the TSAGE attribute.

Where resource definitions are held

Every resource defined to CICS by means of CEDA or DFHCSDUP is held on the CICS system definition (CSD) file, which is a VSAM data set.

The CSD file can be defined as recoverable, so that changes made by CEDA or CEDB that were incomplete when an abend occurred are backed out. CICS allows a CSD file and its resource definitions to be shared between different CICS systems. For more information on defining the CSD, see in the *CICS System Definition Guide*.

CICS control tables contain resource definition records for resources that cannot be defined in the CSD. The tables and their resource definitions are created by using the CICS table assembly macro instructions. You have to code assembler-language macro statements for each resource to appear in the table, assemble the complete set of macro statements, link-edit the output to produce a load module, and specify the module suffix in DFHSIT. See “Defining resources in CICS control tables” on page 507.

How resource definitions are organized

Resource definitions held on the CSD are organized into *groups* and *lists*.

Group A collection of related resources on the CSD. Each resource that you define must belong to a group; you cannot define a resource without naming the group.

List The names of groups that CICS installs at an initial or cold start. You can add groups to lists if you want them installed at an initial or cold start, or if it helps you to manage your groups better. Groups do not have to belong to lists, and can be defined independently.

For more information on groups and lists, see Chapter 3, “Groups and lists,” on page 23.

Commands for managing resources

You manage your resource definitions using commands supplied as part of CEDA or DFHCSDUP. These commands allow you to work with your resources, for example, by defining, deleting, copying, and renaming.

The commands are listed in Table 3 on page 9. For the syntax of these commands and information on how to use them, see “System definition file utility program (DFHCSDUP)” on page 447 To help you use CEDA, see “The CEDA transaction tutorial” on page 393.

Table 3. CEDA and DFHCSDUP commands

Command	**Function**	**CEDA—see**	**DFHCSDUP—see**
ADD	Adds a group name to a list.	"The CEDA ADD command" on page 415	"The DFHCSDUP ADD command" on page 454
ALTER	Modifies the attributes of an existing resource definition.	"The CEDA ALTER command" on page 416	"The DFHCSDUP ALTER command" on page 455
APPEND	Copies a list to the end of another list.	"The CEDA APPEND command" on page 418	"The DFHCSDUP APPEND command" on page 457
CHECK (CEDA only)	Cross checks the resource definitions within a group, or within the groups in a list or lists, up to a maximum of four lists.	"The CEDA CHECK command" on page 418	
COPY	Copies one or more resource definitions from one group to another, or one resource definition within a group.	"The CEDA COPY command" on page 420	"The DFHCSDUP COPY command" on page 459
DEFINE	Creates a new resource definition.	"The CEDA DEFINE command" on page 423	"The DFHCSDUP DEFINE command" on page 460
DELETE	Deletes one or more resource definitions.	"The CEDA DELETE command" on page 425	"The DFHCSDUP DELETE command" on page 462
DISPLAY (CEDA only)	Shows the names of one or more groups, lists, or resource definitions within a group.	"The CEDA DISPLAY command" on page 427	
EXPAND (CEDA only)	Shows the names of the resource definitions in one or more groups or lists.	"The CEDA EXPAND command" on page 429	
EXTRACT (DFHCSDUP only)	Extracts and processes resource definition data from groups or lists on the CSD file.		"The DFHCSDUP EXTRACT command" on page 464
INITIALIZE (DFHCSDUP only)	Prepare a newly-defined data set for use as a CSD file.		"The DFHCSDUP INITIALIZE command" on page 466

Table 3. CEDA and DFHCSDUP commands (continued)

Command	Function	CEDA—see	DFHCSDUP—see
INSTALL (CEDA only)	Dynamically adds a resource definition or a group of resource definitions to the active CICS system.	"The CEDA INSTALL command" on page 432	
LIST (DFHCSDUP only)	Produce listings of the current status of the CSD file.		"The DFHCSDUP LIST command" on page 466
LOCK (CEDA only)	Prevents other operators updating or deleting a group or the groups in a list.	"The CEDA LOCK command" on page 434	
MOVE (CEDA only)	Moves one or more resource definitions from one group to another.	"The CEDA MOVE command" on page 435	
PROCESS (DFHCSDUP only)	Applies maintenance to the CSD file for a specific APAR.		"The DFHCSDUP PROCESS command" on page 468
REMOVE	Removes a group name from a list.	"The CEDA REMOVE command" on page 438	"The DFHCSDUP REMOVE command" on page 469
RENAME (CEDA only)	Renames a resource definition, either within a group, or while simultaneously moving it to another group.	"The CEDA RENAME command" on page 439	
SCAN (DFHCSDUP only)	Scans all of the IBM-supplied groups and user-defined groups for a resource. The definition of the matched resource in an IBM-supplied group is compared to the definition(s) of the corresponding matched resource in the user groups.		"The DFHCSDUP SCAN command" on page 469
SERVICE (DFHCSDUP only)	Applies corrective maintenance to the CSD file.		"The DFHCSDUP SERVICE command" on page 471
UNLOCK (CEDA only)	Releases a lock on a group or list.	"The CEDA UNLOCK command" on page 440	
UPGRADE (DFHCSDUP only)	Upgrades the CICS-supplied resource definitions on the CSD file (for example, when you migrate to a higher release of CICS).		"The DFHCSDUP UPGRADE command" on page 472

Table 3. CEDA and DFHCSDUP commands (continued)

Command	**Function**	**CEDA—see**	**DFHCSDUP—see**
USERDEFINE	Creates a new resource definition with your own defaults.	"The CEDA USERDEFINE command" on page 442	"The DFHCSDUP USERDEFINE command" on page 473
VERIFY (DFHCSDUP only)	Removes internal locks on groups and lists.		"The DFHCSDUP VERIFY command" on page 474
VIEW (CEDA only)	Shows the attributes of an existing resource definition.	"The CEDA VIEW command" on page 445	

Shared resources for intercommunication

Resources that reside on a remote system, but are accessed by a local CICS system, have to be defined on both the remote and local systems. To avoid duplicating definitions in the CSD files for the local and remote systems, you can create resource definitions on a CSD file that is shared by the local and remote systems. This reduces disk storage and maintenance, because you require only one CSD file record for each shared resource.

If you decide to use dual-purpose resource definition, you may want to consider reorganizing your resources within your resource definition groups. For example, you might currently have two groups: one containing all the resources for a CICS transaction-owning region (TOR), and one containing all the resources for a CICS application-owning region (AOR).

When you use shared resource definitions, you can have three groups, with the first group containing resources specific to the TOR, the second group containing resources specific to the AOR, and the third group containing resources to be installed in both the TOR and the AOR.

These resources should be defined as both local and remote. When the definition is installed on the TOR, CICS compares the SYSIDNT name with the REMOTESYSTEM name. If they are different, a remote transaction definition is created. When the definition is installed on the AOR, CICS compares the REMOTESYSTEM name with the SYSIDNT name. If they are the same, a local transaction definition is installed.

Dual-purpose resource definition can be used with the following resources:
- Files
- Programs
- Temporary storage models (TSMODELs)
- Terminals
- Transient data queues (TDQUEUEs)
- Transactions

Security of resource definitions

CICS provides a number of facilities that help you keep your resource definitions secure from unauthorized use.

When you are considering the security of your resource definitions:

Limited access to resource definitions in the CSD

You should limit read/write access to resource definitions in the CSD to a small number of people. To do this:

- Protect groups of resources by using the CEDA command LOCK
- Protect the list of resource groups that is specified in the system initialization parameter GRPLIST by using the CEDA command LOCK
- Use the CEDB transaction to create resource definitions, but not to INSTALL them
- Use the CEDC transaction for read-only access to resource definitions.

Resource security checking

Resource security checking ensures that terminal operators can access only those resources for which they have been authorized. You can use resource security checking (RESSEC) for the TRANSACTION definition.

Multiple CSD files

You can have different CSD files for different CICS systems. The users of one CICS do not have access to the CSD file for another CICS.

You could have a test CSD file in a system where the RDO transactions can be used, and a production CSD file in a system where the RDO transactions are not available. There would then be no chance of unauthorized users altering resource definitions needed for production work.

Read-only and update definitions for the same CSD file

Having two CSD files means duplicating resource definitions for resources that are shared by more than one system. An advantage of RDO is that you need only one definition for each resource. You can define one CSD file to be shared among several CICS systems with only one having write access. To do this, you define one CSD file differently to different systems by using the CSDACC system initialization parameter. For the system where the CSD file can be used but not updated, you specify:

```
CSDACC=READONLY
```

and, for the system where you are planning to update the CSD, you specify:

```
CSDACC=READWRITE
```

You need READONLY access to install definitions. This also allows you to use the DISPLAY and VIEW commands. You need READWRITE access to use the ADD, APPEND, ALTER, COPY, MOVE, and RENAME commands. For information on defining the CSD file, see “Resource management utility DFHCSDUP commands” on page 454.

Controlling access to a group or list—LOCK and UNLOCK

RDO also provides a means of controlling access to any group or list, so that users in the same system can have different types of access. This is done with the LOCK and UNLOCK commands.

The LOCK and UNLOCK commands enable you to control update access to a group or list so that only operators with the same operator identifier can make changes.

The lock is held on the CSD file and remains in effect across restarts of CICS. The lock is owned by the user, who is identified by a combination of the CICS generic applid (specified by the APPLID system initialization parameter), and the user's operator identifier (OPIDENT).

The OPIDENT is the one associated with the user when he or she signs on to the terminal used for RDO. For further information on OPIDENT, see the *CICS RACF Security Guide*.

Any user who is not signed on or who has a different OPIDENT is not allowed to perform any operation that would change the locked group. However, any user is allowed to do the following things to a locked group:
- COPY
- CHECK
- DISPLAY
- INSTALL
- VIEW

The lock can be removed, using the UNLOCK command, only by a user on the same system and with the same operator identifier.

It would be wise to put a lock on your group of TYPETERMs and on your group of AUTINSTMODEL TERMINALs.

Controlling access to the RDO transactions

Recommended access for the CEDA, CEDB, and CEDC transactions is as follows:
- CEDC can be given fairly wide access, because it allows only read-only commands.
- CEDB should be restricted, because it allows modification of the CSD file as well as read-only commands.
- CEDA should be further restricted to the few people allowed to modify both the active CICS system and the CSD file.

Installing resources

A user who is authorized to use CEDA can install any resources in the CICS system: beyond checking the user's authority to use the transaction itself, CICS does not do any command or resource security checking in the CEDA transaction.

This is not the case for transactions that use the CREATE command to install resources; here, CICS uses
- command security to check that the user is authorized to use the CREATE command. For more information, see the *CICS RACF Security Guide*.
- resource security to check that the user is authorized to modify the resource in question. For more information, see the *CICS RACF Security Guide*.

Auditing resources

The resource signature, the combination of the definition and the installation signatures, can be used to audit and manage resources by capturing details when the resource is defined, installed, and last changed.

Being able to display information about when the resource was defined, installed, and last changed helps with problem determination. The details improve the auditing and tracing of resources and can be displayed in the CICS Explorer views, CICSPlex SM views, CEDA panels, using EXEC CICS INQUIRE SPI commands and CEMT INQUIRE commands. The following resource types support the resource signature:

- ATOMSERVICE
- BUNDLE
- CONNECTION
- CORBASERVER
- DB2CONN
- DB2ENTRY
- DB2TRAN
- DJAR
- DOCTEMPLATE
- ENQMODEL
- EPADAPTER
- EVENTBINDING
- FILE
- IPCONN
- JOURNALMODEL
- JVMSERVER
- LIBRARY
- MQCONN
- MQINI
- OSGIBUNDLE
- PIPELINE
- PROFILE
- PROCESSTYPE
- PROGRAM
- REQUESTMODEL
- TCPIPSERVICE
- TDQUEUE
- TRANCLASS
- TRANSACTION
- TSMODEL
- URIMAP
- WEBSERVICE
- XMLTRANSFORM

For these resources, their definition and installation signatures can be compared to identify their origin. For more information, see the following topics.

The definition signature for resource definitions

The definition signature captures details about when, how, and by whom each resource is defined or changed in the CSD file or in the CICSPlex SM EYUDREP data repository. The definition signature is updated each time a change is made to the resource. You can use these details to detect resource modifications for auditing or for fixing problems.

The definition signature is displayed in the CICS Explorer views, on CEDA and CEMT panels, CICSPlex SM BAS views, EXEC CICS INQUIRE commands, and in DFHCSDUP reports. These are the definition signature fields:

DEFINESOURCE
: The source of the resource definition. The DEFINESOURCE value depends on the CHANGEAGENT.

DEFINETIME
: The time when the resource definition was created using the **`DEFINE, USERDEFINE, COPY, MOVE, or RENAME`** commands. When you alter an existing resource using the ALTER command, the value specified by DEFINETIME does not change. On CEDA panels, the date is displayed in the format that you specified in the DATFORM system initialization parameter.

CHANGEAGENT
: How the resource was defined or last modified, by using one of these methods:

  Autoinstall
  : Autoinstall

  Csdapi
  : CEDA, the programmable interface to DFHEDAP, or EXEC CICS CSD command

  Csdbatch
  : DFHCSDUP

  Drepapi
  : CICSPlex SM BAS API command

  Dynamic
  : The resource was generated by:
    - A PIPELINE scan (URIMAP or WEBSERVICE).
    - CICS Web template management, using DFHWBTL or DFHWBBMS (DOCTEMPLATE).
    - The installation of a DB2ENTRY resource definition with transid specified (DB2TRAN).
    - The installation of an ATOMSERVICE resource definition with XSDBIND specified (XMLTRANSFORM).
    - The installation of an MQCONN resource definition with INITQNAME specified (MQINI).
    - The installation of a CORBASERVER resource definition with autopublish specified (DJAR).

  System
  : CICS or CICSPlex SM system

  Table
  : Table definition

CHANGEAGREL
: The level of the CICS system used for the definition of, or last modification to, the resource definition.

CHANGETIME
: The time when the resource definition was last modified. When the resource is first defined, the CHANGETIME value is identical to the DEFINETIME value. On CEDA panels, the date is displayed in the format that you specified in the DATFORM system initialization parameter.

CHANGEUSRID
: The ID of the user who defined or last modified the resource definition.

To display the definition signature for an individual resource, or a group of resources, in the CEDA DISPLAY and EXPAND GROUP panels press PF2. To return to the previous CEDA command panel, press PF2 again.

To display a summary of the definition signatures for all the specified resources, add the **SIGSUMM** parameter to the **DFHCSDUP LIST** command. The definition signature fields are displayed with the resource attributes when you use the **OBJECTS** option on the command. The **DFHCSDUP EXTRACT** command also extracts the definition signature fields from the CSD file.

Resources defined in CICS releases before CICS TS 4.1 do not have information displayed for the definition signature until they are modified in this CICS release or later. When the resource is modified, the DEFINETIME field remains blank.

The installation signature for resource definitions

The installation signature shows when, how, and by whom each resource is installed.

The installation signature is displayed in the CICS Explorer views, the CICSPlex SM Operations views, on the expanded view panel of the **CEMT INQUIRE** command for the resource, or you can use an **EXEC CICS INQUIRE** command. These are the installation signature fields:

INSTALLAGENT
: How the resource was installed, by using one of these methods:

Autoinstall
: Autoinstall

Bundle
: Bundle deployment

Createspi
: EXEC CICS CREATE command

Csdapi
: CEDA, the programmable interface to DFHEDAP, or EXEC CICS CSD command

Dynamic
: The installed resource was generated by:

A PIPELINE scan (URIMAP or WEBSERVICE).

CICS Web template management, using DFHWBTL or DFHWBBMS (DOCTEMPLATE).

The installation of a DB2ENTRY resource definition with transid specified (DB2TRAN).

The installation of an ATOMSERVICE resource definition with XSDBIND specified (XMLTRANSFORM).

The installation of an MQCONN resource definition with INITQNAME specified (MQINI).

The installation of a CORBASERVER resource definition with autopublish specified (DJAR).

Grplist
GRPLIST INSTALL

System
CICS or CICSPlex SM system

Table Table definition

INSTALLTIME
The time when the resource was installed.

INSTALLUSRID
The ID of the user who installed the resource.

Summary of the resource signature field values

Use these tables for details of the contents of the resource signature fields for all of the methods used to install resource definitions in a running CICS system.

Table 4. Resource signature contents. Part 1.

Resource signature field	**GRPLIST INSTALL**	**CEDA INSTALL or EXEC CICS CSD INSTALL**	**EXEC CICS CREATE**	**CICSPlex SM (EXEC CICS CREATE)**	**Autoinstall**
DEFINESOURCE	CSD GROUP	CSD GROUP	Name of the program issuing the EXEC CICS CREATE	CPSMVnn where "nn" is the version of the CICSPlex SM BAS resource definition (the VER attribute)	Autoinstall user program name
DEFINETIME	Time stamp of CSD record creation	Time stamp of CSD record creation	Time that the resource is created	CREATETIME from EYUDREP	Time of the autoinstall
CHANGEAGENT	CSDAPI or CSDBATCH	CSDAPI or CSDBATCH	CREATESPI	DREPAPI or SYSTEM	AUTOINSTALL
CHANGEAGREL	CICS release of CHANGEAGENT system in "nnnn" format 1	CICS release of CHANGEAGENT system in "nnnn" format 1	CICS release of CHANGEAGENT system in "nnnn" format 1	CICS release of CHANGEAGENT system in "nnnn" format 1	CICS release of CHANGEAGENT system in "nnnn" format 1
CHANGETIME	Time stamp of CSD record change	Time stamp of CSD record change	Time that the resource is created	CHANGETIME from EYUDREP	Time of the autoinstall
CHANGEUSRID	User ID that ran the CHANGEAGENT	User ID that ran the CHANGEAGENT	User ID that ran the EXEC CICS CREATE	CHANGEUSRID from EYUDREP 2	User ID that ran the autoinstall
INSTALLAGENT	GRPLIST	CSDAPI	CREATESPI	CREATESPI	AUTOINSTALL
INSTALLTIME	Time of the last cold start	Time of the install	Time that the resource is created (from earlier run if warm-started)	Time that the resource is created (from earlier run if warm-started)	Time of the autoinstall (from earlier run if warm-started)
INSTALLUSRID	Jobstep user ID	User ID that ran the install	User ID that ran the EXEC CICS CREATE	User ID that ran the create or passed from CICSPlex SM	User ID that ran the autoinstall

Table 5. Resource signature contents. Part 2.

Resource signature field	Table definition	System defined	Dynamically created	Created by BUNDLE	CICSPlex SM SYSLINK
DEFINESOURCE	Table name	SYSTEM	For details, see Table 6	BUNDLE name	SYSLINK
DEFINETIME	Time of the last cold start	Time of CICS startup	Time that the resource is generated	Inherited from BUNDLE	Time that the resource is installed.
CHANGEAGENT	TABLE	SYSTEM	DYNAMIC	Inherited from BUNDLE	DREPAPI
CHANGEAGREL	CICS release from table assembly in "nnnn" format [1]	CICS release of CHANGEAGENT system in "nnnn" format [1]	CICS release of CHANGEAGENT system in "nnnn" format [1]	Inherited from BUNDLE	CICS release of CHANGEAGENT system in "nnnn" format [1]
CHANGETIME	Time of the last cold start	Time of CICS startup	Time that the resource is generated	Inherited from BUNDLE	Time that the resource is installed
CHANGEUSRID	Jobstep user ID	Jobstep user ID	User ID that generated the resource (for details, see Table 6)	Inherited from BUNDLE	User ID that requested the SYSLINK installation [2]
INSTALLAGENT	TABLE	SYSTEM	DYNAMIC	BUNDLE	CREATESPI
INSTALLTIME	Time of the last cold start	Time of CICS startup	Time that the installed resource is generated	Inherited from BUNDLE	Time that the resource is installed
INSTALLUSRID	Jobstep user ID	Jobstep user ID	User ID that generated the installed resource (for details, see Table 6)	Inherited from BUNDLE	User ID that requested the SYSLINK installation

Notes

1. The "nnnn" format for the CICS release is the unique 4-digit identifier; for example, 0660 is the identifier for CICS TS 4.1.
2. For the CICSPlex SM BAS resource definitions in the EYUDREP data repository, when CICS security is active the **CHANGEUSRID** field contains the user ID that made the last modification to the resource definition. When CICS security is not active, the **CHANGEUSRID** field contains blanks.

Table 6. The contents of the CHANGEUSRID, DEFINESOURCE, and INSTALLUSRID fields for dynamic resources

Dynamic resource	Generated by	CHANGEUSRID	DEFINESOURCE	INSTALLUSRID
DB2TRAN	The installation of a DB2ENTRY resource definition with TRANSID specified	User ID that installed the DB2ENTRY	DB2ENTRY name	User ID that installed the DB2ENTRY
DJAR	A CORBASERVER scan	User ID that ran the CORBASERVER scan	CORBASERVER name	User ID that ran the CORBASERVER scan
DOCTEMPLATE	CICS Web template management, using DFHWBTL or DFHWBBMS	User ID that ran DFHWBBMS or DFHWBTL	DFHWBBMS or DFHWBTL	User ID that ran DFHWBBMS or DFHWBTL
MQINI	The installation of an MQCONN resource definition with INITQNAME specified	User ID that installed the MQCONN	MQCONN name	User ID that installed the MQCONN
URIMAP	A PIPELINE scan	User ID that ran the PIPELINE scan	PIPELINE name	User ID that ran the PIPELINE scan

Table 6. The contents of the CHANGEUSRID, DEFINESOURCE, and INSTALLUSRID fields for dynamic resources (continued)

Dynamic resource	Generated by	CHANGEUSRID	DEFINESOURCE	INSTALLUSRID
WEBSERVICE	A PIPELINE scan	User ID that ran the PIPELINE scan	PIPELINE name	User ID that ran the PIPELINE scan
XMLTRANSFORM	The installation of an ATOMSERVICE resource definition with XSDBIND specified	User ID that installed the ATOMSERVICE	ATOMSERVICE name	User ID that installed the ATOMSERVICE

Getting started with resource definition

There are several steps that you must perform to begin defining resources.

Procedure

1. Create and initialize a CSD. See the *CICS System Definition Guide* for information on how to do this.
2. Using the **DFHCSDUP UPGRADE** command, bring the CICS supplied definitions in your CSD file up to the level of CICS Transaction Server for z/OS, Version 4 Release 2.
3. Work with your resource definitions. Use Table 1 on page 4 and Table 2 on page 6 to help you decide which methods to use to define and manage your resources.
   - If you want to use CEDA, read “The CEDA transaction tutorial” on page 393 for help in using CEDA and “Resource management transaction CEDA commands” on page 414 for reference information.
   - If you want to use DFHCSDUP, read “System definition file utility program (DFHCSDUP)” on page 447 for guidance information and “Resource management utility DFHCSDUP commands” on page 454 for reference information.
   - If you want to use autoinstall, read Chapter 42, “Autoinstall,” on page 477.

Chapter 2. CSD file management

The CICS system definition (CSD) file is a VSAM data set containing a resource definition record for every resource defined to CICS by means of CEDA or DFHCSDUP.

The CSD can be defined as recoverable, so that changes made by CEDA or CEDB that were incomplete when an abend occurred, are backed out.

You can change the contents of the CSD without interfering with a running CICS region that uses the CSD. This is because when you install the definitions in the CICS region, CICS copies the information from the CSD, and keeps it in its own storage. You can also change the definitions in the running CICS region by reinstalling them, or add more definitions by installing new ones.

Compatibility mode (CSD file sharing)

CICS allows a CSD file and its resource definitions to be shared between different CICS systems.

The systems might be running the same or different releases of CICS. **Compatibility mode** is intended for use when you want to create or change resource definitions on a CSD file that is shared between different releases.

All maintenance should be done under the latest release of CICS. This avoids the risk of earlier releases modifying entries created under more recent releases with new attributes that the older version does not recognize. Ensure this by restricting write access to the CSD file to the latest release. See the *CICS System Definition Guide* for further details on defining CSD files.

Compatibility mode is entered by using PF2 on the CEDA panels where it is available. It gives you access to those attributes that were current at your earlier release, but are obsolete at your later release. However, you can use compatibility mode only with commands affecting individual resources: you cannot perform generic commands (ALTER, DEFINE, and VIEW) in compatibility mode.

There is more information about issues relating to compatibility mode in the following places:

- For the usage and meaning of attributes and their compatibility with previous releases of CICS, see Appendix A, “Obsolete attributes,” on page 831.
- For information about what compatibility groups you need in your startup group list for CSD file sharing to work, see “CICS-supplied compatibility groups” on page 852, and the *CICS Transaction Server for z/OS Upgrading from CICS TS Version 4.1*, which has a table showing the DFHCOMPx groups you need to include for the earlier releases.

Creating a CSD file

If you do not already have a CSD file, you must create one.

About this task

For detailed information about creating a CSD file, see the *CICS System Definition Guide*.

You can create more than one CSD file, depending on your requirements. For example, you can have different CSD files for different systems, so that your test systems and production systems are separate from each other.

You can also share one CSD file between CICS releases; see “Compatibility mode (CSD file sharing)” on page 21.

When the CSD file has been initialized, it contains a number of groups (all beginning with the letters 'DFH') containing related resource definitions, and one list, called DFHLIST. These definitions are supplied by CICS and are necessary for some system functions and for running CICS-supplied transactions.

Chapter 3. Groups and lists

Information on the CSD file is organized into **groups** and **lists**.

The main purpose of the **group** is to provide a convenient method of collecting related resources together on the CSD file. Every resource that you define must belong to a group; you cannot define a resource without also naming its group.

A **list** contains the names of groups that CICS installs at an initial or cold start. You can add groups to lists if you want them to be installed at an initial or cold start, or if it helps you to manage your groups better. Groups do not have to belong to lists, and can be defined independently.

What should be in a group?

When you organize resource definitions into groups, you should consider keeping resources together that have something in common. For example, you might keep all resources related to an application in the same group. In some cases, CICS requires you to put certain resources in the same group.

Usually, the definitions within a group have something in common. For example:

For application resources:
- It is more convenient to keep all the resource definitions belonging to one application in one group.
- If you use PARTITIONSET or PROFILE definitions for many applications, keeping them separate in their own groups avoids the possibility of unnecessary duplication.

For communication resources:
- SESSIONS definitions **must** be in the same group as the CONNECTION definition to which they refer. You may have more than one group of definitions for each system and its sessions with other systems, in a single CSD file that is shared by all the systems. Be careful that you install each group of definitions in the correct system.
- Restrict a group to contain only one CONNECTION definition with its associated SESSIONS definitions.
- Keep all your TYPETERM definitions in one group. This avoids the possibility of unnecessary duplication. You **must** put the group of TYPETERMs before the groups of TERMINAL definitions in your lists.
- It is convenient to group TERMINAL definitions according to departmental function or geographical location.
- You **must** keep all the TERMINAL definitions for one pool of pipeline terminals in the same group.
- Keep AUTINSTMODEL TERMINAL definitions separately in a group of their own.

For CORBA resources:

- A CORBASERVER definition must be in the same group as the DJAR definitions that refer to it, or in a group that is installed before the group containing those DJAR definitions, otherwise CICS may attempt to install the DJAR before the CORBASERVER it requires.

For transient data resources, sample definitions for the CICS-supplied transient data queues (those beginning with the letter "C") are provided in group DFHDCTG. For these definitions to become available for use at the earliest possible point during CICS initialization, include group DFHDCTG as the first group installed during an initial or cold start.

How many resource definitions should a group contain?

Try to keep your groups to a manageable size; ideally, there should be no more than about 100 resource definitions in a group.

Allocate your resource definitions between groups to obtain optimum performance, in both system and administration terms. The following considerations may help:

- A large group can involve a lot of unnecessary processing time to install. This is particularly true of those containing TERMINAL and SESSIONS definitions, because they take a large amount of dynamic storage.
- A large number of very small groups can also use unnecessary processing time, because of the extra I/O involved in reading many group names from the CSD file. In theory, you could have one resource definition per group, but this is not recommended; the processing of a large number of single-resource groups can affect DASD space, initial or cold start performance, and the performance of both CEDA and DFHCSDUP.
- Administration is easier if you have smaller groups. For example, the DISPLAY GROUP ALL command involves a lot of scrolling if the resource definitions in the group extend over many screens. You cannot see at a glance the contents of a large group.
- You may find that you have storage problems when you EXPAND, COPY, or INSTALL a large group. In particular, if a very large number of CSD file records are defined in a region with a small dynamic storage area, issuing a CEDA EXPAND GROUP(*) command can result in the system going short on storage (SOS).

Setting up lists for initialization

You can specify up to four lists, using specific or generic naming, on the GRPLIST system initialization parameter. The default list is the CICS-supplied list DFHLIST.

The lists that you name in the GRPLIST system initialization parameter must include all the resource definitions required by CICS. These are supplied by CICS and are added to the CSD file when you initialize it before starting to use RDO. For further information about this, see "Resource management utility DFHCSDUP commands" on page 454.

To create a list containing both CICS-supplied and your own resource definitions:

1. Start to create the list that you use to initialize CICS, by appending DFHLIST to a new list. For example:

```
CEDA APPEND LIST(DFHLIST) TO(INITLIST)
```

This ensures that all CICS-supplied definitions are installed, whether or not you need to change them.

2. Remove the groups containing definitions for function that you do not require. For example:

   ```
   CEDA REMOVE GROUP(DFHMISC) LIST(INITLIST)
   ```

3. Copy all the resource definitions that you need to change into your own groups. For example:

   ```
   CEDA COPY TRANSACTION(CEDF) GROUP(DFHOPER)  TO(SECTRANS)
   CEDA COPY PROFILE(DFHCICST) GROUP(DFHSTAND) TO(REQMOD)
   ```

   Do **not** rename the copies. You can now use ALTER to change the attributes as necessary. For example:

   ```
   CEDA ALTER TRANSACTION(CEDF) GROUP(SECTRANS)
   ```

4. Add these groups to your list for initialization. For example:

   ```
   CEDA ADD GROUP(SECTRANS) LIST(INITLIST)
   CEDA ADD GROUP(REQMOD)   LIST(INITLIST)
   ```

   Make sure that you add this group **after** the DFH groups. Although you now have two definitions for the resources that you have altered, the second definition in the list is the one that will be installed, if you name this list as a GRPLIST parameter when you initialize CICS.

5. Add any other groups containing resource definitions of your own that you want to use, or append other lists. Your list might look like this:

   ```
   DFHBMS
   DFHCONS
   ⋮
   DFHVTAMP
   SECTRANS
   REQMOD
   ZEMAPPL
   ZEMCOMM
   ZEMTYPES
   ZEMTERMS
   ```

   Note that the group containing the TYPETERMs should come before the groups containing the TERMINAL definitions.

6. Cold start your CICS system, naming the list or lists that you have created in the GRPLIST system initialization parameter. For example:

   ```
   START=COLD,GRPLIST=INITLIST
   ```

Using several lists

You can create lists that contain different sets of groups so that you can initialize different “flavors” of CICS using the GRPLIST system initialization parameter.

Using different lists at different times

Initialize your CICS system with the START=AUTO system initialization parameter, so that the CICS catalog is used to define the system whenever possible, instead of the list or lists named in the GRPLIST operand.

However, if you use CICS differently each time you initialize it, specify the START=COLD system initialization parameter, and specify a different list to define your system every time you initialize CICS. For example, you might have:

- A different list for each day of the week, if the pattern of work is different on each day.

- A list for the CICS used for the day shift, and a list for the CICS used for the night shift.
- A test only list used only when CICS is started up by the system programmers on a day of rest (for example).
- For security reasons, a special list containing groups of restricted resource definitions. You could append this list to your usual one, when these resources are needed.

Consider how you might use the list and group mechanisms with transactions related to a company's salary operations.

Assume that some transactions used by the salary administrators are used every day. For example, a transaction for handling an employee's tax details may have to be performed at any time. Other transactions, such as minor weekly or monthly payroll adjustments, are run at predefined intervals, or on specific days or dates. You would therefore not want to include the same mixture of transactions and programs every time the system was started up.

By creating a resource definition group for taxation transactions, and another for payroll transactions, you could add them to different lists to produce the required system tables for different days. In the above example, one list would identify only the taxation group; the other would identify both taxation and payroll groups. You would specify the appropriate list in a system initialization parameter.

Clearly, a real system would have many more groups and lists than this.

Using different lists for different CICS regions

If you are running more than one CICS region in the same MVS image, you may use the same CSD file to define your resources to both regions.

This helps you to ensure that each region has the same definition of resources where necessary. You probably do not want to use all the same resources in each region, so you could create a list for each region. You name the appropriate list in the system initialization parameter for each region.

For example, you might have two production CICS regions sharing a CSD file. Assume that one production region runs three applications: customer inquiry, billing, and adjustments. Each application has its own resources (programs, map sets, and transactions), so you put the resource definitions in three groups: CUSTINQ, CUSTBILL, and CUSTADJ. Then you add these groups to a list called CICS1A.

Another production region runs two more applications in addition to customer inquiry: customer update and customer credit authorization. For these, you create two more groups (CUSTCRED and CUSTUPDT) and another list called CICS1B.

CICS1B contains the same CUSTINQ group as CICS1A, and it also contains CUSTCRED and CUSTUPDT. If you decide, for performance reasons, to move one of your applications to a different CICS region, all you need to do is add the appropriate group name to the appropriate list. The next time you initialize CICS with this list specified in the GRPLIST system initialization parameter, you install the new group.

Using different lists when you introduce changes

The list with which you initialize CICS is a definition of your system (for RDO resources).

When you introduce changes to your resources, it is useful to create a new list, keeping the old list to return to if something goes wrong. Then you can reinitialize CICS with the old list, knowing that everything is as it was previously.

Creating groups and lists

A group is created when you specify it as the GROUP name in a DEFINE command or as the TO group in a COPY command.

About this task

For example, the command:

```
CEDA DEFINE PROGRAM(PROG1) GROUP(MYGROUP)
```

defines a program called PROG1, and creates a group called MYGROUP if it does not already exist.

These are the only ways to create a group; a nonexistent group can be named in a list, but naming it in a list does not create it.

A group must not have the same name as an existing group or list.

You can create a list in either of the following ways:

- Use the ADD command to add a group to a list. If the specified list does not exist, it is created.
- Use the APPEND command to append the contents of one list to another list. If the appended-to list does not exist, it is created, containing the contents of the first list.

A list must not have the same name as an already existing group or list.

Checking groups and lists of resource definitions for consistency

The CEDA CHECK command checks the consistency of definitions within a group or within all of the groups within a list or lists. It does not, however, cross-check every attribute of a resource. You may still get error messages when installing a group, although there were no problems when you used the CHECK command.

About this task

If you use the CHECK GROUP command, CEDA cross-checks all of the resources in a specified group to ensure that the group is ready to be used. For example, CHECK might warn you that a transaction definition within the group does not name a program within the same group. (Note, however, that this might not be an error. The group might intentionally be paired with a group that does contain the program, or you may want the program to be autoinstalled, in which case it would not have a definition.)

If you use the CHECK LIST command, CEDA cross-checks every group named in the list. It does not check each group in turn, but merges the definitions in all of the listed groups, and checks them all. In this way it warns you if there are duplicate resource definitions, or references to definitions that do not exist.

Chapter 4. Resource definition installation

When a resource definition is installed, information about the resources is used to construct the data structures that represent the resource in the CICS address space.

What happens when CICS is initialized

When you initialize CICS, what happens to your resource definitions depends on the type of start. This is defined in the START system initialization parameter; START=INITIAL or an initial start, START=COLD for a cold start, and START=AUTO for a warm or emergency restart.

Initial or cold start

During an initial or cold start, CICS creates system tables by installing groups named in the list or lists named by the GRPLIST system initialization parameter.

If you installed a group with the INSTALL command during the previous CICS execution, you must add its name to a list if you want it to be installed during a cold start.

If you usually use START=COLD at CICS initialization, installing by means of a list will probably be your standard way of making resource definitions available to CICS. Use of the INSTALL command is a supplementary method, which you could find very useful when testing a system, or if an unexpected need for a resource arises when CICS is running.

You may not want to use the RDO transactions in a production system, for security or performance reasons. In this case, the CSD file is shared by both systems, but is read-only in the production system. You define all your production resources using your development system, and install them in the production CICS system when you cold start it.

Warm or emergency start

During a warm or emergency start, CICS recreates the tables from the resource definitions stored in the system log and global catalog.

No reference is made to the CSD file, nor is the GRPLIST name used. So all groups that had been installed by the end of the previous CICS execution are reinstalled automatically at a warm or emergency restart. Thus any CICS system modifications you have introduced using RDO will persist. For autoinstalled resources, see the following:
- “What happens at CICS restart” on page 486
- “Recovery and restart for connection autoinstall” on page 496
- “Program autoinstall and recovery and restart” on page 500

If you have named a different list in the GRPLIST operand, or if you have added new groups to it after the last system initialization, CICS does not install the groups in the new list during a warm or emergency restart, because CICS does not refer to the list.

If you usually use START=AUTO at CICS initialization, using the INSTALL command is your standard way of making resource definitions available to CICS.

You use a list to define your system only when you need to do an initial or cold start. You can ensure that your list is up to date by adding to it each group installed using the INSTALL command.

What happens when you use the INSTALL command

Most resource definitions can be installed in groups or individually, and are committed at the individual resource level. However, some SNA LU control resource definitions must be installed in groups and are committed in *installable sets*.

Some SNA LU control resource definitions within a CSD group are committed at the installable set level. An installable set comprises those resources, such as a CONNECTION and its associated SESSIONS, which are dependent in some way. The backout of an installable set does not cause the whole group to be backed out. The following types of resource definition are installed in installable sets:

- CONNECTION and associated SESSIONS definitions
- Pipeline terminals—all the terminal definitions sharing the same POOL name

If a member of an installable group fails to install, CICS issues message DFHZC6216 identifying the member that caused the installation of the set to fail.

All other resource types are committed individually, and not in installable sets. For these resources, the effect of a partially successful group INSTALL is to leave the resources that were added in a committed state.

For the installation of installable sets and for individual definition, an INSTALL may not be successful for one of two reasons:

1. A resource definition could not be installed because it is currently in use.
2. A system failure occurred during installation.

You can use the CEDA INSTALL command to reinstall the same group used at a cold or initial start, and the new definitions are installed successfully, even if some original definitions are in use and fail to install.

How to install a limited number of data definitions

If you want to install only a few new or changed definitions, install single resources. Use of the single-resource INSTALL eliminates the problems of a partial INSTALL caused by a failure.

Note that the single-resource INSTALL of some CONNECTIONs and SESSIONS is not possible.

However, if you want to change or add a larger number of definitions, you might prefer to install a new group. In that case, the following considerations apply:

- When you install a group containing an updated definition of an existing resource, the installation fails if the resource is being used at the time. Make sure that none of the resources in a group is in use before trying to install the group.
- Installation is a two-stage process: any existing definition for the resource must be “deleted” from the system tables before a definition can be installed. This can result in more than one message if the “deletion” fails and causes the installation to fail.
- If you have several CICS systems that share the same CSD file, you must be careful not to install a group of resources in the wrong system.

Duplicate resource definition names

An RDO-defined definition overrides a macro-defined definition of the same name. For example, if you try to install a definition for an SNA LU that has the same name as a non-SNA LU, the SNA LU entry overwrites the non-SNA LU entry.

If you INSTALL a group while CICS is active, the resource definitions in the group override any of the same type and name already installed.

When an existing resource definition is replaced in this way, the statistics associated with the old resource definition are transferred to the new definition. If a PROGRAM definition is replaced, the program is relocated on the library and loaded when the new definition is referenced for the first time. In effect, the new definition implies a NEWCOPY operation. The same rules apply to map sets and partition sets.

It is probably unwise to have more than one resource definition of the same name on the CSD file, even for different resource types. You must keep PROGRAM, MAPSET, and PARTITIONSET names unique. If you have, for example a PROGRAM and a MAPSET with the same name, only one of them is available to CICS. As far as names are concerned, after installation these definitions are treated as if they were the same resource type.

For all resource types except TDQUEUEs and FILEs, if two groups in a list contain resource definitions of the same name, and of the same resource type, CICS uses the definition in the group that is later in the list.

- For TDQUEUE definitions, the first definition in the list is used.
- For FILE definitions, if the file is defined as ENABLED, the later installation of a duplicate fails. However, if the file is defined as DISABLED, the later installation of a duplicate succeeds.

The only reason why you might have more than one resource definition of the same name is if you have alternative definitions of the same real resource, with different attributes. These resource definitions must be in different groups.

Part 2. RDO resources

You can define and install the following resources using RDO.

Table 7. CICS RDO resources

Resource	Description	Reference
ATOMSERVICE	Defines an Atom service, feed, collection, or category document, and identifies the Atom configuration file, CICS resource or application program, and Atom binding file that are used to supply the data for the feed.	ATOMSERVICE resources in the Resource Definition Guide
BUNDLE	Defines a bundle, the unit of deployment for an application.	BUNDLE resources in the Resource Definition Guide
CONNECTION	Defines a remote system with which your CICS system communicates, using intersystem communication (ISC) or multiregion operation (MRO).	CONNECTION resources in the Resource Definition Guide
CORBASERVER	Defines an execution environment for enterprise beans and stateless CORBA objects	DB2CONN resources in the Resource Definition Guide
DB2CONN	Defines the attributes of the connection between CICS and DB2, and of the pool threads and command threads used with the connection.	Chapter 9, "DB2CONN resources," on page 71
DB2ENTRY	Defines the attributes of entry threads used by the CICS DB2 attachment facility.	DB2ENTRY resources in the Resource Definition Guide
DB2TRAN	Defines a transaction, or a group of transactions, associated with a DB2ENTRY, that are additional to the transactions specified in the DB2ENTRY itself.	DB2TRAN resources in the Resource Definition Guide
DJAR	Defines an instance of a deployed JAR file, containing enterprise beans.	DJAR resources in the Resource Definition Guide
DOCTEMPLATE	Defines the attributes of a document template.	DOCTEMPLATE resources in the Resource Definition Guide
ENQMODEL	Defines a named resource for which the ENQ and DEQ commands have a sysplex-wide scope.	
FILE	Defines the physical and operational characteristics of a file.	FILE resources in the Resource Definition Guide
IPCONN	Use this resource to define the outbound attributes of a TCP/IP connection to a remote system.	IPCONN resources in the Resource Definition Guide

Table 7. CICS RDO resources (continued)

Resource	Description	Reference
JOURNALMODEL	This resource definition provides the connection between a CICS journal name (or identifier) and the associated log streams managed by the MVS system logger, or between the journal name and the SMF log.	JOURNALMODEL resources in the Resource Definition Guide
LIBRARY	Use the LIBRARY resource to define the physical and operational characteristics of a library.	LIBRARY resources in the Resource Definition Guide
LSRPOOL	The local shared resources (LSR) pool is a reserve of data buffers, strings, and Hiperspace™ buffers that VSAM uses when processing access requests for certain files.	LSRPOOL resources in the Resource Definition Guide
MAPSET	Each interactive application using a display device can use specific screen layouts, or maps. Each map can be used by multiple invocations of the same program, or by different programs. You use either basic mapping support (BMS) or Screen Definition Facility (SDF) to create maps. Every map must belong to a mapset.	MAPSET resources in the Resource Definition Guide
PARTITIONSET	The screen areas of some display devices can be divided into partitions, each of which can be treated as a separate display. Different programs or transactions can write to or receive input from different partitions.	PARTITIONSET resources in the Resource Definition Guide
PARTNER	You use the PARTNER definition to enable CICS application programs to communicate via APPC protocols to a partner application program running on a remote logical unit. This interaction is called a conversation. The PARTNER definition also facilitates the use of the call to the interface with the communications element of the System Application Architecture.	PARTNER resources in the Resource Definition Guide
PIPELINE	A PIPELINE resource definition is used when a CICS application is in the role of a Web service provider or requester. It provides information about the message handler programs that act on a service request and on the response.	PIPELINE resources in the Resource Definition Guide
PROCESSTYPE	Using the CICS business transaction services (BTS) API, you can define and execute complex business applications called *processes*. A PROCESSTYPE resource definition defines a BTS process-type. It names the CICS file which relates to the physical VSAM data set (repository) on which details of all processes of this type (and their activity instances) are to be stored. A PROCESSTYPE resource definition	PROCESSTYPE resources in the Resource Definition Guide

Table 7. CICS RDO resources (continued)

Resource	Description	Reference
PROFILE	The PROFILE definition is used to specify options that control the interactions between transactions and terminals or logical units. It is a means of standardizing the use of, for example, screen size and printer compatibility. Each TRANSACTION definition names the PROFILE to be used.	PROFILE resources in the Resource Definition Guide
PROGRAM	You use the PROGRAM definition to describe the control information for a program that is stored in the program library and used to process a transaction.	PROGRAM resources in the Resource Definition Guide
REQUESTMODEL	A REQUESTMODEL resource definition provides the connection between an Internet Inter-ORB Protocol (IIOP) inbound request and the identifier of the CICS transaction that is to be initiated.	REQUESTMODEL resources in the Resource Definition Guide
SESSIONS	Before two systems can communicate using ISC or MRO, they must be logically linked through one or more sessions. The nature of the link determines how they can communicate. You specify the link in the SESSIONS definition.	SESSIONS resources in the Resource Definition Guide
TCPIPSERVICE	Use this resource to define which TCP/IP services are to use CICS internal sockets support. The internal CICS services that can be defined are IIOP, CICS Web support, and ECI.	TCPIPSERVICE resources in the Resource Definition Guide
TDQUEUE	Defines the attributes of a transient data queue.	TDQUEUE resources in the Resource Definition Guide
TERMINAL	CICS needs a definition for each terminal with which it communicates. A terminal's unique properties are in its TERMINAL definition. Properties that it has in common with other terminals (usually static) are in the TYPETERM definition.	For VTAM terminals, TERMINAL resources in the Resource Definition Guide; for non-VTAM terminal, “TCT—terminal control table” on page 551
TRANCLASS	By putting your transactions into transaction classes (TRANCLASSes), you can control how CICS dispatches tasks. For example, you can separate transactions into those that are heavy resource users and those that are of lesser importance, such as the “Good morning” broadcast messages. You can then use the attributes on the TRANCLASS definition to control the number of active and new tasks allowed from each transaction class.	TRANCLASS resources in the Resource Definition Guide

Table 7. CICS RDO resources (continued)

Resource	Description	Reference
TRANSACTION	A CICS application consists of one or more programs written to perform a specific function. A particular invocation of such an application is a transaction. In the TRANSACTION definition you specify options related to functions provided by CICS itself, such as transaction priority, security key, and the length of the transaction work area (TWA).	TRANSACTION resources in the Resource Definition Guide
TSMODEL	A TSMODEL resource definition allows you to specify a Temporary Storage queue name prefix, and associate attributes with that name. You can also map names directly to a shared TS pool (without the need for a shared sysid).	TSMODEL resources in the Resource Definition Guide
TYPETERM	A TYPETERM is a partial terminal definition that identifies a set of common terminal properties or attributes. Every TERMINAL definition must specify a TYPETERM. TYPETERMS make it easier to define your terminals if you have many terminals of the same kind.	TYPETERM resources in the Resource Definition Guide
URIMAP	A URIMAP is a resource definition that matches the URIs of HTTP or Web service requests and provides information on how to process the requests.	URIMAP resources in the Resource Definition Guide
WEBSERVICE	A WEBSERVICE resource defines aspects of the run time environment for a CICS application program deployed in a Web services setting, where the mapping between application data structure and SOAP messages has been generated using the CICS Web services assistant.	WEBSERVICE resources in the Resource Definition Guide

Chapter 5. ATOMSERVICE resources

An ATOMSERVICE resource defines an Atom service, feed, collection, or category document that CICS can deliver to a Web client over HTTP.

To support each ATOMSERVICE resource, you need a URIMAP resource to handle incoming Web client requests and point to the appropriate ATOMSERVICE resource.

Atom feed documents and collections are documents that contain one or more Atom entries. Web clients cannot edit the Atom entries in a feed, but they can edit the Atom entries in a collection. When a Web client makes an HTTP request relating to the Atom feed or collection, CICS assembles the appropriate Atom entries and delivers the document to the Web client. The ATOMSERVICE resource for an Atom feed or collection identifies the Atom configuration file, CICS resource or application program, and XML binding that CICS uses to supply the data and metadata for the Atom entries.

Atom service documents provide information about the collections that are available from CICS, and Atom category documents list the categories that can be applied to Atom entries in a collection. You can create these documents as an Atom configuration file and serve them using an ATOMSERVICE resource, or you can deliver them as a static document through CICS Web support.

Installing ATOMSERVICE resource definitions

This procedure uses the CEMT and CEDA transactions to install an ATOMSERVICE resource definition. If the ATOMSERVICE resource already exists, it has to be disabled before it can be reinstalled.

Procedure

1. If the ATOMSERVICE resource already exists, ensure that it is disabled. Use the following command:

   ```
   CEMT SET ATOMSERVICE(name) DISABLED
   ```

   While the ATOMSERVICE resource is disabled, if a web client makes an HTTP request that requires the resource, CICS returns an HTTP 503 response (Service Unavailable) to the web client.
2. Install the ATOMSERVICE definition. Use the following command:

   ```
   CEDA INSTALL GROUP(groupname) ATOMSERVICE(name)
   ```
3. Optional: When you have successfully installed the ATOMSERVICE definition, use CEMT to enable the resource. Perform this step only if the ATOMSERVICE resource is not already defined as ENABLED, and you want to make the resource available for web clients. Use the following command:

   ```
   CEMT SET ATOMSERVICE(name) ENABLED
   ```

ATOMSERVICE attributes

Describes the syntax and attributes of the ATOMSERVICE resource.

Syntax

```
►►──ATOMSERVICE(name)──GROUP(groupname)──┬──────────────────┬──────────────────►
                                         └─DESCRIPTION(text)─┘

   ┌─STATUS(ENABLED)──┐
►──┼──────────────────┼──CONFIGFILE(name)─────────────────────────────────────►
   └─STATUS(DISABLED)─┘

     ┌─ATOMTYPE(FEED)───────┐
►──┬─┼──────────────────────┼─┤ Resource attributes ├─┬───────────────────────►◄
   │ └─ATOMTYPE(COLLECTION)─┘                         │
   ├─ATOMTYPE(SERVICE)────────────────────────────────┤
   └─ATOMTYPE(CATEGORY)───────────────────────────────┘
```

Resource attributes:

```
├──RESOURCENAME(name)──┬─RESOURCETYPE(FILE)──BINDFILE(name)──────┬──────────┤
                       ├─RESOURCETYPE(PROGRAM)──┬───────────────┬┤
                       │                        └─BINDFILE(name)─┘│
                       └─RESOURCETYPE(TSQUEUE)──BINDFILE(name)────┘
```

Attributes

ATOMSERVICE(*name*)
Specifies the 8-character name of this resource definition.

Acceptable characters:

```
A-Z 0-9 $ @ #
```

Unless you are using the CREATE command, any lowercase characters that you enter are converted to uppercase.

ATOMTYPE({**FEED**|**SERVICE**|**COLLECTION**|**CATEGORY**})
Specifies the type of Atom document that is returned for this ATOMSERVICE definition.

CATEGORY
An Atom category document, which lists the categories for entries in a collection. You can set up a category document if you want to use the same categories to define multiple collections.

COLLECTION
An Atom collection document, which contains a group of Atom entries that can be edited by Web clients using HTTP POST, PUT, and DELETE requests, as well as being retrieved using HTTP GET requests. The Atom configuration file for a collection must begin with the root element <cics:atomservice type="collection">.

FEED
An Atom feed document, which describes the metadata for a feed, and contains Atom entries that provide data for the feed. An Atom feed can be retrieved using HTTP GET requests, but it cannot be edited by a Web client. The Atom configuration file for an Atom feed must begin with the root element <cics:atomservice type="feed">.

SERVICE
An Atom service document, which provides information about the editable collections that are available on a server.

BINDFILE(*name*)
Specifies the fully qualified (absolute) or relative name of an XML binding stored in z/OS UNIX System Services. This attribute is not used for an Atom service or category document. You create an XML binding using the CICS XML assistant program DFHLS2SC.

For resource types FILE and TSQUEUE, the XML binding is required, and it specifies the data structures used by the resource named in RESOURCENAME, which supplies the data for the Atom document.

For resource type PROGRAM, an XML binding is optional, and you create it using the resource that the program accesses to obtain the data for the Atom entries, not the program itself. You must specify an XML binding for resource type PROGRAM if you are using the resource handling parameters in the DFHATOMPARMS container to pass information from the Atom configuration file to the program. If you are not doing this, do not specify an XML binding.

The name of the XML binding can be specified as an absolute path including all directories and beginning with a slash, for example, `/u/atom/atomictest.xsdbind`. Alternatively, it can be specified as a path relative to the HOME directory of the CICS region user ID; for example, `atom/atomictest.xsdbind` (with no leading forward slash). Up to 255 characters can be used.

Acceptable characters:
`A-Z a-z 0-9 $ @ # . / - _ % & ? ! : | " = ¬ , ; < >`

CONFIGFILE(*name*)
Specifies the fully qualified (absolute) or relative name of an Atom configuration file stored in z/OS UNIX System Services. The Atom configuration file contains XML that specifies metadata and field names for the Atom document that is returned for this resource definition. For details, see the *CICS Internet Guide*.

The name can be specified as an absolute path including all directories and beginning with a slash, for example, `/u/atom/myfeed.xml`. Alternatively, it can be specified as a path relative to the HOME directory of the CICS region user ID, for example, `atom/myfeed.xml` (with no leading forward slash). Up to 255 characters can be used.

Acceptable characters:
`A-Z a-z 0-9 $ @ # . / - _ % & ? ! : | " = ¬ , ; < >`

DESCRIPTION(*text*)
You can provide a description of the resource that you are defining in this field. The description text can be up to 58 characters in length. There are no restrictions on the characters that you can use. However, if you use parentheses, ensure that for each left parenthesis there is a matching right one. If you use the CREATE command, for each single apostrophe in the text, code two apostrophes.

GROUP(*groupname*)

Every resource definition must have a GROUP name. The resource definition becomes a member of the group and is installed in the CICS system when the group is installed.

Acceptable characters:
`A-Z 0-9 $ @ #`
Any lower case characters you enter are converted to upper case.

The GROUP name can be up to eight characters in length. Lowercase characters are treated as uppercase characters. Do not use group names beginning with DFH, because these characters are reserved for use by CICS.

RESOURCENAME(*name*)

Specifies the 1 - 16 character name of the CICS resource that provides the data for this Atom feed or collection. If the data for your Atom entries is held in a resource that is accessed by a service routine, specify the name of the service routine here. This attribute is not used for an Atom service or category document.

Acceptable characters:
`A-Z a-z 0-9 $ @ # . / - _ % & ? ! : | " = ¬ , ; < >`

RESOURCETYPE(**FILE**|**PROGRAM**|**TSQUEUE**})

Specifies the type of CICS resource that holds the data for this Atom feed or collection. This attribute is not used for an Atom service or category document.

FILE
A CICS file. A single record in the file provides the data for a single Atom entry. A file that holds Atom entries must have a unique key for the records, and you cannot use an alternate index file that has been defined with the NONUNIQUEKEY attribute. You can use any type of VSAM file to hold Atom entries, but note that ESDS (entry-sequenced data set) files are not suitable for a feed that you might want to set up as an editable collection, because you cannot delete records in an ESDS. You cannot use a BDAM file.

PROGRAM
A service routine, which is a CICS application program written to supply content for Atom entries.

TSQUEUE
A temporary storage queue. A single record in the temporary storage queue provides the data for a single Atom entry.

STATUS({**ENABLED**|**DISABLED**})

Indicates whether the Atom document specified by this resource definition is available or unavailable.

Chapter 6. BUNDLE resources

A BUNDLE resource defines a *bundle*, a unit of deployment for an application. A bundle is a collection of CICS resources, artifacts, references, and a manifest that you can deploy into a CICS region to represent an application.

The manifest is a file that describes the contents of the bundle, including what resources to create in the CICS region and the location of the supporting artifacts, what prerequisites are required for the application to run successfully, and any services that the application can offer to other applications.

A bundle is deployed to z/OS UNIX and comprises a directory structure of artifacts. The BUNDLE resource defines where the bundle is deployed on z/OS UNIX and its status. When you enable a BUNDLE resource, CICS reads the manifest and dynamically creates the application resources that are defined in the manifest for you. Other resources that are defined as prerequisites for the application must be present in the CICS region to successfully enable the BUNDLE resource.

If CICS fails to create one or more of the application resources, the BUNDLE installs in a DISABLED state. You can use the IBM CICS Explorer® to view the state of each resource. You can try to enable the BUNDLE resource again. However, if one of the resources, for example a WEBSERVICE, installs in an UNUSABLE state, you cannot enable the BUNDLE resource. You must discard the BUNDLE resource and re-create the definition.

If you disable one of the resources that was created by the BUNDLE, for example an EVENTBINDING resource, CICS disables the BUNDLE resource as well. However, any other resources that are part of the bundle remain in an enabled state in the CICS region. If you reenable the resource successfully, the BUNDLE resource also changes to the ENABLED state. If you try to discard a disabled BUNDLE resource when enabled resources that belong to the bundle are in the CICS region, CICS issues a message and the discard fails. You must disable each of the enabled resources before discarding the BUNDLE resource. You can use the **DISABLE BUNDLE** command on a disabled bundle to disable all of the associated resources.

Note: When you have created and deployed your bundle using the CICS Explorer, you should ensure proper management of the bundle source code. The bundle cannot be reconstructed from the exported data in zFS, and a failure of your workstation would cause the data to be lost. You can use the Export function of CICS Explorer to export the bundle and check it in to a source code management system.

Tip: Because a bundle is the unit of deployment for an application, you are recommended to enable, disable, and discard the BUNDLE resource only.

If you disable a resource that is listed as a prerequisite of the bundle, for example a FILE resource, CICS disables the BUNDLE resource. Prerequisites are listed in the imports section of the bundle manifest. Use the IBM CICS Explorer to view the list of imports for a bundle.

BUNDLE attributes

Describes the syntax and attributes of the BUNDLE resource.

```
►►──BUNDLE(name)──GROUP(groupname)──┬──────────────────────┬──────────────────►
                                    └─DESCRIPTION(text)─┘

                          ┌─STATUS(ENABLED)──┐
►─BUNDLEDIR(zfsdirectory)─┼──────────────────┼──┬───────────────────┬────────►◄
                          └─STATUS(DISABLED)─┘  └─BASESCOPE(value)──┘
```

BASESCOPE(*value*)
: Specifies the 1 - 255 character string that defines the scope for the contents of the bundle. You are recommended to specify a uniform resource identifier (URI). Use the BASESCOPE attribute when you want to group similar bundles together. The default value is empty so that all BUNDLE resources install in the same scope.

Acceptable characters:

`A-Z a-z 0-9 $ @ # . / - _ % & ? ! : | " = ¬ , ; < >`

BUNDLE(*name*)
: Specifies the 1 - 8 character name of the BUNDLE.

Acceptable characters:

`A-Z a-z 0-9 $ @ # . / - _ % & ? ! : | " = ¬ , ; < >`

Do not use names beginning with DFH, because these characters are reserved for use by CICS.

BUNDLEDIR(*zfsdirectory*)
: Specifies the 1 - 255 character fully qualified name of the root directory for the bundle on z/OS UNIX. The first character must be /.

The value specified must be a valid name for a UNIX file:
- It must not contain imbedded space characters.
- It must not contain consecutive instances of the / character.
- It is case-sensitive.

Acceptable characters:

`A-Z a-z 0-9 . / _ # @ -`

DESCRIPTION(*text***)**
: In this field, you can provide a description of the resource that you are defining. The description text can be up to 58 characters in length. No restrictions apply to the characters that you may use. However, if you use parentheses, ensure that each left parenthesis has a matching right one. If you use the CREATE command, for each single apostrophe in the text code two apostrophes.

GROUP(*groupname*)
Every resource definition must have a GROUP name. The resource definition becomes a member of the group and is installed in the CICS system when the group is installed.

Acceptable characters:

```
A-Z 0-9 $ @ #
```

Any lowercase characters that you enter are converted to uppercase.

The GROUP name can be up to 8 characters in length. Do not use group names beginning with DFH, because these characters are reserved for use by CICS.

STATUS(ENABLED|DISABLED)
Specifies the initial status of the BUNDLE resource when it is installed.

ENABLED
The BUNDLE is available for use. CICS checks that all prerequisites for the bundle are present in the region and attempts to install and enable all of the required resources that are defined in the bundle.

DISABLED
The BUNDLE is not available for use. CICS does not check for prerequisites and installs, but does not enable, the resources that are defined in the bundle.

Chapter 7. CONNECTION resources

A CONNECTION defines a remote system with which your CICS system communicates, using *intersystem communication* (ISC) or *multiregion operation* (MRO).

ISC uses the APPC or LUTYPE6.1 communication protocol. MRO uses the IRC, XM, or XCF/MRO access method.

See also Chapter 16, “IPCONN resources,” on page 131. Like a CONNECTION, an IPCONN defines a communication link to a remote system, but in this case the connection uses the TCP/IP protocol.

When you define a CONNECTION, you give enough information to identify the system and specify its basic attributes. You put details in the SESSIONS definition about the sessions you use to communicate with the system. CICS uses the CONNECTION name to identify the other system when the definition has been installed. For other CICS systems connected via MRO, this name is typically the same as that specified in the other CICS system as the SYSIDNT system initialization parameter. For other systems connected via ISC, this name is typically based on an acronym that describes the location of or the organization that owns the system (for example, USA1 or IBMC).

The REMOTESYSTEM name on a TRANSACTION definition, or on a TERMINAL definition, can refer to a CONNECTION definition through its CONNECTION name (or to an IPCONN definition through its IPCONN name). These attributes are used for transaction routing.

The REMOTESYSTEM name on a PROGRAM definition can refer to a CONNECTION definition through its CONNECTION name (or to an IPCONN definition through its IPCONN name). This attribute is used for distributed program link.

The CONNECTION definition does **not** name associated SESSIONS.

Before you start creating definitions for intercommunication resources, see the *CICS Intercommunication Guide* for further guidance. There you can find many useful examples of the attributes you must specify for different types of links and sessions.

Special considerations for different connection types are:

MRO links and sessions
: You define an MRO link using one CONNECTION definition, and its associated parallel sessions using one SESSIONS definition.

  ACCESSMETHOD
  : On the CONNECTION definition, specify this as IRC (for interregion communication), or XM (for cross-memory services). IRC is used to open and close the links.

  PROTOCOL
  : On the SESSIONS definition, specify LU61 as the PROTOCOL. On the CONNECTION definition, leave the PROTOCOL value blank.

SENDPFX, SENDCOUNT, RECEIVEPFX, RECEIVECOUNT
In one SESSIONS definition, you specify a number of send sessions and a number of receive sessions. The values that you specify in these attributes are used to determine the names of the TCT entries created when the definition is installed. (See "Installing connection definitions" on page 48.)

APPC links and parallel sessions
For APPC, the sessions are grouped into modesets. You define each modeset with a SESSIONS definition, so you have as many SESSIONS definitions as you require modesets. You define the link as a CONNECTION definition. The following attributes are significant:

ACCESSMETHOD
On the CONNECTION definition, specify this as z/OS Communications Server.

MAXIMUM
Use this to control the number of sessions in the modeset.

MODENAME
On the SESSIONS definition for each modeset, name the modeset with the MODENAME. This is the name by which the modeset is known to CICS when the definition is installed in the active system.

PROTOCOL
On both the CONNECTION and SESSIONS definitions, specify APPC as the protocol.

APPC (LUTYPE6.2) single session terminal
You can define an APPC terminal as a CONNECTION-SESSIONS pair or as a TERMINAL-TYPETERM pair. The TERMINAL-TYPETERM method is described in "APPC (LUTYPE6.2) single session terminal" on page 275. If you want to use the CONNECTION-SESSIONS method, the following attributes are significant:

ACCESSMETHOD
On the CONNECTION definition, specify this as z/OS Communications Server.

MAXIMUM
For a single session terminal, specifying 1,0 or 1,1 has the same effect. (For further information, see "CONNECTION attributes" on page 49.)

MODENAME
On the SESSIONS definition, specify the MODENAME. This is the name that CICS uses to identify the session when the definition is installed in the active system.

PROTOCOL
On both the CONNECTION and SESSIONS definitions, specify APPC as the protocol.

SINGLESESS
YES indicates that the CONNECTION definition is for a single session terminal.

LUTYPE6.1 links and sessions
LUTYPE6.1 links and sessions can be defined in one of two ways:

- In one CONNECTION and one SESSIONS definition

- In one CONNECTION and a number of SESSIONS definitions: one for each session needed

If your sessions are all to have **identical** attributes, define each link in one CONNECTION definition and all its associated sessions in one SESSIONS definition.

ACCESSMETHOD
On the CONNECTION definition, specify this as z/OS Communications Server.

PROTOCOL
On the SESSIONS definition and on the CONNECTION definition, specify this as LU61.

RECEIVECOUNT, RECEIVEPFX, SENDCOUNT, SENDPFX
These attributes are used as for MRO links and sessions.

If your sessions are to have **different** attributes from each other, you must create a separate SESSIONS definition for each one. With the exception of NETNAMEQ, this method is the same as that for CICS-IMS™ sessions, described below.

Note: For CICS-CICS ISC links and sessions, you are recommended to use APPC rather than LUTYPE6.1.

LUTYPE6.1 CICS-IMS links and sessions
IMS needs each session to be defined in a separate SESSIONS definition, because each session must have a different NETNAMEQ.

You define the link as a CONNECTION definition, and create a number of SESSIONS definitions: one for each SEND session and one for each RECEIVE session.

ACCESSMETHOD
On the CONNECTION definition, specify this as z/OS Communications Server.

NETNAMEQ
This is the name that the remote IMS system uses to identify the session.

PROTOCOL
On both the CONNECTION and SESSIONS definitions, specify LU61 as the protocol.

SESSNAME
This is the name that CICS uses to identify the session when the definition is installed in the active system.

RECEIVECOUNT
SENDCOUNT
Use these attributes to specify whether a session is a SEND session or a RECEIVE session.

A RECEIVE session is one in which the local CICS is the primary and is the contention loser. It is specified by defining RECEIVECOUNT(1) and leaving SENDCOUNT to default to blank. (You do not need to specify a SENDPFX or a RECEIVEPFX.)

A SEND session is one in which the local CICS is the secondary and is the contention winner. Specify it by defining SENDCOUNT(1) and leaving RECEIVECOUNT to default to blank.

INDIRECT connections

An INDIRECT connection is a remote system for which you have not defined a direct link with the local system. Instead, the two systems communicate with each other by way of one or more intermediate systems. You can use this method for transaction routing. The remote system, indirectly connected, is always the terminal-owning region; the local system is always the application-owning region or an intermediate region on the transaction routing path.

Indirect connections are required only if you use non-z/OS Communications Server terminals for transaction routing across intermediate systems. Optionally, you can use them with z/OS Communications Server terminals, where several transaction routing paths are possible, to identify the preferred path to the terminal-owning region. For information about why you might want to define indirect connections, and about the resources required for transaction routing, see the *CICS Intercommunication Guide*.

In the local system, you must have ordinary CONNECTION and SESSIONS definitions for the intermediate systems to which you are directly connected. The ACCESSMETHOD should be IRC or XM with PROTOCOL(LU61), or z/OS Communications Server with PROTOCOL(APPC).

For the INDIRECT connection (also known as an indirect link or an indirect system) you need, in the local system, a CONNECTION definition only. You do not need a SESSIONS definition: the sessions that are used are those of the intermediate system. The following attributes of the CONNECTION definition are significant:

ACCESSMETHOD
Specify this as INDIRECT.

INDSYS
Specify the CONNECTION definition for the MRO or APPC link that is the start of a path to the terminal-owning system.

NETNAME
Specify the APPLID of the terminal-owning system.

Installing connection definitions

To install new CONNECTION definitions, put them in a group of their own which does not contain CONNECTION definitions that have already been installed, then use CEDA INSTALL to install the whole group. You cannot install single CONNECTION definitions.

About this task

To modify and reinstall existing MRO CONNECTION definitions, or if you want new and existing MRO CONNECTION definitions to be in the same group, you must close down all interregion communication (IRC) and open it again, before you can use the definition. If you do not close IRC and open it again, you get message DFHIR3788 when you try to bring up the region with the new connection.

Procedure

1. Close IRC down. Use the following command:

```
CEMT SET IRC CLOSED
```

2. Install the resource definitions. Use the following command:

   ```
   CEDA INSTALL GROUP(groupname)
   ```

3. When you have successfully installed the group containing the definitions, open IRC again. Use the following command:

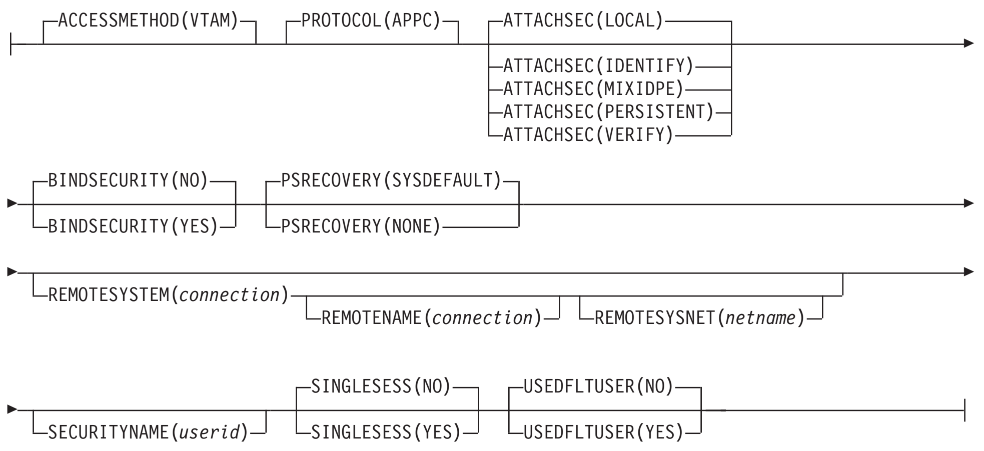
   ```
   CEMT SET IRC OPEN
   ```

CONNECTION attributes

Describes the syntax and attributes of the CONNECTION resource.

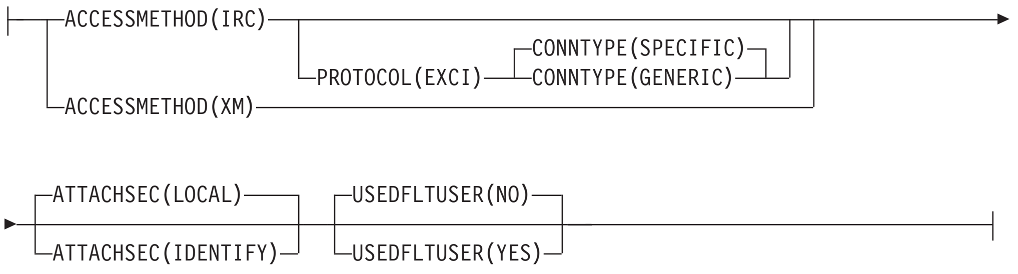
```
►►──CONNECTION(name)──GROUP(groupname)──┬──────────────────┬─────────────────────►
                                         └─DESCRIPTION(text)─┘

     ┌┤ Attributes for APPC connections ├──────────┐   ┌─AUTOCONNECT(NO)──┐
►──┼──────────────────────────────────────────┼───┼──────────────────┼─────────►
     ├┤ Attributes for MRO connections ├───────────┤   ├─AUTOCONNECT(ALL)─┤
     ├┤ Attributes for LU type 6.1 connections ├───┤   └─AUTOCONNECT(YES)─┘
     └┤ Attributes for indirect connections ├──────┘

   ┌─DATASTREAM(USER)─────┐ ┌─INSERVICE(YES)─┐ ┌─MAXQTIME(NO)────────┐
►──┼──────────────────────┼─┼────────────────┼─┼─────────────────────┼────────────►
   ├─DATASTREAM(LMS)──────┤ └─INSERVICE(NO)──┘ └─MAXQTIME(seconds)───┘
   ├─DATASTREAM(SCS)──────┤
   ├─DATASTREAM(STRFIELD)─┤
   └─DATASTREAM(3270)─────┘

                           ┌─QUEUELIMIT(NO)─────┐ ┌─RECORDFORMAT(U)──┐
►──┬──────────────────┬──┼────────────────────┼─┼──────────────────┼──────────────►
   └─NETNAME(netname)─┘  └─QUEUELIMIT(number)─┘ └─RECORDFORMAT(VB)─┘

   ┌─XLNACTION(KEEP)──┐
►──┼──────────────────┼──────────────────────────────────────────────────────────►◄
   └─XLNACTION(FORCE)─┘
```

Attributes for APPC connections:

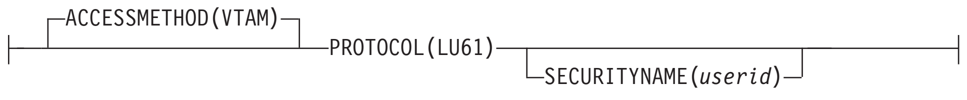


Note: VTAM is now z/OS Communications Server.

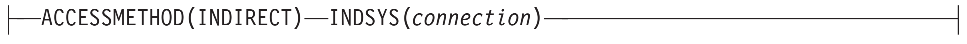
Attributes for MRO connections:



Attributes for LU type 6.1 connections:



Attributes for indirect connections:



ACCESSMETHOD({**VTAM**|**INDIRECT**|**IRC**|**XM**})
specifies the access method to be used for this connection.

VTAM
Communication between the local CICS region and the system defined

by this connection definition is through z/OS Communications Server. You can use z/OS Communications Server intersystem communication (ISC) for systems that are in different MVS images or in different address spaces in the same MVS image.

INDIRECT
Communication between the local CICS system and the system defined by this connection definition is through the system named in the INDSYS operand.

IRC Communication between the local CICS region and the region defined by this connection definition is through the interregion communication (IRC) program DFHIRP, using the SVC (as opposed to cross-memory (XM)) mode of DFHIRP.

Note: This use of the term IRC is more specific than its general use. You can use IRC for multiregion operation (MRO) for regions that are in the same MVS image or in different MVS images within a sysplex.

XM MRO communication between the local CICS region and the region defined by its CONNECTION definition uses MVS cross-memory services. Initial connection is through the interregion communication (IRC) program DFHIRP, using the cross-memory (XM) (as opposed to the SVC) mode of DFHIRP. You can use XM for multiregion operation for regions that are in the same MVS image, or in different MVS images within a sysplex.

Note: The CICS type 3 SVC is still required with XM because DFHIRP is used when the link is opened. For further information about SVCs, see the *CICS Transaction Server for z/OS Installation Guide*.

MVS cross-memory services are used only if the ACCESSMETHOD of the other end of the link is also defined as XM.

If the MRO partners reside in different MVS images within a sysplex, and the CONNECTION specifies IRC or XM, CICS automatically uses XCF as the access method, and ignores the IRC or XM specification.

Note: You cannot define XCF explicitly; if you want to use XCF, you must specify IRC or XM. See the *CICS Intercommunication Guide* for more information about XCF.

ATTACHSEC({LOCAL|IDENTIFY|VERIFY|PERSISTENT| MIXIDPE})
specifies the level of attach-time user security required for the connection.

IDENTIFY
Incoming attach requests must specify a user identifier. Enter IDENTIFY when the connecting system has a security manager; for example, if it is another CICS system.

LOCAL
CICS does not require the client to supply to supply a user identifier, or a password. All requests will run under the userid specified in the SECURITYNAME attribute. If the PROTOCOL attribute on the CONNECTION definition is LU6.1, you must specify LOCAL.

MIXIDPE
Incoming attach requests may be using either or both IDENTIFY or PERSISTENT security types. The security type used depends on the incoming attach request.

PERSISTENT
: Incoming attach requests must specify a user identifier and a user password on the first attach request. Subsequent attach requests require only the user identifier. This should be used only between a programmable workstation, (for example, an IBM Personal Computer) and CICS.

VERIFY
: Incoming attach requests must specify a user identifier and a user password. Enter VERIFY when the connecting system has no security manager and hence cannot be trusted. Do not specify VERIFY for CICS-to-CICS communication, because CICS does not send passwords.

AUTOCONNECT({NO|YES|ALL})

For systems using ACCESSMETHOD(VTAM), you specify with AUTOCONNECT(YES) or (ALL) that sessions are to be established (that is, BIND is to be performed). Such sessions are set up during CICS initialization, or when you use the CEMT or EXEC CICS SET VTAM OPEN command to start communication with z/OS Communications Server. If the connection cannot be made at these times because the remote system is unavailable, you must subsequently acquire the link by using the CEMT or EXEC CICS SET CONNECTION(sysid) INSERVICE ACQUIRED command, unless the remote system becomes available in the meantime and itself initiates communications.

For APPC connections with SINGLESESS(NO) specified, CICS tries to bind, on system start-up, the LU services manager sessions in mode group SNASVCMG.

For connection definitions with SINGLESESS(YES) specified, the AUTOCONNECT operand is ignored. Use the AUTOCONNECT operand of the session definition instead.

ALL On this definition, ALL is equivalent to YES, but you can specify ALL to be consistent with the session definition.

AUTOCONNECT(ALL) should not be specified for connections to other CICS systems, because this can cause a bind-race.

NO CICS does not attempt to bind sessions when the connection is established.

YES CICS attempts to bind only contention-winning sessions when the connection is established.

The AUTOCONNECT option is not applicable on an LU6.1 connection definition. For LU6.1 connections, specify AUTOCONNECT(YES) on the SESSIONS definition if you want the connection to be established at initialization or CEDA install. Specify AUTOCONNECT(NO) on the SESSIONS definition if you do not want the connection to be established at initialization or CEDA install.

BINDPASSWORD

This attribute is obsolete, but is supported to provide compatibility with earlier releases of CICS. For more information, see Obsolete attributes in the Resource Definition Guide.

BINDSECURITY({NO|YES}) (APPC only)

specifies whether an ESM is being used for bind-time security.

NO No external bind-time security is required.

YES If security is active and the XAPPC system initialization parameter is set to YES, CICS attempts to extract the session key from RACF® in order to perform bind-time security. If no RACF profile is available, the bind fails.

CONNECTION(*name*)
specifies the name of this connection definition. The name can be up to four characters in length.

> **Acceptable characters:**
> `A-Z 0-9 $ @ #`
>
> Unless you are using the CREATE command, any lowercase characters that you enter are converted to uppercase.

This is the name specified as REMOTESYSTEM on file, terminal, transaction, and program definitions. You should not have a terminal definition and a connection definition with the same name.

CONNTYPE({**SPECIFIC**|**GENERIC**})
For external CICS interface (EXCI) connections, this specifies the nature of the connection.

GENERIC
The connection is for communication from a non-CICS client program to the CICS system, and is generic. A generic connection is an MRO link with a number of sessions to be shared by multiple EXCI users. For a generic connection you cannot specify the NETNAME attribute.

SPECIFIC
The connection is for communication from a non-CICS client program to the CICS region, and is specific. A specific connection is an MRO link with one or more sessions dedicated to a single user in a client program. For a specific connection, NETNAME is mandatory.

DATASTREAM({**USER**|**3270**|**SCS**|**STRFIELD**|**LMS**})
specifies the type of data stream.

LMS The data stream is a Logical Message Services (LMS) data stream consisting of FMH4s and FMH8s as defined in the LUTYPE6.1 architecture.

SCS The data stream is an SCS data stream as defined in the LUTYPE6.1 architecture.

STRFIELD
The data stream is a structured field data stream as defined in the LUTYPE6.1 architecture.

USER Let DATASTREAM default to USER if the data stream is user-defined. If you are communicating between multiple CICS systems, always let DATASTREAM default to USER.

3270 The data stream is a 3270 data stream as defined in the type 6.1 logical unit (LUTYPE6.1) architecture.

DESCRIPTION(*text*)
You can provide a description of the resource that you are defining in this field. The description text can be up to 58 characters in length. No restrictions apply to the characters that you can use. However, if you use parentheses,

ensure that for each left parenthesis there is a matching right one. If you use the CREATE command, for each single apostrophe in the text, code two apostrophes.

GROUP(*groupname*)
Every resource definition must have a GROUP name. The resource definition becomes a member of the group and is installed in the CICS system when the group is installed.

Acceptable characters:

`A-Z 0-9 $ @ #`

Any lowercase characters that you enter are converted to uppercase.

The GROUP name can be up to 8 characters in length. Lowercase characters are treated as uppercase characters. Do not use group names beginning with DFH, because these characters are reserved for use by CICS.

INDSYS(*connection*)
specifies the name of another CONNECTION that defines an intermediate system used to relay communications between this system and the remote system. The name can be up to four characters in length.

Acceptable characters:

`A-Z 0-9 $ @ #`

Unless you are using the CREATE command, any lowercase characters that you enter are converted to uppercase.

You may specify an intermediate system only if you specify ACCESSMETHOD(INDIRECT).

INSERVICE({YES|NO})
specifies the status of the connection that is being defined.

NO The connection can neither receive messages nor transmit input.

YES Transactions may be initiated and messages may automatically be sent across the connection.

MAXQTIME({NO|*seconds*})
specifies a time control on the wait time for queued allocate requests waiting for free sessions on a connection that appears to be unresponsive. The maximum queue time is used only if a queue limit is specified for QUEUELIMIT, and then the time limit is applied only when the queue length has reached the queue limit value.

NO CICS maintains the queue of allocate requests that are waiting for a free session. No time limit is set for the length of time that requests can remain queued (though the DTIMOUT mechanisms can apply to individual requests). In this case, a value of X'FFFF' is passed on the XZIQUE parameter list (in field UEPEMXQT).

seconds
The approximate upper limit on the time that allocate requests can be queued for a connection that appears to be unresponsive. The number represents seconds in the range 0 through 9999.

CICS uses the maximum queue time attribute to control a queue of allocate requests waiting. When the number of queued allocate requests reaches the queue limit (QUEUELIMIT), and a new allocate request is received for the connection, if the rate of processing for the queue indicates that, on average, the new allocate takes more than the maximum queue time, the queue is purged, and message DFHZC2300 is issued. When the queue is purged, queued allocate requests return SYSIDERR.

No further queuing takes place until the connection has successfully freed a session. At this point, CICS issues DFHZC2301 and resumes normal queuing.

You can also control the queuing of allocate requests through an XZIQUE global user exit program. This allows you to use statistics provided by CICS, which report the state of the link. You can use these statistics, in combination with the queue limit and maximum queue time values you specify, to make more specialized decisions about queues.

The MAXQTIME value is passed to an XZIQUE global user exit program on the XZIQUE parameter list, if the exit is enabled. See the *CICS Customization Guide* for programming information about writing an XZIQUE global user exit program.

You can also specify the NOQUEUE|NOSUSPEND option on the ALLOCATE command to prevent an explicit request being queued. See CICS command summary in CICS Application Programming for programming information about these API options.

NETNAME(*netname*)

specifies the network name that identifies the remote system. The name can be up to eight characters in length. The name follows assembler language rules. It must start with an alphabetic character.

Acceptable characters:

`A-Z 0-9 $ @ #`

Unless you are using the CREATE command, any lowercase characters that you enter are converted to uppercase.

The NETNAME is the APPLID of the remote system or region, unless you are defining an LUTYPE6.1 or APPC link to a z/OS Communications Server generic resource group.

- If you are defining an LUTYPE6.1 link to a generic resource, NETNAME must specify the generic resource name, not the APPLID of one of the group members.
- If you are defining an APPC link to a generic resource, NETNAME can specify either the group's generic resource name or the APPLID (member name) of one of the group members. However, if you specify a member name, and this CICS is not itself a member of a CICS generic resource, the connection must always be acquired by this CICS (“this CICS ” being the CICS region in which the connection definition is installed).

For z/OS Communications Server, the APPLID is the label of the remote VTAM VBUILD TYPE=APPL statement.

If you do not supply a NETNAME, the CONNECTION name is used by default.

There are some rules about duplicate NETNAMEs. You **cannot** have:

- Two or more APPC links with the same NETNAME

- An APPC link and an LUTYPE6.1 link with the same NETNAME
- Two or more IRC connections with the same NETNAME
- Two or more remote APPC connections with the same NETNAME.
- A remote APPC connection with the same NETNAME as any other connection or local terminal.

You **can** have:

- An IRC connection and an LUTYPE6.1 connection with the same NETNAME
- An IRC connection and an APPC connection with the same NETNAME
- Two or more LUTYPE6.1 connections with the same NETNAME
- Any connection with the same NETNAME as a remote terminal.

For connections that use the z/OS Communications Server LU alias facility:

- **APPC synclevel 1**: If the CICS region supports z/OS Communications Server dynamic LU alias (that is, LUAPFX=*xx* is specified on the CICS region's APPL statement) this NETNAME is assumed to be in the same network as the CICS region. If it is not the resource must have a local z/OS Communications Server CDRSC definition with LUALIAS=*netname* defined, where *netname* must match the NETNAME defined on this CONNECTION definition. Synclevel 1 APPC connections are generally work stations.

  Be aware that some synclevel 1 resources may become synclevel 2, depending on how they connect to CICS. For example, if TXSeries does *not* use a PPC gateway, the connection is synclevel 1. If it does use a PPC gateway, it is synclevel 2.
- **APPC synclevel 2 and LUTYPE6.1**: This NETNAME is assumed to be unique. CICS matches it against the network name defined in the z/OS Communications Server APPL statement. These connections are generally CICS-to-CICS but could, for example, be TXSeries-connected through a PPC gateway.

Some rules about NETNAME and APPLID:

-
  - If an installed CONNECTION definition has the same name as an installed IPCONN definition, the APPLID of the IPCONN definition must match the NETNAME of the CONNECTION definition. If they do not, the message that results depends on the situation:
  - DFHIS3009 if the error is detected during IPCONN autoinstall
  - DFHAM4913 if the error is detected during IPCONN install
  - DFHZC6312 if the error is detected during CONNECTION install or autoinstall
- The IPCONN definition takes precedence over the CONNECTION definition: that is, if an IPCONN and a CONNECTION have the same name, CICS uses the IPCONN connection.
- a CONNECTION and an IPCONN with the same NETNAME and APPLID do not have to have the same name.

  This allows the possibility to use a distinct sysid for communication over TCP/IP rather than relying on the CICS default of routing all supported function via the IPCONN, if it exists.

PROTOCOL({APPC|LU61|EXCI|blank})
specifies the type of protocol that is to be used for the link.

APPC (LUTYPE6.2 protocol)
Advanced program-to-program communication, or APPC protocol. This is the default value for ACCESSMETHOD(VTAM). Specify this for CICS-CICS ISC.

blank MRO between CICS regions. You must leave the PROTOCOL blank for MRO, and on the SESSIONS definition you must specify LU6.1 as the PROTOCOL.

EXCI The external CICS interface. Specify this to indicate that this connection is for use by a non-CICS client program using the external CICS interface.

LU61 LUTYPE6.1 protocol. Specify this for CICS-CICS ISC or CICS-IMS ISC, but not for MRO.

PSRECOVERY({**SYSDEFAULT**|**NONE**})
In a CICS region running with persistent sessions support, this specifies whether, and how, LU6.2 sessions are recovered on system restart within the persistent session delay interval.

NONE
All sessions are unbound as out-of-service with no CNOS recovery.

SYSDEFAULT
If a failed CICS system is restarted within the persistent session delay interval, the following actions occur:

- User modegroups are recovered to the SESSIONS RECOVOPTION value.
- The SNASVCMG modegroup is recovered.
- The connection is returned in ACQUIRED state and the last negotiated CNOS state is returned

QUEUELIMIT({**NO**|*number*})
specifies the maximum number of allocate requests that CICS is to queue while waiting for free sessions:

NO There is no limit set to the number of allocate requests that CICS can queue while waiting for a free session. In this case, a value of X'FFFF' is passed on the XZIQUE parameter list (in field UEPQUELM).

number
The maximum number of allocate requests, in the range 0 through 9999, that CICS can queue on the connection while waiting for a free session. When the number of queued allocate requests reaches this limit, subsequent allocate requests return SYSIDERR until the queue drops below the limit.

This queue limit is passed to an XZIQUE global user exit program on the XZIQUE parameter list if the exit is enabled.

You can also control the queuing of allocate requests through the MAXQTIME attribute, and through an XZIQUE global user exit program. See the MAXQTIME attribute for more information about controlling queues.

Note: BIND re-negotiation is not triggered, even if there are unused secondary sessions. Unless the CEMT SET MODE command is used to force re-negotiation, the queuelimit will come into play as soon as all the primary sessions are in use.

RECORDFORMAT({U|VB})
specifies the type of SNA chain.

U Let RECORDFORMAT default to U if the SNA chain is a single, unblocked stream of data. You can have private block algorithms within the SNA chain. Let RECORDFORMAT default to U if you are communicating between multiple CICS systems.

VB The SNA chain is formatted according to the VLVB standard as defined in the LUTYPE6.1 architecture.

REMOTENAME(*connection*)
specifies the name by which the APPC connection for transaction routing is known in the system or region that owns the connection. The name can be up to four characters in length.

Acceptable characters:

`A-Z 0-9 $ @ #`

Unless you are using the CREATE command, any lowercase characters that you enter are converted to uppercase.

The remote system or region can be an APPC device (see APPC devices for transaction routing).

REMOTESYSNET(*netname*)
specifies the network name (APPLID) of the system that owns the connection. The name can be up to eight characters in length. It follows assembler language rules, and must start with an alphabetic character.

Acceptable characters:

`A-Z 0-9 $ @ #`

Unless you are using the CREATE command, any lowercase characters that you enter are converted to uppercase.

Use REMOTESYSNET when transaction routing to remote APPC systems or devices, and there is no direct link between the region in which this definition is installed and the system that owns the connection to the remote device. You do not need to specify REMOTESYSNET if:

- You are defining a local connection (that is, REMOTESYSTEM is not specified, or specifies the sysid of the local system).
- REMOTESYSTEM names a direct link to the system that owns the connection. However, there is one special case: if the connection-owning region is a member of a z/OS Communications Server generic resources group and the direct link to it is an APPC connection, you may need to specify REMOTESYSNET. REMOTESYSNET is needed in this case if the NETNAME specified on the CONNECTION definition for the direct link is the generic resource name of the connection-owning region (not the applid).

REMOTESYSTEM(*connection*)
specifies the name that identifies the intercommunication link to the system that owns the connection. The name can be up to four characters in length.

Acceptable characters:

```
A-Z 0-9 $ @ #
```

Unless you are using the CREATE command, any lowercase characters that you enter are converted to uppercase.

This is the CONNECTION name on the connection definition for the intercommunication link.

REMOTESYSTEM is used for transaction routing to remote APPC systems or devices. If it is not specified, or if it is specified as the sysid of the local system, this connection is local to this system. If the name is that of another system, the connection is remote. You can therefore use the same definition for the connection in both the local system and a remote system.

If there are intermediate systems between this CICS and the region that owns the (connection to the) device, REMOTESYSTEM should specify the first link in the path to the device-owning region. If there is more than one possible path, it should specify the first link in the preferred path.

SECURITYNAME(*userid*)
For APPC and LU6.1 links only, this is the security name of the remote system.

In a CICS system with security initialized (SEC=YES), the security name is used to establish the authority of the remote system.

Note: If USERID is specified in the SESSIONS definition associated with the connection definition, it overrides the userid specified in the SECURITYNAME attribute, and is used for link security.

The security name (or USERID on the sessions definition) must be a valid RACF userid on your system. Access to protected resources on your system is based on the RACF user profile and its group membership.

SINGLESESS({**NO**|**YES**})
specifies whether the definition is for an APPC terminal on a single session APPC link to CICS.

NO The definition is not for a single session APPC link to CICS.

YES The definition is for an APPC terminal on a single session APPC link to CICS.

The MODENAME attribute of the SESSIONS definition can be used to supply a modename for the single session mode set.

An APPC single session terminal can also be defined as a TERMINAL-TYPETERM definition. Both the TERMINAL-TYPETERM definition and the CONNECTION definition can be autoinstalled. If you are considering using autoinstall, see Autoinstalling z/OS Communications Server terminals.

USEDFLTUSER ({**NO**|**YES**}) **(APPC and MRO only)**
specifies the action that is taken when an inbound FMH5 does not contain the security information implied by the ATTACHSEC attribute.

NO The attach request is rejected, and a protocol violation message is issued.

YES The attach is accepted, and the *default user ID* is associated with the transaction.

For more information, see the *CICS RACF Security Guide*.

XLNACTION({KEEP|FORCE}) (APPC and MRO only)
specifies the action to be taken when a new logname is received from the partner system. Receipt of a new logname indicates that the partner has deleted its recovery information.

Note: MRO here covers connections with ACCESSMETHOD set to either IRC or XM.

FORCE
The predefined decisions for indoubt UOWs (as defined by the indoubt attributes of the transaction definition) are implemented, before any new work with the new logname is started. CICS also deletes any information retained for possible resolution of UOWs that were indoubt at the partner system.

Attention: Data integrity may be compromised if you use this option.

KEEP Recovery information is kept, and no action is taken for indoubt units of work.

For IRC, the connection continues with new work. Resolve indoubt UOWs using the CEMT or SPI interface.

For APPC, the connection is unable to perform new work that requires synclevel 2 protocols until all outstanding recoverable work with the partner (that is, indoubt UOWs, or information relevant to UOWs that were indoubt on the partner system under the old logname) is completed using the CEMT or SPI interface.

Chapter 8. CORBASERVER resources

A CORBASERVER defines an execution environment for enterprise beans and stateless CORBA objects.

The attributes include:

- Information that is used to construct Generic Factory Interoperable Object References used by clients that invoke stateless CORBA objects. For more information, see *Java Applications in CICS*.
- Information that is used when making outbound method requests on objects in remote EJB or CORBA servers.

If you are using load balancing, you will need to install the same CORBASERVER definition in multiple cloned AORs. See *Java Applications in CICS*.

If you are not using load balancing, you should not define and install CORBASERVER definitions with the same name (but different attributes) in different CICS regions, because (unless the CorbaServers have different JNDI prefixes) only the last PERFORM CORBASERVER PUBLISH command will register an entry with the name server for the CORBASERVER name.

Installing CORBASERVER definitions

When you install a CORBASERVER definition, CICS for consistency with other resources. After you have installed the CORBASERVER, CICS starts a task that prepares the resource so that it is ready for use.

Before you begin

Before you can install a CORBASERVER definition, the EJB request streams directory file, DFHEJDIR, must be defined, installed, and available.

About this task

When you install a CORBASERVER, CICS checks related resources for consistency:

- At the end of GROUPLIST installation during CICS initialization.
- After a group containing a CORBASERVER is installed. In this case, related TCPIPSERVICEs must either be installed before the group containing the CORBASERVER, or as part of the same group.
- After a CORBASERVER is installed as an individual resource. In this case, related TCPIPSERVICEs must be installed before the CORBASERVER.

You can install a CorbaServer in either enabled or disabled state.

When you install a CORBASERVER, it is not available for use immediately, even if you have chosen to install it in enabled state; instead CICS starts a task which completes the steps necessary to make it usable:

1. Related resources (such as TCPIPSERVICE and DJAR) are checked for consistency with the CORBASERVER.
2. The shelf directory is created if necessary, or emptied if it already exists.

3. If a deployed JAR file directory has been specified, it is scanned for deployed JAR files. (This automatic scan occurs regardless of whether the CorbaServer is installed in enabled or disabled state.) CICS assumes that a file is a deployed JAR if:
   a. It has a suffix of `.jar` (in lowercase).
   b. Its base filename is between 1 and 32 characters long. By "base filename" we mean the part of the filename before the suffix, and excluding any file path. For example, the base filename of the file `djardir\myDeployedJar.jar` is `myDeployedJar`.
4. If there are any deployed JAR files in the DJARDIR directory, they are copied to the shelf directory, and DJAR resource definitions are dynamically created for them.

If step 1 or step 2 fails, CICS puts the CORBASERVER in DISABLED state, and issues a message indicating the cause of the problem. If this happens, and the problem lies with the associated resources, you must:
- Make the necessary corrections to the associated resources, re-installing the resource definitions as necessary.
- If required, enable the CorbaServer by issuing an EXEC CICS or CEMT SET CORBASERVER ENABLED command.

If the problem lies with the CORBASERVER definition, you must:
- Discard the installed CORBASERVER definition.
- Make the necessary corrections to the CORBASERVER definition.
- Reinstall the CORBASERVER definition.

Any work which is directed to a newly-installed CORBASERVER is suspended until the CORBASERVER is ready for use—that is, in ENABLED state.

To determine the state of a CORBASERVER, use the **`INQUIRE CORBASERVER`** SPI command or the**`CEMT INQUIRE CORBASERVER`** command.

You can install more than one CORBASERVER definition in the same CICS region. It is recommended that you divide your enterprise beans and CORBA stateless objects between CorbaServers based on their:
- Functionality
- Maintenance requirements
- Availability requirements

That is, sets of beans or CORBA stateless objects that have distinct functionality, maintenance requirements, or availability requirements, should be installed in distinct CorbaServers.

If you replace an existing CORBASERVER definition by installing another of the same name, you must first discard the existing definition.

CORBASERVER: related resources

The attributes and values that you specify for a CORBASERVER resource must be consistent with those specified on other resources.

However, CICS does not check consistency of all related resources when the CORBASERVER is installed, and therefore does not report inconsistencies at installation. See "Installing CORBASERVER definitions" on page 61 for more information. You must perform a number of steps to enable the CorbaServer resource:

- The following attributes specify the name of a TCPIPSERVICE resource:
  - BASIC
  - CLIENTCERT
  - ASSERTED
  - SSLUNAUTH
  - UNAUTH

  You must install each TCPIPSERVICE referred to in the CORBASERVER definition before the CorbaServer can be used. If you are using a separate listener region, you must install each TCPIPSERVICE in the application-owning region and a matching TCPIPSERVICE in the listener region.

  Some attributes in each TCPIPSERVICE referred to in the CORBASERVER definition depend upon which CORBASERVER attribute refers to it:

CORBASERVER attribute that refers to the TCPIPSERVICE	TCPIPSERVICE SSL attribute	TCPIPSERVICE AUTHENTICATE attribute
CLIENTCERT	CLIENTAUTH	CERTIFICATE
SSLUNAUTH	YES or CLIENTAUTH	NO
UNAUTH	NO	NO

- The value of the HOST option of the CORBASERVER definition must match the value of the HOST or IPADDRESS option of one or more IIOP TCPIPSERVICE definitions. These TCPIPSERVICE definitions must be installed in all regions, both listener regions and AORs, of the logical EJB or CORBA server. However, if the TCPIPSERVICE specifies a value for DNSGROUP, the HOST option of the CORBASERVER definition must specify a matching generic host name.

  Note: You might have more than one IIOP TCP/IP service at the same IP address, each listening on a different port and supporting a different type of authentication.

CORBASERVER: interrelated attributes

Some attributes on CORBASERVER definitions are interrelated.

- A CorbaServer knows about two distinct z/OS UNIX directories: a deployed JAR file directory (DJARDIR) from where it installs deployed JAR files, and a “shelf” directory in which it keeps copies of installed deployed JAR files. The DJARDIR attribute (if specified) and the SHELF attribute must identify distinct valid directories.
- You cannot specify both the CLIENTCERT and SSLUNAUTH attributes.

CORBASERVER attributes

Describes the syntax and attributes of the CORBASERVER resource.

```
►►──CORBASERVER(name)──GROUP(groupname)──┬──────────────────┬──────────────────────────►
                                         └─DESCRIPTION(text)─┘

   ┌─AUTOPUBLISH(NO)──┐
►──┼──────────────────┼──┬───────────────────┬──┬──────────────────────┬──────────────►
   └─AUTOPUBLISH(YES)─┘  └─CERTIFICATE(label)─┘  └─CIPHERS(cipherlist)─┘

►──┬──────────────────────┬─HOST(hostname)──┬────────────────────┬───────────────────►
   └─DJARDIR(directory)───┘                 └─JNDIPREFIX(prefix)─┘

   ┌─SESSBEANTIME(00,00,10)─┐  ┌─SHELF(/var/cicsts)─┐  ┌─STATUS(ENABLED)──┐
►──┼────────────────────────┼──┼────────────────────┼──┼──────────────────┼───────────►
   ├─SESSBEANTIME(00,00,00)─┤  └─SHELF(directory)───┘  └─STATUS(DISABLED)─┘
   └─SESSBEANTIME(dd,hh,mm)─┘

►─UNAUTH(tcpipservice)──┬──────────────────┬──┬──────────────────────────┬───────────►◄
                        └─ASSERTED(char8)──┘  ├─CLIENTCERT(tcpipservice)─┤
                                              └─SSLUNAUTH(tcpipservice)──┘
```

ASSERTED(*tcpipservice*)
: Specifies the 8–character name of a TCPIPSERVICE that defines the characteristics of the port which is used for inbound IIOP with asserted identity authentication.

AUTOPUBLISH({**NO**|**YES**})
: Specifies whether the contents of a deployed JAR file should be automatically published to the namespace when the DJAR definition is successfully installed into this CorbaServer. “Successfully installed” means that the DJAR is INSERVICE. The default is NO.

  Specifying YES causes beans to be automatically published to the namespace when a DJAR is successfully installed. It does not cause beans to be automatically retracted when a DJAR is discarded.

CERTIFICATE(*label*)
: Specifies the label of an X.509 certificate that is used as a client certificate during the SSL handshake for outbound IIOP connections. If this attribute is omitted, the default certificate defined in the key ring for the CICS region user ID is used.

  Certificate labels can be up to 32 bytes long.

  The distinguished name within the specified certificate provides inputs to the distinguished name user-replaceable program, DFHEJDNX.

CIPHERS(*cipherlist*)
: Specifies a string of up to 56 hexadecimal digits that is interpreted as a list of up to 28 2-digit cipher suite codes. When you use the CEDA transaction to define the resource, CICS automatically initializes the attribute with a default list of acceptable codes. For CICS to initialize the attribute, the KEYRING system initialization parameter must be specified in the CICS region where you

| are running CEDA. If KEYRING is not set, CICS does not initialize the
| attribute. The default list of codes depends on the level of encryption that is specified by the ENCRYPTION system initialization parameter.

- For ENCRYPTION=WEAK, the default value is `03060102`.
- For ENCRYPTION=MEDIUM, the initial value is `0903060102`.
- For ENCRYPTION=STRONG, the initial value is `050435363738392F303132330A1613100D0915120F0C03060201`.

You can reorder the cipher codes or remove them from the initial list. However, you cannot add cipher codes that are not in the default list for the specified encryption level. To reset the value to the default list of codes, delete all of the cipher suite codes. The field is automatically repopulated with the default list.
See the *CICS RACF Security Guide* for more information.

CLIENTCERT(*tcpipservice*)
Specifies the 8–character name of a TCPIPSERVICE that defines the characteristics of the port which is used for inbound IIOP with SSL client certificate authentication. This attribute is optional. You cannot specify both the CLIENTCERT and SSLUNAUTH attributes.

Acceptable characters:

`A-Z 0-9 $ @ #`

Unless you are using the CREATE command, any lowercase characters that you enter are converted to uppercase.

CORBASERVER(*name*)
Specifies the 1-4 character name of the CorbaServer.

Acceptable characters:

`A-Z a-z 0-9`

Do not use names beginning with DFH, because these characters are reserved for use by CICS.

DESCRIPTION(*text*)
You can provide a description of the resource that you are defining in this field. The description text can be up to 58 characters in length. No restrictions apply to the characters that you can use. However, if you use parentheses, ensure that for each left parenthesis there is a matching right one. If you use the CREATE command, for each single apostrophe in the text, code two apostrophes.

DJARDIR(*directory*)
Specifies the 1–255 character fully-qualified name of the deployed JAR file directory (also known as the *pickup directory*) on z/OS UNIX.

The value specified must be a valid name for a UNIX file:
- It must not contain imbedded space characters.
- It must not contain consecutive instances of the / character.
- It is case-sensitive.

Acceptable characters:

`A-Z a-z 0-9 . / _ # @ -`

If specified, DJARDIR must refer to a valid z/OS UNIX directory to which the CICS region has at least read access.

The pickup directory is where you place deployed JAR files that you want to be installed into the CorbaServer by the CICS scanning mechanism. When the CORBASERVER definition is installed, CICS scans the pickup directory and automatically installs any deployed JAR files it finds there. (This automatic scan occurs regardless of whether the CorbaServer is installed in enabled or disabled state.)

CICS assumes that any files in the pickup directory that end in `.jar` and have a base filename of 1–32 characters are EJB deployed JAR files. It copies them to its shelf directory and dynamically creates and installs DJAR definitions for them. The name of the DJAR definition is the name of the deployed JAR file on z/OS UNIX. For example, a deployed JAR file named `/var/cicsts/pickup/TheThreeBears.jar` results in a DJAR definition named `TheThreeBears`.

After the CorbaServer has been installed, you can add more deployed JAR files to the pickup directory. CICS installs them in either of the folowing situations:

- When instructed to by means of an explicit EXEC CICS or CEMT PERFORM CORBASERVER SCAN command. (This command works only when the CorbaServer is in a steady state—that is, when it is in ENABLED or DISABLED state, but *not* when it is in ENABLING, DISABLING, or DISCARDING state.)
- When instructed to by the resource manager for enterprise beans (otherwise known as the RM for enterprise beans), which issues a PERFORM CORBASERVER SCAN command on your behalf. (The resource manager for enterprise beans is described in the *CICS Operations and Utilities Guide*.

After the CorbaServer has been installed, you can also put updated versions of deployed JAR files into the pickup directory. When you issue a PERFORM CORBASERVER SCAN command (either explicitly or by means of the RM for enterprise beans), CICS detects that an update has occurred and updates both the LASTMODTIME, DATESTAMP, and TIMESTAMP attributes of the installed DJAR definition and the shelf copy of the deployed JAR file, to reflect the pickup directory change.

Note:

1. If you use the scanning mechanism in a production region, be aware of the security implications: specifically, the possibility of CICS command security on DJAR definitions being circumvented. To guard against this, we recommend that user IDs given write access to the z/OS UNIX deployed JAR file directory should be restricted to those given RACF authority to create and update DJAR and CORBASERVER definitions.
2. If you do not specify a value for DJARDIR, no automatic scan takes place on installation of the CorbaServer. PERFORM CORBASERVER SCAN commands (whether explicit or issued by the RM for enterprise beans) will fail.
3. The installation of the CorbaServer fails if the value of DJARDIR is not blank but does not refer to a valid z/OS UNIX directory to which the CICS region has read access.
4. The fact that resource names must be unique in the CSD has several implications for the scanning mechanism:
   a. Different CorbaServers in the same CICS region must use different DJARDIR directories. (Otherwise, performing a scan against different CorbaServers would result in multiple sets of identically-named DJAR definitions, each set pointing at a different CorbaServer. CICS rejects all such sets of definitions except the first.)

   b. For the same reason, you must not place an identically-named deployed JAR file into multiple DJARDIR directories in the same CICS region.

      If you want to install the same set of beans into more than one CorbaServer in the same CICS region, you should do either of the following:

      1) Name the deployed JAR file differently in each DJARDIR directory.
      2) Use static definitions. That is, create multiple (differently-named) static DJAR definitions, pointing at the same deployed JAR file on z/OS UNIX but at different CorbaServers.

5. Different CICS regions may share the same set of DJARDIR directories. Typically, all the AORs in a multi-region EJB server would share the same set of DJARDIR directories.
6. CICS ignores any deployed JAR files in the pickup directory that have the same name *and* the same date and time stamps as currently-installed DJAR resources. A deployed JAR file with the same name but a later date-and-time stamp than an installed DJAR is treated as an update.
7. Deleting a previously-installed deployed JAR file from the pickup directory does not remove the DJAR resource from CICS; its beans are still available. To make the beans unavailable, you must discard the DJAR resource.
8. You cannot update a statically-installed DJAR definition by means of the scanning mechanism—you must first discard the static definition. For example, if you have a statically-installed DJAR definition named `myDjar1`, you cannot update it by scanning a deployed JAR file named `myDjar1.jar`.
9. An invalid deployed JAR file is not detected early (when the pickup directory is scanned), but when the EJB environment attempts to open it. The DJAR resource for an invalid JAR file becomes UNRESOLVED. CICS outputs a message to indicate what is wrong with the JAR file. The message is sent to the CICS log and to the "EJB event" user-replaceable program.
10. After every scan of the pickup directory, CICS outputs a message indicating the number of new and the number of updated deployed JAR files found during the scan.

GROUP(*groupname*)
Every resource definition must have a GROUP name. The resource definition becomes a member of the group and is installed in the CICS system when the group is installed.

Acceptable characters:

`A-Z 0-9 $ @ #`

Any lowercase characters that you enter are converted to uppercase.

The GROUP name can be up to 8 characters in length. Lowercase characters are treated as uppercase characters. Do not use group names beginning with DFH, because these characters are reserved for use by CICS.

HOST(*hostname*)
Specifies the TCP/IP host name, or a string containing the dotted decimal IPv4 or colon hexadecimal IPv6 address, of this logical EJB/CORBA server.

Acceptable characters:

```
A-Z a-z 0-9 . -
```

The host name is included in Interoperable Object References (IORs) exported for objects in this logical server. Clients must use this host name to access the CICS listener regions.

If you are using connection optimization by means of Domain Name System (DNS) registration, to balance client connections across the listener regions of your logical IIOP or EJB server, specify the generic host name to be quoted by client connection requests. The generic host name is the DNSGROUP value defined in the TCPIPSERVICE resource definition, suffixed by the name of the domain or subdomain managed by the MVS system name server. This is established by your MVS TCP/IP system administrator. See *Java Applications in CICS* for more information about using DNS with IIOP and enterprise beans.

The HOST attribute must contain only alphanumeric characters, hyphens (-), colons (:), or periods (.), although you cannot use colons when specifying a character host name instead of an IP address. There are a number of acceptable formats when you specify IP addresses. See the *CICS Internet Guide* for more information on address formats.

If you specify an IPv6 address (or a host name that resolves to an IPv6 address), ensure that you are operating in a dual-mode (IPv4 and IPv6) environment and that the client or server that you are communicating with is also operating in a dual-mode (IPv4 and IPv6) environment. For more information on IPv6, see the *CICS Internet Guide*.

CICS validates the *hostname* at define time.

JNDIPREFIX(*prefix*)

Specifies a JNDI prefix of up to 255 characters which is used when enterprise beans are published to the Java Naming and Directory Interface (JNDI).

The value specified must be a valid name for a UNIX file:
- It must not contain imbedded space characters.
- It must not contain consecutive instances of the / character.
- It is case-sensitive.

Acceptable characters:

```
A-Z a-z 0-9 . / _ # @ -
```

Publishing a bean means binding a reference to the home of the bean in a namespace. The naming context in which the bean is bound is named, relative to the initial context defined for the CICS region, using a concatenation of the JNDIPREFIX attribute of the CorbaServer and the name of the bean. The JNDIPREFIX attribute must match the prefix specified by the client when it uses JNDI to obtain a reference to the home interface for a bean. For more information, see *Java Applications in CICS*.

Note: Any JNDI sub-context below the CICS region's initial JNDI context may be transient. This is the case if CICS has write access to the initial context node (if you're using an LDAP name server) or initial context directory (if you're using a COS name server).

CICS creates the sub-context specified on the JNDIPREFIX option (if it has the necessary write permission and the sub-context does not already exist in the namespace structure) when an enterprise bean is published from the

CorbaServer. However, if all the enterprise beans in the CorbaServer are retracted, CICS may delete the sub-context from the namespace structure. Where multiple CorbaServers share part of a prefix hierarchy, CICS never removes contexts that are still in use by any of them. But if the contexts in the prefix are empty they are removed, as far back as the initial context.

If you want to protect the sub-context hierarchy from deletion, do not give CICS write access to the initial context node or directory. (This means that you must create the top-level node or directory of the sub-context manually. For information on how to do this with an LDAP name server, see *Java Applications in CICS*.)

CICS limits the use of the / character in the JNDI prefix field to prevent the use of empty atomic components, which are denoted by an empty string. The / character may not be the first or last character of the prefix. Also, two or more consecutive instances of the / character are not allowed anywhere in the prefix.

If this option is not specified, no prefix is added when publishing enterprise beans to JNDI.

OUTPRIVACY
This attribute is obsolete, but is supported to provide compatibility with earlier releases of CICS.

SESSBEANTIME({**00,00,00**|**00,00,10**|*dd,hh,mm*})
Specifies, in days, hours, and minutes, the period of inactivity after which a session bean may be discarded by CICS.

00,00,00
Session beans will not be timed out.

00,00,10
Session beans may be discarded after ten minutes of inactivity. This is the default value.

dd,hh,mm
Session beans may be discarded after the specified period of inactivity. The maximum value you can specify is 99 days, 23 hours, and 59 minutes.

SHELF({**/var/cicsts/**|*directory*})
Specifies the 1–255 character fully-qualified name of a directory (a *shelf*, primarily for *deployed JAR files*) on z/OS UNIX.

The value specified must be a valid name for a UNIX file:
- It must not contain imbedded space characters.
- It must not contain consecutive instances of the / character.
- It is case-sensitive.

Acceptable characters:

```
A-Z a-z 0-9 . / _ # @ -
```

CICS regions into which the CORBASERVER definition is installed must have full permissions to the shelf directory—read, write, and the ability to create subdirectories.

A single shelf directory may be shared by multiple CICS regions and by multiple CORBASERVER definitions. Each CICS region uses a separate subdirectory to keep its files separate from those of other CICS regions. The subdirectories for CORBASERVER definitions are contained within the subdirectories of the CICS regions into which they are installed. After a CICS region performs a cold or initial start, it deletes its subdirectories from the shelf before trying to use the shelf.

You should not modify the contents of a shelf that is referred to by an installed CORBASERVER definition. If you do, the effects are unpredictable.

SSLUNAUTH(*tcpipservice*)
Specifies the 8–character name of a TCPIPSERVICE that defines the characteristics of the port which is used for inbound IIOP with SSL but no client authentication. This attribute is optional. You cannot specify both the CLIENTCERT and SSLUNAUTH attributes.

Acceptable characters:

```
A-Z 0-9 $ @ #
```

Unless you are using the CREATE command, any lowercase characters that you enter are converted to uppercase.

STATUS({**ENABLED**|**DISABLED**})
Specifies whether the CorbaServer is to be installed in enabled or disabled state. The default is enabled.

UNAUTH(*tcpipservice*)
Specifies the 8–character name of a TCPIPSERVICE that defines the characteristics of the port which is used for inbound IIOP with no authentication.

Acceptable characters:

```
A-Z 0-9 $ @ #
```

Unless you are using the CREATE command, any lowercase characters that you enter are converted to uppercase.

Note that you must specify a value for the UNAUTH attribute when you define a CORBASERVER, even if you intend that all inbound requests to this CORBASERVER should be authenticated. This is because the PORTNUMBER attribute of the TCPIPSERVICE is required in order to construct IORs that are exported from this logical server.

Chapter 9. DB2CONN resources

A DB2CONN definition defines the attributes of the connection between CICS and DB2, and of the *pool threads* and *command threads* used with the connection.

Installing DB2 connection definitions

This section describes the guidelines for installing and discarding DB2CONN definitions and the implications of interruptions in partial activity.

About this task

- Only one DB2CONN can be installed in a CICS system at any one time. An install of a second DB2CONN can implicitly DISCARD the existing DB2CONN and its associated DB2ENTRYs and DB2TRANs (unless reinstalling a DB2CONN of the same name) before proceeding with the installation.
- A DB2CONN must be installed before any DB2ENTRY or DB2TRAN definitions. DB2ENTRY and DB2TRAN definitions cannot exist on their own, and can only be associated with a DB2CONN that is already installed. Also, if you discard a DB2CONN, the associated DB2ENTRY and DB2TRAN resource definitions are also discarded. Note that there is no attribute on a DB2ENTRY or DB2TRAN that explicitly specifies the DB2CONN to which they belong. This allows DB2ENTRY and DB2TRAN definitions to be shared by DB2CONN definitions without alteration.

  Note: When DB2CONN, DB2ENTRYs, and DB2TRANs are defined in the same group, CICS automatically installs the DB2CONN first. If you install DB2 definitions from multiple groups (by means of a list or multiple INSTALL GROUP commands), the first group you install must contain the DB2CONN definition. Successive groups should not have any DB2CONN definitions. CICS issues an error message when installing a DB2ENTRY or DB2TRAN when no DB2CONN is installed. If multiple DB2CONN definitions are installed, all DB2 definitions installed before the final DB2CONN definition are discarded. CICS issues messages for all discards.
- A DB2CONN must be installed before the CICS DB2 connection can be started. Because it contains information regarding pool threads and command threads, as well as global type information, a DB2CONN represents the minimum required to start the CICS DB2 connection. There are no entry threads, and all transactions use the pool. You can add DB2ENTRYs and DB2TRANs after the CICS DB2 connection is active.
- A DB2CONN can be re-installed only if the CICS DB2 attachment facility is not connected to DB2, and therefore inactive.
- A DB2CONN can be discarded only when the CICS DB2 attachment facility is not connected to DB2.
- The discard of a DB2CONN implicitly discards all installed DB2ENTRYs and DB2TRANs.

  Note: There is no group commit or group discard of DB2CONNs, DB2ENTRYs, and DB2TRANs. However when a DB2CONN is discarded, the underlying control block is marked stating that a discard is in progress. The DB2ENTRYs and DB2TRANs are discarded before the DB2CONN. If the discard fails when half completed, a DB2CONN control block results, and a message is issued that a discard is in progress. A start of the CICS DB2 attachment facility fails with a message:

```
DFHDB2074 CICS DB2 ATTACHMENT FACILITY STARTUP
          CANNOT PROCEED AS THE CURRENTLY
          INSTALLED DB2CONN IS NOT USABLE
```

when using a partially discarded DB2 resource definition. You must re-issue the discard. When a CICS system restarts after a failure when discarding, it knows that a discard took place. CICS does not recover the blocks from the catalog, and this effectively completes the discard. (Note that the definitions are removed from the catalog as well.)

When you are installing, parts of any group or list install can fail, but messages are displayed that identify which resources have failed. You can proceed with a start of the CICS DB2 attachment facility when this happens.

Checks on definitions of DB2 connection resources

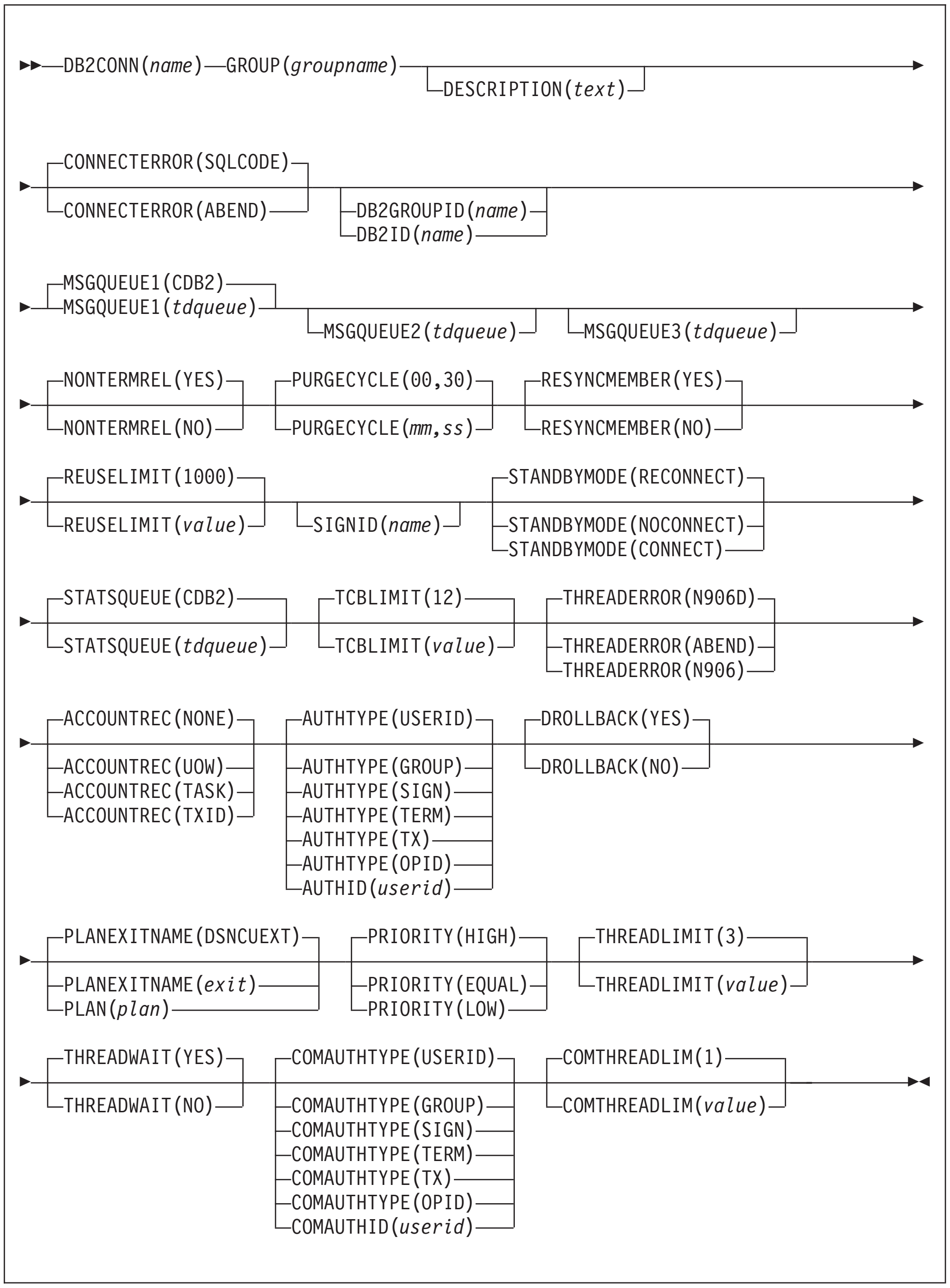
When you define a DB2CONN, CICS checks for consistency with other resource definitions in the same group or list.

For a DB2CONN object, the following checks are made:

- To ensure that there is only one DB2CONN defined in the group or list. If more than one is found (even one with a different name), a warning message is issued. Only one DB2CONN can be installed at a time.
- That PLANEXITNAME exists as a program definition in the group or list if a PLANEXITNAME is specified, and program autoinstall is not active.

DB2CONN attributes

Describes the syntax and attributes of the DB2CONN resource.



General attributes

Describes the general attributes of a DB2CONN resource.

DB2CONN(*name*)
: The name to identify a DB2 connection definition. The name can be up to eight characters in length.

Acceptable characters:

```
A-Z 0-9 $ @ #
```

Unless you are using the CREATE command, any lowercase characters that you enter are converted to uppercase.

DESCRIPTION(*text*)
You can provide a description of the resource that you are defining in this field. The description text can be up to 58 characters in length. No restrictions apply to the characters that you can use. However, if you use parentheses, ensure that for each left parenthesis there is a matching right one. If you use the CREATE command, for each single apostrophe in the text, code two apostrophes.

GROUP(*groupname*)
Every resource definition must have a GROUP name. The resource definition becomes a member of the group and is installed in the CICS system when the group is installed.

Acceptable characters:

```
A-Z 0-9 $ @ #
```

Any lowercase characters that you enter are converted to uppercase.

The GROUP name can be up to 8 characters in length. Lowercase characters are treated as uppercase characters. Do not use group names beginning with DFH, because these characters are reserved for use by CICS.

Connection attributes

Describes the attributes of the DB2CONN resource that relate to the connection.

CONNECTERROR({**SQLCODE**|**ABEND**})
Specifies the way that the information, that CICS is not connected to DB2 because the attachment facility is in 'standby mode', is reported back to an application that has issued an SQL request.

ABEND
The application abends with abend code AEY9.

SQLCODE
The application receives a -923 sqlcode. SQLCODE cannot be specified if STANDBYMODE is set to NOCONNECT.

DB2GROUPID(*name*)
Specifies the group ID (up to four characters) of a data sharing group of DB2 subsystems. The group attach facility connects CICS to any active member of this data sharing group. Match the group ID to the group attachment name defined in DB2. With DB2 Version 10, the group ID can be a subgroup attachment name defined to DB2 which defines a subset of the data sharing group. If the DB2GROUPID attribute is left blank, group attach is not used. You cannot specify both DB2GROUPID and DB2ID, the priorities are as follows:

1. Specifying a DB2GROUPID blanks out any DB2ID that is already set in the DB2CONN definition.
2. If you attempt to specify both a DB2GROUPID and a DB2ID on the same CEDA panel, the DB2ID is used.

3. If the DB2ID of an individual subsystem is specified in a CEMT or EXEC CICS SET DB2CONN command, or in a DSNC STRT command, this DB2ID overrides any DB2GROUPID attribute that is set in the installed DB2CONN definition. The DB2GROUPID in the installed DB2CONN definition is blanked out, and must be set again (using CEDA or a SET DB2CONN command) to use group attach.

DB2ID(*name*)

Specifies the name of the DB2 subsystem to which the CICS DB2 attachment facility is to connect. By default this field is blank. If you want to use group attach, specify a DB2GROUPID in the DB2CONN definition, instead of a DB2ID. The DB2ID set in the installed DB2CONN definition can be overridden by a DB2 subsystem ID specified on a DSNC STRT command, or by a DB2ID specified in a SET DB2CONN command. If the DB2ID in the installed DB2CONN definition is left blank, and the DB2GROUPID is also left blank, you can specify a DB2 subsystem ID on the INITPARM system initialization parameter. If no DB2 subsystem ID is specified by any of these means, and no DB2GROUPID is specified, the default DB2ID of blanks is replaced by DSN when the connection is attempted. Hence, the hierarchy for determining the DB2 subsystem is as follows:

1. Use the subsystem ID if it is specified in a DSNC STRT command.
2. Use the DB2ID in the installed DB2CONN if it is not blank.
3. Use the DB2GROUPID in the installed DB2CONN for group attach, if it is not blank.
4. Use the subsystem ID if it is specified on the INITPARM when the DB2ID and DB2GROUPID in the last installed DB2CONN are blank (or have later been set to blanks). On any startup, INITPARM is always used if the last installed DB2CONN contained a blank DB2ID and a blank DB2GROUPID, even if the DB2ID or DB2GROUPID was later changed using a SET command.
5. Use a default subsystem ID of DSN.

You cannot specify both DB2GROUPID and DB2ID — if you attempt to specify both on the same CEDA panel, the DB2ID is used. If a DB2GROUPID is specified in a CEMT or EXEC CICS SET DB2CONN command, this overrides any DB2ID that is set in the installed DB2CONN definition, and the DB2ID is blanked out.

MSGQUEUE1({**CDB2**|*tdqueue*})

Specifies the first transient data destination to which unsolicited messages from the CICS DB2 attachment facility are sent. This first destination cannot be blank.

MSGQUEUE2(*tdqueue*)

Specifies a second transient data destination to which unsolicited messages from the CICS DB2 attachment facility are sent.

MSGQUEUE3(*tdqueue*)

Specifies a third transient data destination to which unsolicited messages from the CICS DB2 attachment facility are sent.

NONTERMREL({**YES**|**NO**})

Specifies whether a non-terminal transaction releases threads for reuse at intermediate sync points.

NO Non-terminal transactions do not release threads for reuse at intermediate sync points.

YES Non-terminal transactions release threads for reuse at intermediate sync points.

PURGECYCLE({00|*mm*},{30|*ss*})
Specifies the duration, in minutes and seconds, of the purge cycle for protected threads. The duration of the purge cycle is in the range 5 seconds to 59 minutes 59 seconds. If you do not specify a value for PURGECYLE, it defaults to 30 seconds; PURGECYCLE= 00, 30.

A protected thread is not terminated immediately when it is released. It is terminated only after two completed purge cycles, if it has not been reused in the meantime. Therefore, if the purge cycle is set to 30 seconds, a protected thread is purged 30 - 60 seconds after it is released. The first purge cycle after the attachment facility starts is always 5 minutes. After that the purge cycle values are applied. An unprotected thread is terminated when it is released (at sync point or end of task) if there are no other transactions waiting for a thread on that DB2ENTRY. Only threads belonging to a DB2ENTRY can be protected. Pool threads and command threads cannot be protected.

RESYNCMEMBER({YES|NO})
If you are using group attach, use the RESYNCMEMBER attribute to select the strategy that CICS adopts if outstanding units of work are being held for the last DB2 data sharing group member to which CICS was connected.

YES Indicates that if outstanding units of work are held, you require resynchronization with the last DB2 data sharing group member to which CICS was connected. CICS ignores the group attach facility, and the CICS-DB2 attachment facility waits until it can reconnect to that last connected DB2 data sharing group member, to resolve the indoubt units of work. Units of work which are shunted indoubt are not included in this process, because CICS itself is unable to resolve those units of work at this time. Resynchronization for those UOWs occurs when CICS has resynchronized with its remote coordinator.

NO Indicates that you do not require resynchronization. CICS makes one attempt to reconnect to the last connected DB2 data sharing group member. If this attempt is successful, the indoubt units of work (except for UOWs that are shunted indoubt) can be resolved. If it is unsuccessful, then CICS uses group attach to connect to any active member of the DB2 data sharing group, and a warning message (DFHDB2064) is issued stating that there can be unresolved indoubt units of work with the last member of the group to which CICS was connected.

REUSELIMIT(*value*)
Specifies a value in the range 0 - 10000 representing the maximum number of times a thread can be reused before it is terminated. The default is 1000. A value of 0 means that there is no limit on the number of times that a thread can be reused; this was the situation before CICS TS 4.2. However, long-running CICS DB2 threads that are constantly being reused build up resources in DB2 that can cause storage problems leading to abends and DB2 subsystem outages.

The reuse limit applies to unprotected threads both in the pool and on a DB2ENTRY, and to protected DB2ENTRY threads. An unprotected thread is reused if, at the time it is released from a transaction, there is a new transaction waiting. A protected thread is reused if a new transaction requires a thread during the time the thread is protected from being terminated. In either case, when the reuse limit is reached no further transactions can use the thread. When the transaction that is currently using the thread releases it, CICS terminates and re-creates the thread to free up DB2 resources before determining if there is new work for the thread to do, or whether the thread is to be protected.

Using the default of 1000 provides sufficient protection against over-allocating thread storage and EDM pool storage below the 2 GB bar when you are using a DB2 bind option of RELEASE(DEALLOCATE) without adversely affecting performance. If, however, DB2 monitoring and statistics show excessive DB2 thread storage, excessive EDM pool storage usage, or both, this limit can be lowered. Conversely, if CICS-DB2 statistics show that pool or entry threads are hitting the reuse limit frequently and there is sufficient virtual and real storage available to allow more DB2 thread storage, this limit can be raised.

Setting a low value for the reuse limit has a performance impact in terms of an increase in processor activity and a decrease in throughput. However, there are situations where you might choose to set a low value. For example, if you wanted to evaluate changing DB2 bind options from RELEASE(COMMIT) to RELEASE(DEALLOCATE) for a plan or package, you might use a low value temporarily to test the scenario.

SIGNID(*name*)
Specifies the authorization ID to be used by the CICS DB2 attachment facility when signing on to DB2 for pool and DB2ENTRY threads that specify AUTHTYPE(SIGN). The default is blanks which are replaced by the applid of the CICS system when the DB2CONN is installed. The ID that you specify can be up to eight characters in length.

Acceptable characters:

```
A-Z 0-9 $ @ #
```

Unless you are using the CREATE command, any lowercase characters that you enter are converted to uppercase.

If you specify a user ID on the SIGNID attribute, CICS performs a surrogate user check against the user ID that is performing the installation. Similarly, the CICS region user ID is subject to a surrogate user check during group list installation on a CICS cold or initial start.

If the ID you specify matches the CICS region user ID, and you specify AUTHTYPE(SIGN) for any command, pool, or entry threads, the RACF access control environment element (ACEE) for the CICS region user ID is passed to DB2.

STANDBYMODE({<u>**RECONNECT**</u>|**CONNECT**|**NOCONNECT**})
Specifies the action to be taken by the CICS DB2 attachment facility if DB2 is not active when an attempt is made to connect CICS to DB2.

CONNECT
Specifies that the CICS DB2 attachment facility is to wait in 'standbymode' for DB2 to become active. If the connection is made, and DB2 later fails, the CICS DB2 attachment facility terminates.

NOCONNECT
Specifies that the CICS DB2 attachment facility is to terminate.

<u>**RECONNECT**</u>
Specifies that the CICS DB2 attachment facility is to go into 'standby mode' and wait for DB2. If DB2 later fails after the connection is made,

the CICS DB2 attachment facility reverts to 'standby mode', and CICS then reconnects to DB2 when DB2 recovers.

STATSQUEUE({CDB2|*tdqueue*})
Specifies the transient data destination for CICS DB2 attachment facility statistics produced when the CICS DB2 attachment facility is shut down.

TCBLIMIT({12|*value*})

Specifies the maximum number of TCBs that can be used to process DB2 requests. The default is 12. The minimum number is 4 and the maximum is 2000. CICS creates open TCBs (up to the limit specified by the system initialization parameter MAXOPENTCBS). The TCBLIMIT attribute of the DB2CONN definition governs how many of the open TCBs can be used to access DB2 — that is, how many of them can identify to DB2 and create a connection into DB2.

The TCBLIMIT value controls the total number of threads for the CICS region. For this reason, the recommended value for TCBLIMIT is the sum of all the thread limit values (that is, the sum of all THREADLIMIT attributes on the DB2 connection and DB2 entry resource definitions, plus the COMTHREADLIMIT value on the DB2 connection definition) up to the limit of 2000.

Note: If MAXOPENTCBs is exceeded (so no more open TCBs can be created), the task is suspended with HTYPE(DISPATCH) and HVALUE(OPEN_TCB). If MAXOPENTCBs is not exceeded but TCBLIMIT is exceeded, then the task is suspended with HTYPE(CDB2CONN). In this situation, although CICS has an open TCB available, the maximum allowed number of open TCBs are being used to access DB2 (as defined in TCBLIMIT).

When determining the number for TCBLIMIT, you must consider the amount you specified for the MAX USERS parameter on DB2 installation panel DSNTIPE.

THREADERROR({N906D|N906|ABEND})
Specifies the processing that is to occur following a create thread error.

ABEND
When the first SQL error is detected, CICS takes a transaction dump for abend code AD2S, AD2T, or AD2U, depending on the type of error. For the first error, the transaction does not abend. For a second or subsequent SQL error, the transaction abends with abend code AD2S, AD2T, or AD2U. The transaction must be terminated and reinitialized before it is allowed to issue another SQL request.

N906D
A transaction dump is to be taken and the DSNCSQL RMI associated with the transaction is *not* to be disabled. The transaction receives a -906 SQLCODE if another SQL is issued, unless the transaction issues SYNCPOINT ROLLBACK. SYNCPOINT without the ROLLBACK option results in an ASP3 or ASP7 abend. The transaction dump records an abend of AD2S, AD2T, or AD2U.

N906 The DSNCSQL RMI associated with the transaction is *not* to be disabled. The transaction receives a -906 SQLCODE if another SQL request is issued, unless the transaction issues a SYNCPOINT ROLLBACK. SYNCPOINT without the ROLLBACK option results in an ASP3 or ASP7 abend.

Pool thread attributes

Describes the attributes of the DB2CONN resource that relate to the pool thread.

ACCOUNTREC({NONE|TASK|TXID|UOW})
Specifies the minimum amount of DB2 accounting required for transactions that use pool threads. The specified minimum might be exceeded, as described in the following options.

NONE
No accounting records are required for transactions that use pool threads.

DB2 produces at least one accounting record for each thread when the thread is ended. Authorization changes additionally cause accounting records to be produced.

TASK
The CICS DB2 attachment facility causes a minimum of one accounting record for each CICS task to be produced.

A transaction that contains multiple units of work (UOWs), and in which the threads are released at sync point, can use a different thread for each of its UOWs. As a result, an accounting record might be produced for each UOW.

TXID
The CICS DB2 attachment facility causes an accounting record to be produced when the transid that uses the thread changes.

Because pool threads are typically used by a number of different transaction IDs, there is an increased chance that a transaction containing multiple UOWs, and in which the threads are released at sync point, will use a different thread for each UOW. In this case, an accounting record might be produced for each UOW.

UOW
The CICS DB2 attachment facility causes an accounting record to be produced for each UOW, assuming that the thread is released at the end of the UOW.

AUTHID(*userid*)
Specifies the user ID that is used for security checking when using pool threads.

Do not specify AUTHID if you are using RACF for some or all of the security checking in your DB2 address space; use AUTHTYPE instead, with the GROUP, SIGN, or USERID options. You must use AUTHTYPE because threads that use an AUTHID do not pass the required RACF access control environment element (ACEE) to DB2. The ID that you specify can be up to 8 characters in length.

Acceptable characters:

```
A-Z 0-9 $ @ #
```

Unless you are using the CREATE command, any lowercase characters that you enter are converted to uppercase.

AUTHTYPE({USERID|OPID|GROUP|SIGN|TERM|TX})
Specifies the type of ID that can be used for threads on this DB2ENTRY.

If you are using RACF for some or all of the security checking in your DB2 address space, use the GROUP, SIGN, or USERID options. You must use one of these options because only threads defined with these options pass the required RACF access control environment element (ACEE) to DB2. However, if you specify the SIGN option, the ACEE is passed to DB2 only if the value specified for the SIGNID attribute on the DB2CONN definition matches the CICS region user ID.

The ACEE is not required if you are using DB2 internal security only; so, in this case, you can use any of the options.

USERID
The user ID associated with the CICS transaction is used as the authorization ID. If the user ID is less than 8 characters in length, it is padded on the right with blanks.

Important: Do not specify AUTHTYPE(USERID) when you use the DB2 sample sign-on exit DSN@SGN, because it might result in an SQL -922 failure. Specify COMMAUTHTYPE(GROUP) instead.

OPID The operator identification that is associated with the user ID that is associated with the CICS transaction is used as the authorization ID. The 3-character operator identification is padded on the right with blanks to form the 8-character authorization ID.

GROUP
Specifies the user ID and the connected group name as the authorization ID. The following table shows how these two values are interpreted by DB2.

IDs passed to DB2	How DB2 interprets values
CICS sign-on user ID (USERID)	Represents the primary DB2 authorization ID.
RACF connected group name	If the RACF list of group options is not active, DB2 uses the connected group name supplied by the CICS attachment facility as the secondary DB2 authorization ID. If the RACF list of group options is active, DB2 ignores the connected group name supplied by the CICS attachment facility, but the value appears in the DB2 list of secondary DB2 authorization IDs.

To use the GROUP option, you must specify SEC=YES in the system initialization parameters for the region.

If no RACF group ID is available for this USERID, an 8-character field of blanks is passed to DB2 as the group ID.

SIGN Specifies that the SIGNID attribute of the DB2 connection definition is to be used as the resource authorization ID.

TERM Specifies the terminal identification as an authorization ID. The 4-character terminal identification is padded on the right with blanks to form the 8-character authorization ID.

If the transaction is not associated with a terminal (for example, if it is initiated with a START command), do not specify AUTHTYPE(TERM).

TX Specifies the transaction identification as the authorization ID. The 4-character transaction identification is padded on the right with blanks to form the 8-character authorization ID.

DROLLBACK({YES|NO})
Specifies whether the CICS DB2 attachment facility initiates a SYNCPOINT ROLLBACK if a transaction that is involved in a deadlock resolution is selected.

YES The attachment facility initiates a SYNCPOINT ROLLBACK before returning control to the application. An SQL return code of -911 is returned to the program.

Do not specify YES if the pool is used by transactions running enterprise beans as part of an OTS transaction; SYNCPOINT ROLLBACK is not allowed in an OTS transaction. Consider defining a DB2ENTRY that specifies DROLLBACK(NO) for use by transactions which run enterprise beans as part of an OTS transaction.

NO The attachment facility does not initiate a rollback for a transaction. An SQL return code of -913 is returned to the application.

PLAN(*plan*)
Specifies the name of the plan to be used for all pool threads.

PLANEXITNAME({DSNCUEXT|*exit*})
Specifies the name of the dynamic plan exit to be used for pool threads. If you change PLAN and PLANEXITNAME while there are active transactions for the pool, the next time the transaction releases the thread the new values are applied.

PRIORITY({HIGH|EQUAL|LOW})
Specifies the priority of the pool thread TCBs relative to the CICS main TCB (QR TCB). The thread TCBs are CICS open L8 TCBs.

HIGH Thread TCBs have a higher priority than the CICS QR TCB.

EQUAL
Thread TCBs have equal priority with the CICS QR TCB.

LOW Thread TCBs have a lower priority than the CICS QR TCB.

THREADLIMIT({3|*value*})
Specifies the current maximum number of pool threads that the CICS DB2 attachment facility allows to be active before requests are made to wait or are rejected, subject to the THREADWAIT attribute. The default value of THREADLIMIT (3) is also the minimum that you can specify. The maximum value must not be greater than the value specified for TCBLIMIT.

THREADWAIT({YES|NO})
Specifies whether transactions wait for a pool thread or end abnormally if the number of active pool threads reaches the thread limit.

The CICS DB2 attachment issues a unique abend code AD3T, message DFHDB2011, when you code THREADWAIT=NO and the number of pool threads is exceeded.

YES If all threads are busy, a transaction must wait until one becomes available. A transaction can wait as long as CICS allows it to wait, generally until a thread becomes available.

NO If all threads are busy, the transaction ends abnormally with code AD2T or AD3T.

Command thread attributes

Describes the attributes of the DB2CONN resource that relate to the command thread.

The DB2 connection definition command thread attribute descriptions are:

COMAUTHID(*userid*)

Specifies what id the CICS DB2 attachment facility should use for security checking when using command threads.

Do not use COMAUTHID if you are using RACF for some or all of the security checking in your DB2 address space; use COMAUTHTYPE instead, with the USERID or GROUP option. You can also use COMMAUTHTYPE with the SIGN option when the SIGNID attribute on the DB2CONN definition matches the CICS region user ID. This is because threads using a COMAUTHID do not pass the required RACF access control environment element (ACEE) to DB2. The ACEE is not required if you are only using DB2 internal security, so in this case, you can use COMAUTHID.The ID that you specify can be up to eight characters in length.

Acceptable characters:

`A-Z 0-9 $ @ #`

Unless you are using the CREATE command, any lowercase characters that you enter are converted to uppercase.

COMAUTHTYPE({<u>USERID</u>|OPID|GROUP|SIGN|TERM|TX})

Specifies the type of id that can be used for security checking when using command threads.

If you are using RACF for some or all of the security checking in your DB2 address space, use the GROUP, SIGN or USERID options. This is because only threads defined with these options pass the required RACF access control environment element (ACEE) to DB2. However, if you specify the SIGN option, the ACEE is passed to DB2 only if the value specified for the SIGNID attribute on the DB2CONN definition matches the CICS region user ID.

<u>USERID</u>

The 1 to 8-character userid associated with the CICS transaction is used as the authorization ID. The name can be up to eight characters in length.

Acceptable characters:

`A-Z 0-9 $ @ #`

Unless you are using the CREATE command, any lowercase characters that you enter are converted to uppercase.

Important: Do not specify COMMAUTHTYPE(USERID) when you use the DB2 sample sign-on exit DSN@SGN, as this may result in an SQL -922 failure. Specify COMMAUTHTYPE(GROUP) instead.

OPID The operator identification associated with the userid that is associated with the CICS transaction sign-on facility is used as the authorization ID (three characters padded to eight).

GROUP
Specifies the 1 to 8-character USERID and the connected group name as the authorization ID. The following table shows how these two values are interpreted by DB2.

IDs passed to DB2	How DB2 interprets values
CICS sign-on user ID (USERID)	Represents the primary DB2 authorization ID.
RACF connected group name	If the RACF list of group options is not active, DB2 uses the connected group name supplied by the CICS attachment facility as the secondary DB2 authorization ID. If the RACF list of group options is active, DB2 ignores the connected group name supplied by the CICS attachment facility, but the value appears in the DB2 list of secondary DB2 authorization IDs.

To use the CGROUP option the CICS system must have SEC=YES specified in the CICS system initialization table (SIT).

If no RACF group ID is available for this USERID, an 8-character field of blanks is passed to DB2 as the group ID.

SIGN Specifies that the SIGNID attribute of the DB2CONN is used as the resource authorization ID.

TERM Specifies the terminal identification (four characters padded to eight) as an authorization ID. An authorization ID cannot be obtained in this manner if a terminal is not connected with the transaction.

If a transaction is started (using a CICS command) and has no terminal associated with it, the COMAUTHTYPE(TERM) should not be used.

TX Specifies the transaction identification (four characters padded to eight) as the authorization ID.

`COMTHREADLIM({1|value})`
The number specifies the current maximum number of command threads the CICS DB2 attachment facility allows active before requests overflow to the pool.

Chapter 10. DB2ENTRY resources

A DB2ENTRY defines the attributes of *entry threads* used by the CICS DB2 attachment facility.

A transaction, or a group of transactions, can be associated with the DB2ENTRY; a group of transactions may be represented by the use of one or more wildcard characters (see “Wildcard characters for transaction IDs” on page 92). Also, further transactions can be associated with a DB2 entry by defining a DB2 transaction.

Installing DB2 entry definitions

This section describes the guidelines for installing and discarding DB2ENTRY definitions and the implications of interruptions in partial activity.

About this task

- You can install a DB2ENTRY only if you have previously installed a DB2CONN.
- You can install a new DB2ENTRY at any time, even when the CICS DB2 adapter is connected to DB2.
- You can reinstall (by replacing an existing DB2ENTRY) only when the DB2ENTRY is disabled and no transaction is using it. Use the SET DB2ENTRY DISABLED command to quiesce activity and disable the entry. New transactions trying to use the DB2ENTRY are routed to the pool, abended, or returned an SQLCODE, dependent on the setting of the DISABLEDACT keyword when the DB2ENTRY is disabled.
- You can discard a DB2ENTRY only if it is disabled. Use the SET DB2ENTRY DISABLED command to quiesce activity and disable the entry. New transactions trying to use the DB2ENTRY are routed to the pool, abended, or returned an SQLCODE, dependent on the setting of the DISABLEDACT keyword when the DB2ENTRY is disabled.

  If you discard a DB2ENTRY, you could make the corresponding DB2TRAN an 'orphan'. If you then run a transaction, a message is sent to the CDB2 transient data destination, and the request is rerouted to the pool.

Checks on definitions of DB2 entry resources

When you define a DB2ENTRY, CICS checks for consistency with other resource definitions in the same group or list.

For a DB2ENTRY object, the following checks are made:

- That two DB2ENTRYs of the same name do not appear in the same list. If they do, a warning message is issued.
- That a DB2CONN exists in the group or list. If one does not, a warning message is issued. This may not be an error because the DB2CONN may exist in another group elsewhere, but a DB2CONN must be installed before a DB2ENTRY can be installed.
- Whether a transaction resource definition exists for TRANSID in the group or list if TRANSID has been specified on the DB2ENTRY. If it does not, a warning message is issued.
- Whether PLANEXITNAME exists as a program definition in the group or list if PLANEXITNAME has been specified, and program autoinstall is not active.

DB2ENTRY attributes

Describes the syntax and attributes of the DB2ENTRY resource.

```
►►──DB2ENTRY(name)──GROUP(groupname)──┬──────────────────────┬──────────────►
                                      └─DESCRIPTION(text)─┘

                              ┌─ACCOUNTREC(NONE)─┐   ┌─AUTHTYPE(USERID)─┐
►──┬─────────────────────┬────┼──────────────────┼───┼──────────────────┼──►
   └─TRANSID(transaction)─┘   ├─ACCOUNTREC(UOW)──┤   ├─AUTHTYPE(GROUP)──┤
                              ├─ACCOUNTREC(TASK)─┤   ├─AUTHTYPE(SIGN)───┤
                              └─ACCOUNTREC(TXID)─┘   ├─AUTHTYPE(TERM)───┤
                                                     ├─AUTHTYPE(TX)─────┤
                                                     ├─AUTHTYPE(OPID)───┤
                                                     └─AUTHID(userid)───┘

   ┌─DROLLBACK(YES)─┐   ┌─PLANEXITNAME(DSNCUEXT)─┐   ┌─PRIORITY(HIGH)──┐
►──┼────────────────┼───┼────────────────────────┼───┼─────────────────┼───►
   └─DROLLBACK(NO)──┘   ├─PLANEXITNAME(exit)─────┤   ├─PRIORITY(EQUAL)─┤
                        └─PLAN(plan)─────────────┘   └─PRIORITY(LOW)───┘

   ┌─PROTECTNUM(0)─────┐   ┌─THREADLIMIT(0)─────┐   ┌─THREADWAIT(POOL)─┐
►──┼───────────────────┼───┼────────────────────┼───┼──────────────────┼──►◄
   └─PROTECTNUM(value)─┘   └─THREADLIMIT(value)─┘   ├─THREADWAIT(YES)──┤
                                                    └─THREADWAIT(NO)───┘
```

General attributes

Describes the general attributes of a DB2ENTRY resource.

DB2ENTRY(*name*)
One to eight character name to identify a DB2 entry definition.

Acceptable characters:
`A-Z a-z 0-9 $ @ # . / - _ % & ? ! :	" = ¬ , ; < >`

DESCRIPTION(*text*)
You can provide a description of the resource that you are defining in this field. The description text can be up to 58 characters in length. No restrictions apply to the characters that you can use. However, if you use parentheses, ensure that for each left parenthesis there is a matching right one. If you use the CREATE command, for each single apostrophe in the text, code two apostrophes.

GROUP(*groupname*)
Every resource definition must have a GROUP name. The resource definition becomes a member of the group and is installed in the CICS system when the group is installed.

Acceptable characters:
`A-Z 0-9 $ @ #`
Any lowercase characters that you enter are converted to uppercase.

The GROUP name can be up to 8 characters in length. Lowercase characters are treated as uppercase characters. Do not use group names beginning with DFH, because these characters are reserved for use by CICS.

Thread selection attributes

Describes the attributes of the DB2ENTRY resource that relate to thread selection.

TRANSID(*transaction*)
Specifies the transaction id associated with the entry. Only one transaction can be specified here. However, the use of one or more wildcard characters in the TRANSID (see "Wildcard characters for transaction IDs" on page 92) allows a group of transactions to be represented. Additional transactions can be defined for this entry by defining a DB2 transaction that refers to this DB2 entry. Transid is optional on a DB2 entry. All transactions can be associated with a DB2 entry means of DB2 transactions instead. However, if only one transaction is associated with a DB2 entry it is easier to specify it on the DB2 entry.

Note: Specifying a transaction id here causes a 'ghost' DB2 transaction object to be created when the DB2 entry definition is installed, and such DB2 transaction objects may appear on SYSRES and RDSCPROC views.

Thread operation attributes

Describes the attributes of the DB2ENTRY resource that relate to thread operations.

ACCOUNTREC({NONE|TASK|TXID|UOW})
Specifies the minimum amount of DB2 accounting required for transactions using this DB2 entry. The specified minimum might be exceeded, as described in the following options.

NONE
No accounting records are required for transactions using threads from this DB2ENTRY

However, DB2 produces at least one accounting record for each thread after the thread is terminated. Authorization changes additionally cause records to be produced.

TASK The CICS DB2 attachment facility causes a minimum of one accounting record for each CICS task to be produced.

A transaction that contains multiple units of work (UOWs), and in which the threads are released at sync point, can use a different thread for each of its UOWs. As a result, an accounting record might be produced for each UOW.

TXID The CICS DB2 attachment facility causes an accounting record to be produced when the transid using the thread changes.

This option applies to DB2 entry definitions that are used by more than one transaction ID. As threads are typically released at syncpoint, a transaction containing multiple UOWs might use a different thread for each UOW. As a result, an accounting record might be produced for each UOW.

UOW The CICS DB2 attachment facility causes an accounting to be produced for each UOW, assuming that the thread is released at the end of the UOW.

AUTHID(*userid*)

Specifies the user ID that is used for security checking when using this DB2ENTRY.

Do not specify AUTHID if you are using RACF for some or all of the security checking in your DB2 address space; use AUTHTYPE instead, with the GROUP, SIGN, or USERID options. You must use AUTHTYPE because threads using an AUTHID do not pass the required RACF access control environment element (ACEE) to DB2. The ID that you specify can be up to 8 characters in length.

Acceptable characters:

```
A-Z 0-9 $ @ #
```

Unless you are using the CREATE command, any lowercase characters that you enter are converted to uppercase.

AUTHTYPE({<u>USERID</u>|OPID|GROUP|SIGN|TERM|TX})

Specifies the type of ID that can be used for security checking when using this DB2ENTRY.

If you are using RACF for some or all of the security checking in your DB2 address space, use the GROUP, SIGN, or USERID options. You must use one of these options because only threads defined with these options pass the required RACF access control environment element (ACEE) to DB2. However, if you specify the SIGN option, the ACEE is passed to DB2 only if the value specified for the SIGNID attribute on the DB2CONN definition matches the CICS region user ID.

The ACEE is not required if you are using DB2 internal security only; so in this case, you can use any of the options.

<u>USERID</u>
The USERID associated with the CICS transaction is used as the authorization ID. If the user ID is less than 8 characters in length, it is padded on the right with blanks.

When the DB2 sample sign-on exit DSN3@SGN is used with AUTHTYPE(USERID), the exit sends the user ID to DB2 as the primary authorization ID and the connected group name to DB2 as the secondary ID. When the sample sign-on exit is used, AUTHTYPE(USERID) and AUTHTYPE(GROUP) are the same.

OPID The operator identification that is associated with the userid that is associated with the CICS transaction sign-on facility is used as the authorization ID. The 3-character operator identification is padded on the right with blanks to form the 8-character authorization ID.

GROUP
Specifies the 1- to 8-character USERID and the connected group name as the authorization ID. The following table shows how these two values are interpreted by DB2.

IDs passed to DB2	How DB2 interprets values
CICS sign-on user ID (USERID)	Represents the primary DB2 authorization ID.

IDs passed to DB2	How DB2 interprets values
RACF connected group name	If the RACF list of group options is not active, DB2 uses the connected group name supplied by the CICS attachment facility as the secondary DB2 authorization ID. If the RACF list of group options is active, DB2 ignores the connected group name supplied by the CICS attachment facility, but the value appears in the DB2 list of secondary DB2 authorization IDs.

To use the GROUP option, you must specify SEC=YES in the system initialization parameters for the region.

If no RACF group ID is available for this USERID, an 8-character field of blanks is passed to DB2 as the group ID.

SIGN Specifies that the SIGNID attribute of the DB2CONN is used as the resource authorization ID.

TERM Specifies the terminal identification (4 characters padded to 8) as an authorization ID. An authorization ID cannot be obtained in this manner if a terminal is not connected with the transaction.

If a transaction is started, using a CICS command, and has no terminal associated with it do not use AUTHTYPE(TERM).

TX Specifies the transaction identification as the authorization ID. The 4-character transaction identification is padded on the right with blanks to form the 8-character authorization ID.

DROLLBACK({YES|NO})
Specifies whether the CICS DB2 attachment facility initiates a SYNCPOINT ROLLBACK in the event of a transaction being selected as victim of a deadlock resolution.

YES The attachment facility initiates a SYNCPOINT ROLLBACK before returning control to the application. An SQL return code of -911 is returned to the program.

Do not specify YES if the DB2ENTRY is used by transactions running enterprise beans as part of an OTS transaction; SYNCPOINT ROLLBACK is not allowed in an OTS transaction.

NO The attachment facility does not to initiate rollback for this transaction. An SQL return code of -913 is returned to the application.

PLAN(*plan*)
Specifies the name of the plan to be used for this entry.

PLANEXITNAME(DSNCUEXT|*exit*)
Specifies the name of the dynamic plan exit to be used for this DB2 entry definition. If you change PLAN and PLANEXITNAME while there are active transactions for the DB2 entry definition, the next time the transaction releases the thread, the new values are applied.

PRIORITY({HIGH|EQUAL|LOW})
Specifies the priority of the thread TCBs for this DB2ENTRY relative to the CICS main TCB (QR TCB).If CICS is connected to DB2 Version 6 or later, the thread TCBs are CICS open L8 TCBs.

HIGH Thread TCBs have a higher priority than the CICS QR TCB.

EQUAL
Thread TCBs have equal priority with the CICS QR TCB.

LOW Thread TCBs have a lower priority than the CICS QR TCB.

PROTECTNUM({0|*value*})
Specifies the maximum number of protected threads allowed for this DB2 entry definition. A thread that is released by a transaction when no other work is queued can be *protected*, meaning that it is does not end immediately. A protected thread ends after two complete purge cycles if it has not been reused in the meantime. For example, if the purge cycle is set to 30 seconds, a protected thread ends 30 - 60 seconds after it is released if it is not reused in the meantime. The first purge cycle after the CICS DB2 attachment facility has been started is 5 minutes, after which the PURGECYCLE value is applied. Threads are protected only while they are inactive. If a transaction reuses a protected thread, the thread becomes active, and the current number of protected threads is decremented.

THREADLIMIT({0|*value*})
Specifies the maximum number of threads for this DB2 entry definition that the CICS DB2 attachment allows active before requests are made to wait, are abended, or diverted to the pool.

THREADWAIT({POOL|YES|NO})
Specifies whether transactions wait for a DB2ENTRY thread, end abnormally, or overflow to the pool if the number of active DB2ENTRY threads reaches the THREADLIMIT number.

POOL If all threads are busy, the transaction is diverted to use the pool of threads. If the pool is also busy, and you specified THREADWAIT(NO) on the DB2 connection definition, the transaction ends abnormally with abend code AD3T.

NO If all threads are busy, the transaction ends abnormally with abend AD2P.

YES If all threads are busy, the transaction waits until a thread becomes available.

Chapter 11. DB2TRAN resources

A DB2TRAN defines a transaction, or a group of transactions, associated with a DB2ENTRY, that are additional to the transactions specified in the DB2ENTRY itself.

Only one DB2TRAN definition can be installed for a specific transaction. An attempt to install a second DB2TRAN definition explicitly referring to the same transaction ID will fail.

The DB2TRAN definition allows a DB2ENTRY to have an unrestricted number of transactions associated with it, including names using wildcard characters. You can define any number of DB2TRANs to be associated with a single DB2ENTRY.

Checks on definitions of DB2 transaction resources

When you define a DB2TRAN, CICS checks for consistency with other resource definitions in the same group or list.

For a DB2TRAN object, the following checks are made:

- That a DB2TRAN of the same name does not appear in the same list. If one does, a warning message is issued.
- Whether a DB2CONN exists in the group or list. If one does not, a warning message is issued. This may not be an error because the DB2CONN may exist in another group, but a DB2CONN must be installed before a DB2TRAN can be installed.
- Whether the DB2ENTRY specified on the DB2TRAN exists in the group or list. If not, a warning message is issued.
- That the TRANSID specified on the DB2TRAN exists in the group or list. If not, a warning message is issued.

Installing DB2 transaction definitions

This section describes the guidelines for installing and discarding DB2TRAN definitions and the implications of interruptions in partial activity.

About this task

- You cannot install more than one DB2TRAN for the same transaction, if you have given the full transaction ID in the DB2TRAN definition. If you have used a generic transaction ID with a wildcard character, you can install more than one DB2TRAN that potentially matches the transaction, but CICS only uses the closest match (see "Wildcard characters for transaction IDs" on page 92).
- A DB2TRAN that refers to a non-existent DB2ENTRY cannot be installed. The DB2ENTRY must be installed first.
- Note that when DB2ENTRY and DB2TRAN definitions are defined in the same group, CICS installs the DB2ENTRY first at install time.
- You can install a new DB2TRAN at any time, even when the CICS DB2 adapter is connected to DB2.
- A DB2TRAN can be re-installed at any time, and can be discarded at any time.

DB2TRAN attributes

Describes the syntax and attributes of the DB2TRAN resource.

```
►►──DB2TRAN(name)──GROUP(groupname)──┬──────────────────────┬──ENTRY(db2entry)──────►
                                     └─DESCRIPTION(text)─┘

►──┬───────────────────────┬─────────────────────────────────────────────────────►◄
   └─TRANSID(transaction)─┘
```

DB2TRAN(*name*)
The one to eight character name to identify this DB2 transaction definition.

Acceptable characters:
`A-Z a-z 0-9 $ @ # . / - _ % & ? ! : | " = ¬ , ; < >`

DESCRIPTION(*text*)
You can provide a description of the resource that you are defining in this field. The description text can be up to 58 characters in length. No restrictions apply to the characters that you can use. However, if you use parentheses, ensure that for each left parenthesis there is a matching right one. If you use the CREATE command, for each single apostrophe in the text, code two apostrophes.

ENTRY(*db2entry*)
Specifies the name of the DB2 entry definition to which this DB2 transaction definition refers. It is the DB2 entry definition with which this additional transaction should be associated.

GROUP(*groupname*)
Every resource definition must have a GROUP name. The resource definition becomes a member of the group and is installed in the CICS system when the group is installed.

Acceptable characters:
`A-Z 0-9 $ @ #`
Any lowercase characters that you enter are converted to uppercase.

The GROUP name can be up to 8 characters in length. Lowercase characters are treated as uppercase characters. Do not use group names beginning with DFH, because these characters are reserved for use by CICS.

TRANSID(*transaction*)
Specifies the transaction id to be associated with the entry. If the TRANSID is not specified it defaults to the first four characters of the DB2 transaction definition name. The transaction id can include wildcard characters (see "Wildcard characters for transaction IDs").

Wildcard characters for transaction IDs

When you define a DB2TRQAN resource, you can specify a generic transaction ID using asterisk (*) and plus (+) symbols as wildcard characters.

- An asterisk (*) can be added to a transaction name, or used alone, to produce the effect on any value of making it 'wild'. The transaction name specified with an asterisk at the end of the name represents 0-3 unspecified characters in the transaction ID. For example, a TRansid of “T*” would represent transaction “T”, “TA”, “TAB”, “TABE”.
- A plus sign (+) is allowed in any position to represent any single character.
- An asterisk alone represents any transaction and can act as an alternative pool definition. It differs from a pool by having the additional attribute of the DB2ENTRY of overflowing to the pool when the thread allocation is exhausted.

The rules of matching are that the most specific match is taken. For example, transaction FRED will use DB2ENTRY(1) specifying a generic transaction ID of “FRE*”, rather than DB2ENTRY(2) specifying a generic transaction ID of “F*”. Also a '+' is more specific than a '*', eg “FRE+” is more specific than “FRE*”.

If AUTHTYPE(TX) is specified, the actual TXID is passed to DB2 as the primary authorization ID, and not the name that used wildcard characters.

Note that if a DB2TRAN is defined using a generic transaction ID that includes a wildcard, the INQUIRE DB2TRAN command is unable to identify the individual transactions that match the generic transaction ID. For example, you can issue the command

```
CEMT INQUIRE DB2TRAN(*) TRANSID(ABCD)
```

to see details of the DB2TRAN with which transaction ABCD is associated. However, if the DB2TRAN is defined using a transaction ID 'ABC*', the INQUIRE DB2TRAN command is unable to match the DB2TRAN to the transaction ID 'ABCD', and returns a 'not found' response.

Chapter 12. DJAR resources

A DJAR defines an instance of a deployed JAR file, which contains enterprise beans.

The definition identifies a particular instance of a deployed JAR file (in the sense that it is valid to have multiple versions of the same deployed JAR file deployed in different CorbaServers in the same region). The DJAR definition also associates the JAR file instance with its execution environment, the CorbaServer.

A deployed JAR file is an ejb-jar file, containing enterprise beans, on which code generation has been performed and which has been stored on the z/OS file system. When the DJAR definition is installed, CICS copies the deployed JAR file (specified by HFSFILE) into a subdirectory of the z/OS shelf directory of the specified CORBASERVER.

Although you can define DJAR resources in the same way as you define other resources, normally you do not need to do so. Typically DJAR resources are created dynamically, by the CICS scanning mechanism.

Defining deployed JAR files using the CICS scanning mechanism

To cause deployed JAR files to be defined and installed into a CorbaServer by the CICS scanning mechanism, place them in the CorbaServer's deployed JAR directory.

(The deployed JAR directory is specified by the DJARDIR option of the CORBASERVER definition. It is also known as the "pickup" directory.) When the CorbaServer is installed, CICS scans the pickup directory and automatically installs any deployed JAR files it finds there. (This automatic scan occurs regardless of whether the CorbaServer is installed in enabled or disabled state.)

CICS assumes that a file is a deployed JAR if:

1. It has a suffix of `.jar` (in lowercase).
2. Its base filename is between 1 and 32 characters long. By "base filename" we mean the part of the filename before the suffix, and excluding any file path. For example, the base filename of the file `djardir\myDeployedJar.jar` is `myDeployedJar`.

CICS copies any deployed JAR files it finds in the pickup directory to its shelf directory and dynamically creates and installs DJAR definitions for them. The name of the DJAR definition is the name of the deployed JAR file on z/OS UNIX. For example, a deployed JAR file named `/var/cicsts/pickup/TheThreeBears.jar` results in a DJAR definition named `TheThreeBears`.

After the CorbaServer has been installed, you can:

- Add more deployed JAR files to the pickup directory. CICS installs them:
  - When instructed to by means of an explicit EXEC CICS or CEMT PERFORM CORBASERVER SCAN command. (This command works only when the CorbaServer is in a steady state—that is, when it is in ENABLED or DISABLED state, but *not* when it is in ENABLING, DISABLING, or DISCARDING state .)

  - *Or* when instructed to by the resource manager for enterprise beans (otherwise known as the RM for enterprise beans), which issues a PERFORM CORBASERVER SCAN command on your behalf.
- Put updated versions of deployed JAR files into the pickup directory. When you issue a PERFORM CORBASERVER SCAN command (either explicitly or by means of the RM for enterprise beans), CICS detects that an update has occurred and updates both the LASTMODTIME, DATESTAMP, and TIMESTAMP attributes of the installed DJAR definition and the shelf copy of the deployed JAR file, to reflect the pickup directory change.

  Note:
  1. If you use the scanning mechanism in a production region, be aware of the security implications: specifically, the possibility of CICS command security on DJAR definitions being circumvented. To guard against this, we recommend that user IDs given write access to the z/OS UNIX deployed JAR file directory should be restricted to those given RACF authority to create and update DJAR and CORBASERVER definitions.
  2. The fact that resource names must be unique in the CSD has implications for the scanning mechanism:
     a. Different CorbaServers in the same CICS region must use different DJARDIR directories. (Otherwise, performing a scan against different CorbaServers would result in multiple sets of identically-named DJAR definitions, each set pointing at a different CorbaServer. CICS rejects all such sets of definitions except the first.)
     b. For the same reason, you must not place an identically-named deployed JAR file into multiple DJARDIR directories in the same CICS region.

        If you want to install the same set of beans into more than one CorbaServer in the same CICS region, you should do one of the following:
        - Name the deployed JAR file differently in each DJARDIR directory.
        - Use static definitions. That is, create multiple (differently-named) static DJAR definitions, pointing at the same deployed JAR file on z/OS UNIX but at different CorbaServers.
  3. CICS ignores any deployed JAR files in the pickup directory that have the same name *and* the same date and time stamps as currently-installed DJAR resources. A deployed JAR file with the same name but a later date-and-time stamp than an installed DJAR is treated as an update.
  4. You cannot update a statically-installed DJAR definition by means of the scanning mechanism—you must first discard the static definition. For example, if you have a statically-installed DJAR definition named `myDjar1`, you cannot update it by scanning a deployed JAR file named `myDjar1.jar`.
  5. An invalid deployed JAR file is not detected early (when the pickup directory is scanned), but when the EJB environment attempts to open it. The DJAR resource for an invalid JAR file becomes UNRESOLVED. CICS outputs a message to indicate what is wrong with the JAR file. The message is sent to the CICS log and to the "EJB event" user-replaceable program.
  6. After every scan of the pickup directory, CICS outputs a message indicating the number of new and the number of updated deployed JAR files found during the scan.

To determine which DJAR resources have been dynamically installed by the scanning mechanism and which statically installed from a CSD or by means of CREATE DJAR, look at the value of the HFSFILE field returned on an INQUIRE

DJAR command. If the DJAR has been dynamically installed, the value will begin with the CorbaServer's pickup directory. (You should not put statically-installed deployed JAR files in the pickup directory.) A DJAR name longer than 8 characters will also indicate a dynamically-installed resource.

Installing deployed JAR files

Before you can use the resource definition for a deployed DJAR, you must install it.

About this task

How to install deployed JAR files using the CICS scanning mechanism is described in "Defining deployed JAR files using the CICS scanning mechanism" on page 95.

Note:

1. For performance reasons, CICS installs DJAR definitions in two stages. On receipt of an install request, CICS puts the resource into a pending state. Subsequently, possibly after CICS initialization has ended, CICS completes the installation of any pending resources. If this secondary installation stage (which involves copying the deployed JAR file to the z/OS UNIX shelf directory and parsing the information it contains) fails, the state of the DJAR becomes UNRESOLVED or UNUSABLE. CICS outputs a message to indicate what is wrong with the JAR file. The message is sent to the CICS log and to the "EJB event" user-replaceable program.
2. For *statically-installed* DJARs (those installed from a CSD or by means of CREATE DJAR), installation of the DJAR fails if the deployed JAR file contains a bean with the same name as a bean which is already installed in the specified CorbaServer.

   For *dynamically-installed* DJARs (those installed by the scanning mechanism), installation of the DJAR fails if:

   a. The deployed JAR file contains a bean with the same name as a bean which is already installed in the specified CorbaServer, and the z/OS UNIX file names of the two deployed JAR files—the one containing the original bean and the newly-installed one—are *different*. (If they are the same (but with a different date-and-time stamp), CICS treats the newly-deployed JAR file as an update to the previously-installed version.)

   CICS outputs a message to indicate what is wrong with the JAR file. The message is sent to the CICS log and to the "EJB event" user-replaceable program.
3. CSD-installed DJAR definitions must be either in the same group as the CORBASERVER definition to which they refer, or in a group that is installed after the group containing the referenced CORBASERVER definition.
4. When you install a DJAR, CICS checks related resources for consistency:
   - At the end of GROUPLIST installation during CICS initialization.
   - After a group containing a DJAR is installed. In this case, related CORBASERVERs must either be installed before the group containing the DJAR, or as part of the same group.
   - After a DJAR is installed as an individual resource. In this case, related CORBASERVERs must be installed before the DJAR.
5. To update a *static* DJAR definition—that is, to replace an existing CSD-installed definition by installing another of the same name—you must first discard the existing definition.

6. LASTMODTIME, DATESTAMP, and TIMESTAMP are readonly attributes that CICS updates when the DJAR resource is installed or updated; they do not appear on the DEFINE DJAR panel. They can be used to determine whether CICS has refreshed itself after an update is made to a JAR in the pickup directory. The last-modified-time (LASTMODTIME) is a packed-decimal value accessible through the EXEC CICS or CECI INQUIRE DJAR command. The date and time stamps show the same date-and-time information in human-readable form; they are accessible through the CEMT INQUIRE DJAR transaction.

DJAR attributes

Describes the syntax and attributes of the DJAR resource.

```
►►──DJAR(name)──GROUP(groupname)──┬───────────────────┬──────────────►
                                  └─DESCRIPTION(text)─┘

►─CORBASERVER(corbaserver)──HFSFILE(hfsfile)─────────────────────────►◄
```

CORBASERVER(*corbaserver*)
specifies the 1-4 character name of the CorbaServer in which this DJAR is to be installed.

Acceptable characters:
`A-Z a-z 0-9`

DESCRIPTION(*text*)
You can provide a description of the resource that you are defining in this field. The description text can be up to 58 characters in length. No restrictions apply to the characters that you can use. However, if you use parentheses, ensure that for each left parenthesis there is a matching right one. If you use the CREATE command, for each single apostrophe in the text, code two apostrophes.

DJAR(*name*)
specifies the 1-8 character name of this DJAR.

Acceptable characters:
`A-Z a-z 0-9 @ # . - _ % & ¢ ? ! : | " = , ; < >`

The names of statically-installed DJARs (those installed from a CSD or by means of CREATE DJAR) have a maximum length of 8 characters.

Note: If you hand-code DJAR definitions, do not use names beginning with DFH, because these characters are reserved for use by CICS.

The names of dynamically-installed DJARs (those installed by the CICS scanning mechanism) have a maximum length of 32 characters. The name of a dynamically-installed DJAR is the name of the deployed JAR file on z/OS UNIX. For example, a deployed JAR file whose z/OS UNIX name is `/var/cicsts/pickup/TheThreeBears.jar` results in a DJAR definition named `TheThreeBears`.

GROUP(*groupname*)

Every resource definition must have a GROUP name. The resource definition becomes a member of the group and is installed in the CICS system when the group is installed.

> **Acceptable characters:**
>
> `A-Z 0-9 $ @ #`
>
> Any lowercase characters that you enter are converted to uppercase.

The GROUP name can be up to 8 characters in length. Lowercase characters are treated as uppercase characters. Do not use group names beginning with DFH, because these characters are reserved for use by CICS.

HFSFILE(*hfsfile*)

specifies the 1-255 character fully-qualified file name of the deployed JAR file on z/OS UNIX.

> The value specified must be a valid name for a UNIX file:
> - It must not contain imbedded space characters.
> - It must not contain consecutive instances of the / character.
> - It is case-sensitive.
>
> **Acceptable characters:**
>
> `A-Z a-z 0-9 . / _ # @ -`

Chapter 13. DOCTEMPLATE resources

A DOCTEMPLATE resource defines the attributes of a *document template*.

A document template is a unit of information that is used to construct a document. A document template can contain fixed text, and symbols that represent text whose value is supplied by an application program. Document templates can be created by a CICS application, or retrieved from an external source. For more information, see the *CICS Application Programming Guide*.

The template can reside in one of the following places:
- An MVS partitioned data set (specified by the DDNAME and MEMBERNAME attributes)
- A temporary storage queue (specified by the TSQUEUE attribute)
- A transient data queue (specified by the TDQUEUE attribute)
- A CICS program (specified by the PROGRAM attribute)
- A CICS file (specified by the FILE attribute)
- A z/OS UNIX System Services file (specified by the HFSFILE attribute)

The template can also be returned by an exit program (specified by the EXITPGM attribute).

DOCTEMPLATE attributes

Describes the syntax and attributes of the DOCTEMPLATE resource.

```
►►──DOCTEMPLATE(name)──GROUP(groupname)──┬──────────────────────┬──────────────────────►
                                          └─DESCRIPTION(text)──┘

   ┌─APPENDCRLF(YES)─┐
►──┼─────────────────┼──┬─FILE(file)────────────────────────────────┬────────────────►
   └─APPENDCRLF(NO)──┘  ├─HFSFILE(hfsfile)──────────────────────────┤
                        ├─TSQUEUE(tsqueue)──────────────────────────┤
                        ├─TDQUEUE(tdqueue)──────────────────────────┤
                        ├─PROGRAM(program)──────────────────────────┤
                        ├─EXITPGM(program)──────────────────────────┤
                        │                    ┌─DDNAME(DFHHTML)─┐    │
                        └─MEMBERNAME(member)─┴─DDNAME(ddname)──┴────┘

                                ┌─TYPE(EBCDIC)─┐
►──┬──────────────────────────┬─┼──────────────┼──────────────────────────────────────►◄
   └─TEMPLATENAME(template)───┘ └─TYPE(BINARY)─┘
```

APPENDCRLF(YES|NO)
: specifies whether CICS is to delete trailing blanks from and append carriage-return line-feed to each logical record of the template .

DDNAME(DFHHTML|*ddname*)
when the template resides in an MVS partitioned data set (PDS), specifies the DDname of the PDS. The name can be up to eight characters in length.

Acceptable characters:
`A-Z 0-9 $ @ #`
Unless you are using the CREATE command, any lowercase characters that you enter are converted to uppercase.

If you specify a value for the MEMBERNAME attribute, but do not specify a value for DDNAME, the default value of DFHHTML is taken.

If you specify this attribute, you cannot specify EXITPGM, FILE, HFSFILE, PROGRAM, TDQUEUE or TSQUEUE.

DESCRIPTION(*text*)
You can provide a description of the resource that you are defining in this field. The description text can be up to 58 characters in length. No restrictions apply to the characters that you can use. However, if you use parentheses, ensure that for each left parenthesis there is a matching right one. If you use the CREATE command, for each single apostrophe in the text, code two apostrophes.

DOCTEMPLATE(*name*)
specifies the name of this document template definition. The name can be up to eight characters in length.

Acceptable characters:
`A-Z a-z 0-9 $ @ # . / - _ % & ? ! : | " = ¬ , ; < >`

EXITPGM(*program*)
specifies the name of an exit program that generates a template. The name can be up to eight characters in length.

Acceptable characters:
`A-Z 0-9 $ @ #`
Unless you are using the CREATE command, any lowercase characters that you enter are converted to uppercase.

If you specify this attribute, you cannot specify DDNAME, FILE, HFSFILE, MEMBERNAME, PROGRAM, TDQUEUE or TSQUEUE.

FILE(*file*)
when the template resides in a CICS file, specifies the name of the file. The name can be eight characters in length.

Acceptable characters:
`A-Z 0-9 $ @ #`
Unless you are using the CREATE command, any lowercase characters that you enter are converted to uppercase.

If you specify this attribute, you cannot specify DDNAME, EXITPGM, HFSFILE, MEMBERNAME, PROGRAM, TDQUEUE or TSQUEUE.

GROUP(*groupname*)

Every resource definition must have a GROUP name. The resource definition becomes a member of the group and is installed in the CICS system when the group is installed.

Acceptable characters:

`A-Z 0-9 $ @ #`

Any lowercase characters that you enter are converted to uppercase.

The GROUP name can be up to 8 characters in length. Lowercase characters are treated as uppercase characters. Do not use group names beginning with DFH, because these characters are reserved for use by CICS.

HFSFILE(*hfsfile*)

When the template resides in a z/OS UNIX System Services file, this specifies the fully qualified (absolute) or relative name of the z/OS UNIX file. The name can be specified as an absolute name including all directories and beginning with a slash, for example, `/u/facts/images/bluefish.jpg`. Alternatively, it can be specified as a name relative to the HOME directory of the CICS region userid, for example, `facts/images/bluefish.jpg`. Up to 255 characters can be used.

Acceptable characters:

`A-Z a-z 0-9 $ @ # . / - _ % & ? ! : | " = ¬ , ; < >`

If you specify this attribute, you cannot specify DDNAME, EXITPGM, MEMBERNAME, PROGRAM, TDQUEUE or TSQUEUE.

Note: The CICS region must have permissions to access z/OS UNIX, and it must have permission to access the z/OS UNIX directory containing the file, and the file itself. *Java Applications in CICS* explains how to grant these permissions.

MEMBERNAME(*member*)

when the template resides in an MVS partitioned data set (PDS), specifies the name of the member containing the template. The name can be up to eight characters in length.

Acceptable characters:

`A-Z 0-9 $ @ #`

Unless you are using the CREATE command, any lowercase characters that you enter are converted to uppercase.

If you specify this attribute, you cannot specify EXITPGM, FILE, HFSFILE, PROGRAM, TDQUEUE or TSQUEUE.

PROGRAM(*program*)

when the template resides in a CICS program, specifies the name of the program. The name can be up to eight characters in length.

Acceptable characters:

`A-Z 0-9 $ @ #`

Unless you are using the CREATE command, any lowercase characters that you enter are converted to uppercase.

If you specify this attribute, you cannot specify DDNAME, EXITPGM, FILE, HFSFILE, MEMBERNAME, TDQUEUE or TSQUEUE.

TDQUEUE(*tdqueue*)
when the template resides in a transient data queue, specifies the name of the queue. The name can be up to four characters in length.

Acceptable characters:

`A-Z a-z 0-9 $ @ # . / - _ % & ? ! : | " = ¬ , ; < >`

If you specify this attribute, you cannot specify DDNAME, EXITPGM, FILE, HFSFILE, MEMBERNAME, PROGRAM, or TSQUEUE.

TEMPLATENAME(*template*)
specifies the name by which the template is known to application programs that use it. The name can be up to 48 characters in length.

Acceptable characters:

`A-Z a-z 0-9 $ @ # . / - _ % & ? ! : | " = ¬ , ; < >`

If you do not specify a value for this attribute, the value of the DOCTEMPLATE attribute is used, extended on the right with blanks.

TSQUEUE(*tsqueue*)
when the template resides in a temporary storage queue, specifies the name of the queue. The name can be up to 16 characters in length.

Acceptable characters:

`A-Z a-z 0-9 $ @ # . / - _ % & ? ! : | " = ¬ , ; < >`

If you specify this attribute, you cannot specify DDNAME, EXITPGM, FILE, HFSFILE, MEMBERNAME, PROGRAM, or TDQUEUE.

TYPE({**EBCDIC**|**BINARY**})
specifies the format of the contents of the template.

BINARY
When the template is loaded from the template library, no parsing of the template's contents is done.

EBCDIC
When the template is loaded from the template library, the contents are parsed as EBCDIC text.

Chapter 14. ENQMODEL resources

An ENQMODEL defines a named resource for which the **EXEC CICS ENQ** and **EXEC CICS DEQ** commands have a sysplex-wide scope.

Combined with an ENQMODEL resource, CICS uses MVS global resource serialization to provide sysplex-wide protection of application resources.

Local enqueues within a single CICS region are managed within the CICS address space. Sysplex-wide enqueues that affect more than one CICS region are managed by GRS.

The ENQSCOPE attribute of an ENQMODEL resource, defines the set of regions that share the same enqueue scope. If the ENQSCOPE attribute is left blank (the default value), CICS treats any matching ENQ or DEQ as local to the issuing CICS region. If the ENQSCOPE is non-blank, CICS treats the ENQ or DEQ as sysplex-wide and passes a queue name and the resource name to GRS to manage the enqueue.

The CICS regions that need to use sysplex-wide enqueue or dequeue function must all have the required ENQMODELs defined and installed. The recommended way to ensure this is for the CICS regions to share a CSD, and for the initialization group lists to include the same ENQMODEL groups.

Existing applications can use sysplex enqueues by defining appropriate ENQMODELs, without any change to the application programs. Those existing applications where the resource name is determined dynamically and not known in advance can only be so converted by use of the global user exit XNQEREQ and the parameter UEPSCOPE (see the*CICS Customization Guide* for details).

In a multi-tasking, multi-processing environment, resource serialization is the technique used to coordinate access to resources that are used by more than one program. MVS global resource serialization (GRS) provides a way to control access to such resources.

GRS combines systems into a global resource serialization complex, consisting of one or more systems that are:

- Connected to each other in a ring configuration
- Connected to a coupling facility lock structure in a star configuration
-

Tip: For reasons of performance, a ring configuration is not recommended for production regions in a multisystem environment. You should use a star configuration only in a multisystem sysplex. Note that a coupling facility is required for a star configuration.

You can display sysplex ENQUEUEs using GRS facilities with the Display GRS command. This command has many optional keywords, but for this purpose you can use:

```
D  GRS,RES=(DFHEqname|*,[  rname|,*])
```

where:

qname
specifies a 4-character ENQSCOPE defined by an ENQMODEL

rname
specifies an ENQNAME defined by an ENQMODEL

Installing enqueue model definitions

As ENQMODELs usually have the default status of *ENABLED*, the order of installing ENQMODELs must follow the rules for ENABLING ENQMODELs.

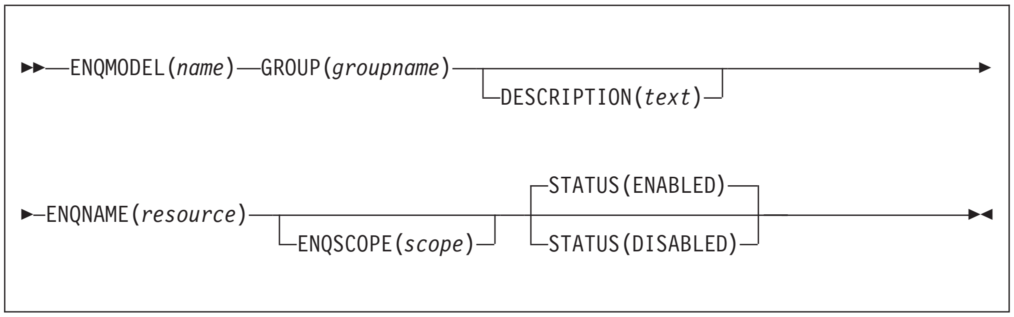
About this task

When you enable ENQMODELs that form nested generic ENQnames you must do so starting with the most specific, and continue in order to the least specific

For example, if you have ENQMODELS that have ENQnames of ABCD*, ABC*, and AB*, enable them in this order:
1. ABCD* (the most specific)
2. ABC*
3. AB* (the least specific)

ENQMODEL attributes

Describes the syntax and attributes of the ENQMODEL resource.



DESCRIPTION(*text*)
You can provide a description of the resource that you are defining in this field. The description text can be up to 58 characters in length. No restrictions apply to the characters that you can use. However, if you use parentheses, ensure that for each left parenthesis there is a matching right one. If you use the CREATE command, for each single apostrophe in the text, code two apostrophes.

ENQMODEL(*name*)
specifies the name of this ENQMODEL definition. The name can be up to eight characters in length.

Acceptable characters:
`A-Z a-z 0-9 $ @ # . / - _ % & ? ! : | " = ¬ , ; < >`

This name is used to identify the ENQMODEL definition on the CSD file. It is not used within the active CICS system.

ENQNAME(*resource*)
specifies the 1 to 255-character resource name.

Acceptable characters:
`A-Z a-z 0-9 $ @ # . / - _ % & ? ! :	" = ¬ , ; < >`

You can also use a `*` (asterisk) as the last character, to denote a generic name.

ENQSCOPE(*scope*)
specifies the optional 4-character enqueue model scope name. If omitted or specified as blanks, matching enqueue models will have a local scope.

GROUP(*groupname*)
Every resource definition must have a GROUP name. The resource definition becomes a member of the group and is installed in the CICS system when the group is installed.

Acceptable characters:
`A-Z 0-9 $ @ #`
Any lowercase characters that you enter are converted to uppercase.

The GROUP name can be up to 8 characters in length. Lowercase characters are treated as uppercase characters. Do not use group names beginning with DFH, because these characters are reserved for use by CICS.

STATUS({**ENABLED**|**DISABLED**})
specifies whether the enqueue model is to be installed in ENABLED or DISABLED status. ENABLED is the default.

ENABLED
Matching enqueue requests are processed in the normal way.

DISABLED
Matching enqueue requests are rejected, and the issuing task is abended. Matching INSTALL CREATE and DISCARD requests are processed.

Chapter 15. FILE resources

A FILE resource defines the physical and operational characteristics of a file.

The FILE definition includes attributes that provide information about record characteristics, the types of operations allowed on the file, recovery attributes, and the operations that are to be journaled. CICS files usually correspond to physical data sets that must have been defined to VSAM before they are used. Using CICS files, your applications can:

- Access records in the data set directly
- Access records in a data table that has been loaded from the data set
- Access records in a coupling facility data table where there is no data set involved (because LOAD(NO) is specified on the CFDT file definition).

The following resources associated with CICS files can be managed using RDO:

- VSAM files (this includes files that refer to CICS-maintained, user-maintained, and coupling facility data tables as well as files that refer to VSAM data sets)
- Remote VSAM files
- Remote BDAM files
- VSAM local shared resource (LSR) pools

For the file to be used by an active CICS system, its definition must have been installed on to the system. CICS file control uses the installed definition to find the file when it needs to access it, to keep count of the number of tasks using the file, to capture processing statistics, and maintain other file control information.

Remote files

When multiple CICS systems are connected, they can share each other's files; all such files must be defined to CICS, including those belonging to another system. Files on other systems are defined as *remote*. Remote files are accessed through CICS function shipping of file control requests to the remote region that owns the file.

However, this does not apply to files accessed in RLS mode, or coupling facility data tables, which are always defined as local files.

The resource attributes needed by CICS for remote files are not specific to the access method used. You can therefore define both remote BDAM files and remote VSAM files using RDO.

If you name a REMOTESYSTEM, you may also supply a REMOTENAME, which is the name of the file used in the remote system.

If you specify a REMOTESYSTEM name that corresponds to the SYSIDNT of the CICS region in which the file definition is installed, CICS installs the definition as a local file. Otherwise, CICS installs the definition as a remote file.

When a file definition is installed as a remote file, only the following attributes are used:

REMOTESYSTEM
REMOTENAME

RECORDSIZE
KEYLENGTH

The other attributes are used when the same file definition is installed as a local definition. For more information, see the *CICS Intercommunication Guide*

Coupling facility data tables

Coupling facility data table support provides a method of file data sharing, using CICS file control, without the need for a file-owning region, and without the need for VSAM RLS support. Data is held in a coupling facility list structure, in a table that is similar in many ways to a shared user-maintained data table.

Unlike user-maintained data tables, coupling facility data tables do not have to be pre-loaded from a source data set. Loading a coupling facility data table is controlled by the DSNAME and LOAD attributes of the file resource definition, which allows CFDTs to be populated entirely by the application programs that use them by specifying LOAD(NO).

The way you use LOAD(YES) and the DSNAME attributes allows you to control loading of a CFDT in various ways, such as:

1. Any CICS region can load the coupling facility data table. The first file open for the CFDT loads it, regardless of which CICS region issues the open. The data set is opened read-only by the loading CICS. All file definitions for the table specify LOAD(YES) and the DSNAME of a source data set. If you use this approach, ensure that the same data set is named on each file definition, otherwise the data set named on the first to be opened is the one that is loaded into the CFDT. CICS does not verify that the DSNAMEs are the same for all files that refer to the same CFDT.
2. One CICS region can be made responsible for loading the coupling facility data table. The loading region contains a file definition for the CFDT that specifies LOAD(YES) and the DSNAME for the data set, which is opened read-only by the loading CICS. Other CICS regions do not need access to the source data set, but they cannot open the CFDT until the loading region has opened it. The file definitions for the CFDT in non-loading regions must also specify LOAD(YES) but omit the DSNAME.

   You can restrict access to a coupling facility data table until after it has been loaded by using two (or more) file names that refer to the same coupling facility data table. To control access in this way:

   - Define only one file name as being capable of loading the data table, by specifying LOAD(YES) and DSNAME(*dataset_name*) Do not refer to this file name from application programs.
   - Define another file (or files) for application program use, ensuring that this file definition cannot initiate table loading. Specify LOAD(YES), but ensure the data set name is not specified on the DSNAME attribute, and that there is no DD statement for this file (or files).
   - Ensure that the load-capable file is opened before any application programs are likely to require access to the data table. For example, define the table-loading file name with OPENTIME(STARTUP) to ensure that the file is opened automatically toward the end of CICS initialization.
   - Ensure that application programs access the data table by referring to a filename that does not load the data.
3. Some hybrid of the above two approaches can be used, where some CICS regions can load the table, and others require it to be loaded on their behalf.

Shared data tables

For detailed information on defining CICS-maintained data tables and user-maintained data tables (collectively referred to as *shared data tables*), please see the *CICS Shared Data Tables Guide*.

Installing file definitions

This procedure uses the CEMT and CEDA transactions to install a FILE definition. As an alternative to CEMT, you can use the **EXEC CICS SET FILE** command in a user-written transaction to disable and enable the file.

About this task

Procedure

1. If the file already exists, ensure that it is closed and disabled. Use the following command:

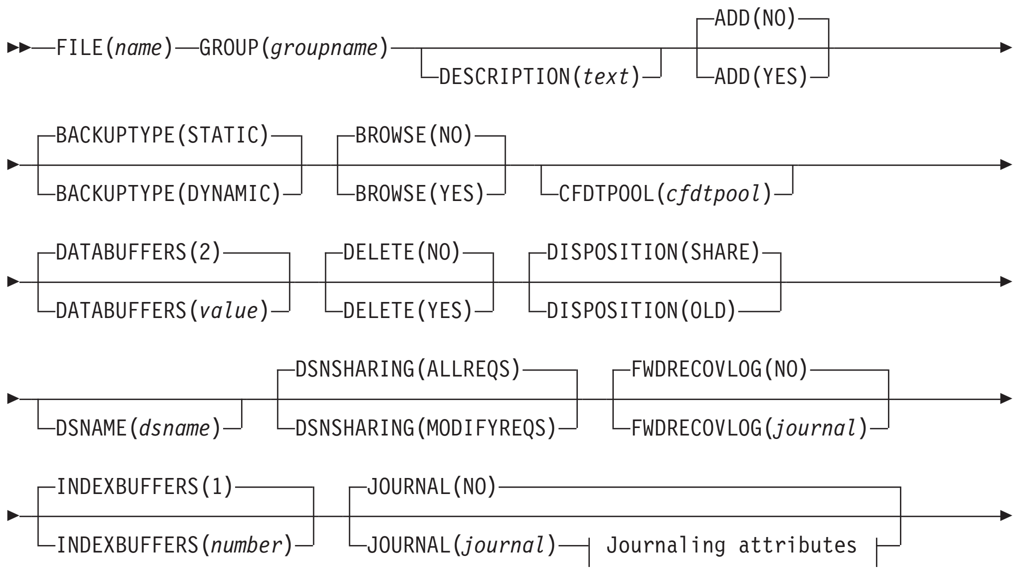
   ```
   CEMT SET FILE(filename) CLOSED DISABLED
   ```
2. Install the file definition. Use the following command:

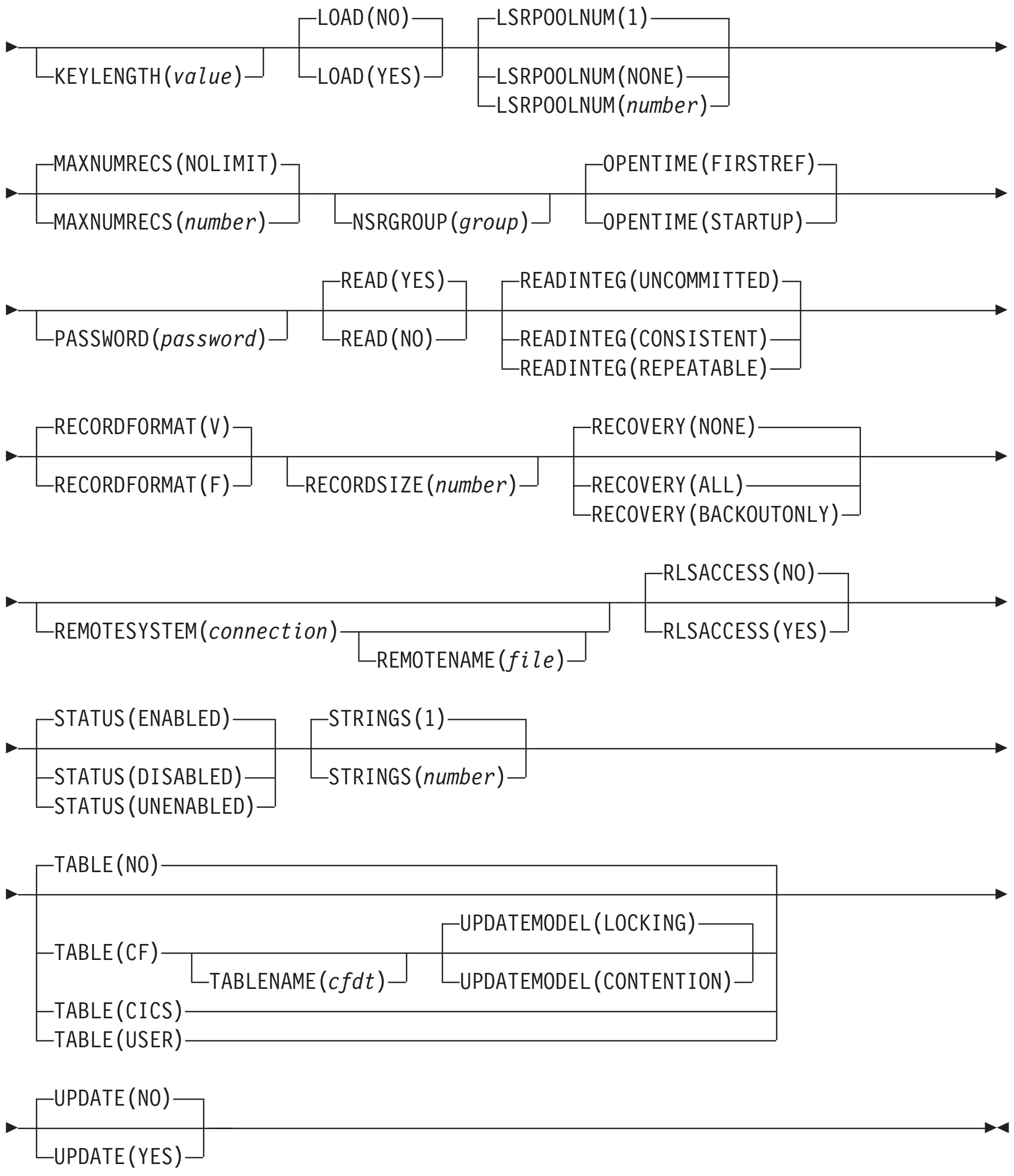
   ```
   CEDA INSTALL GROUP(groupname) FILE(filename)
   ```
3. Optional: When you have successfully installed the group containing the file, use CEMT to open and enable the file. Perform this step only if the file is not already defined as ENABLED, and you want to open the file explicitly. Use the following command:

   ```
   CEMT SET FILE(filename) OPEN ENABLED
   ```

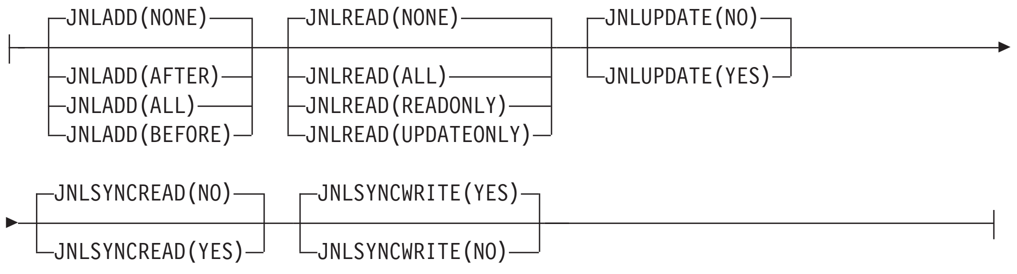
FILE attributes

Describes the syntax and attributes of the FILE resource.





Journaling attributes:



ADD({**NO**|**YES**})
Specifies whether records can be added to the file.

BACKUPTYPE({**STATIC**|**DYNAMIC**})
CICS VSAM files can be defined as eligible for backup while open for update. This attribute is not used for files defined with RLSACCESS(YES), or if the

recovery options are defined in the ICF catalog. To force CICS to use this attribute instead of the recovery options in the catalog, set the **NONRLSRECOV** system initialization parameter to FILEDEF. For files that are accessed in RLS mode, you must specify the backup type on the data set definition in the ICF catalog.

This attribute is ignored for coupling facility data tables and, if there are any recovery attributes defined in the ICF catalog for a source data set associated with the table, these also are ignored. A CFDT is not eligible for backup-while-open (BWO).

Possible values are:

DYNAMIC
: Specify DYNAMIC together with the RECOVERY attribute of ALL to make the file eligible for backup while it is open for update.

STATIC
: The file is not eligible for backup while open for update.

BROWSE({**NO**|**YES**})
: Specifies whether records can be retrieved sequentially from the file.

CFDTPOOL(*cfdtpool*)
: Specifies the name of the coupling facility data table pool containing the table defined by this file definition. This attribute is required if you specify TABLE(CF).

Acceptable characters:

`A-Z 0-9 $ @ #`

Unless you are using the CREATE command, any lowercase characters that you enter are converted to uppercase.

Coupling facility data tables can be separated (for purposes of accounting, security, administration, and so on) into groups (pools) of CFDTs. The names of all coupling facility data table pools must be unique within the sysplex, but can be the same as the names of other types of pools, such as TS data-sharing pools.

Opening a file that references a coupling facility data table requires that a coupling facility data table server for the named pool is running in the MVS in which the open request is issued. If the required server has not been started, the file open request fails.

Note: The CFDTPOOL attribute is meaningful only for CFDTs. You can specify a pool name for a file that is not defined as TABLE(CF), but CICS ignores it. If you then alter the file definition to reference a coupling facility data table, the CFDTPOOL name comes into effect.

DATABUFFERS({**2**|*value*})
: Specifies the number of buffers to be used for data. Use a value in the range 2 (the default) through 32767. The minimum value you can specify is one more than the number of strings defined in the STRINGS attribute.

DELETE({**NO**|**YES**})
: Specifies whether records can be deleted from the file.

DESCRIPTION(*text*)
: You can provide a description of the resource that you are defining in this field. The description text can be up to 58 characters in length. No restrictions

apply to the characters that you can use. However, if you use parentheses, ensure that for each left parenthesis there is a matching right one. If you use the CREATE command, for each single apostrophe in the text, code two apostrophes.

DISPOSITION({SHARE|OLD})
Specifies the disposition of this file.

OLD Equivalent to the DISP=OLD parameter in JCL.

SHARE
Equivalent to the DISP=SHR parameter in JCL.

DSNAME(*dsname*)
Specifies the data set name (as known to the operating system) to be used for this file. DSNAME can be 1 through 44 characters, conforming to the rules for MVS data set names (see the DSNAME parameter in the z/OS MVS JCL Reference).

Acceptable characters:

```
A-Z 0-9 $ @ # . -
```

Any lowercase characters that you enter are converted to uppercase.

At file open time, if no JCL statement exists for this file, the open is preceded by a dynamic allocation of the file using this DSNAME. If the file definition refers to a data table (CICS, USER, or CF) the DSNAME must be that of a VSAM base KSDS. It cannot be a path or alternate index data set.

The DSNAME specified on a DD statement for this file in the CICS start-up JCL takes precedence over the DSNAME specified in this file definition.

Coupling facility data tables
If the file definition specifies LOAD(YES) and it is not already opened, DSNAME specifies the name of the source data set from which the table is to be loaded. Alternatively, you can specify the source data set on a DD statement in the CICS startup JCL. The specified data set must be a VSAM base KSDS.

If there is a path or alternate index associated with the source data set, then any updates made via the file are not reflected in either the source data set or its associated alternate indexes. A coupling facility data table is entirely independent of its source data set after loading has completed.

If you want table loading to be initiated by the opening of another file specified by a different file definition, omit this attribute. In this case, also ensure that the file name is not specified on a DD statement in the CICS JCL. Attempts to open the file fail until CFDT loading has been initiated. For more information about loading a coupling facility data table from a data set, see Coupling facility data tables.

If LOAD(NO) is specified, this attribute is not required and is ignored.

DSNSHARING({ALLREQS|MODIFYREQS})
Specifies whether VSAM data set name sharing is used for the VSAM file. The possible values are:

ALLREQS
Data set name sharing is set in the ACB when the file is opened and is therefore used for all file requests.

MODIFYREQS
Data set name sharing is set in the ACB when the file is opened only if an operation of DELETE, ADD, or UPDATE is set for the file.

FILE(*name*)
Specifies the name of the file. The name can be up to 8 characters in length.

> **Acceptable characters:**
> `A-Z 0-9 $ @ #`
>
> Unless you are using the CREATE command, any lowercase characters that you enter are converted to uppercase.

The name must not start with a numeric character.

FWDRECOVLOG({NO|*journal*})
Specifies the journal that corresponds to the MVS system logger log stream that is to be used for forward recovery.

This attribute is ignored for coupling facility data tables and, if there are any recovery attributes defined in the ICF catalog for a source data set associated with the table, these also are ignored. A CFDT is not forward recoverable.

NO Forward recovery logging is not required for this file.

journal The number that identifies the journal that CICS is to use for the forward recovery log. CICS journal names are of the form DFHJ*nn* where *nn* is in the range 01 through 99. The after images for forward recovery are written to the MVS log stream that corresponds to journal name DFHJ*nn*.

Note: In CICS Transaction Server for z/OS, DFHJ01 is not the system log.

This attribute is used by CICS only if the following conditions are satisfied:
- RECOVERY(ALL) is specified
- RLSACCESS(NO) is specified
- No recovery attributes are defined in the ICF catalog

If you define the recovery attributes for a file in the ICF catalog entry for the corresponding data set, CICS always uses the ICF catalog recovery attributes and ignores those in the FILE resource. To force CICS to use the FILE resource attributes instead of the recovery options in the catalog, set the **NONRLSRECOV** system initialization parameter to FILEDEF. You can alter the recovery attributes defined in the ICF catalog by using the IDCAMS ALTER command. This is not prevented while there are ACBs open for a data set. However, if you change the recovery attributes, be aware of the possible effect on data integrity.

CICS takes a copy of the recovery attributes for a data set from the ICF catalog on the first open-for-update in a sequence of open requests for a data set. This means that a single CICS region is not affected by an update to recovery attributes. However, if a data set is opened in RLS mode and the attributes on the ICF catalog are modified, a second CICS region could open the same data set for update and copy a different set of attributes, with a risk to data integrity.

If you must alter recovery attributes defined in the ICF catalog (for example, to change the forward recovery log stream name), quiesce the data set before making any changes. This ensures that the data set cannot be used in RLS mode until you have made the change and unquiesced the data set.

GROUP(*groupname*)
Every resource definition must have a GROUP name. The resource definition becomes a member of the group and is installed in the CICS system when the group is installed.

Acceptable characters:
`A-Z 0-9 $ @ #`
Any lowercase characters that you enter are converted to uppercase.

The GROUP name can be up to 8 characters in length. Lowercase characters are treated as uppercase characters. Do not use group names beginning with DFH, because these characters are reserved for use by CICS.

INDEXBUFFERS({**1**|*number*})
Specifies the number of buffers to be used for the index. Use a value in the range 1 through 32767. The minimum value you can specify is the number of strings defined in the STRINGS attribute.

JNLADD({**NONE**|**BEFORE**|**AFTER**|**ALL**})
Specifies the add operations you want recorded on the journal nominated by the JOURNAL attribute. Possible values are:

AFTER
Add the file control write operation to the journal after the VSAM I/O operation.

ALL
Add the file control write operation to the journal both before and after the VSAM I/O operation has completed.

BEFORE
Add the file control write operation to the journal before the VSAM I/O operation.

NONE
Do not add write operations to the journal.

JNLREAD({**NONE**|**UPDATEONLY**|**READONLY**|**ALL**})
Specifies the read operations you want recorded on the journal nominated by the JOURNAL attribute. Possible values are:

ALL
Add all read operations to the journal.

NONE
Do not add read operations to the journal.

READONLY
Add only READ ONLY operations (not READ UPDATE operations) to the journal.

UPDATEONLY
Add only READ UPDATE operations (not READ ONLY operations) to the journal.

JNLSYNCREAD({**NO**|**YES**})
Specifies whether you want the automatic journaling records, written for READ operations to the journal specified by JOURNAL, to be written synchronously or asynchronously.

JNLSYNCWRITE({YES|NO})
Specifies whether you want the automatic journaling records, written for WRITE operations to the journal specified by JOURNAL, to be written synchronously or asynchronously.

JNLUPDATE({NO|YES})
Specifies whether you want REWRITE and DELETE operations recorded on the journal nominated by the JOURNAL attribute.

JOURNAL({NO|*journal*})
Specifies whether you want automatic journaling for this file. The journaled data is in the format of the VSAM record and is used for user controlled journaling.

The data to be journaled is identified by the JNLADD, JNLREAD, JNLSYNCREAD, JNLSYNCWRITE, and JNLUPDATE attributes.

For a CICS-maintained data table, journaling is performed only for requests that result in VSAM I/O requests.

For a user-maintained data table or a coupling facility data table journaling is not performed for any file control operations. However, although automatic journaling for these tables is not supported, if you specify a journal number, CICS tries to open the log stream for the specified journal when opening the file.

Note: Automatic journaling is independent of logging to the system and forward recovery logs, as specified by the RECOVERY and FWDRECOVLOG attributes.
Possible values are:

NO No automatic journaling is to take place for this file.

number
The number that identifies the journal that CICS is to use for the autojournal. CICS journal names are of the form DFHJ*nn*, where *nn* is in the range 01 through 99.

Note: In CICS Transaction Server for z/OS, DFHJ01 is not the system log.

KEYLENGTH(*value*)
Specifies the length in bytes of the logical key of records in remote files, and in coupling facility data tables that are specified with LOAD(NO).

If KEYLENGTH is not defined here, the KEYLENGTH option must be specified on file control commands in the application programs that refer to this file. If KEYLENGTH is not defined here and is not specified in the application program, and the key is longer than 4 characters, the default value is 4.

Remote files
The range for key length is 1 through 255.

Coupling facility data tables
The range for key length is 1 through 16. Key length is required only if LOAD(NO) is specified.

You can, optionally, specify a key length for coupling facility data tables specified with LOAD(YES), in which case you should be aware of the following:

- The key length is obtained from the ICF catalog entry for the data set from which the table is loaded. If you specify a key length, the key length must match that specified for the source data set, otherwise attempts to open the file fail with an error message.
- If, when opening the file, CICS finds that the CFDT has already been created, and the key length is different from that used when loading the data set, the open fails.

If you specify a key length for a file that is not a remote file, or does not refer to a CFDT, it has no effect unless the file is redefined, either as a remote file or to reference a CFDT. Note, however, that if you specify a key length, the value returned by an INQUIRE FILE command is as follows:

- If the file is open, CICS returns the value obtained from VSAM, which can be different from that specified on the file definition.
- If the file is closed, CICS returns the value specified on the file definition.

The value for this attribute must be the same throughout the sysplex in all file definitions that reference the same coupling facility data table.

LOAD({NO|YES})
Specifies whether the coupling facility data table is to be loaded from a source data set when first opened.

NO Means that the coupling facility data table does not require loading from a source data set; it is fully usable by application programs as soon as it is open. The table is loaded by the application programs that use it, which is the default method for a coupling facility data table.

YES Means that the coupling facility data table has to be loaded from a source data set before it is fully usable; the application programs that use this coupling facility data table rely on it containing the records from a source data set. Loading does not have to be completed before data can be accessed.

This attribute is meaningful only for files defined with the TABLE(CF) attribute. You can specify the LOAD attribute for a file that is not defined as TABLE(CF), but CICS ignores it. (CICS-maintained and user-maintained tables are loaded automatically always from a source data set.) If you then alter the file definition to reference a coupling facility data table, the LOAD attribute comes into effect.

Ensure that the value for this attribute is the same throughout the sysplex in all file definitions that reference the same coupling facility data table.

For more information about using this attribute, see Coupling facility data tables.

LSRPOOLID({1|2|3|4|5|6|7|8|NONE})
This attribute is obsolete, but is supported to provide compatibility with earlier releases of CICS.

| The value specified for LSRPOOLID in existing definitions is transferred to the new option LSRPOOLNUM.

| **LSRPOOLNUM({1|*number*|NONE})**
| Specifies the identity of the local shared resource pool. The default value for LSRPOOLNUM is 1, unless a value has been specified for the NSRGROUP attribute, in which case the default value for LSRPOOLNUM is NONE.

NONE
Specifies that the data set associated with this file uses VSAM nonshared resources (NSR).

You cannot specify NONE for a CICS shared data table (CICS or user-maintained), because these types of data tables must use an LSR pool. However, this restriction does not apply to a coupling facility data table, for which you can specify NONE.

VSAM nonshared resources (NSR) are not supported for transactions that use transaction isolation. Specify ISOLATE(NO) when you define transactions that access VSAM files that use NSR. You can also function ship the file request to a remote region. The DFHMIRS program that carries out the request is defined with an EXECKEY of CICS. A CICS-key program has read and write access to CICS-key and user-key storage of its own task and all other tasks, whether or not transaction isolation is active.

number
Identifies the number of the VSAM shared resource pool that is used by the VSAM data set associated with this file. The value must be in the range 1 through 255. The data set is defined as using VSAM local shared resources (LSR). Define the buffers, strings, and other resources explicitly in an LSRPOOL resource definition that corresponds to the assigned LRPOOLNUM value.

By default, if the file definition specifies RLSACCESS(YES), the LSRPOOLNUM value is ignored when CICS opens the file. However, if you change a file definition that specifies an LSR pool from RLSACCESS(NO) to RLSACCESS(YES), you are advised to keep the LSRPOOLNUM value. LSRPOOLNUM ensures that, if the file is switched at any time from RLS to LSR mode, the file correctly references an LSR pool.

MAXNUMRECS({**NOLIMIT**|*number*})
Specifies the maximum number of records (entries) to be accommodated in the data table. You can use this attribute to prevent a runaway transaction from using:

- All the storage in the server's pool if the table is a coupling facility data table
- All the storage in the MVS data space if the table is a CICS- or user-maintained table.

This attribute is meaningful only for files defined with CICS, USER, or CF for the TABLE attribute. You can specify MAXNUMRECS for a file that is defined with TABLE(NO), but it has no effect. If you then alter the file definition to reference a data table, the MAXNUMRECS value comes into effect.

NOLIMIT
There is no user-specified limit placed on the number of records that can be stored in the table. CICS imposes a limit of 2,147,483,647, the maximum fullword value.

number
Specifies the maximum number of records allowed in the table, in the range 1 through 99999999. If you are setting a limit for a recoverable coupling facility data table, specify a value that is about 5 to 10% greater than the maximum number of records the table is expected to contain. This is to allow for additional records that can be created internally for processing recoverable requests. The margin you allow for this internal processing depends on the level of use of the coupling

facility data table, and the nature of that use. An effect of this internal processing is that the NOSPACE condition with a RESP2 of 102 can be raised on a WRITE or REWRITE request to a recoverable coupling facility data table that apparently has fewer records than the MAXNUMRECS limit that has been specified for it.

NSRGROUP(*group*)
Specifies a symbolic name (up to 8 characters) to group file definitions that refer to the same VSAM base data set. The value is purely symbolic and need not refer to any particular file definition. It is merely necessary that all file definitions that must be grouped have the same name. You do not have to specify this attribute to ensure correct processing, but if you do not provide it, performance of your system might be degraded.

The NSRGROUP attribute takes effect only for files referencing data sets that use VSAM nonshared resources. The NSRGROUP attribute must not be coded for a data table. It is associated with the VSAM concept of data set name sharing which causes VSAM to create a single control block structure for the strings and buffers required by all the files that relate to the same base data set.

When the first member of such a group of files is opened, the total number of strings to be allocated for all file entries in the group must be specified to VSAM (with the BSTRNO value in the Access Control Block). The VSAM control block structure is built this time regardless of whether the first file to be opened is associated with a path or base data set. The value of BSTRNO is calculated at this time by adding the STRINGS values in all the file definitions with the same NSRGROUP attribute. After the first file in the group is opened, any new files added to the group do not affect the VSAM control block structure already built. This would change only if all the files open against the base cluster were closed and then reopened.

Data set name sharing is forced by CICS as the default for all VSAM files. Data set name sharing is not in effect if a file is opened for read-only processing with DSNSHARING=MODIFYREQS. A file with DSNSHARING=MODIFYREQS still, however, contributes to the BSTRNO calculation.

If a file is using VSAM nonshared resources, and you do not provide an NSRGROUP attribute, the VSAM control block structure might be built with insufficient strings for later processing. When this happens, VSAM invokes the dynamic string addition feature to provide the extra control blocks for the strings as they are required. This mechanism is, however, inefficient and the extra storage is not released until the end of the CICS run.

| For files specifying that VSAM local shared resources are to be used
| (LSRPOOLNUM=n, where n is in the range 1 - 255), NSRGROUP has no effect.

Figure 1 on page 121 Shows an example of how to specify the required file control definition for a VSAM base data set and alternate index path.

```
CEDA DEFINE FILE(VSAM10B)  GROUP(xxxxxx)
            DSNAME(DTGCAT.VSAM10B)
            DISPOSITION(SHARE)  ADD(YES)
            BROWSE(YES)  DELETE(YES)  READ(YES)
            UPDATE(NO)  RECORDFORMAT(F)
            STRINGS(8)  LSRPOOLNUM(NONE)
            RECOVERY(NONE)  NSRGROUP(GROUP1)
            INDEXBUFFERS(8)  DATABUFFERS(9)
CEDA DEFINE FILE(VSAM10P)  GROUP(xxxxxx)
            DSNAME(DTGCAT.VSAM10P)
            LSRPOOLNUM(NONE)  DISPOSITION(SHARE)
            STRINGS(5)  NSRGROUP(GROUP1)
            BROWSE(YES)  DELETE(NO)  READ(YES)
            ADD(NO)  UPDATE(NO)  RECORDFORMAT(F)
            RECOVERY(NONE)  INDEXBUFFERS(5)
            DATABUFFERS(6)
```

Figure 1. VSAM base data set and alternate index path definition.

OPENTIME({**FIRSTREF**|**STARTUP**})
Specifies when the file is opened. Possible values are:

FIRSTREF
The file remains closed until a request is made to open it by using one of the following methods:

- A master terminal command
- An EXEC CICS SET FILE OPEN command in an application program
- An implicit open

STARTUP
The file is opened immediately after CICS initialization by an automatically initiated CICS transaction (CSFU), unless the status of the file is UNENABLED when the file is left closed.

PASSWORD(*password*)
Specifies the 1- to 8-character password that is used to verify user access to the file.

CICS masks the password you supply to avoid unauthorized access. You should therefore find a safe way of recording the password.

READ({**YES**|**NO**})
Specifies whether records on this file can be read.

READINTEG({**UNCOMMITTED**|**CONSISTENT**|**REPEATABLE**})
Specifies the level of read integrity required for files defined with RLSACCESS(YES). Read integrity does not apply to non-RLS access mode files, CICS shared data tables, or coupling facility data tables.

You can use READINTEG to set a default level of read integrity for a file. The default level of read integrity is used by programs that do not specify one of the API read integrity options UNCOMMITTED, CONSISTENT, or REPEATABLE on the READ, READNEXT, or READPREV commands. However, if an application program uses one of these explicitly to specify read integrity, the API option overrides any value specified on this READINTEG attribute.

Note: You can specify read integrity options only on CICS file control API commands or in CICS file resource definitions. You cannot use the equivalent parameter on the DD statement for files opened by CICS.

You can specify CONSISTENT or REPEATABLE in a file resource definition, to make read integrity available to programs written before these options were available on the API, and without having to modify those programs. However, if you do this, be aware that enforcing consistent or repeatable reads can introduce unexpected deadlocks. Programs might also encounter the LOCKED condition.

CONSISTENT
The record is read with consistent read integrity. If the record is being modified by another transaction, the READ request waits until the update is complete, the timing of which depends on whether the data set is recoverable or unrecoverable:

- For a recoverable data set, the READ request completes when the updating transaction completes its next sync point or rollback.
- For an unrecoverable data set, the READ completes as soon as the VSAM request that performing the update completes.

CONSISTENT is valid only if you also specify RLSACCESS(YES)—the resource definition is rejected with an error if you specify CONSISTENT for a non-RLS file.

REPEATABLE
The record is read with repeatable read integrity. If the record is being modified by another transaction, the READ request waits until the update is complete, the timing of which depends on whether the data set is recoverable or unrecoverable:

- For a recoverable data set, the READ request completes when the updating transaction completes its next sync point or rollback.
- For an unrecoverable data set, the READ completes as soon as the VSAM request that performing the update completes.

After the read completes, a shared lock remains held until sync point. This guarantees that any record read within a unit-of-work cannot be modified while the task makes further read requests. Error responses such as NOTFND might not be repeatable.

REPEATABLE is valid only if you also specify RLSACCESS(YES)—the resource definition is rejected with an error if you specify REPEATABLE for a non-RLS file.

UNCOMMITTED
The record is read without read integrity. CICS obtains the current value of the record as known to VSAM. No attempt is made to serialize this read request with any concurrent update activity for the same record. The record returned might be a version updated by another transaction, but not yet committed, and this record can change if the update is subsequently backed out.

Note:

1. UNCOMMITTED is the same level of integrity that is provided by those releases of CICS that do not support the READINTEG attribute.
2. Specify UNCOMMITTED for any kind of data table. Any value other than UNCOMMITTED is allowed if RLSACCESS(YES) but is ignored if TABLE(CF), TABLE(CICS), or TABLE(USER) is also specified for the file.

RECORDFORMAT({V|F})
Specifies the format of the records on the file.

F
The records are fixed length. For VSAM files, specify this only if the VSAM access method services definition specifies fixed size records (that is, the average size is equal to the maximum size), and all the records in the file are of that size.

F is invalid for user-maintained data tables and coupling facility data tables

V
The records are variable length. All user-maintained data tables and coupling facility data tables must be specified as variable length. Otherwise, CICS returns an error message stating that RECORDFORMAT(F) conflicts with TABLE(CF) or TABLE(USER) options and is ignored.

RECORDSIZE(*number*)
Specifies the maximum length in bytes of records in a remote file or a coupling facility data table. The size specified can be in the range 1 through 32767.

For coupling facility data tables only
This value is required if the file definition for the table specifies LOAD(NO).

You can also specify this attribute if LOAD(YES) is specified (for example, to make it easier for switching the file definition between LOAD(NO) and LOAD(YES)). However, if you specify LOAD(YES), the record size value must match that for the source data set, otherwise CICS fails to open the table. There are three conditions in which CICS can detect an error because of an incorrect record size with LOAD(YES):

1. Before opening the table, CICS verifies that the VSAM-defined record size for the data set from which the coupling facility data table is to be loaded is the same as the size, if any, in the file definition. If the record size is different, CICS returns error message DFHFC7081.
2. The record size (if specified) on the file definition is the same as that defined to VSAM for the data set, but on opening the table, CICS finds the table is already loaded with data of a different record size. This is probably because the data was loaded from a different data set from the one specified by this file definition. In this case CICS returns error message DFHFC7082.
3. The file definition for the table being opened specifies a record size, but not a data set name because the table is to be loaded by the opening of a different file. If the table has already been created, the open of a file specifying a different record size fails with message DFHFC7083.

To avoid the above errors, ensure that the value for this attribute is the same throughout the sysplex in all file definitions that reference the same coupling facility data table, or omit it altogether for files that specify LOAD(YES).

If you specify a record size for a file that is not a remote file, or does not refer to a CFDT, it has no effect unless the file is redefined, either as a remote file or to reference a coupling facility data table. Note, however, that if you specify a record size, the value returned by an INQUIRE FILE command is as follows:

- If the file is open, CICS returns the value obtained from VSAM, which can be different from that specified on the file definition.
- If the file is closed, CICS returns the value specified on the file definition.

Note: For coupling facility data tables, if you can keep the record size to 63 bytes or less, there is a significant gain in performance as a result of the way records are held in the coupling facility.

RECOVERY({NONE|BACKOUTONLY|ALL})
Specifies the type of recovery required for the file.

This attribute is not used for files defined with RLSACCESS(YES), or if the recovery options are defined in the ICF catalog. If LOG is defined in the ICF catalog, CICS ignores the RECOVERY option and takes the LOG value from the ICF catalog, even for files defined with RLSACCESS(NO). If LOG(ALL) is specified in the ICF catalog, CICS also takes the LOGSTREAMID and BWO values from the ICF catalog. To force CICS to use this attribute instead of the recovery options in the catalog, set the **NONRLSRECOV** system initialization parameter to FILEDEF.

For files that are accessed in RLS mode, you must specify the recovery parameters with the data set definition in the ICF catalog. See the *CICS Recovery and Restart Guide* for more information.)

For coupling facility data tables and user-maintained tables that are defined with a source data set, any recovery attributes in the ICF catalog are ignored. The recovery attributes are a property of the file not the associated data set.

For coupling facility data tables, the recovery attribute must be the same throughout the sysplex in all file definitions that reference the same coupling facility data table.

ALL Except for coupling facility data tables, which manage their own recovery and do not use the services of log manager or recovery manager, before images are recorded in the system log, and after images in the journal specified in the FWDRECOVLOG attribute.

Records written to the FWDRECOVLOG are independent of any automatic journaling options that might be set.

RECOVERY=ALL together with FWDRECOVLOG provide a means of separating the needs of a forward recovery utility from those of automatic journaling. Additional information, unavailable via automatic journaling, is recorded on the FWDRECOVLOG. RECOVERY=ALL plus FWDRECOVLOG is the preferred way to provide forward recovery support.

Existing forward recovery utilities that used the JREQ=(WU,WN) and JID=FCT macro settings can still be used with these settings. The RDO equivalents of these automatic journaling settings are JNLADD=BEFORE, JNLUPDATE=YES, and the JOURNAL attribute.

For CICS-maintained data tables, the data table and its source data set are logged, journaled, and recovered together.

For user-maintained tables, specifying ALL has the same effect as specifying BACKOUTONLY: Only dynamic backout is provided. There is no forward recovery support for user-maintained tables.

For coupling facility data tables you cannot specify ALL.

Note: When ALL is specified for VSAM ESDS files, CICS is unable to perform backout of ADDs. To cope with this situation, code user exit XFCLDEL to avoid the file being closed because of the error.

BACKOUTONLY
Except for coupling facility data tables, which manage their own recovery and do not use the services of log manager or recovery manager, before images are recorded in the system log.

For CICS-maintained data tables, BACKOUTONLY specifies that the data table and its source data set are recoverable. They are both updated in step and, if required, recovered in step.

For user-maintained tables, BACKOUTONLY specifies only dynamic backout. No log records are written and, therefore, there is no recovery at emergency restart.

For coupling facility data tables, BACKOUTONLY is permitted only if the coupling facility data table is defined with UPDATEMODEL(LOCKING). You cannot specify this attribute for UPDATEMODEL(CONTENTION). Specifying BACKOUTONLY implies that a coupling facility data table is UOW-recoverable. This means that updates made to the CFDT within a unit of work are backed out if the unit of work fails, or if CICS or the CFDT server fails while the unit of work is in-flight, or if MVS fails.

Note: When BACKOUTONLY is specified for VSAM ESDS files, CICS is unable to perform backout of ADDs. To cope with this situation, code user exit XFCLDEL to avoid the file being closed because of the error.

NONE
There is no recovery logging for this file.

REMOTENAME(*file*)
Specifies, if the file resides on a remote system, the name by which this file is known in the system or region in which it is resident. The name can be up to 8 characters in length. If REMOTENAME is not specified, the name given in the FILE attribute is used.

Acceptable characters:

```
A-Z 0-9 $ @ #
```

Unless you are using the CREATE command, any lowercase characters that you enter are converted to uppercase.

If you specify a remote name, CICSPlex SM uses that name when assigning the file to a related system. If you specify a remote system but not a remote name, the local name (that is, the name of this file definition) is used in both the target and related systems.

REMOTESYSTEM(*connection*)
Specifies the name of the connection to the remote system in which the file is resident.

For IPIC connections, REMOTESYSTEM specifies the first 4 characters of the IPCONN name on the IPCONN definition that is in service and acquired.

For MRO and APPC connections, REMOTESYSTEM specifies the CONNECTION name on the CONNECTION definition.If you specify REMOTESYSTEM, you can also supply a REMOTENAME, to specify the name of the file in the remote system.

Acceptable characters:
`A-Z 0-9 $ @ #`
Unless you are using the CREATE command, any lowercase characters that you enter are converted to uppercase.

Note: If you modify a resource definition from RLSACCESS(NO) to RLSACCESS(YES), you must remove the remote system name. Otherwise CICS continues to function ship file requests.

RESSECNUM

This attribute is obsolete, but is supported to provide compatibility with earlier releases of CICS. For more information, see Obsolete attributes in the Resource Definition Guide.

RLSACCESS({NO|YES})

Specifies whether CICS is to open the file in RLS mode.

| **NO** The file is not to be opened in RLS mode. If you specify RLSACCESS(NO) or allow it to default, CICS opens the file in LSR or NSR access mode, depending on the LSRPOOLNUM attribute. If you also specify LSRPOOLNUM(NONE), the access mode is NSR; if you specify LSRPOOLNUM(*number*), the access mode is LSR.

| **YES** The file is to be opened in RLS mode. If you specify RLSACCESS(YES), it takes precedence over the LSRPOOLNUM attribute, which is ignored when the FILE is opened.

Specifying RLSACCESS(YES) alters the effect of some other attributes defined in the FILE definition, as shown in Table 8.

Table 8. Effects of RLSACCESS(YES) on other FILE attributes

Attribute	Effect of RLSACCESS(YES)
PASSWORD	Ignored.
LSRPOOLNUM	Ignored.
DSNSHARING	Ignored.
STRINGS	Ignored; RLS access-mode files always have 1024 strings.
REMOTESYSTEM REMOTENAME RECORDSIZE KEYLENGTH	The meanings of these attributes are unchanged. However, dual FILE definitions of local and remote is of less value for RLS access-mode files. With RLS, there might be many file-owning regions (FORs) instead of one, and a local CICS region has the choice of several FORs.
DATABUFFERS INDEXBUFFERS	Ignored.
TABLE	TABLE(CICS) is not allowed; an error message is issued if specified. TABLE(USER) or TABLE(CF) is allowed. The source data set (if there is one) is accessed in RLS mode to load the data table, after which requests access the data table directly using data table services.

Table 8. Effects of RLSACCESS(YES) on other FILE attributes (continued)

Attribute	Effect of RLSACCESS(YES)
RECOVERY	Ignored. The recovery attribute is obtained from the ICF catalog for an RLS file.
FWDRCOVLOG	Ignored. The forward recovery log stream name is obtained from the ICF catalog for an RLS file.
BACKUPTYPE	Ignored. The type of backup is determined by the DFSMSdss backup utility for RLS.

Note:

1. Provided that a file is opened in RLS mode, any values specified for PASSWORD, LSRPOOLNUM, DSNSHARING, STRINGS, DATABUFFERS, and INDEXBUFFERS are ignored, as described in Table 8 on page 126. However, if you use a CEMT, or EXEC CICS, SET FILE command to change the value of RLSACCESS from YES to NO, these values are no longer ignored, and CICS uses them when the file is closed and reopened in non-RLS mode.
2. CICS always takes the RLS access mode from the file resource definition and you cannot override this using the RLS=NRI or RLS=CR parameter on a DD statement.

STATUS({ENABLED|DISABLED|UNENABLED})
Specifies the initial status of the file following a CICS initialization with START=COLD or START=INITIAL. You can change the status of a closed file with the master terminal transaction CEMT. The status of a file (ENABLED, DISABLED, or UNENABLED) following a CICS restart is recovered to its status at the previous shutdown.

DISABLED
Any request against this file from a command-level application program causes the DISABLED condition to be passed to the program.

ENABLED
Normal processing is allowed against this file.

UNENABLED
This prevents the file being opened by an implicit open from an application program. Any such attempt to access the file raises the NOTOPEN condition. By contrast, an explicit request to open the file (for example, a CEMT or EXEC CICS SET FILE OPEN command) changes the status to ENABLED before attempting to open the file.

STRINGS({1|*value*})
Specifies the number, in the range 1 through 255, of concurrent requests that can be processed against the file. When the number of requests reaches this value, CICS queues any additional requests until one of the active requests terminates. This applies both to files using shared resources, and to those not using shared resources. Note that if the file definition specifies RLSACCESS(YES), STRINGS value is ignored; you always get 1024 strings with RLS mode access.

For files using local shared resources, this number is not used by VSAM. It is used by CICS, not only as described above, but also to calculate the default value in the buffer pool definition.

Notes:

1. When choosing a STRINGS value, be aware that a proportion (20%) of the specified number of strings is reserved by CICS for use in read-only requests
2. When choosing a STRINGS value for an ESDS, consider the following:
   - If an ESDS is used as an 'add-only' file (that is, it is used only in write mode), you must use a string number of 1. Any string number greater than 1 can significantly affect performance, because of exclusive control conflicts that occur when more than one task attempts to write to the ESDS at the same time.
   - If an ESDS is used for both writing and reading, with writing being 80% of the activity, it is better to define two file definitions—using one file for writing and the other for reading.
3. For user-maintained data tables and coupling facility data tables, the STRINGS value does *not* limit the number of concurrent requests against the table. However, the value does limit the number of concurrent requests during the loading of a user-maintained table.
4. For CICS-maintained data tables, the STRINGS value limits the number of concurrent requests to update the table. It does not limit the number of concurrent read-only requests.

TABLE({NO|CICS|USER|CF})
Specifies the type of data table that you require.

CF A coupling facility data table (CFDT). This remains independent of its source data set, and changes to the table are not reflected in the corresponding source data set, if there is one. A source data set is optional for a CFDT, and is specified by LOAD(YES) on the file definition.

If you specify CF, also specify:
- CFDTPOOL, to give the name of the coupling facility pool in which the table resides
- LOAD, to specify whether the table is to be loaded from a source data set (or let this default to NO)
- UPDATEMODEL to specify whether the table is to use the CONTENTION or the LOCKING update model (or let this default to LOCKING)
- RECORDFORMAT as V (or let this default to V)
- MAXNUMRECS with the value you require.

A coupling facility data table requires a coupling facility data table server. For information about how to start a coupling facility data table server, see the *CICS System Definition Guide*.

CICS A CICS-maintained data table. This automatically reflects all modifications made to the table in its source data set. If you specify CICS, also specify:
- | LSRPOOLNUM with a value of 1 through 255
- MAXNUMRECS with the value you require.

NO Data table not required.

USER A user-maintained table. This remains independent of its source data set, and changes to the user-maintained table are not reflected in corresponding source data set. If you specify USER, also specify:
- | LSRPOOLNUM with a value of 1 through 255
- RECORDFORMAT as VARIABLE (or let this default to VARIABLE)

- MAXNUMRECS with the value you require.

TABLENAME(*cfdt*)
Specifies the name of the coupling facility data table that is accessed through this file definition. The name can be up to 8 characters in length.

Acceptable characters:

```
A-Z 0-9 $ @ #
```

Unless you are using the CREATE command, any lowercase characters that you enter are converted to uppercase.

If you omit this attribute when TABLE(CF) is specified, it defaults to the name specified for the FILE. To enable CICS regions to share a coupling facility data table, the file definitions installed in each region must specify the same CFDTPOOL name and TABLENAME (or FILE name when TABLENAME is not used). The TABLENAME need only be unique within its pool.

Note that the table name is not only an identifier for the table, but is also used as the resource name in security checks.

This attribute is meaningful only for files defined with the TABLE(CF) attribute. You can specify a table name for a file that is not defined as TABLE(CF), but CICS ignores it. If you then alter the file definition to reference a coupling facility data table, the TABLENAME attribute comes into effect.

UPDATE({**NO**|**YES**})
Specifies whether records on this file can be updated.

UPDATEMODEL({**LOCKING**|**CONTENTION**})
Specifies the type of update model to be used for a coupling facility data table.

LOCKING
Specifies that the CFDT is updated using the locking model. This means that records are locked when they are read for update, so that they cannot be changed by any other units of work until the update request has been completed. For recoverable tables, the update request is completed at sync point. For unrecoverable tables, the update request is completed when a REWRITE, DELETE, or UNLOCK command is completed. LOCKING is the default for a file that specifies TABLE(CF). With the LOCKING model, the CFDT can be defined as:

- **Unrecoverable**, meaning that CFDT updates are not backed out if a unit of work fails, and the locks are only held for the duration of a request. You specify that a CFDT is not recoverable by specifying RECOVERY(NONE).
- **Recoverable**, or UOW-recoverable, meaning that updates made to the CFDT within a unit of work are backed out if the unit of work fails, or if CICS or the CFDT server fails while the unit of work is in-flight, or if MVS fails. You specify that a CFDT is recoverable by specifying RECOVERY(BACKOUTONLY).

A recoverable CFDT that uses the locking model is like a recoverable file or data set, except that it does not survive a failure of the coupling facility in which it resides. There is no forward recovery for a coupling facility data table.

CONTENTION
Specifies that the CFDT is updated using the contention model. This

means that records are not locked when they are read for update. An error is returned on a subsequent REWRITE or DELETE if the record was changed or deleted by another task after it was read for update. The CFDT must be unrecoverable (RECOVERY(NONE)), meaning that updates are not backed out if a unit of work fails.

The value for this attribute must be the same throughout the sysplex in all file definitions that reference the same coupling facility data table.

This attribute is meaningful only for files defined with the TABLE(CF) attribute. You can specify the update model for a file that is not defined as TABLE(CF), but CICS ignores it. If you then alter the file definition to reference a coupling facility data table, the UPDATEMODEL attribute comes into effect.

Chapter 16. IPCONN resources

An IPCONN resource defines a Transmission Control Protocol/Internet Protocol (TCP/IP) communication link to a remote system. This communication link is known as an IPIC connection.

Some of the inbound attributes of the IPIC connection are specified by the TCPIPSERVICE definition that is named on the TCPIPSERVICE option of the IPCONN definition.

The REMOTESYSTEM name on a PROGRAM definition can refer to an IPCONN definition through its IPCONN name. This attribute is used for distributed program link.

For guidance on defining IPCONN resources, see the *CICS Intercommunication Guide*.

Installing IPCONN definitions

To install new IPCONN definitions, put them in a group of their own which does not contain IPCONN definitions that have already been installed, then use CEDA INSTALL to install the group. You can also install IPCONN definitions individually.

About this task

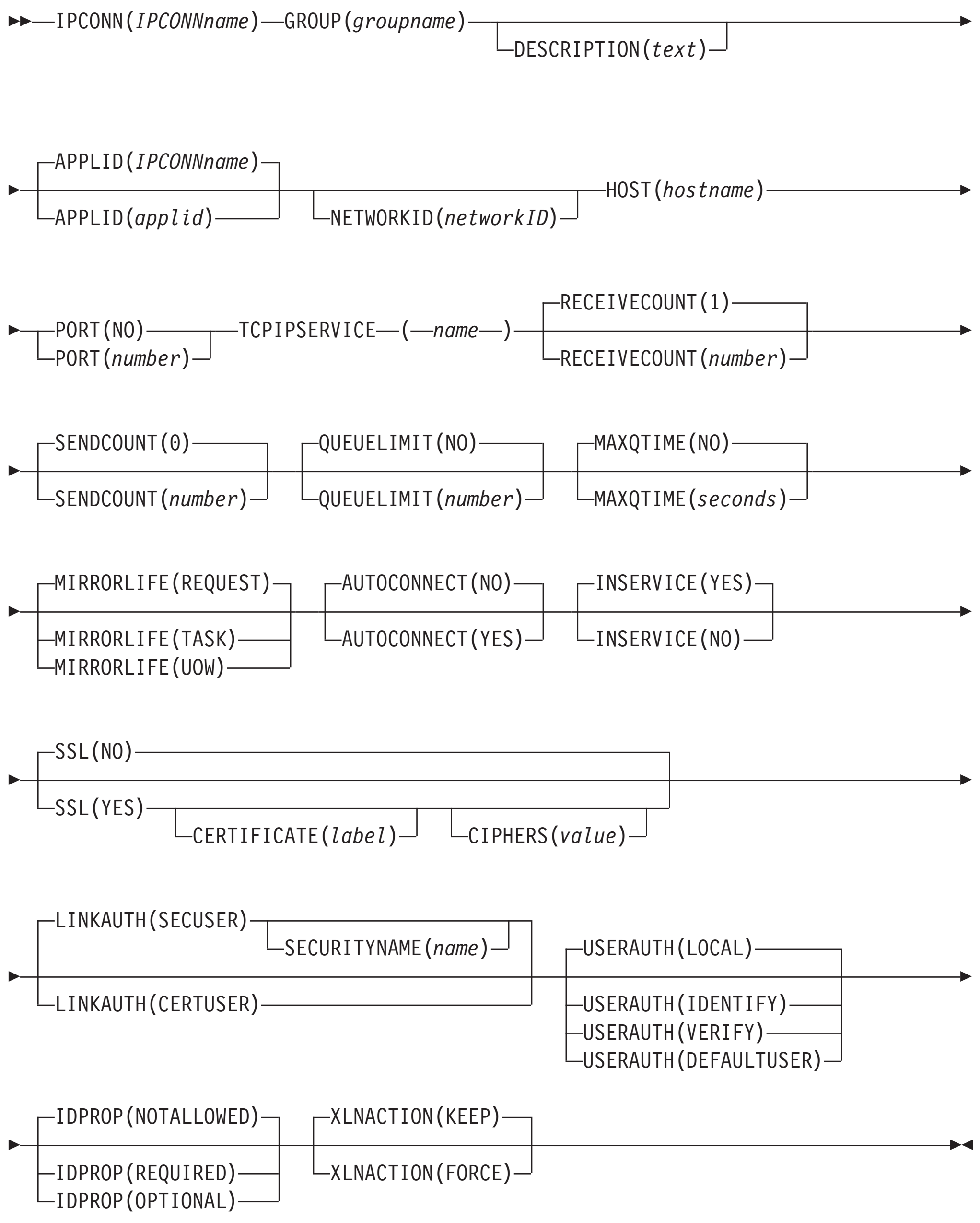
For connectivity to be achieved when you install the IPCONN definition, consider the following resource requirements:

1. The TCPIPSERVICE definition named on the TCPIPSERVICE attribute of this IPCONN definition must also be installed in this region and must specify PROTOCOL(IPIC).
2. Corresponding IPCONN and TCPIPSERVICE definitions must be installed in the remote region."Corresponding" means that:
   a. The HOST attribute of the IPCONN definition on the remote region must specify this region.
   b. The PORT attribute of the IPCONN definition on the remote region must specify the same port number as that specified on the PORTNUMBER attribute of the local TCPIPSERVICE definition named by this IPCONN.
   c. The TCPIPSERVICE definition on the remote region, named by the IPCONN definition on the remote region, must specify PROTOCOL(IPIC) and, on its PORTNUMBER attribute, the same port number as that specified by the PORT attribute of this IPCONN.

IPCONN attributes

Describes the syntax and attributes of the IPCONN resource.

Syntax



Attributes

APPLID({IPCONNname|*applid*})

Specifies the application identifier (APPLID) of the remote system. If the remote system is a CICS region, its APPLID is defined on the APPLID parameter. The value for *applid* can be up to 8 characters in length and must start with an alphabetic character.

Acceptable characters:

`A-Z 0-9 $ @ #`

Unless you are using the CREATE command, any lowercase characters that you enter are converted to uppercase.

For connections to an extended recovery facility (XRF) CICS region, specify the generic APPLID of the remote region.

If you do not supply an APPLID, CICS uses the IPCONN name.

Duplicate APPLIDs follow these rules:

- You cannot install two or more IPCONN definitions that specify the same APPLID *and* the same NETWORKID. The combination of APPLID and NETWORKID can be used to ensure unique naming of systems across the network. See the description of the NETWORKID option.
- You *can* install an IPCONN definition that specifies the same APPLID as the NETNAME of an installed MRO, APPC, or LUTYPE6.1 CONNECTION definition.
- If an installed IPCONN definition has the same name as an installed CONNECTION definition, the APPLID of the IPCONN definition must match the NETNAME of the CONNECTION definition. If they do not, the resulting message depends on the situation:
  - DFHIS3009 if the error is detected during IPCONN autoinstall
  - DFHAM4913 if the error is detected during IPCONN installation
  - DFHZC6312 if the error is detected during CONNECTION installation or autoinstall

  The IPCONN definition takes precedence over the CONNECTION definition; that is, if an IPCONN and a CONNECTION have the same name, CICS uses the IPCONN.
- A CONNECTION definition and an IPCONN definition with the same NETNAME and APPLID do not require the same name to allow the possibility of using a distinct *sysid* for communication over TCP/IP rather than relying on the CICS default of routing all supported function with the IPCONN, if it exists.

These rules are validated at installation time.

AUTOCONNECT({NO|YES})

Specifies whether sessions are to be established when the IPCONN definition is installed (which can happen during CICS initialization, when you issue a subsequent CEDA INSTALL command, or when you use the CEMT or EXEC CICS SET TCPIP OPEN command to start communication with TCP/IP). If the connection cannot be made at these times because the remote system is unavailable, you can later acquire the link by using the CEMT or EXEC CICS SET IPCONN(*name*) INSERVICE ACQUIRED command, unless the remote system becomes available in the meantime and initiates communications.

NO CICS does not try to establish sessions when the IPCONN is installed.

YES CICS tries to establish sessions when the IPCONN is installed.

For connectivity to be achieved when you install the IPCONN definition, note these conditions:

1. The TCPIPSERVICE definition named on the TCPIPSERVICE option of this IPCONN definition must also be installed in this region and must specify PROTOCOL(IPIC).
2. Corresponding IPCONN and TCPIPSERVICE definitions must be installed in the remote region:
   a. The HOST option of the IPCONN definition on the remote region must specify this region.

b. The PORT option of the IPCONN definition on the remote region must specify the same port number as that specified on the PORTNUMBER option of the local TCPIPSERVICE definition named by this IPCONN.

c. The TCPIPSERVICE definition on the remote region (named by the IPCONN definition on the remote region) must specify PROTOCOL(IPIC) and, on its PORTNUMBER option, the same port number as that specified by the PORT option of this IPCONN.

You cannot specify AUTOCONNECT(YES) when PORT(NO) is specified.

CERTIFICATE(*label*)
Specifies the label of an X.509 certificate to be used as a client certificate during the SSL handshake when the IPIC connection is acquired, if the TCPIPSERVICE resource identified by the HOST and PORT definitions is defined with SSL(CLIENTAUTH). If this attribute is omitted, the default certificate defined in the key ring for the CICS region user ID is used.

Certificate labels can be up to 32 bytes long.

The certificate must be stored in a key ring in the external security manager database. For more information, see the *CICS RACF Security Guide*.

If you specify this attribute, you must also specify SSL(YES).

CIPHERS(*value*)
Specifies a string of up to 56 hexadecimal digits that is interpreted as a list of up to 28 2-digit cipher suite codes. When you use the CEDA transaction to define the resource, CICS automatically initializes the attribute with a default list of acceptable codes. For CICS to initialize the attribute, the KEYRING system initialization parameter must be specified in the CICS region where you are running CEDA. If KEYRING is not set, CICS does not initialize the attribute. The default list of codes depends on the level of encryption that is specified by the ENCRYPTION system initialization parameter.

- For ENCRYPTION=WEAK, the default value is `03060102`.
- For ENCRYPTION=MEDIUM, the initial value is `0903060102`.
- For ENCRYPTION=STRONG, the initial value is `050435363738392F303132330A1613100D0915120F0C03060201`.

You can reorder the cipher codes or remove them from the initial list. However, you cannot add cipher codes that are not in the default list for the specified encryption level. To reset the value to the default list of codes, delete all of the cipher suite codes. The field is automatically repopulated with the default list.

See the *CICS RACF Security Guide* for more information.

DESCRIPTION(*text*)
You can provide a description of the resource that you are defining in this field. The description text can be up to 58 characters in length. No restrictions apply to the characters that you can use. However, if you use parentheses, ensure that each left parenthesis has a matching right one. If you use the CREATE command, code 2 apostrophes for each single apostrophe in the text.

GROUP(*groupname*)
Every resource definition must have a GROUP name. The resource definition becomes a member of the group and is installed in the CICS system when the group is installed.

Acceptable characters:
`A-Z 0-9 $ @ #`
Any lowercase characters that you enter are converted to uppercase.

The GROUP name can be up to 8 characters in length. Lowercase characters are treated as uppercase characters. Do not use group names beginning with DFH, because these characters are reserved for use by CICS.

HOST(*hostname*)
Specifies the host name of the remote system or its IPv4 or IPv6 address. The name can be up to 116 characters long. You can specify IPv4 and IPv6 addresses in a number of acceptable formats. See the *CICS Internet Guide* for more information about address formats.

If you specify an IPv6 address (or a host name that resolves to an IPv6 address), ensure that you are operating in a dual-mode (IPv4 and IPv6) environment and that the client or server that you are communicating with is also operating in a dual-mode (IPv4 and IPv6) environment. For more information about IPv6, see the *CICS Internet Guide*.

The HOST attribute must contain only alphanumeric characters, hyphens (-), colons (:), or periods (.), although you cannot use colons when specifying a character host name instead of an IP address. CICS validates the host name at define time. The host name can be entered in uppercase, lowercase, or mixed case characters, but if a character host name is specified instead of an IP address, the host name is converted to lowercase in the IPCONN definition.

HOST is ignored when the SENDCOUNT attribute is zero. HOST is a required attribute when SENDCOUNT is greater than zero.

IDPROP({**NOTALLOWED**||**OPTIONAL**|**REQUIRED**})
Specifies whether the distributed identity is transmitted to the connected system by the sender. The IDPROP attribute is meaningful only if a connection extends outside a sysplex and is used primarily to prevent distributed identities being transmitted between enterprises. If the connection is between systems in the same sysplex, the connection operates as if IDPROP(OPTIONAL) is specified and ignores any other setting.

Distributed identities flow only if the connected systems meet all the following criteria:

- Both systems are participating in identity propagation. See Identity propagation requirements.
- The systems are in the same sysplex or are connected by using SSL.
- The receiving system has USERAUTH(IDENTIFY) specified in the IPCONN resource definition.

NOTALLOWED
A user ID associated with the sending transaction is sent for requests that use this connection. NOTALLOWED is the default value.

REQUIRED
A distributed identity is required for requests that use this connection. If REQUIRED is specified, the receiving system must support distributed identities. The user ID associated with the sending transaction is not sent.

OPTIONAL
A distributed identity is sent, if available. The user ID associated with the sending transaction is also sent.

INSERVICE({**NO**|**YES**})
Specifies the status of the IPCONN resource when it is installed.

NO The connection cannot receive messages or transmit output.

YES The connection is available for use.

IPCONN(*IPCONNname*)
Specifies the name of this IPCONN definition. The name can be up to 8 characters in length.

Acceptable characters:

```
A-Z 0-9 $ @ #
```

Unless you are using the CREATE command, any lowercase characters that you enter are converted to uppercase.

If this IPCONN is to be used for distributed program link (DPL) between CICS TS 3.2 or later regions, or transaction routing between CICS TS 4.1 or later regions, or function shipping file control, transient data, or temporary storage requests between CICS TS 4.2 or later regions, that use IPIC connectivity, its name must match the 4-character *local name* (SYSID) by which CICS knows the remote system, padded with four trailing blanks.

Note: You can specify the name (SYSID) of the remote, target region, of a DPL request in these ways:
- The REMOTESYSTEM option of the installed PROGRAM definition
- The SYSID option of the EXEC CICS LINK PROGRAM command
- The dynamic routing program

The IPCONN name can be the same as the name of an installed MRO or APPC CONNECTION definition.

LINKAUTH({**CERTUSER**|**SECUSER**})
Specifies how the user ID for link security is established in a CICS system with security initialized (SEC=YES).

CERTUSER
TCP/IP communication with the partner system must be configured for SSL and a certificate must be received from the partner system during SSL handshaking.

The IPCONN resource must refer to a TCPIPSERVICE resource that is defined with SSL(CLIENTAUTH).

The received certificate must be defined to the external security manager so that it is associated with a user ID, which is used to establish link security.

SECUSER
Specifies that the user ID specified in the SECURITYNAME attribute is used to establish link security.

If you do not specify a value for SECURITYNAME, CICS uses the default user ID.

MAXQTIME({**NO**|*seconds*})

Specifies the maximum time that queued allocate requests, waiting for free sessions on this connection, can wait before the queue is purged.

Note:

- The maximum queuing time is used only if a limit to the length of the queue is specified on the QUEUELIMIT option.
- The time limit is applied only when the queue length has reached the QUEUELIMIT value.

NO CICS maintains the queue of allocate requests that are waiting for a free session. No limit is set on the length of time that requests can remain queued, although the DTIMOUT mechanisms can apply to individual requests.

seconds

The approximate maximum time, in seconds, that allocate requests waiting for a free session can be queued, when this connection appears to be unresponsive; *seconds* must be in the range 0 - 9999.

When the queue of allocate requests reaches its maximum length (specified by the QUEUELIMIT attribute), and a new allocate request is received for the connection, if the rate of processing for the queue indicates that, on average, the new allocate takes more than the maximum queue time, the queue is purged, and message DFHIS500 is issued. When the queue is purged, queued allocate requests return SYSIDERR.

No further queuing takes place until the connection has successfully freed a session. At this point, CICS issues a DFHIS5001 message and resumes normal queuing.

MIRRORLIFE({**REQUEST**|**TASK**|**UOW**})

Specifies the minimum lifetime of the mirror task for function-shipped file control, transient data, and temporary storage requests received by this region. Normally, mirror tasks are terminated as soon as possible to keep the number of active tasks to a minimum and to avoid holding on to a session for long periods. However, for some applications it is more efficient to retain both the mirror task and the session until the next sync point, although this retention is not required for data integrity. For example, a transaction that issues many READ FILE requests to a remote system might be better served by a single mirror task instead of a separate mirror task for each request. In this way, you can reduce the overhead of allocating sessions on the sending side and attaching mirror tasks on the receiving side. The specified MIRRORLIFE value is not reflected in the lifetime of the mirror task until a file control, transient data, or temporary storage request is function shipped.

REQUEST

The mirror task terminates as soon as possible. For unrecoverable work that does not require a mirror to hold on to a session in the resource-owning region (for example, a non-update READ FILE request) this is after the request has been processed. For unrecoverable work that requires the mirror to hold on to a session (for example, file browse requests), this is as soon as the need for the hold state has been completed (for example, the ENDBR is issued). For recoverable work, the mirror remains until the next sync point. This is the default value.

TASK The mirror task remains available to the application that issues the remote request until the task of the application ends. This value saves the overhead of reallocating a session and reattaching the mirror task for a subsequent request following a user sync point. Do not specify this value when long-running tasks might be used to function ship file control, transient data, or temporary storage requests because once the session is allocated to a task it is not freed until the task ends, even it is not being used. The session is not available for use by other tasks until it is freed.

UOW The mirror transaction remains available to the application that issues the remote request until the next sync point is issued. This value saves the overhead of reestablishing communication with the mirror transaction if the application has more function-shipping file control, transient data, or temporary storage requests in this unit of work.

This parameter is valid when it is specified on the IPCONN of the resource-owning region. Specify the TASK or UOW values with this parameter with caution, especially if DPL requests with SYNCONRETURN or TRANSID are used.

NETWORKID(*networkID*)

Specifies the network ID of the remote system. The remote system network ID is either its z/OS Communications Server NETID or, for VTAM=NO systems, the value of its UOWNETQL system initialization parameter.

If NETWORKID is not specified, CICS assumes that the remote system is in the same network as the local system. In this instance, CICS uses the z/OS Communications Server NETID, or the value of the UOWNETQL system initialization parameter, of this CICS (that is, the CICS on which this definition is installed).

Specify NETWORKID if you want to connect to a remote system that is in a different network and therefore has a different z/OS Communications Server NETID or UOWNETQL value. In this instance, it might be possible for two or more remote systems to have the same APPLID. Although CICS APPLIDs must be unique within a sysplex, you might, for example, want to connect to a system outside the sysplex or in a different sysplex. The combination of APPLID and NETWORKID attributes ensures that the remote system is referred to by a unique name.

The NETWORKID value must match the remote system network ID.

When it is not specified, the NETWORKID value is derived when the IPCONN resource is first installed and is not changed between warm starts, even if the local NETID value changes.

The name can be up to 8 characters in length and follows assembly language rules. It must start with an alphabetic character.

Acceptable characters:

`A-Z 0-9 $ @ #`

Unless you are using the CREATE command, any lowercase characters that you enter are converted to uppercase.

PORT(**NO**|*number*)

Specifies the decimal number of the port on which the remote region listens.

NO This IPCONN resource is not used for outbound requests (that is, it has no send sessions) when connecting from the CICS Transaction Gateway.

NO is not valid for CICS to CICS IPCONN resources.

NO forces the value of AUTOCONNECT to NO.

number
A value in the range 1 - 65535. The port number is combined with the HOST value to determine the destination for outbound requests on this IPCONN resource.

QUEUELIMIT({**NO**|*number*})
Specifies the maximum number of allocate requests that CICS is to queue while waiting for free sessions:

NO No limit applies to the number of allocate requests that CICS can queue while waiting for a free session.

number
The maximum number of allocate requests, in the range 0 - 9999, that CICS can queue on the connection while waiting for a free session. When the number of queued allocate requests reaches this limit, subsequent allocate requests fail, returning SYSIDERR, until the queue drops below the limit.

RECEIVECOUNT({**1**|*number*})
Specifies, in the range 1 - 999, the number of receive sessions; that is, sessions that receive incoming requests. The number of receive sessions that are used depends also on the number of send sessions defined in the remote system. When the connection is established, these values are exchanged and the lower value is used.

You can connect up to approximately 20,000 IPIC sessions in a single CICS region. If this limit is exceeded, CICS ends immediately.

SECURITYNAME(*name*)
Specifies the security name of the remote system, to be used for link security.

In a CICS system with security initialized (SEC=YES), and with LINKAUTH(SECUSER) in use, the security name is used to establish the authority of the remote system.

The security name must be a valid RACF user ID on this region. Access to protected resources on this region is based on the RACF user profile and its group membership. If the security name is not a valid RACF user ID when the IPCONN is installed, CICS uses the default user ID for the security name.

The default value is the default user ID.

SENDCOUNT({**0**|*number*})
Specifies, in the range 0 - 999, the number of send sessions; that is, sessions that send outgoing requests. The number of send sessions that are used depends also on the number of receive sessions defined in the remote system. When the connection is established, these values are exchanged and the lower value is used. If 0 is specified, this IPCONN can process only incoming work. It cannot send requests to the connected system.

SENDCOUNT(0) is not valid for CICS to CICS IPCONN resources.

SENDCOUNT(0) forces PORT(NO). A SENDCOUNT value greater than zero requires PORT to have a numeric value.

An attempt to acquire an IPCONN resource that has SENDCOUNT(0) fails because no port is defined.

You can connect up to approximately 20,000 IPIC sessions in a single CICS region. If this limit is exceeded, CICS ends immediately.

SSL({NO|YES})
Specifies whether Secure Sockets Layer (SSL) is used for encrypting the transmitted data.

NO The Secure Sockets Layer (SSL) is not used. No security checks are applied when the connection is being acquired. No encryption is applied to outbound messages.

YES If the SEC system initialization parameter is set to YES, the Secure Sockets Layer (SSL) is used. If the TCPIPSERVICE resource identified by the HOST and PORT attributes is defined with SSL(CLIENTAUTH), CICS extracts the client certificate named in the CERTIFICATE attribute, and uses it when acquiring the IPIC connection to the partner system. SSL encryption processing is applied to all messages sent from this IPCONN resource. The level of encryption depends on the value of the CIPHERS option.

TCPIPSERVICE(*name*)
Specifies the name of a TCPIPSERVICE definition, with PROTOCOL(IPIC), that defines the attributes of the inbound processing for this IPCONN resource.

USERAUTH({LOCAL|IDENTIFY|VERIFY|DEFAULTUSER})
Specifies how the user ID for attach-time user security is established in a CICS system with security initialized (SEC=YES).

LOCAL
CICS does not accept a user ID or password from clients. All requests run under the link user ID or the default user ID if there is no link user ID.

IDENTIFY
Incoming attach requests must specify a user ID. Enter IDENTIFY when the connecting system has a security manager; for example, if it is another CICS system.

SSL client authentication must be in use or the connecting system must be in the same sysplex.

VERIFY
Incoming attach requests must specify a user ID and password. Specify VERIFY when connecting systems are unidentified and cannot be trusted.

DEFAULTUSER
CICS does not accept a user ID and password from the partner system. All requests run under the default user ID.

XLNACTION({KEEP|FORCE})
Specifies the action to be taken when a new logname is received from the partner system. Receipt of a new logname indicates that the partner has deleted its recovery information.

KEEP Recovery information is kept, and no predefined actions are taken for indoubt units of work.

The connection cannot perform new work that requires sync level 2 protocols until all outstanding recoverable work with the partner (that is, indoubt UOWs, or information relevant to UOWs that were indoubt on the partner system under the old logname) is completed, using the

CEMT or SPI interface. Therefore, because the connection is being used for CICS-to-CICS communication, which always uses the sync level 2 protocols, the connection cannot be acquired until all outstanding recoverable work with the partner has completed.

FORCE

Before any new work with the new logname is started, the predefined decisions for indoubt units of work (UOWs), as defined by the indoubt attributes of the TRANSACTION definition, are implemented. CICS also deletes any information retained for possible resolution of UOWs that were indoubt on the partner system.

Attention: Data integrity might be compromised if you use this option.

The XLNACTION parameter is ignored for IPCONN definitions used by the CICS Transaction Gateway.

Chapter 17. JOURNALMODEL resources

A JOURNALMODEL resource defines the connection between a CICS journal name (or identifier) and the associated physical log streams managed by the MVS system logger, or between the journal name and the SMF log.

Although they are intended mainly for user journals, you can also define journal models for the system log and forward recovery logs (non-RLS only). However, for forward recovery logs, you are recommended to define all log stream names for forward recovery in the VSAM catalog. This is mandatory for VSAM files processed in RLS mode, but optional for non-RLS mode files.

Unlike the journal control table, you do not need to define a journal model for every journal that CICS uses. Instead, define some generic model definitions that describe the mapping to log stream names for the majority of your CICS journals. You may find that you can use the default models supplied by CICS and need not define any of your own. In addition to generic models, you can define the necessary specific models where special handling is required (for example, SMF logging, or merging with other log streams).

You can change JOURNALMODEL definitions at any time, but any journal entries that CICS has already created using model definition cannot reflect the change unless you first delete the existing entry using a DISCARD JOURNALNAME() command.

Compatibility note: For API compatibility with releases earlier than CICS Transaction Server for z/OS, CICS continues to support numeric journal identifiers in the range 01 through 99, for the following purposes:

- For file control autojournaling, as specified in FILE resources (or for BDAM files, on DFHFCT macro entries)
- For terminal control autojournaling, as specified in PROFILE resource definitions
- For forward recovery logging, as specified in FILE resources
- For user journaling using API journal commands, such as the EXEC CICS WRITE JOURNALNUM command.

JOURNALMODEL attributes

Describes the syntax and attributes of the JOURNALMODEL resource.

```
►►──JOURNALMODEL(name)──GROUP(groupname)──┬──────────────────┬──────────────►
                                          └─DESCRIPTION(text)─┘

►──┬─────────────────────┬──────────────────────────────────────────────────►
   └─JOURNALNAME(journal)─┘

   ┌─STREAMNAME(&USERID..&APPLID..&JNAME.)──────────┐  ┌─TYPE(MVS)───┐
►──┼──────────────────────────────────────────────┼──┼─────────────┼─────►◄
   └─STREAMNAME(stream_name_template)──────────────┘  ├─TYPE(DUMMY)─┤
                                                       └─TYPE(SMF)───┘
```

DESCRIPTION(*text*)
: You can provide a description of the resource that you are defining in this field. The description text can be up to 58 characters in length. No restrictions apply to the characters that you can use. However, if you use parentheses, ensure that for each left parenthesis there is a matching right one. If you use the CREATE command, for each single apostrophe in the text, code two apostrophes.

GROUP(*groupname*)
: Every resource definition must have a GROUP name. The resource definition becomes a member of the group and is installed in the CICS system when the group is installed.

Acceptable characters:

`A-Z 0-9 $ @ #`

Any lowercase characters that you enter are converted to uppercase.

The GROUP name can be up to 8 characters in length. Lowercase characters are treated as uppercase characters. Do not use group names beginning with DFH, because these characters are reserved for use by CICS.

JOURNALMODEL(*name*)
: specifies the name of this JOURNALMODEL definition.

The journal model name is used to refer to a specific JOURNALMODEL definition in the CSD file—it does not have to correspond to a CICS journal name. However, the JOURNALMODEL name is also used as the JOURNALNAME if you omit the JOURNALNAME attribute.

The name can be up to eight characters in length.

Acceptable characters:

`A-Z 0-9 $ @ #`

Unless you are using the CREATE command, any lowercase characters that you enter are converted to uppercase.

JOURNALNAME(*journal*)

specifies the journal names to which this definition applies. If you omit the JOURNALNAME attribute, the name you specify on the JOURNALMODEL attribute is used as the journal name. Name can be either the specific name of a journal or a generic name, although using a generic name for system log and log-of-logs models does not serve much purpose.

The name can be up to eight characters in length.

Acceptable characters:

```
A-Z 0-9 $ @ #
```

Unless you are using the CREATE command, any lowercase characters that you enter are converted to uppercase.

The forms of the names you can define are as follows:

For system logs

To define a JOURNALMODEL for system logs, specify the name as DFHLOG for the primary system log stream, and as DFHSHUNT for the secondary log stream. Install one journal model only for each of these log streams in a CICS region.

CICS-supplied definitions for DFHLOG, DFHSHUNT, and DFHLGLOG are contained in group DFHLGMOD in DFHLIST.

For log-of-logs

To define a JOURNALMODEL for the log-of-logs, specify the name as DFHLGLOG. See the *CICS System Definition Guide* for more information about the purpose of the log of logs.

For autojournals

For autojournals (file control and terminal control), the name must be of the form DFHJ*nn* where *nn* is a number in the range 1 through 99. The name can be either the specific name of a journal or a generic name.

For user journals

For user journals, the name can be up to 8 characters, and can be either the specific name of a journal or a generic name. If compatibility with releases earlier than CICS Transaction Server for z/OS, is required, the name must be of the form DFHJ*nn* where *nn* is a number in the range 1 through 99.

For forward recovery logs (non-RLS)

For non-RLS forward recovery logs, the name must be of the form DFHJ*nn* where *nn* is a number in the range 1 through 99. The name can be either the specific name of a journal or a generic name.

Note: You cannot define a journal model for use with VSAM RLS forward recovery logs. CICS obtains the fully-qualified LSN directly from the VSAM catalog, and therefore does not need a journal model to obtain the LSN.

You define generic names, using the special symbols %, +, and *, as follows:

- You can use the % or + symbols to represent any single character within a journal name.

- You can use the * symbol at end of a name to represent any number of characters. A default name of a single * is used to match any journal names that do match on a more specific name.

If there are several installed JOURNALMODEL definitions that match a journal name, CICS chooses the best match as follows:

1. If there is a JOURNALMODEL with a specific JOURNALNAME that exactly matches, CICS uses this model.
2. If there is no exact match, the journal name is compared with the matching generic entries and the most specific entry is used.

   In comparing names to see which one is more specific, the names are compared character by character. Where they first differ:
   - If one has a discrete character (not %, +, or *) and the other has a generic character (%, +, or *) the one with the discrete character is used.
   - If one has a % or a + and the other has a *, the one with % or + is used.
3. If there are duplicate JOURNALMODEL definitions (that is, definitions with the same JOURNALNAME), CICS uses the last one processed.

Attention: Take care when defining a completely generic journal name using only the single asterisk (*). This is particularly important if you have not defined a specific journal model for the system log (using journal name DFHLOG), and the log stream name is a fully-qualified literal name. If you define a journal model with JOURNALNAME(*) and do not define a journal model for the system log, CICS uses the log stream name defined on the generic model definition. This causes problems if other journals and forward recovery logs are assigned to the same log stream by means of the generic journal model.

STREAMNAME({&USERID..&APPLID..&JNAME.|*stream_name_template*})
specifies either an explicit MVS system logger log stream name, or a template used to construct the log stream name. STREAMNAME is applicable only to journal models defined with a LOGSTREAMTYPE of MVS.

The four symbolic names, from which you can use a maximum of three, are:

&USERID.
The symbolic name for the CICS region userid, which can be up to eight characters. If the region does not have a userid, the string 'CICS' will be used.

&APPLID.
The symbolic name for the CICS region APPLID as specified on the system initialization parameter, and which can be up to eight characters.

Note: If you are using XRF and you specify the APPLID system initialization parameter as APPLID=(generic_applid,specific_applid), it is the generic applid that CICS uses when resolving &APPLID..

&JNAME.
The symbolic name for a journal name that references, either by a specific or generic match, this journal model definition. &JNAME. can be up to eight characters in length.

&SYSID.
The symbolic name for the CICS region SYSID as specified on the SYSIDNT system initialization parameter. If SYSIDNT is not specified, the string 'CICS' will be used.

The default set of symbolic names is: &USERID..&APPLID..&JNAME.

For Example: &USERID..&APPLID..&JNAME. =

CICSHA##.CICSHAA1.DFHJ02

where:

CICSHA##
: is the CICS region userid used by all the AORs.

CICSHAA1
: is the applid of one AOR.

DFHJ02
: is the journal name of an auto journal.

An alternative set of symbolic names could be:

&SYSID..&APPLID..&JNAME. =
SYSA.CICSHAA1.DFHJ02

where:

SYSA is the character string as specified by the SYSIDNT system initialization parameter.

CICSHAA1
: is the applid of one AOR.

DFHJ02
: is the journal name of an auto journal.

CICS installs the JOURNALMODEL resource as defined, including the symbolic names.

stream_name_template
: A log stream name can be either an unqualified name or a qualified name, as defined for MVS data set names:

- **Unqualified name**: 1 through 8 alphanumeric or national characters ($ # @), or a hyphen. The first character of the name must be alphabetic or national (A-Z $ # @).
- **Qualified name**: Multiple names joined by periods, up to a maximum of 26 characters. Each name in a qualified name must follow the rules for an unqualified name, with each qualified name (except the last) followed by a period. For example,

  ```
  name_1.name_2...name_n
  ```

  where the number of names is restricted by the 26-character limit.

For more information about the rules for qualified and unqualified data set names, see *z/OS MVS JCL Reference*.

You can construct log stream names consisting of a mixture of specific characters (from within the allowed set), and symbolic names for substitution. After substitution, the name must meet the rules for qualified and unqualified log stream names, and must not exceed 26 characters, including periods. Thus, if each name in a qualified name uses the maximum of eight characters, you are restricted to three names only, with the first and second names, and the second and third names separated by a period. For example:

```
CICSDA##.CICSDAA1.FWDRECOV
```

for a forward recovery log stream. The log stream name is determined by symbolic substitution when a journal name is first resolved to a JOURNALMODEL definition.

By specifying the same log stream name for multiple CICS general logs, you can merge the log streams from different CICS regions. However, you cannot merge general log streams with the CICS system log, nor can you merge system logs from different CICS regions.

When merging log streams from different CICS systems, the log data blocks are written to their log streams in strict MVS system logger time-stamp sequence. However, the individual records from different CICS regions may not be in strict time-stamp sequence across different blocks

CICS log streams should not be merged with log streams generated by other products unless any programs that read the log stream are prepared to handle the formats.

Security note: When you have defined a log stream name to CICS and the MVS system logger, you must ensure that the required security authorizations are defined to RACF (or an equivalent external security manager). This security authorization is necessary before you attempt to bring up a CICS region that references a new log stream. RACF supports the LOGSTRM general resource class for this purpose.

TYPE({**DUMMY**|**MVS**|**SMF**})
specifies where the journal records are to be written. It can be up to five characters, and can have the following values:

DUMMY
No log records are to be written. For example, you can use this to suppress unwanted log records without changing an application, or without changing file or profile resource definitions.

If you do not want a system log or a log-of-logs, specify DUMMY on the JOURNALMODEL definitions for the DFHLOG, DFHSHUNT, and DFHLGLOG, as required.

MVS Records are to be written to an MVS system logger log stream. The name of the log stream is specified in the STREAMNAME attribute.

SMF Journal records are to be written in SMF format to the MVS SMF log instead of to an MVS system logger log stream.

Note: SMF is not allowed for the CICS system log or for forward recovery logs.

The default JOURNALMODEL

If CICS cannot find an installed JOURNALMODEL definition, it assumes a set of default attributes.

The attributes used are those of the following "built-in" default definition:

```
DEFINE JOURNALMODEL(OTHERS) GROUP(LOGS)
         JOURNALNAME(*)
         STREAMNAME(&USERID..&APPLID..&JNAME.)
         TYPE(MVS)
```

JOURNALNAME(*) is the default journal model that CICS uses if there is no matching JOURNALMODEL entry for a journal name.

Examples

Example of resource definition commands for CICS JOURNLMODELs.

Given the following set of definitions for a CICS AOR with applid CICSHAA3 and region userid CICSHA##:

```
1.  DEFINE JOURNALMODEL(USERJNL8) GROUP(LOGS)
           JOURNALNAME(DFHJ08)
           TYPE(SMF)
```

Records written to autojournal 08 or user journal 08 using an EXEC CICS WRITE JOURNALNAME(DFHJ08)... or EXEC CICS WRITE JOURNALNUM(08)... command are written in SMF format to the MVS SMF data set.

```
2.  DEFINE JOURNALMODEL(USERJNL9) GROUP(LOGS)
           JOURNALNAME(DFHJ09)
           TYPE(DUMMY)
```

Records written to autojournal 09 or user journal 09 using an EXEC CICS WRITE JOURNALNAME(DFHJ09)... or EXEC CICS WRITE JOURNALNUM(09)... command are not written to any log stream, though the application program receives a normal response.

```
3.  DEFINE JOURNALMODEL(UJ10TO19) GROUP(LOGS)
           JOURNALNAME(DFHJ1%)
           STREAMNAME(&USERID..MERGED.USRJRNLS)
           TYPE(MVS)
```

Records written to user journals 10–19 (DFHJ10–DFHJ19) are merged together on log stream CICSHA##.MERGED.USRJRNLS, together with records from any other CICS regions running under the CICSHA## userid and with the same JOURNALMODELs installed.

```
4.  DEFINE JOURNALMODEL(LOGOFLOG) GROUP(LOGS)
           JOURNALNAME(DFHLGLOG)
           STREAMNAME(CICSVR.SHARED.DFHLGLOG)
           TYPE(MVS)
```

File tie-up records and other records written by file control and the CICS log manager to journal DFHLGLOG for use by forward recovery products, such as CICSVR, are written to a shared log stream CICSVR.SHARED.DFHLGLOG. This log stream is shared by all the CICS regions in the sysplex in which this JOURNALMODEL resource definition is installed.

```
5. DEFINE JOURNALMODEL(JNLMODL1) GROUP(LOGS)
          JOURNALNAME(USERJNL*)
          STREAMNAME(&USERID..ANYCORP.&JNAME..UK)
          TYPE(MVS)
```

Records written to any user journals or autojournals that begin with the letters USERJNL are merged together on a log stream with a name that is obtained by substituting the CICS region userid for &USERID. and the journal name for &JNAME..

With only the above examples installed, other forms of journaling, such as terminal control automatic message journaling defined with PROFILE ... JOURNAL(25), use the default JOURNALMODEL, with records written to log stream CICSHA##.CICSHAA3.DFHJ25. See "The default JOURNALMODEL" on page 148.

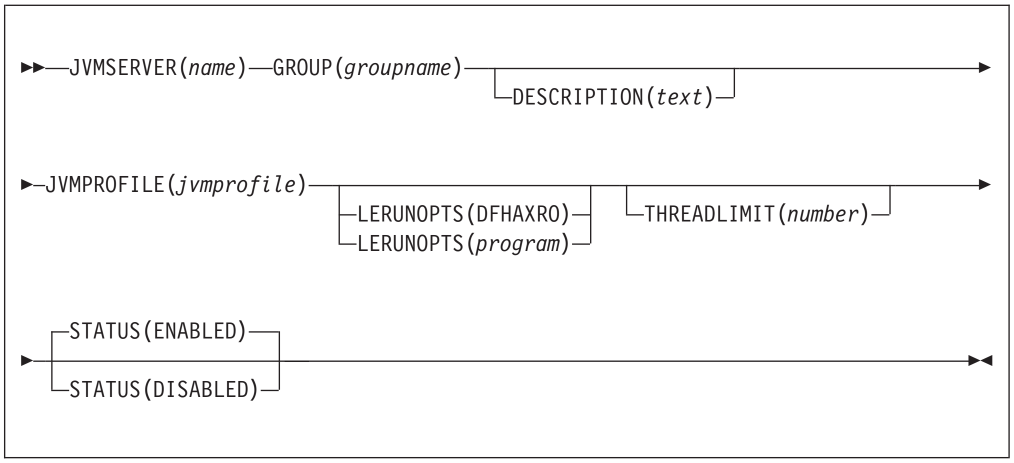
Chapter 18. JVMSERVER resources

A JVMSERVER resource defines the runtime environment for a JVM server.

The JVMSERVER resource defines the location of the JVM profile and the Language Environment options that are required to create a Language Environment enclave and a JVM server in a CICS region.

JVMSERVER attributes

Describes the syntax and attributes of the JVMSERVER resource.



JVMSERVER(*name*)
Specifies the 1 - 8 character name of the JVMSERVER resource.

Acceptable characters:
`A-Z a-z 0-9 $ @ # . - _ % ? ! :	= , ;`

Do not use names beginning with DFH, because these characters are reserved for use by CICS.

DESCRIPTION(*text***)**
In this field, you can provide a description of the resource that you are defining. The description text can be up to 58 characters in length. No restrictions apply to the characters that you may use. However, if you use parentheses, ensure that each left parenthesis has a matching right one. If you use the CREATE command, for each single apostrophe in the text code two apostrophes.

GROUP(*groupname***)**
Every resource definition must have a GROUP name. The resource definition becomes a member of the group and is installed in the CICS system when the group is installed.

Acceptable characters:

```
A-Z 0-9 $ @ #
```

Any lowercase characters that you enter are converted to uppercase.

The GROUP name can be up to 8 characters in length. Do not use group names beginning with DFH, because these characters are reserved for use by CICS.

JVMPROFILE(*jvmprofile*)
Specifies the 1 - 8 character name of the JVM profile for the JVM server. The JVM profile is a file in the z/OS UNIX directory that is specified by the system initialization parameter **JVMPROFILEDIR**. Alternatively, the file can be in another place in the z/OS UNIX file system and be referenced by a UNIX soft link from the **JVMPROFILEDIR** directory. The profile contains the JVM options for running a JVM server.

Acceptable characters:

```
A-Z a-z 0-9 $ @ # . - _ % ? ! : | " = , ; < >
```

LERUNOPTS(**DFHAXRO**|*program*)
Specifies the 1 - 8 character name of the program that defines the runtime options for the Language Environment enclave. DFHAXRO is a supplied program that provides a set of default values. The source for DFHAXRO is in the *hlq*.SDFHSAMP library if you want to change the defaults for any of the Language Environment runtime options.

If you want to use a different program, put the program in the *hlq*.SDFHLOAD library and specify the program name in uppercase characters.

STATUS(**ENABLED**|**DISABLED**)
Specifies the initial status of the JVMSERVER resource when it is installed.

ENABLED
The JVM server runtime environment is available for use.

DISABLED
The JVM server runtime environment is not available for use.

THREADLIMIT(**15**|*number*)
Specifies the maximum number of threads that are allowed in the Language Environment enclave for the JVM server. Each thread runs under a T8 TCB. You can specify a limit in the range of 1 - 256 threads.

If you specify a thread limit that exceeds the maximum of 1024 threads that is allowed for the CICS region, taking into account all other enabled and disabled JVMSERVER resources, CICS allocates the remaining threads up to 1024 to the resource as the thread limit value. If CICS is already at the maximum number of JVMSERVER threads, the resource installs in a disabled state.

Chapter 19. LIBRARY resources

Use the LIBRARY resource to define the physical and operational characteristics of a LIBRARY.

The LIBRARY definition includes attributes that provide the name of the data set, or sets, within the LIBRARY resource and other details about the operational status of the LIBRARY.

There is no 'group commit' for LIBRARY resources. Each LIBRARY in a CSD group is committed separately when the group is installed. To achieve an effect similar to group install, you can use the Disabled status to install a set of LIBRARY resources which would then be SET to an Enablestatus of Enabled after all have been installed

DFHRPL is a special example of a LIBRARY which can not be altered in a running CICS system, and does not appear as a resource in CEDA.

Installing LIBRARY resource definitions

For a new or changed LIBRARY definition to become active in your CICS region, you must install it.

About this task

The following procedure uses the CICS CEDA transaction to install a LIBRARY resource definition which has been defined in a group 'groupname':

1. Install the LIBRARY definition. Use the following command:

   ```
   CEDA INSTALL LIBRARY(libname) GROUP(groupname)
   ```

2. Optionally, if the LIBRARY was defined as disabled, you can use the CEDA ALTER command to enable it:

   ```
   CEDA ALTER LIBRARY(libname) GROUP(groupname) STATUS(ENABLED)
   ```

3. When you have successfully installed the LIBRARY, any programs, map sets and so on that make up the application(s) in the LIBRARY data sets can then be defined to the CICS system, if you have not already done so.

As an alternative to CEDA, you can use the CEMT SET LIBRARY command, or the EXEC CICS SET LIBRARY command in a user-written transaction to disable and enable the LIBRARY.

LIBRARY attributes

Describes the syntax and attributes of the LIBRARY resource.

```
►►──LIBRARY(name)──GROUP(groupname)──┬──────────────────────┬──────────────►
                                     └─DESCRIPTION(text)─┘

   ┌─CRITICAL(NO)──┐                    ┌─RANKING(50)────┐
►──┼───────────────┼──┤ data set names ├──┼────────────────┼───────────────►
   └─CRITICAL(YES)─┘                    ├─RANKING(1-9)───┤
                                        └─RANKING(11-99)─┘

   ┌─STATUS(ENABLED)──┐
►──┼──────────────────┼─────────────────────────────────────────────────►◄
   └─STATUS(DISABLED)─┘
```

data set names:

```
    ┌──────────────────────┐
    ▼                      │
├─────┬─DSNAME01(char44)─┬──┴──────────────────────────────────────────┤
      ├─DSNAME02(char44)─┤
      ├─DSNAME03(char44)─┤
      ├─DSNAME04(char44)─┤
      ├─DSNAME05(char44)─┤
      ├─DSNAME06(char44)─┤
      ├─DSNAME07(char44)─┤
      ├─DSNAME08(char44)─┤
      ├─DSNAME09(char44)─┤
      ├─DSNAME10(char44)─┤
      ├─DSNAME11(char44)─┤
      ├─DSNAME12(char44)─┤
      ├─DSNAME13(char44)─┤
      ├─DSNAME14(char44)─┤
      ├─DSNAME15(char44)─┤
      └─DSNAME16(char44)─┘
```

CRITICAL({**NO**|**YES**})
Indicates whether this LIBRARY is critical to the running of CICS. This determines the behavior if the LIBRARY can not be installed during startup, for example if a data set within the LIBRARY definition is not found or cannot be allocated for one of the following reasons:

- If the LIBRARY is CRITICAL
  - If the LIBRARY is being created during CICS startup (through grouplist install, BAS install, a PLTPI program or restore from the catalog), a 'GO or CANCEL' message is issued to allow the operator to decide whether to override the criticality and allow CICS to start, or to indicate that startup should be failed. Note that if the reply is to continue with the startup, the LIBRARY is not recataloged as NONCRITICAL, but the critical status can be changed to NONCRITICAL if you decide that the LIBRARY should not be regarded as CRITICAL in future.

  - If the LIBRARY is not being created during CICS startup, the criticality of the LIBRARY has no impact on the behavior of install.
- If the LIBRARY is non CRITICAL
  - if the LIBRARY is being created during CICS startup (through grouplist install, BAS install, a PLTPI program or restore from the catalog), the LIBRARY is installed but disabled, a warning message is issued, and CICS startup will continue. A later attempt can be made to resolve the problem and enable the LIBRARY.
  - if the LIBRARY is not being installed during CICS startup, then the criticality of the LIBRARY has no impact on the behavior of install.

DFHRPL is predefined as CRITICAL and cannot be changed. Any problems will cause CICS startup to fail and an error message will be issued.

DSNAME01-16(Name)
The names of up to 16 data sets that contain program artifacts and that are to make up the LIBRARY concatenation. The data sets are concatenated together when the LIBRARY is installed in the order in which they are named, for example, DSNAME01 before DSNAME02 and so on, but it is not necessary for all of the data set attributes to be filled in sequentially, for example, DSNAME01 could be blank. However, at least one of the data set attributes must have a value. See the *CICS System Definition Guide* for further information

GROUP(*groupname*)
Every resource definition must have a GROUP name. The resource definition becomes a member of the group and is installed in the CICS system when the group is installed.

Acceptable characters:

```
A-Z 0-9 $ @ #
```

Any lowercase characters that you enter are converted to uppercase.

The GROUP name can be up to 8 characters in length. Lowercase characters are treated as uppercase characters. Do not use group names beginning with DFH, because these characters are reserved for use by CICS.

RANKING(1-99)
RANKING is a fullword binary value containing a decimal number which determines where this LIBRARY should appear in the overall LIBRARY search order. A lower number indicates that this LIBRARY is searched for programs to load before other LIBRARY resources with higher ranking numbers. The ranking is analogous to the concatenation number of a data set within a LIBRARY concatenation, although it differs in a number of ways.

RANKING can take values between 1 and 99, with a default of 50. A value of 10 is reserved for DFHRPL, the static LIBRARY, and cannot be specified.

The DFHRPL concatenation is assigned a predefined ranking of 10. This value cannot be changed. It allows dynamically defined LIBRARY resources to be placed before the DFHRPL concatenation in the overall search order by giving them a ranking value smaller than 10.

Note:

- You should regard as a temporary situation to have LIBRARY resources with a ranking that places them before DFHRPL in the search order.

- Although the predefined DFHRPL ranking of 10 is intended to discourage the placing of LIBRARY resources before DFHRPL in the search order, it does not limit the total number of LIBRARY resources that can be placed before DFHRPL providing the ranking between the LIBRARY resources themselves is not significant. If you specify a RANKING of less than 10 you will get a message to say that this LIBRARY will appear ahead of DFHRPL in the search order.
- No ranking change will take effect until a NEWCOPY or PHASEIN request is issued, or the program is loaded for the first time if it has not already been loaded.

STATUS({**ENABLED**|**DISABLED**})
Indicates whether the LIBRARY is to be enabled or disabled when it is created. When a LIBRARY is created as enabled, CICS attempts to allocate and then concatenate the data sets, before finally opening the LIBRARY concatenation. If any of these steps fail, then those that had already succeeded are undone, and the LIBRARY is installed as disabled. A message will be issued indicating which step failed.

When a LIBRARY is created with as disabled, CICS does not attempt to allocate or concatenate the data sets.

Chapter 20. LSRPOOL resources

The LSRPOOL resource defines the size and characteristics of the local shared resources (LSR) pool. The LSR pool is a reserve of data buffers, strings, and Hiperspace buffers that VSAM uses when processing access requests for certain files.

A Hiperspace buffer is a high-performance storage area in the MVS image. This area is used for reading and writing 4 KB pages. The type of Hiperspace used by VSAM resides entirely in expanded storage, which is additional processor storage used only for paging to and from real storage.

Up to 255 LSR pools can be defined concurrently in the system, each identified by its LSRPOOLNUM. This LSRPOOLNUM is used to associate a FILE with an LSR pool if that file is to use shared resources.

When the LSRPOOL definition is installed in the active system, its information is stored and used when the pool with the specified ID is next built. A pool is built when the first file that uses a particular LSR pool is opened, and is dynamically deallocated only when no files are currently open against that pool. This means that when an LSRPOOL definition is installed into the system it might not take effect immediately.

CICS sets default attributes if an LSRPOOL is not defined, but you are advised to define the LSRPOOL anyway, for reasons of performance. In a production system, for example, delay might be incurred while pool requirements are being calculated by CICS. Another possible problem is that if files are not allocated at the time the pool is built, the data set names are not known to CICS. In this case, the pool is built based on the information available, but the subsequent performance of the system can suffer or files might fail to open.

You can associate the CSD file with a particular LSRPOOL by specifying the **CSDLSRNO** system initialization parameter. The default is pool 1; ensure that sufficient buffers of an appropriate size are provided to permit the CSD file to be used by CICS. See the *CICS System Definition Guide* for further information about CSDLSRNO and for details about calculating the buffer requirements for the CSD file.

LSRPOOL attributes

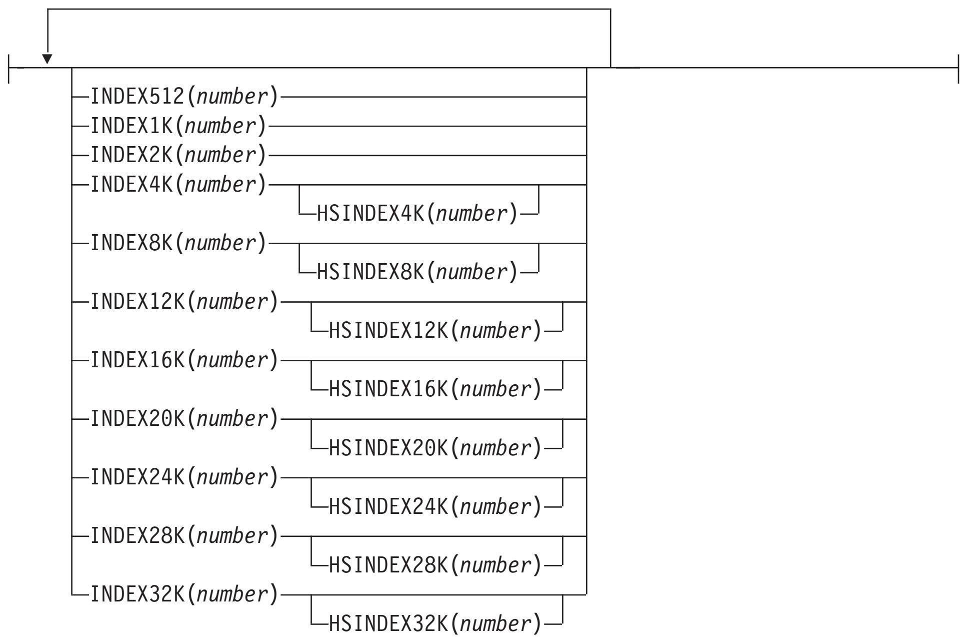
Describes the syntax and attributes of the LSRPOOL resource.

```
►►──LSRPOOL(name)──GROUP(groupname)──┬────────────────────┬──────────────────────►
                                     └─DESCRIPTION(text)──┘

                                          ┌─LSRPOOLNUM(1)──────┐
►──┬────────────────────────────────┬─────┼────────────────────┼─────────────────►
   └─┤ Data buffers ├─┤ Index buffers ├─┘ └─LSRPOOLNUM(number)─┘

►──┬──────────────────────┬──┬────────────────────┬──┬─────────────────┬─────►◄
   └─MAXKEYLENGTH(number)─┘  └─SHARELIMIT(number)─┘  └─STRINGS(number)─┘
```

Data buffers:

```
     ┌────────────────────────────────────────┐
     ▼                                        │
├────┬─DATA512(number)──────────────────────┬─┴──────────────────────────────┤
     ├─DATA1K(number)───────────────────────┤
     ├─DATA2K(number)───────────────────────┤
     ├─DATA4K(number)───┬──────────────────┬┤
     │                  └─HSDATA4K(number)─┘│
     ├─DATA8K(number)───┬──────────────────┬┤
     │                  └─HSDATA8K(number)─┘│
     ├─DATA12K(number)──┬───────────────────┬┤
     │                  └─HSDATA12K(number)─┘│
     ├─DATA16K(number)──┬───────────────────┬┤
     │                  └─HSDATA16K(number)─┘│
     ├─DATA20K(number)──┬───────────────────┬┤
     │                  └─HSDATA20K(number)─┘│
     ├─DATA24K(number)──┬───────────────────┬┤
     │                  └─HSDATA24K(number)─┘│
     ├─DATA28K(number)──┬───────────────────┬┤
     │                  └─HSDATA28K(number)─┘│
     └─DATA32K(number)──┬───────────────────┬┘
                        └─HSDATA32K(number)─┘
```

Index buffers:



DATA BUFFERS
Specify the number of data buffers of each size that you require, in the range 3 through 32767. These attributes do not have default values.

DATA512(*number*)
Specifies the number, in the range 3 through 32767, of 512 byte data buffers you require.

DATA1K(*number*)
Specifies the number, in the range 3 through 32767, of 1 KB data buffers you require.

DATA2K(*number*)
Specifies the number, in the range 3 through 32767, of 2 KB data buffers you require.

DATA4K(*number*)
Specifies the number, in the range 3 through 32767, of 4 KB data buffers you require.

DATA8K(*number*)
Specifies the number, in the range 3 through 32767, of 8 KB data buffers you require.

DATA12K(*number*)
Specifies the number, in the range 3 through 32767, of 12 KB data buffers you require.

DATA16K(*number*)
Specifies the number, in the range 3 through 32767, of 16 KB data buffers you require.

DATA20K(*number*)
Specifies the number, in the range 3 through 32767, of 20 KB data buffers you require.

DATA24K(*number*)
Specifies the number, in the range 3 through 32767, of 24 KB data buffers you require.

DATA28K(*number*)
Specifies the number, in the range 3 through 32767, of 28 KB data buffers you require.

DATA32K(*number*)
Specifies the number, in the range 3 through 32767, of 32 KB data buffers you require.

DESCRIPTION(*text*)
You can provide a description of the resource that you are defining in this field. The description text can be up to 58 characters in length. No restrictions apply to the characters that you can use. However, if you use parentheses, ensure that for each left parenthesis there is a matching right one. If you use the CREATE command, for each single apostrophe in the text, code two apostrophes.

GROUP(*groupname*)
Every resource definition must have a GROUP name. The resource definition becomes a member of the group and is installed in the CICS system when the group is installed.

Acceptable characters:

```
A-Z 0-9 $ @ #
```

Any lowercase characters that you enter are converted to uppercase.

The GROUP name can be up to 8 characters in length. Lowercase characters are treated as uppercase characters. Do not use group names beginning with DFH, because these characters are reserved for use by CICS.

HIPERSPACE DATA BUFFERS
Specify the number of Hiperspace data buffers of each size that you require, in the range 0 through 16777215. If you leave these fields blank, there are no default values.

Note: If you specify a value for a Hiperspace data buffer of a given size, you must also specify a value for the data buffer of the same size.

HSDATA4K(*number*)
Specifies the number, in the range 0 through 16777215, of 4 KB Hiperspace data buffers you require.

HSDATA8K(*number*)
Specifies the number, in the range 0 through 16777215, of 8 KB Hiperspace data buffers you require.

HSDATA12K(*number*)
Specifies the number, in the range 0 through 16777215, of 12 KB Hiperspace data buffers you require.

HSDATA16K(*number*)
Specifies the number, in the range 0 through 16777215, of 16 KB Hiperspace data buffers you require.

HSDATA20K(*number*)
Specifies the number, in the range 0 through 16777215, of 20 KB Hiperspace data buffers you require.

HSDATA24K(*number*)
Specifies the number, in the range 0 through 16777215, of 24 KB Hiperspace data buffers you require.

HSDATA28K(*number*)
Specifies the number, in the range 0 through 16777215, of 28 KB Hiperspace data buffers you require.

HSDATA32K(*number*)
Specifies the number, in the range 0 through 16777215, of 32 KB Hiperspace data buffers you require.

HIPERSPACE INDEX BUFFERS
Specify the number of Hiperspace index buffers of each size that you require, in the range 0 through 16777215. If you leave these fields blank, there are no default values.

Note: If you specify a value for a Hiperspace index buffer of a given size, you must also specify a value for the index buffer of the same size.

HSINDEX4K(*number*)
Specifies the number, in the range 0 through 16777215, of 4 KB Hiperspace index buffers you require.

HSINDEX8K(*number*)
Specifies the number, in the range 0 through 16777215, of 8 KB Hiperspace index buffers you require.

HSINDEX12K(*number*)
Specifies the number, in the range 0 through 16777215, of 12 KB Hiperspace index buffers you require.

HSINDEX16K(*number*)
Specifies the number, in the range 0 through 16777215, of 16 KB Hiperspace index buffers you require.

HSINDEX20K(*number*)
Specifies the number, in the range 0 through 16777215, of 20 KB Hiperspace index buffers you require.

HSINDEX24K(*number*)
Specifies the number, in the range 0 through 16777215, of 24 KB Hiperspace index buffers you require.

HSINDEX28K(*number*)
Specifies the number, in the range 0 through 16777215, of 28 KB Hiperspace index buffers you require.

HSINDEX32K(*number*)
Specifies the number, in the range 0 through 16777215, of 32 KB Hiperspace index buffers you require.

INDEX BUFFERS
Specify the number of index buffers of each size that you require, in the range 3 through 32767. If you leave these fields blank, there are no default values.

INDEX512(*number*)
Specifies the number, in the range 3 through 32767, of 512 byte index buffers you require.

INDEX1K(*number*)
: Specifies the number, in the range 3 through 32767, of 1 KB index buffers you require.

INDEX2K(*number*)
: Specifies the number, in the range 3 through 32767, of 2 KB index buffers you require.

INDEX4K(*number*)
: Specifies the number, in the range 3 through 32767, of 4 KB index buffers you require.

INDEX8K(*number*)
: Specifies the number, in the range 3 through 32767, of 8 KB index buffers you require.

INDEX12K(*number*)
: Specifies the number, in the range 3 through 32767, of 12 KB index buffers you require.

INDEX16K(*number*)
: Specifies the number, in the range 3 through 32767, of 16 KB index buffers you require.

INDEX20K(*number*)
: Specifies the number, in the range 3 through 32767, of 20 KB index buffers you require.

INDEX24K(*number*)
: Specifies the number, in the range 3 through 32767, of 24 KB index buffers you require.

INDEX28K(*number*)
: Specifies the number, in the range 3 through 32767, of 28 KB index buffers you require.

INDEX32K(*number*)
: Specifies the number, in the range 3 through 32767, of 32 KB index buffers you require.

LSRPOOL(*name*)
: Specifies the name of the local shared resource pool being defined. The name can be up to 8 characters in length.

If only DATA BUFFERS is specified, one set of buffers is built for the pool to be used for both the index and the data components of a VSAM KSDS data set.

If no data buffers are specified, CICS calculates the buffers required for both data and index components, both components sharing the same set of buffers.

If INDEX BUFFERS is specified, two parts of the pool are built, one for data and the other for index buffers. If you specify INDEX BUFFERS, you must also specify DATA BUFFERS.

LSRPOOLID({**1**|*lsrpool*})
: This attribute is obsolete, but is supported to provide compatibility with earlier releases of CICS.

| The value specified for LSRPOOLID in existing definitions is transferred to the
| new option LSRPOOLNUM.

LSRPOOLNUM({<u>1</u>|*number*})
Specifies the identifier of the local shared resource pool that is being defined. The value must be in the range 1 through 255.

MAXKEYLENGTH(*number*)
Specifies the maximum key length of any of the files that are to share resources. The value must be in the range 0 through 255. This value overrides part of the CICS resource calculation. If you do not specify it, CICS determines the maximum key length, recalculating it each time the LSR is rebuilt.

SHARELIMIT(*number*)
Specifies, as an integer, the percentage of the maximum amount of VSAM resources to be allocated. The number can be any value from 1 through 100.

Specify SHARELIMIT if CICS is to calculate the maximum amount of resources required by the VSAM files that are to share resources. Because these resources are to be shared, some percentage of this maximum amount of resources must be allocated. If this attribute is omitted, 50 percent of the maximum amount of resources is allocated.

If both the STRINGS and SIZE attributes are specified, SHARELIMIT has no effect.

STRINGS(*number*)
Specifies the limit, in the range 1 through 255, of all the strings of the files in the pool. For more information, see Number of buffers and strings for LSR and NSR poolsin the CICS Performance Guide.

Chapter 21. MAPSET resources

A MAPSET resource defines a BMS map sets.

Each interactive application using a display device can use specific screen layouts, or maps. These are not specified in the program itself. Instead, you use basic mapping support (BMS). This gives greater flexibility and allows the maps to be used by multiple invocations of the same program, or by several different programs. You specify maps, and the fields on them, using the DFHMSD, DFHMDI, and DFHMDF macros. For further guidance on this, see the *CICS Application Programming Guide*.

Instead of using the BMS map definition macros, you can define maps interactively with the Screen Definition Facility II (SDF II) program product, program numbers 5665-366 (for MVS) and 5664-307 (for VM). SDF II allows you to paint a screen interactively. You can then generate the screen to get the equivalent of a CICS/BMS map set. The test facilities of SDF II also enable you to see your map in its run-time appearance. For background information, see the *Screen Definition Facility II Primer for CICS/BMS Programs* and *Screen Definition Facility II General Information*.

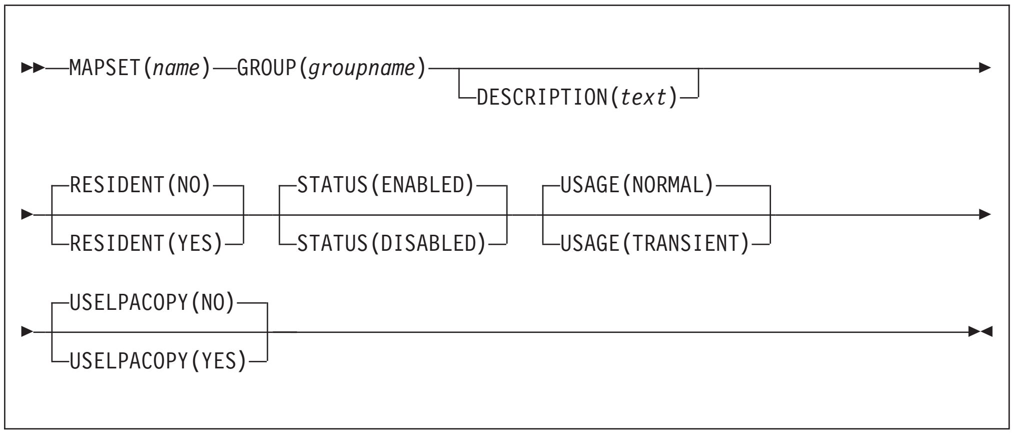
An application can use a series of related maps at different times during the interaction with the user. It can also use several related maps at the same time and on the same display, to build up a complete screen.

These related maps belong to a map set, which you specify in a MAPSET definition. Even if your program has only one map, this must still belong to a map set. You can define your MAPSETs either by using CEDA or DFHCSDUP, or by setting the appropriate system initialization parameters to enable them to be autoinstalled. See “Autoinstalling programs, map sets, and partition sets” on page 497 for further information about autoinstall.

There is no link through resource definitions between a program and its map sets. Instead, you specify the MAPSET name in the BMS SEND MAP and RECEIVE MAP commands in your program.

MAPSET attributes

Describes the syntax and attributes of the MAPSET resource.



DESCRIPTION(*text*)
You can provide a description of the resource that you are defining in this field. The description text can be up to 58 characters in length. No restrictions apply to the characters that you can use. However, if you use parentheses, ensure that for each left parenthesis there is a matching right one. If you use the CREATE command, for each single apostrophe in the text, code two apostrophes.

GROUP(*groupname*)
Every resource definition must have a GROUP name. The resource definition becomes a member of the group and is installed in the CICS system when the group is installed.

Acceptable characters:
`A-Z 0-9 $ @ #`
Any lowercase characters that you enter are converted to uppercase.

The GROUP name can be up to 8 characters in length. Lowercase characters are treated as uppercase characters. Do not use group names beginning with DFH, because these characters are reserved for use by CICS.

MAPSET(*name*)
specifies the name of this MAPSET definition. The name can be up to eight characters in length.

Acceptable characters:
`A-Z 0-9 $ @ #`
Unless you are using the CREATE command, any lowercase characters that you enter are converted to uppercase.

Do not use map set names beginning with DFH, because these characters are reserved for use by CICS.

For a BMS device-dependent map set, the map set name must be derived by adding the map set suffix to the original (1-to 7-character) map set name. The suffix depends on the parameter specified in the TERM operand of the DFHMSD macroinstruction that defined the map set.

To use device-dependent suffixes, you need to specify BMS=(,,,DDS) as a system initialization parameter. For information on map set suffixes, see the *CICS Application Programming Guide*.

RESIDENT({NO|YES})
specifies the residence status of the map set.

NO The map set is not to be permanently resident.

YES The map set is to be loaded on first reference and is then to be permanently resident in virtual storage, but is to be pageable by the operating system.

RSL
This attribute is obsolete, but is supported to provide compatibility with earlier releases of CICS. For more information, see Appendix A, "Obsolete attributes," on page 831.

STATUS({ENABLED|DISABLED})
specifies the map set status.

DISABLED
The map set may not be used.

ENABLED
The map set may be used.

USAGE({NORMAL|TRANSIENT})
specifies when the storage for this map set will be released.

NORMAL
When the use count of the map set reaches zero, it will become eligible for removal from storage as part of the normal dynamic storage compression process.

TRANSIENT
When the use count for this map set becomes zero, the storage for this map set is released. This value should be specified for map sets that are referenced infrequently.

USELPACOPY({NO|YES})
specifies whether the map set is to be used from the link pack area (LPA).

NO The map set is not to be used from the LPA. It is loaded into the CICS partition.

YES The map set can be used from the LPA if LPA=YES is specified as a system initialization parameter. The use of the map set from the LPA requires that it has been installed there and that the map set is not named by the PRVMOD start-up option. For further guidance on this, see the *CICS Transaction Server for z/OS Installation Guide*

Chapter 22. MQCONN resources

An MQCONN resource defines the attributes of the connection between CICS and WebSphere MQ. You can install or discard an MQCONN resource only when CICS is not connected to WebSphere MQ.

Only one MQCONN resource can be installed at a time in a CICS region. When you define an MQCONN resource, CICS checks to ensure that there is only one MQCONN resource defined in the group or list. If more than one is found, even one with a different name, a warning message is issued. If you do install a second MQCONN resource, CICS implicitly discards the existing MQCONN resource before proceeding with the installation, unless you are reinstalling an MQCONN resource with the same name.

When you have installed the MQCONN resource, you can use the CEMT or EXEC CICS SET MQCONN command, CICSPlex SM, or the CICS Explorer to start the connection between CICS and WebSphere MQ.

When you install an MQCONN resource that includes a setting for the INITQNAME attribute, CICS also dynamically creates and installs an MQINI resource. The MQINI resource represents the default initiation queue that is specified by the INITQNAME attribute of the MQCONN resource. The name of the MQINI resource is DFHMQINI, and its attribute INITQNAME specifies the initiation queue name.

You can use the EXEC CICS or CEMT INQUIRE MQINI command to inquire on the INITQNAME attribute of the dynamically created MQINI resource. If you want to change it, you must reinstall the MQCONN resource with an appropriate INITQNAME attribute. The MQINI resource is discarded when the MQCONN resource is discarded.

When you discard an MQCONN resource that includes a setting for the INITQNAME attribute, the dynamically created MQINI resource that represents the default initiation queue specified by the INITQNAME attribute is also discarded.

MQCONN attributes

Describes the syntax and attributes of the MQCONN resource.

```
►►──MQCONN(name)──GROUP(groupname)──┬─────────────────────┬──────────────►
                                    └─DESCRIPTION(text)───┘

                                    ┌─RESYNCMEMBER(YES)──────────┐
►──┬──────────────────┬──MQNAME(name)──┼────────────────────────────┼──────►◄
   └─INITQNAME(name)──┘                ├─RESYNCMEMBER(NO)───────────┤
                                       └─RESYNCMEMBER(GROUPRESYNC)──┘
```

Attributes

DESCRIPTION(*text*)
In this field, you can provide a description of the resource that you are defining. The description text can be up to 58 characters in length. No restrictions apply to the characters that you may use. However, if you use parentheses, ensure that each left parenthesis has a matching right one. If you use the CREATE command, for each single apostrophe in the text code two apostrophes.

GROUP(*groupname*)
Every resource definition must have a GROUP name. The resource definition becomes a member of the group and is installed in the CICS system when the group is installed.

Acceptable characters:
`A-Z 0-9 $ @ #`
Any lowercase characters that you enter are converted to uppercase.

The GROUP name can be up to 8 characters in length. Do not use group names beginning with DFH, because these characters are reserved for use by CICS.

INITQNAME(*name*)
Specifies the 1 - 48 character name of the default initiation queue for this CICS-WebSphere MQ connection.

Acceptable characters:
`A-Z a-z 0-9 . / _ %`

When you install the MQCONN resource definition, if you have specified a non-blank INITQNAME attribute, CICS installs an implicit MQINI resource to represent the default initiation queue. The name of the MQINI resource is DFHMQINI, and its attribute INITQNAME specifies the default initiation queue name. You can inquire on this resource, but you cannot explicitly create, discard, or set the resource. If you want to change it, you must reinstall the MQCONN resource definition with an appropriate INITQNAME attribute.

If you specify the name of a default initiation queue when you start the CICS-WebSphere MQ connection by using the CKQC START command, the setting for the INITQNAME attribute in the installed MQINI resource definition is replaced with the name of the default initiation queue that you specified on the command.

MQCONN(*name*)
Specifies the 8-character name of this resource definition.

Acceptable characters:
`A-Z 0-9 $ @ #`
Unless you are using the CREATE command, any lowercase characters that you enter are converted to uppercase.

MQNAME(*name*)
Specifies the 1 - 4 character name of either a single WebSphere MQ queue manager, or a queue-sharing group of WebSphere MQ queue managers.

- If you specify a single queue manager, when you start the CICS-WebSphere MQ connection, CICS connects only to this queue manager.
- If you specify a queue-sharing group, when you start the connection, CICS connects to any active member of this group on the same LPAR. Use the RESYNCMEMBER attribute to specify what happens when CICS is holding outstanding units of work for the last queue manager to which it connected from the queue-sharing group.
- If you specify RESYNCMEMBER(GROUPRESYNC) then MQNAME must be the name of a queue-sharing group.

Acceptable characters:
`A-Z 0-9 $ @ #`

The name of the queue manager or queue-sharing group must not start with a numeric character.

WebSphere MQ uses the @ symbol to pad queue-sharing group names that are less than four characters long. When you specify a queue-sharing group that is less than four characters long, do not include the @ symbols at the end; CICS adds the padding before querying the queue-sharing group. For example, if the queue-sharing group is defined to WebSphere MQ as DEV@, specify DEV as the value of the MQNAME attribute.

If you specify the name of an alternative WebSphere MQ queue manager or queue-sharing group on the CEMT or EXEC CICS SET MQCONN command, or specify a queue manager name when you start the CICS-WebSphere MQ connection by using the CKQC START command, CICS connects to that alternative queue manager or queue-sharing group. In addition, your setting for the MQNAME attribute in the installed MQCONN definition is replaced with the name of the queue manager or queue-sharing group that you specified on the command. If you want to revert to the original queue manager or queue-sharing group, set MQNAME again.

RESYNCMEMBER({YES|NO|GROUPRESYNC})
This attribute applies only if you have used the MQNAME attribute to specify a WebSphere MQ queue-sharing group. RESYNCMEMBER specifies the strategy that CICS adopts if outstanding units of work are being held for the last queue manager to which CICS was connected from the queue-sharing group.

Changing the setting for RESYNCMEMBER must be done only when all resources are in a consistent state; that is, there are no indoubt units of work outstanding otherwise CICS is not able to resynchronize the WebSphere MQ units of work. It is important to ensure that all resources are in a consistent state before changing RESYNCMEMBER to or from GROUPRESYNC.

YES CICS connects to the same queue manager, waiting, if necessary, until the queue manager becomes active to resolve the indoubt units of work. YES is the default.

NO CICS makes one attempt to connect to the same queue manager. If that attempt fails, CICS connects to any member of the queue-sharing group and issues the warning message DFHMQ2064 about the outstanding units of work.

GROUPRESYNC
CICS connects to any member of the queue-sharing group. The queue manager is chosen by WebSphere MQ and it asks CICS to resolve indoubt units of work on behalf of all eligible queue managers in the

queue-sharing group. This function is called *group unit of recovery*. The GROUPRESYNC option can be used only when you are running WebSphere MQ 7.1, or higher, that supports group unit of recovery for CICS and when group unit of recovery is enabled in the queue managers.

Do not change the setting for RESYNCMEMBER when units of work are outstanding in WebSphere MQ, because units of work cannot be resolved. A unit of work held in CICS is identified with a resource manager qualifier. When RESYNCMEMBER(GROUPRESYNC) is used the qualifier is the name of the queue-sharing group, otherwise the qualifier used is the name of the individual queue manager.

Units of work that are shunted indoubt are not included in this process, because CICS itself cannot resolve those units of work at this time. Resynchronization for those UOWs occurs when CICS has resynchronized with its remote coordinator.

Chapter 23. PARTITIONSET resources

A PARTITIONSET resource defines a partition set, that is, is a table that describes to CICS how to partition a display screen.

Partition sets are created by coding and assembling a series of commands.

The screen areas of some display devices (the 8775 Display Terminal and the IBM 3290 Information Panel, for example), can be divided into **partitions**, which can be treated as several different small displays. Different programs or program steps in a transaction can write to or receive input from different partitions.

You specify the partition set with DFHPSD and DFHPDI macros, described for programming purposes in the *CICS Application Programming Reference*.

You specify each different partition configuration as a PARTITIONSET. PARTITIONSET definitions are created using CEDA or DFHCSDUP, or they can be autoinstalled if the appropriate system initialization parameters have been set. See “Autoinstalling programs, map sets, and partition sets” on page 497 for information.

You can name the PARTITIONSET that you want the transaction to use in the TRANSACTION definition. When the transaction starts, the information is loaded into the internal buffer of the display device.

Alternatively, if you do not specify a PARTITIONSET, CICS sets the display device to its base state before the transaction is initiated.

The transaction may require CICS to load a PARTITIONSET, or change to a new one, by issuing the BMS SEND PARTNSET command. This loads the partition set dynamically, if its definition has been installed in the active CICS system.

Instead of using the BMS partition definition macros, you can define partitions interactively with the Screen Definition Facility II (SDF II) program product, program numbers 5665-366 (for MVS) and 5664-307 (for VM). SDF II allows you to paint a screen interactively. You can then generate the screen to get the equivalent of a CICS/BMS partitionset. The test facilities of SDF II also enable you to see your partition in its run-time appearance. For general information, see *Screen Definition Facility II Primer for CICS/BMS Programs* and *Screen Definition Facility II General Information*.

PARTITIONSET attributes

Describes the syntax and attributes of the PARTITIONSET resource.

```
►►──PARTITIONSET(name)──GROUP(groupname)──┬──────────────────────┬──────────►
                                          └─DESCRIPTION(text)─┘

   ┌─RESIDENT(NO)──┐  ┌─STATUS(ENABLED)──┐  ┌─USAGE(NORMAL)────┐
►──┼───────────────┼──┼──────────────────┼──┼──────────────────┼──────────►
   └─RESIDENT(YES)─┘  └─STATUS(DISABLED)─┘  └─USAGE(TRANSIENT)─┘

   ┌─USELPACOPY(NO)──┐
►──┼─────────────────┼────────────────────────────────────────────────────►◄
   └─USELPACPOY(YES)─┘
```

DESCRIPTION(*text*)
: You can provide a description of the resource that you are defining in this field. The description text can be up to 58 characters in length. No restrictions apply to the characters that you can use. However, if you use parentheses, ensure that for each left parenthesis there is a matching right one. If you use the CREATE command, for each single apostrophe in the text, code two apostrophes.

GROUP(*groupname*)
: Every resource definition must have a GROUP name. The resource definition becomes a member of the group and is installed in the CICS system when the group is installed.

Acceptable characters:

`A-Z 0-9 $ @ #`

Any lowercase characters that you enter are converted to uppercase.

The GROUP name can be up to 8 characters in length. Lowercase characters are treated as uppercase characters. Do not use group names beginning with DFH, because these characters are reserved for use by CICS.

PARTITIONSET(*name*)
: specifies the name of this PARTITIONSET definition. The name can be up to eight characters in length.

Acceptable characters:

`A-Z 0-9 $ @ #`

Unless you are using the CREATE command, any lowercase characters that you enter are converted to uppercase.

Do not use partition set names beginning with DFH, because these characters are reserved for use by CICS.

For a device-dependent partition set, the partition set name must be derived by adding the partition set suffix to the original (1- to 6-character) partition set name. The suffix depends on the parameter specified in the SUFFIX operand of the DFHPSD macro instruction that defined the partition set.

To use device-dependent suffixes, you need to specify BMS=(,,,DDS) as a system initialization parameter.

RESIDENT({NO|YES})
specifies the residence status of the partition set.

NO The partition set is not to be permanently resident.

YES The partition set is to be loaded on first reference and is then to be permanently resident in virtual storage, but is to be pageable by the operating system.

RSL
This attribute is obsolete, but is supported to provide compatibility with earlier releases of CICS. For more information, see Appendix A, "Obsolete attributes," on page 831.

STATUS({ENABLED|DISABLED})
specifies the partition set status.

DISABLED
The partition set may not be used.

ENABLED
The partition set may be used.

USAGE({NORMAL|TRANSIENT})
specifies when the storage for this partition set is released.

NORMAL
When the use count for this partition set reaches zero, it becomes eligible for removal from storage as part of the normal dynamic program compression process.

TRANSIENT
When the use count for this partition set becomes zero, the storage for this partition set is released. This value should be specified for partition sets that are referenced infrequently.

USELPACOPY({NO|YES})
specifies whether the partition set is to be used from the link pack area (LPA).

NO The partition set is not to be used from the LPA. It is loaded into the CICS partition.

YES The partition set can be used from the LPA if LPA=YES is specified as a system initialization parameter. The use of the partition set from the LPA requires that it has been installed there and that the partition set is not named by the PRVMOD start-up option. For more details on this, see the *CICS Transaction Server for z/OS Installation Guide*.

Chapter 24. PARTNER resources

A PARTNER resource enables CICS application programs to communicate, using APPC protocols, with a partner application program running on a remote logical unit.

The interaction between a CICS application program and a partner application program is called a *conversation*.

The PARTNER definition also facilitates the use of the call to the interface with the communications element of the System Application Architecture (SAA). For more information on the SAA communications interface, see the *Common Programming Interface Communications Reference*.

To allow the SAA communications interface to be used, you must specify the following resources:

- A PROFILE definition (see Chapter 27, “PROFILE resources,” on page 189)
- A CONNECTION definition (see Chapter 7, “CONNECTION resources,” on page 45)
- A SESSIONS definition (see Chapter 30, “SESSIONS resources,” on page 219)

You can define your CICS partner information in one of two ways:

- Create a PARTNER definition
- In an application program, by setting SYMDESTNAME to a null value, and issuing the appropriate CPI SET calls. See the *CPI-C Communications Reference* for further details.

Installing partner definitions

When you install a PARTNER definition, CICS attempts to resolve references to CONNECTION and PROFILE definitions.

About this task

CICS then creates an entry for the PARTNER definition in the *partner resource table* (PRT). See Defining remote resources for DTPin the *CICS Intercommunication Guide* for more information.

Because it is possible for programs to use the SAA communications interface SET calls to change the PARTNER name and the TPNAME name, CICS does not check that the CONNECTION definition is present when the PARTNER resource is being installed.

If you leave out the PROFILE attribute, CICS uses the default profile DFHCICSA. Because it is not possible for an SAA communications interface program to set a different profile, the PROFILE must be installed before the PARTNER resource. However, the PARTNER install does not fail if the PROFILE is missing; instead, a run-time error occurs when the partner conversation is attempted.

The MODENAME specified in the PROFILE need not be specified in a corresponding SESSIONS definition, as it is possible for the SAA communications interface program to set a different value for MODENAME.

CICS programs, and SAA communications interface programs that do not use the SET calls, require that all the relevant definitions be installed. You can use CEDA CHECK to help find out if all required definitions are in a group.

PARTNER attributes

Describes the syntax and attributes of the PARTNER resource.

```
►►──PARTNER(name)──GROUP(groupname)──┬──────────────────────┬──────────────────►
                                     └─DESCRIPTION(text)─┘

                                              ┌─PROFILE(DFHCICSA)─┐
►─NETNAME(netname)──┬────────────────────┬───┼───────────────────┼──────────►
                    └─NETWORK(network)─┘   └─PROFILE(profile)──┘

►──┬─TPNAME(tpname)───┬───────────────────────────────────────────────────►◄
   └─XTPNAME(xtpname)─┘
```

DESCRIPTION(*text*)
: You can provide a description of the resource that you are defining in this field. The description text can be up to 58 characters in length. No restrictions apply to the characters that you can use. However, if you use parentheses, ensure that for each left parenthesis there is a matching right one. If you use the CREATE command, for each single apostrophe in the text, code two apostrophes.

GROUP(*groupname*)
: Every resource definition must have a GROUP name. The resource definition becomes a member of the group and is installed in the CICS system when the group is installed.

Acceptable characters:

`A-Z 0-9 $ @ #`

Any lowercase characters that you enter are converted to uppercase.

The GROUP name can be up to 8 characters in length. Lowercase characters are treated as uppercase characters. Do not use group names beginning with DFH, because these characters are reserved for use by CICS.

NETNAME(*netname*)
: is the netname of the logical unit on which the partner application program is running. It matches the NETNAME attribute specified in the CONNECTION definition. The name can be up to eight characters in length.

Acceptable characters:

`A-Z 0-9 $ @ #`

Unless you are using the CREATE command, any lowercase characters that you enter are converted to uppercase.

NETWORK(*network*)
You can use this optional attribute to specify the name of the network on which the partner LU is located. The name can be up to eight characters in length.

Acceptable characters:

`A-Z 0-9 $ @ #`

Unless you are using the CREATE command, any lowercase characters that you enter are converted to uppercase.

PARTNER(*name*)
specifies the name of this PARTNER definition. The name can be up to eight characters in length.

Acceptable characters:

`A-Z 0-9`

Unless you are using the CREATE command, any lowercase characters that you enter are converted to uppercase.

Do not use partner names beginning with DFH, because these characters are reserved for use by CICS.

A partner definition specifies the SAA communications interface information required to establish a conversation with a partner program. For further guidance on this, see *Common Programming Interface Communications Reference*.

PROFILE(*profile*)
specifies the name of the PROFILE definition which is to be used for the session and conversation. The default PROFILE is DFHCICSA. The name can be up to 8 characters in length.

Acceptable characters:

`A-Z a-z 0-9 $ @ # . / - _ % & ? ! : | " = ¬ , ; < >`

TPNAME(*tpname*)
specifies the name of the remote transaction program that will be running on the partner LU. The definition of a remote TP name is mandatory; you must specify either TPNAME or its alternative, XTPNAME. This name can be up to 64 characters in length.

Acceptable characters:

`A-Z a-z 0-9 $ @ # . / - _ % & ? ! : | " = ¬ , ; < >`

If this range of characters is not sufficient for a name that you want to specify, you may use the XTPNAME attribute instead of TPNAME.

XTPNAME(*xtpname*)
This attribute may be used as an alternative to TPNAME; you **must** specify one of the two, because the definition of a remote TP name is mandatory.

Enter a hexadecimal string up to 128 characters in length, representing the name of the remote transaction program that runs on the partner LU. All hexadecimal combinations are acceptable **except X'40'**.

To specify an XTPNAME more than 72 characters long to DFHCSDUP, put an asterisk in column 72. This causes the following line to be concatenated.

Chapter 25. PIPELINE resources

A PIPELINE resource is used when a CICS application is in the role of a Web service provider or requester. It provides information about the message handler programs that act on a service request and on the response. Typically, a single PIPELINE definition defines an infrastructure that can be used by many applications.

The information about the processing nodes is supplied indirectly: the PIPELINE specifies the name of a z/OS UNIX file containing an XML description of the nodes and their configuration.

An inbound Web service request (that is, a request by which a client invokes a Web service in CICS) is associated with a PIPELINE resource by the URIMAP resource. The URIMAP identifies the PIPELINE resource that applies to the URI associated with the request; the PIPELINE specifes the processing that is to be performed on the message.

PIPELINE attributes

Describes the syntax and attributes of the PIPELINE resource.

```
►►──PIPELINE(name)──GROUP(groupname)──┬──────────────────────┬──────────────────────►
                                      └─DESCRIPTION(text)─┘

                      ┌─SHELF(/var/cicsts)─┐   ┌─STATUS(ENABLED)──┐
►─CONFIGFILE(name)────┼────────────────────┼───┼──────────────────┼───────────────────►
                      └─SHELF(directory)───┘   └─STATUS(DISABLED)─┘

►──┬─────────────────┬──┬──────────────────┬────────────────────────────────────────►◄
   └─RESPWAIT(value)─┘  └─WSDIR(directory)─┘
```

PIPELINE(*name*)
Specifies the name of this PIPELINE. The name can be up to eight characters in length.

Acceptable characters:
`A-Z 0-9 $ @ #`
Unless you are using the CREATE command, any lowercase characters that you enter are converted to uppercase.

GROUP(*groupname*)
Every resource definition must have a GROUP name. The resource definition becomes a member of the group and is installed in the CICS system when the group is installed.

Acceptable characters:

`A-Z 0-9 $ @ #`

Any lowercase characters that you enter are converted to uppercase.

The GROUP name can be up to 8 characters in length. Lowercase characters are treated as uppercase characters. Do not use group names beginning with DFH, because these characters are reserved for use by CICS.

DESCRIPTION(*text*)
You can provide a description of the resource that you are defining in this field. The description text can be up to 58 characters in length. No restrictions apply to the characters that you can use. However, if you use parentheses, ensure that for each left parenthesis there is a matching right one. If you use the CREATE command, for each single apostrophe in the text, code two apostrophes.

CONFIGFILE(*name*)
Specifies the name of a z/OS UNIX file that contains information about the processing nodes that will act on a service request, and on the response.

The value specified must be a valid name for a UNIX file:
- It must not contain imbedded space characters.
- It must not contain consecutive instances of the / character.
- It is case-sensitive.

Acceptable characters:

`A-Z a-z 0-9 . / _ # @ -`

RESPWAIT(*value*)
Specifies the number of seconds that an application program should wait for a response message from a remote Web service. The value can range from 0 to 9999 seconds.

If you want to use the default timeout value of the transport protocol, specify `DEFT`.

- The default timeout value for HTTP is 10 seconds.
- The default timeout value for WebSphere MQ is 60 seconds.

SHELF({**/var/cicsts/**|*directory*})
Specifies the 1–255 character fully-qualified name of a directory (a *shelf*, primarily for Web service binding files) on z/OS UNIX.

The value specified must be a valid name for a UNIX file:
- It must not contain imbedded space characters.
- It must not contain consecutive instances of the / character.
- It is case-sensitive.

Acceptable characters:

`A-Z a-z 0-9 . / _ # @ -`

CICS regions into which the PIPELINE definition is installed must have full permissions to the shelf directory—read, write, and the ability to create subdirectories.

A single shelf directory can be shared by multiple CICS regions and by multiple PIPELINE definitions. Within a shelf directory, each CICS region uses a separate subdirectory to keep its files separate from those of other CICS regions. Within each region's directory, each PIPELINE uses a separate subdirectory.

After a CICS region performs a cold or initial start, it deletes its subdirectories from the shelf before trying to use the shelf.

You should not attempt to modify the contents of a shelf that is referred to by an installed PIPELINE definition. If you do, the effects are unpredictable.

STATUS({**ENABLED**|**DISABLED**})
Specifies the initial status of the PIPELINE when it is installed:

ENABLED
Web service requests for this PIPELINE are processed normally.

DISABLED
Web service requests for this PIPELINE cannot be processed.

WSDIR(*directory*)
specifies the 1–255 character fully-qualified name of the *Web service binding directory* (also known as the *pickup directory*) on z/OS UNIX. Each PIPELINE installed in a CICS region must specify a different Web service binding directory.

The value specified must be a valid name for a UNIX file:
- It must not contain imbedded space characters.
- It must not contain consecutive instances of the / character.
- It is case-sensitive.

Acceptable characters:

```
A-Z a-z 0-9 . / _ # @ -
```

The Web service binding directory contains Web service binding files that are associated with a PIPELINE, and that are to be installed automatically by the CICS scanning mechanism. When the PIPELINE definition is installed, CICS scans the directory and automatically installs any Web service binding files it finds there. Note that this happens regardless of whether the PIPELINE is installed in enabled or disabled state.

If you specify a value for the WSDIR attribute, it must refer to a valid z/OS UNIX directory to which the CICS region has at least read access. If this is not the case, any attempt to install the PIPELINE resource will fail.

If you do not specify a value for WSDIR, no automatic scan takes place on installation of the PIPELINE.

Chapter 26. PROCESSTYPE resources

A PROCESSTYPE resource defines a BTS process-type. It names the CICS file which relates to the physical VSAM data set (repository) on which details of all processes of this type (and their activity instances) are to be stored.

Using the CICS business transaction services (BTS) API, you can define and execute complex business applications called *processes*. A process is represented in memory as a block of storage containing information relevant to its execution. It also has associated with it at least one additional block of information called an activity instance. When not executing under the control of the CICS business transaction services domain, a process and its activity instances are written to a data set called a *repository*.

You can categorize your BTS processes by assigning them to different process-types. This is useful, for example, for browsing purposes. The activities that constitute a process are of the same process-type as the process itself.

Note: Records for multiple process-types can be written to the same repository data set.

Figure 2 shows the relationship between PROCESSTYPE definitions, FILE definitions, and BTS repository data sets:

- More than one PROCESSTYPE resources can refer to the same FILE.
- More than one FILE can refer to the same BTS repository data set.

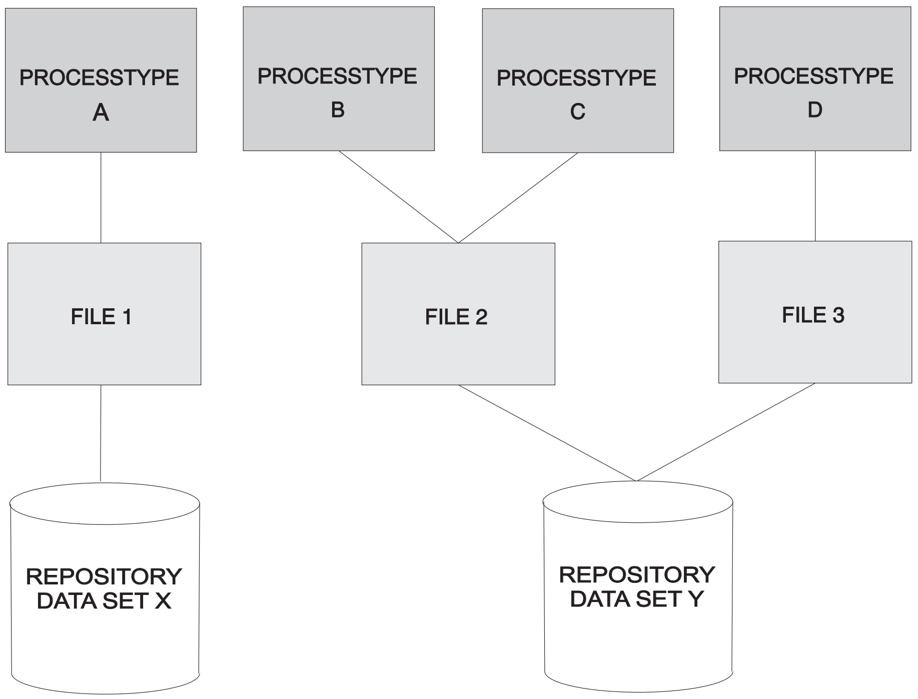


Figure 2. PROCESSTYPE definitions, FILE definitions, and BTS repository data sets

You may want to record the progress of BTS processes and activities for audit purposes, and to help diagnose errors in BTS applications. If so, you can name the CICS journal to which audit records are to be written, and the level of auditing that is required, for processes of the specified type.

PROCESSTYPE attributes

Describes the syntax and attributes of the PROCESSTYPE resource.

```
►►──PROCESSTYPE(name)──GROUP(groupname)──┬───────────────────┬──FILE(file)──────►
                                         └─DESCRIPTION(text)─┘

                          ┌─AUDITLEVEL(OFF)──────┐ ┌─STATUS(ENABLED)──┐
►──┬──────────────────┬───┼──────────────────────┼─┼──────────────────┼──────►◄
   └─AUDITLOG(journal)┘   ├─AUDITLEVEL(ACTIVITY)─┤ └─STATUS(DISABLED)─┘
                          ├─AUDITLEVEL(FULL)─────┤
                          └─AUDITLEVEL(PROCESS)──┘
```

AUDITLEVEL({**OFF**|**PROCESS**|**ACTIVITY**|**FULL**})
specifies the initial level of audit logging for processes of this type. If you specify any value other than OFF, you must also specify the AUDITLOG option.

ACTIVITY
Activity-level auditing. Audit records will be written from:
1. The process audit points
2. The activity primary audit points.

FULL Full auditing. Audit records will be written from:
1. The process audit points
2. The activity primary *and* secondary audit points.

OFF No audit trail records will be written.

PROCESS
Process-level auditing. Audit records will be written from the process audit points only.

For details of the records that are written from the process, activity primary, and activity secondary audit points, see the *CICS Business Transaction Services*

AUDITLOG(*journal*)
specifies the name of a CICS journal to which audit trail records will be written, for processes of this type and their constituent activities. The name can be up to eight characters long. If you do not specify an audit log, no audit records will be kept for processes of this type.

DESCRIPTION(*text*)
You can provide a description of the resource that you are defining in this field. The description text can be up to 58 characters in length. No restrictions apply to the characters that you can use. However, if you use parentheses, ensure that for each left parenthesis there is a matching right one. If you use the CREATE command, for each single apostrophe in the text, code two apostrophes.

FILE(*file*)
specifies the name of the CICS file definition that will be used to write the process and activity records of this process-type to its associated repository data set. The name can be up to eight characters long.

Acceptable characters:
`A-Z 0-9 $ @ #`
Unless you are using the CREATE command, any lowercase characters that you enter are converted to uppercase.

GROUP(*groupname*)
Every resource definition must have a GROUP name. The resource definition becomes a member of the group and is installed in the CICS system when the group is installed.

Acceptable characters:
`A-Z 0-9 $ @ #`
Any lowercase characters that you enter are converted to uppercase.

The GROUP name can be up to 8 characters in length. Lowercase characters are treated as uppercase characters. Do not use group names beginning with DFH, because these characters are reserved for use by CICS.

PROCESSTYPE(*name*)
specifies the name of this PROCESSTYPE definition.

Acceptable characters:
`A-Z a-z 0-9 $ @ # . / - _ % & ? ! : | " = ¬ , ; < >`

The name can be up to eight characters in length.. Leading and embedded blank characters are not permitted. If the name supplied is less than eight characters, it is padded with trailing blanks up to eight characters.

STATUS({<u>ENABLED</u>|DISABLED})
specifies the initial status of the process-type following a CICS initialization with START=COLD or START=INITIAL. After initialization, you can use the CEMT SET PROCESSTYPE command to change the status of the process-type. The status of the process-type following a restart is recovered to its status at the previous shutdown.

DISABLED
Processes of this type cannot be created. An EXEC CICS DEFINE PROCESS request that tries to create a process of this type results in the INVREQ condition being returned to the application program.

<u>ENABLED</u>
Processes of this type can be created.

Chapter 27. PROFILE resources

A PROFILE resource specifies options that control the interactions between transactions and terminals or logical units. The PROFILE is a means of standardizing the use of such options as screen size and printer compatibility, and the use of such functions as message journaling and the node error program.

MODENAME
: A profile is associated with the communication between a transaction and an LUTYPE6.1 or APPC session to another system. For APPC sessions, you refer on the PROFILE definition to the MODENAME that is also named on the SESSIONS definitions. This MODENAME is the name of the mode set to which the sessions belong. See Chapter 7, "CONNECTION resources," on page 45.

When installed in CICS, the information from the PROFILE definition creates an entry in the profile table. This entry is later used by each transaction that references that PROFILE.

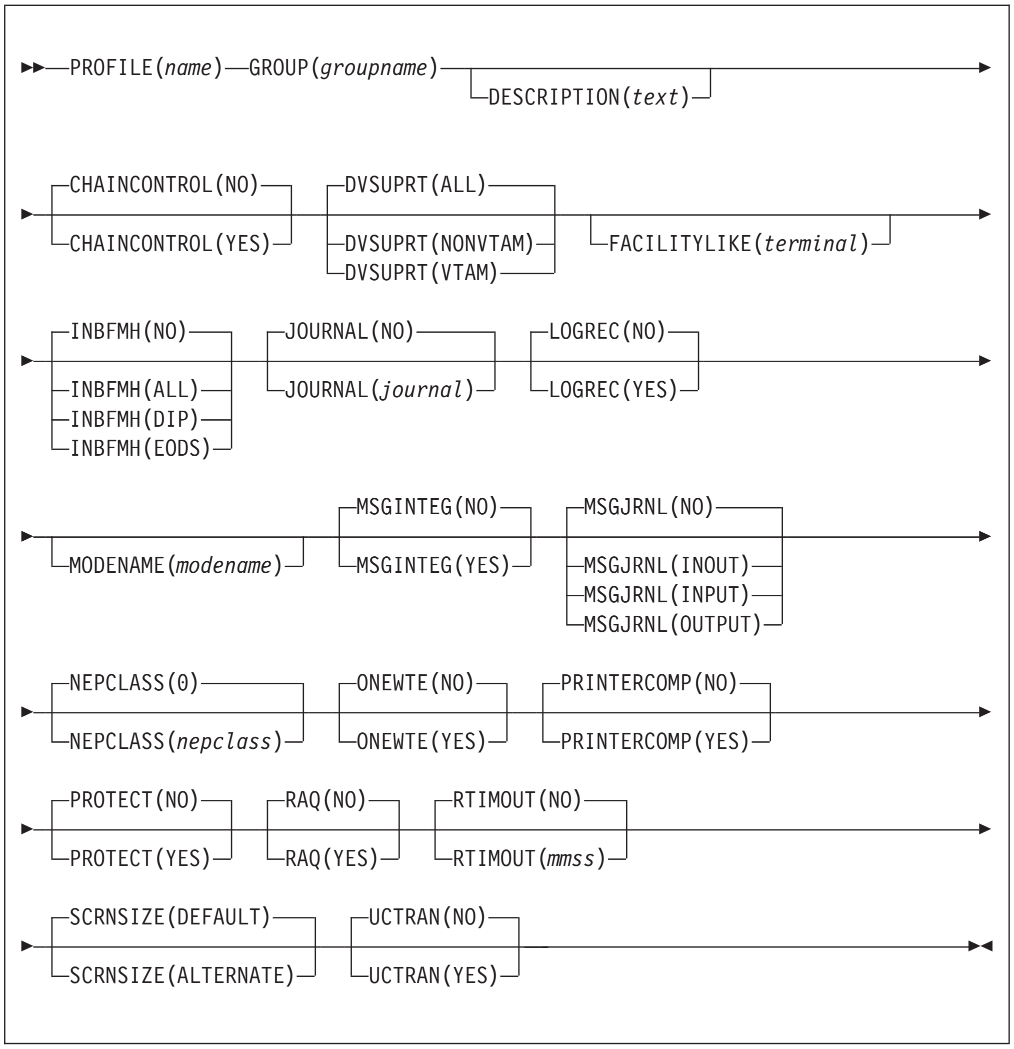
There are CICS-supplied PROFILE definitions suitable for most purposes. Each TRANSACTION definition names the PROFILE to be used. If you do not specify a PROFILE, the transaction uses the PROFILE supplied for using a terminal in a standard way.

With CICS intercommunication facilities (for example, function shipping), a PROFILE is needed for the communication between the transaction and the session. The attributes of the CICS-supplied profiles are shown in "PROFILE definitions in group DFHISC" on page 878. the *CICS Intercommunication Guide* gives further information about the CICS-supplied PROFILEs, and tells you about defining your own profiles.

PROFILE attributes

Describes the syntax and attributes of the PROFILE resource.

Note: VTAM is now z/OS Communications Server.



CHAINCONTROL({NO|**YES**})
: specifies whether the application program can control the outbound chaining of request units. If you specify CHAINCONTROL(YES), ONEWTE(YES) means one chain and not one terminal control output request.

DESCRIPTION(*text*)
: You can provide a description of the resource that you are defining in this field. The description text can be up to 58 characters in length. No restrictions apply to the characters that you can use. However, if you use parentheses, ensure that for each left parenthesis there is a matching right one. If you use the CREATE command, for each single apostrophe in the text, code two apostrophes.

DVSUPRT({ALL|**NONVTAM**|**VTAM**})
: specifies the devices (terminals or logical units) that are to be supported. The access method used by a particular terminal or logical unit is specified in its associated TCTTE.

ALL The profile can be used with any terminal or logical unit.

NONVTAM
The profile can be used only with non-z/OS Communications Server terminals.

VTAM
The profile can be used only with logical units.

FACILITYLIKE(*terminal*)
This is an optional attribute that specifies the name of an existing (four-character) terminal resource definition to be used as a template for the bridge facility. It can be overridden by specifying FACILITYLIKE in the bridge exit.

There is no default value for this attribute.

If you are running in a CICS system started with the VTAM=NO system initialization (SIT) parameter, the resource definition specified by FACILITYLIKE must be defined as a remote terminal.

GROUP(*groupname*)
Every resource definition must have a GROUP name. The resource definition becomes a member of the group and is installed in the CICS system when the group is installed.

Acceptable characters:

`A-Z 0-9 $ @ #`

Any lowercase characters that you enter are converted to uppercase.

The GROUP name can be up to 8 characters in length. Lowercase characters are treated as uppercase characters. Do not use group names beginning with DFH, because these characters are reserved for use by CICS.

INBFMH({NO|ALL|DIP|EODS}) (SNA LUs only)
specifies, for profiles used with logical units, whether a function management header (FMH) received from a logical unit is to be passed to the application program.

ALL All FMHs (except APPC FMHs and LU6.1 ATTACH and SYNCPOINT FMHs that are processed by CICS) are passed to the application program. This value is required for function shipping transactions such as CSMI, transactions which use distributed transaction processing, and for distributed program link requests.

DIP The batch data interchange program (DFHDIP) is to process inbound FMHs. BMS issues a batch data interchange receive request if a BMS receive request has been issued, and a batch data interchange receive request is issued instead of a terminal control receive request.

EODS An FMH is passed to the application program only if it indicates end of data set (EODS).

NO The FMHs are discarded.

JOURNAL({NO|*journal*})
specifies that you want automatic journaling of messages to take place, by giving the identifier of the journal.

NO No automatic journaling of messages is to take place.

journal The journal identification to be used for automatic journaling. This can be any number in the range 01 through 99. This number is appended to the letters DFHJ to give a journal identification of the form DFHJ*nn* and this maps to an MVS system logger general log stream.

Note: In CICS Transaction Server for z/OS, DFHJ01 is not the system log.
In a transaction routing environment, message journaling is performed in the application-owning region (AOR). Therefore, you should specify the JOURNAL attribute on the transaction profile in the AOR.

LOGREC({**<u>NO</u>**|**YES**})
specifies whether the design of the application requires that each EXEC CICS RECEIVE request is to be satisfied by a logical record. This option allows existing 2770-and 2780-based application programs to be attached to a batch logical unit (for example, 3790 or 8100) without modification to the program.

MODENAME(*modename*)
specifies the name that identifies a group of sessions for use on an APPC connection. The name can be up to eight characters in length, and must be the name of a z/OS Communications Server LOGMODE entry defined to z/OS Communications Server. It must not be the reserved name SNASVCMG. If you omit the modename, it defaults to blanks. See the *CICS Intercommunication Guide* for more information about z/OS Communications Server modenames.

If a transaction that specifies this profile has been started using an EXEC CICS START command, the MODENAME is used for allocation of the principal facility. If a transaction performs an EXEC CICS ALLOCATE command specifying this profile, the MODENAME is used for allocation of the alternate facility.

If you do not specify a MODENAME, CICS selects a session from any one of the mode sets that have been defined.

The CICS-supplied profile DFHCICSA is used, if PROFILE is not specified on an EXEC CICS ALLOCATE command. For function shipping, the profile DFHCICSF is always used. MODENAME is not specified on the definition for either of these profiles, but you can add a MODENAME if you make your own copy. You must then ensure that the mode sets using your MODENAME have been defined in the TERMINAL or SESSIONS definition for all the systems with which communication takes place using APPC.

If a MODENAME is specified and you want to remove it, delete completely the value previously specified by pressing the ERASE EOF key.

MSGINTEG({**<u>NO</u>**|**YES**}) **(SNA LUs only)**
specifies whether a definite response is to be requested with an output request to a logical unit. You cannot specify YES for a pipeline transaction.

MSGJRNL({**<u>NO</u>**|**INPUT**|**OUTPUT**|**INOUT**})
specifies which messages are to be automatically journaled. If you specify a value other than NO, you must also supply a value for the JOURNAL attribute.

<u>NO</u> No message journaling is required.

INPUT
Journaling is required for input messages.

OUTPUT
Journaling is to be performed for output messages.

INOUT
Journaling is to be performed for input and output messages.

In a transaction routing environment, message journaling is performed in the application-owning region (AOR) for routed APPC (LU type 6.2) sessions, and you should specify the MSGJRNL attribute on the transaction profile in the AOR. For other routed sessions, message journaling is performed in the terminal-owning region (TOR). In this case, you should specify the MSGJRNL attribute on the transaction profile in the TOR.

NEPCLASS({<u>**0**</u>|*nepclass*}) **(z/OS Communications Server only)**
specifies the node error program transaction class. This value overrides the value specified on the TYPETERM and SESSION definitions.

<u>**0**</u> This results in a link to the default node error program module for z/OS Communications Server devices, or is the default value for non-z/OS Communications Server devices.

value The transaction class for the (nondefault) node error program module. The value can be in the range 1 through 255. For programming information on the node error program, see the *CICS Customization Guide*

The NEPCLASS attribute applies only to user transactions, and is ignored for SNASVCMGR sessions.

ONEWTE({<u>**NO**</u>|**YES**})
specifies whether the transaction is permitted only one write operation or EXEC CICS SEND during its execution. YES has the effect of forcing the LAST option on the first write of the transaction. Any additional write requests are treated as errors, and the task is made ready for abnormal termination.

You must specify YES for a PIPELINE transaction.

PRINTERCOMP({<u>**NO**</u>|**YES**})
specifies the level of compatibility required for the generation of data streams to support the printer compatibility option for the BMS SEND TEXT command.

<u>**NO**</u> Each line of output starts with a blank character, so that the format is equivalent to that on a 3270 display where an attribute byte precedes each line.

YES No blank character is inserted, so that forms-feed characters included as the first character of your data are honored and the full width of the printer is available for your data.

If you use the BMS forms feed option, specify YES.

PROFILE(*name*)
specifies the name of this PROFILE definition. The name can be up to eight characters in length.

Acceptable characters:
`A-Z a-z 0-9 $ @ # . / - _ % & ? ! : | " = ¬ , ; < >`

Do not use profile names beginning with DFH, because these characters are reserved for use by CICS.

Note: If you use a comma (,) in a name, you will be unable to use those commands such as

```
CEMT INQUIRE PROFILE(value1,value2)
```

where the comma serves as a list delimiter. See *CICS Supplied Transactions* for information about using lists of resource identifiers.

A profile specifies the options that control the interaction between CICS and a terminal or logical unit. A profile name is specified on the transaction definition to indicate the set of options that control the communication between the transaction and its principal terminal. You can also specify a profile name on an EXEC CICS ALLOCATE command to indicate the options that control communication between the transaction and the allocated session.

CICS supplies a number of profile definitions that are suitable for most purposes. For more information, see the *CICS Intercommunication Guide*.

PROTECT
This attribute is obsolete, but is supported to provide compatibility with earlier releases of CICS. For more information, see Appendix A, "Obsolete attributes," on page 831.

RAQ({NO|YES}) (SNA terminals only)
specifies whether the 'read ahead queuing' option is required.

NO The transaction obeys SNA protocols and only SEND and RECEIVE when in the correct mode. If it does not follow the protocol, it may be abended with code ATCV.

YES The transaction may not obey SNA protocols, and CICS queues incoming data on temporary storage until the data is specifically requested by the transaction. RAQ(YES) is provided only for compatibility with transactions that support both bisynchronous devices and logical units, and its use is not recommended.

RTIMOUT({NO|*mmss*})
specifies the time-out value:

- For the read time-out feature. The task that is timed out receives an AKCT , AZCT or AZIG abend. (Note that if a value is specified and you want to let it default to NO, you must completely delete the value previously specified.)
- To terminate an IIOP request processor task that has been waiting for a method request for longer than the RTIMOUT value.

RTIMOUT has no effect for basic (unmapped) APPC connections.

NO The read time-out feature is not required.

value This is an interval (MMSS for minutes and seconds) after which the task is terminated if no input has been received from the terminal. The maximum value that can be specified is 70 minutes.

SCRNSIZE({DEFAULT|ALTERNATE})
specifies whether the DEFAULT or ALTERNATE buffer size for a 3270 display or printer is to be used. For further information on the choice of screen sizes and buffer sizes, refer to the ALTSCREEN and DEFSCREEN attributes on the TYPETERM definition.

The SCRNSIZE value is ignored if the TYPETERM definition has ALTSCREEN(0,0) and DEFSCREEN(0,0). That is, the screen size is assumed from the related TERMMODEL attribute in the TYPETERM definition; the page size is taken from PAGESIZE, and the ALTPAGE value is ignored. The 3270 erase write (EW) command is inserted for output requests with the ERASE option.

ALTERNATE
If the TYPETERM definition has nonzero ALTSCREEN, the alternate screen size mode is applied, using the erase write alternate (EWA) command. That is, whenever a terminal output request with the

ERASE option is issued, the 3270 EWA command is inserted in the data stream. The ALTSCREEN value is assumed as the screen size, and BMS uses the value in ALTPAGE as the page size.

SCRNSIZE(ALTERNATE) may be used for all CICS service transactions (for example, CSMT).

DEFAULT

If the TYPETERM definition has nonzero ALTSCREEN or nonzero DEFSCREEN, the default screen size mode is applied, using the erase write (EW) command. That is, whenever the terminal issues a terminal output request with the ERASE option, the 3270 EW command is inserted in the data stream. The screen size specified in the DEFSCREEN attribute is assumed, and BMS uses the value specified in the PAGESIZE attribute as the page size.

Note: Both DEFAULT and ALTERNATE can be overridden by the DEFAULT and ALTERNATE options on the SEND MAP, SEND TEXT, and SEND CONTROL commands.

UCTRAN({NO|YES}) (z/OS Communications Server only)

specifies whether terminal input is to be translated to uppercase before passing to programs for the transaction using this profile.

You can also request translation to uppercase at the terminal level on the associated TYPETERM definition (see "TYPETERM attributes" on page 341) but be aware of the following points:

- A TYPETERM UCTRAN(YES) definition overrides a PROFILE UCTRAN(NO) definition. So, if you specify TYPETERM UCTRAN(YES), a PROFILE UCTRAN(NO) has no effect.
- A PROFILE UCTRAN(YES) definition overrides a TYPETERM UCTRAN(NO) definition.
- Specifying TYPETERM UCTRAN(TRANID) causes the tranid to be translated to uppercase so that CICS can locate the transaction definition. All other input received by the application is translated according to what is specified for PROFILE UCTRAN.
- UCTRAN(YES) on a profile definition does not cause translation of the input data until an EXEC CICS RECEIVE or CONVERSE is executed. This means that if the transaction is routed through a dynamic routing program, for example DFHDYP, the copy of the input data passed to the routing program is unaffected by the UCTRAN option of the PROFILE definition.

Note: In a transaction routing environment where your z/OS Communications Server terminals have a remote definition on the AOR, and the AOR has a different UCTRAN value from the TOR, the TOR value of UCTRANST (as specified in an EXEC CICS SET TERMINAL command) overrides that on the AOR.

Table 9 shows which portion of the terminal input is translated (transaction id and/or data) according to the setting of the UCTRAN on the PROFILE and TYPETERM resource definitions.

Table 9. The effect of UCTRAN attributes on tranid and data translation

UCTRAN in PROFILE	UCTRAN in TYPETERM	TRANID translated?	Data Translated?
YES	YES	Yes	Yes
YES	NO	No	Yes

Table 9. The effect of UCTRAN attributes on tranid and data translation (continued)

UCTRAN in PROFILE	UCTRAN in TYPETERM	TRANID translated?	Data Translated?
YES	TRANID	Yes	Yes
NO	YES	Yes	Yes
NO	NO	No	No
NO	TRANID	Yes	No

Some national-language characters are not automatically translated when UCTRAN(YES) is specified. If that is the case, you can use one of the methods described in the *CICS Customization Guide*.

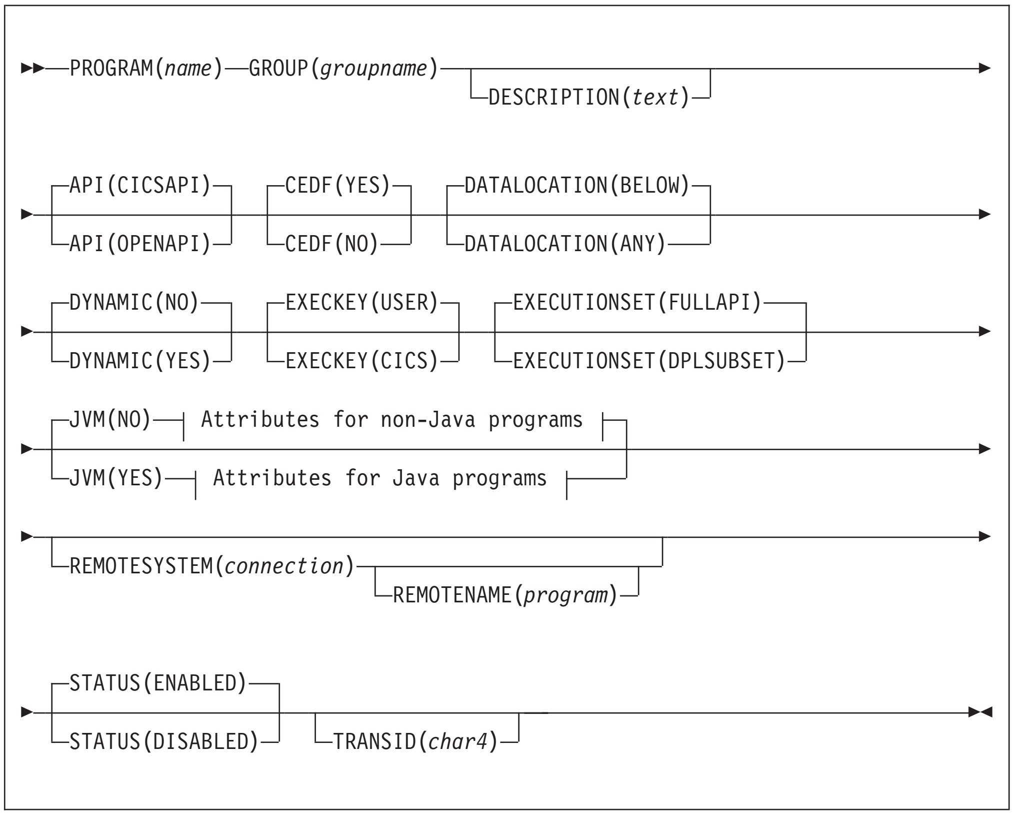
Chapter 28. PROGRAM resources

A PROGRAM resources describes the control information for a program that is stored in the program library and used to process a transaction, or part of a transaction.

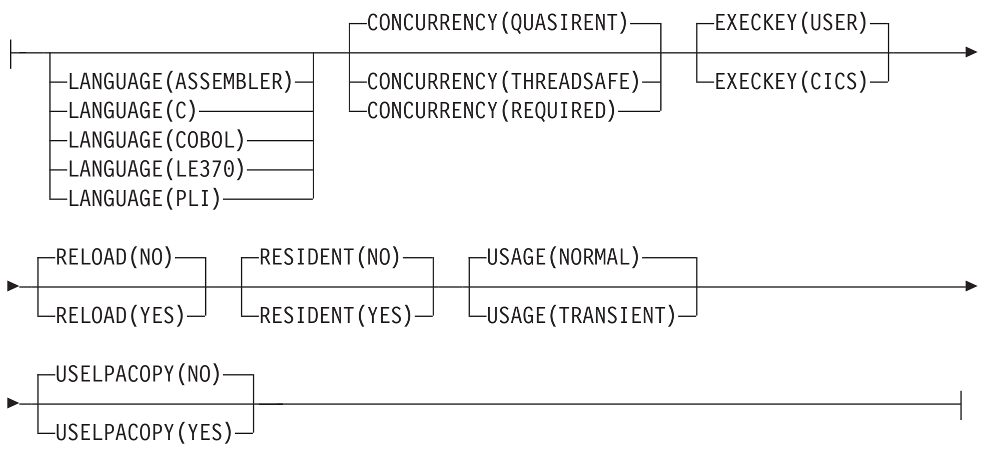
For example, this is where you would tell CICS whether the program can handle data located above the 16MB line. You can create PROGRAM definitions either by using CEDA or DFHCSDUP, or by setting the appropriate system initialization parameters and allowing programs to be autoinstalled. See Autoinstalling programs, map sets, and partition sets in the Resource Definition Guide for information on autoinstall for programs.

PROGRAM attributes

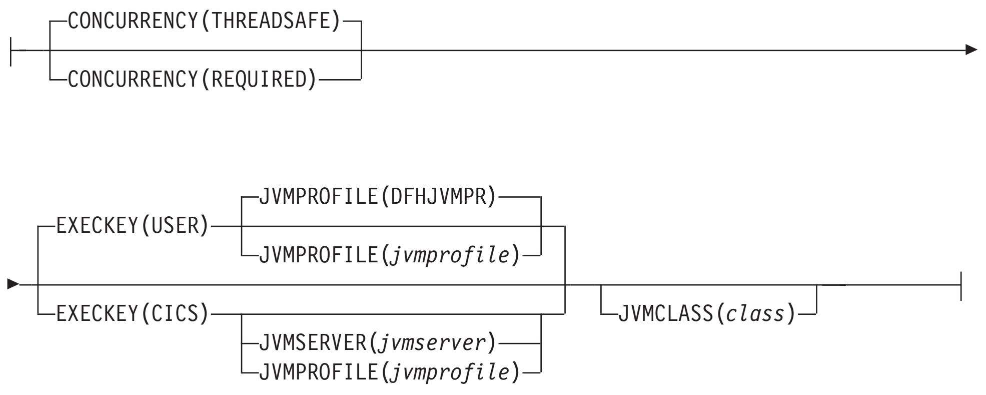
Describes the syntax and attributes of the PROGRAM resource.



Attributes for non-Java programs:



Attributes for Java programs:



API({<u>CICSAPI</u>|OPENAPI})

Specifies which API is to be used by the program. The API attribute applies to:
- User application programs
- PLT programs
- User-replaceable programs
- Task-related user exit programs. For more information, see Task-related user exit programs.

The API attribute does not apply to global user exits.

<u>CICSAPI</u>

The program is restricted to use of the CICS permitted application programming interfaces only.

If the program is defined with CONCURRENCY(QUASIRENT), it always runs on the quasi-reentrant (QR) TCB. If the program is defined with CONCURRENCY(THREADSAFE), it runs on whichever TCB is in use by CICS at the time that is determined as suitable, and if the program is defined with CONCURRENCY(REQUIRED), it always runs on an open TCB.

OPENAPI
The program is not restricted to the CICS application programming interfaces.

CICS runs the program on its own open TCB. The type of open TCB used depends on the value of the EXECKEY attribute and the language of the program.

If CICS requires a switch to the QR TCB when running a command, it returns to the open TCB before handing control back to the application program.

To specify the OPENAPI attribute, your program must be coded to threadsafe standards and defined with CONCURRENCY(REQUIRED). The primary use for OPENAPI programs is to move application workloads off the QR TCB and onto multiple open TCBs. You can benefit from better exploitation of server resources to achieve better throughput.

Note: The combination of CONCURRENCY(THREADSAFE) API(OPENAPI) supported in previous releases is deprecated but is kept for compatibility, and produces the same behavior as CONCURRENCY(REQUIRED) API(OPENAPI).

Use of other (non-CICS) APIs in OPENAPI programs is possible. If an open TCB is blocked by an operating system wait, only the single application is affected and not the whole of CICS. Such OPENAPI programs are not permitted to run on the QR TCB precisely because of this risk of blocking the TCB by an operating system wait and thus affecting the whole of CICS. Nevertheless, OPENAPI programs still have obligations to the CICS system as a whole. See the *CICS Application Programming Guide*.

Important: Use of other (non-CICS) APIs within CICS is entirely at the discretion and risk of the user. No testing of other (non-CICS) APIs within CICS has been undertaken and use of such APIs is not supported by IBM Service.

CEDF({YES|NO})
Specifies the action of the execution diagnostic facility (EDF) when the program is running under EDF control.

NO The EDF diagnostic screens are not displayed.

YES The EDF diagnostic screens are displayed. If the program is translated with the NOEDF option, only the program initiation and termination EDF screens are displayed. See Table 10.

Table 10. The effect on programs of CEDF(NO) and NOEDF

CEDF option on PROGRAM	EDF specified for translator	NOEDF specified for translator
YES	ALL EDF screens	Program initiation and termination screens only
NO	NO EDF screens	NO EDF screens
Note: The table shows how the CEDF option on the program resource definition interacts with the EDF option specified for the translator.		

CONCURRENCY({QUASIRENT|THREADSAFE|REQUIRED})
Specifies whether the program is written to threadsafe standards, or is only quasi-reentrant. You can specify the CONCURRENCY attribute for all CICS executable program objects:
- User application programs.
- PLT programs.
- User-replaceable programs.
- Global user exit programs. For more information, see Global user exit programs.
- Task-related user exit programs. For more information, see Task-related user exit programs.

QUASIRENT

The program is quasi-reentrant only, and relies on the serialization provided by CICS when accessing shared resources.

The program is restricted to the CICS permitted programming interfaces, and must comply with the CICS quasi-reentrant rules. For more information, see the *CICS Application Programming Guide*.

This value is supported for all executable programs.

CICS ensures that the program always runs under the QR TCB, even when control is returned after it has started a JVM or an open API task-related user exit, or when it interacts with threadsafe programs.

THREADSAFE

The program is written to threadsafe standards. When it accesses shared resources it takes into account the possibility that other programs might be running concurrently and attempting to modify the same resources. The program, therefore, uses appropriate serialization techniques when accessing any shared resources.

JVM programs and any C and C++ programs compiled with the XPLink option must be defined as threadsafe. For compatibility with previous releases, CONCURRENCY(THREADSAFE) is the default value for Java programs, but the preferred option to use is CONCURRENCY(REQUIRED).

For information about CICS DB2 application programs, see the *CICS DB2 Guide*

For information about writing threadsafe application programs, see Threadsafe programs.

This value is supported for all executable programs. Threadsafe programs must be Language Environment®-conforming, or be assembler programs.

REQUIRED

The program is written to threadsafe standards. CICS starts the program on an open TCB and ensures that the program always runs on an open TCB. If CICS switches to the QR TCB to run a CICS command, it returns to the open TCB before handing control back to the application program. The type of open TCB used depends on the API setting and the language of the program.

- Java programs using pooled JVMs operate like OPENAPI programs and use a J8 TCB if CICS key is set, and a J9 TCB if user key is set. OSGi bundles that run in a JVM server use a T8 TCB.

- C or C++ XPLink programs operate like OPENAPI programs and use an X8 TCB if CICS key is set, and an X9 TCB if user key is set.
- COBOL, PL/I, non-XPLink C or C++, and assembly language programs that also specify API(CICSAPI) use an L8 TCB because CICS commands can operate on this TCB irrespective of the execution key of the program. This setting is also suitable for programs that access resource managers like DB2 and WebSphere MQ, which also require an L8 TCB. However, for OPENAPI programs CICS must use an L9 TCB for user key programs and an L8 TCB for CICS key programs so that non-CICS API commands such as MVS requests operate correctly.

REQUIRED is applicable to user application programs, PLT programs, and user-replaceable programs, and is the preferred option for Java programs.

You can also specify the program CONCURRENCY attribute using a program autoinstall exit, if program autoinstall is active.

DATALOCATION({**BELOW**|**ANY**})
Commands using the SET option can return a data address to an application program; this operand specifies the location of the data. For example, in the command **EXEC CICS RECEIVE SET(ptr-ref)**, *ptr-ref* is less than 16 MB if DATALOCATION(BELOW) is specified, but might be greater than 16 MB if DATALOCATION(ANY) is specified. DATALOCATION does not affect the operation of the GETMAIN command. See GETMAIN in CICS Application Programming for programming information about where CICS obtains storage in response to a GETMAIN command.

ANY The program can handle 31-bit addresses. The address of the data can be above or below the 16 MB line. The values specified for the DATALOCATION attribute are independent of the addressing mode of the link-edited program. Programs that are link-edited with addressing mode AMODE=24 cannot access data above 16 MB; ensure that the value you specify is compatible with the addressing mode of the link-edited application program:

- Specify ANY for all 31-bit programs, unless they pass CICS data addresses on to other 24 bit programs.
- Specify DATALOCATION(BELOW) for an AMODE=24 program, unless storage addresses are being passed to a program that can access storage above 16 MB, or the program explicitly switches addressing mode.

BELOW
The program can handle only 24-bit addresses and must therefore only be given data located below the 16 MB line. If required, data is copied below the 16 MB line before passing its address to the application program.

DESCRIPTION(*text*)
You can provide a description of the resource that you are defining in this field. The description text can be up to 58 characters in length. No restrictions apply to the characters that you can use. However, if you use parentheses, ensure that for each left parenthesis there is a matching right one. If you use the CREATE command, for each single apostrophe in the text, code two apostrophes.

DYNAMIC({<u>**NO**</u>|**YES**})
Specifies whether, if the program is the subject of a program-link request, the request can be dynamically routed.

<u>**NO**</u> If the program is the subject of a program-link request, the dynamic routing program is not started.

For a distributed program link (DPL) request, the server region on which the program is to run must be specified explicitly on the REMOTESYSTEM attribute or on the SYSID option of the **EXEC CICS LINK** command; otherwise it defaults to the local region.

YES If the program is the subject of a program-link request, the CICS dynamic routing program is started. If a remote region is not named on the SYSID option of the **EXEC CICS LINK** command, the routing program can route the request to the region on which the program is to run.

The DYNAMIC attribute takes precedence over the REMOTESYSTEM attribute—see the description of the REMOTESYSTEM attribute.

For guidance information about the dynamic routing of DPL requests, see the *CICS Intercommunication Guide*.

EXECKEY({<u>**USER**</u>|**CICS**})
Specifies the key in which CICS gives control to the program, and determines whether the program can modify CICS-key storage. Except for reentrant programs (that is, programs link-edited with the RENT attribute), EXECKEY also defines, with the residency mode, into which of the DSAs CICS loads the program.

CICS CICS gives control to the program in CICS key when it is called. CICS loads the program into one of the CICS-key DSAs - either the CDSA or the ECDSA, depending on the residency mode specified for the program.

In a CICS region with storage protection active, a CICS-key program has read and write access to CICS-key and user-key storage of its own task and all other tasks, whether transaction isolation is active.

<u>**USER**</u> CICS gives control to the program in user key when it is called. CICS loads the program into one of the user-key shared DSAs - either the SDSA or the ESDSA, depending on the residency mode specified for the program.

In a CICS region with storage protection only active, a user-key program has read and write access to all user-key storage, but read-only access to CICS-key storage.

In a storage protection and transaction isolation environment, a user-key program has read and write access to the user-key task-lifetime storage of its own task only, and to any shared DSA storage, if the transaction is defined with ISOLATE(YES).

If a transaction is defined with ISOLATE(NO) in a transaction isolation environment, its user-key programs also have read and write access to the user-key task-lifetime storage of other transactions that are defined with ISOLATE(NO).

User-key programs always have read-only access to CICS-key storage.

The EXECKEY attribute is ignored in the following cases:

- First-level global user exit programs, task-related user exit programs, user-replaceable programs, and PLT programs always run in CICS key.
- If the program is link-edited with the RENT attribute, CICS loads the program into one of the read-only DSAs - either the RDSA or the ERDSA, depending on the residency mode specified for the program. The read-only DSAs are allocated from read-only storage only if RENTPGM=PROTECT is specified as a system initialization parameter.
- Programs called by COBOL dynamic CALL always run in the same key as the caller.

EXECUTIONSET({FULLAPI|DPLSUBSET})
Specifies whether you want CICS to link to and run a program as if it were running in a remote CICS region.

DPLSUBSET
Specify DPLSUBSET if you want CICS to link to the program and run it with the API restrictions of a remote DPL program. See Exception conditions for LINK command, in *CICS Application Programming Reference* for details of the API restrictions for a DPL program.

FULLAPI
Specify FULLAPI if you want CICS to link to the program and run it without the API restrictions of a DPL program. The program can use the full CICS API.

The EXECUTIONSET attribute applies only in these cases:
- To programs which are being linked to, and not to those programs that are the first to be given control by a transaction.
- When the REMOTESYSTEM name is the same name as the local CICS region. Its purpose is to test programs in a local CICS environment as if they were running as DPL programs.

GROUP(*groupname*)
Every resource definition must have a GROUP name. The resource definition becomes a member of the group and is installed in the CICS system when the group is installed.

Acceptable characters:
`A-Z 0-9 $ @ #`

Any lowercase characters that you enter are converted to uppercase.

The GROUP name can be up to 8 characters in length. Lowercase characters are treated as uppercase characters. Do not use group names beginning with DFH, because these characters are reserved for use by CICS.

JVM({NO|YES})
Specifies whether the program is a Java program that must run in a Java Virtual Machine (JVM).

NO The program is not to run in a JVM.

YES The program is to run in a JVM. Specify a class name in the JVMCLASS attribute if you specify JVM(YES).

Note: In addition to YES and NO, you can also specify DEBUG, but in compatibility mode only (see Compatibility mode (CSD file sharing) in the Resource Definition Guide).

JVMCLASS(*class*)
Specifies the name of the main class in a Java program.

- For OSGi bundles that run in a JVM server, this value is the name of the OSGi service. The OSGi service is registered when you install the BUNDLE resource that contains the OSGi bundle. You can look up the name of the OSGi service in the Bundle Parts view in CICS Explorer.
- For Java programs that run in a pooled JVM, this value is the class name qualified by the package name. For example, the package `example.HelloWorld` contains the class `HelloCICSWorld`; in this case, the fully qualified class name is `example.HelloWorld.HelloCICSWorld`.

The names are case sensitive and must be entered with the correct combination of uppercase and lowercase letters. If you use a terminal, ensure that uppercase translation is suppressed.

The value for JVMCLASS can include the following characters:

Acceptable characters:

```
A-Z a-z 0-9 $ @ # . / - _ % & ? ! : | " = ¬ , ; < >
```

This attribute applies only to Java applications running under the control of a JVM. If you specify JVM(NO), then at program execution-time CICS ignores any value specified in the JVMClass field.

JVMPROFILE({**DFHJVMPR**|*jvmprofile*})
Specifies the name (up to 8 characters in length) of a JVM profile. The JVM profile contains the options for running the Java program in a pooled JVM. If you want to run the Java program in a JVM server, use the JVMSERVER attribute instead. If you do not specify a JVM profile for the program and you have not selected a JVM server, CICS uses the supplied sample JVM profile DFHJVMPR. For more information about setting up JVM profiles, see Enabling applications to use a JVM in Java Applications in CICS.

Do not specify the JVM profile DFHJVMCD for your applications. This profile is reserved for use by CICS system programs only.

Acceptable characters:

```
A-Z a-z 0-9 $ @ # . - _ % ? ! : | " = , ; < >
```

If you create your own JVM profiles, do not give them names beginning with DFH, because these characters are reserved for use by CICS.

The profile is in the z/OS UNIX directory that is specified by the JVMPROFILEDIR system initialization parameter. Alternatively, you can use a file in another directory in z/OS UNIX and use a UNIX soft link from the JVMPROFILEDIR directory.

As JVM profiles are z/OS UNIX files, case is important. When you specify the name of the JVM profile, you must enter it using the same combination of uppercase and lowercase characters that are present in the z/OS UNIX file name. If you use a terminal, ensure that uppercase translation is suppressed.

JVMSERVER(*jvmserver*)
Specifies the name (up to 8 characters in length) of the JVMSERVER resource that contains the OSGi service. A JVMSERVER resource represents the JVM server runtime environment in CICS. The JVM server runs all programs in the CICS key. If you set a value for this attribute, you cannot set a value for the JVMPROFILE attribute.

Acceptable characters:
`A-Z a-z 0-9 $ @ # . - _ % ? ! :	= , ;`

`LANGUAGE({COBOL|ASSEMBLER|LE370|C|PLI})`
Specifies the program language.

ASSEMBLER
An assembly language program that was not translated using the LEASM translator option. LEASM is used to translate those assembler programs which are to be Language Environment-conforming MAIN programs.

C A C or C++ program that was not compiled by a Language Environment-conforming compiler.

COBOL
A COBOL program.

LE370 A program that uses multi-language support, or has been compiled by a Language Environment-conforming compiler, or is an assembler MAIN program that was translated using the LEASM option to produce a Language Environment-conforming program.

PLI A PL/I program.

In most cases, you do not have to specify the LANGUAGE attribute, because the CICS program manager deduces the correct language and ignores the value you have specified. However, if the program is written in assembler and does not have a DFHEAI stub, CICS cannot deduce the language and you must specify the appropriate value: If the language is not specified, and CICS cannot deduce it, transactions that attempt to use the program abends with code ALIG.

Although, in most cases, you do not have to specify a value for this attribute, be aware that the value specified is returned in the LANGDEDUCED and LANGUAGE options of the INQUIRE PROGRAM command. Programs that use this command might be affected if you change the value of this attribute.

This attribute does not apply to JVM programs. CICS deduces that the program is a Java program to run under the control of a JVM when JVM(YES) is specified.

`PROGRAM(`*`name`*`)`
Specifies the name of this PROGRAM definition. The name can be up to eight characters in length.

Acceptable characters:
`A-Z 0-9 $ @ #`
Unless you are using the CREATE command, any lowercase characters that you enter are converted to uppercase.

Do not use program names beginning with DFH, because these characters are reserved for use by CICS.

To use the program in an active CICS region, it must be link-edited into one of the libraries specified as part of the DFHRPL or dynamic LIBRARY concatenation. If the program is reentrant, you can place it in the link pack area (LPA). For more information about installing application programs, see the *CICS Application Programming Guide*.

RELOAD({<u>NO</u>|YES})
Specifies whether a program control link, load, or XCTL request is to bring in a fresh copy of a program. This attribute does not apply to JVM programs.

<u>NO</u> Any valid copy of the program currently in storage is reused for the request.

YES A fresh copy of the program is brought into storage for every request. Furthermore, each of these program copies must be removed from storage explicitly, using a storage control FREEMAIN request, when it is no longer required and before the transaction terminates. If the relevant FREEMAINs are not issued, areas of the DSA/EDSA become tied up with inaccessible program copies, potentially causing storage shortage or fragmentation.

Note: If a new version of the program has been placed in the LIBRARY concatenation, a NEWCOPY or PHASEIN must be issued for the program before the new version is loaded.

You can use RELOAD(YES) to load tables or control blocks that are modified by the execution of any associated programs. Do not specify this value for the first program loaded for a task because the task would have no way of issuing a FREEMAIN for the program.

You must specify RELOAD(YES) for nonreentrant programs.

For more information about the RELOAD attribute, see the *CICS Performance Guide*.

REMOTENAME(*program*)
Specifies the name of the program on the remote CICS region. If you specify REMOTESYSTEM and omit REMOTENAME, the REMOTENAME attribute defaults to the same name as the local name (that is, the program name on this resource definition).

REMOTESYSTEM(*connection*)
Specifies the name of an IPCONN or a CONNECTION resource that defines a link to the remote CICS region on which the program resides. Specify this attribute if you want CICS to ship a distributed program link (DPL) request to another CICS region.

Besides the REMOTESYSTEM attribute of the program definition, the DPL server region can also be specified by:

- The application program, using the SYSID option of the **EXEC CICS LINK PROGRAM** command
- The dynamic routing program.

The rules of precedence are as follows:

1. If an application program issues a DPL request, and the SYSID option on the **LINK** command specifies a remote CICS region, CICS ships the request to the remote region.

   If the installed program definition specifies DYNAMIC(YES), or there is no installed program definition, the dynamic routing program is called for notification only—it cannot reroute the request.
2. If an application program issues a DPL request, but the SYSID is the same name as the local CICS region or the SYSID option is not specified:
   a. If the installed program definition specifies DYNAMIC(YES), or there is no installed program definition, the dynamic routing program is called and can route the request.

The REMOTESYSTEM attribute of the program definition, if specified, names the default server region passed to the dynamic routing program.

b. If the installed program definition specifies DYNAMIC(NO), CICS ships the request to the remote system named on the REMOTESYSTEM attribute. If REMOTESYSTEM is not specified, CICS runs the program locally.

The rules for specifying the remote system name are the same as for the CONNECTION attribute of the CONNECTION resource definition.

Note: You must not specify remote attributes for any user-written CICS programs, such as the dynamic transaction routing or autoinstall user programs.

RESIDENT({NO|YES})
specifies the residence status of the program. This attribute does not apply to JVM programs.

NO The program is not to be permanently resident. This value must be specified if RELOAD(YES) is specified.

YES The program is to be loaded on first reference and is then to be permanently resident in virtual storage, but is to be pageable by the operating system. When you specify RESIDENT(YES), CICS assumes a specification of USAGE(NORMAL).

For more information about the effects of the RESIDENT attribute, see the *CICS Performance Guide*.

RSL
This attribute is obsolete, but is supported to provide compatibility with earlier releases of CICS. For more information, see Obsolete attributes in the Resource Definition Guide.

STATUS({ENABLED|DISABLED})
Specifies the program status.

DISABLED
The program cannot be used.

ENABLED
The program can be used.

TRANSID(*name*)

If the program is dynamic, this value is the default TRANSID used for the distributed program link (DPL) request. If the program is not dynamic, this value specifies the name of the transaction you want the remote CICS to attach, and under which it is to run the remote program.

If you do not specify a transaction name on the TRANSID attribute, the remote region runs the DPL program under one of the following CICS-supplied default mirror transactions. If you have defined a user transaction in the remote region to call the mirror program, the DPL program runs under that transaction ID.

CPMI The mirror transaction that is used for LU6.2 connections that require data conversion and for TCP/IP and IPIC requests from the CICS Transaction Gateway for Multiplatforms.

CSMI The CICS mirror transaction for MRO and LU6.2 connections with sync level 2 and for EXCI and IPIC requests from the CICS Transaction Gateway for z/OS.

USAGE({NORMAL|TRANSIENT})
Specifies when the storage for this program is released. This attribute does not apply to JVM programs.

NORMAL
When the resident use count (RESCOUNT) for this program reaches zero, it becomes eligible for removal from storage as part of the normal dynamic program storage compression process.

This value must be specified if RELOAD(YES) is specified.

TRANSIENT
When the resident use count (RESCOUNT) for this program becomes zero, the storage for this program is released. Specify this value for programs that are referenced infrequently.

USELPACOPY({NO|YES})
Specifies whether the program is to be used from the link pack area (LPA). This attribute does not apply to JVM programs.

NO The program is not to be used from the LPA. It is loaded into the CICS address space.

YES The program can be used from the LPA if `LPA=YES` is specified as a system initialization parameter. The use of the program from the LPA requires that it has been installed there and that the program is not named by the PRVMOD system initialization parameter. For more information, see the *CICS Transaction Server for z/OS Installation Guide*.

Chapter 29. REQUESTMODEL resources

A REQUESTMODEL resource defines how an Internet Inter-ORB Protocol (IIOP) inbound request is mapped to the CICS transaction that is to be initiated.

IIOP inbound requests may be:
- Client requests for enterprise beans
- Client requests for CORBA stateless objects

The inbound IIOP request is formatted according to CORBA standards; it does not specify a CICS transaction name explicitly. REQUESTMODEL definitions define templates that are compared with the inbound IIOP message to identify the type of request. CICS uses the following attributes to select the request model that most closely matches the inbound request:
- CORBASERVER
- TYPE
- BEANNAME
- INTFACETYPE
- MODULE
- INTERFACE
- OPERATION

For detailed information about how inbound requests are matched with request models, see *Java Applications in CICS*.

The TRANSACTION attribute of the selected REQUESTMODEL specifies the name of a CICS TRANSID, which associates the IIOP request with a set of execution characteristics such as security, priority, and monitoring data.

Note:
1. You cannot install a REQUESTMODEL definition if the attributes used for matching requests have identical values to a previously installed definition with a different name. Upper case, lower case, and mixed case values of attributes which are otherwise similar are considered to be identical.

   If you try, the install is rejected and a message is written to CSMT indicating the name of the conflicting REQUESTMODEL.
2. The following attributes were introduced in CICS Transaction Server for z/OS, Version 2 Release 1:
   - BEANNAME
   - CORBASERVER
   - INTFACETYPE
   - INTERFACE
   - MODULE
   - OPERATION
   - TYPE

   If you specify any of these attributes in a request model definition, then you cannot specify OMGMODULE, OMGINTERFACE, or OMGOPERATION. You can install the definition in CICS Transaction Server for z/OS, Version 2 or later, but not in CICS Transaction Server for OS/390®, Version 1 Release 3

The following attributes, introduced in CICS Transaction Server for OS/390, Version 1 Release 3, are obsolete, but supported for compatibility purposes:

- OMGMODULE
- OMGINTERFACE
- OMGOPERATION

If you specify any of these attributes in a request model definition, then you cannot specify BEANNAME, CORBASERVER, INTFACETYPE, MODULE, OPERATION, or TYPE. You can install the definition in CICS Transaction Server for OS/390, Version 1 Release 3 but not in CICS Transaction Server for z/OS, Version 2 or later.

3. The CORBA attributes (MODULE and INTERFACE) must specify the interface which is directly implemented by the objects they are required to match (known as the **most derived interface**). If you specify an interface which is not the most derived interface, the CORBA attributes will not match requests for objects that implement that interface.

   Consider this example:

   - Interface `B` is derived by inheritance from interface `A`.
   - Object `x` implements interface `B` (and, indirectly, interface `A`)

   In this case, you must specify CORBA attributes which will match the most derived interface (`B`), and not interface `A`.

Installing request models

You cannot install a REQUESTMODEL definition which has identical pattern-matching options (CORBASERVER, TYPE, EJB, CORBA, and COMMON attributes) as an installed REQUESTMODEL with a different name.

If you try, the install is rejected and a message is written to either the console or user's terminal indicating the name of the conflicting REQUESTMODEL.

You cannot install a request model with CICS Transaction Server for OS/390, Version 1 Release 3 attribute values in a CICS Transaction Server for z/OS, Version 2 Release 2 or later system.

REQUESTMODEL attributes

Describes the syntax and attributes of the REQUESTMODEL resource.

You can specify generic values for some of the attributes in a request model definition. A generic value consists of:

- An asterisk (*)
- *Or* a string consisting of the acceptable characters for the attribute, followed by an asterisk.

A generic attribute matches more than one value in a request: the characters preceding the asterisk are matched exactly, and the remaining characters are ignored. For example:

- A generic attribute of `get_*` matches `get_firstname` and `get_lastname`, but not `set_firstname` or `getName`
- A generic attribute of `*` matches all possible values in a request.

```
►►──REQUESTMODEL(name)──GROUP(groupname)──┬────────────────────┬──────────►
                                          └─DESCRIPTION(text)─┘

  ┌─TRANSID(CIRP)────────┐
►─┼──────────────────────┼─CORBASERVER(corbaserver)────────────────────────►
  └─TRANSID(transaction)─┘

  ┌─TYPE(GENERIC)──┤ Attributes for TYPE(GENERIC) ├─┐
►─┼─────────────────────────────────────────────────┼──────────────────────►◄
  ├─TYPE(EJB)──┤ Attributes for TYPE(EJB) ├──────────┤
  └─TYPE(CORBA)──┤ Attributes for TYPE(CORBA) ├─────┘
```

Attributes for TYPE(GENERIC):

```
├──BEANNAME(*)──INTFACETYPE(BOTH)──INTERFACE(*)──MODULE(*)──OPERATION(*)────────┤
```

Attributes for TYPE(EJB):

```
├──┬─BEANNAME(bean)──┬─INTFACETYPE(BOTH)───┬──┬─OPERATION(operation)─┬─┬──────┤
   │                 ├─INTFACETYPE(HOME)───┤  └─OPERATION(*)─────────┘ │
   │                 └─INTFACETYPE(REMOTE)─┘                           │
   └─BEANNAME(generic bean)──INTFACETYPE(BOTH)──OPERATION(*)───────────┘
```

Attributes for TYPE(CORBA):

```
├──┬─┬──────────────────┬─┬─INTERFACE(interface)──┬─OPERATION(operation)─┬─┬─┬──────┤
   │ └─MODULE(module)───┘ │                       └─OPERATION(*)─────────┘ │ │
   │                      └─INTERFACE(*)──OPERATION(*)────────────────────┘ │
   └─MODULE(generic module)──INTERFACE(*)──OPERATION(*)────────────────────┘
```

BEANNAME(*bean*)

specifies a bean name, of up to 240 characters, matching the name of the enterprise bean in the XML deployment descriptor.

Acceptable characters:
`A-Z a-z 0-9 . - _`
You can also use accented alphabetic characters.

Characters outside this range may give unpredictable results. However, you can use an asterisk as the last (or only) character to specify a generic name.

If you specify a generic value for BEANNAME, then you must specify INTFACETYPE(BOTH) and OPERATION(*).

For CORBA REQUESTMODELs—that is, if TYPE is CORBA—this field should be blank.

CORBASERVER(*corabserver*)

specifies the name of the destination CORBASERVER for this REQUESTMODEL. The name can be up to 4 characters in length.

Acceptable characters:
`A-Z a-z 0-9`

You can also use an asterisk as the last (or only) character to specify a generic name.

If a generic CORBASERVER is specified, BEANNAME, the CORBA attributes (MODULE and INTERFACE), and the COMMON attributes (OPERATION) must all be an asterisk (*); INTFACETYPE must be BOTH.

If any of the obsolete attribute values (OMGINTERFACE, OMGMODULE and OMGOPERATION) is present in the request model definition, CORBASERVER must be blank.

DESCRIPTION(*text*)
You can provide a description of the resource that you are defining in this field. The description text can be up to 58 characters in length. No restrictions apply to the characters that you can use. However, if you use parentheses, ensure that for each left parenthesis there is a matching right one. If you use the CREATE command, for each single apostrophe in the text, code two apostrophes.

GROUP(*groupname*)
Every resource definition must have a GROUP name. The resource definition becomes a member of the group and is installed in the CICS system when the group is installed.

Acceptable characters:

`A-Z 0-9 $ @ #`

Any lowercase characters that you enter are converted to uppercase.

The GROUP name can be up to 8 characters in length. Lowercase characters are treated as uppercase characters. Do not use group names beginning with DFH, because these characters are reserved for use by CICS.

INTFACETYPE({**BOTH**|**HOME**|**REMOTE**})
specifies the Java interface type for this REQUESTMODEL:

BOTH
matches either the home or component interface for the bean. OPERATION must be an asterisk (*).

HOME
specifies that this is the home interface for the bean.

REMOTE
specifies that this is the component interface for the bean.

For CORBA REQUESTMODELs—that is, if TYPE is CORBA—this field should be blank.

If any of the obsolete attribute values (OMGINTERFACE, OMGMODULE and OMGOPERATION) is present in the request model definition, INTFACETYPE must be blank.

INTERFACE(*interface*)
specifies a name, of up to 255 characters, matching the IDL interface name.

Acceptable characters:

`A-Z a-z 0-9 _`

You can also use accented alphabetic characters.

Characters outside this range may give unpredictable results. However, you can use an asterisk as the last (or only) character to specify a generic name.

Case is significant and should match the original Java or IDL source. However, to comply with CORBA, installation of REQUESTMODELS that specify INTERFACE with values differing only in case from previously installed definitions, will be rejected.

If a generic INTERFACE is specified, the common attributes (OPERATION) must be an asterisk (*).

For EJB REQUESTMODELs—that is, if TYPE is EJB—this field should be blank.

If any of the obsolete attribute values (OMGINTERFACE, OMGMODULE and OMGOPERATION) is present in the request model definition, INTERFACE must be blank.

MODULE(*module*)
specifies a name, of up to 255 characters, matching the IDL module name (which defines the name scope of the interface and operation).

Acceptable characters:

```
A-Z a-z 0-9  _
```

You can also use accented alphabetic characters.

Characters outside this range may give unpredictable results. However, you can use an asterisk as the last (or only) character to specify a generic name.

Case is significant and should match the original Java or IDL source. However, to comply with CORBA, installation of REQUESTMODELS that specify MODULE with values differing only in case from previously installed definitions, will be rejected.

If you specify a generic value for MODULE, then you must specify INTERFACE(*) and OPERATION(*).

To indicate the default package, leave this field blank and specify a non-blank (but possibly generic) INTERFACE.

For EJB REQUESTMODELs—that is, if TYPE is EJB—this field should be blank.

If any of the obsolete attribute values (OMGINTERFACE, OMGMODULE and OMGOPERATION) is present in the request model definition, MODULE must be blank.

OMGINTERFACE
This attribute is obsolete, but is supported to provide compatibility with earlier releases of CICS.

If this attribute is present in the request model definition, the following attributes must be blank:

- BEANNAME
- CORBASERVER
- INTFACETYPE
- INTERFACE
- OPERATION
- TYPE

OMGMODULE(*text*)
This attribute is obsolete, but is supported to provide compatibility with earlier releases of CICS.

If this attribute is present in the request model definition, the following attributes must be blank:
- BEANNAME
- CORBASERVER
- INTFACETYPE
- INTERFACE
- OPERATION
- TYPE

OMGOPERATION
This attribute is obsolete, but is supported to provide compatibility with earlier releases of CICS.

If this attribute is present in the request model definition, the following attributes must be blank:
- BEANNAME
- CORBASERVER
- INTFACETYPE
- INTERFACE
- OPERATION
- TYPE

OPERATION(*operation*)
specifies a name, of up to 255 characters, matching the IDL operation or a Java-to-IDL mangled representation of the bean or CORBA stateless object's method signature.

Acceptable characters:
`A-Z a-z 0-9  _`
You can also use accented alphabetic characters.

However, you can use an asterisk as the last (or only) character to specify a generic name. Characters outside this range may give unpredictable results. Case is significant and should match the original Java or IDL source. However, to comply with CORBA, installation of REQUESTMODELS that specify OPERATION with values differing only in case from previously installed definitions, will be rejected.

In general, Java method names are mapped to an equivalent IDL name. However, there are cases where this is not possible, for example:
- Java method names that contain characters which are not permitted in IDL names.
- Overloaded Java method names.
- Java method names that begin with `get` and `set`.

Instead, IDL uses a "mangled" form of the Java method name—that is, a valid and unambiguous IDL name derived from the Java method name. The OPERATION attribute of the REQUESTMODEL must match the mangled name in this case.

You can use the CREA supplied transaction to manage REQUESTMODEL definitions for enterprise beans. CREA creates REQUESTMODEL definitions with correctly-mangled method names in the OPERATION field.

For detailed information about how Java names are mapped to IDL names, see the *OMG Java to IDL mapping*, published by the Object Management Group (OMG), and available from *www.omg.org*.

If any of the obsolete attribute values (OMGINTERFACE, OMGMODULE and OMGOPERATION) is present in the request model definition, OPERATION must be blank.

REQUESTMODEL(*name*)
specifies the 8–character name of this request model definition.

Acceptable characters:
`A-Z a-z 0-9`

Do not use names beginning with DFH, because these characters are reserved for use by CICS.

TRANSID(*transaction*)
defines the 4-character name of the CICS transaction to be used when a new request processor transaction instance is required to process a method request matching the specification of the REQUESTMODEL.

The transaction definition must have as its initial program a JVM program whose JVMClass is com.ibm.cics.iiop.RequestProcessor. It must be installed in all the AORs of the logical EJB server, and in the listener regions.

TYPE({**GENERIC**|**CORBA**|**EJB**})
specifies the type of REQUESTMODEL:

GENERIC
matches both enterprise bean and CORBA requests. If you specify TYPE(GENERIC), you must also specify:
- BEANNAME(*)
- INTERFACE(*)
- INTFACETYPE(BOTH)
- MODULE(*)
- OPERATION(*)

CORBA
matches CORBA requests as specified by the CORBA attributes (MODULE and INTERFACE). Only the CORBA attributes and OPERATION attribute can be specified; the EJB attributes (BEANNAME and INTFACETYPE) and CICS TS V1R3 attributes (OMGINTERFACE, OMGMODULE and OMGOPERATION) must be blank.

EJB
matches enterprise bean requests as specified by the EJB (BEANNAME and INTFACETYPE). Only the EJB attributes and COMMON attributes (OPERATION) are valid; the CORBA attributes (MODULE and INTERFACE) must be blank.

If any of the obsolete attribute values (OMGINTERFACE, OMGMODULE and OMGOPERATION) is present in the request model definition, TYPE must be blank.

Table 11 on page 216 shows the attributes that are valid for each type:

Table 11. Attributes valid for each value of the TYPE attribute

	TYPE(GENERIC)	TYPE(EJB)	TYPE(CORBA)
BEANNAME	valid	valid	invalid
INTFACETYPE	valid	valid	invalid
MODULE	valid	invalid	valid
INTERFACE	valid	invalid	valid
OPERATION	valid	valid	valid

Examples

Examples of resource definitions for an enterprise bean-specific REQUESTMODEL and a stateless CORBA REQUESTMODEL.

Figure Figure 3 shows an example of an enterprise bean-specific REQUESTMODEL definition.

```
 Requestmodel   : DFH$EJB
 Group          : DFH$EJB
 Description  ==> EJB HelloWorld sample
 Corbaserver  ==> EJC1
 TYpe         ==> Ejb                Corba | Ejb | Generic
EJB PARAMETERS
 Beanname     ==> HelloWorld
 (Mixed Case) ==>
              ==>
              ==>
 INTFacetype  ==> Both               Both | Home | Remote
CORBA PARAMETERS
 Module       ==>
 (Mixed Case) ==>
              ==>
              ==>
 INTErface    ==>
 (Mixed Case) ==>
              ==>
              ==>
COMMON PARAMETERS
 OPeration    ==> *
 (Mixed Case) ==>
              ==>
              ==>
TRANSACTION ATTRIBUTES
 TRansid      ==> EJHE
CICS TS V1R3 ATTRIBUTES
 OMGModule      :
 OMGInterface   :
 OMGOperation   :
```

Figure 3. Example of an enterprise bean-specific REQUESTMODEL definition

Note: The transaction definition for EJHE should be copied from that of CIRP. Any attributes of the transaction definition can be changed except the program name, which must be that of a JVM program whose JVMClass is `com.ibm.cics.iiop.RequestProcessor`.

Figure Figure 4 on page 217 shows an example of a stateless CORBA REQUESTMODEL.

```
 Requestmodel   : DFH$IIRH
 Group          : DFH$IIOP
 Description  ==> Hello world CORBA Java server sample
 Corbaserver  ==> IIOP
 TYpe         ==> Corba             Corba | Ejb | Generic
EJB PARAMETERS
 Beanname     ==>
 (Mixed Case) ==>
              ==>
              ==>
 INTFacetype  ==>                   Both | Home | Remote
CORBA PARAMETERS
 Module       ==> hello
 (Mixed Case) ==>
              ==>
              ==>
 INTErface    ==> HelloWorld
 (Mixed Case) ==>
              ==>
              ==>
COMMON PARAMETERS
 OPeration    ==> *
 (Mixed Case) ==>
              ==>
              ==>
TRANSACTION ATTRIBUTES
 TRansid      ==> IIHE
CICS TS V1R3 ATTRIBUTES
 OMGModule      :
 OMGInterface   :
 OMGOperation   :
```

Figure 4. Example of a stateless CORBA REQUESTMODEL

Note: The transaction definition for IIHE should be copied from that of CIRP. Any attributes of the transaction definition can be changed except the program name, which must be that of a JVM program whose JVMClass is `com.ibm.cics.iiop.RequestProcessor`.

Figure Figure 5 on page 218 shows an example of a generic definition that matches any enterprise bean or stateless CORBA object request. This example changes the default request processor transaction from CIRP to EJB1.

```
 Requestmodel   : GENERIC
 Group          : TEST
 Description  ==> Generic default definition
 Corbaserver  ==> *
 TYpe         ==> Generic            Corba | Ejb | Generic
EJB PARAMETERS
 Beanname     ==> *
              ==>
              ==>
              ==>
 INTFacetype  ==> Both               Both | Home | Remote
CORBA PARAMETERS
 Module       ==> *
              ==>
              ==>
              ==>
 INTErface    ==> *
              ==>
              ==>
              ==>
COMMON PARAMETERS
 OPeration    ==> *
              ==>
              ==>
              ==>
TRANSACTION ATTRIBUTES
 TRansid      ==> EJB1
CICS TS V1R3 ATTRIBUTES
 OMGModule      :
 OMGInterface   :
 OMGOperation   :
```

Figure 5. Example of a generic definition that matches any enterprise bean or stateless CORBA object request

Note: The transaction definition for EJB1 should be copied from that of CIRP. Any attributes of the transaction definition can be changed except the program name, which must be that of a JVM program whose JVMClass is `com.ibm.cics.iiop.RequestProcessor`.

Chapter 30. SESSIONS resources

A SESSIONS resource defines the logical link between two CICS systems that communicate using intersystem communication (ISC) or multiregion operation (MRO).

Before two systems can communicate using , they must be logically linked through one or more sessions. The nature of the logical link determines how they can communicate. CICS does **not** use the SESSIONS name when the definition has been installed in the active system. This name is used only to identify the definition in the CSD file.

You use the CONNECTION attribute of the SESSIONS resource to name the CONNECTION with which these SESSIONS are associated when they are installed in the active systems.

Special considerations for different session types are:

MRO links and sessions
When you install a SESSIONS definition for MRO, you are telling CICS about a set of parallel sessions between this CICS and another CICS. The number of sessions is determined by the SENDCOUNT and RECEIVECOUNT attributes. The SEND sessions are identified by names created from the SENDPFX and SENDCOUNT attributes. The RECEIVE sessions are identified by names created from the RECEIVEPFX and RECEIVECOUNT attributes.

APPC (LUTYPE6.2) links and parallel sessions
When you install the SESSIONS definition, the sessions are grouped (for the benefit of z/OS Communications Server) into a modeset, which is identified by the MODENAME. The individual sessions are named by a counter; the first session created is named -999, the second -998, and so on. The value of this counter is retained over a warm or emergency start. The number of sessions created is controlled by the MAXIMUM attribute on the SESSIONS definition.

LUTYPE6.1 CICS-CICS ISC links and sessions
The way in which the sessions are identified by CICS depends on the way you defined them, using SENDPFX, SENDCOUNT, RECEIVEPFX, and RECEIVECOUNT like MRO sessions, or using SESSNAME as for CICS-IMS sessions.

Note: Use APPC for all new CICS-CICS ISC links.

LUTYPE6.1 CICS-IMS links and sessions
When you install the SESSIONS definitions in the active CICS system, CICS identifies each session by the SESSNAME attribute.

INDIRECT connections
Because the association between an INDIRECT link and the intermediate systems used for communicating with it is made at installation time, install the definition for the intermediate system before the definition for the INDIRECT link. If you install the INDIRECT link first, it remains dormant until the intermediate definition is installed, and until any other already installed connections that make reference to it are resolved. For example,

System A is indirectly connected with system C through system B. In system A, install the following definitions in this order:

1. The intermediate system:
   ```
   CONNECTION(B) NETNAME(B) ACCESSMETHOD(IRC) ...
   ```
2. The INDIRECT link
   ```
   CONNECTION(C) NETNAME(C) ACCESSMETHOD(INDIRECT)
      INDSYS(B) ...
   ```

Installing session definitions

If you use the INSTALL command to install a new SESSIONS definition for MRO when a definition is already installed, you must close down all interregion communication (IRC) and open it again before you can use the definition.

About this task

Procedure

1. Close IRC down. Use the following command:
   ```
   CEMT SET IRC CLOSED
   ```
2. Install the resource definitions. Use the following command:
   ```
   CEDA INSTALL GROUP(groupname)
   ```
3. When you have successfully installed the group containing the definitions, open IRC again. Use the following command:
   ```
   CEMT SET IRC OPEN
   ```

SESSIONS attributes

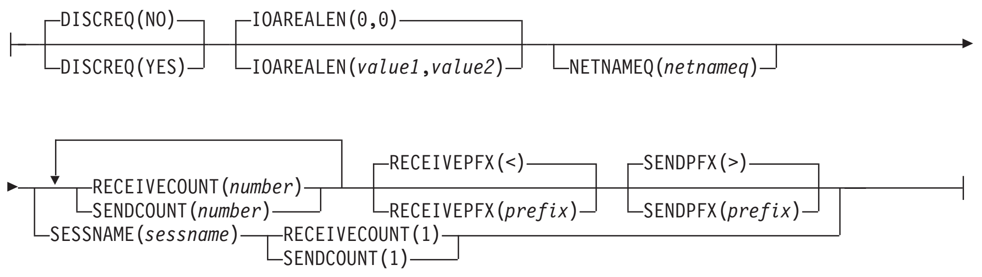
Describes the syntax and attributes of the SESSIONS resource.

```
►►──SESSIONS(name)──GROUP(groupname)──┬───────────────────┬────────────────────►
                                      └─DESCRIPTION(text)─┘

   ┌─PROTOCOL(APPC)──┤ Attributes for APPC sessions ├────────┐
►──┼─────────────────────────────────────────────────────────┼──────────────────►
   ├─PROTOCOL(LU61)──┤ Attributes for MRO and LU61 sessions ├┤
   └─PROTOCOL(EXCI)──┤ Attributes for EXCI sessions ├────────┘

   ┌─AUTOCONNECT(NO)──┐ ┌─BUILDCHAIN(YES)─┐
►──┼──────────────────┼─┼─────────────────┼──CONNECTION(connection)─────────────►
   ├─AUTOCONNECT(ALL)─┤ └─BUILDCHAIN(NO)──┘
   └─AUTOCONNECT(YES)─┘

   ┌─NEPCLASS(0)─────────┐ ┌─RECEIVESIZE(4096)───┐
►──┼─────────────────────┼─┼─────────────────────┼──────────────────────────────►
   └─NEPCLASS(tranclass)─┘ └─RECEIVESIZE(number)─┘

   ┌─RECOVOPTION(SYSDEFAULT)──┐ ┌─RELREQ(NO)──┐ ┌─SENDSIZE(4096)───┐
►──┼──────────────────────────┼─┼─────────────┼─┼──────────────────┼────────────►
   ├─RECOVOPTION(CLEARCONV)───┤ └─RELREQ(YES)─┘ └─SENDSIZE(number)─┘
   ├─RECOVOPTION(NONE)────────┤
   ├─RECOVOPTION(RELEASESESS)─┤
   └─RECOVOPTION(UNCONDREL)───┘

   ┌─SESSPRIORITY(0)─────────┐ ┌─USERAREALEN(0)──────┐
►──┼─────────────────────────┼─┼─────────────────────┼──┬────────────────┬────►◄
   └─SESSPRIORITY(priority)──┘ └─USERAREALEN(number)─┘  └─USERID(userid)─┘
```

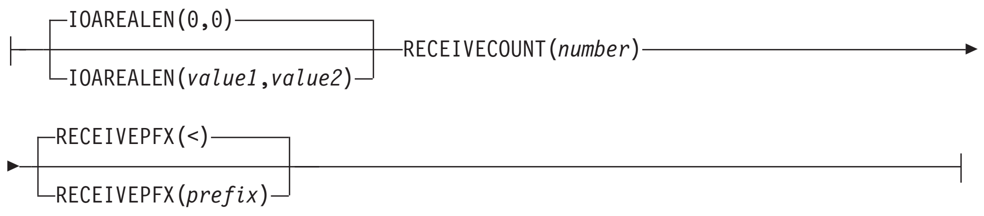
Attributes for APPC sessions:

```
    ┌─MAXIMUM(1,0)─────────────┐
├───┼──────────────────────────┼──┬────────────────────┬──────────────────────┤
    └─MAXIMUM(value1,value2)───┘  └─MODENAME(modename)─┘
```

Attributes for MRO and LU61 sessions:



Attributes for EXCI sessions:



AUTOCONNECT({NO|YES|ALL})
specifies how connections are to be established. What you have to specify for LU6.1 and APPC sessions is discussed below:

APPC sessions
For a z/OS Communications Server-connected system that has AUTOCONNECT(YES) or (ALL) on the connection definition:

NO CICS does not attempt to bind any sessions when the connection is established. However, one or more user sessions may be allocated as part of any ACQUIRE CONNECTION processing which takes place.

YES or ALL
A contention-winner session is established (that is, BIND is performed) during CICS initialization, or when communication with z/OS Communications Server is started using the CEMT SET VTAM OPEN command. If the connection cannot be made at this time because the remote system is unavailable, the link must be subsequently acquired using the CEMT SET CONNECTION(sysid) INSERVICE ACQUIRED command, unless the remote system becomes available in the meantime and itself initiates communications.

AUTOCONNECT(ALL) should not be specified for sessions to other CICS systems, because this can caused a bind race.

For a z/OS Communications Server-connected system that has AUTOCONNECT(NO) on the CONNECTION definition:

ALL All sessions, not just contention winners, are established when the connection is acquired by issuing CEMT SET CONNECTION(name) ACQUIRED, or when the remote system itself initiates communication.

NO CICS does not attempt to bind any sessions when the connection is established. However, one or more user sessions may be allocated as part of any ACQUIRE CONNECTION processing that takes place.

YES Contention-winner sessions are established when the connection is acquired by issuing CEMT SET CONNECTION(sysid) ACQUIRED, or when the remote system itself initiates communication.

LU6.1 sessions

Specify AUTOCONNECT(YES) on the SESSIONS if you want the connection to be established at initialization or CEDA install.

Specify AUTOCONNECT(NO) on the SESSIONS if you do not want the connection to be established at initialization or CEDA installation.

BUILDCHAIN({**YES**|**NO**})

specifies whether CICS is to perform chain assembly before passing the input data to the application program.

NO Any TIOA received by an application program from this logical unit contains one request unit (RU).

YES Any terminal input/output area (TIOA) received by an application program from this logical unit contains a complete chain.

CONNECTION(*connection*)

specifies the name of the connection definition that you want to use with this session definition. The name can be up to four characters in length.

Acceptable characters:

```
A-Z 0-9 $ @ #
```

Unless you are using the CREATE command, any lowercase characters that you enter are converted to uppercase.

Note that the CONNECTION definition must be in the same GROUP as the SESSIONS definition.

DESCRIPTION(*text*)

You can provide a description of the resource that you are defining in this field. The description text can be up to 58 characters in length. No restrictions apply to the characters that you can use. However, if you use parentheses, ensure that for each left parenthesis there is a matching right one. If you use the CREATE command, for each single apostrophe in the text, code two apostrophes.

DISCREQ({**NO**|**YES**})

specifies whether disconnect requests are to be honored. DISCREQ applies to LUTYPE6.1 ISC sessions, but not to MRO sessions where CICS is not dealing with z/OS Communications Server devices.

DISCREQ does not apply to APPC (LUTYPE6.2) sessions. When APPC is used, individual sessions are acquired as transactions need them, then are subsequently freed. Because it is possible to have multiple sessions between APPC logical units, there should never be a problem of one request holding up another. It is not possible to disconnect an individual APPC session; instead, you can issue a CEMT SET CONNECTION RELEASED command.

NO
CICS is not to honor a disconnect request for a z/OS Communications Server device.

YES
CICS is to honor a disconnect request for a z/OS Communications Server device, and issue a z/OS Communications Server CLSDST macro instruction to terminate the z/OS Communications Server session with that logical unit.

CESF LOGOFF or GOODNIGHT commands issued from the terminal also cause disconnection if you specify DISCREQ(YES).

GROUP(*groupname*)
Every resource definition must have a GROUP name. The resource definition becomes a member of the group and is installed in the CICS system when the group is installed.

Acceptable characters:

`A-Z 0-9 $ @ #`

Any lowercase characters that you enter are converted to uppercase.

The GROUP name can be up to 8 characters in length. Lowercase characters are treated as uppercase characters. Do not use group names beginning with DFH, because these characters are reserved for use by CICS.

INSERVICE
This attribute is obsolete, but is supported to provide compatibility with earlier releases of CICS.

IOAREALEN({**0**|*value1*}**,**{**0**|*value2*})
specifies the length, in bytes, of the terminal input/output area to be used for processing messages transmitted on the MRO link.

value1
value1 specifies the minimum size of a terminal input/output area to be passed to an application program when a RECEIVE command is issued.

value2
If *value2* is not specified, or is less than *value1*, it defaults to the value of *value1*.

You can specify *value2* as greater than or equal to *value1*. In this case, when the size of an input message exceeds value1, CICS uses a terminal input/output area (TIOA) *value2* bytes long. When a transaction is attached on an MRO link, CICS uses a TIOA that is long enough to contain the initial input message. Otherwise, if the input message size also exceeds *value2*, the node abnormal condition program sends an exception response to the terminal.

You can waste both real and virtual storage by specifying an IOAREALEN value that is too large for most messages transmitted on your MRO link. On the other hand, if you specify an IOAREALEN value that is either zero or smaller than most of your messages, excessive FREEMAIN and GETMAIN activity may occur. This results in additional processor requirements.

MAXIMUM({**1**|*value1*},{**0**|*value2*}) **(APPC only)**
specifies the maximum number of sessions that are to be supported for the modeset. Value1 must be greater than or equal to value2.

1 | *value1*
: The maximum number of sessions in the group. This value can be in the range 1 through 999. The default is 1.

0 | *value2*
: The maximum number of sessions that are to be supported as contention winners. This value can be in the range 0 to 999. The default is 0. Note that this operand has no meaning for a single session connection.

SNA allows some resources (for example, switched lines) to be defined in the network as **limited resources**. At bind time, z/OS Communications Server indicates to CICS whether the bind is over a limited resource. When a CICS task frees a session across a limited resource, CICS unbinds the session if no other task wants to use it.

If the sessions are to use limited resources, specify **MAXIMUM(***value1***,0)**. This causes any unbound session to be reset so that either side can then bind it as a winner when it is next required.

For further information on the effects of the MAXIMUM option, and the use of limited resources, see the *CICS Intercommunication Guide*

MODENAME(*modename***) (APPC only)**
specifies the name that identifies a group of sessions for use on an APPC connection. The name can be up to eight characters in length, and must be the name of a z/OS Communications Server LOGMODE entry defined to z/OS Communications Server. It must not be the reserved name SNASVCMG. If you omit the modename it defaults to blanks. See the *CICS Intercommunication Guide* for more information about z/OS Communications Server modenames.

The MODENAME must be unique for each group of sessions defined for any one intersystem link. That is, the MODENAME must be unique among the SESSIONS definitions related to one CONNECTION definition. It is passed to z/OS Communications Server as the LOGMODE name.

NEPCLASS({**0**|*tranclass*}**)**
specifies the transaction class for the node error program. This value acts as the default.

0 This results in a link to the default node error program module.

tranclass
: The transaction class for the (nondefault) node error program module. The value can be in the range 1 through 255. For programming information about the node error program, see the *CICS Customization Guide*.

The NEPCLASS attribute is ignored for SNASVCMGR sessions.

NETNAMEQ(*netnameq***)**
specifies the name by which the remote IMS system knows this particular session. This is used for CICS-IMS sessions. The name can be up to eight characters in length. The acceptable characters are: A-Z 0-9 $ @ # . / - _ % & ¢ ? ! : | " = ¬ , ; < and >. Lowercase characters are converted to uppercase except when using the CREATE command.

OPERID
OPERPRIORITY
OPERRSL

OPERSECURITY
These attributes ares obsolete, but are supported to provide compatibility with earlier releases of CICS.

PROTOCOL({APPC|LU61|EXCI})
specifies the type of protocol that is to be used for an intercommunication link (ISC or MRO).

APPC (LUTYPE6.2)
Advanced program-to-program communication (APPC) protocol. Specify this for CICS-CICS ISC.

EXCI The external CICS interface. Specify this to indicate that the sessions are for use by a non-CICS client program using the external CICS interface.

LU61 LUTYPE6.1 protocol. Specify this for CICS-CICS ISC, for CICS-IMS, or for MRO.

RECEIVECOUNT(*number*)
For MRO, and z/OS Communications Server LU6.1 sessions, and for sessions with EXCI clients, specifies the number of *receive sessions*; that is, sessions that normally receive before sending:
- MRO receive sessions (including sessions with EXCI clients) always receive before sending
- z/OS Communications Server LU6.1 receive sessions normally receive before sending, but may send before receiving when there is a shortage of suitable send sessions

The number of receive sessions you can specify depends upon the length of the prefix specified in the RECEIVEPFX attribute:
- If you use the default receive prefix (<), or your own 1-character prefix, you can specify 1 through 999 receive sessions
- If you use a 2-character prefix, you can specify 1 through 99 receive sessions.

You should also ensure that the value specified matches the number of send sessions in the partner system:
- If the partner is another CICS system, the value should match the SENDCOUNT specified in the partner system
- If the partner is an EXCI client, you cannot specify the number of send session in the partner. However, there is an upper limit of 100 send sessions in an EXCI address space. When this limit is reached, IRP rejects further requests for a session with SYSTEM_ERROR reason code 608.

If you do not specify the RECEIVECOUNT attribute, there are no receive sessions

RECEIVEPFX({<|*prefix*})
specifies a 1-or 2-character prefix that CICS is to use as the first one or two characters of the receive session names (the names of the terminal control table terminal entries (TCTTEs) for the sessions).

Prefixes must not cause a conflict with an existing connection or terminal name.

< (MRO and EXCI sessions)
For MRO and EXCI sessions, if you do not specify your own receive prefix, CICS enforces the default prefix—the less-than symbol (<), which is used in conjunction with the receive count to generate receive session names.

CICS creates the last three characters of the session names. The acceptable characters are A-Z 1-9. These 3-character identifiers begin with the letters AAA, and continue in ascending sequence until the number of session entries reaches the limit set by the RECEIVECOUNT value. Note that receive session names are generated **after** the send sessions, and they follow in the same sequence.

For example, if the last session name generated for the send sessions is >AAJ, using the default sendprefix (>) CICS generates the receive session names as <AAK, <AAL, <AAM, and so on. (This method of generation of session identifiers is the same as for APPC sessions, except for the initial prefix symbol.)

If you use more than 46656 sessions (<AAA to <999), CICS allocates the next range of AAA< to 999<, again in a similar manner to APPC sessions.

A region with more than 46656 sessions might not perform well. You should consider the alternative of increasing the number of CICS regions.

Although you can define up to 93312 MRO sessions there is a current restriction that prevents you from attempting to acquire more than 65535 sessions in one attempt. This might occur during CICS start up or for a CEDA install for more than 65536 sessions if ALL the partner regions are up and running. Further sessions can be acquired later.

Note: If you specify your own prefix, CICS generates the session names in the same way as it does for LUTYPE6.1 sessions.

prefix **(LUTYPE6.1 sessions)**
If the sessions are on LUTYPE6.1 ISC connections, you must specify a 1-or 2-character prefix. Do not use the default < symbol for LUTYPE6.1 sessions.

For LUTYPE6.1 sessions (and MRO if you specify your own 1-or 2-character prefix), CICS generates session names by appending a number to the prefix, either in the range 1 through 99, or 1 through 999. The number begins with 1 and is incremented by 1 until the specified RECEIVECOUNT is reached.

RECEIVESIZE({**4096**|*number*})
specifies the maximum z/OS Communications Server request unit (RU) size that these sessions are capable of receiving. The value must be between 1 and 30720 for LU61 sessions, or 256 and 30720 for APPC sessions. The default is 4096.

The value specified is transmitted to the connected logical unit. This value may be rounded down by CICS, depending on what value you specified, because the value must be transmitted in an architected form. The value may be negotiated down still further at BIND time.

If CICS is the secondary LU session, this indicates the maximum z/OS Communications Server request unit (RU) size that these sessions are capable of sending.

RECOVNOTIFY
This attribute is obsolete, but is supported to provide compatibility with earlier releases of CICS.

RECOVOPTION({SYSDEFAULT|CLEARCONV| RELEASESESS|UNCONDREL|NONE})

This option applies to the recovery of sessions in a CICS region running with z/OS Communications Server persistent sessions, or with XRF.

z/OS Communications Server persistent sessions: In a CICS region running with persistent session support, this option specifies how you want CICS to recover the session, and return the terminal to service on system restart within the persistent session delay interval.

XRF: In a CICS region running with XRF support, this option specifies how you want CICS to recover the session, and return the terminal to service after an XRF takeover.

For all recovery options other than NONE, if the action taken is a z/OS Communications Server UNBIND, the UNBIND is followed by a z/OS Communications Server SIMLOGON.

CLEARCONV

z/OS Communications Server persistent sessions: CLEARCONV is not supported for APPC sessions. It defaults to SYSDEFAULT.

XRF: If AUTOCONNECT(YES) is specified, the session is restarted. If AUTOCONNECT(NO) is specified, the session is unbound.

NONE

z/OS Communications Server persistent sessions: In a CICS region running with persistent sessions support, this specifies that the session is not to be recovered at system restart within the persistent session delay interval: in effect, the sessions on the modegroup have no persistent sessions support. LU6.2 sessions are unbound and the modegroup CNOS value is reset to zero. After system restart, the session is reconnected automatically if you specify AUTOCONNECT(YES).

XRF: In a CICS region running with XRF support, this specifies that the logon state is not tracked by the alternate system, and the terminal session is not automatically recovered after a takeover; in effect, the terminal has no XRF support. After takeover, the terminal is reconnected automatically by the alternate system, if you specify AUTOCONNECT(YES).

RELEASESESS

z/OS Communications Server persistent sessions: RELEASESESS is not supported for APPC sessions. It defaults to SYSDEFAULT.

XRF: If AUTOCONNECT(YES) is specified, the session is restarted. If AUTOCONNECT(NO) is specified, the session is unbound.

SYSDEFAULT

z/OS Communications Server persistent sessions: In a CICS region running with persistent sessions support, this specifies that CICS is to select the optimum procedure to recover a session on system restart within the persistent session delay interval, depending on the session activity and on the characteristics of the terminal.

Although sessions are recovered, any transactions in-flight at the time of the failure are abended and not recovered. Transactions are also abended if the recovered session is being used by another CICS region over an APPC connection.

CICS recovers the session with the least possible impact, in one of the following ways:

- If the session was not busy at the time that CICS failed, no action is required.
- If the session was busy at the time that CICS failed, CICS issues a DEALLOCATE(ABEND) (equivalent to an EXEC CICS ISSUE ABEND) for the APPC conversation in progress at the time of the failure.
- If neither of the above applies, the session is unbound.

XRF: If AUTOCONNECT(YES) is specified, the session is restarted. If AUTOCONNECT(NO) is specified, the session is unbound.

UNCONDREL
Requires CICS to send an UNBIND request to release the active session. The UNBIND is sent whether or not the session was busy at the time of system restart (in the case of persistent sessions support) or takeover (in the case of XRF).

RELREQ({**NO**|**YES**})
specifies whether CICS is to release the logical unit upon request by another z/OS Communications Server application program.

SENDCOUNT(*number*)
For MRO, and z/OS Communications Server LU6.1 sessions only, specifies the number of *send sessions*; that is, sessions that normally send before receiving:
- MRO send sessions always send before receiving
- z/OS Communications Server LU6.1 send sessions normally send before receiving, but may receive before sending when there is a shortage of suitable receive sessions

The number of send sessions you can specify depends upon the length of the prefix specified in the SENDPFX attribute:
- If you use the default send prefix (>), or your own 1-character prefix, you can specify 1 through 999 send sessions
- If you use a 2-character prefix, you can specify 1 through 99 send sessions.

You should also ensure that the value specified matches the number of receive sessions in the partner system:
- If the partner is another CICS system, the value should match the RECEIVECOUNT specified in the partner system

If you do not specify the SENDCOUNT attribute, there are no send sessions. Do not specify the SENDCOUNT attribute when the partner is an EXCI client

SENDPFX({**>**|*prefix*})
specifies a 1-or 2-character prefix that CICS is to use as the first one or two characters of the send session names (the names of the terminal control table terminal entries (TCTTEs) for the sessions).

Prefixes must not cause a conflict with an existing connection or terminal name.

> (MRO sessions)
For MRO sessions, if you do not specify your own send prefix, CICS enforces the default prefix—the greater-than symbol (>), which is used in conjunction with the send count to generate send session names.

CICS creates the last three characters of the session names from the alphanumeric characters A through Z, and 1 through 9. These 3-character identifiers begin with the letters AAA, and continue in ascending sequence until the number of session entries reaches the limit set by the SENDCOUNT value.

For example, using the default prefix (>), CICS generates session names as >AAA, >AAB, >AAC, and so on. If you use more than 46656 sessions (>AAA to >999), CICS allocates the next range of AAA> to 999>. (This method of generation of session identifiers is the same as for APPC sessions, except for the initial symbol.)

A region with more than 46656 sessions might not perform well. You should consider the alternative of increasing the number of CICS regions.

Although you can define up to 93312 MRO sessions there is a current restriction that prevents you from attempting to acquire more than 65535 sessions in one attempt. This might occur during CICS start up or for a CEDA install for more than 65536 sessions if ALL the partner regions are up and running. Further sessions can be acquired later.

Note: If you specify your own prefix, CICS generates the session names in the same way as it does for LUTYPE6.1 sessions.

prefix **(for LUTYPE6.1 sessions)**
If the sessions are on LUTYPE6.1 ISC connections, you must specify a 1-or 2-character prefix. Do not use the default > symbol for LUTYPE6.1 sessions.

For LUTYPE6.1 sessions (and MRO if you specify your own 1-or 2-character prefix), CICS generates session names by appending a number to the prefix, either in the range 1 through 99, or 1 through 999. The number begins with 1 and are incremented by 1 until the specified SENDCOUNT is reached.

SENDSIZE({**4096**|**number**})
specifies the maximum z/OS Communications Server request unit (RU) size that these sessions are capable of sending. The value must be between 1 and 30720 for LU61 sessions, or between 256 and 30720 for APPC sessions. The default is 4096. The value may be negotiated down at bind time. Increasing the value of SENDSIZE causes more storage to be allocated for the session but may decrease the number of physical messages sent between the two nodes.

If CICS is the secondary LU session, this attribute indicates the maximum z/OS Communications Server request unit (RU) size that these sessions are capable of receiving. The value must be between 256 and 30720.

SESSIONS(*name*)
specifies the name of this SESSIONS definition. The name can be up to eight characters in length.

Acceptable characters:
`A-Z a-z 0-9 $ @ # . / - _ % & ? ! : | " = ¬ , ; < >`

This name is used to identify the SESSIONS definition on the CSD file. It is not used within the active CICS system.

SESSNAME(*sessname*)
specifies the symbolic identification to be used as the local half of a session qualifier pair in a CICS intercommunication parallel session. The name can be up to four characters in length.

Acceptable characters:
`A-Z a-z 0-9 $ @ # . / - _ % & ? ! : | " = ¬ , ; < >`

SESSPRIORITY({**0**|*priority*})
: specifies the terminal priority. This decimal value (0 through 255) is used in establishing the overall transaction processing priority. (Transaction processing priority is equal to the sum of the terminal priority, transaction priority, and operator priority; this must not exceed 255.)

TRANSACTION
: This attribute is obsolete, but is supported to provide compatibility with earlier releases of CICS.

USERAREALEN({**0**|*number*})
: Specify the length, in bytes, of the user area for this session, in the range 0 through 255. It should be made as small as possible. The TCT user area is initialized to zeros when the session is installed.

  The TCT user area may be located above or below the 16Mb line in virtual storage. Where it is located depends on the value of the TCTUALOC operand of the DFHSIT macro. You should ensure that this is specified correctly to allow successful operation of any programs that are not capable of handling 31-bit addressing.

USERID(*userid*)
: specifies a user identifier used for sign-on (SEC=YES or MIGRATE) and referred to in security error messages, security violation messages, and the audit trail. It must be a valid userid defined to the security manager, or operators will be unable to sign on. All access to protected resources depends on USERID.

  This USERID overrides a SECURITYNAME specified on the CONNECTION definition.

  The name can be up to eight characters in length.

Acceptable characters:
`A-Z 0-9 $ @ #`   Unless you are using the CREATE command, any lowercase characters that you enter are converted to uppercase.

Chapter 31. TCPIPSERVICE resources

A TCPIPSERVICE resource defines which TCP/IP services are to use CICS internal sockets support.

With TCPIPSERVICE resources, the CICS services that can be defined are ECI over TCP/IP (for CICS Clients), IIOP, CICS Web support (HTTP), IPIC (ISC), or a user-defined protocol. The TCPIPSERVICE definition allows you to manage these internal CICS interfaces, with CICS listening on multiple ports, with different flavors of ECI, IIOP, CICS Web support or the user-defined protocol on different ports.

TCPIPSERVICE definitions are for use only with the CICS-provided TCP/IP services, and have nothing to do with the z/OS Communications Server IP CICS Sockets interface. The TCP/IP Socket Interface for CICS is supplied with z/OS Communications Server, which is an integral part of z/OS and does not use the CICS SO domain.

To select dynamic DNS (domain name service), you need to provide a group name for the DNSGROUP attribute. The Listener registers with MVS workload management services (WLM) using the APPLID specified in the system initialization table (SIT). The APPLID is passed to MVS as the **Server**. If the APPLID=(gname,sname) format is used in the SIT, then **sname** is the value passed to MVS.

Note:
1. Both the client and the CICS server must use the same TCP/IP **nameserver**.
2. The **nameserver** must be able to perform a reverse look-up, that is, it must be able to translate the IP address of the server into a full hostname.

TCPIPSERVICE definitions that specify PROTOCOL(IIOP) must be installed in both the listener region and AOR in a CICS logical server. See *Java Applications in CICS*

TCPIPSERVICE: interrelated attributes

The attributes and the values you can specify depend in some cases on which other attributes you have specified.

For TCPIPSERVICE resources:
- The values you can specify for the AUTHENTICATE attribute depend upon the value of the PROTOCOL attribute:

AUTHENTICATE	PROTOCOL(ECI) or PROTOCOL(IPIC)	PROTOCOL(HTTP) or PROTOCOL(USER)	PROTOCOL(IIOP)
NO	invalid	valid	valid
BASIC	invalid	valid	invalid
CERTIFICATE	invalid	valid	valid
AUTOREGISTER	invalid	valid	invalid

AUTHENTICATE	PROTOCOL(ECI) or PROTOCOL(IPIC)	PROTOCOL(HTTP) or PROTOCOL(USER)	PROTOCOL(IIOP)
AUTOMATIC	invalid	valid	invalid
ASSERTED	invalid	invalid	valid

- If you specify PROTOCOL(HTTP) , PROTOCOL(USER) or PROTOCOL(IIOP), ATTACHSEC must be blank. You can specify the ATTACHSEC attribute only when you specify PROTOCOL(ECI).
- If you specify PROTOCOL(HTTP), the default for URM is the CICS-supplied default analyzer program DFHWBAAX.
- If you specify PROTOCOL(IPIC), the default for URM is the CICS-supplied default autoinstall program for IP connections, DFHISAIP.
- If you specify PROTOCOL(IIOP) and AUTHENTICATE(ASSERTED) or AUTHENTICATE(CERTIFICATE), URM must be blank.
- If you specify AUTHENTICATE(CERTIFICATE) or AUTHENTICATE(AUTOREGISTER), you must specify SSL(CLIENTAUTH).
- If you specify a well known port number in the PORTNUMBER attribute, CICS sets the values of other attributes:

PORT	PROTOCOL	TRANSACTION	SSL
80	HTTP	CWXN	NO
443	HTTP	CWXN	YES
683	IIOP	CIRR	NO
684	IIOP	CIRR	YES
1435	ECI	CIEP	NO

- If you specify the PROTOCOL attribute, but not the TRANSACTION attribute, CICS sets the TRANSACTION attribute. Similarly, if you supply one of the following values in the TRANSACTION attribute, but not the PROTOCOL attribute, CICS sets the PROTOCOL attribute:

PROTOCOL	TRANSACTION
ECI	CIEP
HTTP	CWXN
IIOP	CIRR
IPIC	CISS
USER	CWXU

- You can change the value that CICS supplies for the TRANSACTION attribute. Depending on the value that you specify for the PROTOCOL attribute, some values are not permitted:

PROTOCOL	TRANSACTION (CWXN)	TRANSACTION (CIRR)	TRANSACTION (CIEP)	TRANSACTION (CWXU)	TRANSACTION (CISS)
HTTP	Default	Invalid	Invalid	Invalid	Invalid
USER	Invalid	Invalid	Invalid	Default	Invalid
IIOP	Invalid	Default	Invalid	Invalid	Invalid
ECI	Invalid	Invalid	Default	Invalid	Invalid

PROTOCOL	TRANSACTION (CWXN)	TRANSACTION (CIRR)	TRANSACTION (CIEP)	TRANSACTION (CWXU)	TRANSACTION (CISS)
IPIC	Invalid	Invalid	Invalid	Invalid	Default

- If you specify PROTOCOL(ECI) or PROTOCOL(IPIC) you must specify SOCKETCLOSE(NO).

TCPIPSERVICE attributes

Describes the syntax and attributes of the TCPIPSERVICE resource.

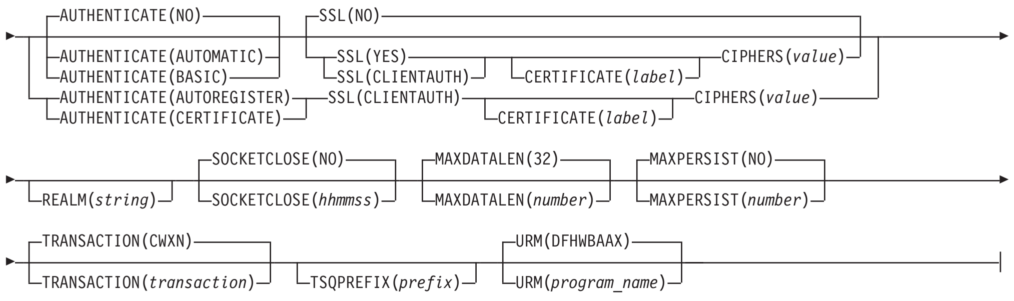
```
►►─TCPIPSERVICE(name)─GROUP(groupname)─┬──────────────────┬───────────►
                                       └─DESCRIPTION(text)┘

   ┌─BACKLOG(1)────────┐                          ┌─GRPCRITICAL(NO)──┐
►──┼───────────────────┼──┬──────────────────┬──┼──────────────────┼──►
   └─BACKLOG(backlog)──┘  └─DNSGROUP(dnsgroup)┘  └─GRPCRITICAL(YES)─┘

   ┌─HOST(ANY)─────────────┐
►──┼───────────────────────┼─PORTNUMBER(port)─────────────────────────►
   ├─HOST(DEFAULT)─────────┤
   ├─HOST(hostname)────────┤
   ├─IPADDRESS(ANY)────────┤
   ├─IPADDRESS(DEFAULT)────┤
   ├─IPADDRESS(INADDR_ANY)─┤
   └─IPADDRESS(ipaddress)──┘

   ┌─PROTOCOL(HTTP)──┤ Attributes used with PROTOCOL(HTTP) ├─┐
►──┼──────────────────────────────────────────────────────────┼───────►
   ├─PROTOCOL(ECI)──┤ Attributes used with PROTOCOL(ECI) ├───┤
   ├─PROTOCOL(IIOP)─┤ Attributes used with PROTOCOL(IIOP) ├──┤
   ├─PROTOCOL(IPIC)─┤ Attributes used with PROTOCOL(IPIC) ├──┤
   └─PROTOCOL(USER)─┤ Attributes used with PROTOCOL(USER) ├──┘

   ┌─STATUS(OPEN)───┐
►──┼────────────────┼─────────────────────────────────────────────────►◄
   └─STATUS(CLOSED)─┘
```

Attributes used with PROTOCOL(ECI):

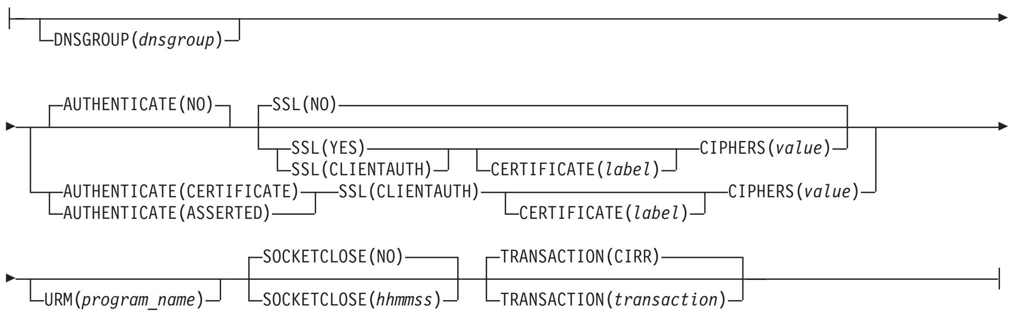
```
                            ┌─ATTACHSEC(LOCAL)──┐  ┌─SOCKETCLOSE(NO)─┐
├──┬──────────────────┬──┼───────────────────┼──┴─────────────────┴──►
   └─DNSGROUP(dnsgroup)┘  └─ATTACHSEC(VERIFY)─┘

   ┌─TRANSACTION(CIEP)─────────┐
►──┼───────────────────────────┼──────────────────────────────────────┤
   └─TRANSACTION(transaction)──┘
```

Attributes used with PROTOCOL(HTTP):

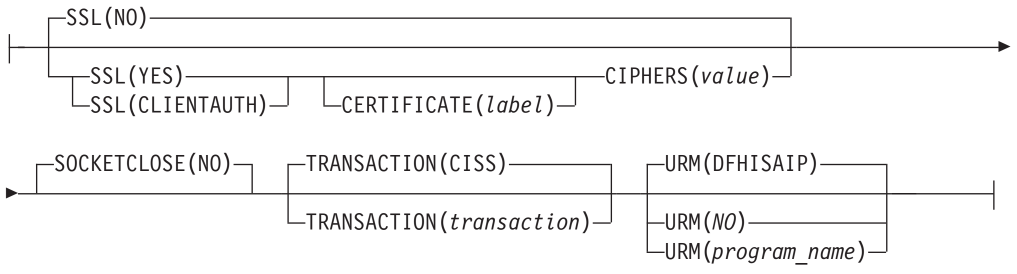
```
├──┬──────────────────┬───────────────────────────────────────────────►
   └─DNSGROUP(dnsgroup)┘
```



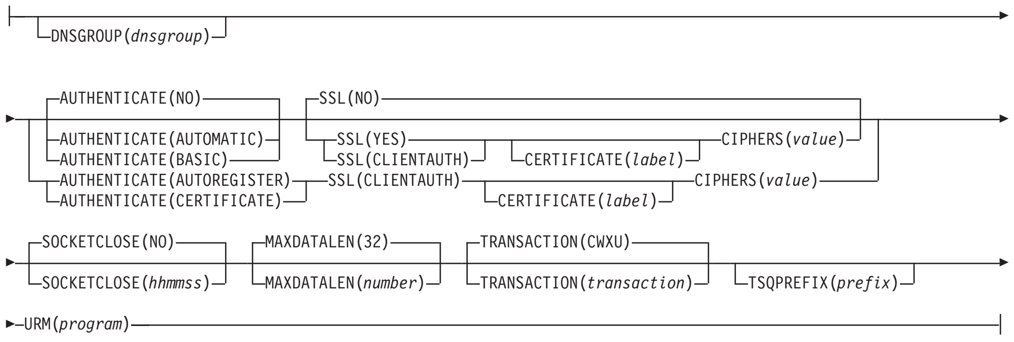
Attributes used with PROTOCOL(IIOP):



Attributes used with PROTOCOL(IPIC):



Attributes used with PROTOCOL(USER):



ATTACHSEC({LOCAL|VERIFY})
Specifies the level of attach-time user security required for this connection.

This option is valid only for PROTOCOL(ECI)).

LOCAL
Specifies that CICS does not require a user ID or password (or password phrase) from clients.

VERIFY
Specifies that incoming attach requests must specify a user ID, and a user password or password phrase. Specify VERIFY when connecting systems are unidentified and cannot be trusted.

AUTHENTICATE({NO|ASSERTED|AUTOMATIC|AUTOREGISTER|BASIC| CERTIFICATE})
Specifies the authentication and identification scheme to be used for inbound TCP/IP connections for the HTTP, USER, and IIOP protocols. The HTTP and USER protocols support a different set of authentication schemes from the IIOP protocol. For the IPIC protocol, this attribute is not applicable. For the ECI protocol, this attribute is invalid. For more information about authentication, see the *CICS RACF Security Guide*.

When PROTOCOL(HTTP) or PROTOCOL(USER) is specified:

NO The client is not required to send authentication or identification information. However, if the client sends a valid certificate that is already registered to the security manager, and associated with a user ID, then that user ID identifies the client.

AUTOMATIC
This combines the AUTOREGISTER and BASIC functions.

- If the client sends a certificate that is already registered to the security manager, and associated with a user ID, then that user ID identifies the client.
- If the client sends a certificate that is not registered to the security manager, then HTTP Basic authentication is used to obtain a user ID, and password or password phrase from the client. If the password or password phrase is valid, CICS registers the certificate with the security manager, and associates it with the user ID. The user ID identifies the client.
- If the client does not send a certificate, then HTTP Basic authentication is used to obtain a user ID, and password or password phrase from the user. When the user has been successfully authenticated, the user ID supplied identifies the client.

AUTOREGISTER
SSL client certificate authentication is used to authenticate the client.

- If the client sends a valid certificate that is already registered to the security manager, and associated with a user ID, then that user ID identifies the client.
- If the client sends a valid certificate that is not registered to the security manager, then HTTP Basic authentication is used to obtain a user ID, and password or password phrase from the client. If the password or password phrase is valid, CICS registers the certificate with the security manager, and associates it with the user ID. The user ID identifies the client.

Note: If you specify AUTHENTICATE(AUTOREGISTER), you must also specify SSL(CLIENTAUTH).

BASIC
HTTP Basic authentication is used to obtain a user ID, and password or password phrase from the client.

If the client has sent an Authorization header, its contents are decoded as a user ID, and password or password phrase. If these are not valid, an HTTP 401 response is returned, together with a WWW-Authenticate header, which causes the client program to prompt the user for a new user ID, and password or password phrase. This process continues until the client either supplies a valid user ID, and password or password phrase, or cancels the connection.

When the user has been successfully authenticated, the user ID supplied identifies the client.

CERTIFICATE
SSL client certificate authentication is used to authenticate and identify the client. The client must send a valid certificate that is already registered to the security manager, and associated with a user ID. If a valid certificate is not received, or the certificate is not associated with a user ID, the connection is rejected.

When the user has been successfully authenticated, the user ID associated with the certificate identifies the client.

Note: If you specify AUTHENTICATE(CERTIFICATE), you must also specify SSL(CLIENTAUTH).

Note: For the HTTP or USER protocol, the analyzer program (named by the user replaceable module (URM) attribute) can change the user ID supplied by the authentication process. If the authentication process does not supply a user ID, the analyzer program or URIMAP definition can supply one. Otherwise, the CICS default user ID is used.

When PROTOCOL(IIOP) is specified:

NO The client is not required to send authentication or identification information. However, if the client sends a valid certificate that is already registered to the security manager, and associated with a user ID, then that user ID identifies the client.

ASSERTED
Asserted identity authentication is used to authenticate and identify the client.

Asserted identity authentication can be used when an IIOP client communicates with the target server through an intermediate server. When a trust relationship has been established between the servers (using SSL authentication), the target server trusts the intermediate server to authenticate the client. The client must supply whatever authentication information is required by the intermediate server. A CICS CorbaServer can be configured as an intermediate server or a target server. AUTHENTICATE(ASSERTED) is used in the TCPIPSERVICE definition for a target server.

CICS can use this authentication method when communicating with WebSphere Application Server for z/OS or with other CICS regions. Both the target server and the intermediate server must use the same security manager.

Note: If a CICS CorbaServer must support asserted identity authentication for IIOP messages sent from WebSphere Application Server for z/OS Version 6.1 or later, to enable a suitable authentication protocol, specify the system property

-Dcom.ibm.cics.iiop.CSIv2Enabled=true in all of the JVM properties files used in the CICS region. (Release 6.1.0.13 or later of WebSphere Application Server for z/OS is required to support this function.)

CERTIFICATE
SSL client certificate authentication is used to authenticate and identify the client. The client must send a valid certificate which is already registered to the security manager, and associated with a user ID. If a valid certificate is not received, or the certificate is not associated with a user ID, the connection is rejected.

When the user has been successfully authenticated, the user ID associated with the certificate identifies the client.

Note: If you specify AUTHENTICATE(CERTIFICATE), you must also specify SSL(YES) or SSL(CLIENTAUTH).

Note: For the IIOP protocol, the IIOP user-replaceable program (named by the URM attribute) can supply a user ID if the authentication process does not supply one; if the user-replaceable program does not supply one, the CICS default user ID is used.

BACKLOG(1|*backlog***)**
Specifies the maximum number of inbound TCP/IP connection requests that can be queued in TCP/IP for CICS processing. When the maximum number is reached, TCP/IP rejects additional connection requests. Set this value to the maximum number of concurrent connection requests that can be established by using this TCPIPSERVICE. If the value of BACKLOG is greater than the TCP/IP configuration value for SOMAXCONN, TCP/IP uses the value specified by the SOMAXCONN attribute. A value of zero disables incoming connection requests.

CERTIFICATE(*label***)**
Specifies the label of an X.509 certificate that is used as a server certificate during the SSL handshake when the connection is acquired. If this attribute is omitted, the default certificate defined in the key ring for the CICS region user ID is used.

Certificate labels can be up to 32 bytes long.

The certificate must be stored in a key ring in the database of the external security manager. For more information, see the *CICS RACF Security Guide*.

This attribute cannot be specified unless SSL(YES) or SSL(CLIENTAUTH) is also specified.

CIPHERS(*value***)**

Specifies a string of up to 56 hexadecimal digits that is interpreted as a list of up to 28 2-digit cipher suite codes. When you use the CEDA transaction to define the resource, CICS automatically initializes the attribute with a default
| list of acceptable codes. For CICS to initialize the attribute, the KEYRING
| system initialization parameter must be specified in the CICS region where you
| are running CEDA. If KEYRING is not set, CICS does not initialize the
| attribute. The default list of codes depends on the level of encryption that is specified by the ENCRYPTION system initialization parameter.
- For ENCRYPTION=WEAK, the default value is `03060102`.
- For ENCRYPTION=MEDIUM, the initial value is `0903060102`.
- For ENCRYPTION=STRONG, the initial value is `050435363738392F303132330A1613100D0915120F0C03060201`.

You can reorder the cipher codes or remove them from the initial list. However, you cannot add cipher codes that are not in the default list for the specified encryption level. To reset the value to the default list of codes, delete all of the cipher suite codes. The field is automatically repopulated with the default list.
See the *CICS RACF Security Guide* for more information.

DESCRIPTION(*text*)
You can provide a description of the resource that you are defining in this field. The description text can be up to 58 characters in length. No restrictions apply to the characters that you can use. However, if you use parentheses, ensure that for each left parenthesis there is a matching right one. If you use the CREATE command, for each single apostrophe in the text, code two apostrophes.

DNSGROUP(*dnsgroup*)
Specifies the group name with which CICS registers to Workload Manager, for connection optimization. The value can be up to 18 characters, and any trailing blanks are ignored. This parameter is referred to as group_name by the TCP/IP DNS documentation and is the name of a cluster of equivalent server applications in a sysplex. It is also the name within the sysplex domain that clients use to access the CICS TCPIPSERVICE.

More than one TCPIPSERVICE might specify the same group name. The register call is made to WLM when the first service with a specified group name is opened. Subsequent services with the same group name do not cause more register calls to be made. The deregister action is dictated by the GRPCRITICAL attribute. It is also possible to explicitly deregister CICS from a group by issuing a master terminal or SPI command.

GROUP(*groupname*)
Every resource definition must have a GROUP name. The resource definition becomes a member of the group and is installed in the CICS system when the group is installed.

Acceptable characters:

```
A-Z 0-9 $ @ #
```

Any lowercase characters that you enter are converted to uppercase.

The GROUP name can be up to 8 characters in length. Lowercase characters are treated as uppercase characters. Do not use group names beginning with DFH, because these characters are reserved for use by CICS.

GRPCRITICAL({**NO**|**YES**})
Marks the service as a critical member of the DNS group, meaning that this service closing or failing causes a deregister call to be made to WLM for this group name. The default is NO, allowing two or more services in the same group to fail independently while CICS remains registered to the group. Only when the last service in a group is closed is the deregister call made to WLM, if it has not already been done so explicitly. Multiple services with the same group name can have different GRPCRITICAL settings. The services specifying GRPCRITICAL(NO) can be closed or fail without causing a deregister. If a service with GRPCRITICAL(YES) is closed or fails, the group is deregistered from WLM.

HOST({**ANY**|**DEFAULT**|*hostname*})
Specifies the 116-character IPv4 or IPv6 address or host name on which CICS listens for incoming connections. Use HOST instead of IPADDRESS when you

define new resources. Do not specify both HOST and IPADDRESS, because HOST always takes precedence over IPADDRESS. IPADDRESS is supported for existing programs that specify IPv4 function.

Possible values are as follows:

ANY
The ANY option has the same function as the ANY and INADDR_ANY options of IPADDRESS. The ANY option specifies that CICS listens on any of the addresses known to TCP/IP for the host system. You can have multiple IP addresses defined for a host. By specifying ANY, you also allow for the TCPIPSERVICE definition to be shared among CICS servers. If you specify ANY, CICS attempts to bind to the port on every stack where it is defined. If, in addition, you want more than one CICS region to bind to the port, you must specify the SHAREPORT option in every stack where the port is defined. If you do not do so, only one CICS region can bind to the port number in those stacks that do not have the SHAREPORT option. Subsequent attempts by other regions to bind to every stack fail, and CICS issues a message indicating that the port is in use.

If you specify the ANY option in a dual-mode (IPv4 and IPv6) environment, CICS attempts to reuse the most recent IPv4 or IPv6 address. If this is the first connection, and CICS cannot retrieve an address, `0.0.0.0` is returned, and no affinity is assigned.

DEFAULT
The DEFAULT option assigns affinity to the TCP/IP stack that has been defined as the default in a multistack CINET environment.

If the DEFAULT option is used in a dual-mode (IPv4 and IPv6) environment, affinity is assigned to the IPv4 environment, because the DEFAULT option is applied to the IPv4 environment.

If DEFAULT is used in a non-CINET environment or no default TCP/IP stack exists, an exception trace is written, `0.0.0.0` is returned, and no affinity is assigned.

If you are operating in a dual-mode (IPv4 and IPv6) environment, specifying HOST(DEFAULT) forces all traffic to pass across the IPv4 network connection.

hostname
hostname can be a character host name, an IPv4 address, or an IPv6 address.

You can specify an address as a character name that can be looked up on the domain name server. The host name can be entered in uppercase, lowercase, or mixed case, but if a host name is specified instead of an IP address, the host name is converted to lowercase in the TCPIPSERVICE definition.

Do not use a character host name if you have a list of addresses at the domain name server, because *hostname* resolves against the first IP address only in the list (that is, the server does not listen on any of the IP addresses in the list for this host name). If you require a particular IP address in a list at the domain name server, define the IP address explicitly in *hostname*.

If you specify an IPv6 address (or a host name that resolves to an IPv6 address), ensure that you are operating in a dual-mode (IPv4 and IPv6) environment and that the client or server that you are communicating with is also operating in a dual-mode (IPv4 and IPv6) environment. For more information about IPv6, see the *CICS Internet Guide*.

You can specify IPv4 and IPv6 addresses in a number of acceptable formats. See IP addresses in the Internet Guide for more information about address formats.

IPADDRESS({**ANY**|**INADDR_ANY**|**DEFAULT**|*ipaddress*})
Specifies the dotted decimal IPv4 address on which this TCPIPSERVICE listens for incoming connections. It must be of the form nnn.nnn.nnn.nnn where nnn is 0 through 255. You can use the HOST attribute to specify the same information as IPADDRESS, but HOST also supports an IPv6 format address and character host name. If you are using IPv6 connections, you must use the HOST attribute for your definitions instead of IPADDRESS. HOST always takes precedence over IPADDRESS. The IPADDRESS attribute interacts with HOST in a number of ways:

- If you specify HOST, IPADDRESS is always overwritten with a value that depends on the contents of HOST:
  - If you specify an IPv4 address, ANY, or DEFAULT in HOST, IPADDRESS is overwritten with the contents of HOST.
  - If you specify an IPv6 address or a character host name in HOST, IPADDRESS is overwritten with blanks.
- If you specify both HOST and IPADDRESS, the HOST value is always used:
  - If HOST contains an IPv4 address, ANY, or DEFAULT, IPADDRESS is populated with the contents of HOST.
  - If HOST contains an IPv6 address, IPADDRESS is overwritten with blanks.

  If you specify IPADDRESS (but not HOST), HOST is populated with the contents of IPADDRESS.

If you specify an IP address of `0.0.0.0` and the HOST option is blank, a warning is issued and the value ANY is assumed.IPADDRESS is supported for existing IPv4 function only. Use the HOST option for new resources.

Possible values are:

ANY or INADDR_ANY
The TCPIPSERVICE listens on any of the addresses known to TCP/IP for the host system. It is possible to have multiple IP addresses defined for a host. Specifying ANY or INADDR_ANY also allows for the TCPIPSERVICE definition to be shared among CICS servers.

If you specify ANY or INADDR_ANY, CICS attempts to bind to the port on every stack where it is defined. If, in addition, you want more than one CICS region to bind to the port you must specify the SHAREPORT option in every stack where the port is defined. If you do not do so, only one CICS region is able to bind to the port number in those stacks that do not have the SHAREPORT option. Subsequent attempts by other regions to bind to every stack fails: CICS issues a message indicating that the port is in use. For information about the SHAREPORT option, see *z/OS Communications Server: IP Configuration Reference*.

DEFAULT
Assigns affinity to the TCP/IP stack that is defined as the default in a multi stack CINET environment. If DEFAULT is used in a non-CINET

environment or there is no default TCP/IP stack, then an exception trace is written and no affinity is assigned.

ipaddress
: The TCPIPSERVICE accepts connections on this particular address. If the address specified is not known to TCP/IP on the host system, the TCPIPSERVICE does not open. If you enter a specific address here, this definition might not be valid for CICS servers running on other regions, and you might not be able to share the definition with those servers.

MAXDATALEN({**32**|*number*})
: Specifies, in kilobytes, the maximum length of data that can be received by CICS as an HTTP server, on the HTTP protocol or the USER protocol. The default value is 32 KB. The minimum is 32 KB, and the maximum is 524,288 KB. To increase security for CICS web support, specify this option on every TCPIPSERVICE definition for the HTTP protocol. It helps to guard against denial of service attacks involving the transmission of large amounts of data.

| **MAXPERSIST**({**NO**|*number*})
: Specifies the maximum number of persistent connections from web clients that the CICS region allows for this port at any one time. This setting applies only for the HTTP protocol.

- The default value NO means that there is no limit on the number of persistent connections.
- In a CICS region that is at risk of being overloaded with persistent connections, you can specify a suitable value (up to a theoretical maximum of 65535) based on the number of persistent connections that the CICS region can handle simultaneously. When this limit is reached and further web clients connect on the port, CICS requires the new clients to close the connection after they receive each response. When the new clients reconnect, if they connect to another CICS region that shares the port and has not reached its limit, they can maintain a persistent connection there instead. An HTTP/1.1 server should normally allow persistent connections, so only set this option in a CICS region that has experienced performance problems due to persistent connections from long-lived web clients.
- If you specify a value of zero for this option, the CICS region does not allow persistent connections and requires every web client to close the connection after they receive each response. A zero setting for MAXPERSIST is not compliant with the HTTP/1.1 specification, so only use that setting if you have a special requirement for it in a CICS region that is not currently handling external requests, for example, in a test environment.

PORTNUMBER(*port*)
: Specifies, in the range 1 through 65535, the decimal number of the port on which CICS is to listen for incoming client requests.

The well-known ports are those from 1 through 1023. It is advisable to use well-known port numbers only for those services to which they are normally assigned. The well-known ports for services supported by CICS are:

80	HTTP (non-SSL)
443	HTTP with SSL
683	IIOP (non-SSL)
684	IIOP with SSL
1435	ECI (Registered port number)

You should take care to resolve conflicts with any other servers on the same MVS image that might use the well-known ports.

Port sharing must be enabled for any port that you want to share across CICS systems within an MVS image. For more information, see *z/OS Communications Server: IP Configuration Reference*.

PRIVACY
This attribute is obsolete, but is supported to provide compatibility with earlier releases of CICS. For more information, see Obsolete attributes in the Resource Definition Guide.

PROTOCOL({**ECI**|<u>**HTTP**</u>|**IIOP**|**IPIC**|**USER**})
Specifies the application level protocol used on the TCP/IP port.

ECI The CICS ECI protocol is used.

<u>**HTTP**</u> HTTP protocol is used. HTTP protocol is handled by CICS Web support. CICS performs basic acceptance checks for messages sent and received using this protocol. This protocol is required for the well-known ports 80 (used for HTTP without SSL) and 443 (used for HTTP with SSL).

IIOP IIOP protocol is used. Specify IIOP for TCPIPSERVICE resources that are to accept inbound method requests for enterprise beans or CORBA stateless objects.

IPIC IPIC protocol is used. Specify IPIC for TCPIPSERVICE resources that are to be used for distributed program link (DPL) over IP interconnectivity connections (which are also known as *IPCONNs*).

USER The user-defined protocol is used. Messages are processed as non-HTTP messages. They are flagged as non-HTTP and passed unchanged to the analyzer program for the TCPIPSERVICE resource. CICS Web support facilities are used for handling the request, but no acceptance checks are carried out for messages sent and received by using this protocol. Processing for all non-HTTP requests must be carried out under the USER protocol, so that they are protected from the basic acceptance checks that CICS carries out for requests by using the HTTP protocol. If an HTTP message is handled by the USER protocol, you are responsible for checking its validity.

REALM(*string*)
Specifies the realm that is used for HTTP basic authentication. You can only specify this attribute for the HTTP protocol.

The realm is provided by CICS in the WWW-Authenticate header, and is seen by the user during the process of basic authentication. It identifies the set of resources to which the authentication information requested (that is, the user ID, and password or password phrase) applies.

If you do not specify a realm, the default used by CICS is `CICS application` *aaaaaaaa*, where *aaaaaaaa* is the APPLID of the CICS region.

The realm can be up to 56 characters, and can include embedded blanks. It is specified in mixed case, and the case is preserved. Do not specify opening and closing double quotation marks, as CICS provides these when assembling the WWW-Authenticate header.

Acceptable characters:

`A-Z a-z 0-9 $ @ # . - _ % & ? ! : | ' = ¬ + * , ; < > ( )`

Space characters are also permitted. If parentheses ("(" and ")") are used, you must use them as pairs of opening and closing parentheses.

SOCKETCLOSE({**NO**|*hhmmss*})
Specifies if, and for how long, CICS should wait before closing the socket. The SOCKETCLOSE attribute does not apply to the first receive request issued after a connection is made. On the first receive request, for the HTTP, USER, and ECI protocols, CICS waits for data for 30 seconds before closing the socket. For the IIOP protocol, CICS waits indefinitely.

The interval is measured from the time of the initial receive request for incoming data on that socket.

NO The socket is left open until it is closed by the client, or by a user application program in CICS.

hhmmss
The interval (in HHMMSS format) from the time of the initial receive request for incoming data, after which CICS is to timeout the socket. Choose a value that is appropriate to the responsiveness of the client, and the reliability of your network. Specifying 000000 closes the socket immediately if no data is available for any receive requests other than the first one.

If you are using this TCPIPSERVICE resource for CICS web support with the HTTP protocol, a zero setting for SOCKETCLOSE means that CICS closes the connection immediately after receiving data from the web client, unless further data is waiting. This setting means that persistent connections cannot be maintained, and it is not compliant with the HTTP/1.1 specification. Use a zero setting for SOCKETCLOSE with the HTTP protocol only if you have a special requirement for it in a CICS region that is not currently handling external requests, for example, in a test environment.

If you specify PROTOCOL(ECI) or PROTOCOL(IPIC) you must specify SOCKETCLOSE(NO).

If you specify PROTOCOL(USER), persistent sessions are not supported, and you should specify SOCKETCLOSE(000000).

After the TCPIPSERVICE resource is installed, you cannot change this value using CEMT; you must set the TCPIPSERVICE resource out of service, then re-install the TCPIPSERVICE resource with the modified definition.

SSL({**NO**|**YES**|**CLIENTAUTH**})
Specifies whether the TCP/IP service is to use the secure sockets layer (SSL) for encryption and authentication. You can specify this attribute for the HTTP, USER, IPIC, and IIOP protocols, but not for the ECI protocol.

NO SSL is not to be used. No security checks are applied when the connection is being acquired. No encryption is applied to outbound messages.

YES An SSL session is to be used; CICS sends a server certificate to the client. SSL decryption processing is applied to all messages arriving at this port. The level of encryption that is applied to inbound messages is found from the value of the CIPHERS attribute.

CLIENTAUTH
An SSL session is to be used; CICS sends a server certificate to the client. CICS expects to receive a client certificate from the partner system during the SSL handshake, when the connection is being acquired.

STATUS({**OPEN**|**CLOSED**})
Indicates the initial status of the service after installation. Set it to OPEN if

CICS is to begin listening for this service after installation. Set to CLOSE if CICS is not to listen on behalf of this service after installation.

TCPIPSERVICE(*name*)
Specifies the 8-character name of this service.

Acceptable characters:
`A-Z 0-9 $ @ #`
Unless you are using the CREATE command, any lowercase characters that you enter are converted to uppercase.

TRANSACTION(*transaction*)
Specifies the 4-character ID of the CICS transaction attached to process new requests received for this service.

- For an ECI over TCP/IP TCPIPSERVICE resource, specify CIEP (or another transaction that executes program DFHIEP).
- For an HTTP TCPIPSERVICE resource, specify CWXN (or another transaction that executes program DFHWBXN).
- For an IIOP TCPIPSERVICE resource, specify CIRR (or another transaction that executes program DFHIIRRS).
- For an IPIC TCPIPSERVICE resource, specify CISS (or another transaction that executes program DFHISCOP).
- For a USER TCPIPSERVICE resource, specify CWXU (or another transaction that executes program DFHWBXN).

TSQPREFIX(*prefix*)
This attribute is obsolete, but is supported to provide compatibility with earlier releases of CICS. For more information, see Obsolete attributes in the Resource Definition Guide.

URM({**NO**|*program_name*})
Specifies the name of a user-replaceable program to be started by this service.

NO Autoinstall is not permitted with this TCPIPSERVICE resource. This is only applicable for PROTOCOL(IPIC).

program_name
For those protocols for which URM is a required attribute, the default program name depends upon the value of the PROTOCOL attribute:

- For the HTTP protocol, specify the name of an analyzer program to be associated with this TCPIPSERVICE resource. The CICS-supplied analyzer program DFHWBAAX is the default. DFHWBAAX provides basic error handling when all requests on the port should be handled by URIMAP definitions (for example, web service requests). It does not provide support for requests using the URL format that CICS web support used before CICS TS 3.1. If you must provide support for requests that are not handled by URIMAP definitions, the analyzer program specified for your TCPIPSERVICE resource should be the CICS-supplied sample analyzer program DFHWBADX or your own customized analyzer program. See the *CICS Internet Guide* for more information about analyzer programs.
- For the IIOP protocol, specify the name of an IIOP security user-replaceable program. If URM is not specified, no program is called. See *Java Applications in CICS* for more information.

- For the IPIC protocol, specify the name of the autoinstall user program for IPCONNs, if required. For PROTOCOL(IPIC), if you do not specify this attribute CICS uses the CICS-supplied, default, IPCONNs autoinstall user program, DFHISAIP.
- For the USER protocol, specify the name of an analyzer program to be associated with this TCPIPSERVICE definition. The analyzer program must be present, and it handles all requests on this protocol. The CICS-supplied sample analyzer program, DFHWBADX, is suitable. See the the *CICS Internet Guide* for more information about analyzer programs.

Chapter 32. TDQUEUE resources

A TDQUEUE definition defines the attributes of a transient data queue.

The following transient data resources can be managed using RDO:
- Intrapartition
- Extrapartition
- Indirect
- Remote

Intrapartition definitions contain attributes that provide information about recovery characteristics, trigger levels, associated transactions, facilities, and userids.

Extrapartition definitions contain information about the associated QSAM data set, and the number of buffers that are to be used.

Indirect definitions identify the underlying queue name.

Remote definitions contain the name of the remote system and the name by which the queue is known on that remote system.

Before a transient data queue can be used by an active CICS system, you must install its definition in the running system. CICS uses the definition to access the data set associated with the queue, and records the number of read and write operations on the queue.

Remote transient data queues can be defined using the CEDA transaction in one of two ways:
- If the queue TYPE is omitted and data is entered into only the REMOTE ATTRIBUTES section of the definition, a remote definition will be created.
- If a TYPE of INTRA or EXTRA is specified and the REMOTE ATTRIBUTES section is completed, both a local and a remote resource will be established at the same time.

  See Figure 6 on page 250 for an example of defining a dual-purpose transient data resource definition.

Dual-purpose resource definition for transient data

You cannot specify TYPE=REMOTE for transient data queues.

Instead, you may want to consider dual-purpose resource definition (see “Shared resources for intercommunication” on page 11). Dual-purpose resource definition can be used with transient data definitions. Figure 6 on page 250 gives an example of dual-purpose resource definition for transient data resources.

If the definition shown in Figure 6 on page 250 is installed in a system called CICQ, that definition becomes a local intrapartition queue (the value of REMOTESYSTEM is CICQ).

If the definition shown in Figure 6 is installed in a system other than CICQ, the definition becomes a REMOTE queue.

```
 TDqueue       : TDQ1
 Group         : Example
 DEscription  ==>
 TYPE         ==> Intra                        Extra | INTra | INDirect
EXTRA PARTITION PARAMETERS
 DAtabuffers   :                               1-255
 DDname        :
 DSname        :
 Sysoutclass   :
 Erroroption   :                               Ignore | Skip
 Opentime      :                               Initial | Deferred
 REWind        :                               Leave | Reread
 TYPEFile      :                               Input | Output | Rdback
 RECORDSize    :                               0-32767
 BLOCKSize     :                               0-32767
 RECORDFormat  :                               Fixed | Variable
 BLOCKFormat   :                               Blocked | Unblocked
 Printcontrol  :                               A | M
 DIsposition  :                                Shr | Old |Mod
INTRA PARTITION PARAMETERS
 Atifacility  ==> Terminal          Terminal | File | System
 RECOVstatus  ==> Logical           No | Physical | Logical
 Facilityid   ==> FR1
 TRAnsid      ==>
 TRIggerlevel ==> 00001             0-32767
 Userid       ==>

 INDOUBT ATTRIBUTES
 WAIT         ==> Yes                          Yes|No
 WAITAction   ==> Reject                       Queue|Reject

 INDIRECT PARAMETERS
 Indirectname :

 REMOTE PARAMETERS
 REMOTEName   ==> FR1
 REMOTESystem ==> CICQ
 REMOTELength ==>                                       0-32767
```

Figure 6. Dual-purpose resource definition for transient data

Installing transient data queue definitions

After CICS has been initialized, you can install additional resources using the CEDA transaction, or the EXEC CICS CREATE commands.

About this task

A transient data queue is **always** installed in an enabled state. Any queues that were disabled when a CICS system terminated, will still be enabled when the system is restored using a warm start or emergency restart.

Replacing existing transient data queue definitions

You can replace an existing transient data queue if certain conditions are satisfied.

About this task

All the following conditions must be satisfied before you can replace an existing transient data queue:
- CICS initialization is complete
- The queue TYPE is the same as the existing definition

- The intrapartition queue is disabled
- The extrapartition queue is disabled and closed

Existing definitions **cannot** be replaced during a cold start of CICS. If you are using multiple groups, take great care to ensure that duplicate names do not exist. Duplicate names cause error messages to be issued. The duplicate definition is not used to replace the existing one.

You can use the following transactions and commands to inquire about, set, and discard transient data definitions after they have been installed:

- CEMT INQUIRE TDQUEUE (or EXEC CICS INQUIRE TDQUEUE)
- CEMT SET TDQUEUE (or EXEC CICS SET TDQUEUE)
- CEMT DISCARD TDQUEUE (or EXEC CICS DISCARD TDQUEUE)
- The CECI transaction

Disabling transient data queues

You cannot disable a transient data queue when it is in use or when other tasks are waiting to use it.

About this task

For intrapartition and extrapartition queues:

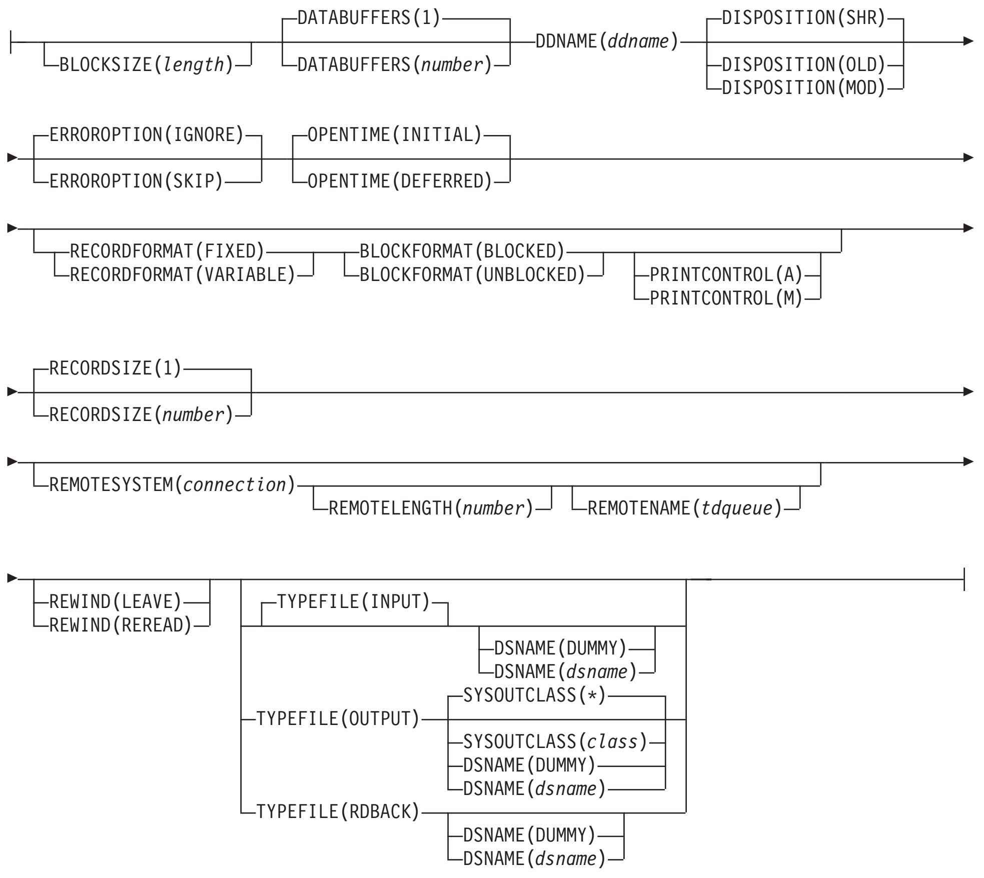
- If tasks are waiting to use an extrapartition queue, a physically recoverable queue, or a nonrecoverable intrapartition queue, the queue enters a "disable pending" state. The last task to use the queue fully disables it.
- If you try to disable a logically recoverable intrapartition transient data queue when units of work are enqueued on it, the queue enters a "disable pending" state. The last unit of work to obtain the enqueue fully disables the intrapartition queue.
- If a unit of work owns an enqueue on a queue that is in a "disable pending" state, it is allowed to continue making updates.
- When a queue is in a "disable pending" state, no new tasks can alter the queue's state, or its contents. CICS returns a disabled response when you issue a READQ TD, WRITEQ TD, or DELETEQ TD request against a queue that is in a "disable pending" state.

TDQUEUE attributes

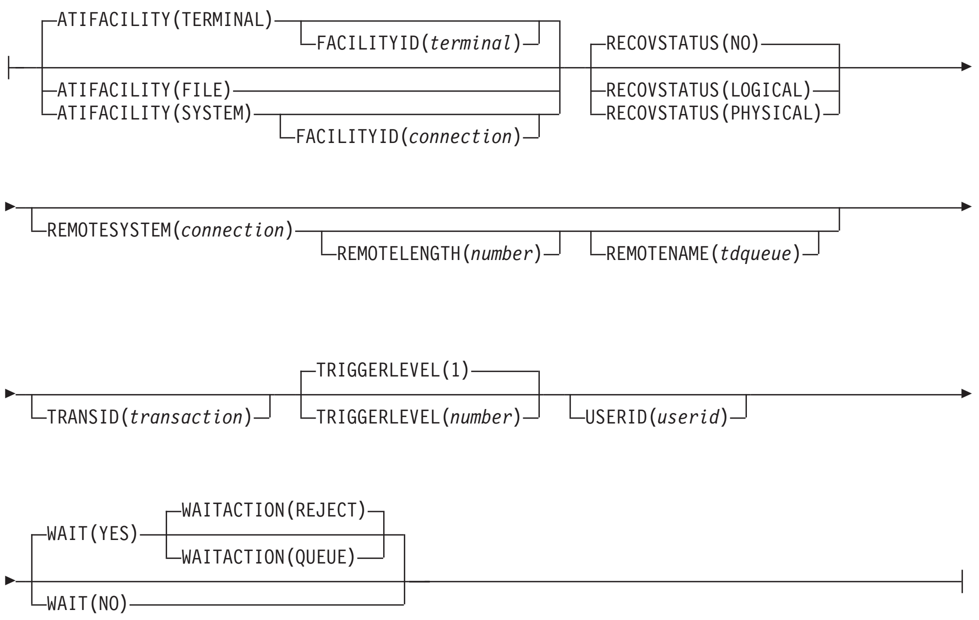
Describes the syntax and attributes of the TDQUEUE resource.

```
►►──TDQUEUE(name)──GROUP(groupname)──┬──────────────────┬──────────────►
                                     └─DESCRIPTION(text)─┘

►──┬─TYPE(EXTRA)──┤ Attributes for extrapartition queues ├──────┬──────►◄
   ├─TYPE(INTRA)──┤ Attributes for intra-partition queues ├─────┤
   ├─TYPE(INDIRECT)──┤ Attributes for indirect queues ├─────────┤
   └─┤ Attributes for remote queues of unspecified TYPE ├───────┘
```

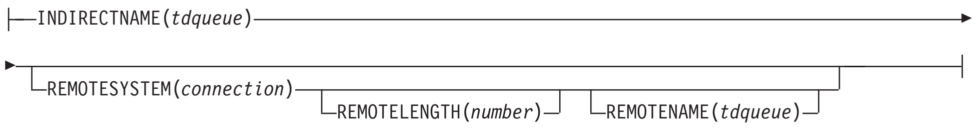
Attributes for extrapartition queues:



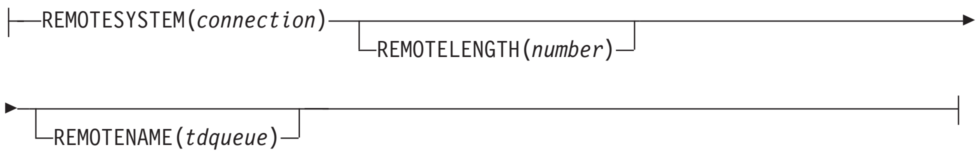
Attributes for intrapartition queues:



TDQUEUE attributes for indirect queues:



TDQUEUE attributes for remote queues of unspecified TYPE:



ATIFACILITY({TERMINAL|FILE|SYSTEM}) (intrapartition queues only)
Specifies the type of destination the queue represents.

FILE The transient data queue is to be used as a file of data records that are not associated with a particular terminal or system. ATI does not require a terminal to be available.

SYSTEM
The transient data queue is to be associated with the specified system identifier. The system must be defined to the local CICS system using an RDO CONNECTION definition.

Specifying ATIFACILITY(SYSTEM) initiates a distributed transaction processing (DTP) session. For more information about DTP considerations in application programming, see the *CICS Application Programming Guide*.

TERMINAL
The transient data queue is to be associated with the terminal. The terminal must be defined to CICS. If you do not specify TERMINAL, it defaults to the value of FACILITYID. If ATI is used, as specified in the TRANSID and TRIGGERLEVEL attributes, the transaction that is initiated is associated with the specified terminal, which must be available before the transaction can be initiated.

BLOCKFORMAT({BLOCKED|UNBLOCKED|*blank*}) (extrapartition queues only)
Specifies the block format of the data set. There is no default. If you specify the record format (RECORDFORMAT attribute) as undefined (or allow it to default), you cannot specify anything for the BLOCKFORMAT attribute.

blank Indicates that no block format is defined for this data set. Leave this field blank if you leave RECORDFORMAT blank.

BLOCKED
Blocked record format.

UNBLOCKED
Unblocked record format.

You are strongly advised to specify an unblocked record format for extrapartition queues that are used as an interface to the JES internal reader. If you use a blocked record format, your job is held in the SYSOUT data set, and not sent directly to JES until one of the following action occurs:

- You follow the JES `/*EOF` control statement with a second `/*EOF` statement
- Your application writes another job to the same queue
- You explicitly close the queue after the job is written
- You shut down CICS normally

BLOCKSIZE({length}) (extrapartition queues only)
Specifies the length of the block in bytes, in the range 0 through 32767.

The maximum value you can specify depends on whether SYSOUTCLASS is specified, either explicitly or by default, and on whether RECORDFORMAT is FIXED or VARIABLE.

- If you specify SYSOUTCLASS, the maximum value of RECORDSIZE is 8968.
- Each block in a variable format data set consists of a block descriptor word followed by one or more logical records. Therefore, if you specify RECORDFORMAT(VARIABLE), the value you specify for BLOCKSIZE must include 4 bytes for the block descriptor word, and space for the largest possible logical record.

These limits are summarized in the following table:

Is SYSOUTCLASS specified?	Yes	Yes	No	No
RECORDFORMAT	VARIABLE	FIXED	VARIABLE	FIXED

Maximum value of RECORDSIZE	8968	8968	32763	32767
Maximum value of BLOCKSIZE	8972	8968	32767	32767

DATABUFFERS({<u>**1**</u>|*number*}) **(extrapartition queues only)**
Specifies the number of buffers to be provided, up to a maximum of 255.

DDNAME(*ddname*)
Specifies a 1- to 8-character value that may refer to a data set defined in the startup JCL. The name must not start with the characters "DFH", which are reserved for use by CICS, unless the name describes one of the standard destinations.

DESCRIPTION(*text*)
You can provide a description of the resource that you are defining in this field. The description text can be up to 58 characters in length. No restrictions apply to the characters that you can use. However, if you use parentheses, ensure that for each left parenthesis there is a matching right one. If you use the CREATE command, for each single apostrophe in the text, code two apostrophes.

DISPOSITION({<u>**SHR**</u>|**OLD**|**MOD**}) **(extrapartition queues only)**
Specifies the disposition of the data set.

MOD CICS first assumes that the data set exists. For an existing sequential data set, MOD causes the read/write mechanism to be positioned after the last record in the data set. The read/write mechanism is positioned after the last record each time the data set is opened for output.

If CICS cannot find volume information for the data set:
- On the DD statement
- In the catalog
- Passed with the data set from a previous step

it assumes that the data set is being created in this job step. A data set allocated dynamically in this way is deleted when the queue is closed, and all records are lost.

For a new data set, MOD causes the read/write mechanism to be positioned at the beginning of the data set.

OLD The data set existed before this job step.

<u>**SHR**</u> The data set existed before this job step and can be read by other concurrent jobs.

DSNAME({*dsname*|**DUMMY**}) **(extrapartition queues only)**
Specifies the name of the QSAM data set that is to be used to store records written to this extrapartition queue.

When CICS receives a request to open an extrapartition transient data queue, the startup JCL is referenced to check if a data set definition has been created. If one is not found, the 44-character name specified on the DSNAME attribute is used to dynamically allocate the required data set.

If you have JCL that preallocates for this queue the DSCNAME value to a DSNAME value, the DSNAME value in the resource definition is overridden by the DSNAME value from the JCL. JCL allocation always takes priority.

Partitioned data sets (PDS) are not supported on the DSNAME attribute. If you want to use a PDS member for an extrapartition queue data set, code it explicitly in your JCL. Bear in mind that if you inquire upon this queue, the DSNAME value that is returned will not give you any indication of the member name.

DUMMY
A dummy data set name.

name The 44-character name of a physical data set.

Attention: If you use log streams for extrapartition queue data sets, unpredictable results may occur.

ERROROPTION({<u>**IGNORE**</u>|**SKIP**}) **(extrapartition queues only)**
Specifies the action to be taken if an I/O error occurs. This can be one of the following:

<u>**IGNORE**</u>
The block that caused the error is accepted.

SKIP The block that caused the error is skipped.

FACILITYID(*terminal*|*connection*) **(intrapartition queues only)**
Specifies a 4-character field that contains either:

- The system identifier for an intrapartition queue that specifies ATIFACILITY(SYSTEM)
- The terminal identifier where ATIFACILITY(TERMINAL) is specified.

If you do not specify anything in the FACILITYID field, it defaults to the name of the queue in each case.

If ATIFACILITY(FILE) is specified, the FACILITYID field must be left blank.

GROUP(*groupname*)
Every resource definition must have a GROUP name. The resource definition becomes a member of the group and is installed in the CICS system when the group is installed.

Acceptable characters:

`A-Z 0-9 $ @ #`

Any lowercase characters that you enter are converted to uppercase.

The GROUP name can be up to 8 characters in length. Lowercase characters are treated as uppercase characters. Do not use group names beginning with DFH, because these characters are reserved for use by CICS.

INDIRECTNAME(*tdqueue*) **(indirect queues only)**
Specifies the name of the transient data queue to which this indirect queue routes data. The transient data queue must be defined to CICS, and it can be intrapartition, extrapartition, remote, or indirect.

OPENTIME({<u>**INITIAL**</u>|**DEFERRED**}) **(extrapartition queues only)**
Specifies the initial status of the data set. The initial status can be one of the following values:

DEFERRED
The data set remains closed until you indicate that you want to open it by using the CEMT INQUIRE|SET TDQUEUE command.

<u>**INITIAL**</u>
The data set is to be opened at install time. However, if the DSNAME

attribute is not specified, and the data set name is not specified in the DD statement in the startup JCL, the transient data queue is allocated to JES during CICS startup.

PRINTCONTROL({**ASA**|**MACHINE**|*blank*}) **(extrapartition queues only)**
Specifies the control characters to be used. There is no default.

If you allow RECORDFORMAT to default to blank, you cannot specify anything in the PRINTCONTROL field. You can use the following characters:

ASA ASA control characters.

blank No control characters are to be used.

MACHINE
Machine control characters.

RECORDFORMAT({**FIXED**|**VARIABLE**|**blank**) **(extrapartition queues only)**
Specifies the record format of the data set.

blank If RECORDFORMAT is not specified (that is, left blank), the BLOCKFORMAT and PRINTCONTROL fields must also be left blank. If the RECORDFORMAT is not specified in the resource definition, TD attempts to derive this attribute from the CICS startup JCL or from the QSAM data set definition at the time it attempts to open the queue. The open request will fail if this information cannot be derived from either of these sources.

FIXED
Fixed records. If you specify `RECORDFormat(Fixed)`, you must also specify a block format.

VARIABLE
Variable records. If you specify RECORDFormat(Variable), you must also specify a block format.

RECORDSIZE({**1**|*number*}) **(extrapartition and remote queues)**
Specifies the record length in bytes, in the range 0 through 32767.

1 The default record length is 1 byte.

number
The record length, in bytes, up to 32767.

The maximum value you can specify depends on whether SYSOUTCLASS is specified, either explicitly or by default, and on whether RECORDFORMAT is FIXED or VARIABLE.

- If you specify SYSOUTCLASS, the maximum value of RECORDSIZE is 8968.
- Each block in a variable format data set consists of a block descriptor word followed by one or more logical records. Therefore, if you specify RECORDFORMAT(VARIABLE), the value you specify for BLOCKSIZE must include four bytes for the block descriptor word, and space for the largest possible logical record.

These limits are summarized in the following table:

Is SYSOUTCLASS specified?	Yes	Yes	No	No
RECORDFORMAT	VARIABLE	FIXED	VARIABLE	FIXED
Maximum value of RECORDSIZE	8968	8968	32763	32767

Maximum value of BLOCKSIZE	8972	8968	32767	32767

RECOVSTATUS({NO|PHYSICAL|LOGICAL}) (intrapartition queues only)
Specifies the recoverability attributes of the queue in the event of an abnormal termination of either CICS or the transaction that is processing the queue. The recoverability attributes are:

LOGICAL
This queue is logically recoverable. Automatic logging is to be performed to keep track of accesses by application programs. If a transaction that accessed this queue was in-flight at the time of abnormal termination, or in the subsequent emergency restart or dynamic transaction backout, the queue is restored to the status it was in before the in-flight UOW modified it.

When this queue is accessed, the task that issued the DELETEQ TD, WRITEQ TD, or READQ TD command is enqueued on the input, the output, or both ends of the transient data queue. The enqueue is maintained until the task terminates (or issues a syncpoint request to signal the end of a UOW) to ensure the integrity of the data being accessed. This means that enqueues can be maintained for a longer time, and can result in a queue lockout if an application program accessing the queue performs more than one UOW against the queue without defining each separate UOW to CICS by issuing a syncpoint request.

Furthermore, when a DELETEQ request is issued for a logically recoverable queue, both the input and output ends of the queue are enqueued upon. This can increase the possibility of an enqueue lockout.

Note: CICS provides an enqueuing protection facility for logically recoverable (as distinct from physically recoverable) TD queues similar to that for recoverable files. However, CICS regards each logically recoverable destination as two separate recoverable resources—one for writing and one for reading.

In the case of a file record, a record is treated as a single resource and requires only one lock. The TD queue, on the other hand, has two 'ends'—the read end and the write end, and these can be enqueued on (locked) independently. This is because, to control both reading and writing from the TD queue (at the same time), CICS has to maintain two pointers (cursors)—one for reading and one for writing, and these need to be protected from conflicting transactions.

Queue records are held on one or more control intervals (CIs). Each CI is marked for release as soon as the last record on it has been read. However, the release does not occur until the end of task, or until after the next user syncpoint.

NO
This queue is not recoverable. Automatic logging is not performed to keep track of accesses to this queue. Queue records are held on one or more control intervals (CIs). Each CI is released as soon as the last record on it has been read.

PHYSICAL
This queue is physically recoverable. Automatic logging is to be

performed to keep track of accesses by application programs. If emergency restart occurs, this queue is to be recovered to its status at the time CICS terminated.

The queue is **not** recovered to its status at the time CICS terminated if the last action on the queue was a READQ request, and if the associated unit of work (UOW) did not commit the changes. On emergency restart, the last read operation is backed out, and appears never to have taken place.

Queue records are held on one or more control intervals (CIs). Each CI is released as soon as the last record on it has been read.

REMOTENAME(*tdqueue*) (remote queues only)
Specifies, if the transient data queue resides on a remote system, the 4-character name by which the queue is known in the system or region on which the queue resides.

REMOTELENGTH({1|*number*}) (remote queues only)
Specifies the length in bytes, in the range 1 through 32767.

For SYSOUT data sets, the value entered in the REMOTELENGTH field must not be greater than 8968 bytes (when the SYSOUTCLASS attribute has been specified).

1 The length is 1 byte.

number
The length in bytes, up to 32767.

If the queue is defined with TYPE=EXTRA, and no value is specified for REMOTELENGTH, the value on the RECORDSIZE attribute is used at installation time.

REMOTESYSTEM(*connection*)
Specifies the 4-character alphanumeric name of the system or region in which
| the remote transient data queue resides. The name entered must be the same
| as the name specified on the RDO CONNECTION or the first 4 characters of
| the name specified on an RDO IPCONN definition. For more information
| about the connection definitions, see "CONNECTION attributes" on page 49 or
| "IPCONN attributes" on page 131.

When the transient data queue definition is installed, the name entered in the REMOTESYSTEM attribute is compared with the system identifier. If the names are different, the system or region is remote. If the names are the same, the value specified in the TYPE attribute is used. If the TYPE attribute is blank, the installation fails.

REWIND({LEAVE|REREAD}) (extrapartition queues only)
Specifies the disposition of a tape data set. The disposition can be one of the following:

LEAVE
The current tape is positioned at the logical end of the data set.

REREAD
The current tape is positioned at the logical start of the data set.

SYSOUTCLASS({A..Z|0..9|*|*blank*}) (extrapartition queues only)
Instead of allocating an extrapartition queue to a physical data set, you can allocate it to a system output data set (referred to as SYSOUT).

Use the SYSOUTCLASS attribute to specify the class of the SYSOUT data set.

A..Z | 0..9
A single alphabetic or numeric character that represents an output class that has been set up on the MVS system on which the CICS job is to run.

Acceptable characters:

```
A-Z 0-9
```

Unless you are using the CREATE command, any lowercase characters that you enter are converted to uppercase.

*	This is the default class. SYSOUTCLASS defaults to an asterisk (*) if you leave the DSNAME attribute blank and specify OUTPUT for the Typefile field.
blank	SYSOUTCLASS defaults to a blank character if you leave the DSNAME attribute blank and specify INPUT or RDBACK for the Typefile attribute. In the latter case, the open operation will fail because a DSNAME **must** be specified for TYPEFILE=INPUT or TYPEFILE=RDBACK.

You can use SYSOUTCLASS as an alternative to DSNAME. As with DSNAME, the queue may already be preallocated to SYSOUT using a JCL DD statement. A JCL DD statement overrides any specification made using the TDQUEUE resource definition.

When CICS receives a request to open an extrapartition transient data queue, the startup JCL is referenced to check if a data set definition has been created. If one is not found, the 44-character name specified on the DSNAME attribute is used to dynamically allocate the required data set.

When SYSOUT is specified for a queue in the JCL, attributes other than class can also be specified (for example, form types).

Note: Specifying SYSOUT data sets using RDO supports the class parameter only. If you require other parameters, you specify SYSOUT data sets in the JCL.

For more information about SYSOUT and its associated classes, see the *z/OS MVS JCL User's Guide*.

TDQUEUE(*name*)
Specifies the 1- to 4-character name of a transient data queue.

Acceptable characters:

```
A-Z a-z 0-9 $ @ # . / - _ % & ? ! : | " = ¬ , ; < >
```

If the name supplied is fewer than four characters, it is left-justified and padded with blanks up to four characters.

Note:

1. If you use a comma (,) in a name, you will be unable to use those commands such as

   ```
   CEMT INQUIRE TDQUEUE(value1,value2)
   CEMT SET     TDQUEUE(value1,value2)
   ```

   where the comma serves as a list delimiter. See *CICS Supplied Transactions* for information about using lists of resource identifiers.

2. If you protect your transient data queues using RACF, avoid using `%` and `&` in the name. RACF commands assign a special meaning to these characters when they are used in a profile name. See the *CICS RACF Security Guide*.

TRANSID(*transaction*) **(intrapartition queues only)**
Specifies the name of the transaction that is to be automatically initiated when the trigger level is reached. Transactions are initiated in this way to read records from the queue. If the TRANSID attribute is not specified (or if TRIGGERLEVEL(0) is specified), you must use another method to schedule transactions to read records from transient data queues.

The transaction specified must not reside in a remote CICS system. If it does, transaction initiation fails and a warning message is issued to the console.

TRIGGERLEVEL({**1**|*number*}) **(intrapartition queues only)**
Specifies the number of records to be accumulated before a task is automatically initiated to process them. (This number is known as the trigger level.)

If you specify the TRANSID attribute, TRIGGERLEVEL defaults to 1. Specify a trigger level of 0 if you want to disable ATI processing. If you do not specify a transaction id, the trigger level is ignored.

If you have specified ATIFACILITY(TERMINAL), the task is not initiated until the specified terminal is available. If you have specified ATIFACILITY(FILE), a terminal is not necessary for the task to be initiated.

If, at maximum task, a short-on-storage or a no-space condition exists for a nonterminal destination, the task is not initiated. This is also true during stages 1 and 2 of initialization, and during the final stage of shutdown. The task is initiated when the stress condition no longer exists, and a subsequent TD WRITE occurs.

For logically recoverable transient data queues, the ATI task is not attached until the task commits forward. This may mean that the trigger level is far exceeded before ATI occurs.

If a z/OS Communications Server terminal is defined as the destination for the CSTL transaction on two ISC CICS systems with a trigger level of 1, a performance problem may arise when both systems repeatedly acquire and release the terminal to write the session-started and session-ended messages.

You can change the trigger level when CICS is running using the CEMT transaction. If you reduce the trigger level to a number that is equal to (or less than) the number of records accumulated so far, the task is initiated when the next record is successfully put on the queue.

1 Only one record can accumulate.

number
The number of records that can accumulate (up to a maximum of 32767) before ATI occurs.

TYPE({**EXTRA**|**INTRA**|**INDIRECT**})
Specifies the following types of transient data queue:

EXTRA
A queue that is outside the CICS region is allocated to CICS.

Extrapartition queues are used for:

- Sending data outside the CICS region: for example, data created by a transaction for processing by a batch program.

- Retrieving data from outside the region: for example, data received from terminals as input to a transaction.

Extrapartition data is sequential and is managed by QSAM.

INDIRECT
An indirect queue is a queue that does not point to an actual data set, but to another queue. An indirect queue can be extrapartition, intrapartition, remote, or even another indirect queue.

For example, you can give a different symbolic name, INDIRECTDEST, to each of several different message types. You can then send all these message types to the same physical queue (INDIRECTDEST), or to different physical queues.

The DFH$TDWT sample program demonstrates how you can use indirect queues to send different categories of message to the same terminal. For programming information about DFH$TDWT, see the *CICS Customization Guide*. DFH$TDWT sample definitions are given in the *CICS/ESA 4.1 Sample Applications Guide*.

If the QUEUE operand of an EXEC CICS WRITEQ TD, EXEC CICS READQ, or EXEC CICS DELETEQ command specifies an indirect queue, access is determined by the security setting of the final target queue.

INTRA
A queue for data that is to be stored temporarily.

An intrapartition destination can be a terminal, a file, or another system. A single data set, managed by VSAM, is used to hold the data for all intrapartition queues.

You can specify a transaction to process the records and a trigger level for each intrapartition queue. The trigger level represents a number of records that are allowed to accumulate before the specified transaction is initiated. See the description of the TRIGGERLEVEL attribute for more information about trigger levels.

The intrapartition queue can be defined as logically recoverable, physically recoverable, or not recoverable.

A logically recoverable queue is restored (after an individual transaction failure or a total system failure) to the status it had at the end of the last completed unit of work (UOW). (A UOW begins at start of task or at a syncpoint, and ends at end of task or at a syncpoint).

Physically recoverable queues are restored (after a total system failure) to the statuses they had when the system failure occurred.

TYPE=REMOTE cannot be specified on the TDQUEUE resource definition. If you want to define a remote transient data queue, leave the TYPE attribute blank and specify values for the remote attributes, REMOTELENGTH, REMOTENAME, and REMOTESYSTEM. Alternatively, you can include the remote attributes as part of the resource definitions for the other transient data queue types.

TYPEFILE({INPUT|OUTPUT|RDBACK})
Specifies the type of data set the queue is to be associated with.

INPUT
An input data set.

OUTPUT
An output data set.

RDBACK
An input data set that is to be read backward.

Note: This is appropriate only for data sets that have been defined on magnetic tape.

An extrapartition queue can be input or output, but not both.

For more information about the DCB macro fields, see the *z/OS DFSMS Macro Instructions for Data Sets*.

USERID(*userid*) (intrapartition queues only)
Specifies the userid you want CICS to use for security checking when verifying the trigger-level transaction specified in the TRANSID field. The userid can be up to eight characters in length.

Acceptable characters:

```
A-Z 0-9 $ @ #
```

Unless you are using the CREATE command, any lowercase characters that you enter are converted to uppercase.

The value entered in the USERID field is valid only when ATIFACILITY(FILE) is also specified.

When security is active, the trigger-level transaction runs under the authority of the specified userid. This userid must be authorized to all the resources used by the trigger-level transaction.

If you omit the userid from a transient data queue definition, CICS uses the CICS default userid, specified on the DFLTUSER system initialization parameter. Security checking takes place when you are installing an intrapartition definition containing a userid. If the security check fails, the resource definition for that intrapartition queue is not installed.

For further information about surrogate user security, see the *CICS RACF Security Guide*.

WAIT({YES|NO}) (intrapartition queues only)
Specifies whether an indoubt unit of work (UOW) that has modified a logically recoverable queue should wait for resynchronization with its coordinator to determine whether to commit or back out the changes.

NO The UOW is not to wait. Any changes made to recoverable resources are to be backed out or committed, as specified by the ACTION attribute on the TRANSACTION resource definition.

YES The UOW is to wait, and any action required while waiting is determined by the WAITACTION attribute.

This attribute overrides the WAIT attribute defined on the UOW's transaction definition. See Table 13 on page 319 for an explanation of the interactions of indoubt attributes on the TDQUEUE and TRANSACTION definitions.

WAITACTION({REJECT|QUEUE}) (intrapartition queues only)
Specifies the action CICS is to take for an indoubt unit of work (UOW) if the definition for this queue specifies WAIT(YES). The possible actions are:

QUEUE
The UOW is indoubt and waiting; any locks held by the UOW for this queue remain active until the final state of the UOW is known. This means that tasks are suspended rather than receiving the LOCKED response. When the final state of the UOW is known, any changes that it has made are committed or backed out. Until then, any further requests of the following types that need one of the active locks must wait:

- READQ, if the indoubt UOW had issued READQ or DELETEQ requests.
- WRITEQ, if the indoubt UOW had issued WRITEQ or DELETEQ requests.
- DELETEQ, if the indoubt UOW had issued READQ, WRITEQ or DELETEQ requests.

REJECT
The UOW is indoubt and is waiting. Any lock held by the UOW for this queue is retained until the final state of the UOW is known. When the final state is known, any changes the UOW has made are committed or backed out. Until then, any further request that needs one of the retained locks is rejected, and a LOCKED response is returned. WAITACTION=REJECT causes LOCKED to be raised in exactly the same circumstances as those in which QUEUE causes a transaction to wait.

Required TDQUEUE definitions

CICS services use certain transient data queues, and the associated TDQUEUE definitions must be installed as soon as possible during a cold start.

To ensure that the required TDQUEUE definitions are installed as soon as possible, specify the **GRPLIST** system initialization parameter in one of the following ways:

- Specify DFHLIST as the first list in **GRPLIST**. The DFHLIST list contains the group DFHDCTG, which contains the relevant TDQUEUE definitions.
- Specify that group DFHDCTG is the first group in the first list in **GRPLIST**.

The transient data queues in group DFHDCTG are as follows:

CADL (needed to log z/OS Communications Server resource definitions)
For z/OS Communications Server resources, this destination keeps a log of each RDO definition installed in the active CICS system. The log records both the installation of entries in the TCT, and the deletion of autoinstalled entries from the TCT. It records definitions installed:

- By autoinstall
- Using CEDA INSTALL
- At system initialization

For details about defining CADL and CSDL, see the *CICS System Definition Guide*.

CADO (needed for CICS Development Deployment Tool messages)
CADO is the transient data queue that logs the messages from the CICS Development Deployment Tool.

CAIL (needed to log autoinstall terminal model definitions)
The autoinstall terminal model manager (AITM) uses this destination to log all autoinstall terminal model entries installed in, and deleted from, the TCT.

`CCPI (needed for CPI Communications messages)`
The common programming interface for communications (CPI Communications) writes messages to this destination.

`CCSE (needed for C language support)`
CICS directs the C standard streams to transient data queues. (Queue names are fixed in CICS: thus, the C standard streams cannot be redirected to other queues.) C programs write to the CCSE queue by writing to stderr. You can code this destination as extrapartition, intrapartition, or indirect. If you do not provide a TDQUEUE definition for the CCSE queue, writing to stderr in C programs fails.

`CCSI (optional, for C language support)`
The CCSI queue is reserved for stdin, the C standard stream for input data. Although the CCSI queue name is reserved for stdin, any attempt to read from stdin in CICS results in EOF being returned. For this reason, this destination is optional. You can code it as extrapartition, intrapartition, or indirect.

`CCSO (needed for C language support)`
CCSO is associated with stdout, the C standard stream for output data. You can code this destination as extrapartition, intrapartition, or indirect. If you do not define the CCSO queue, writing to stdout in C programs fails.

`CCZM (needed for CICS class messages)`
CCZM is the transient data queue that logs the messages from the CICS foundation classes.

`CDBC (needed for DBCTL DFHDB81xx messages)`
CDBC is defined as an indirect queue, which points to the CSML extrapartition queue. Only DBCTL DFHDB81xx messages use this data log; other messages use either the terminal or the console.

`CDB2 (needed if DB2 is used)`
CDB2 is the transient data queue for messages and statistics from the CICS DB2 attachment facility.

`CDEP (needed for deprecation messages)`
CDEP is the transient data queue for deprecation messages.

`CDUL (needed for transaction dump messages)`
CDUL is the destination for transaction dump messages. If a transaction dump is requested, for example after a transaction abend, a message is written to this destination to show that a dump has been taken or to give a reason why the dump was suppressed.

`CECO (needed for event capture and emission messages)`
CECO is the transient data queue for messages from the event capture and emission (EC) component.

`CEJL (needed for Enterprise Java messages)`
CEJL is the transient data queue for messages from the Enterprise Java domain.

`CEPO (needed for event processing messages)`
CEPO is the transient data queue for messages from the event processing (EP) domain.

`CESE (needed for runtime output from Language Environment)`
For Language Environment, all runtime output is written to this transient data queue. For further information, see the *z/OS Language Environment Programming Guide*.

CESO (needed for runtime output from Language Environment)
For Language Environment, all runtime output is written to this transient data queue. For further information, see the *z/OS Language Environment Programming Guide*.

CIEO (needed for IP ECI messages)
CIEO is the transient data queue for Internet Protocol (IP) external call interface (ECI) messages from the IP ECI (IE) domain.

CIIL (needed for CORBA and IIOP messages)
CIIL is the transient data queue for Common Object Request Broker Architecture (CORBA) and Internet Inter-ORB protocol (IIOP) messages from the II domain.

CISL (needed to log IPCONN resource definitions)
This destination provides a log of installed IPCONN resource definitions. During early CICS initialization, if CISL is not yet available messages intended for this destination can be routed to the console.

CISO (needed for IPIC messages)
CISO is the transient data queue for IP interconnectivity (IPIC) connection messages from the inter-system (IS) domain.

CJRM (needed for JRas logging and tracing facility messages)
CJRM is the transient data queue for messages from the JRas logging and tracing facility. These are messages that are issued by a Java class running in a CICS JVM that are not CICS messages.

CKQQ (needed for CICS-MQ Connection messages)
CKQQ is the transient data queue that logs the CICS-MQ messages that are issued during CICS-MQ adapter startup and shutdown. It is defined as an intrapartion queue.

CMIG (needed for migration log)
CMIG is a **migration log**, which receives messages reporting the use of functions that are no longer supported in CICS (for example, the EXEC CICS ADDRESS CSA command). You can define CMIG as an intrapartition, extrapartition, or indirect destination.

CMLO (needed for markup language messages)
CMLO is the transient data queue for messages from the markup language domain.

CMQM (needed for CICS-MQ messages)
CMQM is the queue that logs all CICS-MQ messages that are issued by the CICS-MQ adapter, CICS -MQ trigger monitor,and CICS-MQ bridge.

CPIO (needed for CICS SOAP messages)
CPIO is the transient data queue that logs the CICS SOAP messages.

CRDI (needed to log program resource definitions)
This destination provides a log of installed resource definitions, such as programs, transactions, maps, and mapsets.

CRLO (needed for resource lifecycle messages)
CRLO is the transient data queue for messages from the resource lifecycle manager.

CRPO (needed for Open Network Computing Remote Procedure Call (ONC RPC) messages)
CRPO is defined as an extrapartition queue, but you can make the destination intrapartition or indirect.

CSBA (needed if using the business application manager (BAM))
CSBA is the transient data queue for messages from the business application manager domain.

CSBR (needed if using the bridge facility)
CSBR is the transient data queue that logs the bridge facility messages.

CSCC (needed for CICS client error messages)
CSCC is the transient data queue that logs the CICS client error messages.

CSCS (needed for the sign-on transaction)
CSCS receives a message giving details of each sign-on and sign-off. It also receives a message about each rejected attempt at sign on and each resource authorization failure. This destination can be of any type.

CSDH (needed if using the document handler template)
CSDH is the transient data queue that receives explanatory messages from a document handler template exit program.

CSDL (needed to log RDO commands)
The resource definition online (RDO) transactions write to this destination all commands that result in changes to the CICS system definition (CSD) file or active CICS system.

You need CSDL only if you use RDO and want to keep a log of commands.

The maximum length of data records written to CSDL is 128 bytes. If you define CSDL as extrapartition, the associated SDSCI or DD statement should specify V format records with a minimum blocksize of 136 bytes.

CSFL (needed to log file resource definitions)
CSFL is a log of all file resource definitions installed in the active CICS system. Deletions of file resource entries are also logged here.

CSJE and CSJO (needed for redirected output from Java programs that execute in a JVM)
CSJE and CSJO receive output from JVMs that has been intercepted by the CICS-supplied sample class com.ibm.cics.samples.SJMergedStream. This sample class can optionally be specified by the USEROUTPUTCLASS option in a JVM profile. CSJE is for stderr output, internal messages, and unresettable event logging, and CSJO is for stdout output. The com.ibm.cics.samples.SJMergedStream class handles both types of output, and directs them to the correct transient data queue. CSJE and CSJO are defined as indirect queues that point to the CSSL queue.

The length of messages issued by the JVM can vary, and the maximum record length for the CSSL queue (133 bytes) might not be sufficient to contain some of the messages you receive. If this happens, the sample output redirection class issues an error message, and the text of the message might be affected. If you find that you are receiving messages longer than 133 bytes from the JVM, you should redefine CSJO and CSJE as separate transient data queues. Make them extrapartition destinations, and increase the record length for the queue. You can allocate the queue to a physical data set or to a system output data set. You might find a system output data set more convenient in this case, because you do not then need to close the queue in order to view the output. If you redefine CSJO and CSJE, ensure that they are installed as soon as possible during a cold start, in the same way as for transient data queues that are defined in group DFHDCTG.

CSKL (needed to log transaction and profile resource definitions)
CSKL is a log of all transaction and profile resource definitions installed in the active CICS system. Deletions are also logged here.

CSLB (needed to log LIBRARY resource definitions)
CSLB is a log of all changes to the dynamic LIBRARY resources installed in the active CICS region. That is, install and discard of LIBRARY resources, and any changes to the configuration of LIBRARY resources, including changes to the enablement, ranking or critical status of a LIBRARY. If no dynamic LIBRARY resources are installed, no audit logging to CSLB takes place.

CSML (needed for the sign-off transaction)
CICS sign-off writes data to this destination.

CSMT (needed for terminal error and abend messages)
The terminal abnormal condition program (DFHTACP) and abnormal condition program (DFHACP) write terminal error and ABEND messages, respectively, to this destination. You can code this destination as extrapartition, intrapartition, or indirect.

CSNE (needed for node error messages)
The node abnormal condition program (DFHZNAC) and the node error program (DFHZNEP) write terminal error messages and data to this destination. You can code this destination as extrapartition, intrapartition, or indirect.

CSOO (needed for sockets domain messages)
CSOO is the transient data queue for messages from the sockets domain.

CSPL (needed to log program resource definitions)
CSPL is a log of all program resource definitions installed in the active CICS system. Deletions are also logged here.

CSQL (needed for transient data queue messages)
CSQL is the transient data queue that receives audit log messages from the transient data queue manager itself.

CSRL (needed to log partner resource definitions)
CSRL is a log of all PARTNER resources installed in the active CICS system. Deletions are also recorded here.

CSSH (needed for scheduler services)
CSSH is the transient data queue that receives messages from the scheduler services.

CSSL (needed for recovery utility statistics)
The recovery utility program (DFHRUP) writes statistics to this destination. This destination needs a minimum logical record length of 132 bytes and a minimum blocksize of 136 bytes.

CSTL (needed for terminal I/O error messages)
The terminal abnormal condition program (DFHTACP) writes terminal I/O error messages to this destination. You can code this destination as extrapartition, intrapartition, or indirect.

CSZL (needed for the Front End Programming Interface)
If you have installed the CICS FEPI feature, CSZL is used as the destination for FEPI messages. For information about FEPI transient data destinations, see the *CICS Front End Programming Interface User's Guide*.

CSZX (needed for the Front End Programming Interface)
If you have installed the CICS FEPI feature, CSZX is intended for use with a

triggered transaction. For information about FEPI transient data destinations, see the *CICS Front End Programming Interface User's Guide*.

CWBO (needed for CICS Web support messages)
CWBO is the transient data queue that logs the CICS Web support messages that are issued from the CICS Web Interface.

CWBW (needed for CICS Web warning messages)
CWBW is the transient data queue that logs the HTTP warning headers on messages that are received by CICS Web support.

Chapter 33. TERMINAL resources

A TERMINAL resource defines the characteristics of a terminal device which communicates with CICS. Terminal devices include visual display units, printers, operating system consoles, and more specialized devices such as facsimile (FAX) machines.

The unique and possibly dynamic properties of terminals are defined in the TERMINAL definition in the CSD file.

However, many of your terminals have identical properties, and you do not need to define each of them separately and fully to CICS. There are two ways you can reduce the time and effort needed to define each terminal. They are:

1. **TYPETERM definitions**, with or without the QUERY function. Each TERMINAL definition must refer to a TYPETERM definition that defines the properties that are common, often more complex, and usually static. Together, information from the TERMINAL and TYPETERM definitions makes up a terminal entry in the TCT (a TCTTE).

   One TYPETERM can represent a lot of the properties of many terminals. Some of these properties can be left undefined at the time of creating the TYPETERM definition. These properties can be determined at logon time for each terminal, from the QUERY structured field.

   There are, however, still more properties that many terminals have in common, to the extent that their TERMINAL definitions would all be identical. CICS provides a facility that avoids the need for each terminal to have its own resource definition installed in the TCT the whole time CICS is active.
2. **Autoinstall**, using one TERMINAL definition to represent many terminals. You can let CICS create and install the resource dynamically when the terminal is needed, at logon time. To do this, CICS uses a **model TERMINAL definition** from the CSD file. This process is known as automatic installation, or autoinstall.

   Autoinstall reduces the virtual storage required for the terminal control table (TCT) if some of your terminals are not logged on when CICS is active.

   If you are involved in planning for and managing CICS communications resources such as terminals, read “Autoinstalling z/OS Communications Server terminals” on page 477 for further information.

Terminals for printing

A TERMINAL definition for a display device can name TERMINAL definitions for printers, using the PRINTER and ALTPRINTER attributes. Such a reference is not resolved when the TERMINAL definitions are installed. Instead, the reference is resolved when the printer is needed by the display device.

There are several ways in which printed output can be created and sent to a printer.

- BMS page building
- Screen copying, using one of the following:
  A hardware copy key
  A local copy key
  The ISSUE PRINT command

The TYPETERM and TERMINAL definitions are used for both printers and display devices. A number of attributes apply only to printers, or have special meanings for printers. There are also some attributes that you need to specify for a display device that is to be used for screen-copying.

Printers

Supply a TERMINAL definition for each printer.

Specify NO for AUTINSTMODEL, unless you are using autoinstall for printers. (For more information about this, see "Autoinstall and output-only devices" on page 480.)

ALTPAGE

For BMS, the PAGESIZE attribute determines the default page size, and also the size of the print buffer. You specify the number of lines in the page (the length) and the number of characters in each line (the width).

Another attribute, ALTPAGE, indicates the page size to be used when the alternate screen size (ALTSCREEN) is selected. The width you specify in ALTPAGE must be the same as the width specified in the ALTSCREEN attribute. However, the length of ALTPAGE and ALTSCREEN can be different. This could be useful if you are using the same BMS map to display and to print. For instance, you could make the screen one line longer than the page, to reserve the bottom line of the screen for error messages.

The ALTPAGE, DEFSCREEN, and ALTSCREEN attributes do not normally apply to printers.

AUTOPAGE

AUTOPAGE must be YES for printers, but you do not need to worry about it, because RDO fills it in for all printer DEVICE types. Autopaging means that BMS multiple page messages are printed continuously, without operator intervention. This is what is normally required for a printer. (Contrast the requirement for multiple page messages, displayed on a 3270-type display, when the operator wants to finish reading a page before requesting the next page.)

Only BMS SEND commands with the PAGING option use autopaging. BMS SEND with TERMINAL or SET does not use autopaging.

You need at least one TYPETERM definition for each type of printer you use. You may need more, if you want to allow printers to be used only for some functions and not for others.

DEVICE

The TERMINAL definition for each printer must refer to a TYPETERM with an appropriate DEVICE type. The DEVICE attribute and, in one case, the SESSIONTYPE attribute, determine whether a TYPETERM defines printers or display devices. The values that you can specify for printers are:

DEVICE	SESSIONTYPE	Printers
3270P	-	All printers that support the 3270 data stream (not SNA-connected).
LUTYPE3	-	All printers that support the 3270 data stream (SNA-connected).
SCSPRINT	-	All printers that support the SNA character set (SNA-connected).

DEVICE	SESSIONTYPE	Printers
3790	SCSPRINT	IBM 3793 keyboard-printers that support the SNA character set (SNA-connected).

FORMFEED
Define FORMFEED as YES for BMS page building.

PAGESIZE
specifies the default page size for this terminal. The product of lines and columns must not exceed 32767, where lines = the number of lines in the page, and columns = the number of characters in each line.

If PGESIZE is not coded, the following defaults are used:

TW33, TW35	(12,80)
3270 display model 1	(12,40)
3270 display model 2	(24,80)
3270 printer	(12,80)

TERMINAL
The name of the printer is the TERMINAL name on the resource definition for that printer.

Note: The PRINTER attribute is used on a display device definition to refer to a printer device to be used for output from the display. Do not specify PRINTER on the printer definition. See "Associating printers with display devices."

Associating printers with display devices

If you want to copy the contents of a screen direct to a printer, associate a specific printer with the display device in the TERMINAL definition. You do this using the PRINTER and ALTPRINTER attributes.

ALTPRINTCOPY
Specify YES for ALTPRINTCOPY if you want to use the hardware COPY feature on the alternative printer.

ALTPRINTER
The alternative printer is used if the primary printer is unavailable. ALTPRINTER and ALTPRINTCOPY can be set dynamically by the autoinstall control program, if the display device definition is autoinstalled.

PRINTER
The primary printer is to be used. PRINTER and PRINTERCOPY can be set dynamically by the autoinstall control program, if the display device definition is autoinstalled.

PRINTERCOPY
Specify YES for PRINTERCOPY if you want to use the hardware COPY feature on the primary printer.

Pipeline terminal definitions

When you define a 3600 pipeline logical unit, you generate a TCTTE that is associated with a pool of TCTTEs.

As messages enter CICS from the 3600 pipeline logical unit, a task is attached to process this message, using as an anchor block one of the TCTTEs from the pool. In this way, consecutive messages sent via the pipeline logical unit can be processed concurrently, with the number of concurrent transactions being limited by the number of TCTTEs in the pool. The number of TCTTEs in the pool should represent the high watermark of inquiry activity. In this way, the pipeline facility allows fewer TCTTEs to be defined to CICS than the total number of pipeline inquiry terminals.

All the TERMINAL definitions within a named POOL must be in the same group in the CSD file. TASKLIMIT must have been specified on at least one of the definitions in the group. If it is specified on more than one definition, the value used is the maximum value of TASKLIMIT over the definitions in the group.

TERMINAL and TYPETERM definitions are resolved as for ordinary terminals.

If you do not install PIPELINE terminals by GROUP, the results can be unpredictable.

Note: CICS does not support automatic transaction initiation (ATI) on pipeline terminals.

Defining pipeline terminals

When you define a pipeline terminal, you specify particular attributes.

Define pipeline terminals with the following attributes:

NETNAME
: The z/OS Communications Server session that is used.

POOL
: All the TERMINAL definitions having the same POOL name belong to the same pipeline pool. The presence of a value for the POOL attribute distinguishes these from ordinary TERMINAL definitions.

SESSIONTYPE
: Use this attribute on the TYPETERM definition to identify the TYPETERM as representing pipeline terminals. Specify PIPELINE as the value.

TASKLIMIT
: Specify the maximum number of concurrent tasks that can be active for the pool of terminals on at least one of the TERMINAL definitions.

One TYPETERM would normally suit all the definitions. The TYPETERM may be in another group.

Pipeline transactions are associated with a PROFILE definition that has the ONEWTE attribute. A program associated with these transactions is permitted only one write or EXEC CICS SEND operation, or else it is terminated with an ATCC abend code. This means that CICS tasks rapidly appear and disappear across the pool of sessions.

There is an example of definitions for a pool of pipeline terminals in the description of the POOL attribute in "TERMINAL attributes" on page 286.

Note:

1. If you install a pipeline terminal naming a pipeline that already exists in CICS, both the old pipeline and all its related terminals are deleted before the new definitions are installed.
2. If you discard the terminal that is defined as owning the existing pipeline, the existing pipeline and all its related terminals are deleted.
3. If you discard a terminal that is not the pipeline owner or change it to a different pipeline, or to a nonpipeline terminal, the rest of the pipeline definition is unchanged. (The owning terminal of a pipeline is the terminal with the first name in alphanumeric sequence that is related to the pipeline in the group from which the pipeline was installed.)
4. You cannot change a terminal in an existing pipeline to a nonpipeline terminal, or change it to a new pipeline, if the old pipeline is also being reinstalled in the same group. To do this, you divide the installation into two stages. If you are installing the group twice, remember to set the relevant terminals out of service in the meantime.

Devices with LDC lists

For 3600, 3770 batch, 3770, and 3790 batch data interchange, and LUTYPE 4 logical units, you can specify the name of an LDC (logical device code) list.

The list specifies which LDCs are valid for this logical unit and, optionally, which device characteristics are valid for each LDC. The first LDC in this list is the default when CICS must choose a default LDC for a logical unit.

All the TERMINAL definitions for devices that reference a particular LDC list must name the same TYPETERM, because the LDCLIST attribute is on the TYPETERM definition.

The LDC list itself must be defined using a DFHTCT TYPE=LDCLIST macro. It may be a local LDC list or an extended local LDC list. There is an example of the coding for each in “TYPETERM attributes” on page 341, and further guidance in “DFHTCT logical device codes: z/OS Communications Server non-3270” on page 555. You use the label coded on the macro instruction to identify the LDC list on the TYPETERM definition, specifying it in the LDCLIST attribute.

APPC (LUTYPE6.2) single session terminal

An APPC (LUTYPE6.2) single session terminal can be defined as a TERMINAL, with a reference to a TYPETERM with DEVICE(APPC). When these definitions are installed, the resources they define are known to CICS as a connection and a modeset, just as they are when defined in RDO as CONNECTION and SESSIONS. The name of the connection is the TERMINAL name and the name of the modeset is the MODENAME on the TERMINAL definition.

An APPC terminal may be a PS/2, an Application System/400® (AS/400®), a System/38, or similar. You can define an APPC terminal either by a TERMINAL-TYPETERM definition or by a CONNECTION-SESSIONS definition. Both kinds of definition can be autoinstalled (see “Autoinstalling z/OS Communications Server terminals” on page 477 and “Autoinstalling APPC connections” on page 493 for information about autoinstall). If you decide to use the TERMINAL-TYPETERM method, the following attributes are important:

DEVICE
The TERMINAL definition references a TYPETERM with APPC (advanced

program-to-program communications) specified as the DEVICE. One such TYPETERM definition suffices for many terminals.

MODENAME
This is the name that CICS uses to identify the session when the definition is installed in the active system.

Terminals for transaction routing

Transaction routing enables terminals in one CICS system to start transactions in another CICS system.

In these topics, the word “system” is used to indicate a CICS system communicating with other systems using IPIC, MRO, or ISC. You can use transaction routing between systems connected by IPIC, MRO, or by an APPC link. See the *CICS Intercommunication Guide* for more information.

You can define a terminal for use in transaction routing as one of the following types:
- A local terminal
- A remote terminal
- A dual-purpose terminal

The type of terminal that you define depends on how the definition is made available to the application-owning CICS system (AOR). You can make the definition available using one of the following methods:
- Duplicating terminal definitions
- Sharing terminal definitions
- Shipping terminal definitions

Terminal definitions used in transaction routing

You can define your terminals for use in transaction routing in two different ways. You can install a *local terminal definition* in the terminal-owning region and a *remote terminal definition* in the application-owning region. Alternatively, you can install a *dual-purpose terminal definition* in both regions.

Local terminal definitions

A *local terminal definition* is a full definition of the terminal, installed in the terminal-owning system.

A local terminal definition is used in the **duplicating** and in the **shipping** methods.
- No REMOTESYSTEM, REMOTESYSNET, or REMOTENAME is needed on the TERMINAL or CONNECTION definition.

  If the REMOTESYSTEM named on the TERMINAL definition is the name of the local system (as specified by the SYSIDNT system initialization operand), the definition is treated as a local terminal when it is installed, rather than a remote one.
- SHIPPABLE on the TYPETERM is NO if duplicating definitions.
- SHIPPABLE on the TYPETERM is YES if shipping definitions.
- SHIPPABLE on the TYPETERM is obligatory for APPC devices.
- All other necessary attributes on the TERMINAL and TYPETERM definitions must be specified.

Remote terminal definitions

When a terminal belonging to (local to and fully defined in) one system invokes a transaction belonging to another system, it is known to the application-owning region as a *remote terminal*.

The application-owning system needs to have access to at least a partial definition of the remote terminal. This partial definition is often known as a *remote definition*. This is a partial definition of the terminal, installed in the application-owning region and intermediate regions. It contains the minimum information necessary for the terminal to access a transaction in that system. You create remote definitions only if you are using the **duplicating** method.

- The REMOTESYSTEM name must be the name of the CONNECTION definition for the next region in the transaction routing path to the terminal-owning region.
- REMOTESYSNET must be the netname (generic applid) of the terminal-owning region. If REMOTESYSTEM names a direct CONNECTION to the terminal-owning region, REMOTESYSNET is not required unless the terminal-owning region is a member of a z/OS Communications Server generic resource group, and the direct connection is an APPC link.
- The REMOTENAME is the name by which the terminal or APPC device is known by in the terminal-owning region. It may be the same as or different from the TERMINAL or CONNECTION name, which must be the name the terminal is known by in the application-owning system. REMOTENAME defaults to the TERMINAL name if not specified.
- SHIPPABLE on the TYPETERM is NO for non-APPC devices.
- SHIPPABLE on the TYPETERM is obligatory for APPC devices.
- Some of the attributes on the TERMINAL and TYPETERM definitions may be omitted. For further guidance about these definitions, see the *CICS Intercommunication Guide*.

The following terminals and logical units cannot use transaction routing and therefore cannot be defined as remote:
- Pooled 3600 or 3650 pipeline logical units
- IBM 2260 terminals
- The MVS console

Dual-purpose terminal definitions

A *dual-purpose terminal definition* is a full definition of the terminal, installed in the terminal-owning system and in the application-owning and intermediate regions.

It is used in the **sharing** method only.

- The REMOTESYSTEM name must be the SYSIDNT of the terminal-owning region. This must also be the name of the CONNECTION that you define from the application-owning region to the intermediate region (if any), and from the intermediate region to the terminal-owning region. All the CONNECTION definitions on the path from the application-owning region to the terminal-owning region must be given this same name.
- REMOTESYSNET must be the netname (generic applid) of the terminal-owning region.
- The REMOTENAME is the same as the TERMINAL or CONNECTION name.
- SHIPPABLE on the TYPETERM is NO for non-APPC devices.
- SHIPPABLE on the TYPETERM is obligatory for APPC devices.
- All other necessary attributes on the TERMINAL and TYPETERM definitions must be specified.

Making partial definitions available for transaction routing

You can make a partial definition of a terminal available to the application-owning CICS region in several ways.

Duplicating terminal definitions

You can create a separate terminal definition for each region involved, each on a CSD file that is accessible to that region.

One is created as a local definition and one or more are created as remote definitions. This is referred to as **duplicating terminal definitions**, because there is more than one resource definition for the same terminal (the definitions are not necessarily exact duplicates of each other).

To duplicate terminal definitions:

1. Create a local definition for the terminal, in the CSD file of the terminal-owning region, or on a shared CSD file.
2. Create a remote definition for the terminal, in the CSD file of the application-owning region, or in a shared CSD file. If you have more than one application-owning region, you may need more than one remote definition, but if the regions are sharing a CSD file, you may be able to use the same remote definition for them all.
3. Install the local definition in the terminal-owning region. This definition can be autoinstalled.
4. Install the remote definition in the application-owning region(s).

Note: If your regions share a CSD file, make sure the definitions are in different groups, because:

- You want to install them in different regions
- The TERMINAL names are probably the same, so the definitions cannot be in the same group.

Advantages:

There are some advantages to duplicating terminal definitions.

- You can use this method whether or not your systems share a CSD file, so you can use it for transaction routing between different MVS images.
- This is the **only** method you can use if your terminals are known by different names in different systems.
- You can use automatic transaction initiation (ATI) in the application-owning system for a remote terminal without having to set up XALTENF and XICTENF exits. This is especially useful for printers, because they must be acquired **before** any ATI can be successful.

Disadvantages:

There are some disadvantages to duplicating your terminal definitions.

- The CSD file uses at least twice the necessary amount of disk storage for your definitions.
- The TCT uses more than the necessary amount of virtual storage for your definitions.
- Unnecessary work is involved in maintaining the definitions.

- You can autoinstall the terminal in the terminal-owning system, but you cannot autoinstall it in the application-owning systems.

Example:

In this example, an APPC device (netname APPC1) is connected to a terminal-owning region (applid CICA), which is connected in turn to an application-owning region (applid CICB).

Resources which are installed in the terminal-owning region are maintained in CSD1; those installed in the application-owning region are maintained in CDS2. The configuration is illustrated in Figure 7.

This table shows the resource definitions required in each region:

Purpose of defintions	**Definitions in the terminal-owning region**	**Definitions in the application-owning region**

Defines the connection between the systems	`CONNECTION(AOR)`
	`NETNAME(CICB)`
		`CONNECTION(TOR)`
		`NETNAME(CICA)`

Defines the connection to the APPC device, using a TERMINAL and TYPETERM definition	`TERMINAL(APC1)`
	`TYPETERM(APPC0001)`
	`NETNAME(APPC1)`
	
	`TYPETERM(APPC0001)`
	`DEVICE(APPC)`
		`TERMINAL(BPC1)`
		`TYPETERM(APPC0001)`
		`NETNAME(APPC1)`
		`REMOTESYSTEM(TOR)`
		`REMOTENAME(APC1)`
		
		`TYPETERM(APPC0001)`
		`DEVICE(APPC)`

Defines the connection to the APPC device, using a CONNECTION and SESSIONS definition	`CONNECTION(APC1)`
	`NETNAME(APPC1)`
	
	`SESSIONS(APPC0001)`
	`CONNECTION(APC1)`
		`CONNECTION(BPC1)`
		`NETNAME(APPC1)`
		`REMOTESYSTEM(TOR)`
		`REMOTENAME(APC1)`

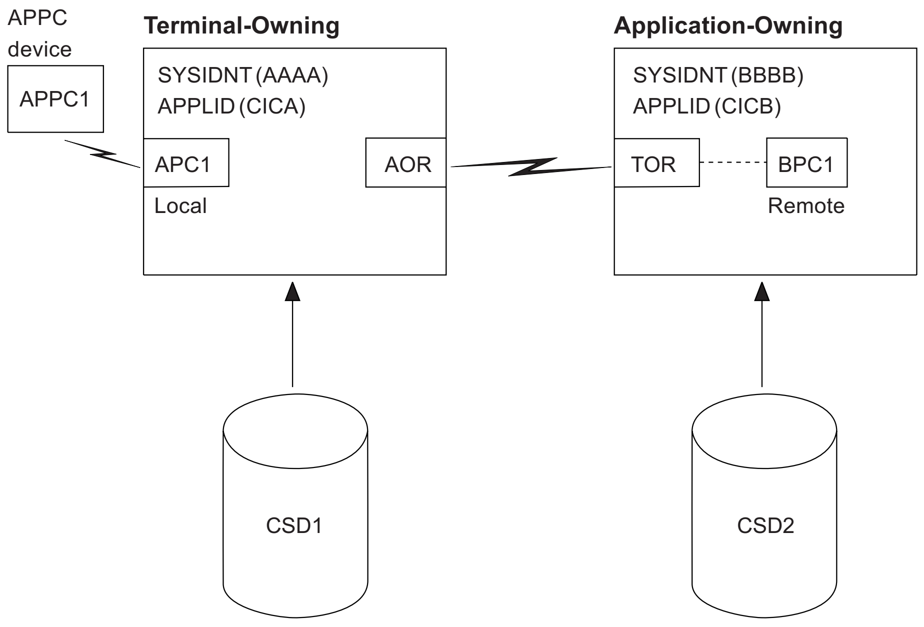


Figure 7. Maintaining local and remote definitions separately.

Sharing dual-purpose terminal definitions

You can create a dual-purpose definition in one, shared CSD file that is available to all the terminal-owning and application-owning regions involved.

1. Create a dual-purpose definition for the terminal, in the shared CSD file.
2. Install the definition in all the regions: it becomes a remote definition in a region whose SYSIDNT is different from the REMOTESYSTEM name, and a local definition in a region whose SYSIDNT is the same as the REMOTESYSTEM name.

Advantages:

There are some advantages to sharing dual-purpose terminal definitions.

- You can use automatic transaction initiation (ATI) in the application-owning system for a remote terminal without having to set up XALTENF and XICTENF exits. This is especially useful for printers, because they must be acquired **before** any ATI can be successful.
- Disk storage use is reduced because you need only one CSD file record.
- Maintenance is reduced because you need only one CSD file record.

Disadvantages:

There are some disadvantages to sharing dual-purpose terminal definitions.

- The TCT uses more than the necessary amount of virtual storage for your definitions.
- You cannot use this method if your systems do not share a CSD file, so you can use it only for transaction routing within the same MVS image.
- You cannot use this method if your terminals are known by different names in different systems.

Example:

In this example, an APPC device (netname APPC1) is connected to a terminal-owning region (applid CICA), which is connected in turn to an application-owning region (applid CICB).

Resources which are installed in the terminal-owning region and the application-owning region are maintained in a shared CSD. The configuration is illustrated in Figure 8 on page 281.

This table shows the resource definitions required in each region:

Purpose of defintions	Definitions in the application-owning region	Definitions in the terminal-owning region
Defines the connection between the systems	`CONNECTION(AOR1)` `NETNAME(CICB)`	`CONNECTION(TOR1)` `NETNAME(CICA)`
	Definitions shared by the terminal-owning region and the application-owning region	

Purpose of defintions	Definitions in the application-owning region	Definitions in the terminal-owning region

Defines the connection to the APPC device, using a TERMINAL and TYPETERM definition	`TERMINAL(APC1)`
	`TYPETERM(APPC0001)`
	`NETNAME(APPC1)`
	`REMOTESYSTEM(TOR1)`
	`REMOTENAME(APC1)`
	
	`TYPETERM(APPC0001)`
	`DEVICE(APPC)`	

Defines the connection to the APPC device, using a CONNECTION and SESSIONS definition	`CONNECTION(APC1)`
	`NETNAME(APPC1)`
	`REMOTESYSTEM(TOR1)`
	`REMOTENAME(APC1)`
	
	`SESSIONS(APPC0000)`
	`CONNECTION(APC1)`	

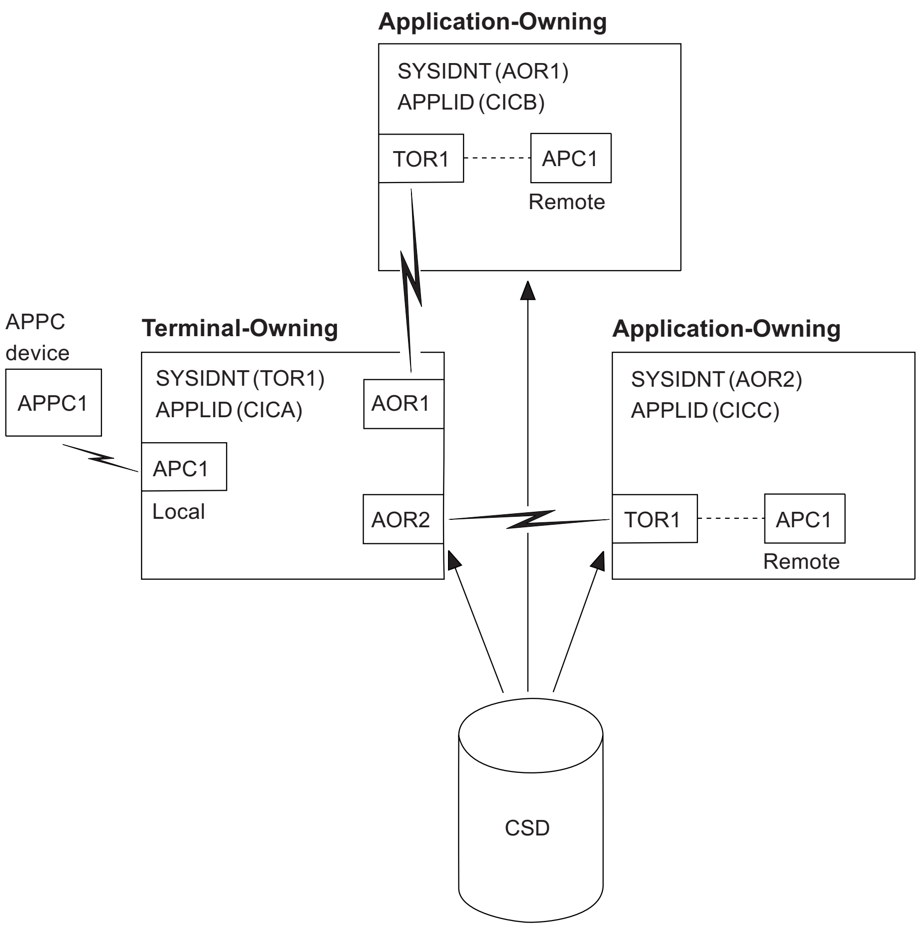


Figure 8. Sharing dual-purpose definitions.

Shipping terminal definitions

You can define in the CSD file available to the terminal-owning region, a local terminal definition that can be shipped to other regions when required.

1. You create a local definition for the terminal, in the CSD file of the terminal-owning region. (This can be a shared CSD file.)

2. You install the local definition in the terminal-owning region. (This definition can be installed at system initialization, or by using CEDA INSTALL, or by autoinstall.)
3. When the terminal invokes a transaction belonging to another region, the information necessary to create a remote definition is shipped to that region, and a temporary definition is installed there automatically.

If the local definition was autoinstalled, the shipped definition lasts until the terminal is logged off. Otherwise, the shipped definition lasts until the local definition is installed again, or until the link between the regions is broken.

Advantages:

There are several advantages to sharing dual-purpose definitions.
- You can use this method whether or not your systems share a CSD file, so you can use it for transaction routing between different MVS images.
- Disk storage use is reduced because you need only one CSD file record.
- Maintenance is reduced because you need only one CSD file record.
- Virtual storage use is reduced because you install the definition in only one system.
- You can autoinstall the terminal in the terminal-owning system, and **in effect** autoinstall it in the application-owning systems. (Shipping terminal definitions has the same effect as autoinstall, but does not itself involve the autoinstall process.)

Disadvantages:

There are some disadvantages to sharing dual-purpose definitions.
- You cannot use this method if your terminals are known by different names in different systems.
- You may need to use the global exits XALTENF and XICTENF if you use ATI in the transaction owning system. See the *CICS Customization Guide* for programming information on these exits.

Example:

In this example, an APPC device (netname APPC1) is connected to a terminal-owning region (applid CICA), which is connected in turn to an application-owning region (applid CICB).

Resource definitions for the APPC device are maintained in a CSD used by the terminal-owning region and installed there. The definitions used in the application-owning region shipped from the terminal-owning region. The configuration is illustrated in Figure 9 on page 283.

This table shows the resource definitions required in each region:

Purpose of defintions	Definitions in the application-owning region	Definitions in the terminal-owning region
Defines the connection between the systems	`CONNECTION(AOR1)` `NETNAME(CICB)`	`CONNECTION(TOR1)` `NETNAME(CICA)`

Purpose of defintions	Definitions in the application-owning region	Definitions in the terminal-owning region

Defines the connection to the APPC device, using a TERMINAL and TYPETERM definition	none required	`TERMINAL(APC1)`
		`TYPETERM(APPC0001)`
		`NETNAME(APPC1)`
		
		`TYPETERM(APPC0001)`
		`DEVICE(APPC)`
		`SHIPPABLE(YES)`

Defines the connection to the APPC device, using a CONNECTION and SESSIONS definition	none required	`CONNECTION(APC1)`
		`NETNAME(APPC1)`
		
		`SESSIONS(APPC0000)`
		`CONNECTION(APC1)`

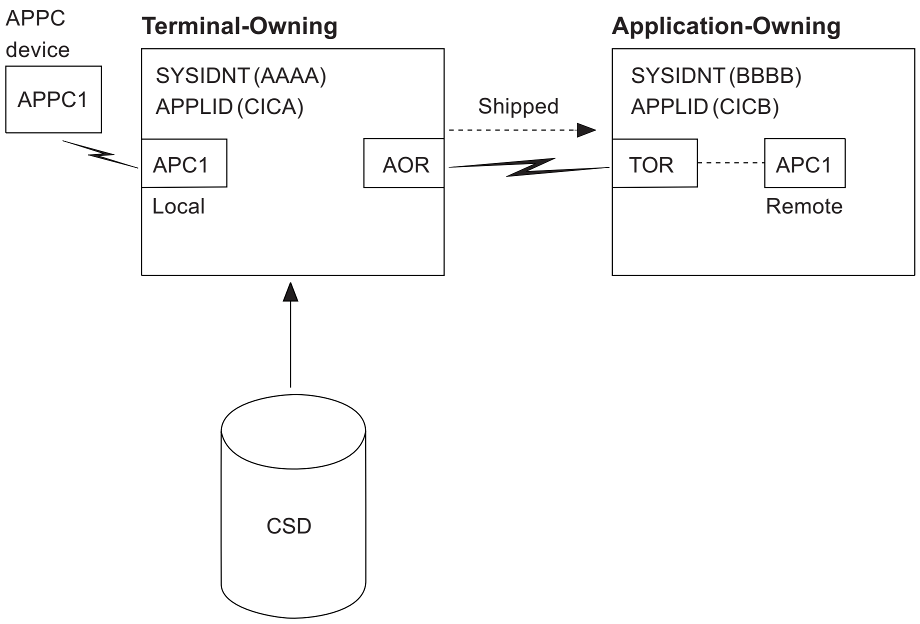


Figure 9. Shipping local definitions to an application-owning system.

APPC devices for transaction routing

APPC transaction routing allows an APPC device belonging to one CICS system to invoke transactions in another CICS system.

The three methods of defining a terminal for transaction routing, described in "Terminals for transaction routing" on page 276, are also applicable to APPC devices. These methods can involve the use of either TERMINAL-TYPETERM or CONNECTION-SESSION definitions. For APPC single session terminals, the TERMINAL-TYPETERM definition method is recommended (see "APPC (LUTYPE6.2) single session terminal" on page 275.)

Transaction routing summary

Before you define terminals for transaction routing, you must consider which of the various methods of defining terminals is most suitable for your CICS configuration.

- Use the **shipping method**, unless you use terminals that are known by different names in different systems. For ATI to work with the shipping method in a transaction owning system, you might need to use the XALTENF and XICTENF global exits. See the *CICS Customization Guide* for programming information on these exits.

- Use the **sharing method** for systems with a shared CSD file, if you use the same names in different systems and you do not want to use global exits to ensure that ATI works.
- Use the **duplicating method** if you use terminals that are known by different names in different systems, or if you use ATI to acquire terminals but do not have a shared CSD file, and you do not want to use the XALTENF and XICTENF global user exits.

You could use a mixture of methods: perhaps shipping for display terminals, and duplicating for printers that need ATI to acquire them but without the use of the XALTENF and XICTENF global user exits.

Before you start creating definitions for intercommunication resources, see the *CICS Intercommunication Guide* for further information. There, you can find useful examples of the attributes you must specify for different types of links and sessions.

Installing terminal definitions

For a new or changed TERMINAL resource definition to become active in a CICS region, you must install it.

About this task

For groups of TERMINAL definitions, use the following procedure:

1. Make sure that nobody is using the terminals that you want to install. Remember that CEMT INQUIRE TERMINAL puts a lock on the TCT entry, and this also prevents installation of a group containing that terminal.
2. Make sure that there are no ATIs outstanding for the terminals.
3. Use CEMT, with a generic name if appropriate:
   ```
   CEMT SET TERMINAL(trmid) RELEASED OUTSERVICE NOATI
   ```
4. Install the resource definitions:
   ```
   CEDA INSTALL GROUP(groupname)
   ```
5. Use CEMT to make the terminals available again:
   ```
   CEMT SET TERMINAL(trmid) ACQUIRED INSERVICE ATI
   ```

TERMINAL and TYPETERM definitions are resolved during installation to become a TCT entry, sometimes known as a TCT terminal entry or TCTTE. Each definition contains only some of the information necessary to build a TCT entry.

Each TYPETERM definition must be installed before or at the same time as the TERMINAL definitions that reference it. When you are using CEDA to install groups, if the TYPETERMs are in a separate group from the TERMINALs, you must install the TYPETERMs group before the TERMINALs. You may include TYPETERMs and TERMINALs in the same group for testing purposes, although it is not recommended for long-term use. (See “What should be in a group?” on page 23.)

Because the TERMINAL definition is not necessarily in the same group as its associated TYPETERM definition, the global catalog is used to store the TYPETERMs.

Changing a TYPETERM definition and then reinstalling it has no effect on an already installed terminal entry, even though the TERMINAL definition used to create it refers to the TYPETERM. To change the terminal entry, you must reinstall both the TYPETERM and the TERMINAL.

Checking terminal definitions

Although you can use the CHECK command to check a group of TERMINAL definitions (it resolves references from display devices to printers, for instance), it is not very useful in resolving TYPETERM references if these are in a separate group because it would produce many unwanted messages for missing TYPETERMs.

About this task

When you add a new cluster of terminal devices, create a new group for them, and then create a list containing your TYPETERM definitions group and the new group of TERMINAL definitions. You can then use the CHECK command to check the whole list, without it being too time-consuming. This list is needed only for the duration of the checking, and is never named as the GRPLIST.

To avoid duplicating TERMINAL names, you could maintain a list of all groups containing TERMINAL definitions. You can use CHECK LIST to ensure that all new TERMINAL names are unique. If this is too lengthy a process, you can avoid it if TERMINAL names beginning with similar characters are kept in separate groups, for example:

```
TERMINAL(AZ01) GROUP(AZTERMS)
TERMINAL(AZ02) GROUP(AZTERMS)
TERMINAL(AZ03) GROUP(AZTERMS)
          .
          .
          .
TERMINAL(AZnn) GROUP(AZTERMS)

TERMINAL(BJ01) GROUP(BJTERMS)
TERMINAL(BJ02) GROUP(BJTERMS)
TERMINAL(BJ03) GROUP(BJTERMS)
          .
          .
          .
TERMINAL(BJnn) GROUP(BJTERMS)
```

Remember: If you are using autoinstall for terminals, you must install the TYPETERM definitions before installing the autoinstall model definitions, to ensure that the model is created. The CHECK command does not check the order of such definitions.

TERMINAL attributes

Describes the syntax and attributes of the TERMINAL resource.

```
►►──TERMINAL(name)──GROUP(groupname)──┬──────────────────────┬──────────────────────────────────►
                                      └─DESCRIPTION(text)─┘

   ┌─AUTINSTMODEL(NO)────────────────────────────────────┐                          ┌─SOLICITED(NO)──┐
►──┼─────────────────────────────────────────────────────┼─┬──────────────────────┬─┼────────────────┼──►
   └─┬─AUTINSTMODEL(ONLY)─┬─┬────────────────────────────┤ └─CONSNAME(console)─┘   └─SOLICITED(YES)─┘
     └─AUTINSTMODEL(YES)──┘ └─AUTINSTNAME(autinstname)─┘

   ┌─INSERVICE(YES)─┐
►──┼────────────────┼──┬────────────────┬──┬──────────────────┬──┬───────────────────┬──────────►
   └─INSERVICE(NO)──┘  └─NATLANG(code)─┘  └─NETNAME(netname)─┘  └─POOL(poolname)─┘

►──┬──────────────────────────────────────────────────────────────────────────────────────┬────►
   │                       ┌─PRINTERCOPY(NO)──┐                                           │
   └─┬──────────────────┬──┼──────────────────┼──┬─────────────────────────────────────┬──┘
     └─PRINTER(printer)─┘  └─PRINTERCOPY(YES)─┘  │                   ┌─ALTPRINTCOPY(NO)──┐ │
                                                 └─ALTPRINTER(printer)─┼───────────────────┼─┘
                                                                       └─ALTPRINTCOPY(YES)─┘

►──┬──────────────────────────┬──┬──────────────────────────────────────────────────┬─────────►
   └─REMOTESYSNET(netname)─┘  └─REMOTESYSTEM(connection)──┬────────────────────────┬┘
                                                           └─REMOTENAME(terminal)─┘

                                     ┌─TASKLIMIT(NO)─────┐  ┌─TERMPRIORITY(0)──────────┐
►──┬─────────────────────────────┬───┼───────────────────┼──┼──────────────────────────┼─────►
   └─SECURITYNAME(securityname)─┘   └─TASKLIMIT(number)─┘  └─TERMPRIORITY(priority)─┘

►──┬────────────────────────────┬──TYPETERM(typeterm)──┬───────────────────┬──┤ APPC attributes ├──────►◄
   └─TRANSACTION(transaction)─┘                        ├─USERID(userid)───┤
                                                        ├─USERID(*EVERY)───┤
                                                        └─USERID(*FIRST)───┘
```

APPC attributes:

```
   ┌─ATTACHSEC(LOCAL)───────┐   ┌─BINDSECURITY(NO)──┐
├──┼────────────────────────┼───┼───────────────────┼──┬──────────────────────┬──────────►
   ├─ATTACHSEC(IDENTIFY)────┤   └─BINDSECURITY(YES)─┘  └─MODENAME(modename)─┘
   ├─ATTACHSEC(MIXIDPE)─────┤
   ├─ATTACHSEC(PERSISTENT)──┤
   └─ATTACHSEC(VERIFY)──────┘

   ┌─USEDFLTUSER(NO)──┐
►──┼──────────────────┼─────────────────────────────────────────────────────────────────┤
   └─USEDFLTUSER(YES)─┘
```

ALTPRINTCOPY({NO|**YES**})
Specifies whether the hardware COPY feature is to be used to satisfy a print request on the printer named in the ALTPRINTER attribute. For more details, see the PRINTERCOPY attribute.

NO CICS will use the hardware COPY feature.

YES CICS will not use the hardware COPY feature.

ALTPRINTER(*printer*)
Specifies the name of a 3270 printer to be used, if the printer named in the PRINTER attribute of this terminal definition is not available. The name can be

up to 4 characters in length. For more details, see the PRINTER attribute. If you specify an ALTPRINTER without specifying a PRINTER, ALTPRINTER is ignored.

The printer that you name must be owned by the CICS system that owns this terminal definition.

To specify the hardware COPY feature for the alternative printer, specify YES for ALTPRINTCOPY on this terminal definition.

ATTACHSEC({LOCAL|IDENTIFY|VERIFY| PERSISTENT|MIXIDPE}) (APPC only)
Specifies the level of attach time user security required for the connection. PERSISTENT and MIXIDPE are valid only with z/OS Communications Server as the access method and when APPC is used.

LOCAL
The authority of the user is taken to be the authority of the link itself, and link security protects only the resource.

IDENTIFY
Incoming attach requests must specify a user identifier. Specify IDENTIFY when the connecting terminal has a security manager.

MIXIDPE
A connection can support attaches using either or both of the IDENTIFY and PERSISTENT security types. The security type used depends on the incoming attach.

As in previous releases, IDENTIFY implies a degree of trust between the two systems that allows this system to accept the sign-on logic of the other system. In effect, you have a distributed security manager, with one system performing the sign-on function and the other system performing the security check.

PERSISTENT
This option involves a user sign-on to a remote system that persists over multiple conversations until the user signs off from the remote system. In this way, the user ID and password are passed only on the first (sign-on) attach. Subsequent attach requests require only the user ID.

VERIFY
Incoming attach requests must specify a user identifier and a user password. Specify VERIFY when the connecting terminal has no security manager and therefore requires verification.

AUTINSTMODEL({NO|YES|ONLY})
Specifies whether this terminal definition can be used as a model terminal definition for autoinstall. For more information on autoinstall and model terminal definitions, see “Autoinstalling z/OS Communications Server terminals” on page 477.

NO This definition is not used as a model for autoinstall. It is used only as a definition for a specific device that is not autoinstalled.

ONLY This definition is used only as a model for autoinstall. It is not used as a definition for a specific device.

YES This definition is used for a specific device that is not autoinstalled. The definition is also used as a model for automatic installation.

AUTINSTNAME(*autinstname*)
Specifies the name by which this model definition is known in the autoinstall control program. The name can be up to 8 characters in length.

Acceptable characters:

```
A-Z 0-9 $ @ #
```

Unless you are using the CREATE command, any lowercase characters that you enter are converted to uppercase.

You specify this name only if AUTINSTMODEL is YES or ONLY. You can default to the terminal name followed by four blanks, if this name is acceptable to the autoinstall control program. For more information about autoinstall models, autoinstall names, and the autoinstall control program, see "Autoinstall control program" on page 477.

BINDPASSWORD
This attribute is obsolete, but is supported to provide compatibility with earlier releases of CICS.

BINDSECURITY({**NO**|**YES**}) **(APPC only)**
Specifies whether an external security manager (ESM) is being used for bind-time security.

NO No external bind-time security is required.

YES If security is active and the **XAPPC** system initialization parameter is set to YES, CICS attempts to extract the session key from RACF to carry out bind-time security. If no RACF profile is available, the bind fails.

CONSOLE
This attribute is obsolete, but is supported to provide compatibility with earlier releases of CICS.

CONSNAME(*console*)
Using CONSNAME, you can install a CICS console definition without having an existing console, and without the console being previously defined in the CONSOL*nn* member of the MVS SYS1.PARMLIB. However, before you can use the console, you must define the name to MVS, either in the CONSOL*nn* member of SYS1.PARMLIB or by dynamic allocation. The length of CONSNAME must be 2 - 8 characters and must begin with an alphabetic character or one of #, @, or $. It uniquely identifies the console device in a CICS region, regardless of the MVS image to which it is connected; that is, you cannot install two console definitions with the same CONSNAME. The CONSNAME corresponds to the name defined for the console in the MVS SYS1.PARMLIB member, CONSOL*nn*.

To define a TSO user as a console device, specify CONSNAME(*name*), where *name* is the TSO user ID. This definition enables a TSO user authorized to use the TSO CONSOLE command to initiate CICS transactions. The TSO user ID does not have to be defined in the CONSOL*nn* member of SYS1.PARMLIB member.

The equivalent of CONSOLE(00) is CONSNAME(INTERNAL) or CONSNAME(INSTREAM), depending on the service level of CICS and the release of MVS being used; specify this option if you want to initiate a CICS transaction and issue a command to it in a JCL statement. For guidance about using JCL to issue CICS commands, see the *CICS Operations and Utilities Guide*.

DESCRIPTION(*text*)

You can provide a description of the resource that you are defining in this field. The description text can be up to 58 characters in length. No restrictions apply to the characters that you can use. However, if you use parentheses, ensure that for each left parenthesis there is a matching right one. If you use the CREATE command, for each single apostrophe in the text, code two apostrophes.

GROUP(*groupname*)

Every resource definition must have a GROUP name. The resource definition becomes a member of the group and is installed in the CICS system when the group is installed.

Acceptable characters:

```
A-Z 0-9 $ @ #
```

Any lowercase characters that you enter are converted to uppercase.

The GROUP name can be up to 8 characters in length. Lowercase characters are treated as uppercase characters. Do not use group names beginning with DFH, because these characters are reserved for use by CICS.

INSERVICE({**YES**|**NO**})

Specifies the status of the terminal that is being defined.

YES Transactions can be initiated and messages are automatically sent to the terminal.

NO The terminal cannot receive messages or transmit input.

MODENAME(*modename*) **(APPC single session terminals only)**

Specifies the name that is passed to z/OS Communications Server as the LOGMODE name. The name can be up to 8 characters in length, but cannot have the reserved name SNASVCMG. The name follows assembler language rules and must start with an alphabetic character.

Acceptable characters:

```
A-Z 0-9 $ @ #
```

Unless you are using the CREATE command, any lowercase characters that you enter are converted to uppercase.

For further guidance on the LOGMODE name, see Coding entries in the z/OS Communications Server LOGON mode table in the *CICS Customization Guide*.

NATLANG(*code*)

Specifies the language in which all NLS-enabled messages are displayed for this terminal. Specify one of the following NATLANG codes. The default is the value specified in the **NATLANG** system initialization parameter.

Table 12. Languages and codes supported by CICS

NATLANG code	NLS code	Language
A	ENG	Alternative English
Q	ARA	Arabic
1	BEL	Byelorussian
L	BGR	Bulgarian
B	PTB	Brazilian Portuguese

Table 12. Languages and codes supported by CICS (continued)

NATLANG code	NLS code	Language
T (Double-Byte Character Set language)	CHT	Traditional Chinese
C (Double-Byte Character Set language)	CHS	Simplified Chinese
2	CSY	Czech
D	DAN	Danish
E	ENU	English
G	DEU	German
O	ELL	Greek
S	ESP	Spanish
W	FIN	Finnish
F	FRA	French
X	HEB	Hebrew
3	HRV	Croatian
4	HUN	Hungarian
J	ISL	Icelandic
I	ITA	Italian
K (Double-Byte Character Set language)	JPN	Japanese
H (Double-Byte Character Set languages)	KOR	Korean
M	MKD	Macedonian
9	NLD	Dutch
N	NOR	Norwegian
5	PLK	Polish
P	PTG	Portuguese
6	ROM	Romanian
R	RUS	Russian
Y	SHC	Serbo-Croatian (Cyrillic)
7	SHL	Serbo-Croatian (Latin)
V	SVE	Swedish
Z	THA	Thai
8	TRK	Turkish
U	UKR	Ukrainian

NETNAME(*netname*)

Specifies the network name that identifies the terminal to ACF/Communications Server. The name can be up to 8 characters in length. The name follows assembler language rules and must start with an alphabetic character.

Acceptable characters:

```
A-Z 0-9 $ @ #
```

Unless you are using the CREATE command, any lowercase characters that you enter are converted to uppercase.

If you do not specify a name, the NETNAME defaults to the TERMINAL name.

The NETNAME must be unique except in the case of a remote terminal. That is, you cannot install two local terminals with the same NETNAME, or a local terminal and any connection with the same NETNAME. However, the NETNAME for a remote terminal can be the same as the NETNAME for any other terminal or the NETNAME for any connection.

If the CICS region supports z/OS Communications Server dynamic LU alias; that is, LUAPFX=*xx* is specified on the CICS region APPL statement, the terminal with this NETNAME is assumed to be in the same network as the CICS region. If the terminal is in another network, it must be defined to z/OS Communications Server on a CDRSC definition with a predefined LUALIAS (LUALIAS=*netname*) to override z/OS Communications Server dynamic allocation. In this case, *netname* on the LUALIAS parameter must match the NETNAME defined on this terminal resource definition.

OPERID
OPERPRIORITY
OPERRSL
OPERSECURITY
These attributes are obsolete, but are supported to provide compatibility with earlier releases of CICS.

POOL(*poolname*)
Specifies the pool name for a 3600 or 3650 pipeline terminal pooled with other pipeline terminals.

When you define a 3600 pipeline logical unit, you generate a TCTTE that is associated with a pool of TCTTEs. A pool of pipeline TCTTEs can be used by one pipeline logical unit, or it can be shared by a number of pipeline logical units.

The pool name is used only as a method of identifying the related TERMINAL definitions on the CSD file. It is not used in the active CICS system. The name can be up to 8 characters in length.

Acceptable characters:

`A-Z 0-9 $ @ #`

Unless you are using the CREATE command, any lowercase characters that you enter are converted to uppercase.

For a pipeline terminal, you must specify a TYPETERM with SESSIONTYPE(PIPELINE) specified. You must specify a TASKLIMIT on at least one of the pool of pipeline terminals. You must name the same group for each of the pipeline terminals in a pool.

Here is an example of the definitions for a pool of pipeline terminals:

```
DEFINE TERMINAL(ttt1) GROUP(g) POOL(poolid)
       TYPETERM(xxxxxxxx) NETNAME(nnnnnnn1)...
DEFINE TERMINAL(ttt2) GROUP(g) POOL(poolid)
       TYPETERM(xxxxxxxx) NETNAME(nnnnnnn2)...
DEFINE TERMINAL(ttt3) GROUP(g) POOL(poolid)
       TYPETERM(xxxxxxxx) NETNAME(nnnnnnn3)...
DEFINE TERMINAL(ttt4) GROUP(g) POOL(poolid)
       TASKLIMIT(nn) TYPETERM(xxxxxxxx)
       NETNAME(nnnnnnn4)...
DEFINE TYPETERM(xxxxxxxx) GROUP(g)
       DEVICE(3650) SESSIONTYPE(PIPELINE)
```

PRINTER(*printer*)
Specifies the name of the primary 3270 printer to be used to respond to an ISSUE PRINT command or a PRINT request from an operator pressing a program access (PA) key. The name can be up to 4 characters in length. The

name is the TERMINAL name on the definition for the printer. If you name a PRINTER here, the TYPETERM referenced by this TERMINAL definition must have PRINTADAPTER(NO).

The printer that you name must be owned by the same CICS system that owns this TERMINAL definition.

You can name a PRINTER if this TERMINAL definition is for one of the following:
- A 3270 display without the printer-adapter feature
- A 3270 display attached to a 3274 control unit
- A 3276 control unit display station
- A 3790 in 3270 compatibility mode

If you want to specify the hardware COPY feature, specify PRINTERCOPY(YES) on this TERMINAL definition.

Note that SNA character string (SCS) printers accept only 3790 data streams; they do not accept 3270 data streams. They therefore cannot be used to print the buffer contents of a display unit.

If you use a program attention key, for example, PA1, to print the contents of the screen on an associated z/OS Communications Server printer, the screen size of the printer is chosen according to the SCRNSIZE operand as defined in the CICS-supplied default profile DFHCICST. This profile is defined with SCRNSIZE(DEFAULT) and, if you want to use the alternate screen size of the printer, you have to change the profile entry for transaction CSPP.

PRINTERCOPY({NO|YES})
Specifies whether the hardware COPY feature is to be used to satisfy a print request on the printer named in the PRINTER attribute of this terminal definition.

CICS uses the hardware COPY feature of the 3270 to perform the print, unless a task is currently attached to the display.

You do not need to specify COPY(YES) on the TYPETERM definition, because it is implied by PRINTERCOPY(YES) on the terminal definition.

If you have named an ALTPRINTER as well as a PRINTER, you can specify ALTPRINTCOPY(YES).

To use the COPY feature, both the printer and the display terminal must be on the same 3270 control unit. Otherwise, either the COPY might fail, raising an error condition, or, if the display device address is valid for the printer control unit, copying might be performed from a different display.

Do not specify PRINTERCOPY(YES) if, in a networking environment, the 3270 control unit is connected to a TCAM system in one domain, and a CICS system in another domain has access to the control unit through z/OS Communications Server. The hardware COPY address is not available to CICS and cannot therefore be used by terminals attached to such a control unit.

The COPY command is invalid for a 3270 compatibility mode display.

REMOTENAME(*terminal*)
Specifies the name by which the terminal is known in the system or region that owns the terminal. The name can be up to 4 characters in length.

Acceptable characters:
`A-Z a-z 0-9 $ @ # . / - _ % & ? ! : | " = ¬ , ; < >`

REMOTESYSNET(*netname*)
Specifies the network name (APPLID) of the region that owns the terminal. The name can be up to 8 characters in length. It follows assembler language rules, and must start with an alphabetic character.

Acceptable characters:

```
A-Z 0-9 $ @ #
```

Unless you are using the CREATE command, any lowercase characters that you enter are converted to uppercase.

REMOTESYSNET is used where there is no direct link between the region in which this definition is installed and the terminal-owning region. You do not need to specify REMOTESYSNET if either of the following is true:

- You are defining a local terminal; that is, REMOTESYSTEM is not specified, or specifies the sysid of the local system.
- REMOTESYSTEM names a direct link to the terminal-owning region. However, if the terminal-owning region is a member of a z/OS Communications Server generic resources group and the direct link is an APPC connection, you might need to specify REMOTESYSNET. REMOTESYSNET is needed in this case if the NETNAME specified on the CONNECTION definition for the direct link is the generic resource name of the TOR (not the applid).

REMOTESYSTEM(*connection*)
Specifies the name that identifies the intercommunication link to the system that owns the terminal. The name can be up to 4 characters in length.

Acceptable characters:

```
A-Z 0-9 $ @ #
```

Unless you are using the CREATE command, any lowercase characters that you enter are converted to uppercase.

REMOTESYSTEM is one of these identifiers:

- For IPIC connections, the first 4 characters of the IPCONN name on the IPCONN definition, which is in service and acquired.
- For MRO and APPC connections, the CONNECTION name on the CONNECTION definition. If the CONNECTION name is not specified, or if the name is specified as the sysid of the local system, the terminal is local to this system. If the name is the name of another system, the terminal is remote. You can therefore use the same definition for the terminal in both the local system and a remote system.

If you have intermediate systems between this CICS and the terminal-owning region, REMOTESYSTEM specifies the first link in the path to the TOR. If more than one path is possible, REMOTESYSTEM specifies the first link in the preferred path.

REMOTESYSTEM is ignored if you specify AUTINSTMODEL(YES) or AUTINSTMODEL(ONLY).

SECURITYNAME(*securityname*)
Specifies the security name of the remote system.

In a CICS system with security initialized (SEC=YES or MIGRATE), the security name is used to establish the authority of the remote system.

If USERID is specified in the session definition (DEFINE SESSIONS command) associated with the connection definition, the user ID overrides the user ID specified in the SECURITYNAME attribute, and is used for link security.

The security name, or USERID on the sessions definition, must be a valid RACF user ID on your system. Access to protected resources on your system is based on the RACF user profile and its group membership.

For more information on defining security for MRO, LUTYPE6.1, and APPC connections, see the*RACF Security Guide*.

SOLICITED(NO|YES)
Specifies whether CICS messages issued to a console will be treated by NetView® as solicited or unsolicited.

NO CICS messages will be treated as unsolicited

YES CICS messages will be treated as solicited. When SOLICITED(YES) is specified for a console, CICS adds the console name or the console identification number and a command and response token to each console message.

The SOLICITED attribute applies only to consoles; it is ignored for other TERMINAL definitions.

TASKLIMIT({**NO**|*number*})
Specifies the number of concurrent tasks allowed to run in a pipeline session or in a pool of pipeline sessions.

NO No concurrent tasks are allowed.

number
The number of concurrent tasks allowed to run, in the range 1 - 32767.

When you define a 3600 pipeline logical unit, you generate a TCTTE that is associated with a pool of TCTTEs. When messages enter CICS from the 3600 pipeline logical unit, a task is attached to process this message, using as an anchor block one of the TCTTEs from the pool. In this way, consecutive messages sent using the pipeline logical unit can be processed concurrently, the number of concurrent transactions being limited by the number of TCTTEs in the pool. The number of TCTTEs in the pool should represents the high watermark of inquiry activity. In this way, the pipeline facility allows fewer TCTTEs to be defined to CICS than the total number of pipeline inquiry terminals.

TERMINAL(*name*)
Specifies the terminal identifier. For a terminal, the name can be up to 4 characters in length.

Acceptable characters:
`A-Z a-z 0-9 $ @ # . / - _ % & ? ! :	" = ¬ , ; < >`

For an APPC LU6.2 single session terminal, the valid characters are as follows:

Acceptable characters:
`A-Z a-z 0-9 $ @ #`

If the name supplied is fewer than 4 characters, it is left-justified and padded with blanks up to 4 characters. You should not have a TERMINAL definition and a CONNECTION definition with the same name.

Note: If you use a comma (,) in a name, you cannot use commands such as:

```
CEMT INQUIRE TERMINAL(value1,value2)
CEMT SET     TERMINAL(value1,value2)
```

where the comma serves as a list delimiter. See *CICS Supplied Transactions* for information about using lists of resource identifiers.

Also, if you are allowing CICS to automatically generate session names or terminal IDs for consoles, avoid using any of the following symbols as the first or fourth character in the terminal name:

- The hyphen is used by CICS for automatically generated terminal names for APPC sessions

> *and* **<**
The > (greater than) and < (less than) symbols are used by CICS for automatically generated terminal names for IRC sessions

¬ The ¬ (logical not) symbol is used by CICS for automatically generated terminal names for MVS consoles.

The name specified becomes the name of the TCT entry, when this TERMINAL definition is installed. For this reason, the TERMINAL name must be unique. Note that the value CERR is reserved for the identification generated for the error console. If you specify AUTINSTMODEL(ONLY), you do not need a unique TERMINAL name, because it is not used as the name of a TCT entry. If you specify AUTINSTMODEL(YES), the TERMINAL name is used as the name of the TCT entry that is installed in the TCT when the TERMINAL definition is installed; the names of the TCT entries for the autoinstalled terminals are determined by the autoinstall user program.

If the terminal is to be associated with a transient data destination, the terminal name and the transient data queue name in the TDQUEUE resource definition must be the same.

TERMPRIORITY({**0**|*priority*})
Specifies the terminal priority. This decimal value (0 - 255) is used in establishing the overall transaction processing priority. Transaction processing priority is equal to the sum of the terminal priority, transaction priority, and operator priority, not exceeding 255.

TRANSACTION(*transaction*)
Specifies a 1- to 4-character name of the transaction that is to be initiated each time input is received from the terminal when there is no active task.

Acceptable characters:
`A-Z a-z 0-9 $ @ # . / - _ % & ? ! :	" = ¬ , ; < >`

For z/OS Communications Server non-3270 devices, a TRANSACTION name of fewer than 4 characters requires a delimiter.

For information on what happens when a transaction is initiated, see the *CICS Application Programming Guide*.

If you specify this operand for a 3270 display, the only CICS functions the operator can start, other than this transaction, are paging commands and print requests.

You are unlikely to specify the TRANSACTION attribute for a 3270 display or SCS printer. It is optional for 3601 logical units, but is mandatory for 3614 logical units.

If this operand is specified for a 3790 Communication System, and multiple sessions are used to connect the same 3791, specify the same TRANSACTION name for all sessions.

TYPETERM(*typeterm*)
Specifies the name of the TYPETERM definition to be associated with this TERMINAL definition. The name can be up to 8 characters in length.

Acceptable characters:

`A-Z 0-9 $ @ #`

Unless you are using the CREATE command, any lowercase characters that you enter are converted to uppercase.

The TYPETERM definition specifies many attributes for a number of similar terminals. For more information, see "TYPETERM attributes" on page 341 and "Methods for defining resources" on page 3. The TYPETERM attribute is mandatory for all TERMINAL definitions.

The TYPETERM definition must already be installed when you install this TERMINAL definition.

USEDFLTUSER ({NO|YES}) (APPC only)
Specifies the kind of security checking that will take place for each inbound attach FMH.

NO Indicates that each inbound attach FMH will be checked for the presence of those fields required by the ATTACHSEC option. If the required fields are not present, a protocol violation message is issued and the attach fails. NO is the default.

YES Indicates that some checks on the validity of the attach Function Management Header (FMH) are bypassed. See the *CICS RACF Security Guide*.

USERID({name|*EVERY|*FIRST})
Specifies a user identifier used for sign-on and referred to in security error messages, security violation messages, and the audit trail. It must be a valid user ID defined to the security manager.

The USERID attribute provides the only way to specify a user identifier for devices such as printers that are unable to sign on using CESN. You can also specify USERID for a display device; if so, the display is permanently signed on. Operators are unable to sign on. All access to protected resources depends on the authorizations permitted by RACF for the specified USERID.

For an APPC single session terminal, USERID overrides any SECURITYNAME that you have specified for the connection.

name This name can be up to 8 characters in length.

Acceptable characters:

`A-Z 0-9 $ @ #`

Unless you are using the CREATE command, any lowercase characters that you enter are converted to uppercase.

***EVERY**
This special operand is for autoinstalled consoles only. It means that CICS is to use the user ID passed on the MVS MODIFY command

every time a MODIFY command is received. The console is signed on using the MVS user ID as the preset user ID for the console being autoinstalled. The console remains signed on with this user ID until the console is deleted or another MODIFY is received with another user ID. If a MODIFY command is received without a user ID, CICS signs on the default CICS user ID until a MODIFY command is received that has a valid user ID. For non-console terminals, or if security is not enabled, this value is ignored.

***FIRST**
: This special is operand for autoinstalled consoles only. It means that CICS is to use the user ID passed on the first MVS MODIFY command that requires the console to be autoinstalled. The console is signed on with the MVS user ID as the preset user ID. The console remains signed on with this user ID until the console is deleted. If a MODIFY command is received without a user ID, CICS signs on the default CICS user ID. For non-console terminals, or if security is not enabled, this value is ignored.

If this terminal definition defines a console, the user ID must be authorized to the appropriate profile in the CONSOLE general resource class. See the *CICS RACF Security Guide* for information about preset security on consoles and terminals.

Chapter 34. TRANCLASS resources

A TRANCLASS resource defines the characteristics of a transaction class.

Transactions that are defined as belonging to a transaction class are subject to scheduling constraints before they are allowed to execute. If transactions belonging to an active transaction class are already running, any new transactions are queued. Use the MAXACTIVE attribute to specify the maximum number of transactions that you want to run. To limit the size of the queue, you can use the PURGETHRESH attribute.

By putting your transactions into transaction classes, you can control how CICS dispatches tasks. For example, you can separate transactions into those that are heavy resource users and those that are of lesser importance, such as the “Good morning” broadcast messages. You can then use the attributes on the TRANCLASS definition to control the number of active tasks allowed from each transaction class.

TRANCLASS attributes

Describes the syntax and attributes of the TRANCLASS resource.

```
►►──TRANCLASS(name)──GROUP(groupname)──┬───────────────────┬──────────────────►
                                       └─DESCRIPTION(text)─┘

            ┌─PURGETHRESH(NO)──────┐
►─MAXACTIVE(number)─┼──────────────────────┼───────────────────────────────►◄
            └─PURGETHRESH(number)──┘
```

The transaction class definition attribute descriptions are:

DESCRIPTION(*text*)
: You can provide a description of the resource that you are defining in this field. The description text can be up to 58 characters in length. No restrictions apply to the characters that you can use. However, if you use parentheses, ensure that for each left parenthesis there is a matching right one. If you use the CREATE command, for each single apostrophe in the text, code two apostrophes.

GROUP(*groupname*)
: Every resource definition must have a GROUP name. The resource definition becomes a member of the group and is installed in the CICS system when the group is installed.

Acceptable characters:

`A-Z 0-9 $ @ #`

Any lowercase characters that you enter are converted to uppercase.

The GROUP name can be up to 8 characters in length. Lowercase characters are treated as uppercase characters. Do not use group names beginning with DFH, because these characters are reserved for use by CICS.

MAXACTIVE(*number*)
specifies the maximum number of transactions in this transaction class that are allowed to be active. You must specify a MAXACTIVE value when you define a transaction class, in the range 0 through 999.

New transactions attached when the number of active transactions has reached the MAXACTIVE limit are considered for queueing subject to the PURGETHRESH limit.

Defining a transaction class with a zero MAXACTIVE value signifies that **all** tasks are to be queued.

PURGETHRESH({**NO**|*number*})
This is an optional purge threshold for the transaction class; it defines a threshold number at which transactions queuing for membership of the transaction class are purged. Specify it if you want to limit the number of transactions queueing in this transaction class. It can have the following values:

NO The size of the queue is unlimited (other than by the storage available to attach tasks).

number
The purge threshold number in the range 1—1 000 000.

If you specify this as 1, no transactions are allowed to queue. If you specify it as any other number (*n*), the size of the queue is restricted to *number-1*. All new transactions attached after the limit of *n-1* is reached are purged.

Example of PURGETHRESH: In the case of a transaction class where the maximum number of active tasks (MAXACTIVE) is set to 50, and the purge threshold (PURGETHRESH) is set to 10 to limit queuing transactions, CICS begins to abend new transactions for the class when:

- The number of active transactions reaches 50, and
- The number of transactions queuing for membership of the transaction class has reached 9

CICS accepts new transactions for this transaction class queue only when the number queued falls below the maximum size of the queue (9 in our example).

TRANCLASS(*name*)
specifies the name of the transaction class. Transactions belonging to a transaction class are subject to scheduling constraints before they are allowed to execute. The reserved TRANCLASS name DFHTCL00 is used to indicate that the transaction does not belong to any transaction class.

For compatibility with releases that support a TCLASS attribute, CICS provides the following TRANCLASS equivalents:

TCLASS	TRANCLASS
NO	DFHTCL00
1	DFHTCL01
2	DFHTCL02
3	DFHTCL03
4	DFHTCL04
5	DFHTCL05
6	DFHTCL06

7	DFHTCL07
8	DFHTCL08
9	DFHTCL09
10	DFHTCL10

Sample definitions for these transaction classes are in group DFHTCL, supplied as part of DFHLIST.

Note: If a transaction is run and its associated TRANCLASS definition is not installed, the transaction runs without any of the scheduling constraints specified in the TRANCLASS. Attention message DFHXM0212 is issued.

TRANCLASS can be up to eight characters in length.

Acceptable characters:

```
A-Z 0-9 $ @ #
```

Unless you are using the CREATE command, any lowercase characters that you enter are converted to uppercase.

Chapter 35. TRANSACTION resources

A TRANSACTION resource defines transaction attributes that relate to functions provided by CICS.

A CICS application consists of one or more programs written to perform a specific function. A particular invocation of such an application is known as a *transaction*, and the CICS transaction manager identifies it by its transaction identifier (TRANSID). You tell CICS how you want your transaction to run, primarily in a TRANSACTION definition, by providing such information as the transaction priority, security key, and the length of the transaction work area (TWA). The name of this definition, the TRANSACTION name, is the same as the TRANSID. You also link the transaction with other resources by coding the names of their definitions in the TRANSACTION definition. These other resources are PROGRAM, PROFILE, PARTITIONSET, REMOTESYSTEM, and TRANCLASS:

PROGRAM
: You specify options related to the software implementation of your application in the PROGRAM definition. This defines the program to which control is to be given to process the transaction. The TRANSACTION definition references the PROGRAM definition.

PROFILE
: You do not have to specify, for each transaction, the attributes that control the interaction with a terminal or logical unit. Instead, the TRANSACTION definition references a PROFILE definition, which specifies them for a number of transactions.

REMOTESYSTEM
: For transaction routing, instead of specifying a PROGRAM name in the TRANSACTION definition, you specify the name of a REMOTESYSTEM. This can be the name of another CICS system, which itself is defined to this CICS system in a CONNECTION definition or IPCONN definition of the same name.

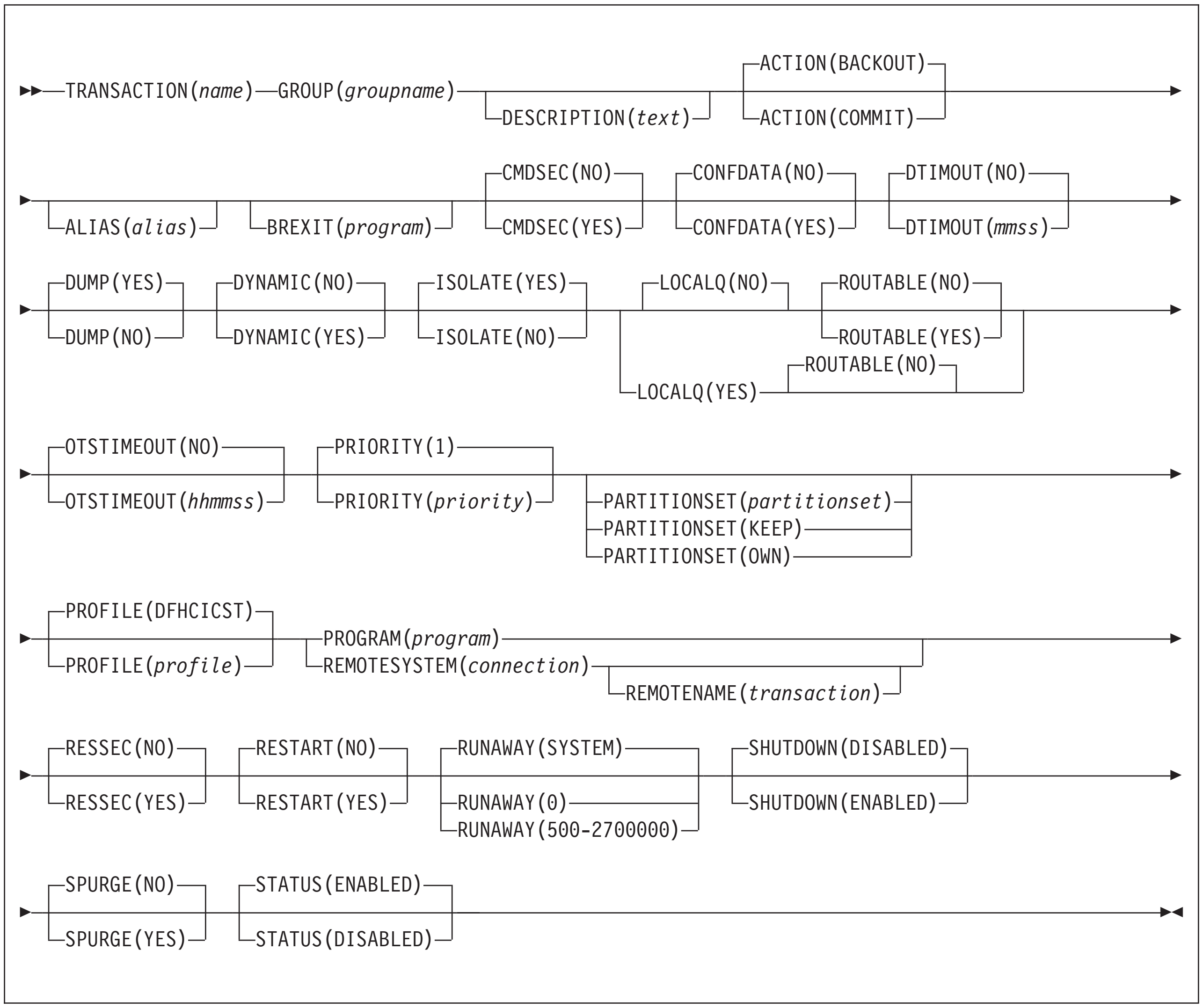
  If you name a REMOTESYSTEM in a CONNECTION definition, you can also supply a REMOTENAME, which is the name of the transaction to be run in the remote system. The remote system decides which program it gives control to.

  If you specify a REMOTESYSTEM name that corresponds to the system in which the definition is installed, CICS installs a local transaction resource. Otherwise CICS installs a remote transaction resource.

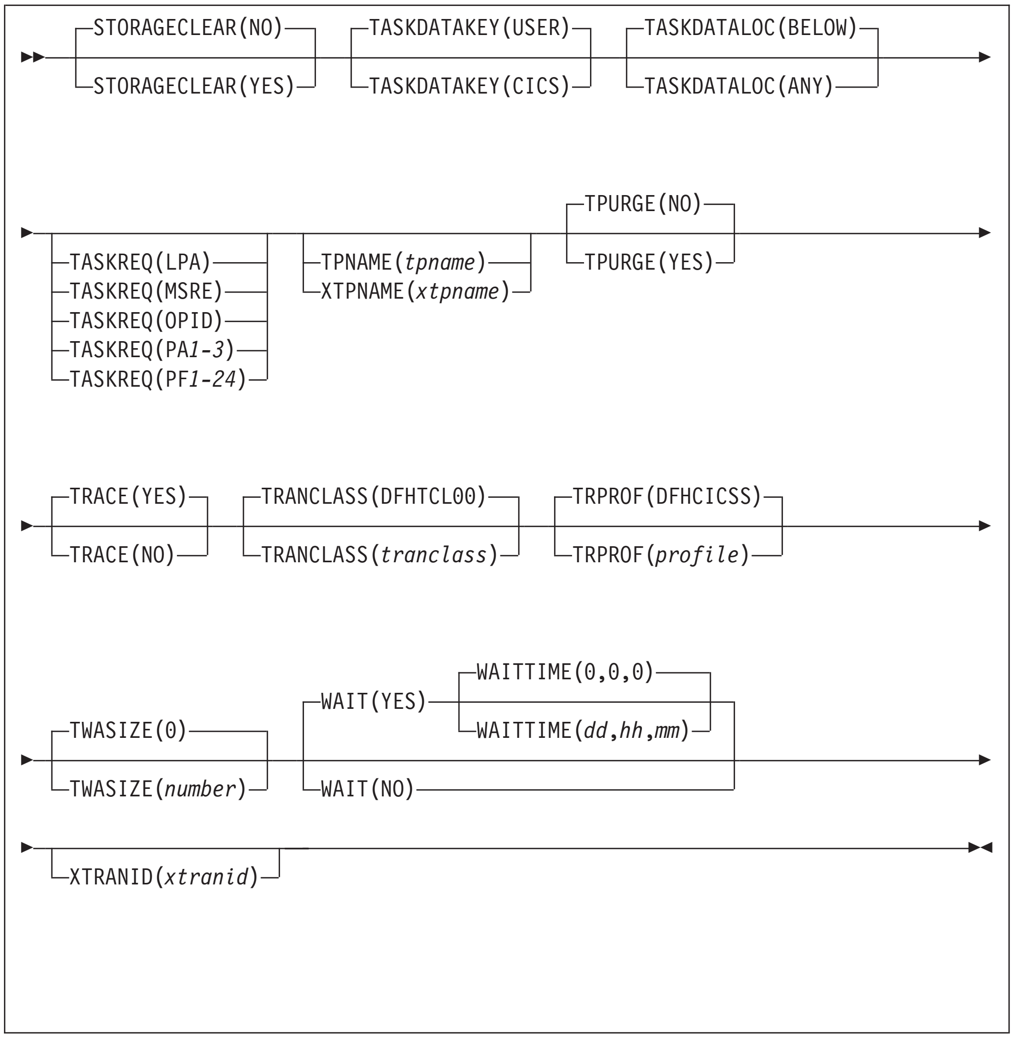
TRANCLASS
: This specifies the name of the transaction class to which the transaction belongs. Transactions belonging to a transaction class are subject to scheduling constraints before they are allowed to execute. The constraints are specified in the associated TRANCLASS definition. The TRANCLASS definition is described in Chapter 34, “TRANCLASS resources,” on page 299.

TRANSACTION attributes

Describes the syntax and attributes of the TRANSACTION resource.



```
                                                                  ┌─ACTION(BACKOUT)─┐
►►──TRANSACTION(name)──GROUP(groupname)──┬──────────────────────┬─┼─────────────────┼──────────────►
                                         └─DESCRIPTION(text)────┘ └─ACTION(COMMIT)──┘

                                   ┌─CMDSEC(NO)──┐ ┌─CONFDATA(NO)──┐ ┌─DTIMOUT(NO)───┐
►──┬───────────────┬─┬──────────────────┬─┼─────────────┼─┼───────────────┼─┼───────────────┼──────►
   └─ALIAS(alias)──┘ └─BREXIT(program)──┘ └─CMDSEC(YES)─┘ └─CONFDATA(YES)─┘ └─DTIMOUT(mmss)─┘

   ┌─DUMP(YES)─┐ ┌─DYNAMIC(NO)──┐ ┌─ISOLATE(YES)─┐   ┌─LOCALQ(NO)─┐ ┌─ROUTABLE(NO)──┐
►──┼───────────┼─┼──────────────┼─┼──────────────┼─┬─┴────────────┴─┼───────────────┼─┬───────────►
   └─DUMP(NO)──┘ └─DYNAMIC(YES)─┘ └─ISOLATE(NO)──┘ │                └─ROUTABLE(YES)─┘ │
                                                   │              ┌─ROUTABLE(NO)─┐    │
                                                   └─LOCALQ(YES)──┴──────────────┴────┘

   ┌─OTSTIMEOUT(NO)─────┐ ┌─PRIORITY(1)─────────┐
►──┼────────────────────┼─┼─────────────────────┼─┬──────────────────────────────┬─────────────────►
   └─OTSTIMEOUT(hhmmss)─┘ └─PRIORITY(priority)──┘ ├─PARTITIONSET(partitionset)─┤
                                                  ├─PARTITIONSET(KEEP)─────────┤
                                                  └─PARTITIONSET(OWN)──────────┘

   ┌─PROFILE(DFHCICST)─┐
►──┼───────────────────┼─┬─PROGRAM(program)──────────────────────────────────────────┬────────────►
   └─PROFILE(profile)──┘ └─REMOTESYSTEM(connection)──┬─────────────────────────────┬─┘
                                                     └─REMOTENAME(transaction)─────┘

   ┌─RESSEC(NO)──┐ ┌─RESTART(NO)──┐ ┌─RUNAWAY(SYSTEM)──────────┐ ┌─SHUTDOWN(DISABLED)─┐
►──┼─────────────┼─┼──────────────┼─┼──────────────────────────┼─┼────────────────────┼────────────►
   └─RESSEC(YES)─┘ └─RESTART(YES)─┘ ├─RUNAWAY(0)───────────────┤ └─SHUTDOWN(ENABLED)──┘
                                    └─RUNAWAY(500-2700000)─────┘

   ┌─SPURGE(NO)──┐ ┌─STATUS(ENABLED)──┐
►──┼─────────────┼─┼──────────────────┼───────────────────────────────────────────────────────────►◄
   └─SPURGE(YES)─┘ └─STATUS(DISABLED)─┘
```



ACTION({**BACKOUT**|**COMMIT**})

Specifies the action to be taken when a CICS region fails, or loses connectivity with its coordinator, during 2-phase commit processing after the unit of work has entered the indoubt period. The action depends on the WAIT attribute. If WAIT specifies YES, ACTION has no effect unless the WAITTIME expires before recovery from the failure.

If WAIT specifies NO, the action taken is one of the following:

BACKOUT
: All changes made to recoverable resources are backed out, and the resources are returned to the state they were in before the start of the UOW.

COMMIT
: All changes made to recoverable resources are committed, and the UOW is marked as completed.

ALIAS(*alias*)

Specifies an alias transaction name for this transaction. The name can be up to 4 characters in length. This option is useful if you want to run on a terminal defined with UCTRAN(NO), or a transaction that allows mixed case input (PROFILE UCTRAN(NO)). For example, you can start by means of ALIAS(abcd) the same transaction as ABCD.

When you install a TRANSACTION definition that contains the ALIAS attribute, the result depends on whether the alias name is already in use in the system:

- If the alias name is in use as a primary transaction ID, the ALIAS attribute is ignored.
- If the alias name is in use as the alias for a different transaction, the original alias is replaced by the new one. In other words, after the TRANSACTION definition has been installed, the alias name refers to the new transaction, and not the original.

BREXIT(*program*)

Defines the name of the default bridge exit to be associated with this transaction, if it is started in the 3270 bridge environment with a **START BREXIT** command that does not specify a name on its BREXIT option. The name can be up to 8 characters in length.

Acceptable characters:

`A-Z 0-9 $ @ #`

Unless you are using the CREATE command, any lowercase characters that you enter are converted to uppercase.

If BREXIT is defined, do not specify REMOTESYSTEM, REMOTENAME, DYNAMIC(YES), or RESTART(YES) because they are ignored.

Note: The Link3270 mechanism is now the recommended way to use the 3270 bridge. Refer to the publications for CICS Transaction Server for OS/390, Version 1 Release 3 if you need to implement new applications using the START BREXIT interface.

CMDSEC({**NO**|**YES**})

Specifies whether security checking is to be applied on system programming commands.

NO No check is made. The commands are always run.

YES A call is made to the external security manager (ESM). CICS either authorizes or prevents access. If the ESM cannot identify the resource or resource type, access is prevented.

CONFDATA({**NO**|**YES**})

Specifies whether CICS is to suppress user data from CICS trace entries when the CONFDATA system initialization parameter specifies HIDETC. If the system initialization parameter specifies CONFDATA=SHOW, CONFDATA on the transaction definition is ignored.

If the system initialization parameter specifies CONFDATA=HIDETC, the following options are effective:

NO CICS does not suppress any user data. z/OS Communications Server and MRO initial user data is traced in trace point AP FC92. FEPI user data is traced in the normal CICS FEPI trace points. IPIC user data is traced in the normal CICS IS trace points.

YES CICS suppresses user data from the CICS trace points.

DESCRIPTION(*text*)

You can provide a description of the resource that you are defining in this field. The description text can be up to 58 characters in length. No restrictions apply to the characters that you can use. However, if you use parentheses, ensure that for each left parenthesis there is a matching right one. If you use the CREATE command, for each single apostrophe in the text, code two apostrophes.

DTIMOUT({NO|*mmss*})
Specifies whether deadlock timeout is to be applied to the task. If the task is suspended (for example, through lack of storage), a purge of the task is initiated if the task stays suspended for longer than the DTIMOUT value. If the purge leads to a transaction abend, the abend code used depends on which part of CICS suspended the task. When using CEDF, the user task, if possible, specifies DTIMOUT(NO) or a large value. This value is also now used as the timeout on all RLS file requests if DTIMOUT is nonzero; otherwise, the request gets the SIT FTIMEOUT value. FTIMEOUT applies to transactions that do not have a deadlock timeout interval active. If a time value is specified for the DTIMOUT keyword of the TRANSACTION definition, this value is used as the file timeout value for that transaction.

When using CEDF, if any DTIMOUT value has been specified for the user task, the DTIMOUT value is ignored while the user task is suspended and a CEDF task is active. Therefore, the suspended user task cannot end with a deadlock timeout (abend AKCS) while a CEDF task is waiting for a user response.

For DTIMOUT to be effective in non-RLS usage, set SPURGE to YES.

CICS inhibits deadlock timeout at certain points.

DTIMOUT is not triggered for terminal I/O waits. Because the relay transaction does not access resources after obtaining a session, it has little need for DTIMOUT except to trap suspended allocate requests. However, for I/O waits on a session, the RTIMOUT attribute can be specified on PROFILE definitions for transaction routing on IPIC or MRO sessions and mapped APPC connections.

You must define some transactions with a DTIMOUT value, because deadlock timeout is the mechanism that CICS uses to deal with short-on-storage (SOS) situations.

NO	The deadlock timeout feature is not required.
mmss	The length of time (MMSS for minutes and seconds) after which deadlock timeout ends a suspended task. The maximum value that you can specify is 68 minutes; this value is accurate to one second.

DUMP({YES|NO})
Specifies whether a call is to be made to the dump domain to produce a transaction dump if the transaction ends abnormally.

This operand has no effect on the following dump operations:
- An EXEC CICS DUMP command, which always produces a dump.
- The system dumps for dump codes AP0001 and SR0001 that CICS produces with ASRA, ARSB, or ASRD abends. If you specify NO on the transaction DUMP attribute, CICS suppresses the transaction dump, but not the system dump.

YES	CICS calls the dump domain to produce a transaction dump. Note that the final production or suppression of the transaction dump is controlled by the transaction dump table. For more information about the dump table, see the *CICS Operations and Utilities Guide*.

If no transaction dump table entry exists for the given dump code when a transaction abends, CICS creates a temporary entry for which the default is to produce a transaction dump.

You control dump table entries for transaction dumps using the **`CEMT SET TRDUMPCODE`** command, or the **`CEMT SET TRANDUMPCODE`** SPI command.

NO No call is made to the dump domain, suppressing any potential transaction dump.

`DYNAMIC({NO|YES})`
Specifies whether the transaction can be dynamically routed to a remote region, using the CICS dynamic transaction routing facility.

NO Creates a local or remote definition according to the REMOTESYSTEM attribute.

YES Allows the dynamic transaction routing program to determine the local or remote status dynamically at invocation time. For programming information about the dynamic transaction routing program, see the *CICS Customization Guide*.

`EXTSEC`
This attribute is obsolete, but is supported to provide compatibility with earlier releases of CICS.

`GROUP(`*`groupname`*`)`
Every resource definition must have a GROUP name. The resource definition becomes a member of the group and is installed in the CICS system when the group is installed.

Acceptable characters:

`A-Z 0-9 $ @ #`

Any lowercase characters that you enter are converted to uppercase.

The GROUP name can be up to 8 characters in length. Lowercase characters are treated as uppercase characters. Do not use group names beginning with DFH, because these characters are reserved for use by CICS.

`INDOUBT`
This attribute is obsolete, but is supported to provide compatibility with earlier releases of CICS.

`ISOLATE({YES|NO})`
Specifies whether CICS is to isolate the transaction user-key task-lifetime storage to provide transaction-to-transaction protection. (See the TASKDATAKEY attribute for a description of user-key storage.) Isolation means that the user-key task-lifetime storage is protected from both reading and writing by the user-key programs of other transactions; that is, from programs defined with EXECKEY(USER). The effect of the ISOLATE attribute of storage access shows the effect of the ISOLATE attribute.

Note:

1. The ISOLATE attribute does not provide any protection against application programs that run in CICS key; that is, from programs defined with EXECKEY(CICS).
2. VSAM nonshared resources (NSR) are not supported for transactions that use transaction isolation. You must specify ISOLATE(NO) when you define

transactions that access VSAM files using NSR. You can also function ship the file request to a remote region. The DFHMIRS program that carries out the request is defined with an EXECKEY of CICS. A CICS-key program has read and write access to CICS-key and user-key storage of its own task and all other tasks, whether transaction isolation is active.

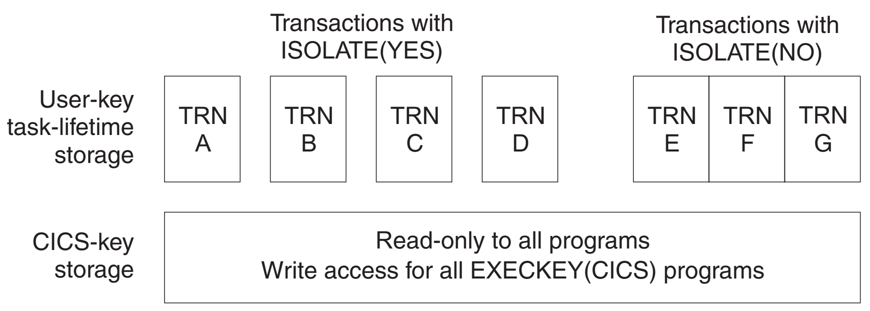
YES The transaction user-key task-lifetime storage is isolated from the user-key programs of all other transactions; that is, from programs defined with EXECKEY(USER), but not from programs defined with EXECKEY(CICS).

Also, the user-key task-lifetime storage of *all* other transactions is protected *from* the user-key programs of transactions defined with ISOLATE(YES).

NO If you specify ISOLATE(NO), the transaction task-lifetime storage is isolated from the user-key programs of those transactions defined with ISOLATE(YES). The transaction storage is not, however, isolated from user-key programs of other transactions that also specify ISOLATE(NO) because, with this option, the transactions are all allocated to the common subspace.

Note also that the user-key task-lifetime storage of all transactions defined with ISOLATE(YES) is protected *from* the user-key programs of transactions defined with ISOLATE(NO).

Specify ISOLATE(NO) for those transactions that share any part of their user-key task-lifetime storage.


Transactions with ISOLATE(YES)
Transactions with ISOLATE(NO)
User-key task-lifetime storage
TRN A
TRN B
TRN C
TRN D
TRN E
TRN F
TRN G
CICS-key storage
Read-only to all programs
Write access for all EXECKEY(CICS) programs

This figure shows four transactions, A, B, C, and D, defined with the ISOLATE(YES), and three transactions, E, F, and G, defined with ISOLATE(NO):
- The user-key task-lifetime storage of each of the transactions A, B, C, and D is isolated from all other transactions.
- The user-key task-lifetime storage of transactions E, F, and G is accessible by all the user-key application programs of transactions E, F, and G, but is isolated from the user-key programs of transactions A, B, C, and D.
- All the transactions have read-only access to CICS-key storage.

Figure 10. The effect of the ISOLATE attribute of storage access

LOCALQ({NO|YES})
Specifies whether queuing on the local system is to be performed.

NO No local queuing is to be performed.

YES Local queuing can be attempted for a START command with

NOCHECK option request when the system or IPIC connection is not available and the system name is valid.

A system is defined as not available in the following circumstances:

- The system is OUT OF SERVICE when the request is initiated.
- The attempt to initiate any session to the remote system fails and the corrective action taken by the abnormal condition program (DFHZNAC) or the node error program (DFHZNEP) is to place the system OUT OF SERVICE.
- No sessions to the remote system are immediately available, and your XISCONA global user exit program specifies that the request is not to be queued in the issuing region.

An IPIC connection is defined as not available in the following circumstances:

- The IPIC connection is not acquired.
- A session is not available and CICS does not queue the request for a new session.

Use local queuing only for those START commands that represent time-independent requests. The delay implied by local queuing affects the time at which the request is started. It is your responsibility to ensure that this condition is met.
If you specify LOCALQ(YES), you cannot specify ROUTABLE(YES).

You can use the global user exits, XISLCLQ or XISQLCL, to override the setting of the LOCALQ attribute. For programming information about the user exits in the intersystem communication program, see the *CICS Customization Guide*.

OTSTIMEOUT({**NO**|*hhmmss*})
Specifies, in hours, minutes, and seconds, the length of time for which an Object Transaction Service (OTS) transaction, created in an enterprise beans environment and running as a task under this CICS transaction, is allowed to run before the initiator of the OTS transaction must take a sync point or roll back the transaction. If the specified period expires, CICS purges the task.

The initiator of the OTS transaction can be one of these:

- The client of the enterprise bean.
- The EJB container. The container issues a sync point at the end of the bean method.
- A session bean that manages its own OTS transactions.

Methods of session beans that manage their own OTS transactions can override the default timeout value by using the `setTransactionTimeout` method of the `javax.Transaction.UserTransaction` interface.

NO OTS transactions will not timeout. NO is the default.

hhmmss
The time (in HHMMSS format) before the task is purged. The maximum period is 24 hours (240000).

PARTITIONSET({*partitionset*|**KEEP**|**OWN**})
Specifies the name of the partition set that is to be the default application partition set. The name can be up to 8 characters in length.

Acceptable characters:

`A-Z 0-9 $ @ #`

Unless you are using the CREATE command, any lowercase characters that you enter are converted to uppercase.

If you do not specify a partition set name or either of the reserved names, CICS destroys existing partitions before the first BMS output to the terminal from the transaction.

partitionset
CICS destroys existing partitions and loads the named partition set before the first BMS output to the terminal from the transaction. (Existing partitions are not destroyed if the terminal partition set matches the application partition set.)

This name must not be the same as that specified in PROGRAM(*name*).

KEEP The transaction uses the application partition set for this terminal. This option is typically used for successor transactions in a chain of pseudoconversational transactions.

OWN The transaction performs its own partition management.

PRIMEDSIZE
This attribute is obsolete, but is supported to provide compatibility with earlier releases of CICS.

PRIORITY({<u>**1**</u>|*priority*})
Specifies the transaction priority. This 1- to 3-digit decimal value from 0 to 255 is used to establish the overall transaction processing priority. Transaction processing priority is equal to the sum of the terminal priority, transaction priority, and operator priority, not exceeding 255. The higher the number, the higher the priority.

PROFILE({<u>**DFHCICST**</u>|*profile*})
Is the name of the PROFILE definition that specifies the processing options used with the terminal that initiated the transaction.

Acceptable characters:

`A-Z a-z 0-9 $ @ # . / - _ % & ? ! : | " = ¬ , ; < >`

The default is DFHCICST.

The processing options provided by the default DFHCICST are shown in PROFILE definitions in group DFHISC. DFHCICST is not suitable for use with a distributed program link. Instead, specify DFHCICSA, which has INBFMH=ALL.

PROGRAM(*program*)
Specifies the name of the program to which CICS gives control to process this transaction. The name can be up to 8 characters in length.

Acceptable characters:

`A-Z 0-9 $ @ #`

Unless you are using the CREATE command, any lowercase characters that you enter are converted to uppercase.

Ensure that this name is not the same as that specified in PARTITIONSET(name).

If a name is specified for REMOTESYSTEM, and it differs from that of the current system, you do not need to specify a name for PROGRAM. If, in these circumstances, you do specify a name for PROGRAM, it might be ignored.

If this transaction definition is for use on a remote program link request, the program name that you specify in this attribute must be the name of the CICS mirror program, DFHMIRS. See the TRANSID attribute on the PROGRAM definition in PROGRAM attributes in the Resource Definition Guide.

REMOTENAME(*transaction*)

Specifies the name of this transaction as it is known in a remote system, if it is to run in a remote system or region using intersystem communication. The remote system can be another CICS region or an IMS system. REMOTENAME can be 1 - 4 characters in length if the REMOTESYSTEM attribute specifies another CICS region, or 1 - 8 characters in length if REMOTESYSTEM specifies an IMS system. IMS uses 8-character names and, if REMOTENAME has fewer than 8 characters, IMS translates it into a usable format.

Acceptable characters:
`A-Z a-z 0-9 $ @ # . / - _ % & ? ! :	" = ¬ , ; < >`

If you specify REMOTESYSTEM and omit REMOTENAME, the value of REMOTENAME defaults to the local name; that is, the TRANSACTION name on this definition. Note that the transaction does not have to be on the remote system or region.

REMOTESYSTEM(*connection*)

Specifies the name that identifies the intercommunication link on which the transaction attach request is sent.

Acceptable characters:
`A-Z 0-9 $ @ #`
Unless you are using the CREATE command, any lowercase characters that you enter are converted to uppercase.

REMOTESYSTEM is one of these identifiers:

- For IPIC connections, the first 4 characters of the IPCONN name on the IPCONN definition, which is in service and acquired.
- For MRO and APPC connections, the CONNECTION name on the CONNECTION definition.

REMOTESYSTEM is used for CICS function request shipping (asynchronous processing and transaction routing).

Ensure that the REMOTESYSTEM options which are specified for a set of transactions do not refer to any other transaction in that set; that is, they are not self-referent, which can lead to looping starts of multiple mirror transactions.

RESSEC({**NO**|**YES**})

Specifies whether resource security checking is to be used for resources accessed by this transaction.

NO All resources are available to any user who has the authority to use this transaction.

YES An external security manager is used. For more details about external security checking, see the *CICS RACF Security Guide*

RESTART({<u>NO</u>|YES})
Specifies whether the transaction restart facility is to be used to restart those tasks that end abnormally and are later backed out by the dynamic transaction backout facility.

If RESTART(YES) is specified, the task that failed is restarted from the beginning of the initial program. If dynamic transaction backout fails, or if restart is suppressed dynamically, DFHPEP is called in the normal way. The transaction restart facility is especially useful in situations such as a program isolation deadlock, where the task can be restarted automatically rather than resubmitted manually. A terminal-initiated transaction is allowed to restart during CICS shutdown even if SHUTDOWN(DISABLED) is specified. For more details about automatic transaction restart, see the*CICS Recovery and Restart Guide*.

<u>NO</u> The restart facility is not required.

YES The restart facility is to be used.

ROUTABLE({<u>NO</u>|YES})
Specifies whether, if the transaction is the subject of an eligible EXEC CICS START command, it is routed using the enhanced routing method.

<u>NO</u> If the transaction is the subject of a START command, it is routed using the “traditional” method.

YES If the transaction is the subject of an eligible START command, it is routed using the enhanced method.

If you specify ROUTABLE(YES), you cannot specify LOCALQ(YES).

For details of the enhanced and “traditional” methods of routing transactions called by EXEC CICS START commands, see the *CICS Intercommunication Guide*.

RSL
This attribute is obsolete, but is supported to provide compatibility with earlier releases of CICS.

RUNAWAY({<u>SYSTEM</u>|0|500-2700000})
The time, in milliseconds, for which any task running under this transaction definition can have control of the processor before it is assumed to be in a runaway condition (logical loop). When this interval expires, CICS can abnormally end the task.

<u>SYSTEM</u>
CICS is to use the ICVR system initialization parameter value as the runaway time limit for this transaction.

0 No limit applies and no runaway task detection is required for the transaction.

500-2700000
The runaway time limit in the range 500 - 2700000. When checking whether a task is in a runaway condition, CICS rounds the value you specify downwards, to a multiple of 500.

SHUTDOWN({<u>DISABLED</u>|ENABLED})
Applies to all transactions, and specifies whether the transaction can be run during CICS shutdown. This option supplements the XLT option of the

PERFORM SHUTDOWN command. For a transaction to be attached during shutdown, it must either be defined as SHUTDOWN(ENABLED) or, in the case of terminal-based transactions, be named in the XLT specified in the **PERFORM SHUTDOWN** command.

DISABLED
The transaction is disabled from running during CICS shutdown.

ENABLED
The transaction is enabled to run during CICS shutdown.

SPURGE({NO|YES})
Specifies whether the transaction is initially "system purgeable" or not.

SPURGE=NO prevents a transaction being purged by these means:

- Deadlock timeout (DTIMOUT)
- An **EXEC CICS ... PURGE** command
- TWAOCT (Cancel Task) being set in the node error program (NEP)
- A **CEMT SET ... PURGE** command

SPURGE=YES allows such purges to go ahead as far as the user is concerned. CICS might, however, prevent the purge if it is not safe to allow a purge at the point the transaction has reached.

Note that SPURGE=NO does not prevent a transaction being purged by the read timeout (RTIMOUT) facility, an EXEC CICS SET ... FORCEPURGE command, or a CEMT SET TRANSACTION(tranid) FORCEPURGE command. SPURGE determines only the initial value, which can be changed by the transaction while it is running.

NO The transaction is not initially system purgeable.

YES The transaction is initially system purgeable.

STATUS({ENABLED|DISABLED})
Specifies the transaction status.

ENABLED
Allows the transaction to be run normally.

DISABLED
Prevents the transaction from running.

STORAGECLEAR({NO|YES})
Specifies whether task-lifetime storage for this transaction is to be cleared on release. Use STORAGECLEAR to prevent other tasks accidentally viewing any confidential or sensitive data that was being stored by this transaction in task lifetime storage.

TASKDATAKEY({USER|CICS})
Specifies the storage key of the storage that CICS allocates at task initialization for the duration of the task (task-lifetime storage), and which is accessible by the application. These storage areas are the EXEC interface block (EIB) and the transaction work area (TWA).

TASKDATAKEY also specifies the key of the storage that CICS obtains on behalf of all programs that run under the transaction. The program-related storage that CICS allocates in the specified key includes these items:

- The copies of working storage that CICS obtains for each run of an application program.

- The storage CICS obtains for the program in response to implicit and explicit GETMAIN requests. For example, the program can request storage by a GETMAIN command or as a result of the SET option on other CICS commands.

You must specify TASKDATAKEY(USER) if any of the programs in the transaction is defined with EXECKEY(USER). If you specify TASKDATAKEY(CICS) for a transaction, an attempt to run any program in user key under this transaction leads to a task abend, with abend code AEZD.

USER CICS obtains user-key storage for this transaction. Application programs running in any key can both read and modify these storage areas.

User-key programs of transactions defined with ISOLATE(YES) have access only to the user-key task-lifetime storage of their own tasks.

User-key programs of transactions defined with ISOLATE(NO) also have access to the user-key task-lifetime storage of other tasks defined with ISOLATE(NO).

See the description of the EXECKEY attribute on the PROGRAM definition for more information about task storage protection.

CICS CICS obtains CICS-key storage for this transaction. Application programs running in CICS key can both read and modify these storage areas. Application programs running in user key can only read these storage areas.

TASKDATALOC({BELOW|ANY})

Specifies whether task life-time storage acquired by CICS for the duration of the transaction can be located above the 16 MB line in virtual storage. These areas, which relate to specific CICS tasks, include the EXEC interface block (EIB) and the transaction work area (TWA).

You must specify TASKDATALOC(BELOW) if any of the programs that make up the transaction runs in 24-bit addressing mode. This restriction also applies to task-related user exits running on behalf of the transaction).

For transactions that do not satisfy any of these conditions, you can specify ANY to obtain the associated virtual storage constraint relief.

CICS monitors the use of TASKDATALOC(ANY), particularly the following actions:

- An attempt to call an AMODE 24 program running under a transaction defined with TASKDATALOC(ANY) results in an AEZC abend.
- An attempt to issue an EXEC CICS command or call a task-related user exit while running AMODE(24) with TASKDATALOC(ANY) specified results in an AEZA abend.
- An AMODE 31 program running as a transaction with TASKDATALOC(ANY), which attempts to call a task-related user exit that is forced to run AMODE(24), results in an AEZB abend.
- If a task-related user exit that is forced to run in AMODE 24 is enabled for task start, CICS forces TASKDATALOC(BELOW) for all transactions for the remainder of the CICS run.

BELOW

Storage areas that CICS acquires for the transaction must be located below the 16 MB line.

ANY Storage areas that CICS acquires for the transaction can be located above the 16 MB line in virtual storage.

TASKREQ(*value*)
Specifies whether a transaction is to be initiated by pressing a function (F or PF) key, by using a light pen, or by using a card. Here are possible values:
- PA1, PA2, or PA3 for PA keys.
- F1 through F24 for F keys.
- OPID for the operator identification card reader.
- LPA for a light-pen-detectable field on a 3270 device.
- MSRE for the 10/63 character magnetic slot reader.

Here are some notes on the use of F and PA keys:
- If a PA or F key is specified in the PRINT system initialization parameter, you cannot use the same F key as the TASKREQ to initiate a transaction.
- PA or F keys specified in the SKR*xxxx* system initialization parameter as page retrieval keys are interpreted as such during a page retrieval session. You can use the same keys to initiate transactions at other times. Define the keys with the following values:

```
TASKREQ=KEY-ID
PROGRAM=DFHTPR
TWASIZE=1024
TPURGE=NO
SPURGE=NO
```

- If you define a transaction with PROGRAM(DFHTPR) and define a TASKREQ key, the key initiates the transaction and opens the page retrieval session at the same time.

TCLASS
This attribute is obsolete, but is supported to provide compatibility with earlier releases of CICS.

TPNAME(*name*)
Specifies the name of the transaction that can be used by an APPC partner if the 4-character length limitation of the TRANSACTION attribute is too restrictive. This name can be up to 64 characters in length.

Acceptable characters:
```
A-Z a-z 0-9 $ @ # . / - _ % & ? ! : | " = ¬ , ; < >
```

If this range of characters is not sufficient for a name that you want to specify, you can use the XTPNAME attribute instead of TPNAME.

TPURGE({**NO**|**YES**})
Specifies, for non-z/OS Communications Server terminals only, whether the transaction can be purged because of a terminal error.

NO The task cannot be purged when a terminal error occurs. Manual intervention by the master terminal operator is required when this happens.

YES The task can be purged when a terminal error occurs.

TRACE({**YES**|**NO**})
Specifies whether the activity of this transaction is to be traced.

YES Trace the activity for this transaction.

NO Do not trace the activity for this transaction.

The CICS-provided transaction definitions for CEDF and CSGM specify TRACE(NO).

TRANCLASS(DFHTCL00|*tranclass*)
Specifies the name of the transaction class to which the transaction belongs. Transactions belonging to a transaction class are subject to scheduling constraints before they are allowed to run. The reserved TRANCLASS name DFHTCL00 is used to indicate that the transaction does not belong to any transaction class.

If a transaction is run and its associated TRANCLASS definition is not installed, the transaction runs without any of the scheduling constraints specified in the TRANCLASS. Message DFHXM0212 is issued as a warning.

TRANCLASS can be up to 8 characters in length.

Acceptable characters:

```
A-Z 0-9 $ @ #
```

Unless you are using the CREATE command, any lowercase characters that you enter are converted to uppercase.

TRANSACTION(*name*)
Specifies the name of the transaction or transaction identifier (TRANSID). The name can be up to 4 characters in length.

Acceptable characters:

```
A-Z a-z 0-9 $ @ # . / - _ % & ? ! : | " = ¬ , ; < >
```

Do not use transaction names beginning with C, because these are reserved for use by CICS.

Note:

1. If you use a comma (,) in a name, you cannot use commands such as these:
   ```
   CEMT INQUIRE TRANSACTION(value1,value2)
   CEMT SET     TRANSACTION(value1,value2)
   ```
   where the comma serves as a list delimiter. See *CICS Supplied Transactions* for information about using lists of resource identifiers.
2. If you protect your transient data queues using RACF, avoid using `%` and `&` in the name. RACF commands assign a special meaning to these characters when they are used in a profile name. See the *CICS RACF Security Guide*.

If you want to use other special characters in a transaction identifier, use the XTRANID attribute to specify another name that can be used to initiate the transaction. You must also specify a TRANSACTION name, because this name is the one by which the TRANSACTION definition is known on the CSD file.

When defining a transaction, you must also name either a PROGRAM or a REMOTESYSTEM.

TRANSEC
This attribute is obsolete, but is supported to provide compatibility with earlier releases of CICS.

TRPROF({DFHCICSS|*profile*})
Specifies the name of the PROFILE for the session that carries intersystem flows during ISC transaction routing. The name can be up to 8 characters in length.

Acceptable characters:

```
A-Z a-z 0-9 $ @ # . / - _ % & ? ! : | " = ¬ , ; < >
```

You can specify this option only for remote transactions.

TWASIZE({0|number})
Specifies the size in bytes of the transaction work area to be acquired for this transaction. Specify a 1- to 5-digit decimal value in the range 0 - 32767.

Note:

1. Your storage might be corrupted if your TWASIZE is too small.
2. Do not change the TWASIZE of the CICS-supplied transactions.

WAIT({YES|NO})
Specifies whether an indoubt unit of work (UOW) is to wait, pending recovery from a failure that occurs after the UOW has entered the indoubt state.

Old-style transaction definitions using INDOUBT(WAIT) are accepted by CICS, and are interpreted as WAIT(YES) ACTION(BACKOUT).

YES The UOW is to wait, pending recovery from the failure, to resolve its indoubt state and determine whether recoverable resources are to be backed out or committed. In other words, the UOW is to be *shunted*.

Recoverable resources can include one of the following:

- DBCTL databases
- DB2 databases
- Temporary storage queues
- Logically recoverable intrapartition transient data queues that specify WAIT(YES) in the TDQUEUE definition
- VSAM data sets
- BDAM data sets

The WAIT(YES) option takes effect *if none of the following applies*:

- The transaction has subordinate MRO sessions to back-level systems.
- The transaction has LU6.1 subordinate sessions. Note that, in this context, LU6.1 IMS sessions are not subordinates.
- The transaction has more than one session and its coordinator session is to a back-level system, or LU6.1.
- The task-related user exits attached to the transaction do not support the CICS indoubt protocols.

If none of the previous exceptions applies, but you have subordinate LU6.2 sessions to systems other than CICS Transaction Server for z/OS systems that do not use the CICS Transaction Server for z/OS indoubt architecture, CICS can indicate that the subordinate must wait by forcing session outage.

If any resources cannot wait for indoubt resolution by the coordinator, a decision is taken for the transaction in accordance with the ACTION attribute. In practice, the only circumstances that force decisions in this way are updates to transient data queues with WAIT(NO) specified in the TDQUEUE definition, and installations of terminal-related resources. The latter are typically installed using an INSTALL command.

Table 13 shows how the WAIT attribute defined on a TRANSACTION definition and a logically recoverable TDQUEUE definition are resolved when they conflict.

NO
The UOW is not to wait. CICS immediately takes whatever action is specified on the ACTION attribute.

Table 13. Resolution of WAIT attributes on TRANSACTION and TDQUEUE definitions

WAIT attribute of TDQUEUE definition	WAITACTION attribute of TDQUEUE definition	WAIT attribute of TRANSACTION definition	Action
NO	not applicable	YES	The TD WAIT(NO) overrides WAIT(YES) on the TRANSACTION definition. The UOW is forced either to commit or back out, in accordance with the ACTION attributes of the transaction.
NO	not applicable	NO	The UOW is forced either to commit or back out, in accordance with the ACTION attributes of the transaction.
YES	QUEUE	YES	The UOW waits; that is, it is shunted. A request from another task for a lock on the TD queue must wait, and is queued by CICS.
YES	QUEUE	NO	The transaction WAIT(NO) overrides the TDQUEUE definition. The UOW is forced either to commit or back out, in accordance with the ACTION attributes of the transaction.
YES	REJECT	YES	The UOW waits; that is, it is shunted. A request from another task for a lock on the TD queue is rejected with the LOCKED condition.
YES	REJECT	NO	The transaction WAIT(NO) overrides the TDQUEUE definition. The UOW is forced either to commit or back out, in accordance with the ACTION attributes of the transaction.

If the UOW references more than one transient data queue, and the queues have inconsistent WAIT options, WAIT(NO) always takes precedence and overrides a WAIT(YES). Therefore, a WAIT(NO) on one TDQUEUE definition forces a failed indoubt UOW to take either the BACKOUT or COMMIT attribute defined on the TRANSACTION definition of the UOW.

WAITTIME({**00,00,00**|*dd*,*hh*,*mm*})
Specifies how long a transaction is to wait before taking a decision about an indoubt unit of work, based on what is specified in the ACTION attribute.

00,00,00
The transaction waits indefinitely.

dd,hh,mm
: The time, in days, hours, and minutes, for which the transaction is to wait. The maximum value is 93,23,59.

WAITTIME takes effect only if WAIT(YES) is specified.

XTPNAME(*value*)
: You can use this attribute as an alternative to TPNAME. Enter a hexadecimal string up to 128 characters in length, representing the name of the transaction that can be used by an APPC partner. All hexadecimal combinations are acceptable *except* X'40'. To specify an XTPNAME more than 72 characters long to DFHCSDUP, put an asterisk in column 72. The asterisk causes the following line to be concatenated to the current line.

XTRANID(*xtranid*)
: Specifies another name to be used instead of the TRANSACTION name for initiating transactions. The name can be up to 8 hexadecimal digits in length. Because XTRANID is specified in hexadecimal form, you can use a name that contains characters that you cannot specify in the TRANSACTION attribute.

See also TASKREQ, another transaction alias that can be specified.

value
: A 4-byte transaction identifier in hexadecimal notation; the identifier therefore uses up to 8 hexadecimal digits. If you specify fewer than 8 hexadecimal digits, the identifier is padded on the right with blanks.

Certain values are reserved for use by CICS, and so the values that you can specify are restricted:

- The first byte must not be X'C3'.
- The first byte must not be less than or equal to X'40'.
- The value must not be X'00000000'.
- The last 3 bytes must not be X'FFFFFF'.

Avoid using values in the range X'00' through X'3F' in the second, third, and fourth bytes if the transaction is to be attached by unsolicited data received from a terminal defined as a 3270 device, because CICS interprets these values as control characters, and not as part of the transaction identifier. For example, if you issue EXEC CICS RETURN or EXEC CICS START and specify TRANSID(X'41303238'), the correct transaction is attached. However, if you issue EXEC CICS RETURN without specifying a TRANSID, and the 3270 device transmits data that begins with X'41303238', CICS attempts to attach a transaction as if X'41404040' had been transmitted.

Chapter 36. TSMODEL resources

A TSMODEL specifies the properties of a set of TS queues. Individual TS queues are associated with a TSMODEL by the *prefix*, a character string that matches the leading characters of the queue name.

You can also map names directly to a shared TS pool (without the need for a shared sysid).

Note: CICS takes default actions on a region where a TSMODEL is not defined. This means that if you have an AOR and a QOR, and a TSMODEL defined in the AOR directs requests to the QOR, then unless a corresponding TSMODEL exists in the QOR, some queue attributes are taken from default values. For example, the location of a queue (MAIN or AUX) is determined from default settings within CICS. If there is no matching model, the location specified in the EXEC CICS command is used; if there is a model match, the location in this is used.

TSMODEL attributes

Describes the syntax and attributes of the TSMODEL resource.

```
►►──TSMODEL(name)──GROUP(groupname)──┬──────────────────────┬──────────────────────►
                                     └─DESCRIPTION(text)─┘

   ┌─LOCATION(AUXILIARY)─┐                           ┌─EXPIRYINT(0)──────┐
►──┼─────────────────────┼──┬──────────────────┬─────┼───────────────────┼─────────►
   └─LOCATION(MAIN)──────┘  ├─PREFIX(prefix)───┤     └─EXPIRYINT(number)─┘
                            └─XPREFIX(xprefix)─┘

   ┌─RECOVERY(NO)──┐
►──┼───────────────┼──┬──────────────────────────────────────────────────────┬─────►
   └─RECOVERY(YES)─┘  ├─POOLNAME(pool)───────────────────────────────────────┤
                      └─REMOTESYSTEM(connection)──┬──────────────────────────┬┘
                                                  ├─REMOTEPREFIX(prefix)─┤
                                                  └─XREMOTEPFX(xprefix)──┘

   ┌─SECURITY(NO)──┐
►──┼───────────────┼───────────────────────────────────────────────────────────────►◄
   └─SECURITY(YES)─┘
```

DESCRIPTION(*text*)
: You can provide a description of the resource that you are defining in this field. The description text can be up to 58 characters in length. No restrictions apply to the characters that you can use. However, if you use parentheses, ensure that for each left parenthesis there is a matching right one. If you use the CREATE command, for each single apostrophe in the text, code two apostrophes.

EXPIRYINT({0|*number*})

Specifies the expiry interval, in hours, for a temporary storage queue that matches this model. The interval count begins after each use of the temporary storage queue. If the queue is not used again before the expiry interval is reached, the queue becomes eligible for CICS to delete it automatically.

0 No expiry interval applies to temporary storage queues that match this model, and they are never eligible for automatic deletion. This setting is the default.

number

An expiry interval in hours, in the range 1 - 15000. After this expiry interval, a temporary storage queue that matches this model becomes eligible for automatic deletion if it has not been used again.

Expiry intervals apply to temporary storage queues in the following locations:

- Main temporary storage in the local CICS region.
- Nonrecoverable auxiliary temporary storage (DFHTEMP data set) associated with the local CICS region.

Expiry intervals do not apply to the following types of temporary storage queues, so CICS never deletes them automatically:

- Queues in auxiliary temporary storage that are defined as recoverable.
- Queues in a remote CICS region. To make CICS delete remote temporary storage queues, specify an expiry interval in a suitable TSMODEL resource definition in the region that owns the queues.
- Queues that CICS creates for its own use.
- Temporary storage queues in shared temporary storage pools.

If you change the expiry interval in a TSMODEL resource definition, existing temporary storage queues that match the model are not affected. Those queues continue to use the expiry interval that applied when they were created. If all the TSMODEL resource definitions with a nonzero expiry interval are deleted from a CICS region, CICS stops scanning for expired temporary storage queues.

GROUP(*groupname*)

Every resource definition must have a GROUP name. The resource definition becomes a member of the group and is installed in the CICS system when the group is installed.

Acceptable characters:

`A-Z 0-9 $ @ #`

Any lowercase characters that you enter are converted to uppercase.

The GROUP name can be up to 8 characters in length. Lowercase characters are treated as uppercase characters. Do not use group names beginning with DFH, because these characters are reserved for use by CICS.

LOCATION({AUXILIARY|MAIN})

Specifies whether the queue is to be held in auxiliary or main storage:

AUXILIARY

Queues matching this model are to be held in auxiliary temporary storage. Whatever is specified on the API request is disregarded.

MAIN Queues matching this model are to be held in main temporary storage. Whatever is specified on the API request is disregarded.

LOCATION is ignored for temporary storage models that relate to remote queues and to queues in shared temporary storage pools. Using LOCATION in a TSMODEL resource definition for a remote queue allows the same definition to be installed in both a local and remote region. See Shared resources for intercommunication in the Resource Definition Guide.

POOLNAME(*pool*)
Specifies the name of the shared TS pool definition that you want to use with this TSMODEL resource definition. The name can be up to eight characters in length.

Acceptable characters:

`A-Z 0-9 $ @ # _`

Any lowercase characters that you enter are converted to uppercase.

Embedded blanks are not acceptable and a name consisting entirely of blanks is treated as though no pool name had been supplied.

You cannot specify POOLNAME if REMOTESYSTEM is also specified.

CICS does not search for a matching TSMODEL resource definition if an application program specifies a SYSID on the EXEC CICS temporary storage command, or if a SYSID is added by an XTSEREQ global user exit program. To enable CICS to find the name of a temporary storage data sharing pool when the application program explicitly specifies a SYSID, you must use a temporary storage table (TST) with a suitable TYPE=SHARED entry.

PREFIX(*prefix*)
Specifies the character string that CICS uses to identify matching temporary storage queues. The prefix can be up to 16 characters in length.

Acceptable characters:

`A-Z a-z 0-9 $ @ # . / - _ % & ? ! : | " = ¬ , ; < >`

In the simplest case, a prefix matches the TS queue names that start with the prefix. For example, the prefix `ABCD` matches queue names `ABCD`, `ABCDE`, and `ABCD99`.

You can use the generic character (+) one or more times within the prefix to match any character in a TS queue name. For example, the prefix `A++D` matches queue names: `ABCD`, `A99D`, and `ABCD99`. It does not match `ABD`. You do not need to specify + characters at the end of a prefix; you can think of a prefix as being padded on the right with + characters, up to the maximum length of a TS queue name (16 characters). For example, a prefix of `ABC` is exactly equivalent to a prefix of `ABC+` or `ABC+++++`.

When you use the + character in a prefix, you might find that, considered individually, more than one prefix matches a TS queue name. In this situation, CICS uses the following rules to select the matching TS model:

- Characters that are exactly specified in the prefix are a stronger match than the + character.
- Characters are compared one at a time, from left to right, and matching characters are a stronger match the further to the left they are.

For example:

- Queue name `ABCD99` matches prefix `ABCD` rather than `AB+D`: In the first prefix, the four matching characters are specified exactly; in the second, only three characters are specified exactly.

- Queue name `ABCD99` matches prefix `ABC+` rather than `AB+D`: In both prefixes, the same number of matching characters are specified exactly. However, the third character that matches exactly is further to the left in the first prefix.

To enable CICS to find the name of a temporary storage data sharing pool when the application program explicitly specifies a SYSID, you must use a temporary storage table (TST) with a suitable TYPE=SHARED entry.

RECOVERY({**NO**|**YES**})
Specifies whether queues matching this model are to be recoverable.

NO Queues matching this model are unrecoverable.

YES Queues matching this model are recoverable.

RECOVERY(YES) is not allowed with LOCATION(MAIN).

REMOTEPREFIX(*prefix*)
Specifies the character string that CICS uses to identify matching temporary storage queues in the remote system. The prefix can be up to 16 characters in length.

Acceptable characters:
`A-Z a-z 0-9 $ @ # . / - _ % & ? ! : | " = ¬ , ; < >`

REMOTEPREFIX is not allowed unless REMOTESYSTEM is also specified. The length of the REMOTEPREFIX attribute must be the same as the PREFIX attribute.

The rules for character matching in the REMOTEPREFIX attribute are the same as for the PREFIX attribute. If you use + characters for generic matching, they must be in the same position in PREFIX and REMOTEPREFIX. For example:

PREFIX: `A++D`

REMOTEPREFIX: `X++Y`

REMOTESYSTEM(*connection*)
Specifies the name of the connection that links the local system to the remote system where the temporary storage queue resides.

Acceptable characters:
`A-Z 0-9 $ @ #`

Unless you are using the CREATE command, any lowercase characters that you enter are converted to uppercase.

Embedded blanks are not acceptable and a name consisting entirely of blanks is treated as though no remote system had been specified.

REMOTESYSTEM and POOLNAME are mutually exclusive. If REMOTESYSTEM is specified, POOLNAME is ignored.

SECURITY({**NO**|**YES**})
Specifies whether security checking is to be performed for queues matching this model.

NO Security checking is not to be performed for queues matching this model.

YES Security checking is to be performed for queues matching this model.

For more information, see the *CICS RACF Security Guide*.

TSMODEL(*name*)
Specifies the name of this TSMODEL resource definition. The name can be up to eight characters in length.

Acceptable characters:
`A-Z a-z 0-9 $ @ # . / - _ % & ? ! :	" = ¬ , ; < >`

Embedded blanks are not acceptable.

This name is used to identify the TSMODEL resource definition on the CSD file. It is not used within the active CICS system.

XPREFIX(*xprefix*)
Can be used as an alternative to PREFIX. Enter a hexadecimal string, up to 32 characters in length, that is to be used as the prefix for this model. Because XPREFIX is specified in hexadecimal form, you can use a name that contains characters that you cannot enter in the PREFIX attribute.

To specify generic characters in the XPREFIX attribute, code `X'4E'`.

The rules for matching the XPREFIX to TS queue names are the same as they are for the PREFIX attribute.

XREMOTEPFX(*xprefix*)
Can be used as an alternative to REMOTEPREFIX. Enter a hexadecimal string, up to 32 characters in length, that is to be used as the prefix on the remote system. Because XREMOTEPFX is specified in hexadecimal form, you can use a name that contains characters that you cannot enter in the REMOTEPREFIX attribute.

To specify generic characters in the XPREFIX attribute, code `X'4E'`.

The rules for matching the XREMOTEPFX to TS queue names are the same as they are for the REMOTEPREFIX attribute.

Chapter 37. TYPETERM resources

A TYPETERM resource defines a set of attributes that are common to a group of terminals.

The resource is a logical extension of the TERMINAL resource. If you have a number of terminals with the same properties, you would define one TYPETERM with the required values, and then name that TYPETERM in each TERMINAL definition (or in the autoinstall model definition if you are using autoinstall).

Each TERMINAL definition must name a TYPETERM definition. This single attribute represents many other characteristics, and thus can save considerable effort, and reduce the chance of making mistakes. TYPETERMs make it easier to define your terminals if you have many terminals of the same kind.

Two TYPETERM attributes are worthy of note here, because they further simplify the terminal definition process:
DEVICE
QUERY

DEVICE
specifies the **device type** that the TYPETERM represents. This is a key attribute, because the default values for a number of other attributes depend on the value you supply for it:

- Some attributes are always the same for every device of the same type. You do not need to define all these attributes yourself, because RDO knows what they are. All you need to tell RDO is the device type of your terminals, when you define the TYPETERM for them. Values for the fixed attributes are supplied automatically.
- Other attributes are given default values, depending on the device type. However, you do not have to use the values that CICS supplies; you can specify different values if you want. If you change the device type in a TYPETERM definition, the default values are not reset.

You must supply a value for the DEVICE attribute, because there is no default.

For a list of terminals supported by RDO, see Devices supported. There is also a list of valid values for the DEVICE attribute of TYPETERM in Default values for TYPETERM attributes. This shows you the other attribute values supplied for different device types. In some cases, these values depend also on your values for SESSIONTYPE and TERMMODEL, but these too have defaults that depend on the DEVICE specified.

Apart from ordinary display devices, printers, and other more specialized input and output devices, you can create a TYPETERM definition for your CICS consoles.

QUERY
The QUERY attribute allows you to leave some features of your terminals undefined until they are connected. Information about these attributes can then be obtained by CICS itself using the QUERY structured field.

All attributes for which you can use QUERY are also TYPETERM attributes. They are:
ALTPAGE

ALTSCREEN
APLTEXT
BACKTRANS
CGCSGID
COLOR
EXTENDEDDS
HILIGHT
MSRCONTROL
OBFORMAT
OUTLINE
PARTITIONS
PROGSYMBOLS
SOSI
VALIDATION

The use of QUERY overrides any value that is explicitly defined for any of the TYPETERM attributes listed above, **except ALTSCREEN**. QUERY-supplied ALTSCREEN values are used only if no ALTSCREEN value is explicitly defined in the TYPETERM.

You can use QUERY for 3270 devices with the extended 3270 data stream. The DEVICE types for which you can use QUERY are:

3270
3270P
LUTYPE2
LUTYPE3
SCSPRINT

You can specify that QUERY be used in one of two ways:

- QUERY(COLD) specifies that the QUERY is to be issued only when the terminal is first connected after an initial or a cold start.
- QUERY(ALL) specifies that the QUERY is to be issued each time the terminal is connected.

The QUERY function is particularly useful with configurable devices, such as the IBM Personal System/2 (PS/2) and the IBM 3290. It enables you to reconfigure the device between logging off and logging on to CICS, without having to change any resource definitions.

The QUERY function is also particularly useful when used in conjunction with autoinstall.

Note that the QUERY facility obtains only the information required by CICS. If an application program needs to determine other device characteristics, it still needs to send a QUERY structured field and analyze the reply.

To summarize, you may need only one TYPETERM definition for each device type. If the attributes that can be determined by QUERY differ among the terminals, you still need only one TYPETERM for each device type. If other attributes of your terminals vary, you may need more than one TYPETERM definition for a device type.

There are some CICS-supplied TYPETERM definitions suitable for the more frequently used terminals. These are described in TYPETERM definitions in group DFHTYPE.

When all your terminals are basically the same, you can have only one TYPETERM definition, and one TERMINAL definition with AUTINSTMODEL(YES). You might like to use QUERY to deal with different features used by your terminals.

Default values for TYPETERM attributes

When you specify the DEVICE, SESSIONTYPE and TERMMODEL in a TYPETERM definition, CICS supplies default values for many of the other attributes.

The default values are shown in Table 14. Note that for some attributes, the supplied values are mandatory, and you cannot change them.

Table 14. Default values for TYPETERM attributes

DEVICE	SESSIONTYPE	TERMMODEL	Default values

3270
3277
L3277
 	
See note 1 on page 336
		1	DEFSCREEN(12,40)
			PAGESIZE(12,40)
			AUTOPAGE(N)
			BRACKET(Y)
			BUILDCHAIN(N)
			ROUTEDMSGS(ALL)

3270		2 (default value)	DEFSCREEN(24,80)
			PAGESIZE(24,80)
			AUTOPAGE(N)
			BRACKET(Y)
			BUILDCHAIN(N)
			ROUTEDMSGS(ALL)

3275		1	DEFSCREEN(12,40)
			PAGESIZE(12,40)
			AUTOPAGE(N)
			BRACKET(Y)
			BUILDCHAIN(N)
			ROUTEDMSGS(ALL)

3275		2 (default value)	DEFSCREEN(24,80)
			PAGESIZE(24,80)
			AUTOPAGE(N)
			BRACKET(Y)
			BUILDCHAIN(N)
			ROUTEDMSGS(ALL)

3270P
3284
L3284
3286
L3286
 	
See note 2 on page 336
		1	DEFSCREEN(12,40)
			PAGESIZE(12,40)
			AUTOPAGE(Y)
			BRACKET(Y)
			BUILDCHAIN(N)
			ROUTEDMSGS(ALL)

Table 14. Default values for TYPETERM attributes (continued)

DEVICE	SESSIONTYPE	TERMMODEL	Default values

3270P		2 (default value)	DEFSCREEN(24,80)
			PAGESIZE(24,80)
			AUTOPAGE(Y)
			BRACKET(Y)
			BUILDCHAIN(N)
			ROUTEDMSGS(ALL)

APPC			DEFSCREEN(0,0)
			PAGESIZE(1,40)
			AUTOPAGE(Y)
			BRACKET(Y) (mandatory)
			BUILDCHAIN(Y) (mandatory)
			ROUTEDMSGS(NONE) (mandatory)

CONSOLE			DEFSCREEN(0,0) (mandatory)
			PAGESIZE(1,124) (mandatory)
			AUTOPAGE(N)
			BRACKET(N) (mandatory)
			BUILDCHAIN(N) (mandatory)
			ROUTEDMSGS(NONE)

LUTYPE2		1	DEFSCREEN(12,40)
			PAGESIZE(12,40)
			AUTOPAGE(N)
			BRACKET(Y) (mandatory)
			BUILDCHAIN(Y) (mandatory)
			ROUTEDMSGS(ALL)

LUTYPE2		2 (default value)	DEFSCREEN(24,80)
			PAGESIZE(24,80)
			AUTOPAGE(N)
			BRACKET(Y) (mandatory)
			BUILDCHAIN(Y) (mandatory)
			ROUTEDMSGS(ALL)

LUTYPE3		1	DEFSCREEN(12,40)
			PAGESIZE(12,40)
			AUTOPAGE(Y)
			BRACKET(Y) (mandatory)
			BUILDCHAIN(N)
			ROUTEDMSGS(ALL)

LUTYPE3		2 (default value)	DEFSCREEN(24,80)
			PAGESIZE(24,80)
			AUTOPAGE(Y)
			BRACKET(Y) (mandatory)
			BUILDCHAIN(N)
			ROUTEDMSGS(ALL)

Table 14. Default values for TYPETERM attributes (continued)

DEVICE	SESSIONTYPE	TERMMODEL	Default values

LUTYPE4			DEFSCREEN(0,0)
			PAGESIZE(50,80)
			AUTOPAGE(Y)
			BRACKET(Y) (mandatory)
			BUILDCHAIN(N)
			ROUTEDMSGS(ALL)

BCHLU	(default value)		DEFSCREEN(0,0)
			PAGESIZE(12,80)
			AUTOPAGE(Y)
			BRACKET(Y) (mandatory)
			BUILDCHAIN(N)
			ROUTEDMSGS(ALL)

BCHLU	BATCHDI		DEFSCREEN(0,0)
			PAGESIZE(12,80)
			AUTOPAGE(Y)
			BRACKET(Y) (mandatory)
			BUILDCHAIN(N)
			ROUTEDMSGS(ALL)

BCHLU	USERPROG		DEFSCREEN(0,0)
			PAGESIZE(12,80)
			AUTOPAGE(Y)
			BRACKET(Y) (mandatory)
			BUILDCHAIN(N)
			ROUTEDMSGS(ALL)

INTLU			DEFSCREEN(0,0)
			PAGESIZE(12,80)
			AUTOPAGE(Y)
			BRACKET(Y)
			BUILDCHAIN(N)
			ROUTEDMSGS(ALL)

SCSPRINT			DEFSCREEN(0,0) (mandatory)
			PAGESIZE(24,80)
			AUTOPAGE(Y)
			BRACKET(Y) (mandatory)
			BUILDCHAIN(N)
			ROUTEDMSGS(ALL)

TLX or TWX	CONTLU (default value)		DEFSCREEN(0,0)
			PAGESIZE(1,40)
			AUTOPAGE(Y)
			BRACKET(Y)
			BUILDCHAIN(N)
			ROUTEDMSGS(ALL)

Table 14. Default values for TYPETERM attributes (continued)

DEVICE	SESSIONTYPE	TERMMODEL	Default values

TLX or TWX	INTLU		DEFSCREEN(0,0)
			PAGESIZE(1,40)
			AUTOPAGE(Y)
			BRACKET(Y)
			BUILDCHAIN(N)
			ROUTEDMSGS(ALL)

3600	(default value)		DEFSCREEN(0,0)
			PAGESIZE(1,40)
			AUTOPAGE(Y)
			BRACKET(Y)
			BUILDCHAIN(N)
			ROUTEDMSGS(ALL)

3600	PIPELINE		DEFSCREEN(0,0)
			PAGESIZE(6,30)
			AUTOPAGE(Y)
			BRACKET(Y)
			BUILDCHAIN(N)
			ROUTEDMSGS(ALL)

3614			DEFSCREEN(0,0)
			PAGESIZE(1,40)
			AUTOPAGE(Y)
			BRACKET(Y)
			BUILDCHAIN(N)
			ROUTEDMSGS(ALL)

3650	USERPROG (default value)		DEFSCREEN(0,0)
			PAGESIZE(3,80)
			AUTOPAGE(Y)
			BRACKET(Y)
			BUILDCHAIN(N)
			ROUTEDMSGS(ALL)

3650	3270		DEFSCREEN(12,40)
			PAGESIZE(23,80)
			AUTOPAGE(Y)
			BRACKET(Y)
			BUILDCHAIN(N)
			ROUTEDMSGS(ALL)

3650	3653		DEFSCREEN(0,0)
			PAGESIZE(6,30)
			AUTOPAGE(Y)
			BRACKET(Y)
			BUILDCHAIN(N)
			ROUTEDMSGS(ALL)

Table 14. Default values for TYPETERM attributes (continued)

DEVICE	SESSIONTYPE	TERMMODEL	Default values

3650	PIPELINE		DEFSCREEN(0,0)
			PAGESIZE(6,30)
			AUTOPAGE(Y)
			BRACKET(Y)
			BUILDCHAIN(N)
			ROUTEDMSGS(ALL)

3767			DEFSCREEN(0,0)
			PAGESIZE(12,80)
			AUTOPAGE(Y)
			BRACKET(Y) (mandatory)
			BUILDCHAIN(N)
			ROUTEDMSGS(ALL)

3767C			DEFSCREEN(0,0)
			PAGESIZE(12,80)
			AUTOPAGE(Y)
			BRACKET(Y) (mandatory)
			BUILDCHAIN(N)
			ROUTEDMSGS(ALL)

3767I			DEFSCREEN(0,0)
			PAGESIZE(12,80)
			AUTOPAGE(Y)
			BRACKET(Y) (mandatory)
			BUILDCHAIN(N)
			ROUTEDMSGS(ALL)

3770	(default value)		DEFSCREEN(0,0)
			PAGESIZE(12,80)
			AUTOPAGE(Y)
			BRACKET(Y) (mandatory)
			BUILDCHAIN(N)
			ROUTEDMSGS(ALL)

3770	USERPROG		DEFSCREEN(0,0)
			PAGESIZE(12,80)
			AUTOPAGE(Y)
			BRACKET(Y) (mandatory)
			BUILDCHAIN(N)
			ROUTEDMSGS(ALL)

3770	BATCHDI		DEFSCREEN(0,0)
			PAGESIZE(12,80)
			AUTOPAGE(Y)
			BRACKET(Y) (mandatory)
			BUILDCHAIN(N)
			ROUTEDMSGS(ALL)

Table 14. Default values for TYPETERM attributes (continued)

DEVICE	SESSIONTYPE	TERMMODEL	Default values

3770B	(default value)		DEFSCREEN(0,0)
			PAGESIZE(12,80)
			AUTOPAGE(Y)
			BRACKET(Y) (mandatory)
			BUILDCHAIN(N)
			ROUTEDMSGS(ALL)

3770B	BATCHDI		DEFSCREEN(0,0)
			PAGESIZE(12,80)
			AUTOPAGE(Y)
			BRACKET(Y) (mandatory)
			BUILDCHAIN(N)
			ROUTEDMSGS(ALL)

3770B	USERPROG		DEFSCREEN(0,0)
			PAGESIZE(12,80)
			AUTOPAGE(Y)
			BRACKET(Y) (mandatory)
			BUILDCHAIN(N)
			ROUTEDMSGS(ALL)

3770C			DEFSCREEN(0,0)
			PAGESIZE(12,80)
			AUTOPAGE(Y)
			BRACKET(Y) (mandatory)
			BUILDCHAIN(N)
			ROUTEDMSGS(ALL)

3770I			DEFSCREEN(0,0)
			PAGESIZE(12,80)
			AUTOPAGE(Y)
			BRACKET(Y) (mandatory)
			BUILDCHAIN(N)
			ROUTEDMSGS(ALL)

3790	(default value)		DEFSCREEN(0,0)
			PAGESIZE(1,40)
			AUTOPAGE(Y)
			BRACKET(Y) (mandatory)
			BUILDCHAIN(N)
			ROUTEDMSGS(NONE) (mandatory)

3790	SCSPRINT		DEFSCREEN(0,0)
			PAGESIZE(24,80)
			AUTOPAGE(Y)
			BRACKET(Y) (mandatory)
			BUILDCHAIN(N)
			ROUTEDMSGS(ALL)

Table 14. Default values for TYPETERM attributes (continued)

DEVICE	SESSIONTYPE	TERMMODEL	Default values

3790	USERPROG		DEFSCREEN(0,0)
			PAGESIZE(12,80)
			AUTOPAGE(Y)
			BRACKET(Y) (mandatory)
			BUILDCHAIN(N)
			ROUTEDMSGS(ALL)

3790	BATCHDI		DEFSCREEN(0,0)
			PAGESIZE(12,80)
			AUTOPAGE(Y)
			BRACKET(Y) (mandatory)
			BUILDCHAIN(N)
			ROUTEDMSGS(ALL)

3790	3277CM
	
	See note 3 on page 336
		1	DEFSCREEN(12,40)
			PAGESIZE(12,40)
			AUTOPAGE(N)
			BRACKET(Y) (mandatory)
			BUILDCHAIN(Y) (mandatory)
			ROUTEDMSGS(ALL)

3790	3277CM
	
	See note 3 on page 336
		2 (default value)	DEFSCREEN(24,80)
			PAGESIZE(24,80)
			AUTOPAGE(N)
			BRACKET(Y) (mandatory)
			BUILDCHAIN(Y) (mandatory)
			ROUTEDMSGS(ALL)

3790	3284CM
	
	See note 4 on page 336
		1	DEFSCREEN(12,40)
			PAGESIZE(12,40)
			AUTOPAGE(Y)
			BRACKET(Y) (mandatory)
			BUILDCHAIN(N)
			ROUTEDMSGS(ALL)

3790	3284CM
	
	See note 4 on page 336
		2 (default value)	DEFSCREEN(24,80)
			PAGESIZE(24,80)
			AUTOPAGE(Y)
			BRACKET(Y) (mandatory)
			BUILDCHAIN(N)
			ROUTEDMSGS(ALL)

3790	3286CM
	
	See note 4 on page 336
		1	DEFSCREEN(12,40)
			PAGESIZE(12,40)
			AUTOPAGE(Y)
			BRACKET(Y) (mandatory)
			BUILDCHAIN(N)
			ROUTEDMSGS(ALL)

Table 14. Default values for TYPETERM attributes (continued)

DEVICE	SESSIONTYPE	TERMMODEL	Default values

3790	3286CM
	See note 4
		2 (default value)	DEFSCREEN(24,80)
			PAGESIZE(24,80)
			AUTOPAGE(Y)
			BRACKET(Y) (mandatory)
			BUILDCHAIN(N)
			ROUTEDMSGS(ALL)

Note:
1. If you specify DEVICE(3277) or DEVICE(L3277), CICS replaces the value you specify with DEVICE(3270)
2. If you specify DEVICE(3284), DEVICE(3286), DEVICE(L3284) or DEVICE(L3286), CICS replaces the value you specify with DEVICE(3270P)
3. If you specify DEVICE(3790) and SESSIONTYPE(3277CM), CICS replaces the values you specify with DEVICE(LUTYPE2). There is no SESSIONTYPE value DEVICE(LUTYPE2).
4. If you specify DEVICE(3790) and SESSIONTYPE(3284CM) or SESSIONTYPE(3286CM), CICS replaces the values you specify with DEVICE(LUTYPE3). There is no SESSIONTYPE value DEVICE(LUTYPE3).

Devices supported

This topic lists the device names that you can use on the TYPETERM definition.

Table 15 is a list of terminal types supported by RDO. To use this table, find the family number of your device in the leftmost column (headed **Terminal or System Type**). Then look across at the second column (headed **Units**) to see if your type of units is specifically mentioned. Next look at the third column (headed **Attachment**) to see what device type you should use on your TYPETERM definition.

The notes that follow the table provide further explanation where required. The following abbreviations are used:

local	channel or adapter attached
s/s	start/stop transmission
SDLC	synchronous data link control
sw	switched
BSC	binary synchronous
nonsw	nonswitched communications

Table 15. z/OS Communications Server terminals and subsystems supported by RDO

Terminal or System Type	Units	Attachment	Notes
3101		Supported as TWX 33/35	9 on page 339
3230		Supported as INTLU (z/OS Communications Server)	
3270	3178, 3179, 3180, 3262, 3271, 3272, 3274, 3276, 3290	local, SDLC, BSC nonsw	1 on page 338, 2 on page 339
	3275, 3277, 3278, 3279, 3284, 3286, 3287, 3288, 3289	BSC sw or nonsw	2 on page 339
3270PC	3270PC, 3270PC/G, 3270PC/GX	Supported as 3270	

Table 15. z/OS Communications Server terminals and subsystems supported by RDO (continued)

Terminal or System Type	Units	Attachment	Notes
3287	models 11, 12	SDLC supported as SCSPRT	12 on page 340
3600	3601, 3602, 3690, 3604, 3610, 3612, 3618, 3614, 3624	SDLC, BSC nonsw	3 on page 339,4 on page 339,13 on page 340
3630	3631, 3632, 3643, 3604	attached as 3600	3 on page 339,10 on page 340
3640	3641, 3644, 3646, 3647	SDLC attached as INTLU	12 on page 340
	3642	SDLC attached as SCSPRT	12 on page 340
	3643	SDLC supported as LUTYPE2	12 on page 340
	3645	SDLC supported as SCSPRT	12 on page 340
3650	3651, 3653, 3275, 3284	SDLC	3 on page 339
3680	3684	Supported as 3790/3650	3 on page 339
3730	3791	Supported as 3790	3 on page 339
3767		SDLC s/s supported as 2740/2741	
3770	3771, 3773, 3774	SDLC	3 on page 339,5 on page 339
	3775, 3776, 3777	BSC supported as 2770	
3790	3791	SDLC or local	3 on page 339,6 on page 339
4300	4331, 4341, 4361, 4381	BSC or SDLC	3 on page 339,7 on page 339
4700	4701-1	Supported as 3600	3 on page 339,4 on page 339
5280		Supported as 3270 (z/OS Communications Server)	
5520		SDLC supported as 3790 full-function LU BSC supported as 2770 SDLC attached as APPC	3 on page 339
5550		Supported as 3270	
5937		SDLC/BSC attached as 3270	2 on page 339
6670		SDLC BSC supported as 2770	
8100	8130/8140 processors with DPCX	Supported as 3790	3 on page 339
	DPPX/BASE using Host Presentation Services or Host Transaction Facility	Attached as 3790	3 on page 339
	DPPX/DSC or DPCX/DSC (including 8775 attach)	Supported as 3270	3 on page 339,11 on page 340
8775		SDLC supported as LUTYPE2	
8815		Supported as APPC	

Table 15. z/OS Communications Server terminals and subsystems supported by RDO (continued)

Terminal or System Type	Units	Attachment	Notes
Displaywriter		Supported as APPC SNA for EDDS Supported as 3270; attached as 2741 (s/s)or 3780 (BSC) SDLC attached as APPC	
Personal Computer		Supported as 3270 and as APPC	13 on page 340
PS/2		Supported as 3270 and as APPC	13 on page 340
Scanmaster		Supported as APPC	
Series/1		Attached as System/3;supported as 3650 Pipeline (z/OS Communications Server) or 3790 (full function LU)	3 on page 339
System/32	5320	SDLC supported as 3770 BSC supported as 2770	3 on page 339,8 on page 339
System/34	5340	SDLC supported as 3770 BSC attached as System/3	3 on page 339,8 on page 339
System/36		Supported as System/34 SDLC attached as APPC	
System/38	5381	SDLC attached as 3770 SDLC attached as APPC BSC attached as System/3	3 on page 339,8 on page 339
AS/400	5381	SDLC attached as 3770 SDLC attached as APPC BSC attached as System/3	3 on page 339,8 on page 339
System/370		SDLC attached as APPC	3 on page 339
System/390®		SDLC attached as APPC	3 on page 339
System z®		SDLC attached as APPC	3 on page 339
TWX 33/35		z/OS Communications Server (via NTO) ss sw	9 on page 339
WTTY		z/OS Communications Server (via NTO) ss nonsw	9 on page 339

Note:

1. CICS supports the 3290 through both the terminal control and the BMS interfaces. The 3290 can be in one of three states: default, alternate, or partitioned. Up to 16 partitions can be defined. The 3290 also has the programmed symbols and extended highlighting features, as well as two kinds of data validation feature, mandatory fill and mandatory enter. A 3290 terminal can be configured as from one to five logical units. You define the size of each logical unit when setting up the 3290. You must ensure that the resource definitions of each logical unit match the setup size, to prevent unpredictable results. Up to four interactive screens in any configuration can

be active at the same time, but only one interactive screen can be defined as having programmed symbols at any time; that is, all programmed symbol sets must be assigned to the interactive screen.

To display long lines of data, such as the 132-character lines of CEMT output, specify a default screen width of 132 characters.

If you intend to use the large buffer, you might have to specify a much larger value for IOAREALEN (see "TYPETERM attributes" on page 341). Whether you need to do this depends on whether operators are likely to modify, or enter, large quantities of data. If a terminal is used for inquiry only, or for limited data entry, IOAREALEN need not be large.

2. SDLC 3270s are supported only through z/OS Communications Server. Printers attached to local or SDLC 3274s and SDLC 3276s are supported through z/OS Communications Server either as LU Type 3 using the 3270 printer data stream or as LU Type 1 using the SCS data stream (which is a subset of that used for SDLC 3767, 3770, and 3790 printers). The 3288 is supported as a 3286 Model 2. CICS supports the 3270 copy feature (#1550).
3. Devices and features supported by a system or programmable controller are generally transparent to CICS. In some cases, CICS provides specific device support, in which case the units are listed.
4. SDLC is supported through z/OS Communications Server. The 3614 is supported both for loop attachment to the 3601 and SDLC attachment to the host via a 3704/3705 Communications Controller.

   The 3614 is supported by CICS as BSC only when loop-attached to the 3601/3602 Controllers. The 3624 is supported as a 3614.

   The 3690 is supported as a 3602.
5. CICS supports the Data Transfer Function of the SDLC Programmable Models of the 3770 Data Communication System. In using this function, you are responsible for allocating data sets and managing the program library.
6. CICS does not support the 3790/Data Entry Configuration using 3760s. The #9165 or #9169 configuration is required to support the CICS enhancement first made available in Version 1 Release 3.0.

   Printers on 3790 systems are supported with one of the following:
   - A function program that you provide
   - 3270 data stream compatibility with a 3270 printer data stream (LU3)
   - An SCS data stream supporting a subset of that for SDLC 3767 (LU1)

   When operating in 3270 mode, the 3288 Model 2 is supported as a 3286 Model 2.
7. The 4300 attachment by BSC requires a suitable telecommunications program (for example, the VSE/3270 Bisync Pass Through Program) in the system connected to CICS. CICS is **not** a suitable program for the remote CPU. Attachment by SDLC is supported by CICS intersystem communication.
8. The System/32 with its SNA/SDLC workstation system utility program, and the System/34 and System/38, are supported as compatible versions of an appropriately featured 3770 Communication System operating as a batch logical unit. The System/34 or System/38 user-written program is responsible for supporting the correct SNA sequences of the attached subsystem.
9. TWX and WTTY are supported through z/OS Communications Server via the Network Terminal Option program product (5735-XX7), with attachments as defined by NTO.

WTTY is attached at 50 bps on common-carrier switched networks where the terminals supported are those interfacing through IBM World Trade Corporation Telegraph Terminal Control with Telegraph Line Adapter.

The transmission code used is International Telegraph Alphabet No. 2 (CCITT No. 2). CICS does not support autocall or automatic host disconnect via WRITE break.

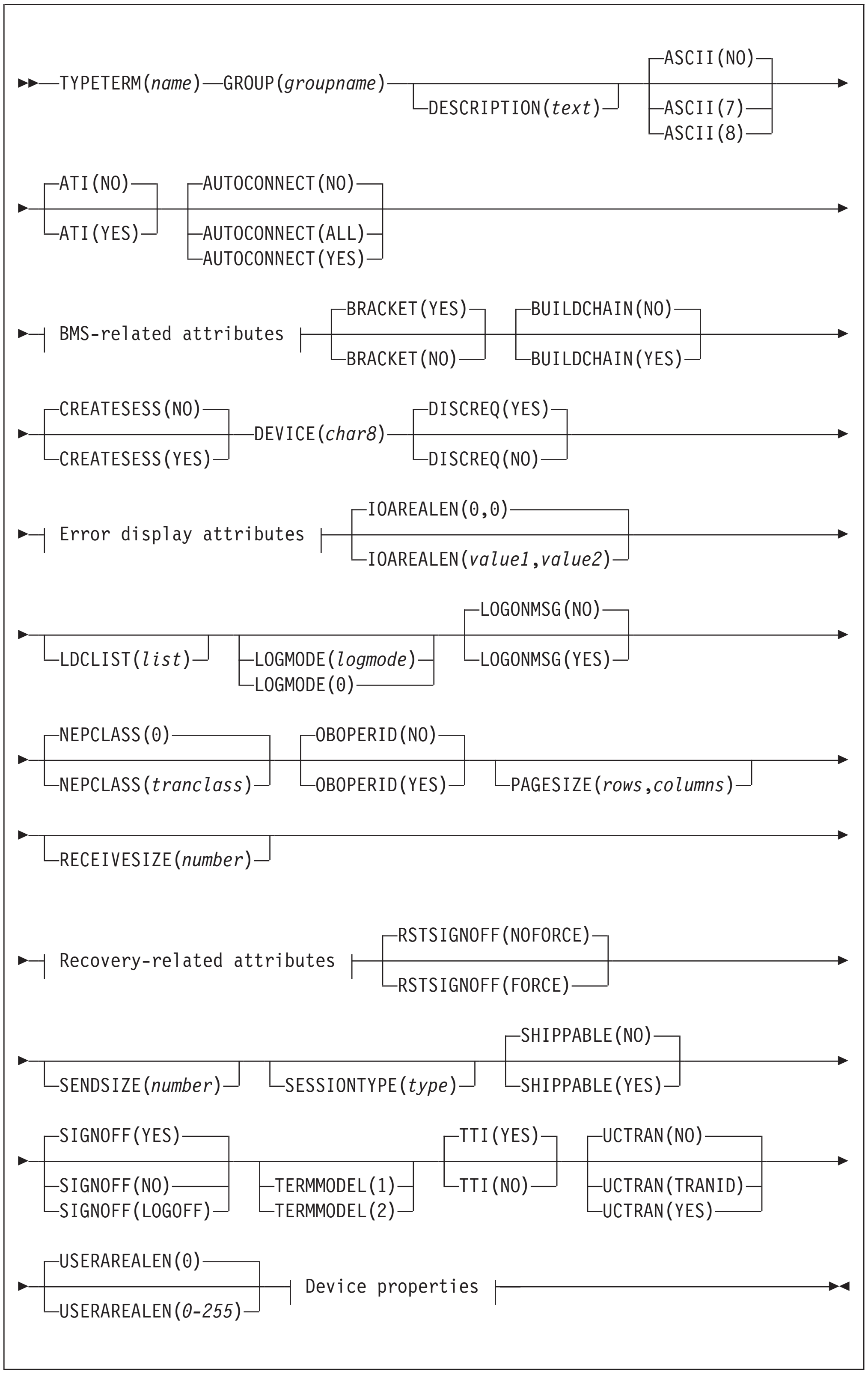
10. The 3643 is supported as a 3604.
11. 8775 support includes validation of mandatory fill and mandatory enter field attributes.
12. Attachment is via the Loop Adapter #4830, #4831, and Data Link Adapter #4840 of the 4331 processor.
13. 3270 support requires that the 3278/3279 Emulation Adaptor be installed in the Personal Computer or PS/2.
14. The 3600 pipeline logical unit is designed to provide high throughput for particular types of transaction, such as credit card authorization or general inquiry applications. To achieve a high throughput of inquiry messages and their replies, the CICS pipeline session uses a restricted set of the communication protocols that are used with the 3601 logical unit.

    These restrictions result in a full duplex message flow whereby many inquiry messages are outstanding at any one time, and the replies may flow back in a different order from that of the original inquiries. The 4700/3600 application program controlling the inquiry terminals is responsible for maintaining the protocols as well as correlating replies with inquiries, and controlling message flow to the group of terminals associated with the pipeline logical unit.

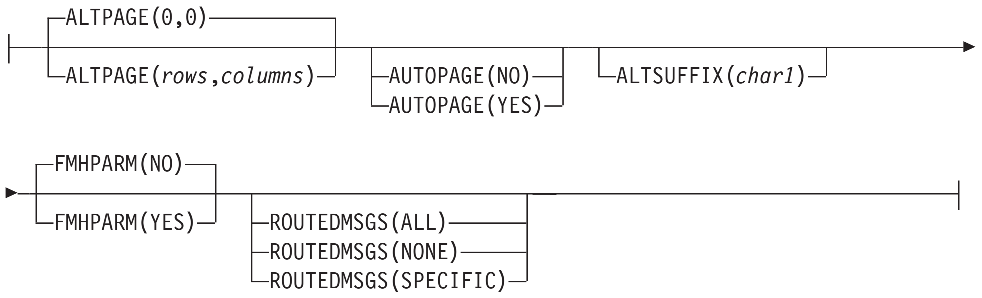
    CICS does not support automatic transaction initiation (ATI) on pipeline terminals.

TYPETERM attributes

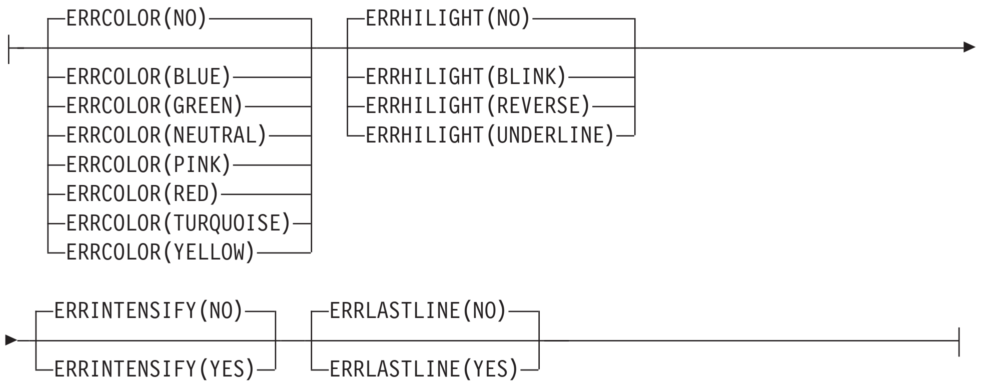
Describes the syntax and attributes of the TYPETERM resource.



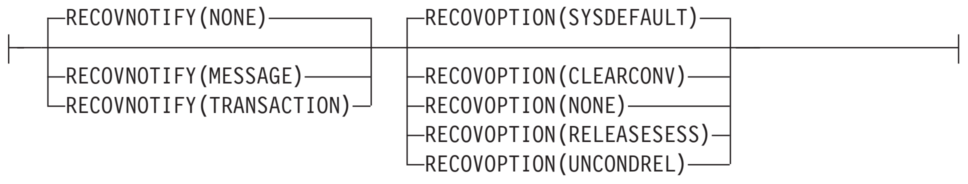
BMS-related attributes:



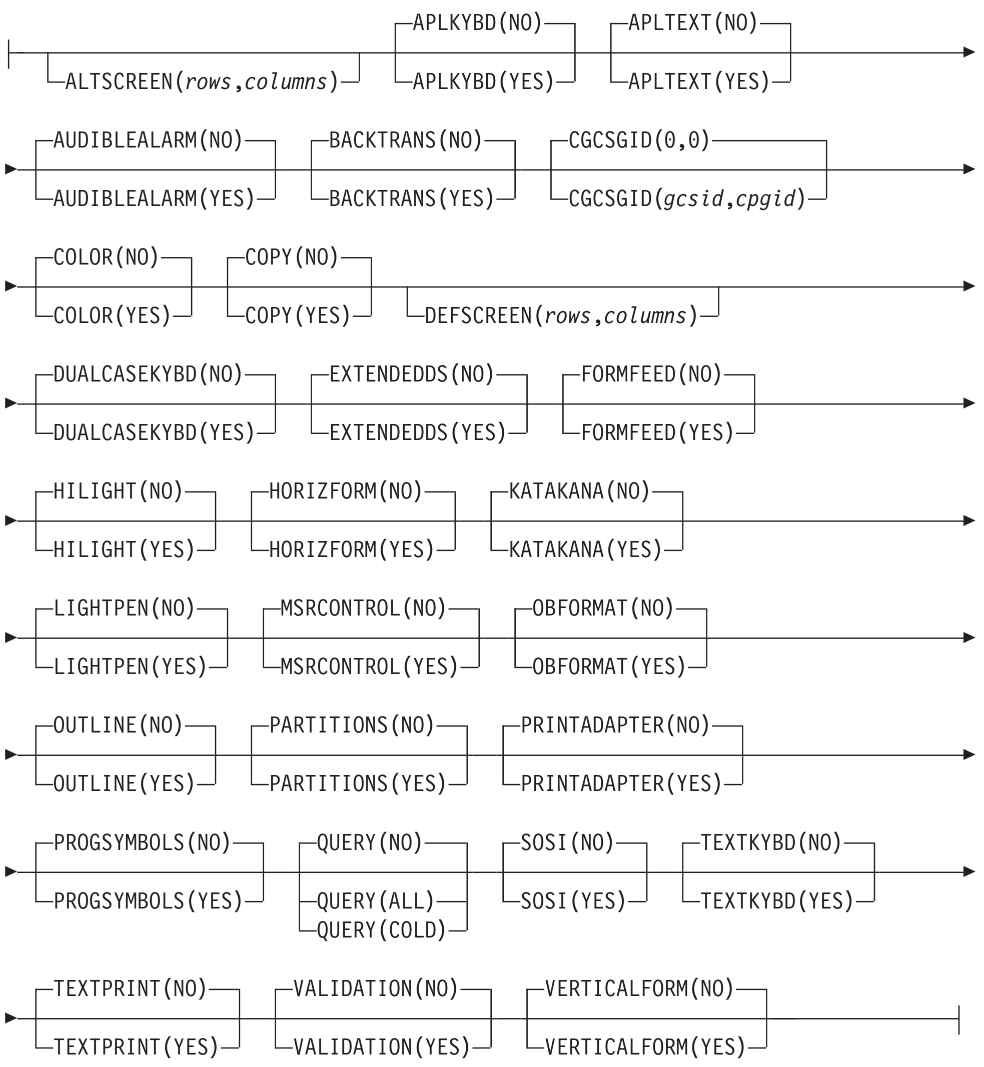
Error display attributes:



Recovery-related attributes:



Device properties:



The typeterm definition attribute descriptions are:

ALTPAGE({0|*rows*},{0|*columns*})

specifies the page size to be used by BMS for this terminal entry when ALTSCREEN has been selected as the screen size. The default is the PAGESIZE. The values for both *rows* and *columns* must be in the range 0 through 999. The product of *rows* and *columns* must not exceed 32767.

You will get unexpected results if the *columns* value of ALTPAGE is different from that of ALTSCREEN. The *rows* value of ALTPAGE can usefully be less than that of ALTSCREEN, perhaps to reserve the bottom line of the screen for error messages.

If you use the QUERY structured field, the alternate page size used is the size set up as the alternate screen size. For terminals that can be queried, you can set ALTPAGE to zero and have the ALTSCREEN value defined explicitly by the CINIT BIND. If ALTPAGE is not zero, it is possible to have different values for the ALTPAGE and the ALTSCREEN.

ALTSCREEN(*rows*,*columns*)

specifies the 3270 screen size to be used for a transaction that has an alternate screen size specified in its profile definition. The values that can be specified are:

Device	Alternate Screen Size
3276-1, 3278-1	(12,80)
3276-2, 3278-2	(24,80)
3276-3, 3278-3	(32,80)
3276-4, 3278-4	(43,80)
3278-5	(27,132)
3279-2A, 3279-2B	(24,80)
3279-3A, 3279-3B	(32,80)

No validity checking is performed on the screen size selected, and incorrect sizes may lead to unpredictable results.

For BSC devices, both the alternate and default screen sizes are determined by the device hardware. The alternate screen size is the maximum screen size. For the 3290 display, both the default and alternate screen sizes are determined by the customer setup procedure. For further guidance, see the *IBM 3290 Information Panel Description and Reference*.

For SNA devices (LUTYPE2 and LUTYPE3), you can specify any value for both alternate and default screen sizes, up to the maximum physical screen size. In particular, both the alternate and default screen sizes can be the maximum screen size, or the default screen size can be the maximum screen size with no alternate screen size specified. The SNA bind is generated by CICS from this information. You do not need to provide logmode table entries, or to customize the device.

For non-SNA 3270 and LUTYPE2 devices, you can use the QUERY structured field to determine the alternate screen size that has been set up for the display. To use QUERY, leave the DEFSCREEN to default to (24,80) and leave ALTSCREEN unspecified. The alternate screen size is the size set up by the terminal user. Otherwise, QUERY(COLD) or QUERY(ALL) has no effect on the alternate screen size. Leaving ALTSCREEN unspecified without using QUERY under the conditions above results in an alternate screen size of (00,00).

If you use dual screen sizes, you can make a CICS transaction use the alternate screen size by coding SCRNSIZE(ALTERNATE) in its associated profile. If an application consists of several pseudo-conversationally linked transactions, specify SCRNSIZE(ALTERNATE) in the profile for each of these transactions if the application uses the alternate screen size.

For 3287 and 3289 printers, the value specified must equal the buffer size of the particular device. For non-SNA 3287 and 3289 printers, the sizes depend on the feature ordered, not on the model number. For SNA printers, there are no features, and any two sizes can be specified from the list of valid sizes. When printing to a printer whose associated TERMINAL definition has PRINTERCOPY(YES) specified, the ALTSCREEN value should match the screen size of the terminal whose screen is to be printed. If the values differ, unpredictable results may occur.

ALTSUFFIX({**blank**|*number*})
A 1-character numeric suffix that BMS is to append to map set names (specified in the SUFFIX operand of the application programmer's DFHMSD TYPE={DSECT|MAP} macro).

blank Leave this attribute blank if you do not want a suffixed map set.

number
BMS appends this suffix to map set names if the screen size being used is the same value as the alternate screen size; that is, if the transaction has an alternate screen size specified in the PROFILE definition, or if the default and alternate screen size are the same. In this case, BMS map selection routines attempt to load the map set with the suffix specified in the ALTSUFFIX operand.

If there is no such map set, BMS tries to load a map set suffixed with M or L and, if this load fails, BMS tries to load an unsuffixed map set version.

If the transaction uses default screen size, BMS first tries to load a map set suffixed with M or L and, if this load fails, BMS tries to load an unsuffixed map set version.

To use a suffixed map set, you must specify the BMS=(,,,DDS) system initialization parameter.

APLKYBD({**NO**|**YES**})
specifies whether the 3270 device has the APL keyboard feature:

YES The 3270 device has the APL keyboard feature.

NO The 3270 device does not have the APL keyboard feature.

APLTEXT({**NO**|**YES**})
specifies whether the 3270 device has the APL text feature:

YES The 3270 device has the APL text feature.

NO The 3270 device does not have the APL text feature.

Do not specify YES for a 3288 printer, with or without TEXTPRINT(YES). The APLTEXT feature is used in conjunction with the TEXTKYBD and APLKYBD operands.

You can use the QUERY structured field to determine whether the device is set up to use the APL text feature.

ASCII({**NO**|**7**|**8**})
specifies whether the terminal has an ASCII feature.

NO This terminal does not have an ASCII feature.

7 Specify this to communicate with ASCII-7 terminals. Devices configured with the ASCII-7 feature must be LUTYPE2 or LUTYPE3 without extended 3270 features. Only the following devices are supported:
3274 Model 1C and 51C
3276 Model 12
3278
3287

Any terminal configured with the ASCII-7 option has all FM data outbound from CICS converted to ASCII-7, and all FM data inbound to CICS converted to EBCDIC. Only FM request data is translated. All other data in the RU such as LU status or sense data is assumed to be in EBCDIC on output. ASCII-7 does **not** support data streams that contain extended attributes, such as structured fields and function management headers.

The ASCII-7 support is available on 3274-1C as an option on the configuration of the standard microcode. The use of the ASCII-7 option is determined at session initiation by BIND parameters set by CICS as a result of the TCT definition described above.

8 Specify this to communicate with ASCII-8 terminals. Devices configured with the ASCII-8 feature can be LUTYPE1, LUTYPE2, or LUTYPE3 with or without extended 3270 and SCS data stream features.

Any terminal configured with the ASCII-8 option has all FM data outbound from CICS converted to ASCII-8, and all FM data inbound to CICS converted to EBCDIC. All FM request data is translated. This includes the AID, cursor address, FM headers and structured fields. Any other form of the RU such as LU status or sense data is assumed to be in EBCDIC on input and is transmitted in EBCDIC on output.

Note that this ASCII-8 support is intended only for devices that operate in EBCDIC but translate or retranslate the data stream to or from ASCII-8, as is done by this CICS support. This is because the data stream is treated as a character string, and any binary number fields are translated byte by byte as though they were graphic characters. Thus they may not represent their true value while in ASCII form.

The ASCII-8 support is available as a microcode RPQ on the 3274 and is mutually exclusive with the ASCII-7 option. The use of the ASCII-8 option is determined at session initiation by BIND parameters set by CICS as a result of the TCT definitions described above.

ATI({NO|YES})
specifies whether transactions can start at the terminal by automatic transaction initiation:

YES Transactions can start at the terminal by automatic transaction initiation.

NO Transactions cannot start at the terminal by automatic transaction initiation.

ATI(YES) allows transactions to be started at the terminal by transient data control or by an EXEC CICS START command issued by another transaction. If there is already a transaction at the terminal, the ATI transaction is held until it ends. If you specify ATI(YES), you must specify an IOAREALEN of at least one byte, except for DEVICE(APPC) when ATI and IOAREALEN have forced default values of YES and 0.

If ATI is specified as YES and CREATESESS is specified as YES, and if a transaction is initiated when the terminal is not ACQUIRED, it is automatically acquired.

See also the TTI attribute.

AUDIBLEALARM({NO|YES})
specifies whether the audible alarm feature is installed for a 3270 display or for a 3270 printer attached to a 3651 controller:

YES The audible alarm feature is installed.

NO The audible alarm feature is not installed.

AUTOCONNECT({NO|YES|ALL})
specifies whether autoconnect processing is to occur for the terminal. AUTOCONNECT(YES) or (ALL) specifies that the session with the terminal is to be established (that is, BIND is to be performed) during CICS initialization, or when communication with z/OS Communications Server is started using the CEMT SET VTAM OPEN command. If the connection cannot be made at this time because the terminal is unavailable, the link must be subsequently acquired using the CEMT SET TERMINAL(*termid*) INSERVICE ACQUIRED command, unless the terminal becomes available in the meantime and itself initiates communications.

Note: If you use the z/OS Communications Server LOGAPPL function, do not specify AUTOCONNECT(YES), because this can lead to race conditions causing errors or hung logical units.

NO CICS does not attempt to bind sessions when the connection is established.

YES CICS attempts to bind as a contention winner session, when the connection is established.

ALL Not applicable.

For background information about AUTOCONNECT, see the *CICS Intercommunication Guide*.

AUTOPAGE({NO|YES})
specifies whether BMS autopaging is to be used. Specify YES for printers and NO for display devices. The default depends on the value you specify for the DEVICE attribute. The default values are indicated in “Default values for TYPETERM attributes” on page 329

BACKTRANS({NO|YES})
specifies whether the device has the background transparency feature:

NO The device does not have the background transparency feature.

YES The device does have the background transparency feature.

You can use the QUERY structured field to determine whether the device is set up to use the background transparency feature.

BRACKET({YES|NO})
specifies whether bracket protocol is to be enforced for this logical unit. The default depends on the value you specify for the DEVICE attribute (see “Default values for TYPETERM attributes” on page 329).

YES Bracket protocol is to be used. This option is required for the 3790 inquiry and full function logical units. BRACKET(YES) is forced for many DEVICE types

NO Bracket protocol is not to be used. You must specify BRACKET(NO) for a 3614 logical unit and the 3650 Host Command Processor (HCP) session.

Bracket protocol is a feature of SNA; if you specify BRACKET(YES) for non-SNA devices, CICS will neither follow, nor enforce, strict bracket protocol.

BUILDCHAIN({NO|YES})
specifies whether CICS is to perform chain assembly before passing the input data to the application program.

The default depends on the value you specify for the DEVICE attribute.

NO	Any terminal input/output area (TIOA) received by an application program from this logical unit contains one request unit (RU).
YES	Any TIOA received by an application program from this logical unit contains a complete chain.

CGCSGID({0,0|*value1*,*value2*})
The coded graphic character set global identifier (CGCSGID) enables application programs to determine the character set supported at the device.

You can get this information from a QUERY structured field for some devices. For others, you must supply this information here, so that application programs can retrieve it using the EXEC CICS ASSIGN command.

0,0 No CGCSGID is specified.

gcsid,cpgid
The CGCSGID consists of two 5-digit decimal numbers which can take values in the range 1 through 65535. *gcsid* is the graphic character set global identifier (GCSGID) and *cpgid* is a specification of the code points for the set, the code page global identifier (CPGID).

COLOR({NO|YES})
specifies whether the 3270 device or the SCS printer has the extended color feature, which allows colors to be selected for each field or character:

NO	The device does not have the extended color feature.
YES	The device has the extended color feature.

You can use the QUERY structured field to determine whether the device is set up to use the color feature.

COPY({NO|YES})
specifies whether the copy feature for a 3270 display or printer is included in the 3270 control unit:

NO	The copy feature is included.
YES	The copy feature is not included.

Leave it to default to COPY(NO) for 3270 compatibility mode logical units, because COPY(YES) is ignored.

See also the PRINTERCOPY and ALTPRINTCOPY attributes of the TERMINAL definition.

For further details about screen copying, see the CICS 3270 Data Stream Device Guide.

CREATESESS({NO|YES})
specifies whether sessions are to be created.

NO Specify this to prevent internally generated session requests from creating a session. During CICS execution, this can be changed only by a CEMT command.

CREATESESS(NO) prevents EXEC START requests and automatic transaction initiation (ATI) requests for this terminal causing a session to be created. This means that the requests are either queued or rejected when no session is currently established.

YES Specify this for a status that allows internally generated session requests to create a session. During CICS execution, this status can be generated only by a CEMT command.

CREATESESS(YES) allows EXEC START requests and automatic transaction initiation (ATI) requests for this terminal to cause a session to be created automatically.

DEFSCREEN(*rows , columns*)
specifies the 3270 screen size or 3270 printer page size to be used on this device when attached to a transaction or used by BMS for which the default screen size has been specified in the profile definition. The default depends on the value you specify for the DEVICE attribute (see "Default values for TYPETERM attributes" on page 329). The values that can be specified for a BSC 3270 are:

Device	Screen size
3278-1	(12,40)
3278-2	(24,80)
3276-3, 3278-3	(24,80)
3276-4, 3278-4	(24,80)
3278-5	(24,80)
3279-2A, 3279-2B	(24,80)
3279-3A, 3279-3B	(24,80)

For BSC devices, both default and alternate screen sizes are determined by the terminal hardware. The default screen size is (24,80), except for the 3278-1 where it is (12,40).

For SNA devices (LUTYPE2 and LUTYPE3), both default and alternate screen sizes can be any value you choose, up to the maximum physical screen size (see ALTSCREEN). In particular, both default and alternate screen sizes can be the maximum screen size; or the default screen size can be the maximum screen size with no alternate screen size specified. The SNA bind is generated by CICS from this TCT information. You do not need to provide logmode table entries, or to customize the device.

DESCRIPTION(*text*)
You can provide a description of the resource that you are defining in this field. The description text can be up to 58 characters in length. No restrictions apply to the characters that you can use. However, if you use parentheses, ensure that for each left parenthesis there is a matching right one. If you use the CREATE command, for each single apostrophe in the text, code two apostrophes.

DEVICE(*device*)
specifies the device type which this TYPETERM defines. This attribute is mandatory for all TYPETERM definitions.

If you type DEVICE(*xxxx*), where *xxxx* is a valid device type, on the command line, together with SESSIONTYPE and TERMMODEL if appropriate, other attributes are given appropriate default values. For further guidance, see "Default values for TYPETERM attributes" on page 329. Entering or overtyping the DEVICE, SESSIONTYPE, or TERMMODEL values on the overtype-to-modify panel does **not** provide these defaults.

The valid attributes and the defaults for each device type are listed in "Default values for TYPETERM attributes" on page 329. The recommended attributes for non-SNA z/OS Communications Server 3270 devices are 3270 and 3270P for displays and printers, respectively. The following attributes can also be specified and are retained for compatibility with previous releases:

- Displays: 3277 and L3277
- Printers: 3284 and L3284, 3286 and L3286

For SNA z/OS Communications Server 3270 devices, use the LUTYPE2 or LUTYPE3 attribute as appropriate. LUTYPE2 logical units are those defined by SNA, which accept a 3270-display data stream. LUTYPE3 logical units are those defined by SNA, which accept a data stream similar to that for a 3270 printer.

For a list of device types supported by CICS, see "DFHTCT: CICS terminals list" on page 571. See also "Default values for TYPETERM attributes" on page 329 for a list of valid device names and the default attributes that they generate.

DISCREQ=({<u>YES</u>|NO})
specifies whether disconnect requests are to be honored.

<u>YES</u> CICS is to honor a disconnect request for a z/OS Communications Server device, and issue a z/OS Communications Server CLSDST macroinstruction to terminate the z/OS Communications Server session with that logical unit.

In addition, CESF LOGOFF or GOODNIGHT from the terminal causes disconnection if you specify YES.

YES is essential if the TYPETERM definition is referenced by AUTINSTMODEL TERMINAL definitions, so that autoinstalled terminal entries can be deleted automatically.

NO CICS is not to honor a disconnect request for a z/OS Communications Server device.

DUALCASEKYBD({<u>NO</u>|YES})
specifies whether a 3270 display has a typewriter keyboard or an operator console keyboard. Both uppercase and lowercase data can be transmitted with either of these keyboards

<u>NO</u> The device does not have a dual-case keyboard.

YES The device has a dual-case keyboard.

ERRCOLOR({<u>NO</u>|*color*})
specifies whether the error message is to be displayed in color. Coding ERRCOLOR(*color*) implies ERRLASTLINE(YES).

The colors you can specify are:

BLUE
RED
PINK
GREEN
TURQUOISE
YELLOW
NEUTRAL

ERRHILIGHT({<u>NO</u>|BLINK|REVERSE|UNDERLINE})
specifies the highlighting, if any, with which error messages are to be displayed.

ERRINTENSIFY({NO|YES})
specifies whether the error message is to be displayed in an intensified field. Coding ERRINTENSIFY(YES) implies ERRLASTLINE(YES).

ERRLASTLINE({NO|YES})
specifies where error messages are to be displayed.

NO An error message is displayed at the current cursor position and without any additional attributes.

YES An error message is displayed starting at the beginning of the line nearest the bottom of the screen so that the whole message fits on the screen.

Because all error messages occupy the same line, if the messages are received in quick succession, they overlay one another and earlier messages may disappear before they have been read.

EXTENDEDDS({NO|YES})
specifies whether the 3270 device or the SCS printer supports extensions to the 3270 data stream:

NO The device does not support 3270 data stream extensions.

YES The device supports 3270 data stream extensions.

EXTENDEDDS(YES) is implied if you specify YES for any one of the COLOR, HILIGHT, PROGSYMBOLS, QUERY, or VALIDATION (3270 only) attributes.

If extended data stream (EXTENDEDDS) is set to YES, the device will support the write structured field COMMAND and Outbound Query structured field.

You can use the QUERY structured field to determine whether the device is set up to use the extended data stream. Using the QUERY structured field sets EXTENDEDDS to YES if query is valid.

FMHPARM({NO|YES})
specifies whether BMS is to accept user-supplied parameters for inclusion in the function management header built by BMS:

NO Do not accept user-supplied parameters for inclusion in the function management header built by BMS.

YES Accept user-supplied parameters for inclusion in the function management header built by BMS.

Specify YES only if the DEVICE type is 3650.

FORMFEED({NO|YES})
specifies whether or not the device has the forms feed feature, which means that BMS uses the form-feed character when formatting output documents:

NO The device does not have the form feed feature.

YES The device has the form feed feature.

If DEVICE(SCSPRINT) is specified, BMS inserts a form-feed character at the beginning of the data stream. This causes the device to skip to the top margin of a new page before starting to print.

The top margin is defined by a set vertical format (SVF) data stream, and may be a line number equal to or greater than one. If a SVF data stream has not been sent to the printer, the top margin is line one. The line counter in the device is set to 1 when the operator sets up the paper.

Note that the device may also perform an automatic form feed if you try to print beyond a bottom margin. The bottom margin is also determined by the SVF data stream and defaults to the maximum presentation line (MPL). The MPL is the last line on the page and its value represents the page or form length as a number of lines (that is, physical page size times the line density). Both the MPL and the line density can be determined by the SVF data stream. Otherwise the MPL (the number of lines) can be set up on the device by the operator.

If DEVICE(3270), DEVICE(3270P), DEVICE(LUTYPE2), or DEVICE(LUTYPE3) is specified, use FORMFEED(YES) in conjunction with the FORMFEED option in the BMS SEND commands. Using form feed on display devices provides for a skip to a new page when the screen data is copied to a printer.

The options discussed above for SCSPRINT operation do not apply when the devices are operating as 3270P or LUTYPE3 devices. In this case there is only the concept of a form length, and this can be set on the device only by the operator.

GROUP(*groupname*)

Every resource definition must have a GROUP name. The resource definition becomes a member of the group and is installed in the CICS system when the group is installed.

Acceptable characters:

```
A-Z 0-9 $ @ #
```

Any lowercase characters that you enter are converted to uppercase.

The GROUP name can be up to 8 characters in length. Lowercase characters are treated as uppercase characters. Do not use group names beginning with DFH, because these characters are reserved for use by CICS.

HILIGHT({**NO**|**YES**})

specifies whether the 3270 device or SCS printer has the extended highlight facility, which enables fields or characters to be displayed in reverse-video, underline mode, or blink (3270 only):

NO	The device does not have the extended highlight facility.
YES	The device has the extended highlight facility.

You can use the QUERY structured field to determine whether the device is set up to use the extended highlight facility.

HORIZFORM({**NO**|**YES**})

specifies whether or not the device has the horizontal form feature, which means that BMS should use the horizontal tabbing when formatting output documents:

NO	The device does not have the horizontal form feature.
YES	The device has the horizontal form feature.

The devices that can use this feature are batch, batch data interchange, interactive, SCSPRT or LUTYPE4 logical units.

NO	The HTAB option in the BMS map definition is ignored.
YES	BMS uses horizontal tabbing when formatting output documents.

`IOAREALEN``({`<u>`0`</u>`|`*`value1`*`},{`<u>`0`</u>`|`*`value2`*`})`
: specifies the length in bytes of a terminal input/output area to be passed to a transaction.

If you specify ATI(YES), you must specify an IOAREALEN of at least one byte.

value1
: *Value1* specifies the minimum size of a terminal input/output area to be passed to an application program when a RECEIVE command is issued.

value2
: You can specify *value2* as greater than or equal to *value1*. In this case, when the size of an input message exceeds *value1*, CICS uses a terminal input/output area *value2* bytes long. If the input message size also exceeds *value2*, the node abnormal condition program sends an exception response to the terminal.

If *value2* is not specified, or is less than *value1*, it defaults to the value of *value1*.

The maximum value that you can specify for IOAREALEN is 32767 bytes.

`KATAKANA``({`<u>`NO`</u>`|`**`YES`**`})`
: specifies whether Katakana support is required. Katakana terminals cannot display mixed case output; uppercase characters appear as uppercase English characters, but lowercase characters appear as Katakana characters. If you have any Katakana terminals connected to your CICS system, specify the **`MSGCASE=UPPER`** system initialization parameter.

<u>NO</u>
: Katakana support is not required.

YES
: Katakana support is required. All lowercase characters sent to the terminal from the following transactions are translated to uppercase:

CBRC CDBC CDBI CEBR CECI CEDA CEDF CEMT CEOT CESN CEST CMSG CRTE CSPG CWTO

Important: For emulated Katakana terminals, results depend on the code page that is in use. In some cases, lowercase English characters are not translated to uppercase.

`LDCLIST``(`*`list`*`)`
: specifies the name of a logical device code (LDC) list. The name may be up to eight characters in length. The name follows assembler language rules. It must start with an alphabetic character.

Acceptable characters:

```
A-Z 0-9 $ @ #
```

Unless you are using the CREATE command, any lowercase characters that you enter are converted to uppercase.

Define the LDCLIST and its contents using macroinstruction(s).

A local LDC list is defined by:

```
listname  DFHTCT TYPE=LDCLIST,
LDC(aa=nnn,bb=nnn,....)
```

An extended local LDC list is defined by:

```
listname  DFHTCT TYPE=LDC,LOCAL=INITIAL
          DFHTCT TYPE=LDC=(aa=nnn)....
          DFHTCT TYPE=LDC=(bb=nnn)....
          DFHTCT TYPE=LDC,LOCAL=FINAL
```

You specify this *listname* as the value for the LDCLIST attribute on the TYPETERM definition.

This attribute applies only to 3600, 3770 batch, 3770, and 3790 batch data interchange, and LUTYPE4 logical units. The list specifies which LDCs are valid for this logical unit and, optionally, which device characteristics are valid for each LDC. CICS uses the first LDC generated in this list when choosing a default LDC for a logical unit. For further guidance, see "DFHTCT logical device codes: z/OS Communications Server non-3270" on page 555.

LIGHTPEN({NO|YES})
specifies whether a 3270 display has the selector pen feature:

NO The 3270 display does not have the selector pen feature.

YES The 3270 display has the selector pen feature.

LOGMODE({blank|0|*logmode*})
specifies how CICS is to build the BIND to be sent to the logical unit.

blank A defined terminal definition uses the BIND image generated by the CICS definitions for this device by means of this TYPETERM definition and its associated terminal definitions. An autoinstalled terminal uses the fields specified in the incoming CINIT.

name This is the LOGMODE name from a z/OS Communications Server logon mode table that has been set up for use by this logical unit. The name may be up to eight characters in length and must follow assembler language rules. The name must start with an alphabetic character.

Acceptable characters:

```
A-Z 0-9 $ @ #
```

Unless you are using the CREATE command, any lowercase characters that you enter are converted to uppercase.

This allows you to override the BIND image provided by CICS for the logical unit. For further information, see the appropriate CICS subsystem guide.

You cannot code a LOGMODE name when the terminal is a cross-domain resource.

The TCTTE is updated to reflect the logmode bind image fields. These include SEND and RECEIVE sizes and default and alternate screen sizes. If the logmode indicates that the terminal is not queriable, the extended data stream fields are all set to zero.

0 (zero)
This causes CICS to use some of the information from the BIND image contained in the CINIT coming from the logical unit. The BIND image in the CINIT was created by z/OS Communications Server based on the LOGMODE entry defined for the logical unit requesting to log on to CICS. The node initialization block (NIB) is built with LOGMODE=0 and BNDAREA=0. When the TYPETERM's SENDSIZE and RECEIVESIZE have been specified as zero, CICS replaces them with the values from the LOGMODE's RUSIZES.

The TCTTE is updated to reflect the incoming CINIT fields. These include SEND and RECEIVE sizes and default and alternate screen sizes. If the logmode indicates that the terminal is not queriable, the extended data stream fields are all set to 0. Use LOGMODE(0) only in exceptional circumstances. Although the LU is bound with the z/OS Communications Server definition, CICS keeps the main session characteristics from the CICS definition. For example, if a printer is defined to z/OS Communications Server as LUTYPE1 but to CICS as an LUTYPE3 with LOGMODE(0), CICS accepts the bind but sends LUTYPE3 control characters to the printer, giving rise to incorrect results. This restriction does not apply to pipeline terminals.

Note:

1. You should only need to use this value for the logmode attribute in exceptional circumstances.
2. For a logical unit in a cross-domain environment, specify LOGMODE(0) and provide the logical unit mode information in the DLOGMOD and MODETAB operands of the z/OS Communications Server(LU) statement. In a cross-domain environment, LOGMODE with a name causes a z/OS Communications Server error.

LOGMODECOM
This attribute is obsolete, but is supported to provide compatibility with earlier releases of CICS.

LOGONMSG({**NO**|**YES**})
specifies whether the 'good morning' transaction, specified in the GMTRAN system initialization parameter, will be:

- Automatically initiated when the logical unit is first logged on to CICS through z/OS Communications Server
- Initiated after the terminal user's TIMEOUT period has expired under certain conditions.

If you have specified ERRLASTLINE(YES), the messages written by the transaction do not overwrite the error message line.

NO CICS does not run the 'good morning' transaction.

Note: If you are using a non-SNA terminal such as a Telnet 3270, LOGONMSG(NO) does not automatically release the keyboard lock. You need to press the Reset key to release the keyboard lock.

YES CICS runs the 'good morning' transaction when the OPNDST exit is successfully completed and a session is established. The transaction is initiated by automatic task initiation (ATI) and competes with other ATI transactions for use of the terminal. Specify ATI(YES) for this TYPETERM.

Note: If you are using a non-SNA terminal such as a Telnet 3270, LOGONMSG(YES) also automatically releases the keyboard lock.

MSRCONTROL({**NO**|**YES**})
specifies whether the terminal, an 8775 or 3643, has a magnetic slot reader. This option is not valid for SCS printers.

You can use the QUERY structured field to determine whether the device is set up to use a magnetic slot reader.

NEPCLASS({**0**|*tranclass*})
specifies the node error program transaction class.

0 This results in a link to the default node error program module.

tranclass
The transaction class for the (nondefault) node error program module. *tranclass* can be in the range 1 through 255. For programming information about the node error program, see the *CICS Customization Guide*.

OBFORMAT({**NO**|**YES**})
specifies whether outboard formatting is used. If the devices for which you are defining this TYPETERM use BMS outboard formatting, specify OBFORMAT(YES). OBFORMAT(YES) can be specified for two device types only:

- 3650, SESSIONTYPE(3270)
- LUTYPE2, for an 8100 Information System using the DPPX operating system with DPPX/DPS Version 2 for presentation services

Use the QUERY structured field to determine whether the device is set up to use outboard formatting.

OBOPERID({**NO**|**YES**})
specifies whether CICS uses the outboard operator identifiers to support the BMS routing facilities required for this terminal. This option applies only to the 3790 and 3770 batch data interchange logical units.

NO CICS does not use the outboard operator identifiers.

YES CICS uses the outboard operator identifiers.

OUTLINE({**NO**|**YES**})
specifies whether the device supports field outlining:

NO The device does not support field outlining.

YES The device supports field outlining.

Use the QUERY structured field to determine whether the device is set up to use field outlining.

PAGESIZE(*rows* , *columns*)
specifies the default page size for this printer. The default page size is used by BMS when the default screen size has been selected in the DEFSCREEN attribute.

rows Indicates the number of rows in the page. The PAGESIZE *rows* value can usefully be less than the DEFSCREEN *rows* value, perhaps to reserve the bottom line of a screen for error messages (see the ERRLASTLINE attribute), if the same BMS map is being used for both printing and display.

columns
Indicates the number of characters in each line. Unexpected results occur if the *columns* value specified in PAGESIZE differs from the *columns* value specified in DEFSCREEN.

The product of *rows* and *columns* must not exceed 32 767.

The default value depends on the value you specify for the DEVICE attribute. See "Default values for TYPETERM attributes" on page 329 for details.

BMS uses the page size values when preparing output data streams. The specified number of characters in each line of the page should not exceed the physical line width of the terminal. In the case of printers that automatically perform a new-line function on reaching the end of the carriage (for example, 3270 printers), the line width specified here should be less than the physical line width.

This ensures that the formatting of the output data is governed entirely by the new-line (NL) characters supplied by BMS or by you, not by new-line functions performed by the device itself, which would produce additional lines of output, resulting in a physical page depth greater than that specified here.

For 3270-type printers, the hardware limits the amount of data that BMS may transmit. If the map or application program request specifies L40, L64, or L80, or does not specify NLEOM on the SEND MAP command, the product of *lines* and *columns* specified in PAGESIZE must not be greater than the buffer size.

If the BMS request specifies NLEOM, the page length may be any number of lines, but the product of *lines* and *columns* specified in the DEFSCREEN or ALTSCREEN attributes must not exceed the buffer size of the device. In other words, the number of characters that BMS transmits must not exceed the physical buffer size of the printer.

Note: BMS divides a large page into smaller segments for transmission. PAGESIZE should therefore correspond to the required **logical** page size (the product of *lines* and *columns*), and the DEFSCREEN value should correspond to the actual buffer size.

For a z/OS Communications Server 3600, the PAGESIZE specified is used if a BMS page build operation is attempted without specifying a logical device code (LDC). A default device type of 3604 is assumed.

For 3770, LUTYPE4, or 3790 batch data interchange logical units, the PAGESIZE specified is used if a BMS page build operation is requested without specifying a logical device code (LDC). The default device type is the console printer.

Take care when routing a message to a list of terminals. If the PAGESIZE you have defined (or allowed to default) is too small to accommodate the message, the transaction abends.

For cumulative text processing, the maximum allowed buffer size is 32767. If this is exceeded, BMS internally forces a reduced page length to ensure that the PAGESIZE stays within the limit.

PARTITIONS({NO|YES})
specifies whether a device is to use partitions. This option is not valid for SCS printers.

NO The device is not to use partitions.

YES The device is to use partitions.

You can use the QUERY structured field to determine whether the device is set up to use partitions.

PRINTADAPTER({NO|YES})
For the 3275: specifies whether the printer adapter feature and corresponding 3284 Printer Model 3 are present on the 3275 Display Station. This feature makes the 3284 eligible for print requests through the PA key from the host 3275.

NO The printer adapter feature and corresponding 3284 Printer Model 3 are not available.

YES The printer adapter feature and corresponding 3284 Printer Model 3 are available.

For LUTYPE2 logical units: specifies whether, for print requests initiated by the PRINT key or by an ISSUE PRINT command, printer allocation is handled by the 3790, or by the 3274 or 3276, according to the printer authorization matrix for both z/OS Communications Server and non-z/OS Communications Server attachments.

NO Print requests are not handled according to the printer authorization matrix for both z/OS Communications Server and non-z/OS Communications Server attachments.

YES Print requests are handled according to the printer authorization matrix for both z/OS Communications Server and non-z/OS Communications Server attachments.

Further, 3270 printers attached to the same 3790 are available for print requests sent to the 3270-display logical unit by a terminal control print request or initiated by the operator. If PRINTADAPTER is NO, printer allocation is determined by the PRINTER and ALTPRINTER attributes of the TERMINAL definition.

If output is created on the screen by BMS requests with the PRINT option, by BMS requests with the NLEOM option, or by the CMSG command, the contents of the screen are automatically copied to a 3270 printer, whether or not the CICS-defined PRINT key (usually a PA key) was pressed.

PROGSYMBOLS({NO|YES})
specifies whether the programmed symbol (PS) facility can be used on this 3270 device or SCS printer. The facility enables up to six 191-character sets, with customer-defined and program-loaded fonts and codes, to be stored and accessed.

NO Programmed symbol (PS) facility cannot be used.

YES Programmed symbol (PS) facility can be used.

You can use the QUERY structured field to determine whether the device is set up to use programmed symbols.

QUERY({NO|COLD|ALL})
specifies whether CICS should use the QUERY structured field to determine the characteristics of the device.

NO CICS does not use the QUERY function.

COLD CICS uses the QUERY function to determine the characteristics of the device only when the device is first connected after an initial or a cold start of CICS. The device characteristics are stored in the CICS global catalog for use on subsequent warm and emergency starts.

ALL CICS uses the QUERY function to determine the characteristics of the device each time the device is connected.

RECEIVESIZE(*number*)
For a **defined nonautoinstalled terminal**, specify the maximum size of a request unit that can satisfy a z/OS Communications Server RECEIVE request. The RECEIVESIZE value is transmitted to the connected logical unit, and must be in the range 0 through 30720. It may be rounded down by CICS, because it must be transmitted in an architected form.

The effect of RECEIVESIZE depends on whether a RECEIVE RUSIZE is present in the z/OS Communications Server LOGMODE table. Table 16 shows the RECEIVE RUSIZE used to bind a session for each possible combination of TYPETERM and LOGMODE values.

Table 16. RECEIVE RUSIZE for defined (nonautoinstalled) terminals

RECEIVE RUSIZE (VTAM)	TYPETERM RECEIVESIZE	RUSIZE used in bind
0	0	0
0	specified	TYPETERM RECEIVESIZE size
specified	0	This combination is invalid and results in a bind failure with message DFHZC2403
specified	specified	TYPETERM RECEIVESIZE size
Note: The exception to this table is LOGMODE(0). If you specify this in your TYPETERM definition, VTAM values are used, irrespective of what else is specified.		

APPC terminal For an APPC (LUTYPE6.2) single session terminal, 256 would be a suitable value.

Autoinstalled terminal For an autoinstalled terminal, a nonzero value for RECEIVESIZE specifies either the maximum or actual RECEIVE RUSIZE value used in binding a session for a logical unit defined with this TYPETERM.

The effect of RECEIVESIZE depends on whether a RECEIVE RUSIZE is present in the z/OS Communications Server LOGMODE table. Table 17 shows the RECEIVE RUSIZE used to bind a session for each possible combination of TYPETERM and LOGMODE values.

Table 17. RECEIVE RUSIZE for autoinstalled terminals

RECEIVE RUSIZE (VTAM)	TYPETERM RECEIVESIZE	RUSIZE used in bind
0	0 and BUILDCHAIN(YES)	256
0	0 and BUILDCHAIN(NO)	0
0	specified	TYPETERM RECEIVESIZE size
specified	0	VTAM RECEIVE RUSIZE size
specified less than or equal to TYPETERM RECEIVESIZE	specified	VTAM RECEIVE RUSIZE size
specified greater than TYPETERM RECEIVESIZE	specified	this combination is invalid and results in message DFHZC5963

RECOVNOTIFY({NONE|MESSAGE|TRANSACTION})

In a CICS region running with persistent session support, this option specifies how a terminal end user is notified that the terminal session has been recovered; in a CICS region running with XRF support, it specifies how the terminal user is notified that an XRF takeover has occurred.

This option is not applicable to APPC sessions.

NONE
There is no notification that a terminal session has been recovered, or that an XRF takeover has occurred.

MESSAGE
A message is displayed on the screen to say that the system has recovered. The message is specified in two BMS maps (DFHXRC1 and DFHXRC2) for XRF and in one BMS map (DFHXRC3) for z/OS Communications Server persistent sessions. These maps are in map set DFHXMSG. If reduced takeover time is important, use MESSAGE rather than TRANSACTION.

The terminal must be defined with the ATI(YES) option, and must be capable of displaying a BMS map.

TRANSACTION
A transaction is initiated at the terminal. The name of the transaction is specified by the RMTRAN system initialization parameter. For z/OS Communications Server persistent sessions, only the first transaction named in the RMTRAN system initialization parameter is used.

Tip: The default transaction for RMTRAN is the one specified in the GMTRAN system initialization parameter: the good-morning transaction.

For the TRANSACTION option, the terminal must be defined with the ATI(YES) option. If reduced takeover time is important, use MESSAGE rather than TRANSACTION.

RECOVOPTION({SYSDEFAULT|CLEARCONV|RELEASESESS| UNCONDREL|NONE})
This option applies to the recovery of sessions in a CICS region running with z/OS Communications Server persistent sessions, or with XRF.

z/OS Communications Server persistent sessions: In a CICS region running with persistent session support, this option specifies how you want CICS to recover the session, and return the terminal to service on system restart within the persistent session delay interval.

XRF: In a CICS region running with XRF support, this option specifies how you want CICS to recover the session, and return the terminal to service after an XRF takeover.

For all recovery options other than NONE, if the action taken is a z/OS Communications Server UNBIND, the UNBIND is followed by a z/OS Communications Server SIMLOGON.

SYSDEFAULT
z/OS Communications Server persistent sessions: In a CICS region running with persistent sessions support, this specifies that CICS is to select the optimum procedure to recover a session on system restart within the persistent session delay interval, depending on the session activity and on the characteristics of the terminal.

Although sessions are recovered, any transactions in-flight at the time of the failure are abended and not recovered. Transactions are also abended if the recovered session is being used by another CICS region over an APPC connection.

CICS recovers the session with the least possible impact, in one of the following ways:

- If the terminal was not executing a transaction at the time of the CICS failure, no recovery action is required, and CICS takes the appropriate recovery notification action as defined by the RECOVNOTIFY attribute.
- If the terminal was busy (that is, executing a transaction) when CICS failed, CICS first tries to recover the session by sending a z/OS Communications Server end-bracket indicator. If the end-bracket does not recover the session (for example, CICS may be in RECEIVE mode), CICS issues a CLEAR command. If the terminal does not support the CLEAR command, the recovery action taken is a z/OS Communications Server UNBIND followed by a SIMLOGON.

  See the*CICS Recovery and Restart Guide* for more information about persistent sessions.

XRF: In a CICS region running with XRF support, this specifies that CICS is to select the optimum procedure to recover a busy session at takeover, depending on the session activity and on the characteristics of the terminal.

CLEARCONV
Prevents CICS from sending an end-bracket indicator to close an in-bracket session. Instead CICS sends a CLEAR request, to reset the conversation states. If the session does not support the CLEAR request, CICS sends an UNBIND request. The CLEAR or UNBIND is sent only if the session was busy at the time of system restart (in the case of persistent sessions) or takeover (in the case of XRF).

RELEASESESS
Requires CICS to send an UNBIND request to release the active session. The UNBIND is sent only if the session was busy at the time of system restart (in the case of persistent sessions), or takeover (in the case of XRF). Following the UNBIND, the session is queued for SIMLOGON. If the session is not busy, the requested recovery notification is carried out.

UNCONDREL
Requires CICS to send an UNBIND request to release the active session. The UNBIND is sent whether or not the session was busy at the time of system restart (in the case of persistent sessions support) or the takeover (in the case of XRF). Following the UNBIND, the session is queued for SIMLOGON.

NONE
z/OS Communications Server persistent sessions: In a CICS region running with persistent sessions support, this specifies that the terminal session is not to be recovered at system restart within the persistent session delay interval: in effect, the terminal has no persistent sessions support. LU6.2 sessions are unbound, but the latest negotiated CNOS value is returned to the CICS system after the restart. After system restart, the terminal is reconnected automatically if you specify AUTOCONNECT(YES), subject to the operation of the AIRDELAY system initialization parameter (AIRDELAY=0 overrides AUTOCONNECT(YES), and the terminal is not reconnected).

RECOVOPTION(NONE) should be used if this terminal or autoinstall model is to be used with persistent sessions (PSDINT = nnn in the SIT) but the terminal may be the subject of an EXEC CICS ISSUE PASS LUNAME() LOGONLOGMODE.

XRF: In a CICS region running with XRF support, this specifies that the logon state is not tracked by the alternate system, and the terminal session is not automatically recovered after a takeover: in effect, the terminal has no XRF support. After takeover, the terminal is reconnected automatically by the alternate system, if you specify AUTOCONNECT(YES).

`RELREQ=({NO|YES})`
specifies whether CICS is to release the logical unit upon request by another z/OS Communications Server application program.

NO CICS is not to release the logical unit.

YES CICS is to release the logical unit, if the logical unit is not currently part of a transaction.

`ROUTEDMSGS({ALL|NONE|SPECIFIC})`
specifies which messages are to be routed to this terminal by an EXEC CICS ROUTE command. The default depends on the value you specify for the DEVICE attribute. See "Default values for TYPETERM attributes" on page 329 for details.

ALL BMS routes to this terminal messages that are destined for **all** terminals as well as those specifically destined for **this** terminal.

NONE
BMS does not route any messages to this terminal, whether they are destined for all terminals or for this terminal specifically.

SPECIFIC
BMS routes messages to this terminal when they are destined specifically for this terminal, but not when they are destined for **all** terminals.

`RSTSIGNOFF({NOFORCE|FORCE})`
specifies whether the terminal user should be signed off in the event of a persistent sessions restart or an XRF takeover.

FORCE
The terminal will be signed off after a persistent sessions restart or XRF takeover.

NOFORCE
The terminal will remain signed on after a persistent sessions restart or XRF takeover, provided that:
- the RSTSIGNOFF system initialization parameter is set to NOFORCE
- *and* the XRFSOFF entry in the CICS segment of the RACF user profile is set to NOFORCE.

`SENDSIZE(`*`number`*`)`
Defined terminal (nonautoinstalled): For a nonautoinstalled terminal, this is the maximum size in bytes of a request unit that can satisfy a z/OS Communications Server **`VTAM SEND`** request. The SENDSIZE value is transmitted to the connected logical unit, and must be in the range 0 through 30720. It may be rounded down by CICS, because it must be transmitted in an architected form.

The effect of SENDSIZE depends on whether a SEND RUSIZE is present in the z/OS Communications Server LOGMODE table. Table 18 on page 363 shows the SEND RUSIZE used to bind a session for each possible combination of TYPETERM and LOGMODE values.

Table 18. SEND RUSIZE for defined (nonautoinstalled) terminals

SEND RUSIZE (VTAM)	TYPETERM SENDSIZE	RUSIZE used in bind
0	0	0
0	specified	TYPETERM SENDSIZE size
specified	0	0
specified	specified	TYPETERM SENDSIZE size
Note: The exception to this table is LOGMODE(0). If you specify this in your TYPETERM definition, VTAM values are used, irrespective of what else is specified. **Note:** VTAM is now z/OS Communications Server.		

APPC terminal: For an APPC (LUTYPE6.2) single session terminal, 256 is a suitable value.

Autoinstalled terminal: For an autoinstalled terminal, a nonzero value for SENDSIZE specifies either the maximum or actual SEND RUSIZE value used in binding a session for a logical unit defined with this TYPETERM.

The effect of SENDSIZE depends on whether a SEND RUSIZE is present in the z/OS Communications Server LOGMODE table. Table 19 shows the SEND RUSIZE used to bind a session for each possible combination of TYPETERM and LOGMODE values.

Table 19. SEND RUSIZE for autoinstalled terminals

SEND RUSIZE (VTAM)	TYPETERM SENDSIZE	RUSIZE used in bind
0	0	0
0	specified	TYPETERM SENDSIZE size
specified	0	VTAM SEND RUSIZE size
specified less than or equal to TYPETERM SENDSIZE	specified	VTAM SEND RUSIZE size
specified greater than TYPETERM SENDSIZE	specified	this combination is invalid and results in message DFHZC5963

SESSIONTYPE(*type*)
specifies the type of session that can be used for a z/OS Communications Server SNA logical unit. For details, see "Default values for TYPETERM attributes" on page 329.

SHIPPABLE({NO|YES})
specifies whether the definition is allowed to be sent to a remote system if this device tries to initiate a remote transaction.

NO	This definition cannot be shipped to a remote system.
YES	This definition can be shipped to a remote system.

This function may be used for any terminal, whether autoinstalled or with its own TERMINAL definition. The shipping does not work unless the terminal has a definition installed, by one of these methods, in the local system.

Using SHIPPABLE(YES) means that you do not need to ensure that a definition of the terminal exists on the remote system for a locally defined terminal to initiate a transaction in that system. This can be useful when the remote system cannot share the CSD file with the local system.

A definition for the terminal must already be installed in (or already shipped to) the remote system.

For guidance on deciding whether to use SHIPPABLE(YES), see “Terminals for transaction routing” on page 276.

SIGNOFF({YES|NO|LOGOFF})
specifies the actions taken when GNTRAN (CESF or user-defined transaction) is attached and attempts to sign off the terminal. If you are using RACF 1.9 or later, specify the TIMEOUT limit in the RACF segment.

YES When the specified time has elapsed after the last input from the operator, the terminal is automatically signed off from CICS.

NO The terminal is not timed out.

LOGOFF
When the specified time has elapsed after the last input from the operator, the terminal is automatically signed off from CICS and then logged off from z/OS Communications Server. LOGOFF is useful for an autoinstall model, because virtual storage is not wasted on entries for terminals that have been timed out.

If GNTRAN fails to attach because of unprocessed data in the terminal buffer (resulting in a BID failure), the terminal will be signed off and logged off. GNTRAN will not run and will have no effect.

Note: You cannot change the value of this attribute when DEVICE(APPC) is specified. The default value in that case is SIGNOFF(NO).

SOSI({NO|YES})
specifies whether the device supports mixed EBCDIC and double-byte character set (DBCS) fields.

NO The device supports mixed EBCDIC and double-byte character set (DBCS) fields.

YES The device supports mixed EBCDIC and double-byte character set (DBCS) fields.

You can use the QUERY structured field to determine whether the device is set up to use mixed EBCDIC and DBCS fields.

TERMMODEL({1|2})
specifies the model number of the terminal. If the device is a component of the 3270 Information Display System, specify the model number of the terminal:

1 Specify 1 for the 3270 Model 1 displays and printers (for example, 3277 Model 1) with a default screen or buffer size of 12x40 (480 bytes/characters). TERMMODEL(1) is the default for 3270 Model 1 printers and displays.

Specify 1 for the 3275 Display Station Model 11. The CICS support obtained is identical to that obtained by coding TERMMODEL(1) for 3275 Display Station Model 1.

2 Specify 2 for the 3270 displays and printers (for example, 3278 Model 4) with a default screen or buffer size of 24x80 (1920 bytes/characters). TERMMODEL(2) is the default for the 3286 printer in 3270 compatibility mode.

Specify 2 for the 3275 Display Station Model 12. The CICS support obtained is identical to that obtained by coding TERMMODEL(2) for 3275 Display Station Model 2.

TEXTKYBD({NO|YES})
specifies whether the 3270 device has the text-keyboard feature.

NO The 3270 device does not have the text-keyboard feature.

YES The 3270 device has the text-keyboard feature.

TEXTPRINT({NO|YES})
specifies whether the 3288 printer has the text-print feature.

NO The 3288 printer doe not have the text-print feature.

YES The 3288 printer has the text-print feature.

TTI({YES|NO})
specifies whether transactions can be initiated at the terminal by a user.

YES Transactions can be initiated at the terminal by a user. If you also specify ATI(YES), transactions can also be initiated automatically. In this case, the automatic transaction initiation, either by transient data control or interval control, sets a condition in an appropriate terminal control table terminal entry. If both ATI and TTI are specified as YES, and if there is no transaction at the terminal, terminal control initiates the user-defined task. This task is expected to send messages to the terminal.

For a terminal used in the processing of transactions such as inquiries or order entries, specify TTI(YES) and ATI(NO). This also applies to a display station or hard-copy terminal to which no messages are sent without a terminal request and through which transactions are entered. Note that this is the only specification allowed for 3790 inquiry logical units.

NO Transactions cannot be initiated at the terminal by a user. If you specify NO, specify ATI(YES) to allow transactions to be initiated automatically. An example of this type of terminal is one that is located in a remote location, such as a warehouse, and is unattended but may receive messages.

TYPETERM(*name*)
specifies the name of this extension of a TERMINAL definition. The name can be up to eight characters in length.

Acceptable characters:

```
A-Z 0-9 $ @ #
```

Unless you are using the CREATE command, any lowercase characters that you enter are converted to uppercase.

This name is referred to in all the TERMINAL definitions using this TYPETERM. Note that this TYPETERM definition must be installed before or at the same time as the TERMINAL definitions that reference it.

UCTRAN({NO|YES|TRANID})
specifies whether the input data stream from a terminal is to be translated to uppercase. The input data stream may include a transaction identifier as well as program data. CICS supports transaction identifier definition in mixed case,

and the UCTRAN attribute can be used to ensure that the correct transaction is located. Uppercase translation is done for both 3270 and non-3270 data streams.

NO No uppercase translation is performed.

YES All the data input from the terminal, both the transaction identifier if present and the program data, is translated to uppercase before any processing.

TRANID
When the input data stream includes a transaction identifier, CICS translates it to uppercase before attempting to locate its definition. However, all the input data, both the transaction identifier and the program data, is passed to the program without any translation.

Therefore both the YES and the TRANID options allow transaction identifiers to be defined in uppercase and to be entered from the terminal in either uppercase or lowercase, but the TRANID option causes the transaction identifier and program data to be passed to the program without any translation.

You can also request translation to uppercase at the transaction level on PROFILE definitions (see “PROFILE attributes” on page 189), but be aware that a TYPETERM UCTRAN(YES) definition overrides a PROFILE UCTRAN(NO) definition. So, if you specify TYPETERM UCTRAN(YES), a PROFILE UCTRAN(NO) has no effect. Translation can be overridden by the application program for all RECEIVE requests except the first, by using the ASIS option.

Table 20 shows which portion of the terminal input is translated (transaction id and/or data) according to the setting of the UCTRAN on the PROFILE and TYPETERM resource definitions.

Table 20. The effect of UCTRAN attributes on tranid and data translation

UCTRAN in PROFILE	UCTRAN in TYPETERM	TRANID translated?	Data Translated?
YES	YES	Yes	Yes
YES	NO	No	Yes
YES	TRANID	Yes	Yes
NO	YES	Yes	Yes
NO	NO	No	No
NO	TRANID	Yes	No

Some national-language characters are not automatically translated when UCTRAN(YES) or UCTRAN(TRANID) is specified. If that is the case, you can use one of the methods described in the *CICS Customization Guide*.

USERAREALEN({0|*number*})
specifies the length in bytes (0 to 255) of the user area for this terminal. It should be made as small as possible. The TCT user area is initialized to zeros at system initialization.

The TCT user area may be located above or below the 16Mb line in virtual storage. Where it is located depends on the value of the TCTUALOC system initialization parameter. Specify this so that it caters for any programs you may have that are not capable of handling 31-bit addressing.

VALIDATION({<u>NO</u>|YES})
For the 8775, specifies whether the 8775 device has the extended validation feature, which allows fields to be defined as TRIGGER, MANDATORY FILL, or MANDATORY ENTER.

For the 3290, specifies whether the 3290 device has the validation feature, which allows fields to be defined as MANDATORY FILL or MANDATORY ENTER.

This option is not valid for SCS printers. If VALIDATION(YES) is specified for an SCS printer, an error message is raised and the option is ignored.

You can use the QUERY structured field to determine whether the device is set up to use the validation feature.

VERTICALFORM({<u>NO</u>|YES})
specifies whether the device has the vertical form feature. The devices that can use this feature are batch, batch data interchange, interactive, SCSPRT or LUTYPE4 logical units.

<u>NO</u>	The device does not have the vertical form feature.
YES	The device has the vertical form feature.

XRFSIGNOFF
This attribute is obsolete, but is supported to provide compatibility with earlier releases of CICS.

Chapter 38. URIMAP resources

URIMAP definitions are resources that match the URIs of HTTP, Atom feed, or Web service requests, and provide information on how to process the requests.

URIMAP definitions are used to provide several different Web-related facilities in CICS:

Requests from a Web client, to CICS as an HTTP server
URIMAP definitions for requests for CICS as an HTTP server have a USAGE attribute of SERVER. These URIMAP definitions match the URLs of HTTP requests that CICS expects to receive from a Web client, and they define how CICS should provide a response to each request. You can use a URIMAP definition to tell CICS to:

- Provide a static response to the HTTP request, using a document template or z/OS UNIX System Services file.
- Provide an application-generated response to the HTTP request, using an application program.

Requests to a server, from CICS as an HTTP client
URIMAP definitions for requests from CICS as an HTTP client have a USAGE attribute of CLIENT. These URIMAP definitions specify URLs that are used when a user application, acting as a Web client, makes a request through CICS Web support to an HTTP server. Setting up a URIMAP definition for this purpose means that you can avoid identifying the URL in your application program. You can also choose to pool opened connections for reuse by the same application or another application.

Requests from a SOAP client to CICS as a Web service provider
URIMAP definitions for inbound Web service requests have a USAGE attribute of PIPELINE. These URIMAP definitions associate a URI for an inbound Web service request (that is, a request by which a client invokes a Web service in CICS) with the PIPELINE and WEBSERVICE resources that specify the processing to be performed. Web services overview has further information about Web services in CICS.

Requests to a Web service provider from CICS as a Web service requester
URIMAP definitions for outbound Web service requests using the **INVOKE WEBSERVICE** command are optional and have a USAGE attribute of CLIENT. For example, you can use the URIMAP definition to specify the cipher suites or certificate label to use when establishing a socket connection that uses Transport Layer Security (TLS). You can also choose to pool opened connections to be reused for further **INVOKE WEBSERVICE** commands by the application, rather than opening a new connection each time. URIMAP definitions give administrators control of the connection to the remote Web service: they can change its URI as needed, or enable and disable the URIMAP to allow or disallow the connection.

Atom feed requests
URIMAP definitions for Atom feed requests have a USAGE attribute of ATOM. These URIMAP definitions match an inbound request from a Web client for an Atom document. They reference an ATOMSERVICE resource definition that specifies the Atom document to be returned.

Business event emissions from the HTTP EP adapter

URIMAP definitions for CICS event processing have a USAGE attribute of CLIENT. These URIMAP definitions specify a URL that the HTTP EP adapter uses to emit events to an HTTP 1.1 compliant server using HTTP POST. You can choose to pool opened connections to be reused for further event emissions. Event processing overview has further information about CICS event processing.

For CICS as an HTTP server, URIMAP definitions incorporate most of the functions that were previously provided by the analyzer program associated with the TCPIPSERVICE definition. You can still use an analyzer program in the processing path if you need to do so.

URIMAP search order

If multiple URIMAPs are available, any URIMAPs with the same URI and a TCPIPSERVICE are searched first. URIMAPs containing wildcards are searched for a matching URI first and TCPIPSERVICE last. This search order ensures that the most specific URIMAP is used.

Installing URIMAP resource definitions

This procedure uses the CEMT and CEDA transactions to install a URIMAP resource definition. If the URIMAP resource already exists, it has to be disabled before it can be reinstalled.

Procedure

1. If the URIMAP resource already exists, ensure that it is disabled. Use the following command:

   ```
   CEMT SET URIMAP(name) DISABLED
   ```

   While the URIMAP resource is disabled, if a web client makes an HTTP request that requires the resource, CICS issues error message DFHWB0763, and returns an HTTP 503 response (Service Unavailable) to the web client through a web error program. You can tailor this response by changing the web error program.
2. Install the URIMAP definition. Use the following command:

   ```
   CEDA INSTALL GROUP(groupname) URIMAP(name)
   ```

   When you install a URIMAP definition, CICS carries out the following security checks:
   - If the URIMAP definition specifies SCHEME(HTTPS), CICS checks at install time that SSL is active in the CICS region. This is indicated by the use of the KEYRING system initialization parameter to specify the key ring used by the CICS region. If SSL is not active in the CICS region, CICS issues message DFHAM4095, and the URIMAP definition is not installed.
   - If the URIMAP definition specifies the CIPHERS attribute, CICS validates the list of ciphers against the ciphers supported in the running system. If no valid ciphers are found in the list, CICS issues message DFHAM4918 and the URIMAP definition is not installed. However, if some but not all of the ciphers in the list are supported, CICS issues message DFHAM4917 and the URIMAP is installed with the reduced set of cipher codes.
   - If the URIMAP definition specifies the CERTIFICATE attribute, CICS validates the certificate against those specified in the key ring. If the specified

certificate is not valid, then CICS issues messages DFHAM4889 and DFHAM4928, and the URIMAP definition is not installed.

3. Optional: When you have successfully installed the URIMAP definition, use CEMT to enable the resource. Perform this step only if the URIMAP resource is not already defined as ENABLED, and you want to make the resource available for web clients or web services. Use the following command:

```
CEMT SET URIMAP(name) ENABLED
```

URIMAP: related resources

The attributes and values you specify for a URIMAP resource must be consistent with those specified on other resources.

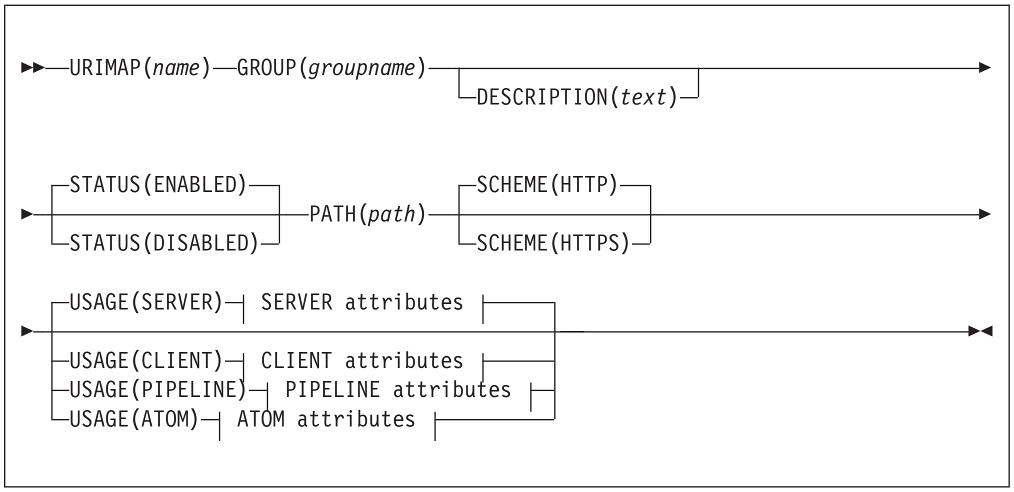
However, CICS does not check consistency of all related resources when the URIMAP definition is installed, and therefore does not report most inconsistencies at install time. The exception is the check described in “Installing URIMAP resource definitions” on page 370.

- In URIMAP definitions for CICS as an HTTP server and Web services, the TCPIPSERVICE attribute specifies the name of a TCPIPSERVICE resource definition that defines an inbound port to which this URIMAP definition relates. The attribute is optional, and if it is not specified, the URIMAP definition applies to any inbound request on all TCPIPSERVICE definitions. If the TCPIPSERVICE attribute is specified:
  - The selected TCPIPSERVICE resource definition must specify PROTOCOL(HTTP).
  - If SSL(YES) or SSL(CLIENTAUTH) is specified in the TCPIPSERVICE resource definition, the SCHEME attribute of the URIMAP definition must be HTTPS. When a URIMAP definition with HTTPS as the scheme matches a request that a Web client is making, CICS checks that the inbound port used by the request is using SSL. If SSL is not specified for the port, the request is rejected with a 403 (Forbidden) status code.

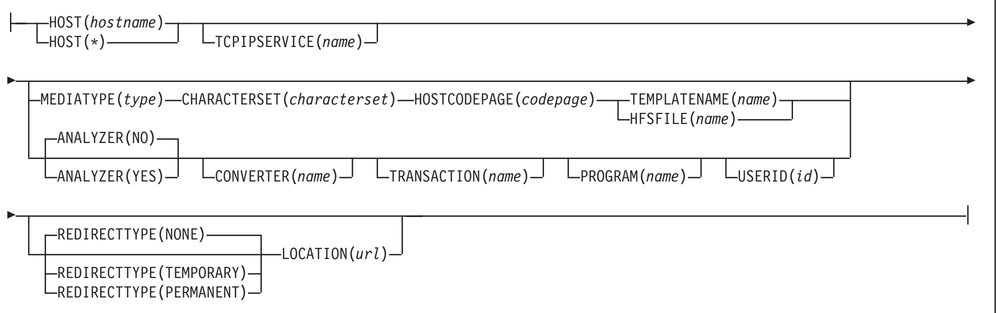
  You must install the selected TCPIPSERVICE definition before the URIMAP definition can be used.
- In URIMAP definitions for CICS as an HTTP server where a static response is to be provided, the TEMPLATENAME attribute specifies the 1-48 character name of a CICS document template that will form the static response. The document template must be defined using a DOCTEMPLATE resource definition, and the TEMPLATENAME attribute of that definition specifies the name that is used in the URIMAP definition. The DOCTEMPLATE resource definition must be available before the URIMAP definition can be used.

URIMAP attributes

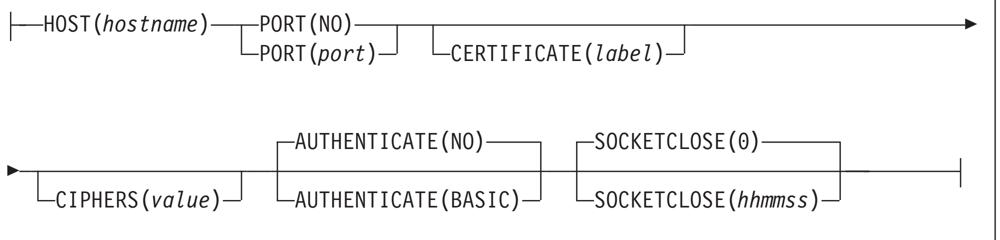
Describes the syntax and attributes of the URIMAP resource.



SERVER attributes:



CLIENT attributes:



PIPELINE attributes:

```
├──┬─HOST(hostname)─┬──PIPELINE(name)──┬─────────────────────┬──────────────►
   └─HOST(*)────────┘                  └─WEBSERVICE(name)─┘

►──┬───────────────────────┬──┬──────────────────────┬──┬─────────────┬──────►
   └─TCPIPSERVICE(name)─┘  └─TRANSACTION(name)─┘  └─USERID(id)─┘

►──┬─────────────────────────────────────────────────┬──────────────────────┤
   │ ┌─REDIRECTTYPE(NONE)──────┐                      │
   └─┼─────────────────────────┼──LOCATION(url)──┘
     ├─REDIRECTTYPE(TEMPORARY)─┤
     └─REDIRECTTYPE(PERMANENT)─┘
```

ATOM attributes:

```
├──┬─HOST(hostname)─┬──ATOMSERVICE(name)──┬───────────────────────┬────────►
   └─HOST(*)────────┘                     └─TCPIPSERVICE(name)─┘

►──┬──────────────────────┬──┬─────────────┬─────────────────────────────────►
   └─TRANSACTION(name)─┘  └─USERID(id)─┘

►──┬─────────────────────────────────────────────────┬──────────────────────┤
   │ ┌─REDIRECTTYPE(NONE)──────┐                      │
   └─┼─────────────────────────┼──LOCATION(url)──┘
     ├─REDIRECTTYPE(TEMPORARY)─┤
     └─REDIRECTTYPE(PERMANENT)─┘
```

ANALYZER({**NO**|**YES**})

This attribute is for USAGE(SERVER), where an application-generated response is to be provided. For other usage types, the attribute is forced to NO.

ANALYZER specifies whether an analyzer program is to be used in processing the HTTP request. The analyzer that can be run using this attribute is the analyzer associated with the TCPIPSERVICE definition or definitions to which this URIMAP definition relates. (An analyzer program must be in the local CICS region.) YES runs the analyzer. NO means that the analyzer is not used.

As supplied, the CICS-supplied default analyzer DFHWBAAX and sample analyzer DFHWBADX do not perform any analysis of a request when a matching URIMAP definition has been found for the request, even if the URIMAP specifies ANALYZER(YES).

If an analyzer program is used, you can still specify the CONVERTER, TRANSACTION, USERID, and PROGRAM attributes. The values that you specify for these attributes are used as input to the analyzer program, but they can be overridden by it. Alternatively, you can leave these attributes blank and let the analyzer program specify them.

ATOMSERVICE(*name*)

This attribute is for USAGE(ATOM).

When a client makes a request to CICS for an Atom feed using the URI specified by this URIMAP definition, ATOMSERVICE specifies the 1- to 8-character name of the ATOMSERVICE resource definition for the Atom feed. The ATOMSERVICE resource definition defines an Atom service, feed, collection, or category document, and identifies the Atom configuration file, CICS resource or application program, and XML binding that are used to supply the data for the feed.

Acceptable characters:

```
A-Z 0-9 $ @ #
```

Unless you are using the CREATE command, any lowercase characters that you enter are converted to uppercase.

AUTHENTICATE({**NO**|**BASIC**})
This attribute is for USAGE(CLIENT).

AUTHENTICATE specifies whether to send HTTP basic authentication information to the HTTP server. AUTHENTICATE(BASIC) requires a user ID and password to be provided by the XWBAUTH global user exit, or as values on the API commands such as WEB SEND or WEB CONVERSE. The XWBAUTH global user exit is not called if USERNAME and PASSWORD are specified on the API command. If you specify an authentication value on the API command, this value is used instead of the AUTHENTICATE value specified in the URIMAP resource.

CERTIFICATE(*label*)
This attribute is for USAGE(CLIENT).

CERTIFICATE specifies the label of the X.509 certificate that is to be used as the SSL client certificate during the SSL handshake. Certificate labels can be up to 32 characters long. This attribute is used only when the URI specified by the URIMAP definition is to be used for an HTTPS request made by CICS as a client. It is up to the server to request an SSL client certificate, and, if this happens, CICS supplies the certificate label that is specified in the URIMAP definition. If this attribute is omitted, the default certificate defined in the key ring for the CICS region user ID is used. The certificate must be stored in a key ring in the external security manager database.

CHARACTERSET(*characterset*)
This attribute is for USAGE(SERVER), where a static response is to be provided.

CHARACTERSET specifies the 1- to 40-character name of the character set into which CICS converts the entity body of the response that is sent to the Web client. CICS does not support all the character sets named by IANA. HTML coded character sets in the Internet Guide lists the IANA character sets that are supported by CICS. The value of this attribute is included in the Content-Type header of the response.

You must specify CHARACTERSET if a static response is being provided and the MEDIATYPE attribute specifies a text type.

CIPHERS(*value*)
This attribute is for USAGE(CLIENT).

Specifies a string of up to 56 hexadecimal digits that is interpreted as a list of up to 28 2-digit cipher suite codes. When you use the CEDA transaction to define the resource, CICS automatically initializes the attribute with a default list of acceptable codes. For CICS to initialize the attribute, the KEYRING system initialization parameter must be specified in the CICS region where you are running CEDA. If KEYRING is not set, CICS does not initialize the attribute. The default list of codes depends on the level of encryption that is specified by the ENCRYPTION system initialization parameter.

- For ENCRYPTION=WEAK, the default value is `03060102`.
- For ENCRYPTION=MEDIUM, the initial value is `0903060102`.
- For ENCRYPTION=STRONG, the initial value is `050435363738392F303132330A1613100D0915120F0C03060201`.

You can reorder the cipher codes or remove them from the initial list. However, you cannot add cipher codes that are not in the default list for the specified encryption level. To reset the value to the default list of codes, delete all of the cipher suite codes. The field is automatically repopulated with the default list.
See the *CICS RACF Security Guide* for more information.

CONVERTER(*name*)
This attribute is for USAGE(SERVER), where an application-generated response is to be provided.

CONVERTER specifies the 1- to 8-character name of a converter program that is to be run to perform conversion or other processing on the request and response. Typically, a converter program transforms the HTTP request into a COMMAREA that can be used by an application program and transforms the output into an HTTP response. The converter program can be any converter program that is available in the local CICS region.

Acceptable characters:

```
A-Z 0-9 $ @ #
```

Unless you are using the CREATE command, any lowercase characters that you enter are converted to uppercase.

Unlike the relationship between the analyzer program and the TCPIPSERVICE definition, the converter program and the TCPIPSERVICE definition have no association.

If the ANALYZER attribute is specified as YES, the CONVERTER attribute is used as input to the analyzer program, but it can be overridden by the analyzer program. If a converter program is used, you can still specify the PROGRAM attribute of the URIMAP definition, but the values that you specify for this attribute can be overridden by the converter program. Alternatively, you can leave this attribute blank and let the converter program specify it.

DESCRIPTION(*text*)
You can provide a description of the resource that you are defining in this field. The description text can be up to 58 characters in length. No restrictions apply to the characters that you can use. However, if you use parentheses, ensure that for each left parenthesis there is a matching right one. If you use the CREATE command, for each single apostrophe in the text, code two apostrophes.

GROUP(*groupname*)
Every resource definition must have a GROUP name. The resource definition becomes a member of the group and is installed in the CICS system when the group is installed.

Acceptable characters:

```
A-Z 0-9 $ @ #
```

Any lowercase characters that you enter are converted to uppercase.

The GROUP name can be up to 8 characters in length. Lowercase characters are treated as uppercase characters. Do not use group names beginning with DFH, because these characters are reserved for use by CICS.

HFSFILE(*name*)

This attribute is for USAGE(SERVER), where a static response is to be provided.

HFSFILE specifies the fully qualified (absolute) or relative name of a z/OS UNIX System Services HFS file that forms the body of the static response that is sent to the HTTP request from the Web client. You can specify the name as an absolute path including all directories and beginning with a slash; for example, `/u/facts/images/bluefish.jpg`. Alternatively, you can specify it as a path relative to the HOME directory of the CICS region user ID; for example, `facts/images/bluefish.jpg`. Up to 255 characters can be used.

The value specified must be a valid name for a UNIX file:
- It must not contain imbedded space characters.
- It must not contain consecutive instances of the / character.
- It is case-sensitive.

Acceptable characters:

```
A-Z a-z 0-9 . / _ # @ -
```

If TEMPLATENAME or HFSFILE is specified, ANALYZER must be set to NO, and the other attributes relating only to application-generated responses (TRANSACTION, CONVERTER, and PROGRAM) must be left blank.

If you want to use path matching, include an asterisk as a wildcard character at the end of the path for the HFS file and also at the end of the path specified by the PATH attribute. CICS takes the portion of the path of each HTTP request that is covered by the wildcard character and substitutes it as the last part of the file path.

For example, you can create a URIMAP definition with the PATH attribute specified as:

```
findout/pictures/*
```

and the HFSFILE attribute specified as:

```
/u/facts/images/*
```

The URIMAP definition is used to process an incoming HTTP request

```
http://www.example.com/findout/pictures/bluefish.jpg
```

CICS appends `bluefish.jpg` to the HFS file path specified in the URIMAP definition in place of the asterisk, so that the HFS file

```
/u/facts/images/bluefish.jpg
```

is used as the static response.

You cannot use an asterisk alone in the HFSFILE specification. At least one level of the directory structure must be specified.

If you are using IRIs (Internationalized Resource Identifiers) containing Unicode characters, the Unicode characters must be escaped to their percent-encoded representations in the HFS file name and in the corresponding path. Tools are available on the Web to help you do this. Search the Web for "unicode percent escaped".

A query string cannot be substituted into an HFS file (unless you define the HFS file as a CICS document template and specify it using the TEMPLATENAME attribute instead of the HFSFILE attribute).

HOST(*hostname*|*)
This attribute is for all USAGE options.

HOST specifies the host name of the URI to which the URIMAP definition applies, or its IPv4 or IPv6 address. The name can be up to 116 characters long. The components of a URL in the Internet Guide explains each of the components and how they are delimited.

The HOST attribute must be present. The HOST attribute must contain only alphanumeric characters, hyphens (-), colons (:), or periods (.), although you cannot use colons when specifying a character host name instead of an IP address. CICS validates the host name at define time. A host name can be entered in any case, but if a character host name is specified instead of an IP address, the host name is converted to lowercase in the URIMAP definition.

When you specify USAGE(SERVER), USAGE(PIPELINE), or USAGE(ATOM), a single asterisk can be used as the HOST attribute, making the URIMAP definition match any host name. An asterisk cannot be used as a wildcard in the HOST attribute along with any other characters.

URIMAP resources support Internationalized Resource Identifiers (IRIs), which can contain Unicode characters. If you specify a host name that contains Unicode characters, you must convert the host name to Punycode format, which is described by RFC 3492. CICS does not provide a tool to carry out this conversion, but free applications are available on the Internet to support the conversion of Unicode to Punycode. If you use an asterisk as the host name, you do not need to use Punycode. For more information about IRIs, see Internationalized Resource Identifiers (IRIs) in the Internet Guide.

You can specify IPv4 and IPv6 addresses in a number of acceptable formats. See IP addresses for more information about address formats.

If you are using a URIMAP definition relating to CICS as an HTTP client, USAGE(CLIENT), and you need to specify a port number in the request to the server, follow these guidelines:

- Use the PORT attribute to specify the port number. PORT replaces the use of the HOST attribute for specifying a port number.
- For compatibility purposes in existing programs that use native IPv4 addresses and host names, you can use the HOST attribute when you specify the port number. Native IPv4 addresses and host names are the only formats in which you can specify the port number, together with a preceding colon; for example, `1.2.3.4:80` or `hostname.com:443`.
- If you specify an IPv6 address (or a host name that resolves to an IPv6 address), ensure that you are operating in a dual-mode (IPv4 and IPv6) environment and that the client or server that you are communicating with is also operating in a dual-mode (IPv4 and IPv6) environment. For more information on IPv6, see Understanding IPv6 and CICS in the Internet Guide.

- For native IPv6 addresses, you must use the PORT attribute to specify the port number. IPv6 addresses require square brackets to separate the address from the port number, and, because square brackets are not fixed values in all EBCDIC character sets, square brackets are not supported in the HOST attribute.
- Specify the port number only if it is different from the default for the scheme; 80 for HTTP without SSL or 443 for HTTPS and HTTP with SSL.
- If you specify a port number in the HOST attribute and a different port number in the PORT attribute, an error is returned. If you do not specify a port number in either the HOST or the PORT attribute, the default port number for the scheme is used.

CICS validates the host name at define time.

HOSTCODEPAGE(*codepage*)
This attribute is for USAGE(SERVER), where a static response is to be provided.

HOSTCODEPAGE specifies the 1- to 10-character name of the IBM code page (EBCDIC) in which the text document that forms the static response is encoded. CICS needs this information to perform code page conversion for the entity body of the static response.

The standard CICS form of a host code page name consists of the code page number (or more generally CCSID) written using 3 - 5 decimal digits as necessary then padded with trailing spaces. For code page 37, which is fewer than 3 digits, the standard form is 037. CICS accepts any decimal number, padded with trailing spaces, in the range 1 - 65535 as a code page name, even if it is not in the standard form.

You must specify HOSTCODEPAGE if a static response is being provided and the MEDIATYPE attribute specifies a text type.

LOCATION(*url*)
This attribute is for USAGE(SERVER), USAGE(PIPELINE), and USAGE(ATOM).

LOCATION specifies a URL of up to 255 characters to which the client request is redirected. The URL must be complete, including scheme, host, path components, and appropriate delimiters. CICS does not check that the URL is valid, so you must ensure that the destination exists and that the URL is specified correctly.

The description for the PATH attribute lists the characters that must be excluded from a URL. These characters must not be used in the LOCATION attribute. The exception is the # character, which can be used in the LOCATION attribute as a separator before a fragment identifier that follows the URL.

The REDIRECTTYPE attribute is used to specify the type of redirection. If temporary or permanent redirection is specified, the URL in the LOCATION attribute is used for redirection. If no redirection is specified, the URL in the LOCATION attribute is ignored. You can use the SET URIMAP command to change the REDIRECTTYPE attribute and the LOCATION attribute.

MEDIATYPE(*type*)
This attribute is for USAGE(SERVER), where a static response is to be provided.

MEDIATYPE specifies the media type (data content) of the static response that CICS provides to the HTTP request; for example, `image/jpg`, `text/html` or text/xml. Up to 56 characters can be used. The media type must contain exactly one forward slash (/). The media type can be entered in uppercase or lowercase, but it is converted to lowercase in the URIMAP definition.

The name for each formally recognized type of data content is defined by IANA. A list is available at http://www.iana.org/assignments/media-types/. CICS creates a Content-Type header for the response using the value of this attribute.

This attribute has no default, and it must be specified. If the MEDIATYPE attribute specifies a text type, such as a type that begins with text/, or a type that contains +xml, you must also specify the CHARACTERSET and HOSTCODEPAGE attributes so that code page conversion can take place. Text media types are identified by RFC 3023, which is available at http://www.ietf.org/rfc/rfc3023.txt.

For a dynamic (application-generated) response, this attribute is not used. The media type for the response is specified by the WEB SEND command.

PATH(*path*)
This attribute is for all USAGE options.

PATH specifies the path component of the URI to which the URIMAP definition applies, which can be up to 255 characters, including the forward slash (/) at the beginning of the path component. If you do not include the forward slash, you can use only 254 characters to specify the path. The minimum possible path is a forward slash, which represents the root of the URL structure for the specified host name. You can include or omit the forward slash at the beginning of the path component; however, if you omit it, CICS adds it at runtime. An example of a path is software/htp/cics/index.html. The components of a URL in the Internet Guide explains each of the components and how they are delimited.

The PATH attribute is specified in mixed case, and the case is preserved in the URIMAP definition. The PATH attribute must contain only the characters allowed in URIs. Specifically, the characters < > # % " { } | \ ^ [ ] ` and imbedded blanks must be excluded (except that % is allowed when it introduces a valid hexadecimal escape sequence; that is, when it is followed by two valid hexadecimal digits in uppercase or lowercase). The tilde character (~) cannot be specified in CICS and must be replaced by the corresponding hexadecimal escape sequence (%7E). CICS validates the use of characters at define time.

URIMAP resources support Internationalized Resource Identifiers (IRIs), which can contain Unicode characters. If you specify a path that contains Unicode characters, any Unicode characters must be escaped to the percent-encoded representation of the Unicode character. If you do not have an application that can convert Unicode characters to percent-encoded representations, free applications are available on the Internet to perform this task. The path must still be 255 characters or less, and a character in this context means a single ASCII character, not the original Unicode character. For example, the Cyrillic character that has the percent-encoded representation %D0%B4 counts as 6 characters from the 255–character limit.

For URIMAP definitions relating to CICS as an HTTP server and Web services, if you want the URIMAP definition to match more than one path, you can use an asterisk as a wildcard character at the end of the path. For example, specifying the path /software/htp/cics/* makes the URIMAP definition match all requests with paths beginning with the string to the left of the asterisk. Specifying a path of /* makes the URIMAP definition match any requests directed to the host named in the HOST attribute. If an HTTP request is matched by more than one URIMAP definition, the most specific match is taken.

If a query component is present, and you want to apply the URIMAP definition to that specific query alone, you can include it as part of the path component. Include the question mark at the beginning of the string. The query string must contain only the characters allowed in URIs. A query string cannot itself include an asterisk as a wildcard, but it can follow a path that includes an asterisk as a wildcard. If you do not include a query string in the URIMAP definition, any query string that is present in the HTTP request is automatically ignored for matching purposes.

For URIMAP definitions for Atom feeds, you must use an asterisk as a wildcard character at the end of the path. The part of the path that you specify in the URIMAP definition is the part that is common to the Atom feed and Atom entry URLs. CICS matches the remainder of the URL to the URLs specified in all the <atom:link> elements in the Atom configuration file for the feed.

For URIMAP definitions for CICS as an HTTP client, you cannot use an asterisk as a wildcard; you must specify the complete path for the request. If the URIMAP definition is referenced on a WEB OPEN command, this path becomes the default path for WEB SEND commands relating to that connection. If the URIMAP definition is referenced on a WEB SEND command, the path is used for that WEB SEND command, but note that the host attribute for that URIMAP definition must match the host specified on the WEB OPEN command for the connection.

PIPELINE(*name*)
This attribute is for USAGE(PIPELINE).

When a client makes an inbound Web service request to CICS with the URI specified by this URIMAP definition, PIPELINE specifies the 1- to 8-character name of the PIPELINE resource definition for the Web service. The PIPELINE resource definition provides information about the message handlers, which act on the service request from the client. PIPELINE resources in the Resource Definition Guide describes these resource definitions.

Acceptable characters:

```
A-Z 0-9 $ @ #
```

Unless you are using the CREATE command, any lowercase characters that you enter are converted to uppercase.

PORT({**NO**|*port*})
This attribute applies to the USAGE(CLIENT) option only.

PORT specifies the decimal number of the port used by a CICS application when it communicates with a server. The value must be a number in the range 1 - 65535.

The port number is combined with the HOST value to determine the destination for outbound requests for this URIMAP. Specify the port number only if it is different from the default for the scheme: 80 for HTTP without SSL, or 443 for HTTPS and HTTP with SSL.

If you specify a port number in the HOST attribute and a different port number in the PORT attribute, an error is returned. If you do not specify a port number in either the HOST or the PORT attribute, the default port number for the scheme is used.

If you do not specify a value for the PORT attribute, PORT is set to NO to indicate that the attribute is not being used.

PROGRAM(*name*)
This attribute is for USAGE(SERVER), where an application-generated response is to be provided.

PROGRAM specifies the 1- to 8-character name of the user application program that composes the HTTP response. For CICS as an HTTP server, this attribute is required unless an analyzer or converter program is specified, or a template name or HFS file is specified, or redirection is specified.

Acceptable characters:

```
A-Z 0-9 $ @ #
```

Unless you are using the CREATE command, any lowercase characters that you enter are converted to uppercase.

If the ANALYZER attribute is specified as YES, or a converter program is specified using the CONVERTER attribute, the PROGRAM attribute is used as input to the analyzer or converter program, but it can be overridden by those programs. Alternatively, you can leave this attribute blank and let the analyzer or converter program specify it.

REDIRECTTYPE({NONE|TEMPORARY|PERMANENT})
This attribute is for USAGE(SERVER), USAGE(PIPELINE), and USAGE(ATOM).

REDIRECTTYPE specifies the type of redirection for requests that match this URIMAP definition. The URL specified by the LOCATION attribute is used for redirection when required.

- NONE means that requests are not redirected. Any URL specified by the LOCATION attribute is ignored.
- TEMPORARY means that requests are redirected on a temporary basis. The URL specified by the LOCATION attribute is used for redirection, and the status code used for the response is 302 (Found).
- PERMANENT means that requests are redirected permanently. The URL specified by the LOCATION attribute is used for redirection, and the status code used for the response is 301 (Moved Permanently).

You can use the **SET URIMAP** command to change the REDIRECTTYPE attribute and the LOCATION attribute.If REDIRECTTYPE(TEMPORARY) or REDIRECTTYPE(PERMANENT) is specified when creating a URIMAP definition, the following attributes are optional: ANALYZER, CONVERTER, HFSFILE, PIPELINE, PROGRAM, TEMPLATENAME, TRANSACTION, USERID, and WEBSERVICE. If you use a CEMT or EXEC CICS command to set the REDIRECTTYPE attribute to NONE after the URIMAP definition is installed, any of the listed attributes that were specified in the URIMAP definition are activated.

SCHEME({HTTP|HTTPS})
This attribute is for all USAGE options.

SCHEME specifies the scheme component of the URI to which the URIMAP definition applies, which is either HTTP (without SSL) or HTTPS (with SSL). Do not include the delimiters `://` (colon and two forward slashes) that follow the scheme component in the URI.

A URIMAP specifying the HTTP scheme accepts Web client requests made using either the HTTP scheme or the HTTPS scheme. A URIMAP specifying the HTTPS scheme accepts only Web client requests made using the HTTPS scheme. However, if the transport is Websphere MQ, a URIMAP specifying either the HTTP scheme or the HTTPS scheme accepts Web client requests made using either the HTTP scheme or the HTTPS scheme.

| **SOCKETCLOSE**({**0**|*hhmmss*})
| This attribute is for USAGE (CLIENT).

| SOCKETCLOSE specifies if, and for how long, CICS keeps a client HTTP
| connection open after the CICS application has finished using it. After use,
| CICS checks the state of the connection and then places it in a pool in a
| dormant state. A dormant connection can be reused by the same application or
| by another application that connects to the same host and port.

| **0** CICS closes each client HTTP connection when the CICS application
| has finished using it. CICS does not place the connection in a pool for
| reuse.

| *hhmmss*
| When a CICS application has finished using its client HTTP
| connection, CICS checks the state of the connection and places it in a
| pool for reuse. A dormant connection that is not reused is discarded
| after the length of time that you specify here.

| Connection pooling can provide performance benefits for the HTTP EP adapter
| for CICS event processing, or where multiple invocations of CICS Web support
| applications make connection requests for the same host and port, or where a
| Web services application makes multiple requests and responses. To activate
| connection pooling, your application programs must specify the URIMAP
| resource on the INVOKE SERVICE or WEB OPEN command. For more
| information about connection pooling, see Connection pooling for HTTP client
| performance in the Internet Guide.

STATUS({**ENABLED**|**DISABLED**})
This attribute is for all USAGE options.

STATUS specifies whether the URIMAP definition is to be installed in an enabled or disabled state. The default is enabled.

TCPIPSERVICE(*name*)
This attribute is for USAGE(SERVER), USAGE(PIPELINE), and USAGE(ATOM).

TCPIPSERVICE specifies the 1- to 8-character name of a TCPIPSERVICE resource definition, with PROTOCOL(HTTP), that defines an inbound port to which this URIMAP definition relates. If this attribute is not specified, the URIMAP definition applies to a request on any inbound ports.

Acceptable characters:

`A-Z 0-9 $ @ #`

Unless you are using the CREATE command, any lowercase characters that you enter are converted to uppercase.

When a URIMAP definition with HTTPS as the scheme matches a request that a Web client is making, CICS checks that the inbound port used by the request is using SSL. If SSL is not specified for the port, the request is rejected with a 403 (Forbidden) status code. When the URIMAP definition applies to all inbound ports, this check ensures that a Web client cannot use an unsecured port to access a secured resource. No check is carried out for a URIMAP definition that specifies HTTP as the scheme, so Web clients can use either unsecured or secured (SSL) ports to access these resources.

You specify the security measures that are applied for each port in the TCPIPSERVICE resource definition. You can choose whether or not to use SSL, and, if you do use SSL, you need to choose the exact security measures that are applied, for example, the authentication method, the sending of certificates by client and server, and encryption of messages. Read Security for CICS web support in the Internet Guide for more information about the security features that you can use to keep your CICS Web support facility safe.

TEMPLATENAME(*name*)

This attribute is for USAGE(SERVER), where a static response is to be provided.

TEMPLATENAME specifies the 1- to 48-character name of a CICS document template that forms the body of the static response that is sent to the HTTP request from the Web client. It must be defined using a DOCTEMPLATE resource definition, and the TEMPLATENAME attribute of that definition specifies the name that is used in the URIMAP definition. For more information, see CICS documents in CICS Application Programming.

Acceptable characters:
`A-Z a-z 0-9 $ @ # . / - _ % & ? ! : | " = ¬ , ; < >`

If you specify TEMPLATENAME or HFSFILE, you must set ANALYZER to NO, and the other attributes relating only to application-generated responses (TRANSACTION, CONVERTER, and PROGRAM) must be left blank.

If you want to use path matching, include an asterisk as a wildcard character at the end of the name of the CICS document template and also at the end of the path specified by the PATH attribute. CICS takes the portion of each HTTP requests path that is covered by the wildcard character and substitutes it as the last part of the template name.

For example, you can create a URIMAP definition with the PATH attribute specified as:

```
findout/about/*
```

and the TEMPLATENAME attribute specified as:

```
templates.facts.*
```

The URIMAP definition is used to process an incoming HTTP request

```
http://www.example.com/findout/about/fish.html
```

CICS appends `fish.html` to the template name specified in the URIMAP definition in place of the asterisk, so that the template

```
templates.facts.fish.html
```

is used to form the static response.

Specifying an asterisk alone for the TEMPLATENAME attribute means that the selected template has the same name as the part of the URL that corresponds to the wildcard character in the PATH attribute.

When you specify the TEMPLATENAME attribute, if a query string is present on the URI, but is not used in the PATH attribute, CICS automatically passes the content of the query string into the named CICS document template as a symbol list. If you want to use the content of the query string in the document template, include appropriate variables in your document template to be substituted for the content of the query string.

TRANSACTION(*name*)

This attribute is for USAGE(SERVER), where an application-generated response is to be provided, USAGE(PIPELINE), and USAGE(ATOM).

TRANSACTION specifies the 1- to 4-character name of an alias transaction that is to be used to run the user application that composes the HTTP response, or to start the pipeline.

Acceptable characters:
`A-Z a-z 0-9 $ @ # . / - _ % & ? ! :	" = ¬ , ; < >`

The default alias transaction is CWBA for USAGE(SERVER), CPIH for USAGE(PIPELINE), or CW2A for USAGE(ATOM). You can select a different transaction name for the purposes of security, monitoring and accounting, or transaction class limitation. Whatever name you choose for the alias transaction, it must always run the same program, which is determined by the USAGE attribute. For USAGE(SERVER), the program is DFHWBA, which links to the application program named in the PROGRAM attribute of the URIMAP definition or named by the analyzer program. For USAGE(PIPELINE), the program is DFHPIDSH, which starts the pipeline named in the PIPELINE attribute and the Web service named in the WEBSERVICE attribute, if specified. For USAGE(ATOM), the program is DFHW2A, the W2 domain alias program.

For USAGE(SERVER), if the ANALYZER attribute is specified as YES, the TRANSACTION attribute is used as input to the analyzer program, but the analyzer program can override it. Alternatively, you can leave this attribute blank and let the analyzer program specify it. For USAGE(PIPELINE) and USAGE(ATOM), the analyzer is not used.

URIMAP(*name*)

Specifies the name of this URIMAP definition. The name can be up to 8 characters in length. The attribute is specified in mixed case, and the case is preserved in the URIMAP definition.

Acceptable characters:
`A-Z a-z 0-9 $ @ # . / - _ % & ? ! :	" = ¬ , ; < >`

USAGE({**SERVER**|**CLIENT**|**PIPELINE**|**ATOM**})

Specifies whether this URIMAP definition is for CICS as an HTTP server (SERVER), CICS as an HTTP client (CLIENT), a Web service (PIPELINE), or an Atom feed (ATOM). The USAGE attribute governs which other attributes in the URIMAP definition can be used.

When you specify SERVER, you create a URIMAP definition for CICS as an HTTP server. This type of URIMAP definition is used to map the URI of an incoming HTTP request from a Web client to CICS resources. An application-generated response or a static response can be provided.

When you specify CLIENT, you create a URIMAP definition for CICS as an HTTP client. This type of URIMAP definition is used when CICS makes a request for an HTTP resource on a server, so that you can avoid identifying the URI in your application program.

When you specify PIPELINE, you create a URIMAP definition for a Web service. This type of URIMAP definition is used for an inbound Web service request; that is, a request by which a client invokes a Web service in CICS. The URI of the incoming request is associated with WEBSERVICE and PIPELINE resources, which specify the processing that is to be performed on the message.

When you specify ATOM, you create a URIMAP definition for an Atom feed. This type of URIMAP definition is used for an incoming request for data that CICS makes available as an Atom feed. The URIMAP definition maps the request URI to an ATOMSERVICE resource definition, which defines an Atom document.

USERID(*id*)
This attribute is for USAGE(SERVER), where an application-generated response is to be provided, USAGE(PIPELINE), and USAGE(ATOM).

USERID specifies a 1- to 8-character default user ID that can be used by any client. For an application-generated response or a web service, the alias transaction is attached under this user ID.

| When authentication is required for the connection, so that CICS requests an authenticated user ID directly from the client, the default user ID that you specify in the URIMAP definition is not used. The authenticated user ID of the client is used instead, or if authentication fails, the request is rejected. Authentication procedures are specified by the AUTHENTICATE attribute of the TCPIPSERVICE definition for the connection.

For an application-generated response, if ANALYZER(YES) is specified, the USERID attribute is used as input to the analyzer program, but the analyzer program can override it. Alternatively, you can leave this attribute blank and let the analyzer program specify it. For USAGE(PIPELINE) and USAGE(ATOM), the analyzer is not used. A user ID specified by a client can also be changed by the analyzer program. If no user ID is specified by any of these means, the default user ID for an application-generated response is the CICS default user ID.

For static responses, the USERID attribute does not apply. Resource security checking for static responses can only be carried out using the authenticated user ID of a client.

If surrogate user checking is enabled in the CICS region, with XUSER=YES specified as a system initialization parameter, CICS checks that the user ID used to install the URIMAP definition is authorized as a surrogate of the user ID specified for the USERID attribute. See the *CICS RACF Security Guide* for more information about surrogate user checking.

WEBSERVICE(*name*)
This attribute is for USAGE(PIPELINE).

When a client makes an inbound Web service request to CICS with the URI specified by this URIMAP definition, WEBSERVICE specifies the name of the Web service. This name can be the 1- to 8-character name of a WEBSERVICE resource definition, or a name up to 32 characters in mixed case representing a Web service generated by the CICS Web services assistant.

Acceptable characters:

```
A-Z a-z 0-9 $ @ # . / - _ % & ? ! : | " = ¬ , ; < >
```

A WEBSERVICE resource defines aspects of the runtime environment for a CICS application program deployed in a Web services setting, where the mapping between application data structure and SOAP messages has been generated using CICS-supplied tools.

Chapter 39. WEBSERVICE resources

A WEBSERVICE resource defines aspects of the run time environment for a CICS application program deployed in a Web services setting, where the mapping between application data structure and SOAP messages has been generated using the CICS Web services assistant. Although CICS provides the usual resource definition mechanisms for WEBSERVICE resources, they are typically installed dynamically, using the output produced by the assistant.

The aspects of the run time environment that are defined by the WEBSERVICE resource are:

A pipeline
: Defines the set of message handlers that operate on Web service requests and responses. The WEBSERVICE resource specifies a separate PIPELINE resource which, in turn, specifies the pipeline configuration file.

A Web service binding file
: Contains information that is used at run time to perform the mapping between application data structures and SOAP messages. The Web service binding file is generated by the CICS-supplied tools.

A Web service description
: The Web services description is used only when runtime validation of SOAP messages is required. Validation of each message is performed against its schema, which is imbedded within the Web service description.

An inbound Web service request (that is, a request by which a client invokes a Web service in CICS) is associated with a WEBSERVICE resource by the URIMAP resource. The URIMAP identifies the WEBSERVICE resource that applies to the URI in the inbound message; the WEBSERVICE specifies the processing that is to be performed on the message.

Although CICS provides the usual resource definition mechanisms for creating WEBSERVICE resources, and installing them in your CICS region, you can instead use the scanning mechanism to dynamically install WEBSERVICE resources in your running CICS system. The advantages of this approach are that it reduces the amount of resource definition required, and that CICS can make direct use of information provided at development time.

To invoke the scanning mechanism, use the **`PERFORM PIPELINE`** command.

The name of a dynamically-installed WEBSERVICE is derived from the name of the Web service binding file from which the WEBSERVICE definition is generated, and has a maximum length of 32 characters; the names of WEBSERVICE definitions installed from the CSD or with the **`EXEC CICS CREATE WEBSERVICE`** are limited to eight characters. For example, a Webservice binding file whose HFS name is `/samples/Webservices/WSDir/InquireSingle.wsbind` generates a WEBSERVICE definition named `InquireSingle`

Installing WEBSERVICE resource definitions

Although CICS provides the usual resource definition mechanisms for creating WEBSERVICE resources, and installing them in your CICS region, there is an alternative strategy which you can use. You can use the scanning mechanism to install WEBSERVICE resources in your running CICS system.

About this task

There are three ways to install a WEBSERVICE resource definition.

Procedure

- Use the **PERFORM PIPELINE SCAN** command (using the CEMT transaction, or the system programming interface) to initiate a scan of the pickup directory for a PIPELINE resource. Use this method when you have added or updated a Web service binding file in the pickup directory of a PIPELINE that is already been installed. CICS scans the pickup directory and uses each Web service binding file that it finds there to dynamically install a WEBSERVICE resource.
- Install a PIPELINE resource. Use this method when the pickup directory of a PIPELINE resource contains a Web service binding file that you want to associate with the PIPELINE, and the PIPELINE has not been installed. When you install the PIPELINE, CICS scans the pickup directory and uses each Web service binding file that it finds there to install a WEBSERVICE resource.
- Install a WEBSERVICE resource from the CSD. Use this method if neither of the two other methods is appropriate - for example, when you want to use a PIPELINE definition with a Web service binding file that is not in the PIPELINE's pickup directory.

What to do next

If you have updated the Web service binding file that is referenced by a WEBSERVICE definition installed from the CSD, you must discard and reinstall the WEBSERVICE to pick up the new Web service binding file.

WEBSERVICE attributes

Describes the syntax and attributes of the WEBSERVICE resource.

```
►►──WEBSERVICE(name)──GROUP(groupname)──┬─────────────────────┬───────────►
                                        └─DESCRIPTION(text)─┘

                                          ┌─VALIDATION(NO)──┐
►─PIPELINE(pipelinename)──WSBIND(hfsfile)─┴─VALIDATION(YES)─┴─────────────►

►─┬───────────────────┬──┬──────────────────────┬──────────────────────►◄
  └─WSDLFILE(hfsfile)─┘  └─ARCHIVEFILE(hfsfile)─┘
```

WEBSERVICE(*name*)

Specifies the 1-8 character name of the WEBSERVICE resource.

Acceptable characters:
`A-Z a-z 0-9 $ @ # . / - _ % & ? ! : | " = ¬ , ; < >`

Do not use names beginning with DFH, because these characters are reserved for use by CICS.

ARCHIVEFILE(*hfsfile*)
Specifies the 1-255 character fully-qualified file name of an archive that contains one or more WSDL files. The supported format for the archive is `.zip`.

The value specified must be a valid name for a UNIX file: • It must not contain imbedded space characters. • It must not contain consecutive instances of the / character. • It is case-sensitive.
Acceptable characters:
`A-Z a-z 0-9 . / _ # @ -`

GROUP(*groupname*)
Every resource definition must have a GROUP name. The resource definition becomes a member of the group and is installed in the CICS system when the group is installed.

Acceptable characters:
`A-Z 0-9 $ @ #`
Any lowercase characters that you enter are converted to uppercase.

The GROUP name can be up to 8 characters in length. Lowercase characters are treated as uppercase characters. Do not use group names beginning with DFH, because these characters are reserved for use by CICS.

DESCRIPTION(*text*)
You can provide a description of the resource that you are defining in this field. The description text can be up to 58 characters in length. No restrictions apply to the characters that you can use. However, if you use parentheses, ensure that for each left parenthesis there is a matching right one. If you use the CREATE command, for each single apostrophe in the text, code two apostrophes.

PIPELINE(*pipelinename*)
Specifies the 1-8 character name of the PIPELINE resource with which this WEBSERVICE resource is associated.

Acceptable characters:
`A-Z 0-9 $ @ #`
Unless you are using the CREATE command, any lowercase characters that you enter are converted to uppercase.

VALIDATION(**NO**|**YES**)
Specifies whether full validation of SOAP messages against the corresponding schema in the web service description should be performed at run time. Validating a SOAP message against its schema incurs considerable processing overhead, and you should normally specify VALIDATION(NO).

Full validation ensures that all SOAP messages that are sent and received are valid XML with respect to the XML schema. If VALIDATION(NO) is specified, checking is performed to ensure that the message contains well-formed XML, but there is no guarantee that the XML is valid.

WSBIND(*hfsfile*)
Specifies the 1-255 character fully-qualified file name of the Web service binding file on z/OS UNIX.

The value specified must be a valid name for a UNIX file:
- It must not contain imbedded space characters.
- It must not contain consecutive instances of the / character.
- It is case-sensitive.

Acceptable characters:

```
A-Z a-z 0-9 . / _ # @ -
```

WSDLFILE(*hfsfile*)
Specifies the 1-255 character fully-qualified file name of the Web service description (WSDL) file on z/OS UNIX. This file is used when full runtime validation is active.

The value specified must be a valid name for a UNIX file:
- It must not contain imbedded space characters.
- It must not contain consecutive instances of the / character.
- It is case-sensitive.

Acceptable characters:

```
A-Z a-z 0-9 . / _ # @ -
```

Part 3. Defining resources

After you have installed CICS, you must define and install all the resources that your CICS regions require to run user transactions.

Chapter 40. Resource definition online (RDO) transaction CEDA

Use the CEDA transaction to add, remove, or change resource definitions online.

The CEDA transaction tutorial

This tutorial shows you how to use the RDO transactions CEDA, CEDB, and CEDC.

It assumes that you have read the information on resources, groups, and lists in Chapter 3, "Groups and lists," on page 23.

At the end of this tutorial, you should be familiar with the CEDA panels, and be able to manage your resources efficiently.

The examples in the tutorial all use CEDA because, if you have CEDA authorization, you can issue all RDO commands. If you have access to only CEDB or CEDC, you can issue the following commands:

CEDB All RDO commands except INSTALL. You can update the CSD but not a running CICS system.

CEDC DISPLAY, EXPAND, and VIEW commands only. You cannot update the CSD or a running CICS system.

Accessing CEDA

You can access CEDA from a CICS terminal.

To access CEDA:

1. Enter `CEDA` at a CICS terminal. The cursor is indicated by the symbol '_'.

   A list of all the CEDA commands is displayed. The CEDB transaction does not support the INSTALL command; the CEDC transaction supports only the DISPLAY, EXPAND, and VIEW commands.

Using the CEDA panels

Use this tutorial to learn how to create, display, alter, and copy a resource definition.

About this task

The features and functions of the panels are described in "CEDA panel functions" on page 409. These topics are covered:

- "Creating a resource definition" on page 394
- "Displaying a resource definition" on page 396
- "Altering a resource definition" on page 401
- "Copying a resource definition" on page 401.

  Tutorial topics

  "Using the command line" on page 402
  So far, this tutorial has taken you through panels to execute CEDA commands,

but when you become familiar with your system's resources and with CEDA, you can enter most CEDA commands on the command line.

"Displaying messages" on page 404
CEDA displays four levels of messages to tell you about errors and to provide other information.

"Using CEDA HELP" on page 404
Press the help function key (F1, also know as PF1) to display the CEDA help panels.

"CEDA panel functions" on page 409
This topic contains descriptions of the features and functions of the CEDA panels.

Tutorial overview

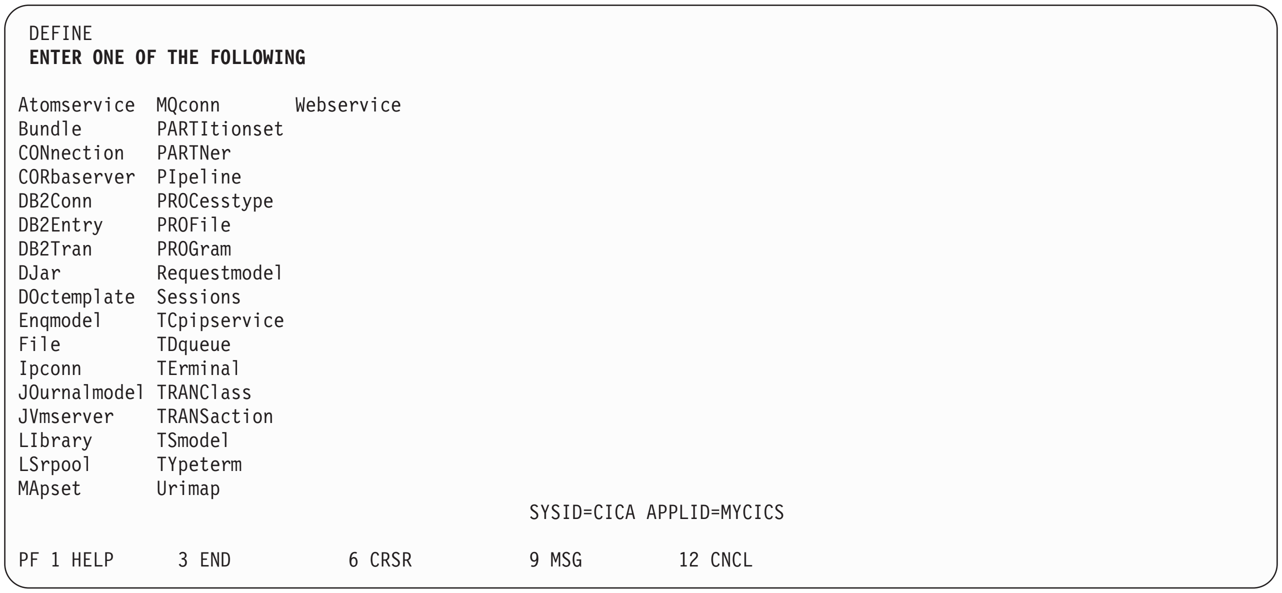
"The CEDA transaction tutorial" on page 393
This tutorial shows you how to use the RDO transactions CEDA, CEDB, and CEDC.

Creating a resource definition

You can use the CEDA transaction to create a new resource definition.

To create a map set definition:

1. Type `CEDA` to start the CEDA function.
2. To create a new resource definition, type:
   ```
   DEFINE
   ```
   See "Using abbreviations" on page 409 for information about abbreviating commands. Press the Enter key. You see the panel shown in Figure 11.



```
 DEFINE
 ENTER ONE OF THE FOLLOWING

Atomservice  MQconn       Webservice
Bundle       PARTItionset
CONnection   PARTNer
CORbaserver  PIpeline
DB2Conn      PROCesstype
DB2Entry     PROFile
DB2Tran      PROGram
DJar         Requestmodel
DOctemplate  Sessions
Enqmodel     TCpipservice
File         TDqueue
Ipconn       TErminal
JOurnalmodel TRANClass
JVmserver    TRANSaction
LIbrary      TSmodel
LSrpool      TYpeterm
MApset       Urimap
                                        SYSID=CICA APPLID=MYCICS

PF 1 HELP     3 END         6 CRSR        9 MSG        12 CNCL
```

Figure 11. CEDA DEFINE panel

   This panel lists all the resource types that you can define for CICS using CEDA. The PF keys are described in "Using the PF keys" on page 411.

3. To create a map set definition, after DEFINE, type:
   ```
   MAPSET(NEW1) GROUP(AAA1)
   ```

The panel in Figure 12 is displayed.

```
DEFINE MAPSET(NEW1) GROUP(AAA1)
OVERTYPE TO MODIFY                                        CICS RELEASE = 0660
 CEDA  DEFine Mapset( NEW1     )
  Mapset         : NEW1
  Group          : AAA1
  Description  ==>
  REsident     ==> No                 No | Yes
  USAge        ==> Normal             Normal | Transient
  USElpacopy   ==> No                 No | Yes
  Status       ==> Enabled            Enabled | Disabled
  RSl            : 00                 0-24 | Public
 DEFINITION SIGNATURE
  DEFinetime     : 03/06/08 14:37:04
  CHANGETime     : 03/06/08 14:37:04
  CHANGEUsrid    : DOUGANV
  CHANGEAGEnt    : CSDApi             CSDApi | CSDBatch
  CHANGEAGRel    : 0660




                                                    SYSID=CICA APPLID=MYCICS
 DEFINE SUCCESSFUL                               TIME: 14.37.04  DATE: 03/06/08
PF 1 HELP 2 COM 3 END             6 CRSR 7 SBH 8 SFH 9 MSG 10 SB 11 SF 12 CNCL
```

Figure 12. CEDA DEFINE MAPSET panel

The whole command (`DEFINE MAPSET(NEW1) GROUP(AAA1)`) remains at the top of the screen. You must specify a group name for every resource that you want to define or work with; if you do not, CEDA displays a severe error message informing you that you have not supplied a group.

The main part of the screen shows the attributes of the MAPSET that you have just defined. All the attributes and values that you see are described in "MAPSET attributes" on page 166; initially, the CEDA screen shows the default value (or the required value) for each attribute.

The screen also shows the definition signature for the resource. The definition signature shows your user ID and information about when and how you defined this resource. For more details, see "The definition signature for resource definitions" on page 14.

4. Press PF3 to exit CEDA. The panel shown in Figure 13 is displayed.

```
CEDA DEFINE MAPSET(NEW1) GROUP(AAA1)
 STATUS:  SESSION ENDED
```

Figure 13. SESSION ENDED panel

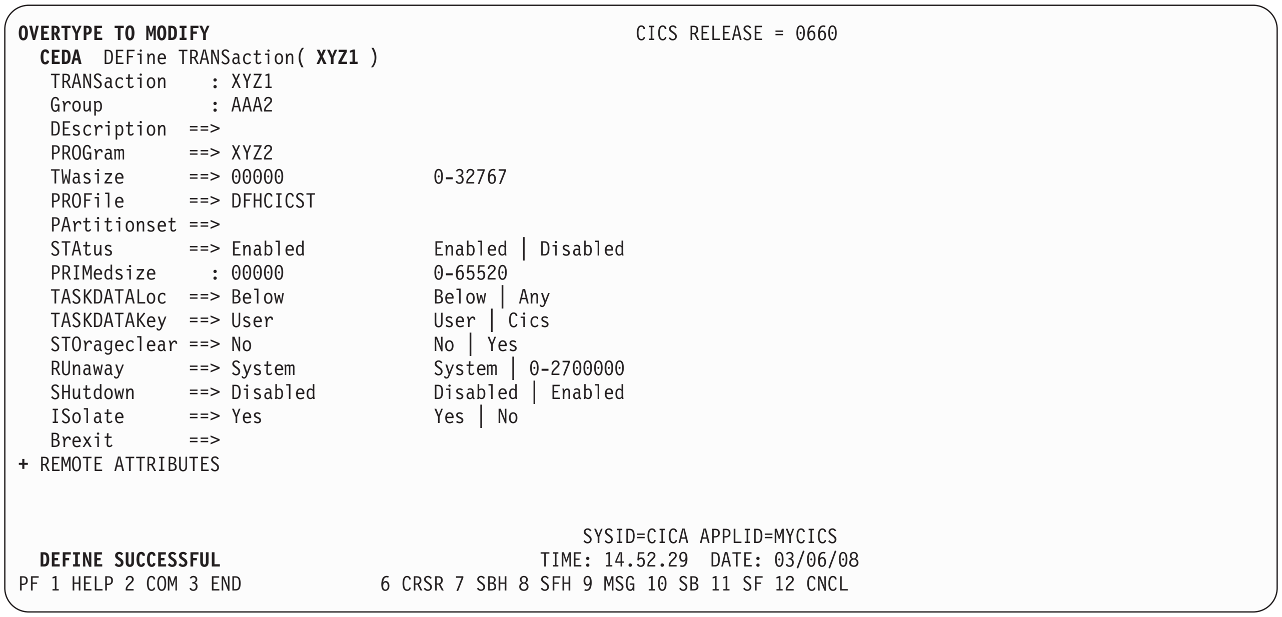
To create a transaction definition:

1. Clear the screen and start the CEDA transaction.
2. Create a transaction definition. You do not have to step through all the panels as you did when you created the map set definition. You can type the whole command on the CEDA initial panel. Type:

   ```
   DEFINE TRANSACTION(XYZ1) PROGRAM(XYZ2) GROUP(AAA2)
   ```

   A panel similar to Figure 14 on page 396 is displayed.

   .



```
OVERTYPE TO MODIFY                                        CICS RELEASE = 0660
  CEDA  DEFine TRANSaction( XYZ1 )
   TRANSaction    : XYZ1
   Group          : AAA2
   DEscription  ==>
   PROGram      ==> XYZ2
   TWasize      ==> 00000              0-32767
   PROFile      ==> DFHCICST
   PArtitionset ==>
   STAtus       ==> Enabled            Enabled | Disabled
   PRIMedsize     : 00000              0-65520
   TASKDATALoc  ==> Below              Below | Any
   TASKDATAKey  ==> User               User | Cics
   STOrageclear ==> No                 No | Yes
   RUnaway      ==> System             System | 0-2700000
   SHutdown     ==> Disabled           Disabled | Enabled
   ISolate      ==> Yes                Yes | No
   Brexit       ==>
+ REMOTE ATTRIBUTES


                                                     SYSID=CICA APPLID=MYCICS
  DEFINE SUCCESSFUL                         TIME: 14.52.29  DATE: 03/06/08
PF 1 HELP 2 COM 3 END            6 CRSR 7 SBH 8 SFH 9 MSG 10 SB 11 SF 12 CNCL
```

Figure 14. CEDA DEFINE TRANSACTION panel

You must specify a PROGRAM whenever you define a new TRANSACTION; if you do not, CEDA displays a severe error message saying that you must specify either a PROGRAM or REMOTESYSTEM. The attributes of the TRANSACTION definition are described in "TRANSACTION attributes" on page 304.

You can see that the TRANSACTION definition has many more attributes than the MAPSET definition. The plus sign **+** to the left of the last attribute in the list means that there are more attributes, so you can use either PF8 or PF11 to scroll down through them, then PF7 or PF10 to scroll back up. See "Using the PF keys" on page 411.

You now have two new resources to work with: a MAPSET in group AAA1 and a TRANSACTION in group AAA2. These resources are used throughout the remainder of the tutorial to demonstrate the other CEDA commands.

3. Press PF3 to exit CEDA.

Tutorial topics - using the CEDA panels

"Displaying a resource definition"
You can use the CEDA transaction to display a resource definition that you defined previously.

Tutorial overview

"The CEDA transaction tutorial" on page 393
This tutorial shows you how to use the RDO transactions CEDA, CEDB, and CEDC.

Displaying a resource definition

You can use the CEDA transaction to display a resource definition that you defined previously.

To display a resource definition:

1. Type `CEDA` to start the CEDA function.
2. Do not clear the screen this time. Type `DISPLAY` over `DEFINE` and delete the rest of the line. Press the Enter key. A panel similar to Figure 15 on page 397 is displayed.

```
 DISPLAY
 OVERTYPE TO MODIFY
  CEDA  DIsplay
   Group        ==> _
   LISt         ==>
   All          ==> *
   ATomservice  ==>
   Bundle       ==>
   CONnection   ==>
   CORbaserver  ==>
   DB2Conn      ==>
   DB2Entry     ==>
   DB2Tran      ==>
   DJar         ==>
   DOctemplate  ==>
   Enqmodel     ==>
   File         ==>
   Ipconn       ==>
   JOurnalmodel ==>
   JVmserver    ==>
   LIBrary      ==>
   LSrpool      ==>
   MApset       ==>
   MQconn       ==>
   PARTItionset ==>
   PARTNer      ==>
   PIpeline     ==>
   PROCesstype  ==>
   PROFile      ==>
   PROGram      ==>
   REQestmodel ==>
   Sessions     ==>
   TCpipservice ==>
   TDqueue      ==>
   TErminal     ==>
   TRANClass    ==>
   TRANSaction  ==>
   TSmodel      ==>
   TYpeterm     ==>
   Urimap       ==>
   Webservice   ==>

  S  No GROUP value has been previously specified so there is no current
       value to assume.                              SYSID=CICA  APPLID=MYCICS

PF 1 HELP       3 END            6 CRSR 7 SBH 8 SFH 9 MSG 10 SB 11 SF 12 CNCL
```

Figure 15. CEDA DISPLAY panel

3. You might not know any group names or list names yet, so type in an asterisk (*) where the cursor is, beside GROUP, and then press Enter. The asterisk means that you want to display all groups. If your system has many groups in it, this command can take some time to execute. You get a panel like the one in Figure 16 on page 398:

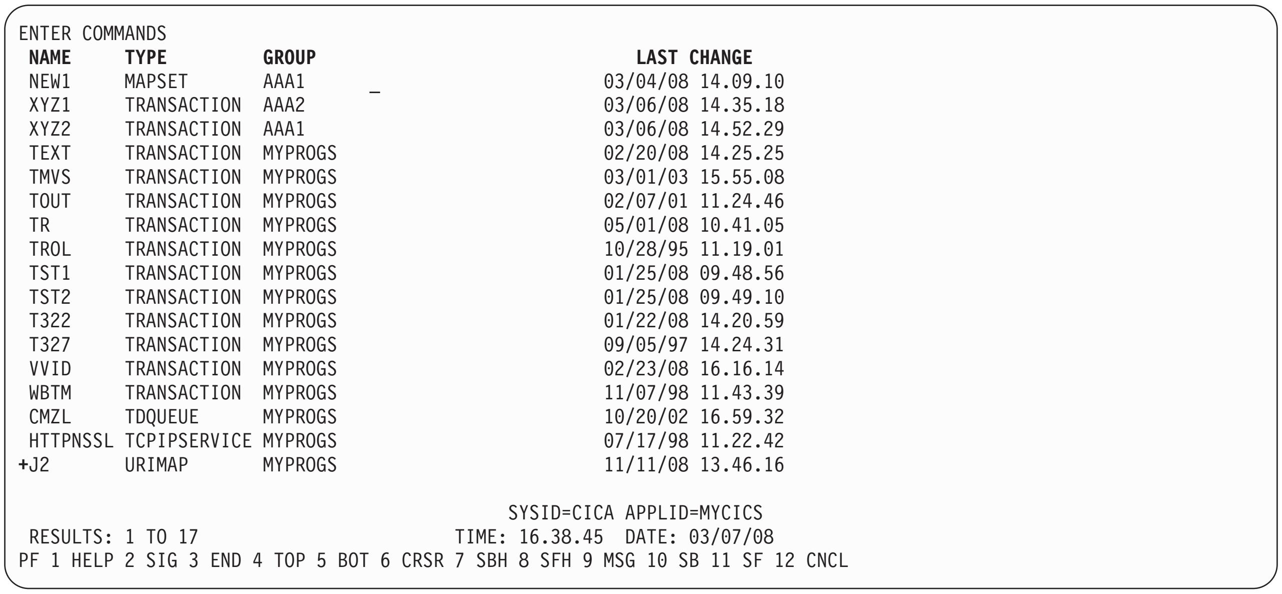

```
ENTER COMMANDS
 NAME     TYPE        GROUP                            LAST CHANGE
 NEW1     MAPSET      AAA1     _                    03/04/08 14.09.10
 XYZ1     TRANSACTION AAA2                          03/06/08 14.35.18
 XYZ2     TRANSACTION AAA1                          03/06/08 14.52.29
 TEXT     TRANSACTION MYPROGS                       02/20/08 14.25.25
 TMVS     TRANSACTION MYPROGS                       03/01/03 15.55.08
 TOUT     TRANSACTION MYPROGS                       02/07/01 11.24.46
 TR       TRANSACTION MYPROGS                       05/01/08 10.41.05
 TROL     TRANSACTION MYPROGS                       10/28/95 11.19.01
 TST1     TRANSACTION MYPROGS                       01/25/08 09.48.56
 TST2     TRANSACTION MYPROGS                       01/25/08 09.49.10
 T322     TRANSACTION MYPROGS                       01/22/08 14.20.59
 T327     TRANSACTION MYPROGS                       09/05/97 14.24.31
 VVID     TRANSACTION MYPROGS                       02/23/08 16.16.14
 WBTM     TRANSACTION MYPROGS                       11/07/98 11.43.39
 CMZL     TDQUEUE     MYPROGS                       10/20/02 16.59.32
 HTTPNSSL TCPIPSERVICE MYPROGS                      07/17/98 11.22.42
+J2       URIMAP      MYPROGS                       11/11/08 13.46.16

                                             SYSID=CICA APPLID=MYCICS
 RESULTS: 1 TO 17                        TIME: 16.38.45  DATE: 03/07/08
PF 1 HELP 2 SIG 3 END 4 TOP 5 BOT 6 CRSR 7 SBH 8 SFH 9 MSG 10 SB 11 SF 12 CNCL
```

Figure 16. CEDA DISPLAY GROUP(*) panel

Plus sign
The plus sign (**+**) beside the last value means that there are more resources, so you can use PF8 or PF10 to scroll down to see them, then PF7 or PF11 to scroll back up again. Use PF7 and PF8, to scroll down and up half a screen at a time. Use PF10 and PF11 to scroll down and up a full screen at a time.

NAME
The list under the NAME heading tells you the name of each individual resource definition installed on your system. You can have duplicate resource names only if the resource definitions are in different groups. The resource names are listed alphabetically according to their resource types; that is, in any one group, all the transactions are listed alphabetically, then all the programs, and so on.

TYPE
`TYPE` tells you the resource type for each definition. The resource types are described in Part 2, "RDO resources," on page 33. In each group, the similar resource types are shown together; that is, all the transactions, then all the programs, and so on.

GROUP
This tells you to which group each resource definition belongs. This whole display of resource definitions is listed in alphabetic sequence of group names.

LAST CHANGE
`LAST CHANGE` shows the date and time when the resource definition was last updated. The time and date immediately above the PF key descriptions at the bottom of the screen are the current time and date.

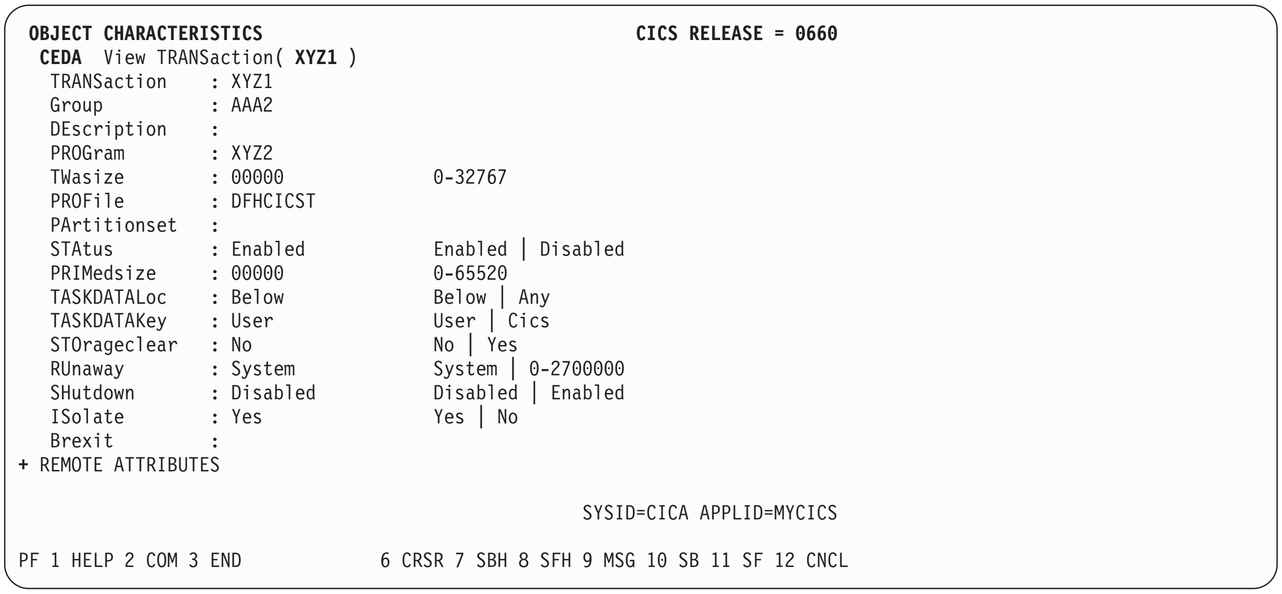
RESULTS: 1 TO 17
Below the list of groups, a line displays `RESULTS: 1 TO 17`, telling you how many group names are displayed on the screen. If there are more than 17 group names, this message changes as you scroll up and down the list of group names. At the beginning of a CEDA DISPLAY GROUP(*) command, it says `RESULTS: 1 TO 17`, but as you scroll down, CEDA builds up a count of the total number of groups, and eventually the message changes to be of

the form `RESULTS: 52 TO 68 OF 97`. If the list is long, you can use PF5 to go straight to the bottom of it and PF4 to get back to the top.

ENTER COMMANDS
You can enter commands in this area of the screen. You can enter these commands for each transaction:

Command	CEDA	CEDB	CEDC
ALTER	Yes	Yes	
COPY	Yes	Yes	
DELETE	Yes	Yes	
INSTALL	Yes		
MOVE	Yes	Yes	
RENAME	Yes	Yes	
VIEW	Yes	Yes	Yes
?	Yes	Yes	Yes
=	Yes	Yes	Yes

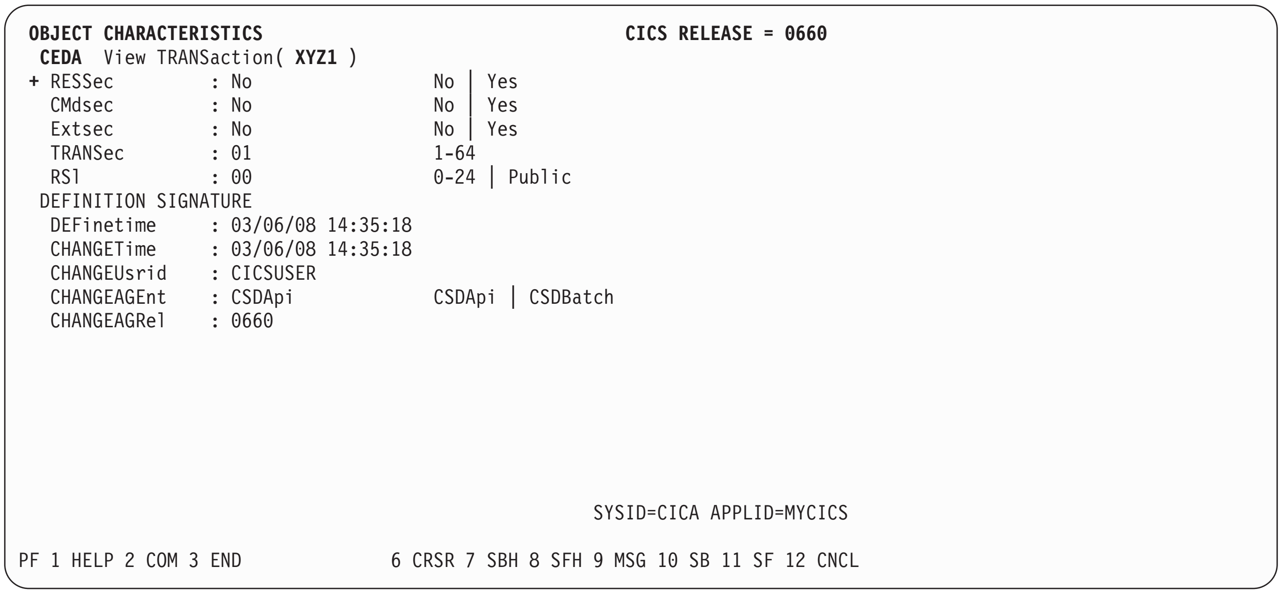
4. Move the cursor down to the TRANSACTION XYZ1 that you defined earlier and type `VIEW` beside it. A screen like this one is displayed.



```
 OBJECT CHARACTERISTICS                                  CICS RELEASE = 0660
  CEDA  View TRANSaction( XYZ1 )
   TRANSaction    : XYZ1
   Group          : AAA2
   DEscription    :
   PROGram        : XYZ2
   TWasize        : 00000             0-32767
   PROFile        : DFHCICST
   PArtitionset   :
   STAtus         : Enabled           Enabled | Disabled
   PRIMedsize     : 00000             0-65520
   TASKDATALoc    : Below             Below | Any
   TASKDATAKey    : User              User | Cics
   STOrageclear   : No                No | Yes
   RUnaway        : System            System | 0-2700000
   SHutdown       : Disabled          Disabled | Enabled
   ISolate        : Yes               Yes | No
   Brexit         :
+ REMOTE ATTRIBUTES

                                                   SYSID=CICA APPLID=MYCICS

PF 1 HELP 2 COM 3 END            6 CRSR 7 SBH 8 SFH 9 MSG 10 SB 11 SF 12 CNCL
```

Figure 17. CEDA VIEW panel

If you scroll down the expanded view of attributes to the end, you can see the definition signature fields. A panel similar to this one is displayed. These fields are always be protected to preserve the integrity of the information. You cannot change the fields in the definition signature. CICS writes them as a record of the actions taken for this resource definition.

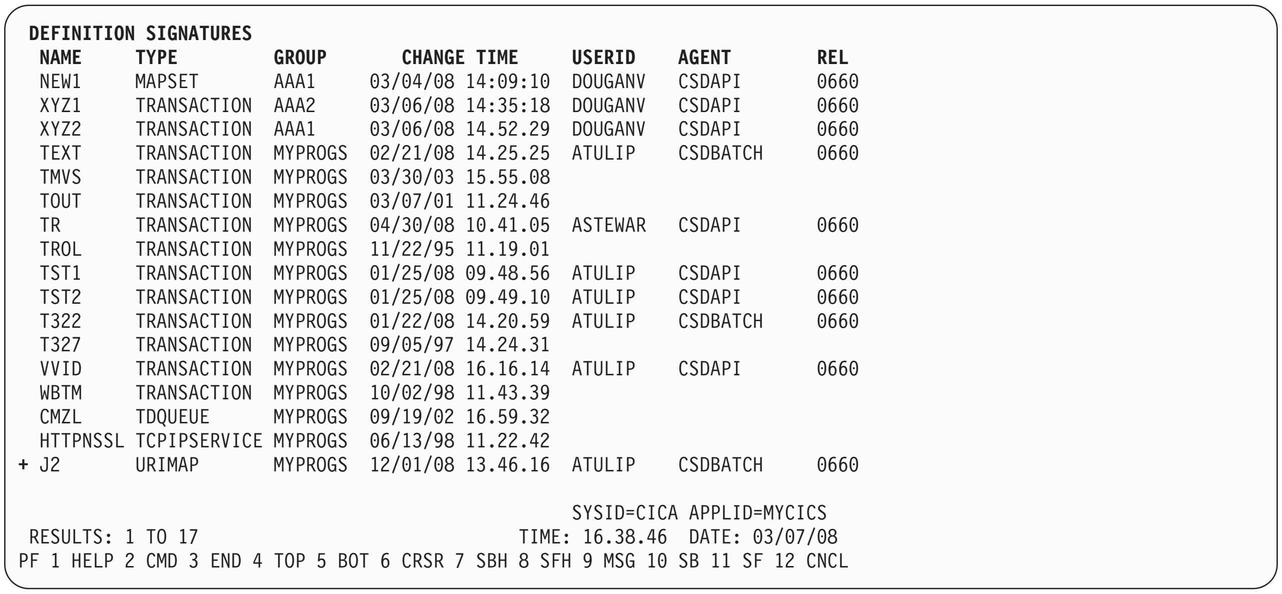


```
 OBJECT CHARACTERISTICS                                        CICS RELEASE = 0660
  CEDA  View TRANSaction( XYZ1 )
 + RESSec        : No                No | Yes
   CMdsec        : No                No | Yes
   Extsec        : No                No | Yes
   TRANSec       : 01                1-64
   RSl           : 00                0-24 | Public
  DEFINITION SIGNATURE
   DEFinetime    : 03/06/08 14:35:18
   CHANGETime    : 03/06/08 14:35:18
   CHANGEUsrid   : CICSUSER
   CHANGEAGEnt   : CSDApi            CSDApi | CSDBatch
   CHANGEAGRel   : 0660







                                                           SYSID=CICA APPLID=MYCICS

PF 1 HELP 2 COM 3 END             6 CRSR 7 SBH 8 SFH 9 MSG 10 SB 11 SF 12 CNCL
```

Figure 18. CEDA EXPANDED VIEW panel

If you notice now that you have defined `TRANSACTION(XYZ1)` incorrectly, you might want to alter one or more of its values.

5. Press PF12 to return to the DISPLAY screen. An asterisk (*) is now beside the transaction to indicate that you have worked with it.
6. To display the definition signatures for all the resources listed on the screen, press PF2. A panel similar to this one is displayed. The information shows when the resource was defined, who defined the resource, what was used to define the resource, and the level of CICS that was running when it was defined. The resources that have blank fields for `USERID`, `AGENT`, and `REL` were defined in a release before CICS TS 4.1.



```
 DEFINITION SIGNATURES
  NAME     TYPE         GROUP      CHANGE TIME     USERID    AGENT        REL
  NEW1     MAPSET       AAA1     03/04/08 14:09:10  DOUGANV   CSDAPI       0660
  XYZ1     TRANSACTION  AAA2     03/06/08 14:35:18  DOUGANV   CSDAPI       0660
  XYZ2     TRANSACTION  AAA1     03/06/08 14.52.29  DOUGANV   CSDAPI       0660
  TEXT     TRANSACTION  MYPROGS  02/21/08 14.25.25  ATULIP    CSDBATCH     0660
  TMVS     TRANSACTION  MYPROGS  03/30/03 15.55.08
  TOUT     TRANSACTION  MYPROGS  03/07/01 11.24.46
  TR       TRANSACTION  MYPROGS  04/30/08 10.41.05  ASTEWAR   CSDAPI       0660
  TROL     TRANSACTION  MYPROGS  11/22/95 11.19.01
  TST1     TRANSACTION  MYPROGS  01/25/08 09.48.56  ATULIP    CSDAPI       0660
  TST2     TRANSACTION  MYPROGS  01/25/08 09.49.10  ATULIP    CSDAPI       0660
  T322     TRANSACTION  MYPROGS  01/22/08 14.20.59  ATULIP    CSDBATCH     0660
  T327     TRANSACTION  MYPROGS  09/05/97 14.24.31
  VVID     TRANSACTION  MYPROGS  02/21/08 16.16.14  ATULIP    CSDAPI       0660
  WBTM     TRANSACTION  MYPROGS  10/02/98 11.43.39
  CMZL     TDQUEUE      MYPROGS  09/19/02 16.59.32
  HTTPNSSL TCPIPSERVICE MYPROGS  06/13/98 11.22.42
+ J2       URIMAP       MYPROGS  12/01/08 13.46.16  ATULIP    CSDBATCH     0660

                                                    SYSID=CICA APPLID=MYCICS
 RESULTS: 1 TO 17                             TIME: 16.38.46  DATE: 03/07/08
PF 1 HELP 2 CMD 3 END 4 TOP 5 BOT 6 CRSR 7 SBH 8 SFH 9 MSG 10 SB 11 SF 12 CNCL
```

Figure 19. DEFINITION SIGNATURES panel

7. Press PF2 to return to the DISPLAY panel.

Tutorial topics - using the CEDA panels

"Altering a resource definition"
You can use the CEDA transaction to alter a resource definition that you created previously.

Tutorial overview

"The CEDA transaction tutorial" on page 393
This tutorial shows you how to use the RDO transactions CEDA, CEDB, and CEDC.

Altering a resource definition

You can use the CEDA transaction to alter a resource definition that you created previously.

To alter a resource definition:

1. Type `ALTER` over the asterisk. You will see a panel that begins like this one:

```
OVERTYPE TO MODIFY                                CICS RELEASE = 0660
 CEDA  ALter TRANSaction( XYZ1 )
  TRANSaction    : XYZ1
  Group          : AAA2
  DEscription  ==>
  PROGram      ==> XYZ2
  TWasize      ==> 00000            0-32767
  PROFile      ==> DFHCICST
```

Figure 20. CEDA ALTER panel

   This panel is almost identical to the one that you saw when you defined this transaction (shown in Figure 14 on page 396), with the difference that on the VIEW panel there is a colon (:) between each attribute and its value. You cannot change any values from a VIEW panel.
2. The highlighted text at the top left of the screen, `OVERTYPE TO MODIFY'`, means that you can overtype any of the highlighted values. Overtype the `TWasize` value, changing it from `00000` to `32767`. When you press Enter, CEDA displays an `ALTER SUCCESSFUL` message at the bottom of the screen.

   Note: The definition signature fields, shown at the end of the list of attributes, are protected to preserve the integrity of the information displayed and direct modification is not allowed. However, when a resource has been altered, the definition signature displays details of the last change made.
3. Press PF12 to return to the DISPLAY screen, where the `ALTER SUCCESSFUL` message is displayed on the same line as the `TRANSaction`. Type `VIEW` against the `TRANSaction`, and you can see that the value of `TWasize` has been changed.

Tutorial topics - using the CEDA panel

"Copying a resource definition"
You can use the CEDA transaction to copy a resource definition from one group to another.

Tutorial overview

"The CEDA transaction tutorial" on page 393
This tutorial shows you how to use the RDO transactions CEDA, CEDB, and CEDC.

Copying a resource definition

You can use the CEDA transaction to copy a resource definition from one group to another.

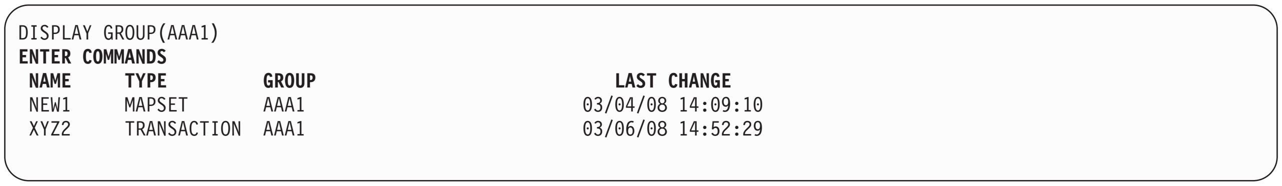
To copy a resource definition:

1. Press PF12 to return to the DISPLAY screen. Beside TRANSACTION(XYZ1) type:

   ```
   COPY TO(AAA1) AS(XYZ2)
   ```

   A COPY SUCCESSFUL message is displayed in the right column of the screen. The COPY command has copied the definition for TRANSACTION(XYZ1) from group AAA2 to group AAA1, renaming it as TRANSACTION(XYZ2). The original transaction, TRANSACTION(XYZ1), still exists in group AAA2.
2. Press PF3 to display the SESSION ENDED panel, and overtype the existing CEDA DISPLAY with:

   ```
   CEDA DISPLAY GROUP(AAA1)
   ```
3. Group AAA1 now contains two resource definitions: a MAPSET called NEW1 and a TRANSACTION called XYZ2. Because this screen is a DISPLAY screen similar in format to Figure 16 on page 398, you can enter the same commands against the definitions.



```
DISPLAY GROUP(AAA1)
ENTER COMMANDS
 NAME     TYPE         GROUP                            LAST CHANGE
 NEW1     MAPSET       AAA1                          03/04/08 14:09:10
 XYZ2     TRANSACTION  AAA1                          03/06/08 14:52:29
```

Figure 21. CEDA DISPLAY GROUP(AAA1) panel

Using the command line

So far, this tutorial has taken you through panels to execute CEDA commands, but when you become familiar with your system's resources and with CEDA, you can enter most CEDA commands on the command line.

About this task

Here is a sequence of commands; if you follow them, you can see that entering commands on the command line is quicker than going through all the CEDA panels. You do not need to use PF3 or PF12 at this point. The topics covered are:

- "Creating a resource definition" on page 403
- "Renaming a resource definition" on page 403
- "Moving a resource definition" on page 403
- "Checking resource definitions" on page 403
- "Removing resource definitions from the CSD file" on page 404.

Tutorial topics

"Displaying messages" on page 404
CEDA displays four levels of messages to tell you about errors and to provide other information.

"Using CEDA HELP" on page 404
Press the help function key (F1, also know as PF1) to display the CEDA help panels.

"CEDA panel functions" on page 409
This topic contains descriptions of the features and functions of the CEDA panels.

Tutorial overview

"The CEDA transaction tutorial" on page 393
This tutorial shows you how to use the RDO transactions CEDA, CEDB, and CEDC.

Creating a resource definition

You can create a resource definition using the command line.

1. Press PF6 to move the cursor to the top left corner of the screen.
2. Insert a transaction name and remove the group; the command now looks like this:
   ```
   CEDA DEFINE TRANSACTION(BBB1) PROGRAM(CCC1)
   ```
3. Press the Enter key.

When you press Enter, the new transaction BBB1 is defined. Note that it has been defined without an associated group name; this is because, as long as you are within the same CEDA session, the current group (that is, the one you have most recently been working with) is used by default. If you had used PF3 before this, your CEDA session would have ended, so there would be no current group name for CEDA to assume.

Renaming a resource definition

You can rename a resource definition by overtyping a command.

1. Rename the transaction by overtyping the command to read:
   ```
   RENAME TRANSACTION(BBB1) AS(DDD1)
   ```

Moving a resource definition

You can move a resource definition to another group by overtyping a command.

1. Move the transaction to group AAA2 by overtyping the command to read:
   ```
   MOVE TRANSACTION(DDD1) TO(AAA2)
   ```

Checking resource definitions

Before installing groups AAA1 and AAA2, you can check them by using the CHECK command. This ensures that all transactions have access to their related programs, that terminal definitions have access to their related typeterm definitions, and so on.

1. Overtype the command to read:
   ```
   CHECK GROUP(AAA1)
   ```

   This should result in the message:
   ```
   W PROGRAM CCC1 referenced by TRANSACTION DDD1 in group AAA2
     cannot be found
   ```

   This is because when you moved transaction DDD1, you did not also move its related program, CCC1.

   Note: You will not see this message if you have autoinstall programs active. If autoinstall programs is active, CEDA assumes that the program will be installed at execution time and does not check the program definitions.
2. You can remedy this by using the COPY command:
   ```
   COPY PROGRAM(CCC1) G(AAA1) TO G(AAA1)
   ```

   If you repeat the CHECK command on both groups, there should be no more error messages.
3. Press PF3 to exit CEDA and clear the screen.

Removing resource definitions from the CSD file

The resource definitions that you have created for the tutorial can be removed; this allows other people to follow the tutorial, and ensures that your CSD file space is not being used unnecessarily.

Using the DELETE command, you can delete the whole of groups AAA1 and AAA2 from your CSD file:

```
CEDA DELETE ALL GROUP(AAA1)
CEDA DELETE ALL GROUP(AAA2)
```

Note that you cannot delete the group itself; it ceases to exist only when it contains no resource definitions.

Displaying messages

CEDA displays four levels of messages to tell you about errors and to provide other information.

About this task

If you have followed the tutorial, you will see that CEDA has produced the informational message 'I New group AAA1 created'. There are four levels of error messages in CEDA, as follows:

S Severe. CEDA cannot continue until you correct what is wrong.

E Error. Commands resulting in these messages will be executed when you press enter, but the results may not be what you intended; for example, if you abbreviate a command to the point where it becomes ambiguous, CEDA warns you, and tells you which command it is going to assume when you press enter. It may not be the command you intended.

W Attention.

I Information.

You can use PF9 to view CEDA messages. If you press PF9 now, the result will be as shown in Figure 12 on page 395 because there is only one message. When you have read the messages, press the Enter key to get back to where you were.

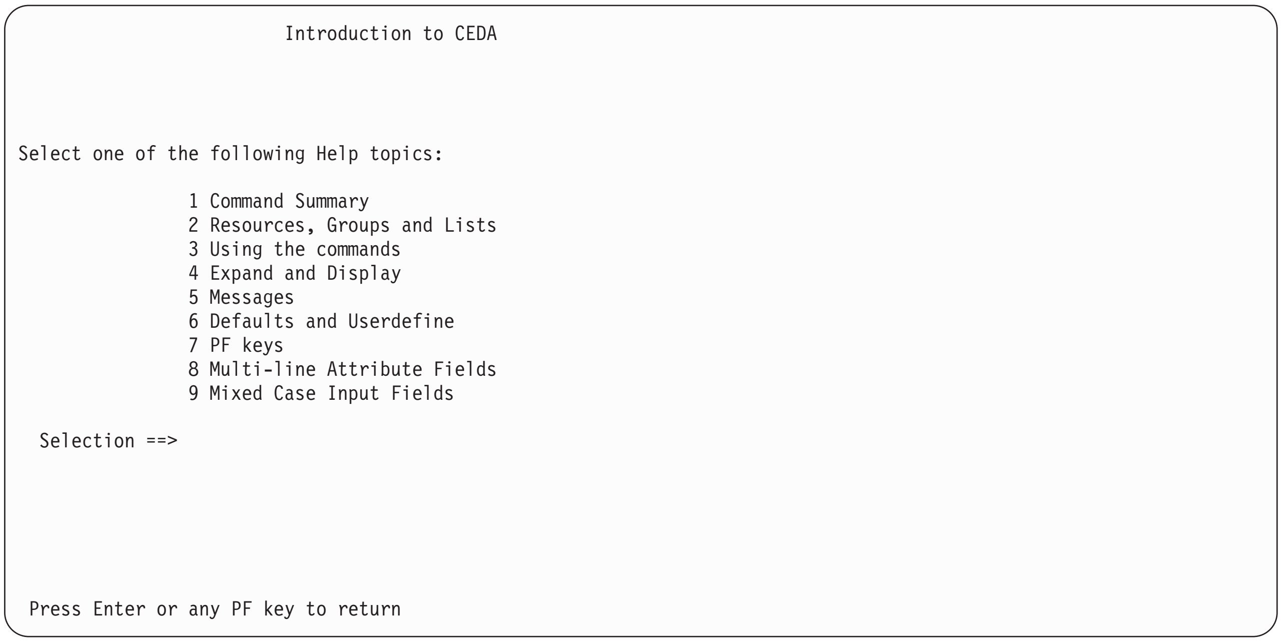
- **Invoking CMAC from CEDA**

  If the CMAC transaction is available, you can also place the cursor under any of the messages and press the Enter key to link to the Messages and Codes online information for that specific message.

Using CEDA HELP

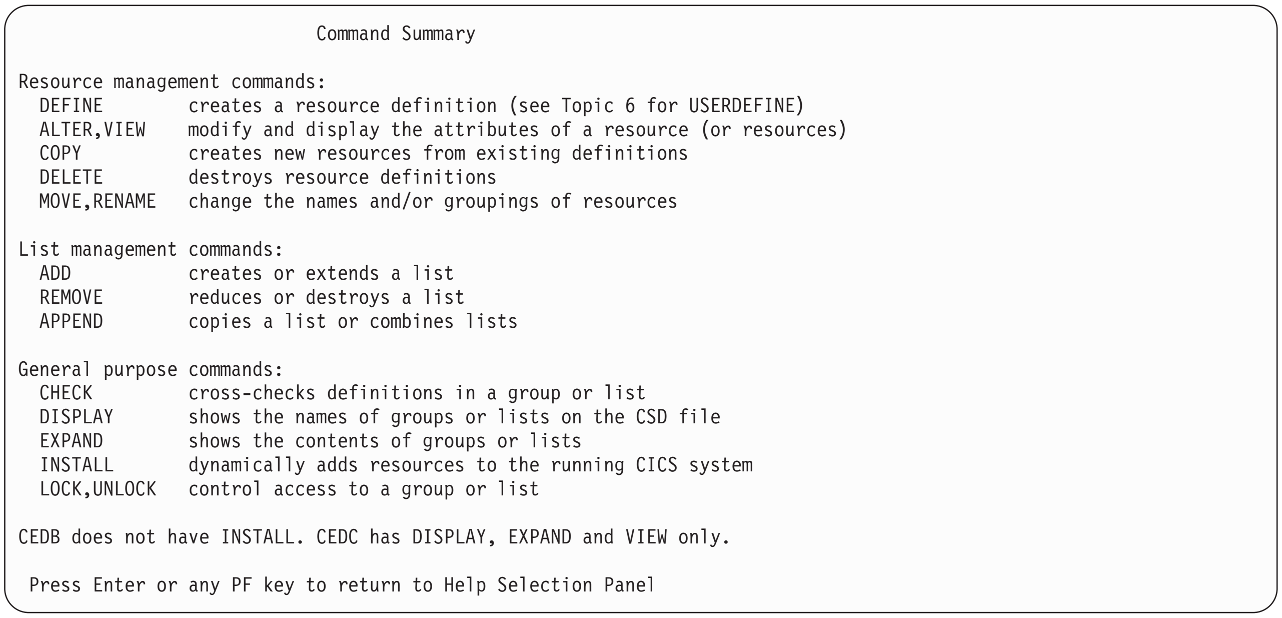
Press the help function key (F1, also know as PF1) to display the CEDA help panels.

About this task



```
                         Introduction to CEDA




Select one of the following Help topics:

                1 Command Summary
                2 Resources, Groups and Lists
                3 Using the commands
                4 Expand and Display
                5 Messages
                6 Defaults and Userdefine
                7 PF keys
                8 Multi-line Attribute Fields
                9 Mixed Case Input Fields

  Selection ==>






 Press Enter or any PF key to return
```

Figure 22. CEDA transaction: initial HELP panel



```
                            Command Summary

Resource management commands:
  DEFINE        creates a resource definition (see Topic 6 for USERDEFINE)
  ALTER,VIEW    modify and display the attributes of a resource (or resources)
  COPY          creates new resources from existing definitions
  DELETE        destroys resource definitions
  MOVE,RENAME   change the names and/or groupings of resources

List management commands:
  ADD           creates or extends a list
  REMOVE        reduces or destroys a list
  APPEND        copies a list or combines lists

General purpose commands:
  CHECK         cross-checks definitions in a group or list
  DISPLAY       shows the names of groups or lists on the CSD file
  EXPAND        shows the contents of groups or lists
  INSTALL       dynamically adds resources to the running CICS system
  LOCK,UNLOCK   control access to a group or list

CEDB does not have INSTALL. CEDC has DISPLAY, EXPAND and VIEW only.

 Press Enter or any PF key to return to Help Selection Panel
```

Figure 23. CEDA transaction: HELP Panel 1

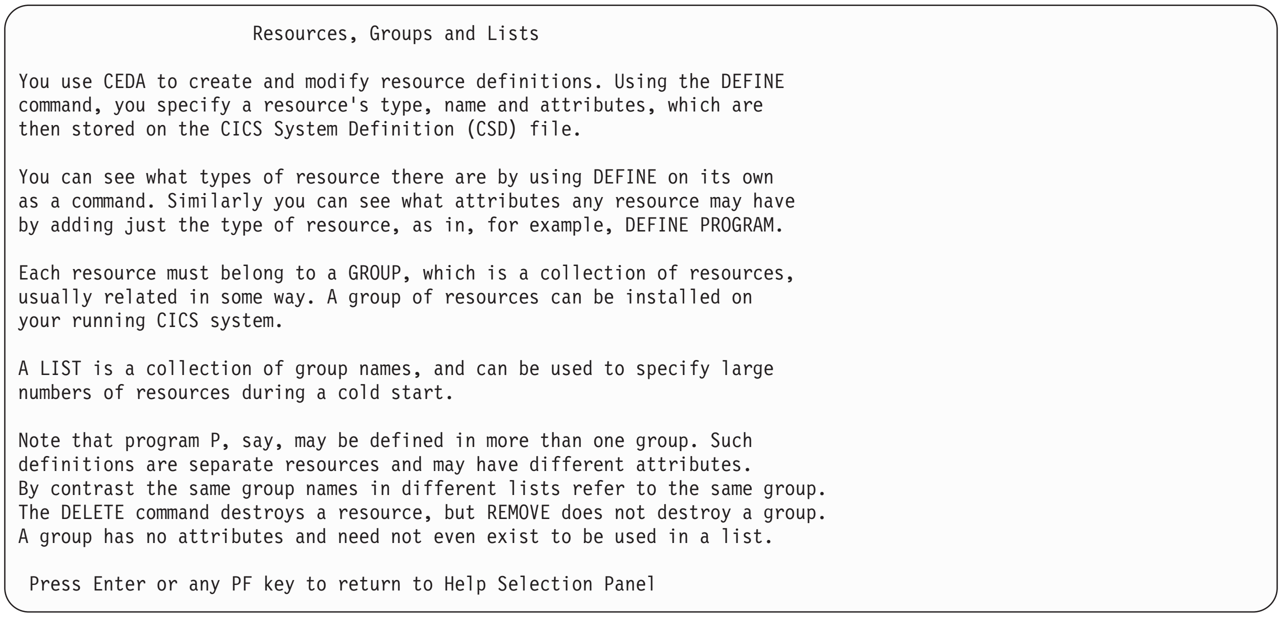

```
                    Resources, Groups and Lists

You use CEDA to create and modify resource definitions. Using the DEFINE
command, you specify a resource's type, name and attributes, which are
then stored on the CICS System Definition (CSD) file.

You can see what types of resource there are by using DEFINE on its own
as a command. Similarly you can see what attributes any resource may have
by adding just the type of resource, as in, for example, DEFINE PROGRAM.

Each resource must belong to a GROUP, which is a collection of resources,
usually related in some way. A group of resources can be installed on
your running CICS system.

A LIST is a collection of group names, and can be used to specify large
numbers of resources during a cold start.

Note that program P, say, may be defined in more than one group. Such
definitions are separate resources and may have different attributes.
By contrast the same group names in different lists refer to the same group.
The DELETE command destroys a resource, but REMOVE does not destroy a group.
A group has no attributes and need not even exist to be used in a list.

 Press Enter or any PF key to return to Help Selection Panel
```

Figure 24. CEDA transaction: HELP Panel 2

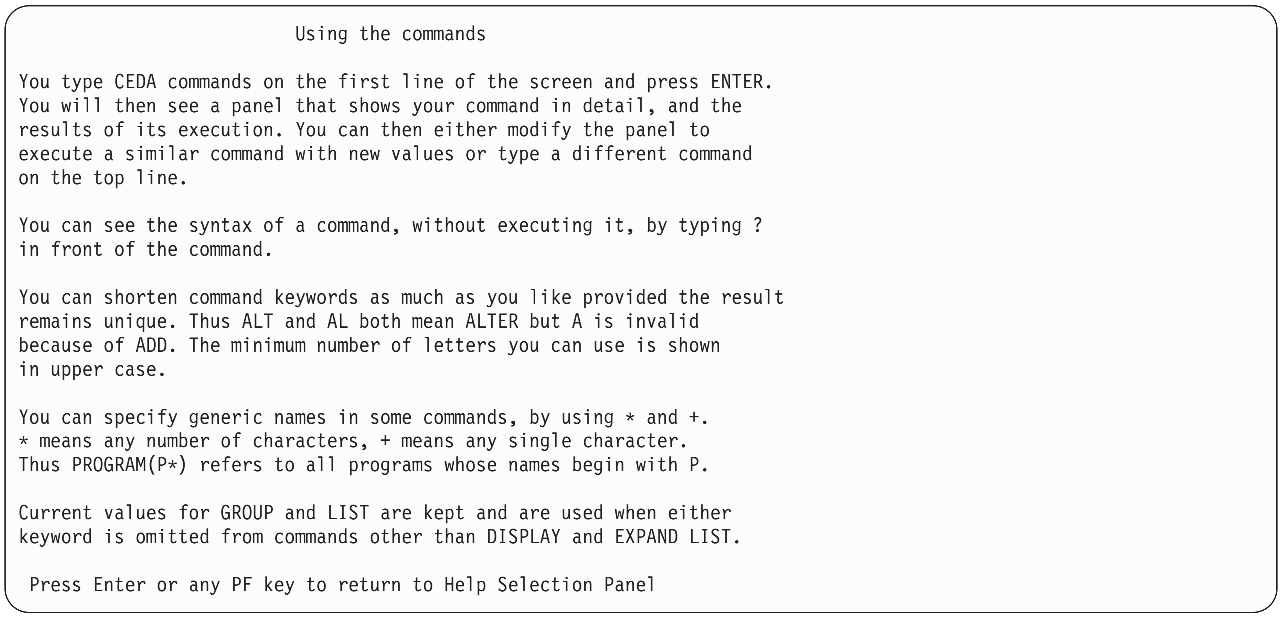
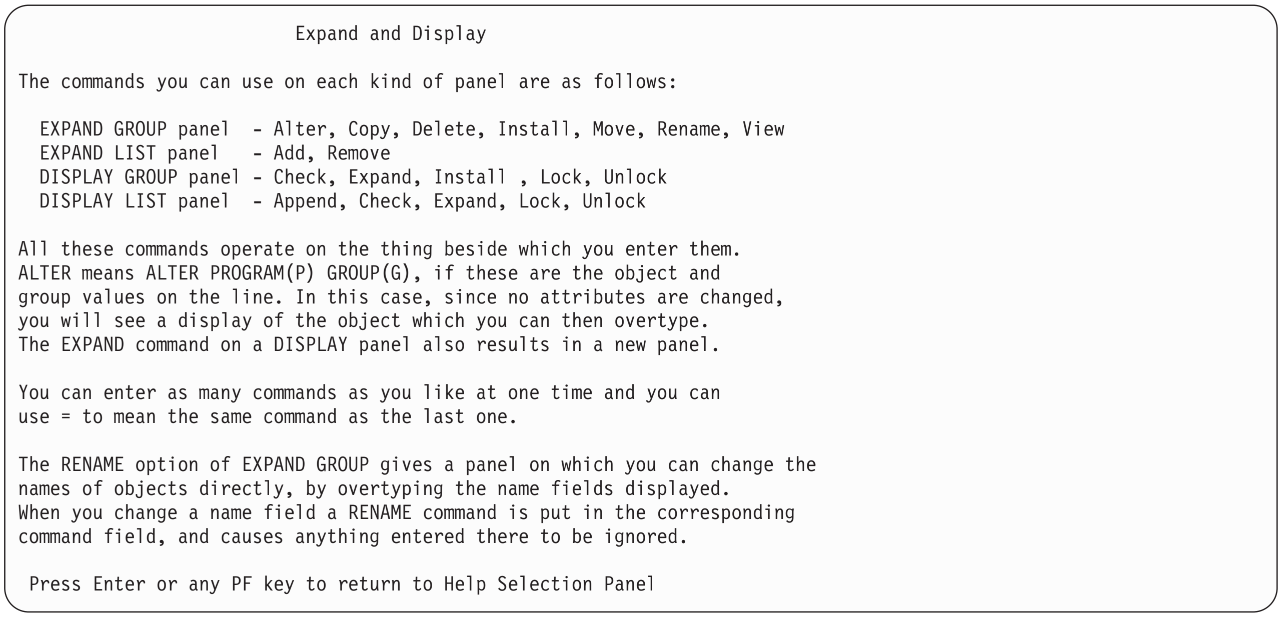
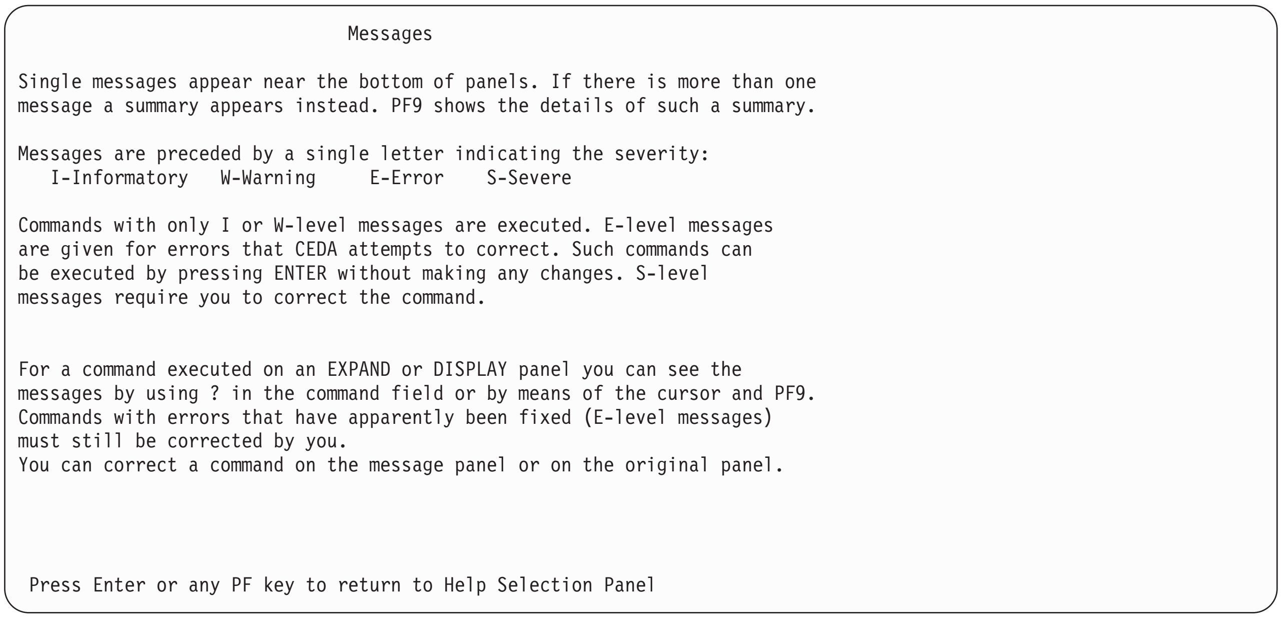

```
                        Using the commands

You type CEDA commands on the first line of the screen and press ENTER.
You will then see a panel that shows your command in detail, and the
results of its execution. You can then either modify the panel to
execute a similar command with new values or type a different command
on the top line.

You can see the syntax of a command, without executing it, by typing ?
in front of the command.

You can shorten command keywords as much as you like provided the result
remains unique. Thus ALT and AL both mean ALTER but A is invalid
because of ADD. The minimum number of letters you can use is shown
in upper case.

You can specify generic names in some commands, by using * and +.
* means any number of characters, + means any single character.
Thus PROGRAM(P*) refers to all programs whose names begin with P.

Current values for GROUP and LIST are kept and are used when either
keyword is omitted from commands other than DISPLAY and EXPAND LIST.

 Press Enter or any PF key to return to Help Selection Panel
```

Figure 25. CEDA transaction: HELP Panel 3



```
                          Expand and Display

The commands you can use on each kind of panel are as follows:

  EXPAND GROUP panel  - Alter, Copy, Delete, Install, Move, Rename, View
  EXPAND LIST panel   - Add, Remove
  DISPLAY GROUP panel - Check, Expand, Install , Lock, Unlock
  DISPLAY LIST panel  - Append, Check, Expand, Lock, Unlock

All these commands operate on the thing beside which you enter them.
ALTER means ALTER PROGRAM(P) GROUP(G), if these are the object and
group values on the line. In this case, since no attributes are changed,
you will see a display of the object which you can then overtype.
The EXPAND command on a DISPLAY panel also results in a new panel.

You can enter as many commands as you like at one time and you can
use = to mean the same command as the last one.

The RENAME option of EXPAND GROUP gives a panel on which you can change the
names of objects directly, by overtyping the name fields displayed.
When you change a name field a RENAME command is put in the corresponding
command field, and causes anything entered there to be ignored.

 Press Enter or any PF key to return to Help Selection Panel
```

Figure 26. CEDA transaction: HELP Panel 4



```
                               Messages

Single messages appear near the bottom of panels. If there is more than one
message a summary appears instead. PF9 shows the details of such a summary.

Messages are preceded by a single letter indicating the severity:
   I-Informatory   W-Warning     E-Error    S-Severe

Commands with only I or W-level messages are executed. E-level messages
are given for errors that CEDA attempts to correct. Such commands can
be executed by pressing ENTER without making any changes. S-level
messages require you to correct the command.


For a command executed on an EXPAND or DISPLAY panel you can see the
messages by using ? in the command field or by means of the cursor and PF9.
Commands with errors that have apparently been fixed (E-level messages)
must still be corrected by you.
You can correct a command on the message panel or on the original panel.




 Press Enter or any PF key to return to Help Selection Panel
```

Figure 27. CEDA transaction: HELP Panel 5

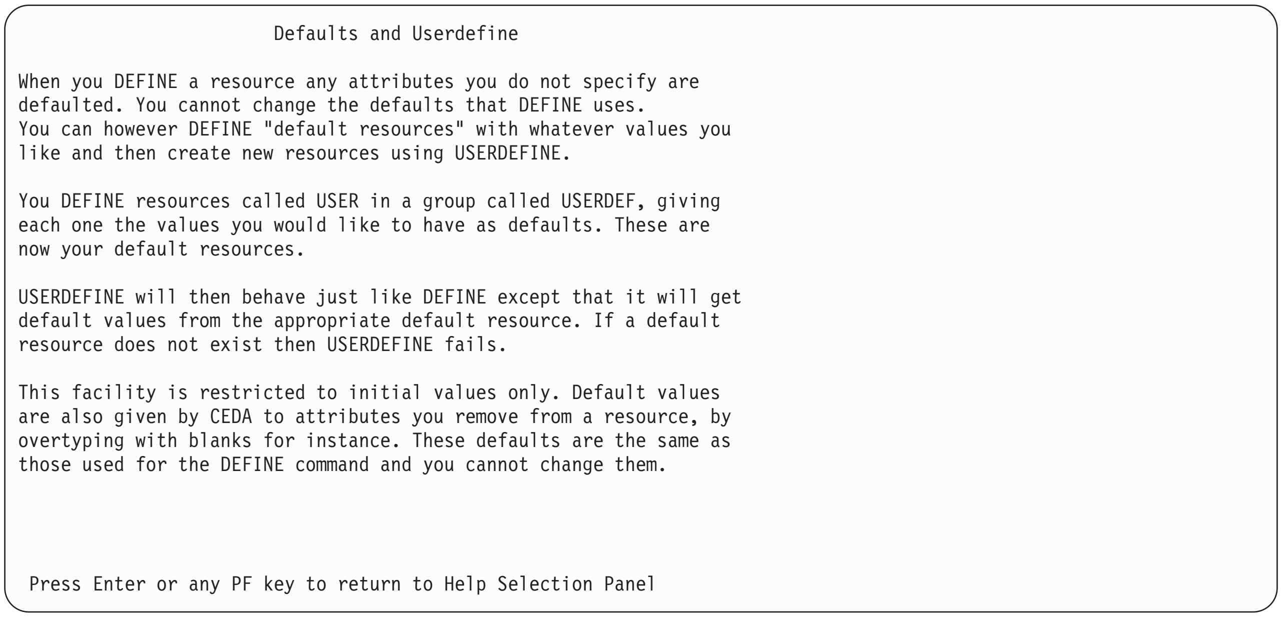

```
                        Defaults and Userdefine

When you DEFINE a resource any attributes you do not specify are
defaulted. You cannot change the defaults that DEFINE uses.
You can however DEFINE "default resources" with whatever values you
like and then create new resources using USERDEFINE.

You DEFINE resources called USER in a group called USERDEF, giving
each one the values you would like to have as defaults. These are
now your default resources.

USERDEFINE will then behave just like DEFINE except that it will get
default values from the appropriate default resource. If a default
resource does not exist then USERDEFINE fails.

This facility is restricted to initial values only. Default values
are also given by CEDA to attributes you remove from a resource, by
overtyping with blanks for instance. These defaults are the same as
those used for the DEFINE command and you cannot change them.




 Press Enter or any PF key to return to Help Selection Panel
```

Figure 28. CEDA transaction: HELP Panel 6

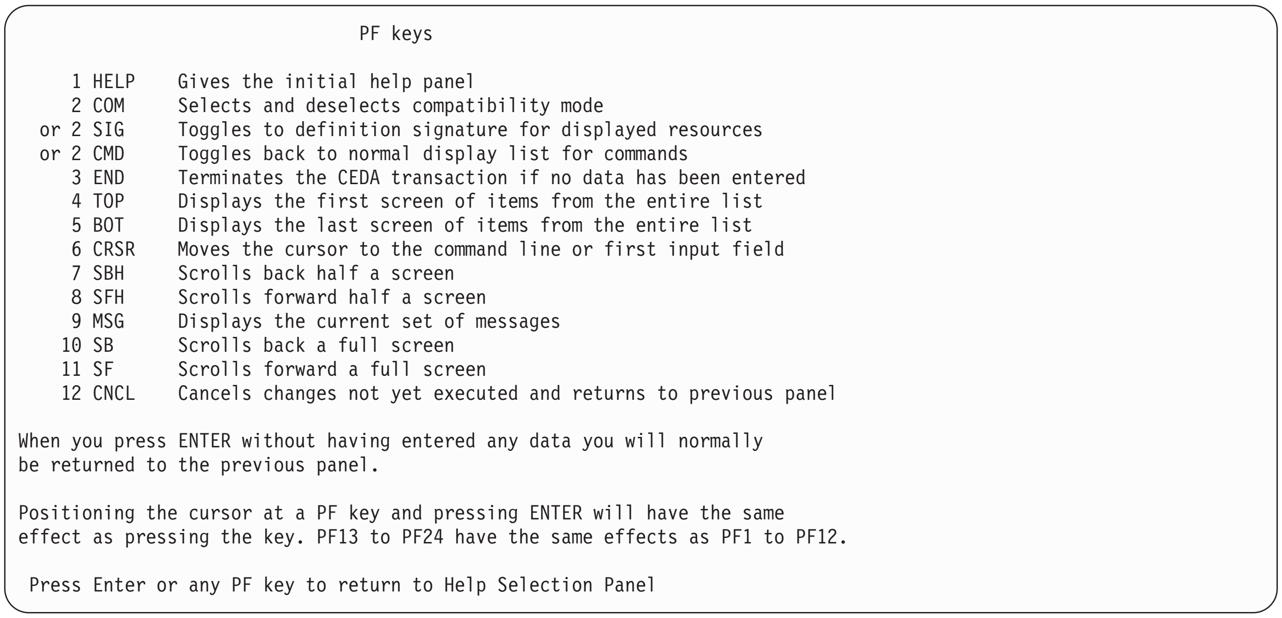
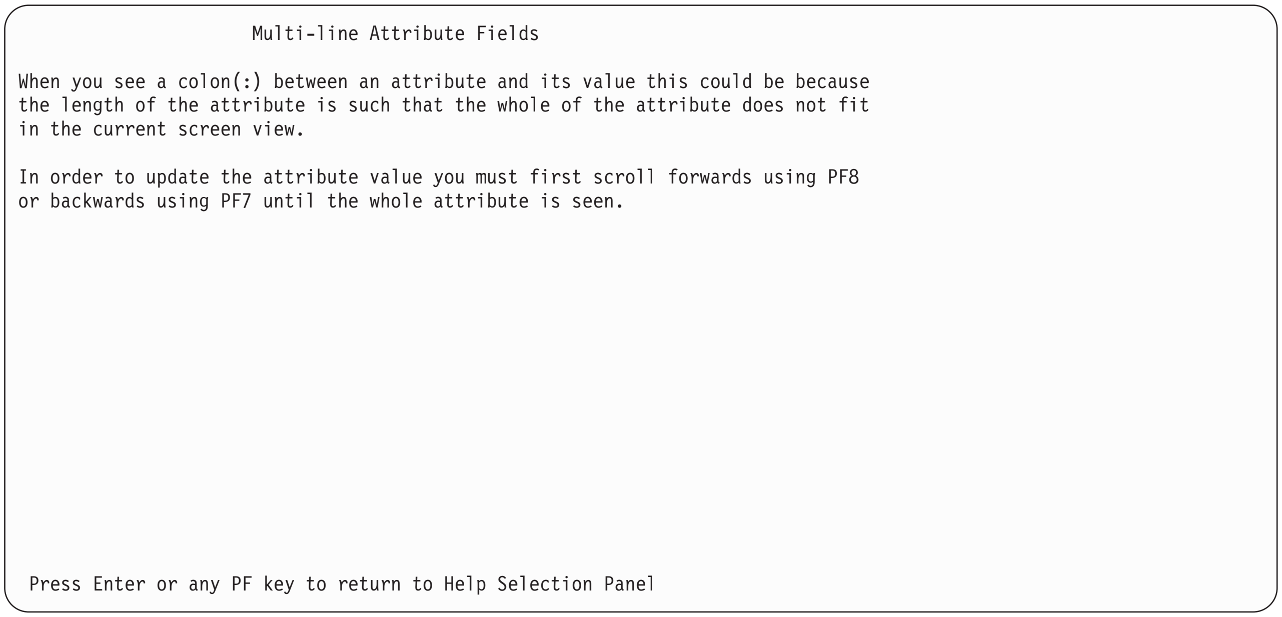
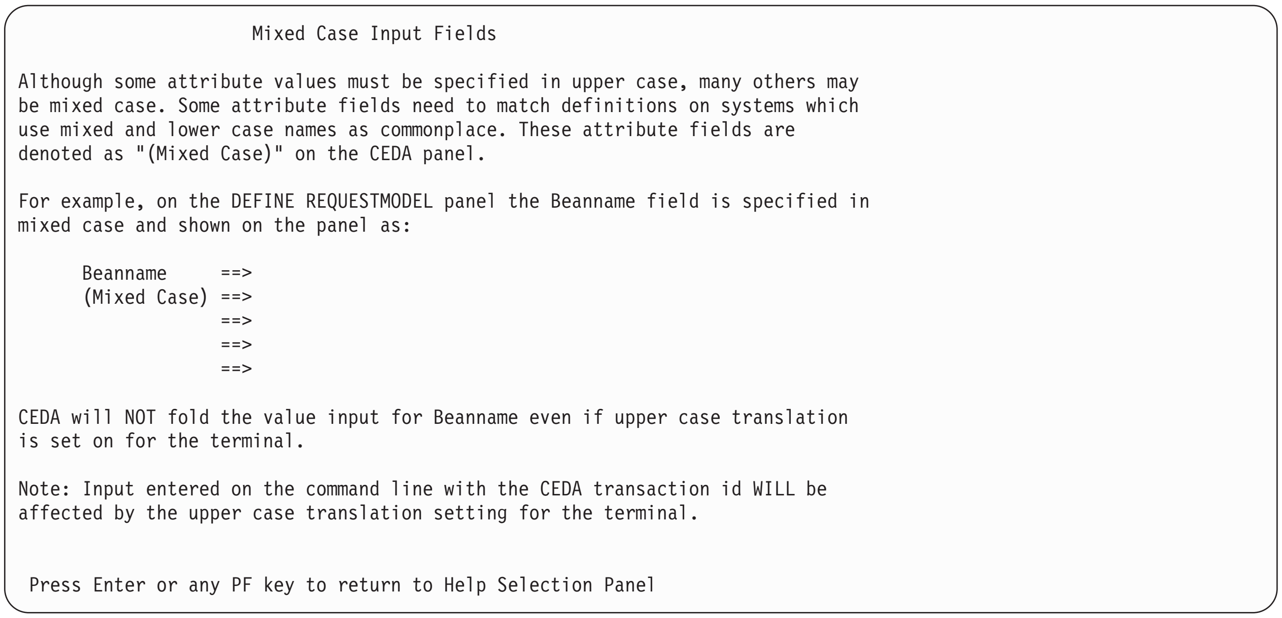

```
                                PF keys

     1 HELP    Gives the initial help panel
     2 COM     Selects and deselects compatibility mode
  or 2 SIG     Toggles to definition signature for displayed resources
  or 2 CMD     Toggles back to normal display list for commands
     3 END     Terminates the CEDA transaction if no data has been entered
     4 TOP     Displays the first screen of items from the entire list
     5 BOT     Displays the last screen of items from the entire list
     6 CRSR    Moves the cursor to the command line or first input field
     7 SBH     Scrolls back half a screen
     8 SFH     Scrolls forward half a screen
     9 MSG     Displays the current set of messages
    10 SB      Scrolls back a full screen
    11 SF      Scrolls forward a full screen
    12 CNCL    Cancels changes not yet executed and returns to previous panel

When you press ENTER without having entered any data you will normally
be returned to the previous panel.

Positioning the cursor at a PF key and pressing ENTER will have the same
effect as pressing the key. PF13 to PF24 have the same effects as PF1 to PF12.

 Press Enter or any PF key to return to Help Selection Panel
```

Figure 29. CEDA transaction: HELP panel 7



```
                      Multi-line Attribute Fields

When you see a colon(:) between an attribute and its value this could be because
the length of the attribute is such that the whole of the attribute does not fit
in the current screen view.

In order to update the attribute value you must first scroll forwards using PF8
or backwards using PF7 until the whole attribute is seen.




















 Press Enter or any PF key to return to Help Selection Panel
```

Figure 30. CEDA transaction: HELP panel 8



```
                      Mixed Case Input Fields

Although some attribute values must be specified in upper case, many others may
be mixed case. Some attribute fields need to match definitions on systems which
use mixed and lower case names as commonplace. These attribute fields are
denoted as "(Mixed Case)" on the CEDA panel.

For example, on the DEFINE REQUESTMODEL panel the Beanname field is specified in
mixed case and shown on the panel as:

      Beanname     ==>
      (Mixed Case) ==>
                   ==>
                   ==>
                   ==>

CEDA will NOT fold the value input for Beanname even if upper case translation
is set on for the terminal.

Note: Input entered on the command line with the CEDA transaction id WILL be
affected by the upper case translation setting for the terminal.


 Press Enter or any PF key to return to Help Selection Panel
```

Figure 31. CEDA transaction: HELP panel 9

CEDA panel functions

This topic contains descriptions of the features and functions of the CEDA panels.

Using abbreviations

Each command can be abbreviated. The minimum abbreviations are shown in uppercase—for example, you can enter REM for REMOVE, but not just R or RE, because to CEDA that would be ambiguous with RENAME.

Note: Minimum abbreviations may change between CICS releases because of the introduction of new commands.

SYSID
This is your system identifier specified in the SYSIDNT system initialization parameter.

APPLID
This is the z/OS Communications Server (for SNA or IP) application identifier for the CICS system, as specified in the APPLID system initialization parameter.

PF keys
The PF keys on this screen are:

PF1 HELP
Provides help in using CEDA.

PF3 END
Takes you out of CEDA. After using PF3, you can clear the screen and continue with another transaction.

PF6 CRSR
Puts the cursor in the top left corner of the screen.

PF9 MSG
Shows you any error messages produced by CEDA. If the CMAC transaction is available, after you press PF9, placing the cursor under a message and pressing the Enter key will link to the Messages and Codes Online transaction (CMAC) for that message.

PF12 CNCL
Takes you back to the previous panel.

Tutorial topics - CEDA panel functions

"Changing attribute values"
The attributes of a resource definition are listed in the first column, and their associated values are listed in the second column.

Tutorial overview

"The CEDA transaction tutorial" on page 393
This tutorial shows you how to use the RDO transactions CEDA, CEDB, and CEDC.

Changing attribute values

The attributes of a resource definition are listed in the first column, and their associated values are listed in the second column.

For example:

```
bg    Status       ==> Enabled            Enabled | Disabled
```

In this example:

Status is the attribute.
Enabled is the defined value.
Enabled | Disabled shows the possible values.

When you see a '==>' symbol between an attribute and its value, it means that you can change the value. The values that can be changed are also highlighted.

When you see a colon (:) between an attribute and its value, it means that you cannot change the value. This can be for several reasons:

- You do not have authority to change the values (for example, if you are a CEDC user).
- You are using the VIEW command.
- The length of the attribute is such that the whole of the attribute does not fit in the current screen view. In order to update the attribute value you must first scroll half a screen forward (PF8) or backwards (PF7) until the whole attribute is seen.
- The attribute is the resource name or the group name (in this example, MAPSET name NEW1 and GROUP name AAA1).
- The attribute is obsolete for the current release of CICS (for example, the RSL attribute). To change the value of obsolete attributes, you must use the **compatibility mode** option, as described in the PF keys below.

  Tutorial topics - CEDA panel functions

  "Using the PF keys"
  You can use the 3270 program function keys (PF keys) with the CEDA transaction.

  Tutorial overview

  "The CEDA transaction tutorial" on page 393
  This tutorial shows you how to use the RDO transactions CEDA, CEDB, and CEDC.

Using the PF keys

You can use the 3270 program function keys (PF keys) with the CEDA transaction.

The PF keys on this screen which were not on the previous screen are:

PF2 COM
: Allows you to use **compatibility mode** to change the value of obsolete attributes. In Figure 12 on page 395, if you press PF2, you see that the symbol between RSL and its value changes from '==>' to ':', the value is highlighted, and the display at the top right of the screen changes from `CICS RELEASE = 0620` to `COMPATIBILITY MODE`. You can now overtype the value to change it, then press PF2 again to get out of compatibility mode. Compatibility mode is described in "Compatibility mode (CSD file sharing)" on page 21.

PF7 SBH
: Scrolls back half a screen. Because MAPSET has a small number of attributes, this does not apply to this panel.

PF8 SFH
: Scrolls forward half a screen. Because MAPSET has a small number of attributes, this does not apply to this panel.

PF9 MSG
: Shows you any error messages produced by CEDA. If you now press PF9, you see the message "NEW GROUP AAA1 CREATED". This is the same message as is displayed on the screen. If you issue a command that generates more than one message, you may have to use PF9 to see them all. If the CMAC transaction is available, after you press PF9, placing the cursor under a message and pressing the Enter key will link to the Messages and Codes Online transaction (CMAC) for that message.

PF10 SB
: Scrolls up one full screen. Because MAPSET has a small number of attributes, this does not apply to this panel.

PF11 SF
Scrolls down one full screen. Because MAPSET has a small number of attributes, this does not apply to this panel.

Tutorial topics - CEDA panel functions

"Generic naming in CEDA"
Generic names allow you to use one command to perform the same operation on many objects.

Tutorial overview

"The CEDA transaction tutorial" on page 393
This tutorial shows you how to use the RDO transactions CEDA, CEDB, and CEDC.

Generic naming in CEDA

Generic names allow you to use one command to perform the same operation on many objects.

You used this feature of CEDA in "Using the CEDA panels" on page 393 when you used an asterisk to mean 'all' groups.

The asterisk can be used to mean 'all' resource names, groups, or lists. For example, CEDA VIEW TRANSACTION(DISC) GROUP(*) shows you transactions called DISC in any group where they occur. CEDA DISPLAY GROUP(*) TRANSACTION(*) shows you all the transactions in every group.

Another way to see groups without having to specify their exact names is to use the plus sign (+) as part of the group name to represent one character. For example, whereas CEDA DISPLAY GROUP(DFH*) displays all groups beginning with DFH, CEDA DISPLAY GROUP(DFH+++) displays only those groups that begin with DFH and are six characters long, CEDA DISPLAY GROUP(DFH++++) displays those that begin with DFH and are seven characters long, and so on.

You can also use the ALL attribute in some commands, instead of specifying a resource type. The command then operates on all resource definitions that fit the type specified with ALL.

Table 21 tells you which CEDA commands that accept generic naming.

yes	means that you may use a generic name or an actual name.
no	means that you must use an actual name.
—	means that generic naming is not applicable for this command.

Table 21. CEDA commands accepting generic names

Command	**Generic resource name**	**Generic group name**	**Generic list name**	**ALL resource types**
ADD	—	no	no	—
ALTER	yes	yes	—	no
APPEND	—	—	no	—
CHECK GROUP	—	no	—	—
CHECK LIST	—	—	no	—
COPY	yes	no	—	yes
DEFINE	no	no	—	no

Table 21. CEDA commands accepting generic names (continued)

Command	Generic resource name	Generic group name	Generic list name	ALL resource types
DELETE	yes	no	—	yes
DISPLAY GROUP	—	yes	—	—
DISPLAY GROUP ALL	yes	yes	—	yes
DISPLAY LIST	—	—	yes	—
DISPLAY LIST GROUP	—	yes	yes	—
EXPAND GROUP	yes	yes	—	yes
EXPAND LIST	—	yes	yes	—
INSTALL	—	no	no	—
INSTALL GROUP	—	no	—	—
LOCK GROUP	—	no	—	—
LOCK LIST	—	—	no	—
MOVE	yes	no	—	yes
REMOVE	—	yes	no	—
RENAME	no	no	—	yes
UNLOCK GROUP	—	no	—	—
UNLOCK LIST	—	—	no	—
USERDEFINE	no	no	—	no
VIEW	yes	yes	—	no

Tutorial topics - CEDA panel functions

"Entering mixed-case attributes"
CEDA is often used in circumstances where the CICS system, or the particular terminals, are defined so that all input is folded (or translated) to upper case.

Tutorial overview

"The CEDA transaction tutorial" on page 393
This tutorial shows you how to use the RDO transactions CEDA, CEDB, and CEDC.

Entering mixed-case attributes

CEDA is often used in circumstances where the CICS system, or the particular terminals, are defined so that all input is folded (or translated) to upper case.

However there are some resource definition attribute values which must be entered in lower case or mixed case, because their values must match those in other systems, where the use of lowercase fields is commonplace.

Note: When uppercase translation is active for a terminal, characters that appear in lower case as you type them are translated to upper case before CICS processes them.

CEDA knows that certain fields may be required in mixed case. When you use the CEDA input panels, uppercase translation of the values entered in these fields does not occur, irrespective of the way uppercase translation is specified for your terminal. These fields are marked `(Mixed Case)` on the CEDA input panels.

Figure 32 shows an example:

```
DJar          ==>
Group         ==>
Description   ==>
Corbaserver   ==>
Hfsfile       ==>
(Mixed Case) ==>
              ==>
              ==>
```

Figure 32. The DEFINE panel for DJAR

The action of suppressing uppercase translation, if it is active, applies to input on the CEDA panels, but it does not apply when values for these fields are supplied on the CEDA command line. If you must enter mixed-case values when you use CEDA from the command line, ensure that the terminal you use is correctly configured, with uppercase translation suppressed.

So, for example, using a terminal which has UCTRAN set to cause uppercase translation, If you enter:

```
CEDA DEFINE DJAR GROUP(ONE) CORBASERVER(TWO) HFSFILE(three)
```

the result is HFSFILE `THREE` instead of the `three` that you intended.

If however you enter:

```
CEDA DEFINE DJAR GROUP(ONE) CORBASERVER(TWO)
```

and then supply the value `three` for HFSFILE using the panel, the result is as you intended.

CEDA has a help panel for mixed-case input, see Figure 31 on page 409

Tutorial overview

"The CEDA transaction tutorial" on page 393
This tutorial shows you how to use the RDO transactions CEDA, CEDB, and CEDC.

Altering the setting of UCTRAN:

At times, you might need to specify mixed case values on the command line of a terminal that is defined to fold lower case input to upper case.

To make that possible:

- You can use the CEOT transaction to suppress upper case translation for your terminal for as long as you need to enter mixed case data. See *CICS Supplied Transactions* for more information about the CEOT transaction.
- You can specify the UCTRAN(NO) or UCTRAN(TRANID) in the TYPETERM definition for the terminal.
- You can specify UCTRAN(NO) in the profile for the CEDA transaction.

Resource management transaction CEDA commands

The CEDA transaction has a number of commands for working with resource definitions on the CSD.

The CEDA ADD command

Use the **CEDA ADD** command to add a group to a list on the CSD.

Syntax

```
►►──CEDA──ADd──Group(groupname)──LISt(listname)──┬──────────────────────┬──────────►
                                                 └─After(groupname3)─┘

►──┬──────────────────────┬────────────────────────────────────────────────────────►◄
   └─Before(groupname2)─┘
```

Description

You can use the ADD command from a DISPLAY screen.

Options

After(*groupname3***)**
You can use this to control the placing of the new group name. If you do not specify BEFORE or AFTER, the group name is added at the end of the list.

Before(*groupname2***)**
You can use this to control the placing of the new group name. If you do not specify BEFORE or AFTER, the group name is added at the end of the list.

Group(*groupname1***)**
specifies the name of the group to be added. The name must not already exist in the list. A generic group name is not accepted. If you do not specify a group, the current group name is added.

LISt(*listname***)**
specifies the name of the list to which the group is to be added. If the list does not already exist, a new one is created. If LIST is not specified, the group name is added to the current list if there is one. A generic list name is not accepted.

Examples

1. To create a list LA01 by adding a group to it:
   ```
   ADD GROUP(GA001) LIST(LA01)
   ```
2. To add another group to list LA01, without specifying where:
   ```
   ADD GROUP(GA002) LIST(LA01)
   ```
   LA01 now looks like this:
   GA001
   GA002
3. To add another group at the top of the list:
   ```
   ADD GROUP(GA003) LIST(LA01) BEFORE(GA001)
   ```
   and another group between GA001 and GA002:
   ```
   ADD GROUP(GA004) LIST(LA01) AFTER(GA001)
   ```
   LA01 now looks like this:
   GA003

GA001
GA004
GA002

The CEDA ALTER command

Use the **CEDA ALTER** command to change some or all of the attributes of an existing resource definition.

Syntax

```
►►──CEDA──ALter──┬─Atomservice(name)──┬──Group(groupname)───────────────────────►
                 ├─Bundle(name)───────┤
                 ├─CONnection(name)───┤
                 ├─CORbaserver(name)──┤
                 ├─DB2Conn(name)──────┤
                 ├─DB2Entry(name)─────┤
                 ├─DB2Tran(name)──────┤
                 ├─DJar(name)─────────┤
                 ├─DOctemplate(name)──┤
                 ├─Enqmodel(name)─────┤
                 ├─File(name)─────────┤
                 ├─Ipconn(name)───────┤
                 ├─JOurnalmodel(name)─┤
                 ├─JVmserver(name)────┤
                 ├─LIbrary(name)──────┤
                 ├─LSRpool(name)──────┤
                 ├─MApset(name)───────┤
                 ├─MQconn(name)───────┤
                 ├─PARTItionset(name)─┤
                 ├─PARTNer(name)──────┤
                 ├─PIpeline(name)─────┤
                 ├─PROCesstype(name)──┤
                 ├─PROFile(name)──────┤
                 ├─PROGram(name)──────┤
                 ├─Requestmodel(name)─┤
                 ├─Sessions(name)─────┤
                 ├─TCpipservice(name)─┤
                 ├─TDqueue(name)──────┤
                 ├─TErminal(name)─────┤
                 ├─TRANClass(name)────┤
                 ├─TRANSaction(name)──┤
                 ├─TSmodel(name)──────┤
                 ├─TYpeterm(name)─────┤
                 ├─Urimap(name)───────┤
                 └─Webservice(name)───┘

►─attribute list(new value)────────────────────────────────────────────────────►◄
```

Description

Important: Do not use ALTER to change the value of the attributes of a TYPETERM definition on which other attributes depend. If you make a mistake with DEVICE, SESSIONTYPE, or TERMMODEL, delete the definition and define a new one with the correct values.

You can specify null attribute values, for example:

```
ALTER FILE(TEST) GROUP(ACT1) DESCRIPTION()
```

If an attribute for which you have specified a null value has a default, the value used depends upon the type of field. For example:

- The command:

  ```
  ALTER FILE(TEST) GROUP(ACT1) RLSACCESS()
  ```

  behaves as if RLSACCESS was not specified. The RLSACCESS attribute has a CVDA default value which is ignored.
- The command:

  ```
  ALTER FILE(TEST) GROUP(ACT1) DESCRIPTION()
  ```

  has the effect of blanking out the description, as there is no default value for the DESCRIPTION field, and it is option.
- The command:

  ```
  ALTER FILE(TEST) GROUP(ACT1) PROFILE()
  ```

  puts the default value of DFHCICSA into the PROFILE field. In this case, the default value is a character string, not a CVDA value.

Changes to resource definitions in the CSD file do not affect the running CICS system until you install the definition, or the group in which the resource definition resides.

You can use CEDA ALTER from a DISPLAY panel. If you use PF12 after making your alterations, CEDA gives you the DISPLAY panel again, with an 'ALTER SUCCESSFUL' message in the Date and Time fields. If you do this but do not make any alterations, an asterisk replaces your 'ALTER' command.

With a generic name, you can use one ALTER command to change the same attributes in the same way on more than one resource definition.

Options

Attribute list
specifies the attributes to be altered.

Group(*groupname*)
specifies the name of the group containing the resource to be altered.

resource(*name*)
specifies the type and name of the resource whose attributes you want to alter.

Examples

- To make a program resident:

  ```
  ALTER PROGRAM(ERR01) GROUP(GENMODS) RESIDENT(YES)
        DATALOCATION()
  ```

  If you do not specify an attribute list and type in:

  ```
  ALTER PROGRAM(ERR01) GROUP(GENMODS)
  ```

  CEDA gives an “ALTER SUCCESSFUL” message followed by the 'overtype to modify' panel.
- To change the status of a whole group of programs:

```
ALTER PROGRAM(*) GROUP(GENMODS) STATUS(ENABLED)
```

The CEDA APPEND command

Use the **CEDA APPEND** command to append the groups in one list on the CSD to the end of another list.

Syntax

```
►►──CEDA──APpend──LISt(listname1)──To(listname2)──────────────────────────►◄
```

Options

LISt(*listname1***)**
specifies the source list to be appended. A generic list name is not accepted.

To(*listname2***)**
specifies the target list to be appended to. A generic list name is not accepted. If **listname2** already exists, the source list is appended to it. If **listname2** does not exist, it is created.

Example

A list called LISTA contains the following groups:
GB001
GB002
GB003

A list called LISTB contains the following groups:
G001
G002
G003

Append LISTB to LISTA, like this:

```
APPEND LIST(LISTB) TO(LISTA)
```

After this, LISTA contains the following groups, in this order:
GB001
GB002
GB003
G001
G002
G003

and LISTB still contains:
G001
G002
G003

The CEDA CHECK command

Use the **CEDA CHECK** command to check the consistency of a set of resource definitions on the CSD.

Syntax

```
►►──CEDA──CHeck──┬─Group(groupname)──────────────────────────────────┬──────────►
                 └─List(listname1, listname2, listname3, listname4)──┘

►──┬──────────────────────┬──────────────────────────────────────────────────►◄
   └─Remotesystem(sysid)──┘
```

Description

The CHECK command performs a cross-check of a group, list, or lists of resource definitions, and should be used before the resource definitions are installed.

It checks that the resource definitions within the group or lists are consistent with one another.

For example: for each TRANSACTION in the list being checked, a check is made that the named PROGRAM definition exists in one of the groups. The success of the check does not necessarily mean that the PROGRAM is available to the running system.

Lists should be checked before being used to initialize CICS during an initial or cold start (when the list or lists are specified in the GRPLIST system initialization parameter).

A group should be checked before you use the INSTALL command to install it on the running CICS system.

A group can be checked before you use the ADD command to add the group to a list. (The group might not be self-contained, in which case there is no point in checking it alone. Put it into a list with the groups containing related resource definitions.)

You can use the CHECK command from a DISPLAY panel.

How CEDA checks the definitions

The CHECK command checks the consistency of definitions within a group or within all of the groups within a list. It does not, however, cross-check every attribute of a resource. You may still get error messages when installing a group although you found no problems when using the CHECK command.

If you use the CHECK GROUP command, CEDA cross-checks all of the resources in a specified group to ensure that the group is ready to be used. For example, CHECK might warn you that a transaction definition within the group does not name a program within the same group. (Note, however, that this might not be an error. The group might intentionally be paired with a group that does contain the program, or you may want the program to be autoinstalled, in which case it would not have a definition.)

If you use the CHECK LIST command, CEDA cross-checks every group named in the list or lists. It does not check each group in turn, but merges the definitions in all of the listed groups, and checks them all. In this way it warns you if there are duplicate resource definitions, or references to definitions that do not exist.

Options

Group(*groupname***)**
: specifies the group you want to check. A generic group name is not accepted.

List(*listname1, listname2, etc.***)**
: specifies the list or lists you want to check. A generic list name is not accepted.

Remotesystem(*sysid***)**
: specifies that a check is to be run on a group or list in a CICS region with a different sysid from the region that the CHECK command is being issued from. If this option is not used, the CHECK command will use the sysid of the region from which the CHECK command is issued.

The CEDA COPY command

Use the **CEDA COPY** command to copy a resource definition, either within the same group or to a different group on the CSD.

Syntax

```
              ┌─All──────────────────┐
►►──CEDA──COpy─┼──────────────────────┼──Group(groupname)───┬─AS(newname)─────────────────────┬──────────►
              └─┬─Atomservice(name)──┬┘                      ├─TO(newgroupname)────────────────┤
                ├─Bundle(name)───────┤                       └─AS(new-name) TO(newgroupname)───┘
                ├─CONnection(name)───┤
                ├─CORbaserver(name)──┤
                ├─DB2Conn(name)──────┤
                ├─DB2Entry(name)─────┤
                ├─DB2Tran(name)──────┤
                ├─DJar(name)─────────┤
                ├─DOctemplate(name)──┤
                ├─Enqmodel(name)─────┤
                ├─File(name)─────────┤
                ├─Ipconn(name)───────┤
                ├─JOurnalmodel(name)─┤
                ├─JVmserver(name)────┤
                ├─LIbrary(name)──────┤
                ├─LSRpool(name)──────┤
                ├─MApset(name)───────┤
                ├─MQconn(name)───────┤
                ├─PARTItionset(name)─┤
                ├─PARTNer(name)──────┤
                ├─PIpeline(name)─────┤
                ├─PROCesstype(name)──┤
                ├─PROFile(name)──────┤
                ├─PROGram(name)──────┤
                ├─Requestmodel(name)─┤
                ├─Sessions(name)─────┤
                ├─TCpipservice(name)─┤
                ├─TDqueue(name)──────┤
                ├─TErminal(name)─────┤
                ├─TRANClass(name)────┤
                ├─TRANSaction(name)──┤
                ├─TSmodel(name)──────┤
                ├─TYpeterm(name)─────┤
                ├─Urimap(name)───────┤
                └─Webservice(name)───┘

►──┬──────────┬──────────────────────────────────────────────────────────────────────────────►◄
   ├─Replace──┤
   └─MErge────┘
```

Description

If you do not specify either MERGE or REPLACE, a message warns you that you are attempting to create duplicate resources, and your COPY will be unsuccessful.

Options

AS(*newname*)

If you copy a definition within a group, you must use AS to rename it. You can also use AS if you want to copy a definition to another group and rename it at the same time. You cannot use a generic name when using AS.

Group(*groupname***)**
specifies the group containing the definitions to be copied.

MErge
This applies when there are duplicate definition names in the groups named in the COPY command. If you specify MERGE, duplicate definitions in the TO group are not replaced.

Replace
This applies when there are duplicate definition names in the groups named in the COPY command. If you specify REPLACE, the definitions being copied replace those in the group named in the TO operand.

resource(*name*)
specifies the type and name of the resource whose attributes you want to copy.

TO(*newgroupname***)**
You can copy definitions to a different group, using TO to specify the new group.

Examples

You can copy a single resource definition into a new group, using the TO option to specify the new group. For example:

```
COPY SESSIONS(L122) GROUP(CICSC1) TO(CICSC2)
```

You can copy a resource definition within the same group. If you do this, you must rename it using the AS option. For example:

```
COPY TERMINAL(TD12) AS(TD34) GROUP(TERMVDU1)
```

When copying between groups, you can give the copy a new name, using the AS option to specify the new name.

```
COPY PROGRAM(ABC01) GROUP(XYZ) AS(ABC02) TO(NEWXYZ)
```

(If you leave the copy with the same name as the original definition, be careful that you install the one you want when the time comes.)

Using the ALL option, without a name, you can copy all the resource definitions in the group to the new group. For example:

```
COPY ALL GROUP(N21TEST) TO(N21PROD)
```

You can copy more than one resource definition to a new group, using the TO option to specify the new group.

Using a generic resource definition name, you can copy all or some definitions of the same resource type to the new group. For example:

```
COPY CONNECTION(*) GROUP(CICSG1) TO(CICSG2)
COPY PROGRAM(N21++) GROUP(NTEST) TO(NPROD)
```

Using the ALL option with a generic name, you can copy all or some of the resource definitions in the group to the new group. For example:

```
COPY ALL(N21*) GROUP(N21OLD) TO(N21NEW)
```

Using the ALL option with a specific name, you can copy all the resource definitions of that name (which must necessarily be for different resource types) in the group to the new group. For example:

```
COPY ALL(XMPL) GROUP(EXAMPLE) TO(EX2)
```

If you are copying a number of definitions into another group, and the groups contain duplicate resource names, you must specify either MERGE or REPLACE. For example:

```
COPY ALL GROUP(TAX1) TO(TAX2) MERGE
COPY ALL GROUP(TAX1NEW) TO(TAX1) REPLACE
```

The following example copies a group named GA001 to a group named GA002, which already exists, replacing any duplicate resource definitions by those in group GA001.

```
COPY GROUP(GA001) TO(GA002) REPLACE
```

The following example copies group GA003 to group GA004, but if any duplicate definitions occur, preserves the group GA004 definitions.

```
COPY GROUP(GA003) TO(GA004) MERGE
```

The CEDA DEFINE command

Use the **`CEDA DEFINE`** command to create new resource definitions on the CSD.

Syntax

```
►►──CEDA──DEFine──┬─Atomservice(name)──┬──Group(groupname)─────────────────►
                  ├─Bundle(name)───────┤
                  ├─CONnection(name)───┤
                  ├─CORbaserver(name)──┤
                  ├─DB2Conn(name)──────┤
                  ├─DB2Entry(name)─────┤
                  ├─DB2Tran(name)──────┤
                  ├─DJar(name)─────────┤
                  ├─DOctemplate(name)──┤
                  ├─Enqmodel(name)─────┤
                  ├─File(name)─────────┤
                  ├─Ipconn(name)───────┤
                  ├─JOurnalmodel(name)─┤
                  ├─JVmserver(name)────┤
                  ├─LIbrary(name)──────┤
                  ├─LSRpool(name)──────┤
                  ├─MApset(name)───────┤
                  ├─MQconn(name)───────┤
                  ├─PARTItionset(name)─┤
                  ├─PARTNer(name)──────┤
                  ├─PIpeline(name)─────┤
                  ├─PROCesstype(name)──┤
                  ├─PROFile(name)──────┤
                  ├─PROGram(name)──────┤
                  ├─Requestmodel(name)─┤
                  ├─Sessions(name)─────┤
                  ├─TCpipservice(name)─┤
                  ├─TDqueue(name)──────┤
                  ├─TErminal(name)─────┤
                  ├─TRANClass(name)────┤
                  ├─TRANSaction(name)──┤
                  ├─TSmodel(name)──────┤
                  ├─TYpeterm(name)─────┤
                  ├─Urimap(name)───────┤
                  └─Webservice(name)───┘

►─attribute list(newvalue)───────────────────────────────────────────────►◄
```

Description

You can use the same name for more than one resource definition in a group, if the definitions are for different resource types. For example:

```
DEFINE PROGRAM(N28A) GROUP(N28APPL)
DEFINE TRANSACTION(N28A) GROUP(N28APPL)

DEFINE TERMINAL(USER) GROUP(USERDEF)
DEFINE PROGRAM(USER) GROUP(USERDEF)
```

When you have any resource definitions with the same name, make sure that you install the one you really want. See “Duplicate resource definition names” on page 31.

You must specify the resource type and name on the command line. You can also specify the group and other attributes on the command line.

The whole definition is displayed on an overtype-to-modify panel, and you can change any of the attributes there, unless you entered a complete DEFINE command on the command line, in which case you cannot change the NAME or GROUPNAME attributes.

The definition was created when you entered the DEFINE command. If you do not want to further modify it, you can enter another command from the command line.

If a resource definition of the same name and type already exists in the group, any attributes specified on the command line are ignored, and the existing resource definition is displayed. You can then overtype and modify any of the existing values if you want. If you do not want to modify the definition, you can enter another command from the command line.

Beware of overtyping values on which other attribute values depend. See "Creating groups and lists" on page 27.

Options

Attribute list
Depends on the resource type being defined; some resources have attributes that must be included in the definition. Attributes that you do not specify are given default values.

Group(*groupname***)**
Specifies the name of the group containing the resource definition being defined. Do not use a generic group name. If you specify the name of a group that does not already exist, the group is created.

resource(*name*)
Specifies the type and name of the resource that you want to define. Do not use a generic resource name.

The CEDA DELETE command

Use the **CEDA DELETE** command to delete one or more resource definitions from the CSD file.

Syntax

```
►►──CEDA──DELete──┬─All─────────────────────┬──Group(groupname)──┬────────┬──►◄
                  └─┬─Atomservice(name)─────┬┘                   └─REMove─┘
                    ├─Bundle(name)──────────┤
                    ├─CONnection(name)──────┤
                    ├─CORbaserver(name)─────┤
                    ├─DB2Conn(name)─────────┤
                    ├─DB2Entry(name)────────┤
                    ├─DB2Tran(name)─────────┤
                    ├─DJar(name)────────────┤
                    ├─DOctemplate(name)─────┤
                    ├─Enqmodel(name)────────┤
                    ├─File(name)────────────┤
                    ├─Ipconn(name)──────────┤
                    ├─JOurnalmodel(name)────┤
                    ├─JVmserver(name)───────┤
                    ├─LIbrary(name)─────────┤
                    ├─LSRpool(name)─────────┤
                    ├─MApset(name)──────────┤
                    ├─MQconn(name)──────────┤
                    ├─PARTItionset(name)────┤
                    ├─PARTNer(name)─────────┤
                    ├─PIpeline(name)────────┤
                    ├─PROCesstype(name)─────┤
                    ├─PROFile(name)─────────┤
                    ├─PROGram(name)─────────┤
                    ├─Requestmodel(name)────┤
                    ├─Sessions(name)────────┤
                    ├─TCpipservice(name)────┤
                    ├─TDqueue(name)─────────┤
                    ├─TErminal(name)────────┤
                    ├─TRANClass(name)───────┤
                    ├─TRANSaction(name)─────┤
                    ├─TSmodel(name)─────────┤
                    ├─TYpeterm(name)────────┤
                    ├─Urimap(name)──────────┤
                    └─Webservice(name)──────┘
```

Description

Deleting a resource definition is different from removing a group from a list (see "The CEDA REMOVE command" on page 438). A deleted resource definition really does disappear from the CSD file.

When you DELETE the last resource in a group, the group is automatically deleted. An empty group cannot exist.

This command does **not** affect definitions installed on the active CICS system. To remove installed definitions from the active CICS system, you can use either the CEMT DISCARD transaction or the EXEC CICS DISCARD command.

Options

`All`
: specifies that all resources are to be deleted from the group.

`Group(`*`groupname`*`)`
: specifies the group containing the resource. Do not use a generic group name.

`REMove`
: specifies that, when a group is deleted, the group is to be removed from all lists that had contained it.

`resource``(`*`name`*`)`
: specifies the type and name of the resource you want to delete. You can use a generic resource name.

Examples

- To delete all resources in a group:
  ```
  DELETE ALL GROUP(TOPS)
  ```
- To delete all programs in a group:
  ```
  DELETE PROGRAM(*) GROUP(NSOS)
  ```

The CEDA DISPLAY command

Use the **`CEDA DISPLAY`** command to display one or more group names, list names, or resources.

Syntax

```
►►──CEDA──DISplay──┬─List(listname)──┬─────────────────┬──────────────────────────┬──────────►◄
                   │                 └─Group(groupname)─┘                          │
                   └─Group(groupname)──┬─All(name)───────────┬──┬────────┬─────────┘
                                       └─┬─Atomservice(name)─┘  └─REname─┘
                                         ├─Bundle(name)──────┤
                                         ├─CONnection(name)──┤
                                         ├─CORbaserver(name)─┤
                                         ├─DB2Conn(name)─────┤
                                         ├─DB2Entry(name)────┤
                                         ├─DB2Tran(name)─────┤
                                         ├─DJar(name)────────┤
                                         ├─DOctemplate(name)─┤
                                         ├─Enqmodel(name)────┤
                                         ├─File(name)────────┤
                                         ├─Ipconn(name)──────┤
                                         ├─JOurnalmodel(name)┤
                                         ├─JVmserver(name)───┤
                                         ├─LIbrary(name)─────┤
                                         ├─LSRpool(name)─────┤
                                         ├─MApset(name)──────┤
                                         ├─MQconn(name)──────┤
                                         ├─PARTItionset(name)┤
                                         ├─PARTNer(name)─────┤
                                         ├─PIpeline(name)────┤
                                         ├─PROCesstype(name)─┤
                                         ├─PROFile(name)─────┤
                                         ├─PROGram(name)─────┤
                                         ├─Requestmodel(name)┤
                                         ├─Sessions(name)────┤
                                         ├─TCpipservice(name)┤
                                         ├─TDqueue(name)─────┤
                                         ├─TErminal(name)────┤
                                         ├─TRANClass(name)───┤
                                         ├─TRANSaction(name)─┤
                                         ├─TSmodel(name)─────┤
                                         ├─TYpeterm(name)────┤
                                         ├─Urimap(name)──────┤
                                         └─Webservice(name)──┘
```

Options

Group(*groupname***)**
: specifies the name of the group to be displayed. You can use a generic group name.

List(*listname***)**
: specifies the name of the list to be displayed. You can use a generic list name.

REname
: This option applies only to GROUP. Specifying RENAME allows you to rename resource definitions within the group.

resource(*name*)
: specifies the type and name of the resource you want to display.

Examples

- To display all groups on the CSD file:

```
DISPLAY GROUP(*)
```

- To display all groups with seven-character names that begin with PROD:

```
DISPLAY GROUP(PROD+++)
```

- To display all the lists on the CSD file:

```
DISPLAY LIST(*)
```

- To display all lists with five-character names that begin with PROD:

```
DISPLAY LIST(PROD+)
```

The CEDA DISPLAY GROUP command

Use the **CEDA DISPLAY GROUP** command to display one or more group names on a full screen panel.

You can enter the following commands next to the names on the panel:
CHECK
DISPLAY ALL
EXPAND
INSTALL
LOCK
UNLOCK

Restriction: You cannot install CONNECTION and SESSIONS resources from a DISPLAY panel. They have to be installed in groups.

On this panel, all these commands can be abbreviated down to their initial letter. It is unnecessary to type the group name. For the syntax of each command, see that command in this section.

To DISPLAY the group names, you must use a generic name. For more information about using the DISPLAY panel, see "Displaying a resource definition" on page 396.

The CEDA DISPLAY LIST command

Use the **CEDA DISPLAY LIST** command to display one or more list names on a full screen panel.

- You can enter the following commands next to the names on the panel:
  CHECK
  DISPLAY GROUP
  EXPAND
  LOCK
  UNLOCK

  On this panel, all these commands can be abbreviated down to their initial letter. It is not necessary to type the list name. For the syntax of each command, see that command in this section.
- To DISPLAY the list names, you must use a generic list name.
- For more information about using the DISPLAY panel, see "Displaying a resource definition" on page 396.

The CEDA EXPAND command

Use the **CEDA EXPAND** command to display the resource definitions that are contained in one or more groups or lists. You can enter other CEDA commands against the resource names that are displayed.

Syntax

```
►►──CEDA──EXPand─────────────────────────────────────────────────────►

►──┬─List(listname)────┬────────────────────┬──────────────────┬────►◄
   │                   └─Group(groupname)─┘                    │
   └─Group(groupname)─┬─All(name)──────────────┬──┬──────────┬─┘
                      └─┬─Atomservice(name)──┬─┘  └─REname──┘
                        ├─Bundle(name)───────┤
                        ├─CONnection(name)───┤
                        ├─CORbaserver(name)──┤
                        ├─DB2Conn(name)──────┤
                        ├─DB2Entry(name)─────┤
                        ├─DB2Tran(name)──────┤
                        ├─DJar(name)─────────┤
                        ├─DOctemplate(name)──┤
                        ├─Enqmodel(name)─────┤
                        ├─File(name)─────────┤
                        ├─Ipconn(name)───────┤
                        ├─JOurnalmodel(name)─┤
                        ├─JVmserver(name)────┤
                        ├─LIbrary(name)──────┤
                        ├─LSRpool(name)──────┤
                        ├─MApset(name)───────┤
                        ├─MQconn(name)───────┤
                        ├─PARTItionset(name)─┤
                        ├─PARTNer(name)──────┤
                        ├─PIpeline(name)─────┤
                        ├─PROCesstype(name)──┤
                        ├─PROFile(name)──────┤
                        ├─PROGram(name)──────┤
                        ├─Requestmodel(name)─┤
                        ├─Sessions(name)─────┤
                        ├─TCpipservice(name)─┤
                        ├─TDqueue(name)──────┤
                        ├─TErminal(name)─────┤
                        ├─TRANClass(name)────┤
                        ├─TRANSaction(name)──┤
                        ├─TSmodel(name)──────┤
                        ├─TYpeterm(name)─────┤
                        ├─Urimap(name)───────┤
                        └─Webservice(name)───┘
```

Options

Group(*groupname*)
specifies the group to be expanded.

List(*listname*)
specifies the list to be expanded.

REname
This option applies only to GROUP. Specifying RENAME allows you to rename resource definitions within the group.

resource(*name*)
: specifies the type and name of the resource you want to see within the expanded group.

The CEDA EXPAND GROUP command

Use the **EXPAND GROUP** command to display the resource definitions that are contained in one or more groups. You can enter other CEDA commands against the resource names that are displayed.

You can enter the following commands next to the names on the panel:

ALTER
COPY
DELETE
INSTALL
MOVE
RENAME
VIEW

All these commands can be abbreviated down to their initial letter. It is unnecessary to type the group or list name. For the syntax of each command, see that command in this section.

You may EXPAND a generic group name. For example:

- Show all the resource definitions in all groups on the CSD file:
  ```
  EXPAND GROUP(*)
  ```
- Show all the resource definitions in groups whose names begin with PROD and are seven characters long:
  ```
  EXPAND GROUP(PROD+++)
  ```

You may EXPAND a group to show only one resource type. The name you specify as the resource name may be a generic name. For example:

- Show all PROFILE definitions in all groups on the CSD file:
  ```
  EXPAND GROUP(*) PROFILE(*)
  ```
- Show all TERMINAL definitions that begin with SZ in a group:
  ```
  EXPAND GROUP(ZEMGROUP) TERMINAL(SZ++)
  ```

You may EXPAND a group or groups, limiting the resource definitions to those that share a generic name. For example:

- Show all resource definitions, of all types, ending in A1:
  ```
  EXPAND GROUP(REINDEER) ALL(*A1)
  ```

If you use the RENAME option, you get a special panel on which you can overtype the resource definition names. This is a quick way of renaming many resource definitions.

The CEDA EXPAND LIST command

Use the **EXPAND LIST** command to display the groups that are contained in one or more lists. You can enter other CEDA commands against the group names that are displayed.

When expanding a list, you can enter the following commands next to the names on the panel:

ADD
REMOVE

You may EXPAND part of a list, by using a generic group name, for example:

```
EXPAND LIST(INITLIST) GROUP(DFH*)
```

You may EXPAND more than one list, by using a generic list name. For example, to show the groups in all lists on the CSD file:

```
EXPAND LIST(*)
```

Show the groups in lists whose names begin with PROD and are five characters long:

```
EXPAND LIST(PROD+)
```

The CEDA INSTALL command

Use the **CEDA INSTALL** command to make the resource definitions in the named group or group list available to the active CICS system.

Syntax

```
►►──CEDA──Install──┬─────────────────────────┬──┬─Group(groupname)─┬──────────────────────────►◄
                   ├─ALl(name)───────────────┤  └─List(listname)──┘
                   └─┬─Atomservice(name)───┬─┘
                     ├─Bundle(name)────────┤
                     ├─CONnection(name)────┤
                     ├─CORbaserver(name)───┤
                     ├─DB2Conn(name)───────┤
                     ├─DB2Entry(name)──────┤
                     ├─DB2Tran(name)───────┤
                     ├─DJar(name)──────────┤
                     ├─DOctemplate(name)───┤
                     ├─Enqmodel(name)──────┤
                     ├─File(name)──────────┤
                     ├─Ipconn(name)────────┤
                     ├─JOurnalmodel(name)──┤
                     ├─JVmserver(name)─────┤
                     ├─LIbrary(name)───────┤
                     ├─LSRpool(name)───────┤
                     ├─MApset(name)────────┤
                     ├─MQconn(name)────────┤
                     ├─PARTItionset(name)──┤
                     ├─PARTNer(name)───────┤
                     ├─PIpeline(name)──────┤
                     ├─PROCesstype(name)───┤
                     ├─PROFile(name)───────┤
                     ├─PROGram(name)───────┤
                     ├─Requestmodel(name)──┤
                     ├─Sessions(name)──────┤
                     ├─TCpipservice(name)──┤
                     ├─TDqueue(name)───────┤
                     ├─TErminal(name)──────┤
                     ├─TRANClass(name)─────┤
                     ├─TRANSaction(name)───┤
                     ├─TSmodel(name)───────┤
                     ├─TYpeterm(name)──────┤
                     ├─Urimap(name)────────┤
                     └─Webservice(name)────┘
```

Description

You can use single-resource installation to install only the resources you require.

When applied to telecommunication and intercommunication resources, restrictions apply to the single-resource INSTALL command. The restrictions apply to resource definitions that are linked; for example, CONNECTION and SESSIONS definitions.

You can install the following resource types *only* as part of a group:

- CONNECTION definitions, except a CONNECTION with ACCESSMETHOD(INDIRECT)
- SESSIONS definitions
- TERMINAL definitions for pipeline terminals that share the same POOL

If you want to use single-resource INSTALL for TERMINAL and related TYPETERM definitions, you must install the TYPETERM that is referred to by a TERMINAL definition *before* you install the TERMINAL definition.

The same restriction applies when installing groups containing TERMINAL and TYPETERM definitions; install the group containing the TYPETERM definition before you install the group containing the TERMINAL definition. Similarly, if you install a list that contains groups containing TERMINAL and TYPETERM definitions, the group containing the TYPETERM definition must be before the group containing the TERMINAL definition. Also, in a list containing groups of DB2 resource definitions (DB2CONN, DB2ENTRY, and DB2TRAN definitions), the DB2CONN must be defined in the first group in the list.

A CORBASERVER definition must be either in the same group as the DJAR definitions that refer to it or in a group that is installed before the group containing those DJAR definitions.

If you want to use singe-resource install for ENQMODEL, note that ENQMODEL definitions usually have the default status of ENABLED, so the order of installing ENQMODELs must follow the rules for enabling ENQMODEL definitions; that is, ENQMODEL definitions forming nested generic ENQnames must be enabled in order from the most to the least specific. For example, ABCD* then ABC* then AB*.

If the named resource already exists in the active CICS system, the existing definition is replaced by the new one.

Replacement of an existing definition occurs only if it is not in use.

If the installation of one or more of the resources in the group or groups being installed fails because the resource is in use or for any other reason, the following takes place:

1. The installation process continues with the next resource in the group.
2. When the group installation is complete, if the resource that failed was part of an *installable set*, all the resources in the installable set are backed out. Resources that were committed at the individual resource level are not backed out. For a list of the resource types that are committed as part of an installable set, see "What happens when you use the INSTALL command" on page 30.
3. A message is displayed to indicate that the group has been only partially installed. A message is also produced on the message panel for each of the

resources that failed to install, stating the reason for each failure. No messages are produced for those resources that have been backed out.

In addition, a message is written to the CEMT log, saying that the install completed with errors.

You can run the CEDA INSTALL from a console, using the MVS MODIFY command.

Options

Group(*groupname*)
Specifies the group to be installed, or containing the resource to be installed. A generic group name is not accepted.

List(*listname*)
Specifies the list of groups to be installed, or containing the resource to be installed. A generic list name is not accepted.

resource(*name*)
Specifies the type and name of the resource that you want to install.

The CEDA LOCK command

Use the **CEDA LOCK** command to restrict update and delete access to a single operator identifier.

Syntax

```
►►──CEDA──Lock──┬─Group(groupname)─┬──────────────────────────────────────────►◄
                └─List(listname)───┘
```

Description

The group or list can be used, looked at, and copied by other users of RDO, but cannot be changed or deleted by them.

You can LOCK a nonexistent group or list, thereby reserving the named group or list for your own future use.

The only RDO command that releases a lock is the UNLOCK command. No other RDO commands can unlock a group or list. For example, if you DELETE all the resources in a group, or all the groups in a list, the lock remains.

You must specify either GROUP or LIST, even if you are locking the current group or list.

A generic group or list name is not accepted.

Locking and unlocking resources

The LOCK and UNLOCK commands enable you to control update access to a group or list so that only operators with the same operator identifier can make changes.

The lock is held on the CSD file and remains in effect across restarts of CICS. The lock is owned by the user, who is identified by a combination of the CICS generic applid (specified by the APPLID system initialization parameter), and the user's operator identifier (OPIDENT).

The OPIDENT is the one associated with the user when he or she signs on to the terminal used for RDO. For further information on OPIDENT, see the *CICS RACF Security Guide*. Any user who is not signed on or who has a different OPIDENT is not allowed to perform any operation that would change the locked group. However, any user is allowed to do the following things to a locked group:
- CHECK
- COPY
- DISPLAY
- INSTALL
- VIEW

The lock can be removed, using the UNLOCK command, only by a user on the same system and with the same operator identifier.

Options

Group(*groupname***)**
specifies the group to be locked.

List(*listname***)**
specifies the list to be locked.

Examples

- To lock a list L1:
  ```
  LOCK LIST(L1)
  ```
- To lock a group G1:
  ```
  LOCK GROUP(G1)
  ```

The CEDA MOVE command

Use the **CEDA MOVE** command to move one or more resource definitions from one group to another.

Syntax

```
           ┌─All──────────────────────┐
►►──CEDA──Move─┼──────────────────────────┼──Group(groupname)──┬────────┬──────────►
           └──┬─Atomservice(name)───┬─┘                     └─REMove─┘
              ├─Bundle(name)────────┤
              ├─CONnection(name)────┤
              ├─CORbaserver(name)───┤
              ├─DB2Conn(name)───────┤
              ├─DB2Entry(name)──────┤
              ├─DB2Tran(name)───────┤
              ├─DJar(name)──────────┤
              ├─DOctemplate(name)───┤
              ├─Enqmodel(name)──────┤
              ├─File(name)──────────┤
              ├─Ipconn(name)────────┤
              ├─JOurnalmodel(name)──┤
              ├─JVmserver(name)─────┤
              ├─LIbrary(name)───────┤
              ├─LSRpool(name)───────┤
              ├─MApset(name)────────┤
              ├─MQconn(name)────────┤
              ├─PARTItionset(name)──┤
              ├─PARTNer(name)───────┤
              ├─PIpeline(name)──────┤
              ├─PROCesstype(name)───┤
              ├─PROFile(name)───────┤
              ├─PROGram(name)───────┤
              ├─Requestmodel(name)──┤
              ├─Sessions(name)──────┤
              ├─TCpipservice(name)──┤
              ├─TDqueue(name)───────┤
              ├─TErminal(name)──────┤
              ├─TRANClass(name)─────┤
              ├─TRANSaction(name)───┤
              ├─TSmodel(name)───────┤
              ├─TYpeterm(name)──────┤
              ├─Urimap(name)────────┤
              └─Webservice(name)────┘

►──┬─AS(newname)──────────────────────┬──┬─────────┬──────────────────►◄
   ├─TO(newgroupname)─────────────────┤  ├─REPlace─┤
   └─AS(newname) TO(newgroupname)─────┘  └─MErge───┘
```

Description

This command moves the resource definitions from the group named by the GROUP option to the group named by the TO option.

When you MOVE the last resource in a group TO a different group, the group is automatically deleted. An empty group cannot exist.

If you do not specify either MERGE or REPLACE, a message warns you that you are attempting to create duplicate resource definitions. The definitions are not moved.

Options

AS(*newname*)
: If you move a definition within a group, you must use AS to rename it. You can also use AS if you want to move a definition to another group and rename it at the same time. You cannot use a generic name when using AS.

Group(*groupname*)
: specifies the group containing the definitions to be moved.

MErge
: This applies when there are duplicate definition names in the groups named in the MOVE command. If you specify MERGE, duplicate definitions in the TO group are not replaced.

REMove
: specifies that, when a group is deleted because the last resource in the group is moved elsewhere, the group is to be removed from all lists that had contained it.

REPlace
: This applies when there are duplicate definition names in the groups named in the MOVE command. If you specify REPLACE, the definitions being moved replace those in the group named in the TO operand.

resource(*name*)
: specifies the type and name of the resource you want to move. The default is ALL, which moves all the resource definitions in a group to another group.

TO(*newgroupname*)
: You can move definitions to a different group, using TO to specify the new group.

Examples

- When you move a single resource definition, you can simultaneously rename it, using the AS option to specify the new name. For example:
  ```
  MOVE PARTITIONSET(PSETQ1) GROUP(PSET1) AS(PSETQ4)
  TO(PSET2)
  ```
- A generic resource definition name can be specified, to move all or some definitions of the same resource type. For example:
  ```
  MOVE TRANSACTION(*) GROUP(DENTRY) TO(TEST1)
  MOVE MAPSET(ACCT+++) GROUP(ACCOUNTS1) TO(ACCOUNTS2)
  ```
- To move all the resource definitions in a group to the new group, you can use ALL. For example:
  ```
  MOVE ALL GROUP(N21TEST) TO(N21PROD)
  ```
- You can use ALL with a generic name, to move all qualifying resource definitions in the group to the new group. For example:
  ```
  MOVE ALL(N21*) GROUP(N21OLD) TO(N21NEW)
  ```
- You can use ALL with a specific name, to move all the resource definitions of that name (which must be for different resource types) in the group to the new group. For example:
  ```
  MOVE ALL(XMPL) GROUP(EXAMPLE) TO(EXAMPLE2)
  ```

- To merge definitions from group X in with the definitions in group Y, keeping the Y version of any duplicates:

```
MOVE GROUP(X) TO(Y) MERGE
```

- To combine definitions from group X in with definitions in group Y, keeping the X version of any duplicates:

```
MOVE GROUP(X) TO(Y) REPLACE
```

The CEDA REMOVE command

Use the **CEDA REMOVE** command to remove the name of a group from a list.

Syntax

```
►►──CEDA──Remove──Group(groupname)──LISt(listname)──────────────────────────►◄
```

Description

The group, and all its resource definitions, still exists on the CSD file. When the last group is removed from a list, the list no longer exists on the CSD file.

A generic list name is not accepted.

A generic group name can be specified to remove many or all groups from a list with one command.

When a group is deleted, the user can request that the group be removed from all lists that had contained it. When the last group is removed from a list, the list is deleted.

Options

Group(*groupname*)
specifies the group to be removed.

List(*listname*)
specifies the list from which the group is to be removed.

Examples

- A list LL02 contains the following groups:
  G001
  X001
  XG001
  G002
  G003
  X002
  G004

  To remove all groups beginning with G:

  ```
  REMOVE GROUP(G*) LIST(LL02)
  ```

  This leaves:
  X001
  XG001

X002

- To remove the list completely:

```
REMOVE GROUP(*) LIST(LL02)
```

The CEDA RENAME command

Use the **CEDA RENAME** command to change the name of a resource on the CSD or move it to a different group.

Syntax

```
                       ┌─All(name)────────────────┐
►►──CEDA──REName───────┼──────────────────────────┼──┬───────────────────┬──────────────►
                       └─┬─Atomservice(name)────┬─┘  └─Group(groupname)──┘
                         ├─Bundle(name)─────────┤
                         ├─CONnection(name)─────┤
                         ├─CORbaserver(name)────┤
                         ├─DB2Conn(name)────────┤
                         ├─DB2Entry(name)───────┤
                         ├─DB2Tran(name)────────┤
                         ├─DJar(name)───────────┤
                         ├─DOctemplate(name)────┤
                         ├─Enqmodel(name)───────┤
                         ├─File(name)───────────┤
                         ├─Ipconn(name)─────────┤
                         ├─JOurnalmodel(name)───┤
                         ├─JVmserver(name)──────┤
                         ├─LIbrary(name)────────┤
                         ├─LSRpool(name)────────┤
                         ├─MApset(name)─────────┤
                         ├─MQconn(name)─────────┤
                         ├─PARTItionset(name)───┤
                         ├─PARTNer(name)────────┤
                         ├─PIpeline(name)───────┤
                         ├─PROCesstype(name)────┤
                         ├─PROFile(name)────────┤
                         ├─PROGram(name)────────┤
                         ├─Requestmodel(name)───┤
                         ├─Sessions(name)───────┤
                         ├─TCpipservice(name)───┤
                         ├─TDqueue(name)────────┤
                         ├─TErminal(name)───────┤
                         ├─TRANClass(name)──────┤
                         ├─TRANSaction(name)────┤
                         ├─TSmodel(name)────────┤
                         ├─TYpeterm(name)───────┤
                         ├─Urimap(name)─────────┤
                         └─Webservice(name)─────┘

►──┬────────────────┬──┬─────────────────────┬──┬──────────┬────────────────────────────►◄
   └─AS(newname)────┘  └─TO(newgroupname)────┘  └─REMove───┘
```

Description

You can also rename a resource definition by using the DISPLAY command or the EXPAND command with the RENAME option. See "The CEDA DISPLAY command" on page 427 and "The CEDA EXPAND command" on page 429 for information about these commands.

You cannot rename a resource definition to a name that already exists in the target group.

Options

AS(*newname*)
: If you copy a definition within a group, you must use AS to rename it. You can also use AS if you want to move a definition to another group and rename it at the same time. You cannot use a generic name when using AS.

Group(*groupname*)
: specifies the group containing the definitions to be renamed or moved. A generic group name is not accepted.

REMove
: specifies that, when a group is deleted, the group is to be removed from all lists that had contained it.

resource(*name*)
: specifies the type and name of the resource you want to move or rename. The default is ALL, which copies all the resource definitions in a group to another group. A generic resource definition name is not accepted.

TO(*newgroupname*)
: You can move definitions to a different group, using TO to specify the new group.

Examples

- To rename a resource and keep it in its current group:
```
RENAME PROFILE(PROF1) AS(NEWPROF) GROUP(PROFS)
```
- You can rename all resource definitions which share the same name, to a new name, using the ALL option instead of a resource type. For example:
```
RENAME ALL(TVA) AS(XTVA) GROUP(XTVA1)
RENAME ALL(USER) AS(OLDU) GROUP(USERDEF)
```
- You can move a resource definition to a new group, which you specify in the TO option, at the same time as renaming it. (You can also do this with the MOVE command.) For example:
```
RENAME PROGRAM(N20ZA) AS($SOSERR) GROUP(N20) TO($MODULES)
```
- You can move all the resource definitions of the same name from one group to another, using the TO option, at the same time as renaming them. For example:
```
RENAME ALL(USER) GROUP(USERDEF) AS(TEMP) TO(TEMPGRP)
```

The CEDA UNLOCK command

Use the **CEDA UNLOCK** command to remove the lock from a group or a list of definitions.

Syntax

```
►►──CEDA──UNLock──┬─Group(groupname)─┬──────────────────────────────────►◄
                  └─List(listname)───┘
```

Description

The UNLOCK command is the only RDO command that can remove a lock on a list or group put there by use of the RDO LOCK command.

You can UNLOCK a nonexistent group or list.

You must specify either the GROUP or the LIST option, even if you are unlocking the current group or list, because the UNLOCK command can be used with both.

Locking and unlocking resources

The LOCK and UNLOCK commands enable you to control update access to a group or list so that only operators with the same operator identifier can make changes.

The lock is held on the CSD file and remains in effect across restarts of CICS. The lock is owned by the user, who is identified by a combination of the CICS generic applid (specified by the APPLID system initialization parameter), and the user's operator identifier (OPIDENT).

The OPIDENT is the one associated with the user when he or she signs on to the terminal used for RDO. For further information on OPIDENT, see the *CICS RACF Security Guide*. Any user who is not signed on or who has a different OPIDENT is not allowed to perform any operation that would change the locked group. However, any user is allowed to do the following things to a locked group:
- CHECK
- COPY
- DISPLAY
- INSTALL
- VIEW

The lock can be removed, using the UNLOCK command, only by a user on the same system and with the same operator identifier.

Options

Group(*groupname*)
specifies the group to be unlocked. A generic group name is not accepted.

List(*listname*)
specifies the list to be unlocked. A generic list name is not accepted.

Examples

- To unlock a group G1:
```
UNLOCK GROUP(G1)
```
- To unlock a LIST L1:

```
UNLOCK LIST(L1)
```

The CEDA USERDEFINE command

Use the **CEDA USERDEFINE** command to create a new resource definition on the CSD with user-defined default attributes.

Syntax

```
►►──CEDA──USerdefine──┬─Atomservice(name)──┬──Group(groupname)──────────────►
                      ├─Bundle(name)───────┤
                      ├─CONnection(name)───┤
                      ├─CORbaserver(name)──┤
                      ├─DB2Conn(name)──────┤
                      ├─DB2Entry(name)─────┤
                      ├─DB2Tran(name)──────┤
                      ├─DJar(name)─────────┤
                      ├─DOctemplate(name)──┤
                      ├─Enqmodel(name)─────┤
                      ├─File(name)─────────┤
                      ├─Ipconn(name)───────┤
                      ├─JOurnalmodel(name)─┤
                      ├─JVmserver(name)────┤
                      ├─LIbrary(name)──────┤
                      ├─LSRpool(name)──────┤
                      ├─MApset(name)───────┤
                      ├─MQconn(name)───────┤
                      ├─PARTItionset(name)─┤
                      ├─PARTNer(name)──────┤
                      ├─PIpeline(name)─────┤
                      ├─PROCesstype(name)──┤
                      ├─PROFile(name)──────┤
                      ├─PROGram(name)──────┤
                      ├─Requestmodel(name)─┤
                      ├─Sessions(name)─────┤
                      ├─TCpipservice(name)─┤
                      ├─TDqueue(name)──────┤
                      ├─TErminal(name)─────┤
                      ├─TRANClass(name)────┤
                      ├─TRANSaction(name)──┤
                      ├─TSmodel(name)──────┤
                      ├─TYpeterm(name)─────┤
                      ├─Urimap(name)───────┤
                      └─Webservice(name)───┘

►─attribute list(newvalue)──────────────────────────────────────────────────►◄
```

Description

USERDEFINE is an alternative to the DEFINE command. Instead of using CICS-supplied default values, USERDEFINE uses your own defaults. Otherwise it operates in exactly the same way as DEFINE.

To set up your own defaults, use DEFINE to create a dummy resource definition named USER in a group named USERDEF. Each dummy resource definition must be complete (for example, a transaction definition must name a program definition, even though you always supply a program name when you USERDEFINE a transaction). You need not install the dummy resource definitions before using USERDEFINE.

Do this for each type of resource for which you want to set default values. Although every definition in the group has the same name (USER), each is unique because it defines a different resource type.

Options

Attribute list
The attribute list depends on the resource type being defined; some resources have attributes that must be included in the definition. Attributes that you do not specify are given default values.

Group(*groupname*)
The name of the group to be defined.

Examples

Assembler programmers at an installation have created a dummy program definition called USER with Assembler as the default language. They use USERDEFINE to define their programs to CICS.

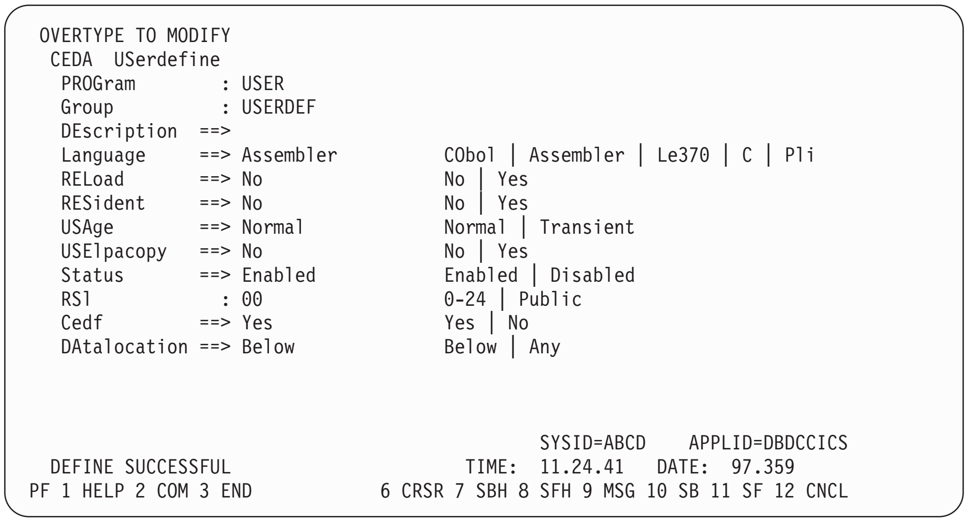
1. First you must define a program called USER in group USERDEF. You could do this with the command:

   ```
   CEDA DEFINE PROGRAM(USER) GROUP(USERDEF)
   ```

   The following figure shows the panel you would see as a result of this command:

   ```
     DEFINE PROGRAM(USER)
   GROUP(USERDEF)           CICS RELEASE = 0620
     OVERTYPE TO MODIFY
      CEDA  DEFine
       PROGram        : USER
       Group          : USERDEF
       DEscription  ==>
       Language     ==>                   CObol | Assembler | Le370 | C | Pli
       RELoad       ==> No                No | Yes
       RESident     ==> No                No | Yes
       USAge        ==> Normal            Normal | Transient
       USElpacopy   ==> No                No | Yes
       Status       ==> Enabled           Enabled | Disabled
       RSl            : 00                0-24 | Public
       Cedf         ==> Yes               Yes | No
       DAtalocation ==> Below             Below | Any
    I New group USERDEF created
                                                   SYSID=ABCD    APPLID=DBDCCICS
      DEFINE SUCCESSFUL                      TIME:  11.24.39   DATE:  97.359
    PF 1 HELP 2 COM 3 END            6 CRSR 7 SBH 8 SFH 9 MSG 10 SB 11 SF 12 CNCL
   ```

2. Type in `ASSEMBLER` as the LANGUAGE option and press ENTER:

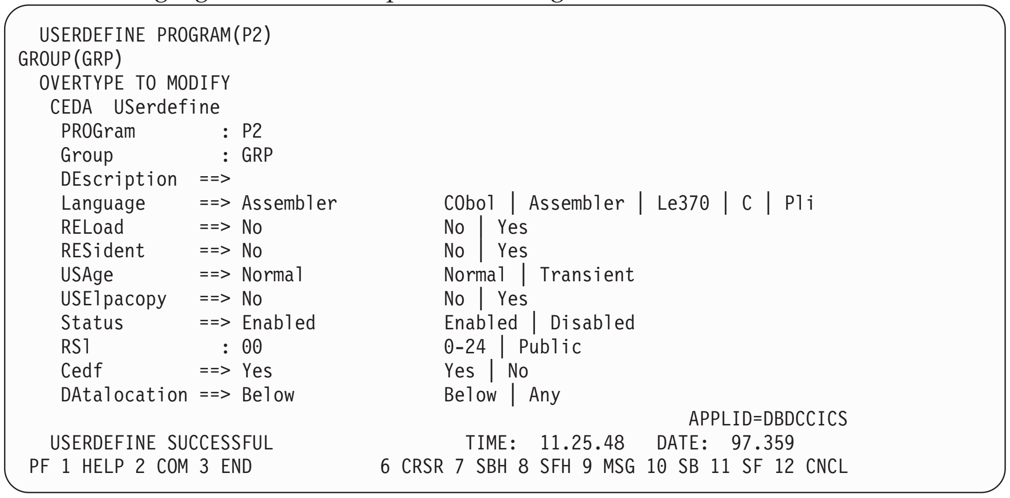


```
 OVERTYPE TO MODIFY
  CEDA  USerdefine
   PROGram        : USER
   Group          : USERDEF
   DEscription  ==>
   Language     ==> Assembler          CObol | Assembler | Le370 | C | Pli
   RELoad       ==> No                 No | Yes
   RESident     ==> No                 No | Yes
   USAge        ==> Normal             Normal | Transient
   USElpacopy   ==> No                 No | Yes
   Status       ==> Enabled            Enabled | Disabled
   RSl            : 00                 0-24 | Public
   Cedf         ==> Yes                Yes | No
   DAtalocation ==> Below              Below | Any



                                                SYSID=ABCD    APPLID=DBDCCICS
  DEFINE SUCCESSFUL                      TIME:  11.24.41   DATE:  97.359
PF 1 HELP 2 COM 3 END            6 CRSR 7 SBH 8 SFH 9 MSG 10 SB 11 SF 12 CNCL
```

Now, each time you want to define a new program, you can use the USERDEFINE command to get the default value ASSEMBLER automatically. So, if you want to define a new program P2 in group GRP you enter the command:

```
CEDA USERDEFINE PROGRAM(P2) GROUP(GRP)
```

The following figure shows the panel resulting from this command.



```
  USERDEFINE PROGRAM(P2)
GROUP(GRP)
  OVERTYPE TO MODIFY
   CEDA  USerdefine
    PROGram        : P2
    Group          : GRP
    DEscription  ==>
    Language     ==> Assembler          CObol | Assembler | Le370 | C | Pli
    RELoad       ==> No                 No | Yes
    RESident     ==> No                 No | Yes
    USAge        ==> Normal             Normal | Transient
    USElpacopy   ==> No                 No | Yes
    Status       ==> Enabled            Enabled | Disabled
    RSl            : 00                 0-24 | Public
    Cedf         ==> Yes                Yes | No
    DAtalocation ==> Below              Below | Any
                                                             APPLID=DBDCCICS
   USERDEFINE SUCCESSFUL                 TIME:  11.25.48   DATE:  97.359
 PF 1 HELP 2 COM 3 END            6 CRSR 7 SBH 8 SFH 9 MSG 10 SB 11 SF 12 CNCL
```

You see that the ASSEMBLER option has appeared for the LANGUAGE attribute. You can overtype the option values on this panel to complete the definition just as you can with the DEFINE command panel.

After you have set up your own defaults in a USER resource definition, anyone using the USERDEFINE command for that resource type gets those default values.

By renaming your USER to something else and defining your own dummy resource definition, you can use your own default values. Normally, however, your installation probably agrees on default values for standardization reasons, and puts a LOCK on the USERDEF GROUP.

The CEDA VIEW command

Use the **CEDA VIEW** command to view the attributes of a resource definition on the CSD.

Syntax

```
►►──CEDA ──View──Group(groupname)──┬─────────────────────────┬──────────────────►◄
                                    ├─All(name)───────────────┤
                                    └─┬─Atomservice(name)─────┬┘
                                      ├─Bundle(name)──────────┤
                                      ├─CONnection(name)──────┤
                                      ├─CORbaserver(name)─────┤
                                      ├─DB2Conn(name)─────────┤
                                      ├─DB2Entry(name)────────┤
                                      ├─DB2Tran(name)─────────┤
                                      ├─DJar(name)────────────┤
                                      ├─DOctemplate(name)─────┤
                                      ├─Enqmodel(name)────────┤
                                      ├─File(name)────────────┤
                                      ├─Ipconn(name)──────────┤
                                      ├─JOurnalmodel(name)────┤
                                      ├─JVmserver(name)───────┤
                                      ├─LIbrary(name)─────────┤
                                      ├─LSRpool(name)─────────┤
                                      ├─MApset(name)──────────┤
                                      ├─MQconn(name)──────────┤
                                      ├─PARTItionset(name)────┤
                                      ├─PARTNer(name)─────────┤
                                      ├─PIpeline(name)────────┤
                                      ├─PROCesstype(name)─────┤
                                      ├─PROFile(name)─────────┤
                                      ├─PROGram(name)─────────┤
                                      ├─Requestmodel(name)────┤
                                      ├─Sessions(name)────────┤
                                      ├─TCpipservice(name)────┤
                                      ├─TDqueue(name)─────────┤
                                      ├─TErminal(name)────────┤
                                      ├─TRANClass(name)───────┤
                                      ├─TRANSaction(name)─────┤
                                      ├─TSmodel(name)─────────┤
                                      ├─TYpeterm(name)────────┤
                                      ├─Urimap(name)──────────┤
                                      └─Webservice(name)──────┘
```

Description

The VIEW command lets you look at the resource definition attributes in the same way as the ALTER command. However, you cannot update any of the definitions.

Options

Group(*groupname*)
specifies the group to be viewed. If no name is given, the current group is assumed.

Examples

```
VIEW TERMINAL(SZT1) GROUP(ZEMTERMS)
VIEW MAPSET(N20MAP01) GROUP(N20)
```

Chapter 41. The resource definition batch utility DFHCSDUP

The CICS system definition utility program, DFHCSDUP, is a component of resource definition online (RDO). DFHCSDUP is an offline utility program that allows you to read from and write to a CICS system definition (CSD) file, either while CICS is running or while it is inactive.

System definition file utility program (DFHCSDUP)

The CICS system definition utility program, DFHCSDUP, is a component of resource definition online (RDO). You can use the DFHCSDUP offline utility program to read from and write to a CICS system definition (CSD) file, either while CICS is running or while it is inactive.

You can use the DFHCSDUP program to:

- ADD a group to the end of a named list in a CSD file
- ALTER attributes of an existing resource definition
- APPEND a group list from one CSD file to a group list in another, or in the same, CSD file
- COPY all of the resource definitions in one group or several generically named groups to another group or several other generically named groups in the same, or in a different, CSD file
- DEFINE a single resource, or a group of resources, on the CSD
- DELETE from the CSD a single resource definition, all of the resource definitions in a group, or all of the group names in a list
- EXTRACT data from the CSD and pass it to a user program for processing
- INITIALIZE a new CSD file, and add to it CICS-supplied resource definitions
- LIST selected resource definitions, groups, and lists
- LIST a specific APAR
- REMOVE a single group from a list on the CSD file
- SCAN all IBM-supplied groups and user defined groups for a resource. The definition of the matched resource in an IBM supplied group is compared to the definition or definitions of the corresponding matched resource in the user-groups.
- SERVICE a CSD file when necessary
- UPGRADE the CICS-supplied resource definitions in a primary CSD file for a new release of CICS
- Define resources using a set of user-defined default values (USERDEFINE command)
- VERIFY a CSD file by removing internal locks on groups and lists.

See “Resource management utility DFHCSDUP commands” on page 454 for information on each of these commands.

Note that the DFHCSDUP utility opens the CSD in non-RLS mode, even when you request RLS access on your JCL. This means that, if you access the CSD from CICS in RLS mode, it cannot be open when you run DFHCSDUP. The reason for the restriction is that the DFHCSDUP utility does not have the capabilities that are needed in order to open a recoverable file in RLS mode. The restriction also applies, however, if your CSD is nonrecoverable.

You can invoke the DFHCSDUP program in two ways:
- As a batch program, for details see "Invoking DFHCSDUP as a batch program."
- From a user program running either in batch mode or in a TSO environment, for details see "Invoking the DFHCSDUP program from a user program" on page 451.

Sharing the CSD between CICS Transaction Server for z/OS, Version 4 Release 2 and earlier releases

If you want to share the CSD between CICS regions at different release levels, to enable you to share common resource definitions, you must update the CSD from the higher level region - CICS Transaction Server for z/OS, Version 4 Release 2.

About this task

In CICS Transaction Server for z/OS, Version 4 Release 2, some attributes are obsolete, and are removed from the CSD definitions.

Procedure

- Use the **ALTER** command on definitions that specify obsolete attributes. This does not cause the loss of these attributes in CICS Transaction Server for z/OS, Version 4 Release 2, so you can safely update resource definitions from a CICS TS for z/OS, Version 4.2 region.
- If you are sharing the CSD between a CICS TS for z/OS, Version 4.2 region and a region at an earlier release of CICS, you can use the CICS TS for z/OS, Version 4.2 CSD utility, DFHCSDUP, to update resources that specify obsolete attributes.
  1. Specify if you want to use the compatibility option. Use the **PARM** parameter on the EXEC PGM=DFHCSDUP statement, using the option COMPAT. The default is NOCOMPAT, which means that you cannot update obsolete attributes. (See Figure 33 on page 449.)
  2. You cannot use the **EXTRACT** command of the DFHCSDUP utility in this release when the COMPAT option is specified.

What to do next

The *CICS Transaction Server for z/OS Upgrading from CICS TS Version 4.1* manual discusses these obsolete attributes and their compatibility with earlier releases.

Invoking DFHCSDUP as a batch program

The example job shows you the job control statements that you can use to invoke DFHCSDUP as a batch program.

About this task

```
//CSDJOB  JOB  accounting info,name,MSGLEVEL=1
//STEP1   EXEC PGM=DFHCSDUP,REGION=0M,                            1
//             PARM='CSD(READWRITE),PAGESIZE(60),NOCOMPAT'
//STEPLIB DD   DSN=CICSTS42.CICS.SDFHLOAD,DISP=SHR
//DFHCSD   DD  UNIT=SYSDA,DISP=SHR,DSN=CICSTS42.CICS.DFHCSD
//SECNDCSD DD  UNIT=SYSDA,DISP=SHR,DSN=CICSTS42.CICS.SECNDCSD    2
//indd     DD  UNIT=SYSDA,DISP=SHR,DSN=extract.input.dataset      3
//outdd    DD  UNIT=SYSDA,DISP=SHR,DSN=extract.output.dataset     4 5
//* or                                                             4
//outdd    DD  SYSOUT=A                                            4 5
//SYSPRINT DD  SYSOUT=A
//SYSIN    DD  *
⋮
     DFHCSDUP commands                                             6
/*
//
```

Figure 33. Sample job to run DFHCSDUP

To use this job, you need to edit it as follows:

Procedure

1. Change the EXEC statement to specify a suitable REGION size and a **PARM** parameter:

   Use the **PARM** parameter to specifiy any of the following options:

   UPPERCASE
   : specifies that you want all output from DFHCSDUP to be in uppercase. If you want all output to be in mixed case (the default), do not code this option.

   CSD({READWRITE|READONLY})
   : specifies whether you want read and write access or read-only access to the CSD from this batch job. The default value is READWRITE.

   PAGESIZE(*nnnn*)
   : specifies the number of lines per page on output listings. Values for *nnnn* are 4 through 9999. The default value is 60.

   NOCOMPAT or COMPAT
   : specifies whether the DFHCSDUP utility program is to run in compatibility mode (that is, whether it can update definitions that are obsolete in CICS Transaction Server for z/OS, Version 4 Release 2). The default is NOCOMPAT, which means that you cannot update obsolete attributes. For further information about this option, see "Sharing the CSD between CICS Transaction Server for z/OS, Version 4 Release 2 and earlier releases" on page 448.

2. If you specify the **FROMCSD** parameter on an APPEND, COPY, or SERVICE command, you need a DD statement for a secondary CSD . The ddname for this DD statement is the name you specify on the **FROMCSD** parameter. The secondary CSD must be a different data set from the primary; you must not define primary and secondary DD statements that reference the same data set.
3. If you specify the EXTRACT command, you might need to:
   a. Concatenate with STEPLIB the libraries that contain your USERPROGRAM programs.

b. Include a DD statement for any input data set that is defined in your user program. For example, the CICS-supplied user program, DFH$CRFA, needs a DD statement with a ddname of CRFINPT.

   The input file specified by CRFINPT is needed by the user programs DFH$CRF*x* (where *x*=A for Assembler or *x*=P for PL/I) and DFH0CRFC (for COBOL) to supply the list of resource types or attributes for which you want a cross reference listing. You can specify (in uppercase) any resource type known to CEDA, one resource type per line (starting in column 1). For example, your CRFINPT file may contain the following resource types (one per line) to be cross referenced:

   PROGRAM
   TRANSACTION
   TYPETERM
   XTPNAME
   DSNAME

   For programming information about the use of the CRFINPT file by the programs DFH$CRFx or DFH0CRFC (for COBOL), see the *CICS Customization Guide*.

4. If you specify the EXTRACT command, you need to include the DD statements for any data sets that receive output from your extract program. The ddname is whatever ddname you define in the user program. The CICS-supplied sample programs need DD statements for the following ddnames:

Table 22. DD statements for the CICS-supplied sample programs

program name	**ddname**	**example DD statement**
DFH$CRFx or DFH0CRFC (COBOL)	CRFOUT	`//CRFOUT DD SYSOUT=A`
DFH$FORx or DFH0FORC (COBOL)	FOROUT	`//FOROUT DD SYSOUT=output.dataset`
DFH0CBDC	CBDOUT SYSABOUT	`//CBDOUT DD SYSOUT=A` `//SYSABOUT DD SYSOUT=A`

5. The output data sets in these examples are opened and closed for each EXTRACT command specified in SYSIN.
   - If you are writing the output to a sequential disk data set, specify DISP=MOD to ensure that data is not overwritten by successive EXTRACT commands.
   - Alternatively, provided you do not specify SYSOUT on the DD statement, you can change the OPEN statement in the program (for example, in the COBOL versions, to OPEN EXTEND).

   For programming information about the CICS-supplied user programs, see the *CICS Customization Guide*.

6. You can code commands and keywords using abbreviations and mixed case, as given in the syntax box in the description of each command. You can use a data set or a partitioned data set member for your commands, rather than coding them in the input stream if you prefer. Keyword values can be longer than one line, if you use the continuation character (an asterisk) at the end of a

line (in column 72). Subsequent lines start in column 1. For example, you can use this facility to specify XTPNAME values of up to 128 hexadecimal characters. If you enter an ambiguous command or keyword, the DFHCSDUP program issues a message indicating the ambiguity.

Invoking the DFHCSDUP program from a user program

Invoking the DFHCSDUP program from a user program enables you to create a flexible interface to the utility.

About this task

By specifying the appropriate entry parameters, your program can cause the DFHCSDUP program to pass control to an exit routine at any of five exit points. The exits can be used, for example, to pass commands to the DFHCSDUP program, or to respond to messages produced by its processing.

You can run your user program:

- In batch mode
- Under TSO.

Note:

1. In a TSO environment, it is normally possible for the terminal user to interrupt processing at any time by means of an ATTENTION interrupt. In order to protect the integrity of the CSD file, the DFHCSDUP program does not respond to such an interrupt until after it has completed the processing associated with the current command. It then writes message number DFH5618 to the put-message exit, where this is available, and also to the default output file:

   ```
   AN ATTENTION INTERRUPT HAS BEEN REQUESTED DURING DFHCSDUP PROCESSING
   ```

   Your put-message exit routine can terminate the DFHCSDUP program, if desired. (You **must** supply a put-message routine if you want your operators to regain control after an ATTENTION interrupt.)
2. Suitably authorized TSO users can use the CEDA INSTALL transaction to install resources that have previously been defined with the DFHCSDUP program.

The CICS-supplied sample program, DFH$CUS1, illustrates how the DFHCSDUP program can be invoked from a user program. It is written as a command processor (CP) for execution under the TSO/E operating system.

The following sections outline the entry parameters of the DFHCSDUP program and the responsibilities of the user program. For programming information about invoking the DFHCSDUP program from a user program, see the *CICS Customization Guide*.

Entry parameters for the DFHCSDUP program

When invoking the DFHCSDUP program, your program passes a list of up to five parameters.

These are described below:

OPTIONS
A list of character strings, separated by commas. (The information passed here is that which would otherwise be passed on the PARM keyword of the EXEC statement of JCL.)

Note: A maximum of three options may be specified:

UPPERCASE
specifies that you want all output from DFHCSDUP to be in uppercase. If you want all output to be in mixed case (the default), do not code this option.

CSD({READWRITE|READONLY})
specifies whether you require read/write or read-only access to the CSD. The default value is READWRITE.

PAGESIZE(nnnn)
specifies the number of lines per page on output listings. Valid values for nnnn are 4 through 9999. The default value is 60.

NOCOMPAT|COMPAT
specifies whether the DFHCSDUP utility program is to run in compatibility mode (that is, whether it can update definitions that are obsolete in Version 4 Release 2). The default is NOCOMPAT, which means that you cannot update obsolete attributes. For further information about this option, see "Sharing the CSD between CICS Transaction Server for z/OS, Version 4 Release 2 and earlier releases" on page 448.

DDNAMES
A list of ddnames that, if specified, are substituted for those normally used by the DFHCSDUP program.

HDING
The starting page number of any listing produced by the DFHCSDUP program. You can use this parameter to ensure that subsequent invocations produce logically numbered listings. If this parameter is not specified, the starting page number is set to 1.

The page number, if supplied, must be four numeric EBCDIC characters.

DCBs
The addresses of a set of data control blocks for use internally by the DFHCSDUP program. Any DCBs (or ACBs) that you specify are used internally, instead of those normally used by the DFHCSDUP program.

Note that if you specify both replacement DDNAMES and replacement DCBs, the alternative DCBs are used, but the alternative DDNAMES are disregarded.

EXITS
The addresses of a set of user exit routines to be invoked during processing of the DFHCSDUP program.

Responsibilities of the user program

Before invoking the DFHCSDUP program, your calling program must ensure that:

- AMODE(24) and RMODE(24) are in force
- S/370 register conventions are obeyed
- If the **EXITS** parameter is passed, any programming environment needed by the exit routines has been initialized
- Any ACBs or DCBs passed for use by the DFHCSDUP program are OPEN.

Rules for the syntax and preparation of commands for the DFHCSDUP program

Enter the commands in columns 1 through 71 of 80-character input records. You can specify keyword values longer than one line, if you use the continuation character (an asterisk) at the end of a line (in column 72). Subsequent lines start in column 1. For example, you can use this facility to specify XTPNAME values of up to 128 hexadecimal characters.

The command keywords can be specified by abbreviations and in mixed case, as shown in the command syntax under each command description. The minimum abbreviation is given in uppercase in the command syntax, with the optional characters given in lower case; for example:

```
ALter Connection(name) Group(groupname)
```

Leading blanks are ignored, and blanks between keywords and operands are permitted.

Comment records are permitted; they must have an asterisk (*) in column 1. Comment material is not permitted on a record that contains a command.

Blank records between commands are ignored.

Follow the conventions for the names of groups and lists when coding the **GROUP**, **LIST**, **TO**, and **TYPESGROUP** parameters. If you use a generic specification for the GROUP or LIST parameter in the LIST command, you can use the symbols * and + in the same way as for CEDA.

The **FROMCSD** parameter must contain a valid ddname conforming to the rules for the JCL of the operating system.

An example of a valid sequence of commands is shown in Figure 34. Other examples of commands are given in the command descriptions that follow.

```
*                                SET UP INITIAL CSD FILE
INITialize
*
LIst LIst(DFHLIST) Objects
*                                UPGRADE FROM EARLIER RELEASE
UPgrade
*
LI Group(PPTM1)
LI G(SETM*)
*                                   CREATE GROUP PCTZ4
Copy G(PCTM1)  To(PCTZ4)
C G(SETMP3) T(PCTZ4) Replace
LI G(P++M+)
*                                   CREATE LIST MODLIST
APpend LIst(TESTLIST) TO(MODLIST) FRomcsd(CSDF1)
AP LI(SECLIST)  To(MODLIST) FR(CSDF1)
AP LI(DFHLIST)  To(MODLIST)
*
LI ALL OBJECTS
```

Figure 34. Sample commands of the DFHCSDUP program

Command processing in DFHCSDUP following internal error detection

If you have provided a put-message-exit routine for the DFHCSDUP program, it is invoked whenever a message is issued. You can use this exit to respond to error messages produced by DFHCDSUP processing, when the DFHCSDUP program is invoked from a user program.

The put-message-exit routine is not used if the DFHCSDUP program is running as a batch program. For programming information about the DFHCSDUP exits, see the *CICS Customization Guide*.

The reaction of the DFHCSDUP program to an error (with return code 8 or greater) depends on the nature of the error and on how the DFHCSDUP program is invoked.

If an error is detected while the DFHCSDUP program is running as a batch program, one of the following two reactions occurs:

1. If the error occurs during connection of the CSD, no subsequent commands are completed.
2. If the error occurs elsewhere, no subsequent commands are executed other than LIST commands.

If an error is detected while the DFHCSDUP program is receiving commands from a get-command exit, all subsequent commands are processed if possible.

Resource management utility DFHCSDUP commands

This section describes the commands available with the DFHCSDUP utility program. Commands can be abbreviated, but the minimum abbreviation allowed differs from some of the CEDA command abbreviations.

The DFHCSDUP ADD command

Add a group to a list.

ADD syntax

```
►►──ADd──Group──(──groupname──)──LIst──(──listname──)──────────────────────►

►──┬────────────────────────────┬──────────────────────────────────────────►◄
   ├─After──(──groupname2──)────┤
   └─Before──(──groupname3──)───┘
```

Options

After*(groupname2)*
specify AFTER to place the new group name after the existing group name. The group name is added at the end of the list if BEFORE or AFTER is not specified.

Before*(groupname3)*
specify BEFORE to place the new group name before the existing group name. The group name is added at the end of the list if BEFORE or AFTER is not specified.

Group*(groupname)*
specifies the name of the group to be added. The name must not already exist in the list. A generic group name is not accepted.

LIst*(listname)*
specifies the name of the list to which the group is to be added. If the list does not already exist, a new one is created. A generic list name is not accepted.

Examples

To create a list LA01, by adding a group to it

```
ADD GROUP(GA001) LIST(LA01)
```

To add another group to list LA01, withot specifying where

```
ADD GROUP(GA002) LIST(LA01)
```

LA01 now looks like this

- GA001
- GA002

To add another group at the top of the list

```
ADD GROUP(GA003) LIST(LA01) BEFORE(GA001)
```

To add another group between GA001 and GA002

```
ADD GROUP(GA004) LIST(LA01) AFTER(GA001)
```

LA01 now looks like this

- GA003
- GA001
- GA004
- GA002

The DFHCSDUP ALTER command

Change some or all of the attributes of an existing resource definition.

ALTER syntax

```
►►──ALter──┬─Atomservice(name)──┬──Group──(──groupname──)──────────────────►
           ├─Bundle(name)───────┤
           ├─CONnection(name)───┤
           ├─CORbaserver(name)──┤
           ├─DB2Conn(name)──────┤
           ├─DB2Entry(name)─────┤
           ├─DB2Tran(name)──────┤
           ├─DJar(name)─────────┤
           ├─DOctemplate(name)──┤
           ├─Enqmodel(name)─────┤
           ├─File(name)─────────┤
           ├─Ipconn(name)───────┤
           ├─JOurnalmodel(name)─┤
           ├─JVmserver(name)────┤
           ├─LIbrary(name)──────┤
           ├─LSRpool(name)──────┤
           ├─MApset(name)───────┤
           ├─MQconn(name)───────┤
           ├─PARTItionset(name)─┤
           ├─PARTNer(name)──────┤
           ├─PIpeline(name)─────┤
           ├─PROCesstype(name)──┤
           ├─PROFile(name)──────┤
           ├─PROGram(name)──────┤
           ├─Requestmodel(name)─┤
           ├─Sessions(name)─────┤
           ├─TCpipservice(name)─┤
           ├─TDqueue(name)──────┤
           ├─TErminal(name)─────┤
           ├─TRANClass(name)────┤
           ├─TRANSaction(name)──┤
           ├─TSmodel(name)──────┤
           ├─TYpeterm(name)─────┤
           ├─Urimap(name)───────┤
           └─Webservice(name)───┘

►─attribute list──(──new value──)──────────────────────────────────────────►◄
```

Description

For information about the attributes that you can specify on the ALTER command for the various resource types, and for a description of the attributes and default values of each resource type, see the *CICS Resource Definition Guide*.

Do not use ALTER to change the value of the attributes of a TYPETERM definition on which other attributes depend. If you make a mistake with DEVICE, SESSIONTYPE, or TERMMODEL, delete the definition and define a new one with the correct values.

You can specify null attribute values, for example:

```
ALTER FILE(TEST) GROUP(ACT1) DESCRIPTION()
```

If an attribute for which you have specified a null value has a default, the value used depends upon the type of field:

- The command:
  ```
  ALTER FILE(TEST) GROUP(ACT1) RLSACCESS() DESCRIPTION()
  ```

uses the default value of NO for RLSACCCESS and the description is blanked out.

- The command:

```
ALTER FILE(TEST) GROUP(ACT1) PROFILE()
```

uses the default value DFHCICSA for the PROFILE field.

Changes to resource definitions in the CSD file do not take effect, in a running CICS system, until you install the group in which the resource definition resides.

Generic naming in the ALTER command

The ALTER command accepts both generic resource names and group names.

For each resource in the CSD file matching the specified combination of resource name and group name, an ALTER is attempted. In the case of an individual ALTER failing, processing terminates when all attempts for the command have been processed.

Options

Attribute list
specifies the attributes to be altered.

Group*(groupname)*
specifies the name of the group containing the resource to be altered.

Resource*(name)*
specifies the resource whose attributes you want to alter. You can specify a generic name by using the characters + and *.

Examples

To make a program resident:

```
ALTER PROGRAM(ERR01) GROUP(GENMODS) RESIDENT(YES)
     DATALOCATION()
```

To make all programs in the group GENMOD resident:

```
ALTER PROGRAM(*) GROUP(GENMOD) RESIDENT(YES)
    DATALOC()
```

The DFHCSDUP APPEND command

Add the groups in one list to the end of another list.

APPEND syntax

```
►►──APpend──FRomcsd──(──ddname──)──LIst──(──listname1──)──To──(──listname2──)────►◄
```

Description

No duplicate group names are allowed in a list. If DFHCSDUP finds any duplicate names during the APPEND operation it ignores them, and they are not appended. The DFHCSDUP output listing contains a warning message if this happens.

Note: If you are appending from one CSD to another, you should be aware that this command does not copy the groups themselves; you should use a separate COPY command to do this.

Options

`FRomcsd`*`(ddname)`*
: specifies the ddname of the secondary CSD file from which you are appending *listname1*.

`List`*`(listname1)`*
: specifies the name of the list that is appended. Do not use a generic list name.

  The list being appended can be on the primary CSD file, or on another CSD file. If you are appending from another CSD file, you must identify it by specifying the FROMCSD parameter.

`To`*`(listname2)`*
: specifies the name of the list to which you want the group names appended. If you are appending from another CSD file, you can give this list the same name as the one you are appending from. Do not use a generic list name.

  If this target list already exists, the source list is appended to the end of it. If the target list does not exist, it is created. (In effect, you are copying the source list.)

Examples

A list called LISTA contains the following groups:
- GB001
- GB002
- GB003

A list called LISTB contains the following groups:
- G001
- G002
- G003

Append LISTB to LISTA, like this:
```
APPEND LIST(LISTB) TO(LISTA)
```

After this, LISTA contains the following groups, in this order:
- GB001
- GB002
- GB003
- G001
- G002
- G003

and LISTB still contains:
- G001
- G002
- G003

The DFHCSDUP COPY command

Copy a resource definition from one group to a different group. Single resources cannot be copied as in the CEDA version of the COPY command.

COPY syntax

```
►►──Copy──Group──(──groupname1──)──To──(──groupname2──)──┬─────────┬──────────►
                                                         ├─Replace─┤
                                                         └─MErge───┘

►─FRomcsd──(──ddname──)──────────────────────────────────────────────────────►◄
```

Description

The COPY command copies all the resource definitions in **groupname1** to **groupname2**. The group to be copied (*groupname1*) can be on the primary CSD, or it can be on the CSD file specified by the **FROMCSD** parameter.

The group is copied to the group named on the TO parameter (*groupname2*) in the primary file. If this group already exists, the definitions from the source group (*groupname1*) are added to those already in the *groupname2* group. If the group specified on the TO parameter does not already exist, a new group of that name is created. However, if duplicate definitions exist in the two groups, the whole copy operation fails unless you specify REPLACE or MERGE to indicate how duplicates should be handled.

Generic naming in the COPY command

The COPY command accepts generic group names, both on the GROUP option and on the TO option, subject to the following rules:

- The only generic character permitted on the COPY command is the asterisk (*) symbol.
- The prefix length of *groupname1* must be equal to or greater than the prefix length of *groupname2*. Thus COPY GROUP(DFHCOMP*) TO(USRCMP*) is valid, but COPY GROUP(DFHCO*) TO(USRCOMP*) is not.

You can use the asterisk (*) symbol to copy from generically named groups to other generically named groups or from generically named groups to a specific group, as shown in "Examples" on page 460.

Note: There is no AS parameter as in the CEDA version of the COPY command.

The DFHCSDUP output listing tells you which definitions were copied, and what happened if duplicates were found.

Options

FRomcsd*(ddname)*
: specifies the ddname of the secondary CSD file from which you are copying *groupname1*.

Group*(groupname1)*
: specifies the name of the group to be copied. You can specify a generic name by using an asterisk (*).

MErge
: If *groupname2* already exists and duplicate definitions occur, the original definitions in *groupname2* are preserved.

Replace
: If *groupname2* already exists and duplicate definitions occur, the definitions in *groupname1* replace those in *groupname2*.

To*(groupname2)*
: specifies the name of the group to which the definitions are copied. If you are copying from another CSD file, you can give this group the same name as the one you are copying from. You can specify a generic name by using an asterisk (*).

Examples

The following example copies a group named GA001 to a group named GA002, which already exists, replacing any duplicate resource definitions with those in group GA001.

```
COPY GROUP(GA001) TO(GA002) REPLACE
```

The following example copies group GA003 to group GA004, but if any duplicate definitions occur, preserves the group GA004 definitions.

```
COPY GROUP(GA003) TO(GA004) MERGE
```

The following example copies all the CICS-supplied groups to user-named groups with a prefix of USR, with the result that DFHOPER becomes USROPER, DFHSTAND becomes USRSTAND, and so on.

```
COPY GROUP(DFH*) TO(USR*)
```

The following example copies every group starting with ABCD to the group called NEWGROUP:

```
COPY GROUP(ABCD*) TO(NEWGROUP)
```

The DFHCSDUP DEFINE command

Create new resource definitions.

DEFINE syntax

```
►►──DEFine──┬─Atomservice(name)───┬─Group──(──groupname──)──────────────────►
            ├─Bundle(name)────────┤
            ├─CONnection(name)────┤
            ├─CORbaserver(name)───┤
            ├─DB2Conn(name)───────┤
            ├─DB2Entry(name)──────┤
            ├─DB2Tran(name)───────┤
            ├─DJar(name)──────────┤
            ├─DOctemplate(name)───┤
            ├─Enqmodel(name)──────┤
            ├─File(name)──────────┤
            ├─Ipconn(name)────────┤
            ├─JOurnalmodel(name)──┤
            ├─JVmserver(name)─────┤
            ├─LIbrary(name)───────┤
            ├─LSRpool(name)───────┤
            ├─MApset(name)────────┤
            ├─MQconn(name)────────┤
            ├─PARTItionset(name)──┤
            ├─PARTNer(name)───────┤
            ├─PIpeline(name)──────┤
            ├─PROCesstype(name)───┤
            ├─PROFile(name)───────┤
            ├─PROGram(name)───────┤
            ├─Requestmodel(name)──┤
            ├─Sessions(name)──────┤
            ├─TCpipservice(name)──┤
            ├─TDqueue(name)───────┤
            ├─TErminal(name)──────┤
            ├─TRANClass(name)─────┤
            ├─TRANSaction(name)───┤
            ├─TSmodel(name)───────┤
            ├─TYpeterm(name)──────┤
            ├─Urimap(name)────────┤
            └─Webservice(name)────┘

►─attribute list──(──value──)─────────────────────────────────────────────►◄
```

Options

Attribute list
: The attribute list depends on the resource type being defined; some resources have attributes that must be included in the definition. For a description of the attributes and default values of each resource type, see the *CICS Resource Definition Guide*. Attributes that you do not specify are given default values.

Group*(groupname)*
: Specifies the name of the group that contains the resource definition that is created. Do not use a generic group name. If you specify the name of a group that does not already exist, the group is created.

Resource*(name)*
: Specifies the name of the resource you want to define. Do not use a generic resource name. The resource option must always be the first operand of the DEFINE command.

Examples

You can use the same name for more than one resource definition in a group, if the definitions are for different resource types. For example:

```
DEFINE PROGRAM(N28A) GROUP(N28APPL)
DEFINE TRANSACTION(N28A) GROUP(N28APPL)

DEFINE TERMINAL(USER) GROUP(USERDEF)
DEFINE PROGRAM(USER) GROUP(USERDEF)
```

The next example defines two consoles to CICS. You do not need continuation symbols if a definition spans several lines.

```
DEFINE TERMINAL(CON0)     GROUP(CONTERMS)
       CONSNAME(CONSJCL)  TYPETERM(DFHCONS)
       DESCRIPTION(MVS CONSOLE FOR ISSUING JCL COMMANDS)

DEFINE TERMINAL(CON1)     GROUP(CONTERMS)
       CONSNAME(CONSMAS)  TYPETERM(DFHCONS)
       DESCRIPTION(MVS MASTER CONSOLE)
```

The INITIALIZE command generates a TYPETERM definition, but not a TERMINAL definition, for a console. You must have at least one console defined to issue MVS MODIFY commands to CICS.

The DFHCSDUP DELETE command

Delete a single resource definition in a group, all the resource definitions in a group, or all the group names in a group list.

DELETE syntax

```
►►──DELete──┬─All──────────────────────┬──┬─Group──(──groupname──)─┬──Remove──────►◄
            └──Atomservice(name)───────┘  └─List──(──listname──)───┘
             ─Bundle(name)──────────
             ─CONnection(name)──────
             ─CORbaserver(name)─────
             ─DB2Conn(name)─────────
             ─DB2Entry(name)────────
             ─DB2Tran(name)─────────
             ─DJar(name)────────────
             ─DOctemplate(name)─────
             ─Enqmodel(name)────────
             ─File(name)────────────
             ─Ipconn(name)──────────
             ─JOurnalmodel(name)────
             ─JVmserver(name)───────
             ─LIbrary(name)─────────
             ─LSRpool(name)─────────
             ─MApset(name)──────────
             ─MQconn(name)──────────
             ─PARTItionset(name)────
             ─PARTNer(name)─────────
             ─PIpeline(name)────────
             ─PROCesstype(name)─────
             ─PROFile(name)─────────
             ─PROGram(name)─────────
             ─Requestmodel(name)────
             ─Sessions(name)────────
             ─TCpipservice(name)────
             ─TDqueue(name)─────────
             ─TErminal(name)────────
             ─TRANClass(name)───────
             ─TRANSaction(name)─────
             ─TSmodel(name)─────────
             ─TYpeterm(name)────────
             ─Urimap(name)──────────
             └Webservice(name)──────┘
```

Description

Deleting a resource definition is different from removing a group from a list (see "The DFHCSDUP REMOVE command" on page 469). A deleted resource definition really does disappear from the CSD file.

Note:

When you DELETE the last resource in a group, the group is automatically deleted. An empty group cannot exist.

If a group is deleted, the group is not removed from all lists that contain it.

You cannot delete the definitions of groups and lists supplied by IBM.

If you delete a list, the definitions of the resources within the groups contained in the list are not deleted. To do this, you must also delete each group individually.

Options

Group*(groupname)*
: If this is specified alone, it indicates the name of the group to be deleted. If a resource is also specified, it indicates the group to which the resource belongs. Do not use a generic group name.

List*(listname)*
: specifies the name of the list to be deleted. Do not use a generic list name.

Remove
: If this is specified when the group is deleted, the group is removed from all lists that contained it unless UPGRADE commands are running.

Resource*(name)*
: specifies the name of the resource to be deleted. Do not use a generic resource name.

  This operand can be used only with the GROUP option.

Examples

A list in the primary CSD file called LISTA contains the following groups:
- GB001
- GB002

Group GB001 contains the following resource definitions:

TERMINAL(CON0)
TERMINAL(CON1)
TERMINAL(TEST)

The following command deletes the resource definition for the terminal TEST from group GB001:

```
DELETE TERMINAL(TEST) GROUP(GB001)
```

The following command deletes all the resource definitions in group GB002:

```
DELETE GROUP(GB002)
```

This leaves only group GB001 in the group list LISTA. The following command deletes all group names in the group list LISTA:

```
DELETE LIST(LISTA)
```

Note: The resource definitions in the groups in LISTA are not deleted.

The DFHCSDUP EXTRACT command

Extract a resource definition, group, or list from the CSD file.

EXTRACT syntax

```
►►──EXtract──┬─Group──(──groupname──)─┬──────────────────────────────►
             └─LIst──(──listname──)───┘
```

```
►──┬─USerprogram──(──DFHxCRFy──)──────────────────┬──┬─────────┬───────────────►◄
   ├─USerprogram──(──DFHxFORy──)──────────────────┤  └─Objects─┘
   ├─USerprogram──(──DFH0CBDC──)──────────────────┤
   └─USerprogram──(──user-written program──)──────┘
```

Description

You can use the **EXTRACT** command to extract resource definition data from the CSD file, either from a list or from a group, and invoke a user program to process the extracted data. You specify the user program on the **USERPROGRAM** parameter.

Note: For programming information about coding user programs for the EXTRACT command, see http://publib.boulder.ibm.com/infocenter/cicsts/v4r2/topic/com.ibm.cics.ts.doc/dfha3/topics/dfha37e.html .

Options

Group*(groupname)*
Specifies only those resource definitions within the named group. You can specify a generic group name.

LIst*(listname)*
Specifies only those resource definitions within the groups contained in the named list. You can use a generic list name only if you are not using the OBJECTS option.

Objects
Returns the detail of each resource definition. You can extract resource definition data at two levels of detail:

- Without the OBJECTS option, the command extracts either the names of all the groups within a specified list, or the names of all the resource definitions within a specified group.
- With the OBJECTS option, all the resource definition attributes are also extracted.

You must specify OBJECTS for the supplied sample user programs DFHxCRFy and DFHxFORy. It is optional for DFH0CBDC and user-written user programs.

USerprogram*(user-written program)*
Specifies the name of the user-written program that is to process the data retrieved by the **EXTRACT** command. You must supply a USERPROGRAM value.

CICS supplies three types of sample user program: DFHxCRFy, DFHxFORy, and DFH0CBDC. The letter *x* in the program name is $ for assembler or PL/I and 0 for COBOL. The letter *y* in the program name denotes the programming language, where y=A is the assembler version, y=C is the COBOL version, and y=P is the PL/I version. .

All other user programs are available in source form, in CICSTS42.CICS.SDFHSAMP, and the assembler versions are also available in pregenerated form in CICSTS42.CICS.SDFHLOAD.

Examples

The following command uses the supplied user program, DFH0CBDC, to extract the resource definitions in group DFHTYPE and create the **DEFINE** commands needed to create them. It stores these commands in the file specified by the CBDOUT DD statement.

```
EXTRACT GROUP(DFHTYPE) USERPROGRAM(DFH0CBDC) OBJECTS
```

The DFHCSDUP INITIALIZE command

Prepare a newly defined data set for use as a CSD file.

INITIALIZE syntax

```
►►──INITialize ──────────────────────────────────────────────────────►◄
```

Description

You must initialize your CSD file before you can use any of the other DFHCSDUP commands, or the RDO transactions. After you have initialized your CSD file, you do not need to execute this function again.

The standard entries for the CICS-supplied resource definitions are created on the CSD file. The INITIALIZE command arranges these definitions into groups, and defines these groups in a group list named DFHLIST. This list contains only the CICS-supplied groups that are required by a CICS system.

CICS supports RDO for transient data. The DFHDCTG group contains sample definitions of all the CICS-supplied queues. You can add the names of other queues that you want to be installed at the same time to DFHDCTG. Place DFHDCTG at the top of DFHLIST so that the queues become available for use at the earliest possible point during CICS initialization.

If you use another group to install the CICS-supplied queues, make sure that this group is at the top of the first list to be installed using GRPLIST as part of an initial or cold start.

You can put other transient data resource definitions into different groups, from which they can be installed either during an initial or cold start, or at some point after initialization has completed.

INITIALIZE also creates a control record at the start of the CSD file. This record contains fields identifying the CICS release and the current level of service applied to the CSD. It also has fields containing the date and time of creation of the CSD file, and the date and time the file was last updated. Both these fields appear on the hard copy listing of the CSD file produced by the LIST command.

If you want to prepare a newly defined recoverable data set for use as a CSD file, you must INITIALIZE it using non-RLS mode, because a recoverable data set cannot be opened for output from batch in RLS mode, but the data set needs to be opened for output in order to initialize it.

The DFHCSDUP LIST command

Produces listings of the current status of the CSD file.

LIST syntax

```
          ┌─All──────────────────────┐
►►──LIst──┼──────────────────────────┼──┬─────────┬──────────────────────────────►◄
          ├─Group──(──groupname──)───┤  ├─Objects─┤
          └─LIst──(──listname──)─────┘  └─Sigsumm─┘
```

Description

The listings are sent to the SYSOUT data set, with the messages issued by the command processing. The contents of all the qualifying groups or lists are printed.

Options

Group*(groupname)*
: Specifies only those resource definitions in the named group. You can specify a generic group name.

LIst*(listname)*
: Specifies only those resource definitions in the groups that are contained in the named list. You can use a generic list name only if you are not using the OBJECTS option. The only command for which a generic list name is not acceptable is LIST LIST(*listname*) OBJECTS.

Objects
: Specifies the level of detail required for each resource definition. You can extract resource definition data at two levels of detail:
  - Without the OBJECTS option, the command extracts either the names of all the groups in a specified list or the names of all the resource definitions in a specified group.
  - With the OBJECTS option, all the resource definition attributes are also extracted, including the definition signature fields.

Sigsumm
: Shows the definition signature for each of the resource definitions displayed.

Examples

The listings produced by the various commands are as follows:

- LIST ALL
  - Names of defined lists and groups
  - Summary of lists
  - Summary of groups

  The LIST ALL command prints summaries of all the definitions of lists and groups that are on the CSD file.
- LIST ALL OBJECTS
  - Names of defined lists and groups
  - Summary of lists
  - Summary of groups
  - Objects in groups

  The LIST ALL OBJECTS command prints summaries of all the definitions of lists and groups that are on the CSD file, with the properties of the resources in all the groups.
- LIST GROUP(*groupname*)

  - Summary of groups
  - Group name can be generic

  The LIST GROUP command summarizes the names of all the resources in one or more groups. They are organized in each group into resource type categories; for example: map sets, and programs.
- LIST GROUP(*groupname*) OBJECTS
  - Summary of groups
  - Objects in groups
  - Group name can be generic

  With this command, you can tabulate the properties of the resources, organized according to resource type. The creation time for each resource is given, with all its attributes, as originally set up by using DEFINE and ALTER commands or by migrating it from a CICS table. The properties of transactions and profiles are arranged in the same subcategories that appear on the CEDA DEFINE screen.
- LIST GROUP(*groupname*) SIGSUMM
  - Group name can be generic

  Use this command to tabulate the definition signature of the resources, organized according to resource type.
- LIST LIST(*listname*)
  - Summary of lists
  - List name can be generic

  The contents of one or more group lists are tabulated. The groups are displayed in the same sequence as their position in the list. This order is set by the commands ADD and APPEND, which were used in the CEDA transaction to build the list.
- LIST LIST(*listname*) OBJECTS
  - Summary of lists
  - Objects of groups in list
  - Generic list name is not allowed

  Use this command to tabulate the properties of all the resources to be defined in a CICS system at startup time. They are identified by one or more list names specified in the GRPLIST=(*list1,list2,list3,list4*) system initialization parameter. The names of all the groups in the list appear in the summary of lists. Then, for each group that is contained in the list, the properties of the individual resources in the group are tabulated.

  The "Objects in Groups in Lists" tabulation arranges the groups in the same order as they were added to the group list. This order is important if duplication occurs, when definitions of the same resource might be in more than one group. If a list of this type is used at system startup time, the resource definitions used when there is duplication are those belonging to the group that is latest in the list.

The DFHCSDUP PROCESS command

Apply maintenance to the CSD file for a specific APAR.

PROCESS syntax

```
►►──PROCESS──Apar──(──aparnumber──)──────────────────────────────────────►◄
```

Description

The PROCESS APAR command is used to apply maintenance to your CSD file for a specific APAR. Only use this command in accordance with the instructions in the associated PTF cover letter.

Options

Apar*(aparnumber)*
: The number of the APAR providing the maintenance; for example, PROCESS APAR(PQ12417) is used to apply maintenance for APAR PQ12417.

The DFHCSDUP REMOVE command

Remove a group name from a list.

REMOVE syntax

```
►►──Remove──Group──(──groupname──)──LIst──(──listname──)──────────────────────►◄
```

Description

The group, and all its resource definitions, still exists on the CSD file.

Options

Group*(groupname)*
: specifies the name of the group to be removed. Do not use a generic group name.

LIst*(listname)*
: specifies the name of the list from which a group is to be removed. Do not use a generic list name. When the last group is removed from a list, the list no longer exists on the CSD file.

Examples

A list LL02 contains the following groups:

G001 G002 G003 G004

To remove group G003:

```
REMOVE GROUP(G003) LIST(LL02)
```

This leaves:

G001 G002 G004

The DFHCSDUP SCAN command

SCAN all the IBM-supplied groups and user-defined groups for a specified resource. The definition of the matched resource in an IBM supplied group is compared with the definition(s) of the corresponding matched resource in the user groups.

SCAN syntax

```
►►──SCAN──┬─Atomservice(name)──┬──┬───────────────────────┬──────────────────►◄
          ├─Bundle(name)───────┤  └─ALIAS──(──aliasname──)─┘
          ├─CONnection(name)───┤
          ├─CORbaserver(name)──┤
          ├─DB2Conn(name)──────┤
          ├─DB2Entry(name)─────┤
          ├─DB2Tran(name)──────┤
          ├─DJar(name)─────────┤
          ├─DOctemplate(name)──┤
          ├─Enqmodel(name)─────┤
          ├─File(name)─────────┤
          ├─Ipconn(name)───────┤
          ├─JOurnalmodel(name)─┤
          ├─JVmserver(name)────┤
          ├─LIbrary(name)──────┤
          ├─LSRpool(name)──────┤
          ├─MApset(name)───────┤
          ├─MQconn(name)───────┤
          ├─PARTItionset(name)─┤
          ├─PARTNer(name)──────┤
          ├─PIpeline(name)─────┤
          ├─PROCesstype(name)──┤
          ├─PROFile(name)──────┤
          ├─PROGram(name)──────┤
          ├─Requestmodel(name)─┤
          ├─Sessions(name)─────┤
          ├─TCpipservice(name)─┤
          ├─TDqueue(name)──────┤
          ├─TErminal(name)─────┤
          ├─TRANClass(name)────┤
          ├─TRANSaction(name)──┤
          ├─TSmodel(name)──────┤
          ├─TYpeterm(name)─────┤
          ├─Urimap(name)───────┤
          └─Webservice(name)───┘
```

Description

For information about the types of resource that you can specify on the SCAN command, and for a description of the attributes and default values of each resource type, see the *CICS Resource Definition Guide*.

The SCAN command searches all the IBM supplied groups in the CSD for a resource definition of a specified name and type. A message is issued with the results of the search. The user-defined groups are then searched for the same resource definition. The outcome of this can be one of the following:

- If an IBM-supplied group and one or more user-defined groups contain the resource definition, a comparison is made between the definition in the IBM-supplied group and the user group(s). A message is issued indicating whether the definition in the IBM supplied group matches the definition(s) in the user group(s).
- If the resource definition is not found in the user defined groups a message is issued.
- If the resource definition is not found in an IBM-supplied group but is found in one or more user defined groups a message is issued indicating the group(s) that contained it.

If *aliasname* is specified, the user groups are searched using *aliasname*.

Note:

1. The compatibility groups DFHCOMPx are not scanned as part of the IBM supplied groups but as user defined groups.
2. The DESCRIPTION attribute is not used in the comparison.

You can use the SCAN command to check for differences between IBM-supplied definitions that you have modified and the latest IBM-supplied versions after an upgrade.

Options

Alias*(aliasname)*
: specifies the alias name of the resource type to be searched for in the user-defined groups.

  This operand is optional.

Resource*(name)*
: specifies the name of the resource type to be searched for in the IBM-supplied groups, and in the user-defined groups if *aliasname* is not specified. The resource option must always be the first operand of the SCAN command.

Examples

To search the CSD for transaction CEDA:

```
SCAN TRANSACTION(CEDA)
```

The result of this could look like:

```
 DFH5130 I PRIMARY CSD OPENED;  DDNAME: DFHCSD
 DFH5633 I TRANSACTION CEDA FOUND IN GROUP DFHSPI
 DFH5631 I TRANSACTION CEDA FOUND IN GROUP A1
           MATCHES THE IBM SUPPLIED DEFINITION IN GROUP DFHSPI
 DFH5631 I TRANSACTION CEDA FOUND IN GROUP A2
           MATCHES THE IBM SUPPLIED DEFINITION IN GROUP DFHSPI
 DFH5632 I TRANSACTION CEDA FOUND IN GROUP DFHCOMP1
           DOES NOT MATCH THE IBM SUPPLIED DEFINITION
           IN GROUP DFHSPI
 DFH5101 I SCAN COMMAND EXECUTED SUCCESSFULLY.
```

To search the CSD for transaction CEDA with an alias name of AEDA:

```
SCAN TRANSACTION(CEDA) ALIAS(AEDA)
```

The result of this could look like:

```
 DFH5130 I PRIMARY CSD OPENED;  DDNAME: DFHCSD
 DFH5633 I TRANSACTION CEDA FOUND IN GROUP DFHSPI
 DFH5631 I TRANSACTION AEDA FOUND IN GROUP A3
           MATCHES THE IBM SUPPLIED DEFINITION IN GROUP DFHSPI
 DFH5101 I SCAN COMMAND EXECUTED SUCCESSFULLY.
```

The DFHCSDUP SERVICE command

Carry out maintenance to your CSD file.

SERVICE syntax

```
►►──Service──FRomcsd──(──ddname──)──LEvel──(──nnn──)──────────────────────►◄
```

Description

You might occasionally (between CICS releases) have to apply a service routine to carry out preventive or corrective maintenance to your CSD file. You do this by loading and running a special service program (DFHCUS1), which is supplied with CICS as a separately loadable module.

You can use the SERVICE command to create a new copy of the CSD file, from the existing CSD file. All the definitions are preserved, with the corrections (if any) applied.

Options

FRomcsd*(ddname)*
: specifies the ddname of the current CSD file, which for the purposes of the command is treated as the secondary CSD file.

LEvel*(nnn)*
: Associated with your CSD file is a current service level, initially set to 000 when the file was initialized. Applying the service routine causes the service level to be incremented in steps of one, from a "current level" to a "target level".

  This operand specifies the target service level to which the CSD file is to be upgraded, and must be 1 higher than the current level of FROMCSD. Specify it as a 3-character integer; for example, LEVEL(001).

The DFHCSDUP UPGRADE command

Change the CICS-supplied resource definitions in a primary CSD file.

UPGRADE syntax

```
►►──UPgrade──┬──────────────────────┬──┬─────────┬──────────────────────►◄
             └─USing──(──filename──)─┘  └─Replace─┘
```

Description

Upgrades the IBM-supplied definitions in the CSD. Definitions are added to, modified in, or deleted from DFH-groups. Note that deleted definitions are added to compatibility groups with names of the form DFHCOMP*n*. This enables you to share the CSD with earlier releases of CICS after you have run the upgrade command.

The upgrade command can also be used to apply any package of IBM-supplied resource definitions to the CSD file. For example, the definitions for the CICS sample programs and transactions can be transferred to the CSD file with the UPGRADE statement.

Options

Replace
: Specify the REPLACE option when you need to rerun the UPGRADE command (for example, because of a previous failure).

USing*(filename)*

To upgrade a CSD, do not specify the **USING** operand. All IBM-supplied definitions from **any** release are deleted and then the CSD file is initialized, so you do not need to say which release you came from.

To install IBM features onto CICS, specify UPGRADE USING(*filename*). For example, UPGRADE USING(DFHRDJPN) is used to place the double-byte character set feature definitions onto the CSD file.

The DFHCSDUP USERDEFINE command

Create new resource definitions using your own default values instead of the default values supplied by CICS.

USERDEFINE syntax

```
►►──USERDEFINE──┬─Atomservice(name)───┬──Group──(──groupname──)──────────────────►
                ├─Bundle(name)────────┤
                ├─CONnection(name)────┤
                ├─CORbaserver(name)───┤
                ├─DB2Conn(name)───────┤
                ├─DB2Entry(name)──────┤
                ├─DB2Tran(name)───────┤
                ├─DJar(name)──────────┤
                ├─DOctemplate(name)───┤
                ├─Enqmodel(name)──────┤
                ├─File(name)──────────┤
                ├─Ipconn(name)────────┤
                ├─JOurnalmodel(name)──┤
                ├─JVmserver(name)─────┤
                ├─LIbrary(name)───────┤
                ├─LSRpool(name)───────┤
                ├─MApset(name)────────┤
                ├─MQconn(name)────────┤
                ├─PARTItionset(name)──┤
                ├─PARTNer(name)───────┤
                ├─PIpeline(name)──────┤
                ├─PROCesstype(name)───┤
                ├─PROFile(name)───────┤
                ├─PROGram(name)───────┤
                ├─Requestmodel(name)──┤
                ├─Sessions(name)──────┤
                ├─TCpipservice(name)──┤
                ├─TDqueue(name)───────┤
                ├─TErminal(name)──────┤
                ├─TRANClass(name)─────┤
                ├─TRANSaction(name)───┤
                ├─TSmodel(name)───────┤
                ├─TYpeterm(name)──────┤
                ├─Urimap(name)────────┤
                └─Webservice(name)────┘

►─Attribute list──(──value──)────────────────────────────────────────────────────►◄
```

Description

The USERDEFINE command is an alternative to the DEFINE command. Instead of using the default values supplied by CICS, the USERDEFINE command uses your own default values to create a resource definition. Otherwise it operates in exactly the same way as the DEFINE command.

To set up your own default values for the USERDEFINE command, use the normal DEFINE command to create resource definitions named USER in a group named USERDEF:

- Create a resource definition named USER in the USERDEF group for each resource for which you want to provide default values. For example, if you want to provide default values for PROGRAM, TRANSACTION, and TCPIPSERVICE resource definitions, create the resource definitions PROGRAM(USER), TRANSACTION(USER), and TCPIPSERVICE(USER) in the USERDEF group. It does not matter that all the resource definitions in the USERDEF group are named USER; they are unique because they are different resource types. Any resource definitions in the USERDEF group that are not named USER are ignored by the USERDEFINE command.
- In each resource definition in the USERDEF group, specify the default values that are to be applied when you use the USERDEFINE command to create a resource of that type. For example, if you want Assembler to be the default language in PROGRAM resource definitions created with the USERDEFINE command, issue the following DEFINE command to create the resource definition:

  ```
  DEFINE PROGRAM(USER) GROUP(USERDEF) LANGUAGE(ASSEMBLER)
  ```
- Each resource definition in the USERDEF group must be a complete, valid resource definition. For example, a transaction definition must name a program definition, even if you always supply a program name when you use the USERDEFINE command to define a transaction.
- You do not have to install the resource definitions in the USERDEF group.

When you have created resource definitions in the USERDEF group, you can use the USERDEFINE command to define those types of resources, and the default values that you set up are used in the resource definitions. For example, if you have created a PROGRAM resource definition in the USERDEF group that specifies LANGUAGE(ASSEMBLER), the following command creates a resource definition for program P2 in group GRP and specifies Assembler as the language:

```
USERDEFINE PROGRAM(P2) GROUP(GRP)
```

Options

Attribute list*(value)*
: The attribute list depends on the resource type that is being defined; some resources have attributes that must be included in the definition. For a description of the attributes and default values of each resource type, see RDO resources in the Resource Definition Guide. Attributes that you do not specify are given default values.

Group*(groupname)*
: Specifies the name of the group that will contain the resource definition to be created. Do not use a generic group name. If you specify the name of a group which does not already exist, the group is created.

Resource(name)
: Specifies the name of the resource you want to define. Do not use a generic resource name. The resource option must always be the first operand of the USERDEFINE command.

The DFHCSDUP VERIFY command

Remove internal locks on groups and lists.

VERIFY syntax

```
►►──VERIFY──────────────────────────────────────────────────────────────►◄
```

Description

Use the VERIFY command only when the CSD file is not in use and no backout processing is pending on the CSD file; preferably use it only when no CICS systems that may use the CSD file are running. In particular, do not use the VERIFY command while CICS systems could be accessing the CSD file in RLS access mode.

VERIFY acts on the whole CSD file, and is for use in the extreme condition where internal lock records have been left behind. These records are normally removed when a function that changes the CSD file has been completed. However, this may not have happened if there was a system failure when the CEDA transaction was running, or if an offline utility failed to finish. The locks may prevent CEDA users from accessing certain groups and lists on the CSD file.

Note that VERIFY removes only the internal locks. It does not affect the normal user locks applied by the LOCK command in the CEDA transaction.

Chapter 42. Autoinstall

Autoinstall is a method of creating and installing CICS resources dynamically as they are required. You can use autoinstall for SNA LUs, MVS consoles, APPC connections, IPIC connections, programs, map sets, partition sets, and journals.

With autoinstall, you do not have to define and install every resource that you intend to use. Instead, CICS dynamically creates and installs a definition for you when a resource is requested. CICS bases the new definition on a *model* definition that you provide.

You can use an *autoinstall control program* to control the way autoinstall operates in your CICS region.

Using autoinstall saves the time that is otherwise used to define and install every resource, and it saves storage, because each installed resource occupies storage whether the resource is being used or not.

Autoinstall models

You must provide at least one *model* resource definition for each type of resource to be autoinstalled.

When a resource is requested that does not have an installed definition, CICS creates a definition based on what you have specified in the model. You can have more than one model, depending on what properties you want the autoinstalled resources to have; for example, if you had 500 terminals all with the same properties and another 500 with a different set of properties, you could have two model terminal definitions, one for each of the two sets of properties.

Autoinstall control program

You control autoinstall by means of an *autoinstall control program*, either user-written or supplied by CICS. This program is responsible for, among other things, providing the model name or names to CICS and, providing z/OS Communications Server information to CICS for autoinstall for terminals, and so on.

CICS provides several autoinstall control programs; one for terminals; one for MVS consoles; one for connections; and one for programs, map sets, and partition sets. You can use the CICS-supplied ones or you can customize them to suit your installation.

Autoinstalling z/OS Communications Server terminals

How to use autoinstall for z/OS Communications Server terminals and connections.

For information on autoinstalling MVS consoles, see “Autoinstalling MVS consoles” on page 489.

For information on autoinstalling connections and parallel sessions, see “Autoinstalling APPC connections” on page 493.

For programming information about the autoinstall control program, see the *CICS Customization Guide*.

Deciding which terminals to autoinstall

This section will help you to decide which terminal devices to autoinstall.

Automatic transaction initiation

If a BMS ROUTE message is sent to a terminal that has a TCT entry but is not logged on, CICS saves the message for subsequent delivery.

In addition, if the TCT entry so specifies, CICS attempts to acquire the terminal and log it on for that purpose. CICS attempts to satisfy other ATI requests (EXEC CICS START or a transient data trigger level) in the same way.

The use of autoinstall for printers is severely limited because almost all transactions for printers are initiated automatically. It is possible to autoinstall printers, however, if you arrange for them to be logged on. Entering VARY NET,...,LOGON as a console command does this.

For an autoinstalled terminal, a TCT entry **may** be available even when the terminal is logged off. This happens only if the terminal has been logged on earlier in the CICS run, and depends on the TYPETERM definition, the system initialization parameters, and the SNT entry for the last user of the terminal. For details, see “Automatic sign-off, logoff, and TCTTE deletion” on page 487. If a TCT entry exists, an autoinstalled terminal can accept an ATI request just like an individually defined terminal.

If you choose autoinstall for terminals that might receive ATI requests, make use of the AUTOCONNECT attribute on the TYPETERM definition for your models. AUTOCONNECT(YES) means that the terminal is logged on to CICS automatically at an emergency restart (see Figure 38 on page 489), by CICS requesting a z/OS Communications Server SIMLOGON (simulated logon). (Because this requires a TCT entry, it does not happen at cold or warm start.)

You may find that setting up a printer-owning region is the best approach, especially if you have distributed printing with many small printers.

Whether or not you autoinstall your printers, you can associate a printer and an alternate printer with a display device. The association is made when the display device is autoinstalled. Definitions for these printers need not have been installed at the time the display device is autoinstalled, but they must exist at the time of use.

The TCT user area (TCTUA)

The TCT user area is an optional extension to the TCT entry.

The TCTUA is available for application use (the rest of the TCT entry belongs to CICS). It has traditionally been used for two purposes:

- To pass data from one transaction of a pseudo-conversational sequence to the next.
- To maintain user profile information and statistics during a terminal session. (This is not necessarily a z/OS Communications Server session, but a period of access to a particular application, as defined by the application.)

The first use has gradually been supplanted by COMMAREA and other CICS facilities, but the second is still fairly common. An application may store statistics, such as teller totals, in the TCTUA, which is initialized by a PLTPI program at the beginning of execution and retrieved by a PLTSD program at termination (shutdown). Autoinstall does not provide the ability to save this information between logoff and logon, because the TCTUA does not exist then. In addition, the TCTUA is not available to PLTPI and PLTSD programs at system initialization and termination. A new technique must be devised to allow the initialization of TCTUA and user data when the user logs on or logs off.

As noted earlier, the autoinstall process creates the TCT entry (including the TCTUA) before the first transaction is executed at the terminal, but after the autoinstall control program has done its initial execution. Thus you cannot access the TCTUA in the autoinstall control program and so any TCTUA initialization must be done later. You could write your own 'good morning' transaction to do this, or use the first transaction of the application in question.

Furthermore, the autoinstall control program does not have access to the TCTUA at logoff either, because CICS deletes the TCT entry (including the TCTUA) before invoking this program. Therefore, if an application needs to capture statistics or other information from such a TCTUA, it must get access before CICS does this. The place to do this is in the **node error program (NEP)**, the user-written component of the terminal error processing routines, because CICS drives the NEP exit before it deletes the TCT entry.

The terminal list table (TLT)

A terminal list table is a list of terminals, defined either by four-character CICS terminal names or by three-character CICS operator identifiers.

It is used principally for routing messages to multiple destinations and for giving limited operational control of a group of terminals to a supervisor. Both of these uses must be rethought in an autoinstall environment. If a TLT lists terminals that do not have TCT entries, because they are not logged on at the time the TLT is used, supervisory operations against those terminals fails. For example, you cannot put a nonexistent TCT entry into or out of service.

Similarly, message routing works differently for individually defined terminals and for autoinstalled terminals. When a message is sent to an individually defined terminal that is not logged on, the message is saved in temporary storage, and delivered when the terminal logs on. When a message is sent to a terminal that is not defined because it is an autoinstalled terminal and is not logged on, CICS gives a route fail condition, indicating that it knows nothing of that terminal. Indeed, if terminal names are generated and assigned randomly, as they may be in an autoinstall environment, the whole TLT mechanism breaks down.

Transaction routing

An autoinstall request to a local system overrides an autoinstall request for the same definition shipped from a different system.

If transaction routing can occur between two CICS systems, any terminal that can log on to both should be installed in both in the same way. Such a terminal should be:

- Autoinstalled in both systems, or
- Defined to each system at initialization

Autoinstall and output-only devices

Most of the benefits of autoinstall apply more to display devices than to printers.

Displays initiate transactions in CICS; usually, any transaction output is returned to the input terminal, so that neither CICS nor the application needs to know any other NETNAME than that of the display, which identifies itself in the process of logging on.

On the other hand, when output is directed to output-only printers, either CICS or the application must know what NETNAME to use, and this implies that some knowledge of the network is maintained somewhere. The primary and alternate printer names in an individually-defined TCT entry constitute this kind of information, as maintained by CICS. In the case of autoinstalled terminals, corresponding information—if it is required—must be maintained in tables or files, embedded in the application, supplied by z/OS Communications Server ASLTAB and ASLENT model terminal support (MTS), or supplied dynamically by the user.

Autoinstall and z/OS Communications Server

This topic explains how autoinstall works with z/OS Communications Server. It is intended to help you understand the processing that takes place when you use autoinstall.

The process of logging on to CICS using autoinstall

To help you understand the process, consider what takes place when you log on to CICS through z/OS Communications Server.

(The process is illustrated in Figure 35 on page 482 and Figure 36 on page 483.) CICS supports the model terminal support (MTS) function of z/OS Communications Server. Using MTS, you can define the model name, the printer (PRINTER), and the alternate printer (ALTPRINTER) for each terminal in a z/OS Communications Server table. CICS captures this information as part of autoinstall processing at logon, and uses it to create a TCTTE for the terminal. If you are using MTS, you must use a version of DFHZATDX that is suitable for use on CICS Transaction Server for z/OS. See the *CICS Customization Guide* for programming information about the user-replaceable autoinstall program.

1. z/OS Communications Server receives your request, determines that you want to use CICS, and passes your request to CICS.
2. CICS extracts your terminal's NETNAME name from the logon data. CICS searches the TCT for an entry with the same NETNAME.
3. If it finds such an entry, CICS issues an OPNDST to z/OS Communications Server to establish a session between CICS and the terminal. This is the normal CICS logon process.
4. If it fails to find a matching entry, CICS checks the system initialization parameters that were specified in the SIT, or reset using CEMT, to check whether it can allow an autoinstall.
5. If the system initialization parameters allow an autoinstall, CICS checks the terminal data passed by z/OS Communications Server, to check whether the terminal is eligible for autoinstall.
6. If the terminal is eligible, CICS examines the bind image to see if it carries sufficient information.
7. If the z/OS Communications Server bind image data proves sufficient, CICS searches the autoinstall model table (AMT) in sorted ascending order, and autoinstalls the terminal in one of the following ways:

- If z/OS Communications Server has supplied CICS with a valid model name, CICS passes this name to the **autoinstall control program**. (If the logon request has come to CICS through z/OS Communications Server, and if you have supplied z/OS Communications Server with names of model terminals, CICS can obtain the name of the model terminal from the logon data.)
- If z/OS Communications Server has not supplied CICS with a valid model name, CICS searches the AMT for suitable autoinstall models and passes these to an **autoinstall control program**, together with z/OS Communications Server logon data. If z/OS Communications Server has supplied CICS with an invalid model name, message DFHZC6936 results.

8. The autoinstall control program (either the CICS-supplied program or one written by you) selects one of the models and provides the rest of the information necessary to complete a TCT entry for the terminal.
9. When the autoinstall control program returns control, CICS builds a TCT entry using the autoinstall model, the data returned by the autoinstall control program, and the z/OS Communications Server logon data for the terminal. CICS then adds the new entry to the TCT and issues an OPNDST to z/OS Communications Server to establish a session between CICS and the terminal.
10. If the TYPETERM definition so specifies, CICS uses the QUERY function to find out about some of the features of the terminal. (These features are listed in Chapter 37, "TYPETERM resources," on page 327.)

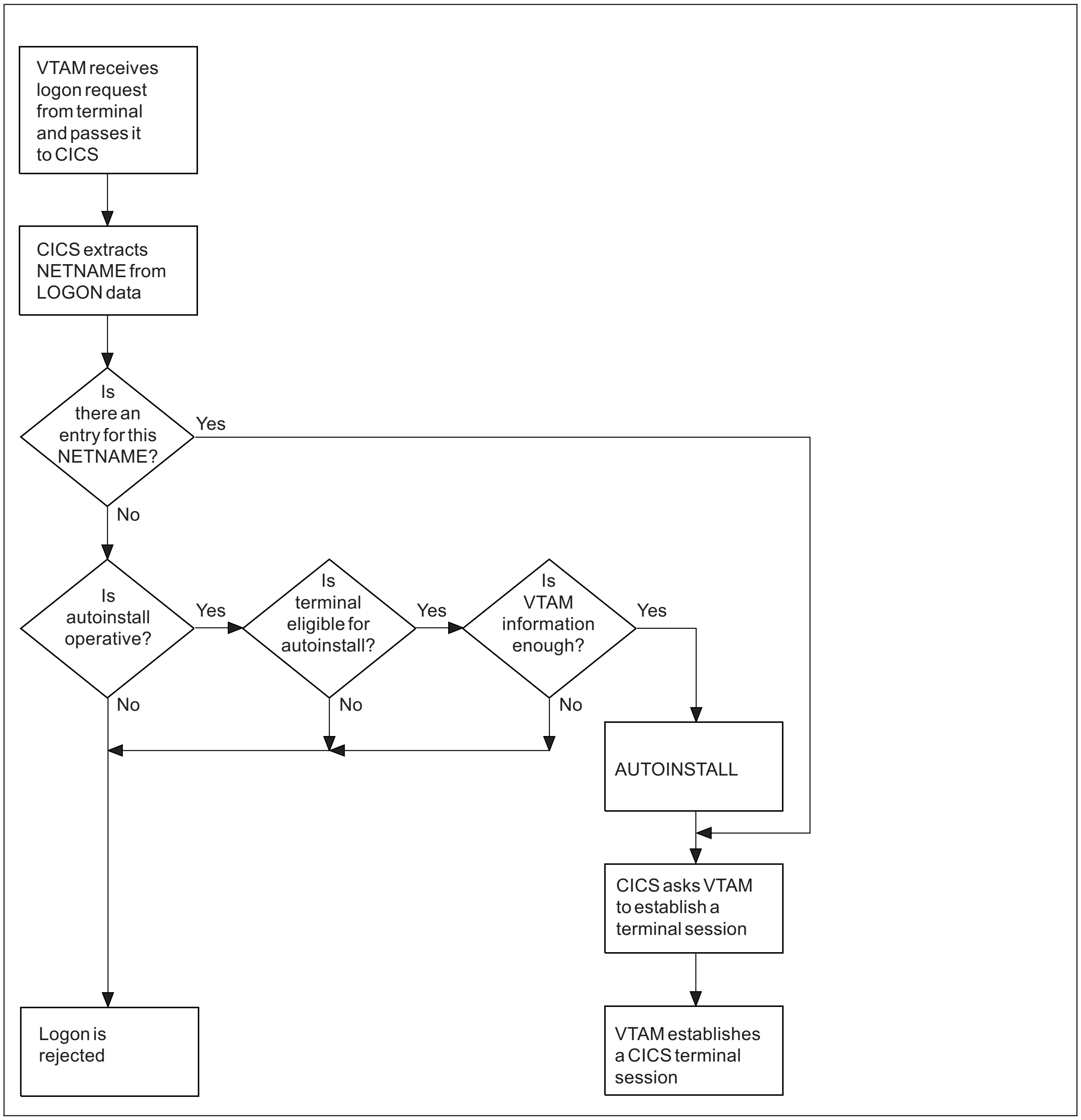

VTAM receives logon request from terminal and passes it to CICS
CICS extracts NETNAME from LOGON data
Is there an entry for this NETNAME?
Yes
No
Is autoinstall operative?
Yes
No
Is terminal eligible for autoinstall?
Yes
No
Is VTAM information enough?
Yes
No
AUTOINSTALL
CICS asks VTAM to establish a terminal session
VTAM establishes a CICS terminal session
Logon is rejected

Figure 35. The process of logging on to CICS using autoinstall.

Note that the autoinstall process itself is shown as a single box. What happens inside this box is depicted in Figure 36 on page 483

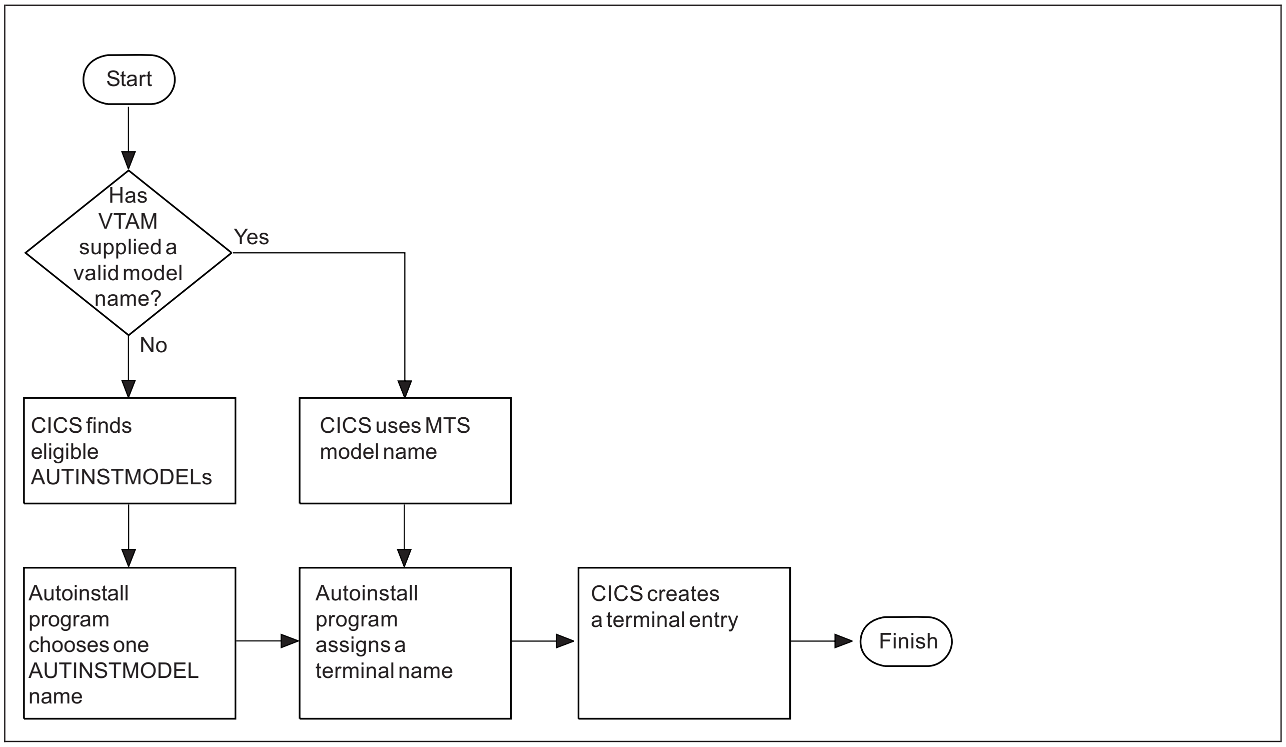

Start
Has VTAM supplied a valid model name?
Yes
No
CICS finds eligible AUTINSTMODELs
CICS uses MTS model name
Autoinstall program chooses one AUTINSTMODEL name
Autoinstall program assigns a terminal name
CICS creates a terminal entry
Finish

Figure 36. How CICS autoinstalls a terminal.

Note that the overall process in which this fits is shown in Figure 35 on page 482 .

What happens when the user logs off

CICS performs a number of processing steps when a terminal user logs off.

1. CICS issues a CLSDST to ask the z/OS Communications Server to end the session.
2. CICS attempts to delete the TCT entry after a delay specified in the AILDELAY system initialization parameter.

   Note that the TCT entry cannot be deleted if there is a lock effective at the time. For instance, CEMT INQUIRE TERMINAL or an outstanding ATI request locks the TCT entry.
3. CICS gives control to the autoinstall control program in case it has any further processing to do; for example, to free the TERMINAL name it gave to the terminal.

If the terminal's TYPETERM definition specifies SIGNOFF(LOGOFF) **and** the RACF segment specifies timeout, expiry of the timeout period causes the terminal to be logged off and the user to be signed off. After this automatic logoff, the delay period commences, leading to deletion of the TCT entry unless the terminal logs on again before the period ends. For details, see “Automatic sign-off, logoff, and TCTTE deletion” on page 487.

Implementing z/OS Communications Server autoinstall

You need to perform a number of steps to set up autoinstall for your z/OS Communications Server terminals.

Procedure

1. Determine if your terminals are eligible for autoinstall.

   The terminals that can be autoinstalled are:
   - z/OS Communications Server locally attached 3270 terminals (non-SNA), both displays and printers
   - z/OS Communications Server logical unit type 0 terminals
   - z/OS Communications Server logical unit type 1 terminals, including SCS printers
   - z/OS Communications Server logical unit type 2 terminals
   - z/OS Communications Server logical unit type 3 terminals
   - z/OS Communications Server logical unit type 4 terminals
   - z/OS Communications Server logical unit type 6.2 single-session terminals
   - TLX or TWX terminals using NTO

   Terminals that cannot be autoinstalled are:
   - Pipeline terminals
   - Automatic teller machines (3614 and 3624)
   - Non-z/OS Communications Server resources
   - z/OS Communications Server logical unit type 6.1 ISC and MRO sessions
2. Decide whether you can benefit from using autoinstall.

   You are likely to benefit from autoinstall if your system has:
   - A significant number of z/OS Communications Server terminals
   - Frequent changes to your network
   - Many z/OS Communications Server terminals logged off much of the time
   - Many z/OS Communications Server terminals using other applications much of the time
   - Many z/OS Communications Server terminals that need access to multiple, but unconnected, CICS systems

   Autoinstall might be less beneficial if you have:
   - A small, static network
   - Many terminals more or less permanently logged on to one CICS system
   - Many terminals logging on and off frequently
   - Many terminals logging on and off at the same time
3. Decide which devices to autoinstall.

   This decision depends on how you use your z/OS Communications Server terminals. For example, a terminal that is logged on all the time can be autoinstalled, but you might choose to define it individually.

   An autoinstall logon is slower than a logon to a terminal individually defined to CICS, so if you switch continually between applications and have to log on to CICS frequently, you may require individual definitions for some terminals.

   You should also consider your use of automatic transaction initiation (ATI), terminal list tables (TLTs), and the intercommunication methods in use in your installation. See "Deciding which terminals to autoinstall" on page 478.
4. Create your TYPETERM and model TERMINAL definitions.

   CICS supplies some TERMINAL and TYPETERM definitions; these are listed in "TYPETERM definitions in group DFHTYPE" on page 870 and "Model TERMINAL definitions in group DFHTERM" on page 875. You can use these definitions if they are suitable; if not, create your own using CEDA or DFHCSDUP.

   Define an autoinstall model for each different kind of terminal to be autoinstalled. Try to keep the number of definitions to a minimum, so that the autoinstall control program can be as simple as possible.

When you create your definitions, consider whether you want to use the QUERY structured field (see TYPETERM attributes in the Resource Definition Guide). It can help the autoinstall control program to choose which model on which to base a definition, and so speed up the autoinstall process.

5. Redefine DFHZCQ. For every region using autoinstall, redefine DFHZCQ to be RESIDENT(YES). (DFHZCQ is in the CICS-supplied group DFHSPI). See the *CICS Performance Guide* for guidance on why you should consider making programs resident.
6. Ensure that your z/OS Communications Server LOGMODE table entries are correct. “Autoinstall and z/OS Communications Server” on page 480 explains the relationship between CICS autoinstall and z/OS Communications Server. For programming information, including a list of z/OS Communications Server LOGMODE table entries, see the *CICS Customization Guide*.
7. Design and write an autoinstall control program.

   The terminal autoinstall control program is invoked by CICS every time there is a valid request for a TCT entry to be autoinstalled, and every time an autoinstalled TCT entry is deleted.

   For programming information about the autoinstall control program, see the *CICS Customization Guide*.

   Before beginning your program, look at the CICS-supplied autoinstall control program DFHZATDX in group DFHSPI to see if it is suitable for what you want to do with autoinstall.
8. Enable terminal autoinstall.

   You can enable autoinstall for terminals either by specifying suitable system initialization parameters, or by using the EXEC CICS or CEMT SET and INQUIRE SYSTEM commands.

   Five system initialization parameters relate to terminal autoinstall:

   AIEXIT
   specifies the name of the autoinstall program to be used. It defaults to DFHZATDX, the name of the IBM-supplied autoinstall control program.

   AIQMAX
   specifies the maximum number of terminals that can be queued concurrently for autoinstall. When this limit is reached, CICS requests z/OS Communications Server to stop passing LOGON and BIND requests to CICS until CICS has processed one more autoinstall request.

   The purpose of the limit is to protect the system from uncontrolled consumption of operating system storage by the autoinstall process, as a result of some other abnormal event. Normally, in the process of autoinstall, the principal consumer of CICS storage is the autoinstall task (CATA) itself. The amount of CICS storage consumed by the autoinstall process during normal operation can therefore be controlled by creating an appropriate TRANCLASS definition to limit the number of autoinstall tasks that can exist concurrently.

   AILDELAY
   specifies the time interval, expressed as hours, minutes, and seconds (hhmmss), which elapses after an autoinstall terminal logs off before its TCTTE is deleted. The default value is 0, indicating that TCTTEs are deleted at logoff time and at warm shutdown as CLSDST is issued for the autoinstall terminals still in session. Specifying an AILDELAY interval permits the TCTTE to be reused should the terminal log back on before the interval has expired.

AIRDELAY
specifies the time interval, expressed as hours, minutes, and seconds (hhmmss), which elapses after emergency restart before terminal entries are deleted if they are not in session. The default value is 700, indicating a restart delay of 7 minutes.

GRPLIST
specifies the list or lists containing the group or groups of autoinstall models created.

For information on how to specify these system initialization parameters, see CICS system initialization.

Three options relate to terminal autoinstall on the INQUIRE and SET AUTOINSTALL command:

CUR(*value*)
specifies the number of autoinstall logon requests that are currently being processed.

MAXREQS(*value*)
specifies the largest number of autoinstall requests that are allowed to queue at one time, in the range 0-999.

You can prevent more terminals from logging on through autoinstall by setting this value to 0. This allows autoinstalled entries for terminals currently logged on to be deleted by the autoinstall program when they log off.

PROGRAM(*pgrmid*)
specifies the name of the user program that is controlling the autoinstall process. The default is the CICS-supplied program DFHZATDX.

Recovery and restart of autoinstalled terminal definitions

This topic explains what happens to autoinstalled terminal definitions at logoff and system restart times.

What happens at CICS restart

At an emergency restart, autoinstalled TCT entries are recovered unless you specify a restart delay period of zero in the **AIRDELAY** system initialization parameter.

Users can log on again after an emergency restart without going through the autoinstall process. Those terminals with AUTOCONNECT(YES) specified in their TYPETERM definition are automatically logged on during the restart process, without the need for operator intervention. The recovery of autoinstalled TCT entries avoids the performance impact of many concurrent autoinstall requests following a CICS restart. A terminal user logging on after restart uses the TCT entry created for that terminal's NETNAME during the previous CICS run. It is just as if that terminal had an individual TERMINAL definition installed in the TCT.

Because this could pose a threat to security, CICS checks for operator activity after recovery. After a delay, all autoinstalled TCT entries that were recovered but are not in session again are deleted. As well as improving security, this ensures that CICS storage is not wasted by unused TCT entries. You can specify the length of the delay using the system initialization parameters.

If z/OS Communications Server persistent sessions support is in use for the CICS region and AIRDELAY is not equal to zero, autoinstalled TCT entries are treated exactly like other TCT entries.

At a warm start, TCT entries that were previously autoinstalled are lost, unless you logoff and CICS is shut down before the AILDELAY time has expired.

If a TCTTE is recovered during emergency restart, a specification of AUTOCONNECT(YES) prevents deletion of the TCTTE by AIRDELAY. If you want the TCTTE storage to be deleted in this case, specify AUTOCONNECT(NO).

Automatic sign-off, logoff, and TCTTE deletion

If a session ends through expiry of the user's TIMEOUT period, the terminal entry is deleted as described in the preceding section only if SIGNOFF(LOGOFF) is specified in the TYPETERM definition of the model.

Table 23 summarizes the automatic deletion and recovery of TCTTEs for autoinstalled terminals.

Figure 37 on page 488 shows how automatic sign-off, logoff, and TCTTE deletion occur if a session is timed out. Figure 38 on page 489 shows how logon and TCTTE deletion occur if, at a warm start or emergency restart, a TCTTE exists for an autoinstalled terminal. Table 24 on page 488 shows how automatic TCTTE deletion occurs if a session ends for any reason other than timeout.

Table 23. AUTOINSTALL—summary of TCTTE recovery and deletion

CICS RUNNING:	
Restart delay = 0	TCTTE entries are not cataloged and therefore cannot be recovered in a subsequent run.
Restart delay > 0	TCTTE entries are cataloged. If they are not deleted during this run or at shutdown, they can be recovered in a subsequent emergency restart.
SHUTDOWN:	
Warm	Terminals are logged off and their TCTTEs are deleted, except for those terminals which were logged off before shutdown but whose AILDELAY has not expired.
Immediate	No TCTTEs are deleted. All can be recovered in a subsequent emergency restart.
Abnormal termination	No TCTTEs are deleted. All can be recovered in a subsequent emergency restart.
STARTUP:	
Cold	No TCTTEs are recovered.
Warm	No TCTTEs are recovered.
Emergency restart when restart delay = 0	No TCTTEs are recovered (but see note in Figure 38 on page 489). This session is unbound if it persists.
Emergency restart when restart delay > 0	TCTTEs are recovered. For details see Figure 38 on page 489. This session is recovered if it persists.

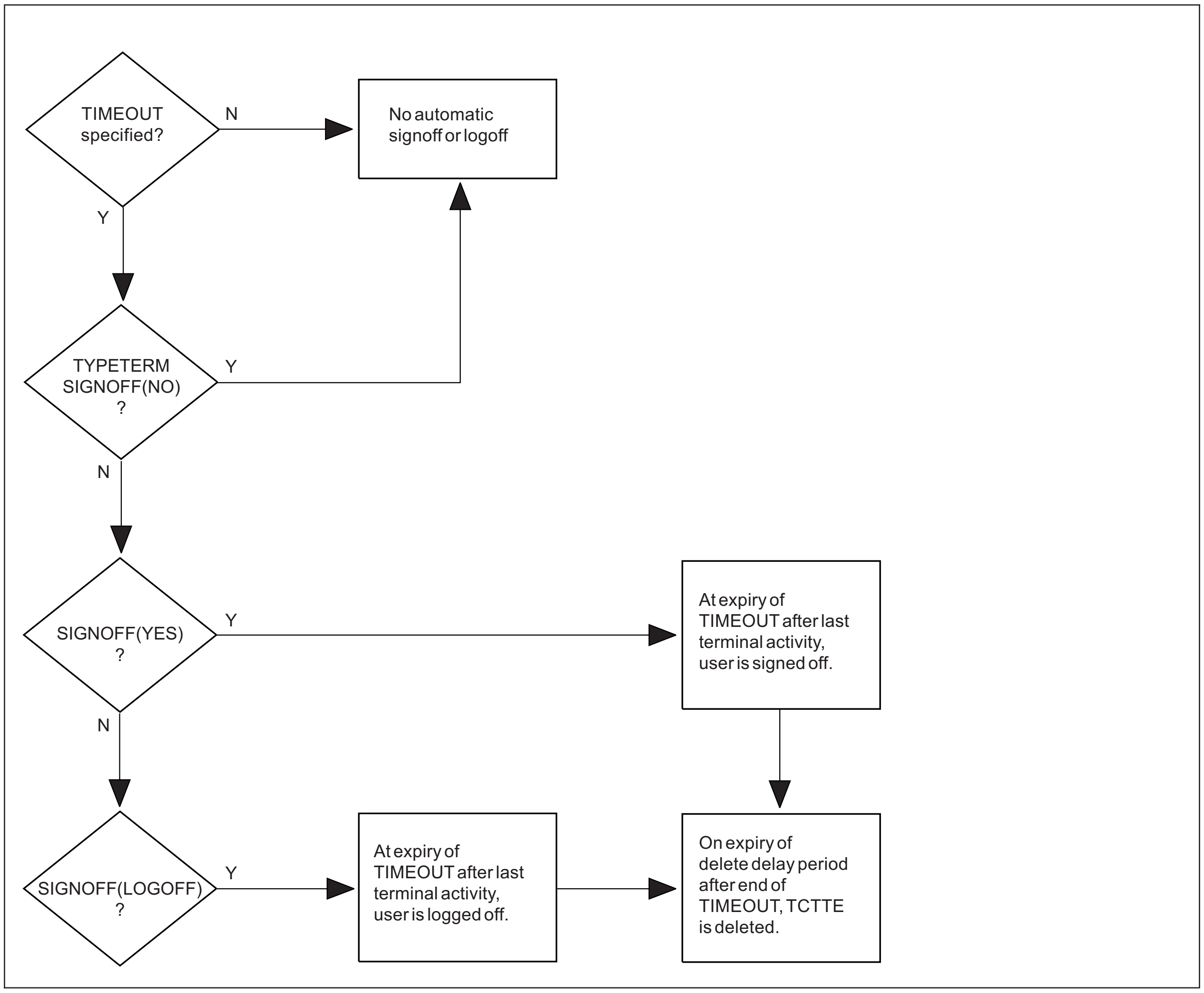

TIMEOUT specified?
N
No automatic signoff or logoff
Y
TYPETERM SIGNOFF(NO) ?
Y
N
SIGNOFF(YES) ?
Y
At expiry of TIMEOUT after last terminal activity, user is signed off.
N
SIGNOFF(LOGOFF) ?
Y
At expiry of TIMEOUT after last terminal activity, user is logged off.
On expiry of delete delay period after end of TIMEOUT, TCTTE is deleted.

Figure 37. Automatic sign-off, logoff and deletion of autoinstalled terminals.

When a session is timed out because there is no terminal activity, CICS uses these steps to determine whether to delete an autoinstalled terminal definition:

1. If no timeout is specified in the RACF segment, the user is not automatically signed off or logged off.
2. If SIGNOFF(NO) is specified in the TYPETERM definition, the user is not automatically signed off or logged off.
3. If SIGNOFF(YES) is specified in the TYPETERM definition, and a timeout is specified in the RACF segment, the user is signed off when the timeout period has expired.

   Before the timeout period has expired, the user can resume terminal activity.
4. If SIGNOFF(LOGOFF) is specified in the TYPETERM definition, and a timeout is specified in the RACF segment, the user is signed off and the terminal is logged off. The terminal definition is deleted after a further interval, which is specified in the AILDELAY attribute of the TYPETERM definition.

   Before the timeout period has expired, the user can resume terminal activity. After the timeout has expired, but before the terminal definition is deleted, the user can log on again without the overhead of the autoinstall process.

Table 24. AUTOINSTALL—automatic TCTTE deletion after non-automatic logoff

Non-automatic LOGOFF:	<---------**Delete delay period**--------->	TCTTE entry deleted.
z/OS Communications Server informs CICS of a session outage, terminal logs off, or transaction disconnects terminal	The terminal can log on during this period without repeating the autoinstall process.	

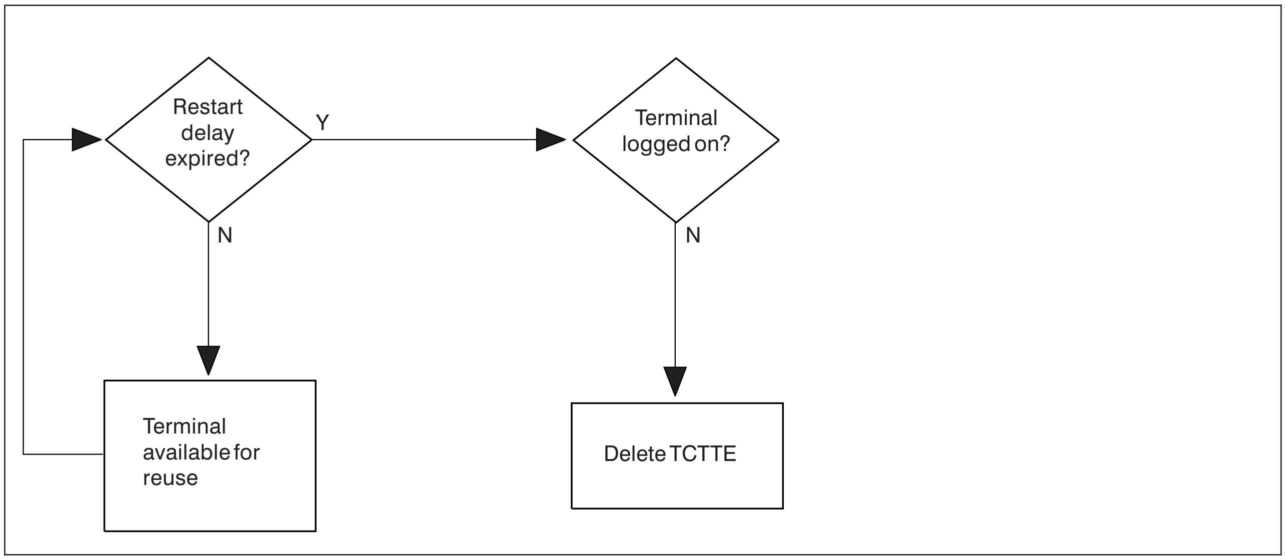


Figure 38. AUTOINSTALL—automatic logoff and TCTTE deletion after an emergency restart.

During a warm or emergency start, CICS uses these steps to determine whether an autoinstalled terminal definition that has been recovered should be deleted:

1. Before the restart delay period, specified in the AIRDELAY attribute of the TYPETERM definition, expires, the terminal definition is available for use.
2. After the restart delay period expires, the terminal definition is deleted. If a user attempts to log on at the terminal, the definition is autoinstalled.

Note:

1. Successive CICS runs are assumed to use the same restart delay period. If a run with restart delay > 0 is followed by an emergency restart with restart delay = 0, undeleted TCTTEs are recoverd. If the recovered TCTTE specifies AUTOCONNECT(YES), the associated terminal is logged on; otherwise the TCTTE is deleted after startup
2. Emergency restart: If the restart delay peiod = 0, there is no TCTTE recovery during emergeny restart.

Autoinstalling MVS consoles

Commands issued at an MVS console (or in a job stream) can be directed to a CICS region running as a started task, or job, using the MVS MODIFY command. Before CICS can accept the MVS command, it needs an entry in the terminal control table for the console issuing the command, which CICS terminal control can use to display a response.

This is how CICS handles commands (transaction invocations) it receives from an MVS operator console:

Pre-installed console definitions

When MVS receives your request, it identifies the CICS region from the task or job name, and passes your request to CICS.

CICS extracts the console's name from the MODIFY data, and searches the terminal control table (TCT) for a CONSNAME entry that matches the console name. If CICS finds a matching entry, it starts the transaction specified on the MODIFY command, and the transaction can send the results to the console using the termid of the console's entry in the terminal control table.

Autoinstalled console definitions

If CICS fails to find a matching entry, it checks the autoinstall status for consoles to determine whether it can perform an autoinstall for the console.

If autoinstall for consoles is active, CICS searches the autoinstall model table (AMT) and initiates the autoinstall process for the console. CICS either:

- Passes a list of autoinstall model definitions to the autoinstall control program, together with information about the console, or
- Automatically uses the first console model definition it finds, or a console model with the same name as the console, and autoinstalls the console using a CICS-generated termid, without calling your autoinstall control program.

Which of these options CICS takes is determined by the autoinstall status for consoles. The autoinstall status for consoles is either set at startup by the AICONS system initialization parameter, or dynamically by a CEMT (or EXEC CICS) SET AUTOINSTALL CONSOLES command.

The terminal autoinstall control program

You use the same autoinstall control program for console autoinstall as for z/OS Communications Server terminals and APPC connections, specifying the name of the control program on the AIEXIT system initialization parameter.

If the autoinstall control program is invoked (either the CICS-supplied program or your own) it selects one of the models and provides the rest of the information necessary to complete a TCT terminal entry for the console. When the autoinstall control program returns control, CICS builds a terminal control table terminal entry (TCTTE) for the console using the autoinstall model, the termid, and other data returned by the autoinstall control program, and MVS console data. CICS then adds the new entry to the TCT and starts the transaction specified on the MODIFY command.

Preset security for autoinstalled consoles

If the model terminal specifies USERID(*FIRST) or USERID(*EVERY), CICS uses the user ID passed by MVS on the MODIFY command to sign on the console, in effect using the MVS-passed user ID as the preset userid for the new console.

Automatic deletion of autoinstalled consoles

CICS automatically deletes autoinstalled consoles if they are unused for a specified delay period (the default is 60 minutes). As part of the install function, the autoinstall control program can set a 'delete-delay' value for the console. The delete-delay period is the length of time (in minutes) that an autoinstalled console can remain installed without being used before CICS deletes it. Setting this value to 0 inhibits automatic deletion. Autoinstalled consoles are not recorded on the catalog and not recovered at restart. Note that a console is deleted even if there is a currently signed-on user.

Implementing autoinstall for MVS consoles

CICS autoinstall support for consoles is not provided automatically—there are some tasks to be completed to enable the support.

About this task

Basically, you need to specify that you want the support, and ensure that the required model resource definitions are installed. This is because the autoinstall models supplied in DFHLIST do not contain models suitable for console autoinstall. The IBM-supplied group DFHTERMC contains an autoinstall model definition for a console, but this is not included in DFHLIST. Also, an optional requirement is the support of an autoinstall control program

The following steps describe how to enable autoinstall for consoles:

1. Define a console terminal definition that:
   - Specifies AUTINSTMODEL(YES), or AUTINSTMODEL(ONLY)
   - Specifies the CONSNAME(name)
   - References a TYPETERM that specifies DEVICE(CONSOLE)

   You can use the model console definition defined in the group DFHTERMC, which is added to your CSD by the INITIALIZE and UPGRADE commands.

   Note: When a model terminal definition is used by the console autoinstall function, CICS ignores the console name specified on the model definition.
2. Install the model console definition either by adding its group to a group list and perform a cold start, or use the CEDA INSTALL command.
3. If you decide that you want the autoinstall control program to be invoked for console autoinstall, modify your autoinstall control program to handle console install and delete requests. To reactivate your modified program, either restart CICS or use the CEMT, or EXEC CICS, SET PROGRAM(...) NEWCOPY command.

   To ensure CICS invokes your autoinstall control program, specify system initialization parameter AICONS=YES, or use the CEMT, or EXEC CICS, SET AUTOINSTALL CONSOLES(PROGAUTO) command to specify console autoinstall dynamically.
4. If you decide to let CICS autoinstall consoles without invoking your autoinstall control program, specify system initialization parameter AICONS=AUTO, or use the CEMT, or EXEC CICS, SET AUTOINSTALL CONSOLES(FULLAUTO) command to specify console autoinstall dynamically. With the AUTO option, CICS allocates the termid automatically.
5. As in the case of z/OS Communications Server terminal autoinstall, ensure that the necessary autoinstall programs and transactions are installed. These are your autoinstall control program, the transactions CATA and CATD, and the programs DFHZATD and DFHZATA. The CICS-supplied autoinstall control program, DFHZATDX or DFHZATDY, accepts a request from any console, provided an autoinstall model for a console is found in the AMT. Use the model definition supplied in group DFHTERMC, or alternatively create your own autoinstall console models (see "The autoinstall control program for MVS consoles" on page 492)

If, when your CICS system is in production, you want to restrict the consoles that are allowed to be autoinstalled, control this in the autoinstall control program. There are other reasons why you might write your own autoinstall control program, such as security requirements or varying the default delete-delay period. See the *CICS Customization Guide* for information about including support for consoles in your autoinstall console program. You may have to change the way you use console names and terminal names, or you may have to make special arrangements in the autoinstall control program to allow you to continue to use the names in the way that you do.

Defining model TERMINAL definitions for consoles

Whenever CICS receives a command from an unknown console, and autoinstall for consoles is active, CICS searches the AMT for autoinstall models that describe a console.

These models must specify a CONSNAME, and reference a TYPETERM definition that specifies DEVICE(CONSOLE). The console name in a model definition is a dummy value in the case of autoinstall, and is ignored by CICS, which passes a list of AUTINSTNAME attribute values to the autoinstall control program, so that it can choose one of them.

Specifying automatic preset security

One attribute that your autoinstall control program may require in a model definition is a USERID that provides the correct preset security.

Selecting a model that has preset security defined ensures that the operator's security authority is predetermined. This avoids an operator having to logon to CICS, using the CESN signon transaction, in order to issue a MODIFY command. Two special operands of the USERID parameter provide for an automatic signon of consoles:

- USERID(*EVERY) means that CICS is to use the userid passed on the MVS MODIFY command every time a MODIFY command is received. The console is signed on using the MVS userid as the preset userid for the console being autoinstalled. The console remains signed on with this userid until the console is deleted or another MODIFY command is received with another userid. If a MODIFY command is received without a userid, CICS signs on the default CICS userid until a MODIFY command is received that has a valid userid. For non-console terminals, or if security is not enabled, this value is ignored.
- USERID(*FIRST) means that CICS is to use the userid passed on the first MVS MODIFY command that requires the console to be autoinstalled. The console is signed on with the MVS userid as the preset userid. The console remains signed on with this userid until the console is deleted. If a MODIFY command is received without a userid, CICS signs on the default CICS userid. For non-console terminals, or if security is not enabled, this value is ignored.

The autoinstall control program for MVS consoles

The console name and other MVS data about the console are not sufficient to build a terminal control table terminal entry (TCTTE) for the console.

The autoinstall control program must create a CICS terminal identifier (termid) for the console, and choose a suitable model from the list of models passed by CICS in the communications area.

IBM supplies two assembler versions of an autoinstall control program (DFHZATDX and DFHZATDY in SDFHLOAD) that perform the basic functions, but it these may not perform all the functions that you require. For example, you may have your own conventions for terminal names and their relationship to console names. Terminal names are up to four characters long, and console names are up to eight characters long, hence it is often not possible to derive one from the other.

In addition to providing the termid, you can code your program to perform other functions associated with console definition. For example, your program could:
- Perform security checks
- Monitor the number of autoinstalled consoles currently logged on.

The autoinstall control program runs in a transaction environment as a user-replaceable program, rather than as a CICS exit. This means that you can read files, and issue other CICS commands, to help you determine the terminal name. The TCTTE entry for the console, however, does not exist at either of the times that the program is invoked, because (1) for the install function it has not yet been created, and (2) for the delete function it has already been deleted. The program therefore runs in transaction-without-terminal mode.

You can write an autoinstall control program in the following languages: assembler language, C, COBOL, or PL/I. The CICS-supplied autoinstall program source is available in all four languages. The assembler version, which is used by default, is also shipped in executable form in SDFHLOAD. If you decide to write your own program, you can use one of the IBM-supplied programs as a pattern.

You specify the name of your autoinstall control program on the AIEXIT system initialization parameter. CICS supports only one autoinstall control program at a time, and therefore your program must handle console and terminal autoinstall requests if support for both is required.

When you test your autoinstall control program, you will find that CICS writes install and delete messages to the transient data destination, CADL, each time CICS installs and deletes a TCT entry. If there are no autoinstall models installed for consoles, CICS does not call the autoinstall control program, and fails the autoinstall request.

For information on implementing the CICS-supplied autoinstall control program, or designing and writing your own program, see the *CICS Customization Guide*.

Autoinstalling APPC connections

When you decide whether to use autoinstall for connections, there are several factors to consider.

Security

Before using autoinstall for connections, consider whether the security considerations are suitable for your purposes.

The autoinstalled connection inherits the security attributes specified in the model. The security attributes from the CONNECTION definition are:
- SECURITYNAME
- ATTACHSEC
- BINDSECURITY

If you are using compatibility mode to share a CSD file with an earlier release of CICS, the BINDPASSWORD attribute is also inherited. See "CONNECTION attributes" on page 49 for information on these attributes.

From the SESSIONS definition, the autoinstalled connection inherits the preset security attribute USERID. See "SESSIONS attributes" on page 221 for a description of this attribute. If you are attempting to autoinstall an attachsec verify connection from a non-EBCDIC based system, then you should refer to the *CICS RACF Security Guide*

Model terminal support (MTS)

MTS is not supported for connection autoinstall. This means that you must code the routines yourself to select the model definition name; you cannot get z/OS Communications Server to do it for you. MTS is described in "The process of logging on to CICS using autoinstall" on page 480.

Deletion of autoinstalled connections

Unlike autoinstalled terminal definitions, autoinstalled connection definitions are not deleted when they are no longer in use. This means that they continue to occupy storage.

The rules for cataloging and deletion of autoinstalled APPC connections have changed in CICS Transaction Server for z/OS. All autoinstalled connections are now cataloged, depending on the **AIRDELAY** system initialization parameter. If AIRDELAY=0, synclevel 1 connections are not cataloged.

The rules for deletion are:

- Autoinstalled synclevel 1 connections are deleted when they are released.
- If CICS is not registered as a generic resource, autoinstalled synclevel 2 connections are not deleted.
- If CICS is registered as a generic resource, autoinstalled synclevel 2 and limited resources connections are deleted when the affinity is ended.

If autoinstall is enabled, and an APPC BIND request is received for an APPC service manager (SNASVCMG) session that does not have a matching CICS CONNECTION definition, or a BIND is received for a single session, a new connection is created and installed automatically.

Implementing APPC connection autoinstall

You are most likely to benefit from autoinstall for connections if you have large numbers of workstations all with the same characteristics.

Procedure

1. Decide whether to use autoinstall for connections

   The main **benefits** of using autoinstall for connections are that cold, warm, and emergency restarts are faster, you have fewer CSD file definitions to manage, and less storage is taken up by unused definitions.

   However, some possible restrictions are discussed in “Autoinstalling APPC connections” on page 493 and “Recovery and restart for connection autoinstall” on page 496.
2. Decide which sessions to autoinstall

   You can use autoinstall for CICS-to-CICS connections, but it is intended primarily for workstations.
3. Create your model connection definitions

   A model definition provides CICS with one definition that can be used for all connections with the same properties. See “Model definitions for connection autoinstall” on page 495.
4. Design and write an autoinstall control program

   The autoinstall control program provides CICS with the extra information it needs to complete an autoinstall request, such as the autoinstall model name.

   For programming information about the autoinstall control program, see Writing a program to control autoinstall of LUs.
5. Enable autoinstall for connections

   Autoinstall for connections is enabled when you enable autoinstall for terminals; see “Implementing z/OS Communications Server autoinstall” on page 483 for information about the system initialization parameters and the CEMT and EXEC CICS INQUIRE and SET options used.

If terminal autoinstall has been enabled but you want to prevent autoinstall for connections, set the model connection out of service by using the **SET CONNECTION***(connection-name)* **OUTSERVICE** command. For details, see CEMT SET CONNECTION in CICS Supplied Transactions and SET CONNECTION in CICS System Programming Reference. When the model connection is out of service, the autoinstall control program cannot access it and copy it, so the autoinstall function for connections is effectively disabled.

Model definitions for connection autoinstall

Model definitions for connection autoinstall are different from those for terminal autoinstall in that they do not have to be defined explicitly as models. Any installed connection definition can be used as a "template" for an autoinstalled connection.

For performance reasons, use an installed connection definition that is not otherwise in use. The definition is locked while CICS copies it and, if you have a very large number of sessions autoinstalling, the delay may be noticeable.

You can set the model connection definition out of service by using the CEMT or EXEC CICS SET CONNECTION OUTSERVICE command. This effectively disables autoinstall for connections, because the autoinstall control program cannot access and copy the model definition.

For CICS-to-CICS connection autoinstall, the MAXIMUM attribute in the SESSIONS definition of the model connection should be large enough to accommodate the largest device using the model.

When creating model connections, you must ensure that the usergroup modenames specified in the session's MODENAME field match the usergroup modenames in the connection to be autoinstalled.

The autoinstall control program for connections

The autoinstall control program is invoked at installation for APPC single- and parallel-session connections initiated by a BIND. The autoinstall control program provides CICS with any extra information it needs to complete an autoinstall request. For APPC parallel sessions, the control program provides a SYSID for the new definition.

When an APPC BIND request is received by CICS, CICS receives the partner's z/OS Communications Server NETNAME and passes it to the autoinstall control program. The control program uses the information contained in the partner's NETNAME and in the z/OS Communications Server BIND to select the most appropriate model on which to base a new connection. In order to return the name of the most suitable model to CICS, the control program must know the NETNAME or SYSID of every model.

CICS supplies a sample control program, DFHZATDY, for connection autoinstall. You can use DFHZATDY unchanged if both of the following conditions are met:
- Your model connections are called CCPS, CBPS, or CBSS
- You use the last four characters of the NETNAME as the SYSID or terminal name

If these conditions are not met, you have to change DFHZATDY to suit your installation. Its source is supplied in CICSTS42.SDFHSAMP.DFHZATDY is defined as follows:

```
DEFINE PROGRAM(DFHZATDY)  GROUP(DFHAI62)  LANGUAGE(ASSEMBLER)
       RELOAD(NO)  RESIDENT(NO)  STATUS(ENABLED)  CEDF(NO)
       DATALOCATION(ANY)  EXECKEY(CICS)
```

The definitions for the supplied model connections and sessions are:

```
DEFINE CONNECTION(CBPS)  GROUP(DFHAI62)  NETNAME(TMPLATE1)
       ACCESSMETHOD(VTAM)  PROTOCOL(APPC)  SINGLESESS(NO)
DEFINE SESSION(CBPS)  GROUP(DFHAI62)  CONNECTION(CBPS)
       MODENAME(LU62PS)  PROTOCOL(APPC)  MAXIMUM(10,5)

DEFINE CONNECTION(CBSS)  GROUP(DFHAI62)  NETNAME(TMPLATE2)
       ACCESSMETHOD(VTAM)  PROTOCOL(APPC)  SINGLESESS(YES)
DEFINE SESSION(CBSS)  GROUP(DFHAI62)  CONNECTION(CBSS)
       MODENAME(LU62SS)  PROTOCOL(APPC)  MAXIMUM(1,0)

DEFINE CONNECTION(CCPS)  GROUP(DFHAI62)  NETNAME(TMPLATE3)
       ACCESSMETHOD(VTAM)  PROTOCOL(APPC)  SINGLESESS(NO)
DEFINE SESSION(CCPS)  GROUP(DFHAI62)  CONNECTION(CCPS)
       MODENAME(LU62PS)  PROTOCOL(APPC)  MAXIMUM(10,5)
```

If you want to use these definitions, you must add group DFHAI62 to your group list. Do not try to use the terminal autoinstall exit DFHZATDX to autoinstall connections; any sessions installed by DFHZATDX are terminated and message DFHZC6921 is issued.

Note: VTAM is now the z/OS Communications Server.

For programming information on customizing the autoinstall control program, see the *CICS Customization Guide*.

Recovery and restart for connection autoinstall

Information about autoinstalled connections are recovered in some, but not all, restart situations.

Because autoinstalled connections are not cataloged, they cannot benefit from persistent sessions support. This means that when a session does persist, any autoinstalled connections relating to it are unbound.

Autoinstalled connections are recovered only at a cold start of CICS; they are not recovered at warm and emergency restarts.

Unit-of-recovery descriptors (URDs) for autoinstalled connections are recovered after cold, warm, and emergency restarts, as long as the SYSIDs of the connections are consistent.

The SYSIDs of the autoinstalled connections must be consistent if you are using recoverable resources.

Autoinstalling IPIC connections

Unlike autoinstalling other resources, autoinstalling an IPCONN does not require a model definition (although this is recommended).

Unlike the model definitions used to autoinstall terminals, the definitions used to autoinstall IPCONNs do not need to be defined explicitly as models. Instead, CICS can use any previously-installed IPCONN definition as a template for a new definition.

For more information on autoinstalling IPCONNs, see the *CICS Customization Guide*.

Autoinstalling programs, map sets, and partition sets

If autoinstall for programs is active, and an implicit or explicit load request is issued for a previously undefined program, map set, or partition set, CICS dynamically creates a definition, and installs it and catalogs it as appropriate.

An implicit or explicit load occurs when:
- CICS starts a transaction
- An application program issues one of the following commands:
  EXEC CICS LINK (without a SYSID)
  EXEC CICS XCTL
  EXEC CICS LOAD
  EXEC CICS ENABLE (for global user exit, or task-related user exit, program)
- When, after an EXEC CICS HANDLE ABEND PROGRAM(...), a condition is raised and CICS transfers control to the named program.
- CICS calls a user-replaceable program for the first time
- An application program issues one of the following commands:
  EXEC CICS RECEIVE or SEND MAP
  EXEC CICS SEND PARTNSET
  EXEC CICS RECEIVE PARTN

Implementing program autoinstall

The only program that cannot be autoinstalled is the program autoinstall control program.

Procedure

1. Decide whether your programs are eligible for autoinstall

   All other programs can be autoinstalled, including:
   - All other user-replaceable programs
   - Global user exits (GLUEs) and task-related user exits (TRUEs)
   - PLT programs

   User-replaceable programs and PLT programs are autoinstalled on first reference. GLUEs and TRUEs are autoinstalled when enabled.
2. Decide whether to use autoinstall for programs

   Using autoinstall for programs can save time spent on defining individual programs, mapsets, and partitionsets. Savings can also be made on storage, because the definitions of autoinstalled resources do not occupy space until they are referenced.

   Use of autoinstall for programs can reduce the number of definitions to be installed on a COLD start, thereby reducing the time taken.
3. Decide which programs to autoinstall

   Depending on your programs, you can choose to use a mixture of RDO and autoinstall. A suggested way to manage program autoinstall is to continue to use RDO for existing program definitions and for installing groups containing related programs. Use autoinstall as you develop and install new applications, and in test environments, where you might otherwise install large numbers of programs at CICS startup.
4. Enable autoinstall for programs

You can enable autoinstall for programs either by specifying system initialization parameters by using the **SET SYSTEM** command.

Three system initialization parameters relate to program autoinstall:

PGAICTLG
The PGAICTLG parameter specifies whether autoinstalled program definitions are cataloged. See "Cataloging for program autoinstall."

PGAIPGM
The PGAIPGM parameter specifies whether the program autoinstall function is active or inactive.

PGAIEXIT
The PGAIEXIT parameter specifies the name of the program autoinstall exit.

Three options relate to program autoinstall on the **SET SYSTEM** command:

PROGAUTOCTLG
The PROGAUTOCTLG option specifies whether autoinstalled program definitions are to be cataloged. See "Cataloging for program autoinstall."

PROGAUTOEXIT
The PROGAUTOEXIT option specifies the name of the program autoinstall exit.

PROGAUTOINST
The PROGAUTOINST option specifies whether the program autoinstall function is active or inactive.

For programming information on how to specify EXEC CICS commands, see System programming overview in CICS System Programming Reference, and for information on how to use CEMT, see CEMT - master terminal.

5. Create your model program definitions

   A model definition provides CICS with one definition that can be used for all programs with the same properties. See "Model definitions for program autoinstall" on page 499

6. Design and write an autoinstall control program

   The autoinstall control program provides CICS with the extra information it needs to complete an autoinstall request, such as the autoinstall model name. You can write your autoinstall program in any language supported by CICS, with full access to the CICS application programming interface. See "The autoinstall control program for programs" on page 499.

Cataloging for program autoinstall

You can specify whether an autoinstalled program definition is cataloged or not (that is, whether the definition is retained over a warm or emergency start) by using either the PGAICTLG system initialization parameter or the PROGAUTOCTLG option on the CEMT INQUIRE∨SET SYSTEM command.

The values you can specify are:

ALL
Autoinstalled program definitions are written to the global catalog at the time of the autoinstall, and following any subsequent modification.

MODIFY
Autoinstalled program definitions are cataloged only if the program definition is modified by a SET PROGRAM command subsequent to the autoinstall.

NONE
Autoinstalled program definitions are not cataloged. This gives a faster CICS restart (warm and emergency) compared with the MODIFY or ALL options, because CICS does not reinstall definitions from the global catalog. Definitions are autoinstalled on first reference.

The effects of specifying cataloging for program autoinstall apply mainly to recovery and restart. See "Program autoinstall and recovery and restart" on page 500.

Model definitions for program autoinstall

Model definitions for program autoinstall are different from those for terminal autoinstall in that they do not have to be defined explicitly as models. Any installed program, mapset, or partitionset definition can be used as a "template" for program autoinstall.

If you do not want to use your own definitions, you can use the CICS-supplied model definitions. These are:
- DFHPGAPG for programs
- DFHPGAMP for mapsets
- DFHPGAPT for partitionsets

They are listed in Appendix B, "CICS-supplied resource definitions, groups, and lists," on page 839.

Note: Although the DFHPGAPG definition does not specify a program language, the CICS autoinstall routine detects the program language from the program being loaded.

The autoinstall control program for programs

You specify the name of the control program you want to use in the PGAIEXIT system initialization parameter, or use the CEMT or EXEC CICS INQUIRE∨SET SYSTEM command.

For detailed programming information about the autoinstall control program for programs, see the *CICS Customization Guide*. This topic is a summary of that information.

When the autoinstall control program is invoked for program autoinstall

The autoinstall program is invoked in a number of different situations for programs, mapsets, and partitionsets.

For programs, the autoinstall control program is invoked when:
- Any of these commands references a previously undefined program:
  - EXEC CICS LINK
  - EXEC CICS XCTL
  - EXEC CICS LOAD
- The program is the first program in a transaction.
- An EXEC CICS ENABLE is issued for a GLUE or a TRUE.
- An abend occurs after an EXEC CICS HANDLE ABEND PROGRAM command is issued and CICS invokes the named program.
- CICS calls a user-replaceable program.

For mapsets, the autoinstall control program is invoked when an EXEC CICS SEND MAP or EXEC CICS RECEIVE MAP refers to a previously undefined mapset.

For partitionsets, the autoinstall control program is invoked when an EXEC CICS SEND PARTNSET or EXEC CICS RECEIVE PARTN command refers to a previously undefined partitionset.

Sample programs

CICS supplies a number of sample programs for the program autoinstall exit.

The following sample programs are supplied by CICS:
- DFHPGADX—assembler program for program autoinstall exit
- DFHPGAHX—C program for program autoinstall exit
- DFHPGALX—PL/I program for program autoinstall exit
- DFHPGAOX—COBOL definition for program autoinstall exit

The source for these programs is supplied in the CICSTS42.SDFHSAMP sample library, but only the assembler version is supplied in executable form, in the CICSTS42.SDFHLOAD load library.

Program autoinstall functions

The program autoinstall facility uses model definitions, together with a user-replaceable program, to create explicit definitions for programs, mapsets, and partitionsets that need to be autoinstalled.

CICS calls the user-replaceable program with a parameter list that gives the name of the appropriate model definition. On return from the program (depending on the return code), CICS creates a resource definition from information in the model and from parameters which the program returns.

Note: CICS does not call the user-replaceable program for any CICS programs, mapsets, or partitionsets (that is, any objects beginning with the letters DFH).

Program autoinstall and recovery and restart

There is a difference in performance between warm and emergency restarts using program autoinstall without cataloging, and warm and emergency restarts using autoinstall with cataloging.

If you are using autoinstall **with** cataloging, restart times are similar to those of restarting a CICS region that is not using program autoinstall. This is because, in both cases, resource definitions are reinstalled from the catalog during the restart. The definitions after the restart are those that existed before the system was terminated.

If you are using autoinstall **without** cataloging, CICS restart times are improved because CICS does not install definitions from the CICS global catalog. Instead, definitions are autoinstalled as required whenever programs, mapsets, and partitionsets are referenced following the restart.

Autoinstalling model terminal definitions

If you define a model terminal for autoinstall, you install it just as you would an ordinary resource definition; that is, by installing the group containing it.

However, terminal definitions specified as AUTINSTMODEL(ONLY) are stored only in the autoinstall model table (AMT) at this time; they do not result in a TCTTE on the active CICS system. These model terminal definitions are stored in the AMT until needed by CICS to create a definition for an actual terminal logging on through the z/OS Communications Server using autoinstall. The resulting terminal definition is “automatically installed” at this time.

This is what happens when you install a TERMINAL definition, either at system initialization or using INSTALL:

AUTINSTMODEL(NO)
A TCT entry is created for the terminal.

AUTINSTMODEL(YES)
A TCT entry is created for the terminal, and the model definition is stored for later use by the autoinstall process.

AUTINSTMODEL(ONLY)
The model definition is stored for later use by the autoinstall process.

If you install two model TERMINAL definitions with the same AUTINSTNAME, the second one replaces the first.

For further information about autoinstall and model TERMINAL definitions, see “Autoinstalling z/OS Communications Server terminals” on page 477.

Autoinstalling journals

CICS writes journal data to journals or logs on log streams managed by the MVS system logger, or to SMF.

You must define JOURNALMODELs so that the connection between the journal name, or identifier, and the log stream, or SMF log, can be made. You can use RDO, DFHCSDUP, or an EXEC CICS CREATE JOURNALMODEL command to define a journalmodel.

CICS resolves the link between the log stream and the journal request by using user-defined JOURNALMODELs or, in the situation where an appropriate JOURNALMODEL does not exist, by using default names created by resolving symbolic names. See JOURNALMODEL attributes for more information about this.

Journals are not user-definable resources.

Chapter 43. Macro resource definition

Reference information for resource definition macros used to create CICS tables.

Introduction to CICS control tables and macros

You can define most CICS resources by using resource definition online (RDO), but for some resources you must use CICS macros.

You use macros to define:
- Non-SNA networks
- Non-SNA LUs
- Non-VSAM files
- Monitoring resources
- System recovery resources

You must use **resource definition online (RDO)** for VSAM files, and to define programs, map sets, partition sets, queues, transactions, and profiles. You must also use RDO to define SNA LUs, and links and sessions with MRO (multiregion operation) and ISC (intersystem communication) systems. RDO is described in Chapter 1, "An overview of resource definition," on page 3.

CICS is configured under your control during system initialization. You select a system initialization table (SIT) and, through it, CICS selects other control tables. Each control table is created separately and can be recreated at any time before system initialization. You prepare the required control tables by coding the appropriate macros. For each table, the macros automatically generate the necessary linkage editor control statements.

You might need to read about the following areas related to control tables:
- The **system initialization table (SIT)**, required for the system to be operational. Other tables are required only if you are using the corresponding CICS facilities. For details of the SIT, see the *CICS System Definition Guide*.
- The **job control language (JCL)** required for the control tables and how to link-edit and assemble the macro statements that you specify. See "Defining resources in CICS control tables" on page 507.
- Whether CICS loads a table above or below 16 MB (also known as above the line or below the line). The CICS table macros contain linkage editor control statements that determines this. Table 25 on page 504 shows whether specific tables are loaded above or below 16 MB.

The control tables that can be defined by macros are shown in Table 25 on page 504.

Table 25. Control tables that can be defined by macros. The third column shows whether the table is loaded above or below the 16 MB line.

Control table	Contents	Above the line?	Reference
Command list table (CLT)	Sets of commands and messages for an XRF takeover. The command list table (CLT) is used for XRF (extended recovery facility). If you are using XRF, you must have a CLT; it is used only by the alternate CICS system. The CLT contains a list of commands that are passed to JES or MVS for execution. It also provides the authorization for canceling the active CICS system.	Yes	"CLT—command list table" on page 512
Data conversion table	A data conversion table might be needed if the CICS system is using ISC to communicate with a member of the CICS family that runs on a hardware platform that does not use EBCDIC. The conversion table defines how data is to be changed from ASCII format at the workstation to EBCDIC format at the CICS host.		The DFHCNV macros used to create the table are described in the *CICS Intercommunication Guide*.
DL/I directories (PDIR)	Databases and program specification blocks. If you use CICS-IMS DBCTL (database control) exclusively to manage your CICS system's use of DL/I, you need not define the DL/I directory (PDIR) using CICS. The PDIR is a directory of all the remote program specification blocks (PSBs) that are accessed by the CICS system. If you function-ship requests to a remote database manager (remote DL/I), you need only one directory, the PDIR.	No	"PDIR—DL/I directory" on page 515
File control table (FCT)	BDAM file definitions. The file control table (FCT) is retained to allow you to define BDAM files.	No	"FCT—file control table" on page 517
Monitoring control table (MCT)	Monitoring actions (data collection) to be taken at each user event monitoring point (EMP). Different actions can be specified for each monitoring class at each EMP.	Yes	"MCT - monitoring control table" on page 525
Program list table (PLT)	A list of related programs. You may want to generate several PLTs to specify a list of programs that are to be executed in the initialization programs phase of CICS startup; executed during the first or second quiesce stages of controlled shutdown; or both, or enabled or disabled as a group by a CEMT ENABLE or DISABLE command.	Yes	"PLT—program list table" on page 543

Table 25. Control tables that can be defined by macros (continued). The third column shows whether the table is loaded above or below the 16 MB line.

Control table	**Contents**	**Above the line?**	**Reference**
Recoverable service table (RST)	Sets of recoverable service elements. The recoverable service table (RST) is used for IBM CICS IMS DBCTL (database control) support. If you are using XRF and DBCTL, you must have an RST: it is used by the active CICS system. The RST contains a list of recoverable service elements that define the DBCTL configuration. It defines which DBCTL CICS connects to.	Yes	"RST—recoverable service table" on page 547
System initialization table (SIT)	Parameters used by the system initialization process. In particular, the SIT identifies (by suffix characters) the versions of CICS system control programs and CICS tables that you have specified are to be loaded.		See the *CICS System Definition Guide*
System recovery table (SRT)	A list of codes for abends that CICS intercepts.		"SRT—system recovery table" on page 549.
Temporary storage table (TST)	Generic names (or prefixes) for temporary storage queues. CICS still supports the use of a TST in combination with or in place of TSMODEL resource definitions. You must use a TST if you have application programs that reference temporary storage data sharing queues by specifying an explicit SYSID on EXEC CICS temporary storage commands, or if a SYSID is added by an XTSEREQ global user exit program. You must also use a TST if you require the TSAGE attribute. For temporary storage queues where you do not require these functions, you can use TSMODEL resource definitions, which provide all other functions of the TST and some additional functions.	Yes	"TST—temporary storage table" on page 575
Terminal control table (TCT)	Retained to define non- SNA LU networks.	No	"TCT—terminal control table" on page 551
Terminal list table (TLT)	Sets of related terminals. The terminal list table (TLT) allows terminal or operator identifications, or both, to be grouped logically. A TLT is required by the supervisory terminal operation (CEST), to define and limit the effective range of the operation. It can also be used by a supervisory or master terminal operation (CEMT) to apply a function to a predetermined group of terminals. A TLT can be used, singly or in combination with other TLTs, to provide predefined destinations for message switching.	No	"TLT—terminal list table" on page 572

Table 25. Control tables that can be defined by macros (continued). The third column shows whether the table is loaded above or below the 16 MB line.

Control table	**Contents**	**Above the line?**	**Reference**
Transaction list table (XLT)	Sets of logically related transaction identifications. A list of identifications that can be initiated from terminals during the first quiesce stage of system termination, or a group of identifications that can be disabled or enabled through the master terminal.	Yes	"XLT—transaction list table" on page 584

Format of macros

The CICS macros are written in assembler language and, like all assembler language instructions, must be written in a standard format.

Name	Operation	Operand	Comments
blank or symbol	DFHxxxxx	One or more operands separated by commas	

TYPE=INITIAL (control section)

Most of the tables must start with a TYPE=INITIAL macro.

For some tables you can provide information that applies to the whole table, on the TYPE=INITIAL macro.

The TYPE=INITIAL macro establishes the control section (CSECT) for the CICS system table, and produces the necessary linkage editor control statements. CICS automatically generates the address of the entry point of each table through the DFHVM macro that is generated from each TYPE=INITIAL macro. The entry point label of the table is DFHxxxBA. Only the END statement need be specified.

Naming and suffixing the tables:

You can have more than one version of a table. Each table has a name consisting of six fixed characters followed by a two character suffix.

The tables are named as follows:

Table 26. Names of the control tables

Table	**Name**
Command list table	DFHCLT*xx*
File control table	DFHFCT*xx*
Monitoring control table	DFHMCT*xx*
Program list table	DFHPLT*xx*
Recoverable service table	DFHRST*xx*
Resource control table	DFHRCT*xx*
System recovery table	DFHSRT*xx*

Table 26. Names of the control tables (continued)

Table	Name
Terminal control table	DFHTCT*xx*
Terminal list table	DFHTLT*xx*
Temporary storage table	DFHTST*xx*
Transaction list table	DFHXLT*xx*

The first six characters of the name of each table are fixed. You can specify the last two characters of the name, using the SUFFIX operand. The SUFFIX operand is specified on the TYPE=INITIAL macro for each table.

Suffixes allow you to have more than one version of a table. A suffix may consist of one or two characters. The acceptable characters are: A-Z 0-9 @. (Do not use **NO** or **DY**.) Select the version of the table to be loaded into the system during system initialization, by specifying the suffix in the appropriate system initialization parameter operand.

For example:

```
DFHSIT...,FCT=MY,...
```

Note: The TYPE=INITIAL macros have a STARTER operand that is not listed in the descriptions of the individual macros in the main body of this book. Coding STARTER=YES enables you to use the $ and # characters in your table suffixes. The default is STARTER=NO. This operand should be used only with starter system modules.

TYPE=FINAL (end of table)

Most of the tables, again with the single exception of the SIT, must end with a TYPE=FINAL macro.

The TYPE=FINAL macro creates a dummy entry to signal the end of the table. It must be the last statement before the assembler END statement. The format is always like this:

	DFHxxT	TYPE=FINAL

Defining resources in CICS control tables

Some CICS resource are defined in CICS control tables.

The tables and their resource definitions are created by macros. You must use macros to define non-z/OS Communications Server networks and terminals, non-VSAM files, databases, and resources for monitoring and system recovery. You must use RDO for VSAM files, programs, map sets, partition sets, queues, transactions, and profiles.

For each of the CICS tables listed in Table 25 on page 504, complete the following steps:

1. Code the resource definitions you require.

2. Assemble and link-edit these definitions, using the CICS-supplied procedure DFHAUPLE, to create a load module in the required CICS load library. The load library is either CICSTS42.SDFHLOAD or CICSTS42.SDFHAUTH, which you must specify by the NAME parameter of the DFHAUPLE procedure. The CICS-supplied macros used to create the CICS tables determine whether tables are loaded above the 16MB line. All tables, other than the TCT, are loaded above the 16MB line.
3. Name the suffix of the load module by a system initialization parameter. For most of the CICS tables, if you do not require the table you can code *tablename=NO*. The exceptions to this rule are as follows:
   - CLT: specifying CLT=NO causes CICS to try and load DFHCLTNO. The CLT is used only in the alternate CICS, when you are running CICS with XRF, and is always required in that case.
   - SIT: specifying SIT=NO causes CICS to try and load DFHSITNO. The SIT is always needed, and you can specify the suffix by coding the SIT system initialization parameter.
   - TCT: specifying TCT=NO causes CICS to load a dummy TCT, DFHTCTDY.
   - TLT: terminal list tables are specified by program entries in the CSD, and do not have a system initialization parameter.
   - MCT: specifying MCT=NO causes the CICS monitoring domain to dynamically build a default monitoring control table. This ensures that default monitoring control table entries are always available for use when monitoring is on and a monitoring class (or classes) are active.
4. If you are running CICS with XRF, the active and the alternate CICS regions share the same versions of tables. However, to provide protection against DASD failure, you could run your active and alternate CICS regions from separate sets of load libraries—in which case, you should make the separate copies **after** generating your control tables.

Table 27 lists all the CICS tables that can be assembled, link-edited, and installed in your CICS libraries.

Table 27. CICS tables that you can assemble, link-edit, and install in CICS libraries

Table	Module Name	Abbreviation	Required load library
Command list table	DFHCLTxx	CLT	SDFHAUTH
Data conversion table	DFHCNV	CNV	SDFHLOAD
File control table	DFHFCTxx	FCT	SDFHLOAD
Monitor control table	DFHMCTxx	MCT	SDFHLOAD
Program list table	DFHPLTxx	PLT	SDFHLOAD
DL/I program specification block	DFHPSBxx	PSB	SDFHLOAD
Recoverable service element table	DFHRSTxx	RST	SDFHAUTH
System initialization table	DFHSITxx	SIT	SDFHAUTH
System recovery table	DFHSRTxx	SRT	SDFHLOAD
Terminal control table	DFHTCTxx	TCT	SDFHLOAD
Terminal list table	DFHTLTxx	TLT	SDFHLOAD
Temporary storage table	DFHTSTxx	TST	SDFHLOAD
Transaction list table	DFHXLTxx	XLT	SDFHLOAD

You can generate several versions of each CICS control table by specifying SUFFIX=xx in the macro that generates the table. This suffix is then appended to the default 6-character name of the load module.

To get you started, CICS provides the sample tables listed in Table 28 in the CICSTS42.SDFHSAMP library:

Table 28. Sample CICS system tables in the CICSTS42.SDFHSAMP library

Table	Suffix	Notes
Command list table (CLT)	1$	XRF regions only
Monitor control table (MCT)	A$	For a CICS AOR
Monitor control table (MCT)	F$	For a CICS FOR
Monitor control table (MCT)	T$	For a CICS TOR
Monitor control table (MCT)	2$	
System initialization table (SIT)	$$	Default system initialization parameters
System initialization table (SIT)	6$	
System recovery table (SRT)	1$	
Terminal control table (TCT)	5$	Non-z/OS Communications Server terminals only

Although you can modify and reassemble the tables while CICS is running, you must shut down and restart CICS to make the new tables available to CICS. (The command list table (CLT) is exceptional in that a new table can be brought into use without shutting down either the active CICS region or the alternate CICS region.)

Defining control tables to CICS

You can assemble and link-edit more than one version of a table, and (except for the CNV) use a suffix to distinguish them. To specify which version you want CICS to use, code a system initialization parameter of the form *tablename=xx* as a startup override.

About this task

Other tables that have special requirements are program list tables (PLTs), terminal list tables (TLTs), and transaction list tables (XLTs). For each TLT, autoinstall for programs must be active or you must specify a program resource definition in the CSD, using the table name (including the suffix) as the program name. PLTs or XLTs are autoinstalled if there is no program resource definition in the CSD. For example, to generate a TLT with a suffix of AA (DFHTLTAA), the CEDA command would be as follows:

```
CEDA DEFINE PROGRAM(DFHTLTAA) GROUP(grpname) LANGUAGE(ASSEMBLER)
```

See "Naming and suffixing the tables" on page 506 for information about single and two-character suffixes.

For information about program and terminal list tables, see "PLT—program list table" on page 543 and "TLT—terminal list table" on page 572.

The DFHCNV conversion table is required when communicating with CICS on a non-System z platform. For information about the data conversion process, see Data conversion in an intersystem environment in the Intercommunication Guide.

Assembling and link-editing control tables: the DFHAUPLE procedure

To assemble and link-edit your tables, write a job that calls the CICS-supplied sample procedure DFHAUPLE.

About this task

The DFHAUPLE procedure needs the following libraries to be online:

Table 29. Library requirements for the DFHAUPLE procedure

Library name	Tables required for
SYS1.MACLIB	All
CICSTS42.SDFHMAC	All
CICSTS42.SDFHLOAD	All except the CLT, RST, and SIT
CICSTS42.SDFHAUTH	CLT, RST, and SIT
SMP/E global zone	All
SMP/E target zone	All

When you have assembled and link-edited your tables, define them to CICS by system initialization parameters.

Steps in the DFHAUPLE procedure

The DFHAUPLE procedure is tailored to your CICS environment and stored in the CICSTS42.XDFHINST library when you run the DFHISTAR job.

About this task

The DFHAUPLE procedure contains the following steps:

1. ASSEM: This step puts your table definition macros into a temporary partitioned data set (PDS) member that is used as input to the ASM and SMP steps. The BLDMBR step subsequently adds further members to this temporary PDS.
2. ASM: In this assembly step, SYSPUNCH output goes to a temporary sequential data set. This output consists of IEBUPDTE control statements, lin-edit control statements, SMP control statements, and the object deck.
3. BLDMBR: In this step, the IEBUPDTE utility adds further members to the temporary PDS created in the ASSEM step. These members contain link-edit control statements and SMP control statements, and the object deck from the assembly step.
4. LNKEDT: The link-edit step uses the contents of the PDS member LNKCTL as control statements. The object code produced in step 2 comes from the temporary PDS. The output goes to the load library that is specified by the NAME parameter on the procedure. You must specify NAME=SDFHAUTH for the CLT, RST, and SIT, and NAME=SDFHLOAD for all the others.
5. ZNAME: This step creates a temporary data set that passes to the SMP/E JCLIN job step; it contains a SET BDY command that defines a target zone name. This tells SMP/E which target zone to update.
6. SMP: The SMP step uses the temporary PDS members MACROS, SMPCNTL, SMPJCL1, SMPJCL2, LNKCTL, SMPEOF, and the object deck to update the control data set (CDS).
7. DELTEMP: This final step deletes the temporary partitioned data set, &&TEMPPDS.

   This step must run successfully if you want SMP to reassemble CICS tables automatically when applying later maintenance.

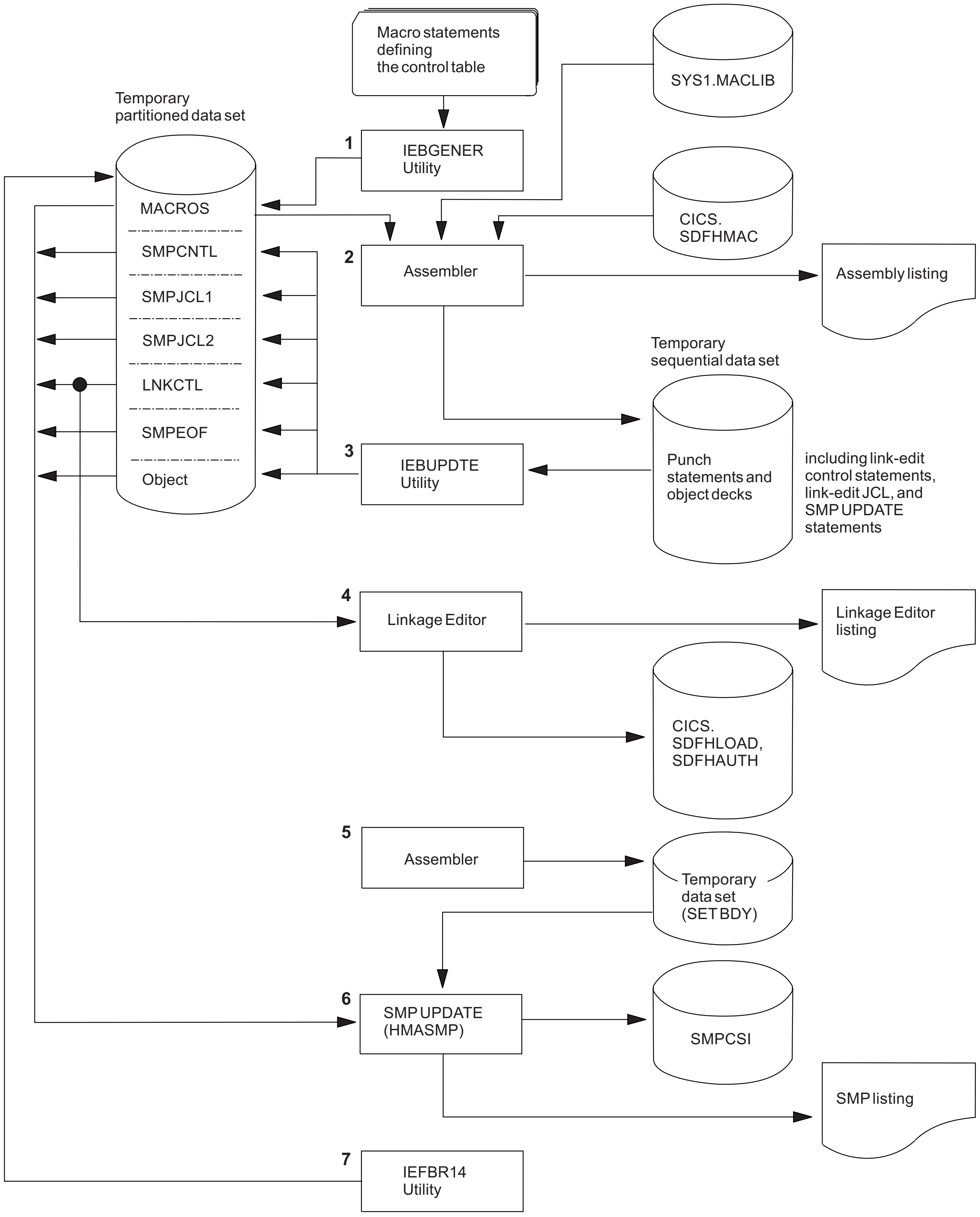


Figure 39. Assembling and link-editing the control tables using the DFHAUPLE procedure

For information about DFHISTAR, see the*CICS Transaction Server for z/OS Installation Guide*).

Sample job stream for control tables:

You can use a single job stream to assemble and link-edit all of the CICS control tables except for the CLT and the RST

Use the following job stream:

```
//jobname      JOB     (accounting information),
//             CLASS=A,MSGCLASS=A,MSGLEVEL=(1,1)
//ASMTAB       EXEC    PROC=DFHAUPLE[,NAME={SDFHLOAD|SDFHAUTH}]
//*
//ASSEM.SYSUT1 DD   *
          .
      Control table macro statements
          .
/*
```

Figure 40. Job stream for control tables

Specify NAME=SDFHAUTH on this job for the system initialization table only; link-edit all other tables (except the CLT and RST) into SDFHLOAD.

CLT—command list table

The command list table (CLT) is used by the *extended recovery facility* (XRF) and contains a list of MVS system commands and messages to the operator, to be issued during takeover. Typically, the function of these commands is to tell alternate systems to take over from their active systems in the same MRO-connected configuration.

The command list table also contains the name of the alternate system, with the jobname of the active system that it is allowed to cancel. (See DFHCLT TYPE=LISTSTART FORALT operand.) This provides a security check against the wrong job being canceled, when the alternate system takes over.

In addition, the DFHCLT TYPE=INITIAL macro gives JES routing information, needed to send cancel commands to the appropriate MVS system. If you are using XRF, you **must** have a CLT: it is used only by the alternate CICS system.

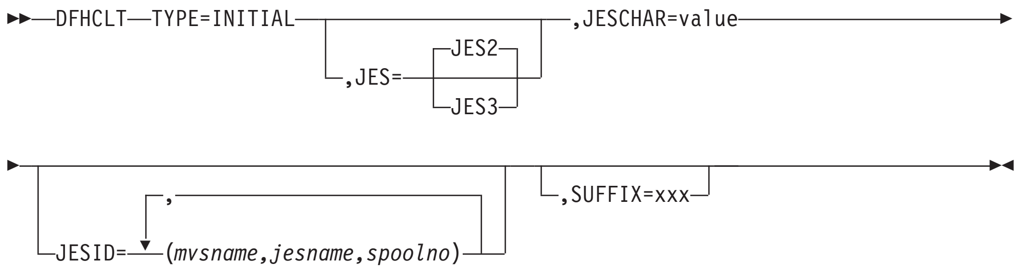
For security reasons, link-edit the CLT into a library authorized using APF. For virtual storage constraint relief considerations, link-edit using a MODE control statement specifying AMODE(31),RMODE(ANY). The table should be link-edited as reentrant. The CLT is not loaded into the CICS nucleus.

Your CLT can contain the following statements:
- DFHCLT TYPE=INITIAL
- DFHCLT TYPE=LISTSTART
- DFHCLT TYPE=COMMAND
- DFHCLT TYPE=WTO
- DFHCLT TYPE=LISTEND
- DFHCLT TYPE=FINAL (see "TYPE=FINAL (end of table)" on page 507)

Note: Although the CLT may be shared by a number of alternate systems, take care that MVS is not given too many redundant commands during takeover. For example, in multiregion operation and using one CLT with commands for several regions, region 1 would send valid commands to other regions, but they would in turn send redundant commands to region 1 and to each other.

Control section—DFHCLT TYPE=INITIAL

The DFHCLT TYPE=INITIAL macro establishes the entry point and the beginning address of the CLT being defined.



For general information about TYPE=INITIAL macros, including the use of the SUFFIX operand, see “TYPE=INITIAL (control section)” on page 506.

JES={JES2∨JES3}
Specifies the version of JES being used. If you have active and alternate CICS systems in different CPCs, you must use the same version of JES on both CPCs.

If you are using JES3, you need release 2.2.0 for full support of all CLT functions in a two-CPC environment. JES2 accepts commands issued by programs. For JES3, this feature was only introduced for release 2.2.0. With an earlier JES3 release, it is possible that a takeover in a two-CPC environment can only proceed after the operator has manually canceled the failing active CICS system. This should occur only when the active system does not realize that it is failing and continues to run.

JESCHAR=value
Specifies the one-character prefix to be used for commands to be passed to JES. If you omit this keyword:
- JESCHAR=$ is the default for JES=JES2
- JESCHAR=* is the default for JES=JES3

JESID=((mvsname,jesname,spoolno) [,(mvsname,jesname,spoolno),...])
Specifies the JES routing code that corresponds to the MVS name and JES name of an active CICS system. You must use this option if active and alternate CICS systems are in different CPCs.

You can specify several groups of *mvsname*, *jesname*, and *spoolno*, so that the CLT can be used to refer to more CPC/JES combinations.

mvsname
This is the SID, as specified in SYS1.PARMLIB member SMFPRM*xx*, for the CPC on which the active CICS system executes.

jesname
This is the JES2 or JES3 subsystem name for the JES under whose control the active system executes. It is defined in the MVS/ESA SCHEDULR sysgen macro and also in SYS1.PARMLIB member IEFSSN*xx*.

spoolno
For JES2, this is the multiaccess spool member number of the JES2 for the active CICS system. It is defined in the JES2 initialization parameter MASDEF SSID(*n*). For JES3, this is the processor name of the JES3 for the active CICS system. It is defined in the JES3 initialization parameter

MAINPROC NAME=*name*. See *MVS/ESA JES2 Initialization and Tuning* or *MVS/ESA JES3 Initialization and Tuning*.

Specifying alternate systems—DFHCLT TYPE=LISTSTART

This macro defines the start of the set of commands and messages that the alternate CICS issues when it takes over from the active CICS. (There may be no commands or messages, but you still need a CLT, so that authorization checks can be made.)

```
►►──DFHLCT──TYPE=LISTSTART──────────────────────────────────────────────►

►─,FORALT=(applid1,jobname1)─┬────────────────────────────┬───────────►◄
                             └─,(applid2,jobname2),...─┘
```

FORALT=((applid1,jobname1)[,(applid2,jobname2),...])
Specifies pairs of alternate and active CICS systems.

applid1
The name of the alternate CICS that issues the set of commands and messages when it takes over. This name must be the **specific APPLID**, defined in the APPLID system initialization parameter. It is used as an authorization check.

jobname1
The name of the active CICS system from which the alternate system is taking over. This name must be the **MVS JOBNAME** for the active CICS system. It is used as a security check, to ensure that the alternate system does not attempt to cancel any job other than one of that name.

You may extend this, using more pairs of *applid* and *jobname*, so that you can use one CLT for several alternate CICS systems.

Specifying takeover commands—DFHCLT TYPE=COMMAND

This macro allows you to specify the commands to be used by the alternate CICS system during takeover.

```
►►──DFHCLT──TYPE=COMMAND──,COMMAND=command-string──────────────────────►◄
```

COMMAND=command-string
Defines a command that is passed to MVS for execution. CICS does not interpret this command.

The command that is issued in this way most frequently is `CEBT PERFORM TAKEOVER`.

In multiregion operation (MRO), where there is a simple hierarchy of **master** and **dependent** regions, a failing master region can issue this command to each of its dependent regions, if it is necessary that they also move to another CPC.

In a more complex multiregion operation, a failing master region can issue this to its **coordinator** region, and the coordinator can issue the same command to other master and dependent regions in the same hierarchy of regions. Hence, many MRO-connected regions can move together to another CPC, without operator intervention.

Here are some examples:

- A master region without a coordinator sends a command to a dependent region:

```
DFHCLT TYPE=COMMAND,
        COMMAND='MODIFY CICSDEP,CEBT PERFORM
        TAKEOVER'
```

- A master region sends a command to its coordinator region:

```
DFHCLT TYPE=COMMAND,
        COMMAND='MODIFY CICSCRD,CEBT PERFORM
        TAKEOVER'
```

- A coordinator region sends commands to master and dependent regions:

```
DFHCLT TYPE=COMMAND,
        COMMAND='MODIFY CICSMAS,CEBT PERFORM
        TAKEOVER'
DFHCLT TYPE=COMMAND,
        COMMAND='MODIFY CICSDEP,CEBT PERFORM
        TAKEOVER'
```

- You can also issue other commands to any other job running under MVS:

```
DFHCLT TYPE=COMMAND,
        COMMAND='MODIFY jobname,command
        string'
```

Messages to the operator—DFHCLT TYPE=WTO

These two instructions define a message that is written to the system operator.

```
►►──DFHCLT──TYPE=WTO──,WTOL=addr──addr──WTO──'message to operator'──────────────►

►──┬───────────────────┬──┬────────────────┬──,MF=L─────────────────────────────►◄
   └─,ROUTCDE=(number)─┘  └─,DESC=(number)─┘
```

WTOL=addr
: Specifies the address of a list format WTO macro that defines the message and any associated route codes and descriptor codes.

The MF (macro format), ROUTCDE (routing code), and DESC (descriptor) operands of the WTO macro are described in the *z/OS MVS Programming: Authorized Assembler Services Reference ALE-DYN* manual.

An example is to send a request to the operator:

```
          DFHCLT TYPE=WTO,
                WTOL=wtoad
wtoad     WTO   'switch local terminals, please',
                 MF=L
```

Closing the command list—DFHCLT TYPE=LISTEND

This instruction defines the end of the set of commands and messages issued by an alternate system when it takes over from an active system.

```
►►──DFHCLT──TYPE=LISTEND────────────────────────────────────────────────────────►◄
```

PDIR—DL/I directory

The PDIR is a directory of all the remote program specification blocks (PSBs) that are accessed by the CICS system.

To use remote DL/I, you must define the PDIR to CICS. For DBCTL, you must define the DL/I directories to DBCTL using IMS-supplied macros.

To create a program specification block directory (PDIR), code DFHDLPSB TYPE=INITIAL, TYPE=ENTRY, and TYPE=FINAL macros. The TYPE=FINAL (see “TYPE=FINAL (end of table)” on page 507) must be followed by:

```
END DFSIDIR0
```

Control section—DFHDLPSB TYPE=INITIAL

The TYPE=INITIAL macro establishes the control section (CSECT) for the table, and produces the necessary linkage editor control statements.

The DFHDLPSB TYPE=INITIAL macro has the following format and operands:

```
►►──DFHDLPSB──TYPE=INITIAL───────────────────────────────────────────────►◄
```

For general information about TYPE=INITIAL macros, including the use of the SUFFIX operand, see “TYPE=INITIAL (control section)” on page 506.

Program specification blocks—DFHDLPSB TYPE=ENTRY

The TYPE=ENTRY macro defines an entry to be generated in the PDIR.

The DFHDLPSB TYPE=ENTRY macro has the following format and operands:

```
►►──DFHDLPSB──TYPE=ENTRY──,PSB=psbname──,MXSSASZ=value──┬───────────────┬──────►
                                                        └─,RMTNAME=name─┘

►─,SYSIDENT=name─────────────────────────────────────────────────────────►◄
```

TYPE=ENTRY
Indicates that an entry is to be generated in the PDIR. The maximum number of entries that can be included in the PDIR is 32760.

PSB=psbname
Specifies the name of the program specification block (PSB) accessed through the remote DL/I. The entry must specify the SYSIDNT and MXSSASZ (and optionally, RMTNAME) operands.

MXSSASZ=value
Specifies the maximum size in bytes of a segment search argument to be used for this PSB.

Note: An excessively large value for MXSSASZ affects performance badly, and may lead to a data stream being shipped which is too large for the connected CICS system.

RMTNAME=name
Indicates the name by which the PSB is known in the remote system or region. The default is the *psbname* specified in the PSB operand.

SYSIDNT=name
Indicates the 4-character alphanumeric name of the remote system or region for which the PSB is applicable. The name specified must be the name of the CONNECTION definition for the remote system.

If the SYSIDNT of the local system is specified, the request is routed to DBCTL and not function-shipped to a remote region. This allows the same PDIR to be used on both sides of the link if this is required. However, it is not necessary to have a PDIR when communicating with DBCTL.

FCT—file control table

The file control table (FCT) describes to CICS the Basic Direct Access Method (BDAM) user files that are processed by file management.

CICS user files correspond to physical data sets that must have been defined to MVS and allocated to the CICS system before they are used.

Note:

1. To define VSAM files, use a FILE resource.
2. Because CICS file management processes only VSAM and BDAM data sets, you define any sequential data sets as extrapartition destinations with a TDQUEUE resource.

The following macros specify file characteristics, and some of the characteristics of BDAM data sets referenced by the files:

- DFHFCT TYPE=INITIAL establishes the beginning of the FCT.
- DFHFCT TYPE=FILE defines the characteristics of a file, such as record characteristics and types of service allowed.
- DFHFCT TYPE=FINAL concludes the FCT. (See “TYPE=FINAL (end of table)” on page 507.)

Control section—DFHFCT TYPE=INITIAL

The DFHFCT TYPE=INITIAL macro establishes the control sections into which the FCT is assembled, and must be coded as the first statement in the source used to assemble the FCT.

```
►►──DFHFCT──TYPE=INITIAL──┬─────────────┬──────────────────────────────►◄
                          └─,SUFFIX=xxx─┘
```

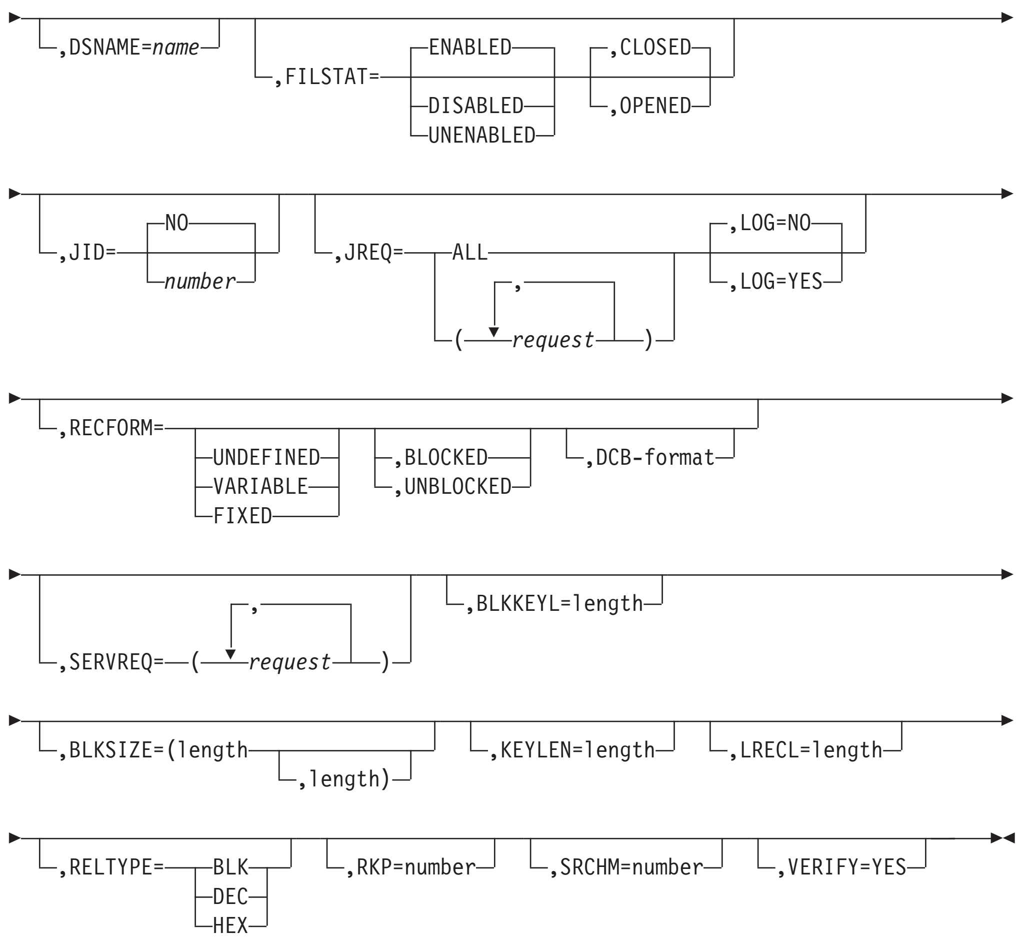
For general information about TYPE=INITIAL macros, including the use of the SUFFIX operand, see “TYPE=INITIAL (control section)” on page 506.

Local files—DFHFCT TYPE=FILE

The DFHFCT TYPE=FILE macro describes to CICS file control the physical and operational characteristics of a BDAM file.

This macro includes operands that provide information about the access method, record characteristics, and types of service allowed for the file. This information is used to generate control information used by CICS as well as a DCB .

```
►►──DFHFCT──TYPE=FILE──,ACCMETH=BDAM──,FILE=name──┬─────────────────┬──────►
                                                  └─,DISP=──┬─OLD─┬─┘
                                                            └─SHR─┘
```



TYPE=FILE
Indicates that this macro describes the characteristics of a file.

ACCMETH=BDAM
specifies the basic direct access method of the data set is allocated to the file.

BLKKEYL=length
Code this with a decimal value from 1 through 255, which represents the length in bytes of the physical key in the BDAM physical record. You must code this operand only for files that reference data sets with physical keys (that is, those with SERVREQ=KEY specified). If a data set contains blocked records, and deblocking is to be performed by using a logical key (that is, a key embedded within each logical record), the logical key length must be specified by using the KEYLEN operand.

If necessary, CICS can place a record under exclusive control by building an ENQ argument by concatenating the data set name, the block reference, and the physical key. An ENQ is issued using a maximum of 255 bytes of this argument. If the argument exceeds 255 bytes in length, the ENQ places a range of keys under exclusive control.

BLKSIZE=(length[,length])
Code this with the length of the block, in bytes. The way you calculate the BLKSIZE depends on the RECFORM. For UNDEFINED or VARIABLE blocks, the length must be the maximum block length. For FIXED length blocks, you calculate the BLKSIZE as follows:

`BLKSIZE = LRECL` for unblocked records.

`BLKSIZE = (LRECL x blocking factor)` for blocked records.

If you want to have a BLKSIZE value generated in the DCB, you must specify that value in the second parameter of the operand; for example, BLKSIZE=(250,250), where the first 250 relates to the FCT and the second 250 relates to the DCB. If the second parameter is not coded, the DCB is generated without a BLKSIZE value.

Note:
1. CICS assumes that the block size of the BDAM data set is the size you have specified on the first BLKSIZE parameter. If the value specified is smaller than the actual block size of the data set, you will probably get storage violations or other unpredictable results when using the file.
2. If you specify the second parameter (the DCB value) the value that you code must always be the actual block size. We recommend that you either omit the second parameter, or make it equal to the first parameter.

`DISP={OLD∨SHR}`
Code this to specify the disposition of the data set which will be allocated to this file. If no JCL statement exists for this file when it is opened, the open is preceded by a dynamic allocation of the file using this disposition. If a JCL statement does exist, it will take precedence over this disposition.

OLD The disposition of the data set is set to OLD if dynamic allocation is performed.

SHR The disposition of the data set is set to SHR if dynamic allocation is performed.

Note: You must specify the disposition of the data set, either with the DISP operand, or:
- In a JCL statement
- With CEMT SET
- With EXEC CICS SET

If you specify the disposition in a JCL statement, specify the data set name in the JCL statement as well.

`DSNAME=name`
Code from 1 to 44 characters to specify the JCL data set name (DSNAME) to be used for this file. If no JCL statement exists for this file when it is opened, the open will be preceded by a dynamic allocation of the file using this DSNAME. If a JCL statement does exist, it will take precedence over this DSNAME.

You must specify the data set name, either with the DSNAME operand, or:
- In a JCL statement
- With CEMT SET
- With EXEC CICS SET

If you specify the data set in a JCL statement, you **must** specify the disposition in the JCL statement as well.

Note: You define the CICS system definition (CSD) file by system initialization parameters, not in the FCT.

`FILE=name`
Code this with a 1-to 8-character symbolic name by which this FCT entry is to

be identified. This name is known as the **file name** and is used by CICS or by CICS application programs to refer to the data set with which this FCT entry has been associated.

As well as identifying the FCT entry, this name is also used as the DDNAME when the associated data set is allocated to CICS. The allocation is achieved either by using JCL statements in the start-up job stream, or dynamically, by using the DSNAME and DISP values in the FCT.

Do not use file names that start with the character string DFH for your own files, because CICS reserves the right to use any file name beginning with DFH. In addition, using the character string FCT for a file name prefix can cause assembly errors.

FILSTAT=({ENABLED∨DISABLED∨UNENABLED},{OPENED∨CLOSED})

Code this to specify the initial status of the file.

The first operand determines the initial enablement state of the file. It is used only during an initial or a cold start. (On a warm or emergency start, the file state is determined by the state at the time of the previous shutdown.)

The second operand specifies whether an attempt is made to open the file at the end of CICS initialization. It applies to initial, cold, warm, and emergency starts.

ENABLED
: Normal processing is to be allowed against this file.

DISABLED
: Any request against this file from an application program causes the DISABLED condition to be passed to the program.

UNENABLED
: This option is valid only with the CLOSED option. It may be used to prevent the file being opened on first reference. An attempt to access the file in this state raises the NOTOPEN condition.

OPENED
: The file is opened by an automatically initiated CICS transaction (CSFU) after CICS initialization. (On a warm or emergency start, a file remains UNENABLED, if that was its state at the time of the previous shutdown. CSFU ignores an OPENED option on an UNENABLED file, and leaves the file closed.)

CLOSED
: The file is to remain closed until a request is made to open it by the master terminal function, by an EXEC CICS SET command, or by an implicit open.

For each combination of initial states, files are opened as follows:

(ENABLED,CLOSED)
: The file is opened on first reference. This is the default.

(ENABLED,OPENED)
: The file is opened by the automatically-initiated transaction CSFU after CICS initialization, unless a user application or master terminal function has opened it first.

(DISABLED,CLOSED)
: The file is opened only by an explicit OPEN request (for example, from the master terminal transaction).

(DISABLED,OPENED)
: The file is opened by the automatically-initiated transaction CSFU after CICS initialization, unless a user application or master terminal function has explicitly opened it first.

(UNENABLED,CLOSED)
: The file is opened only by an explicit OPEN request. The file state after it has been opened is (ENABLED,OPENED).

Note: For performance reasons, the default CSD file entry for transaction CSFU is defined with DTIMOUT=10 (seconds). This can cause a transaction timeout abend if there is a delay in opening a file during CICS startup. See TRANSACTION attributes for an explanation of the DTIMOUT value.

JID={NO∨number}
: Code this if automatic journal activity is to take place for this FCT entry, and to identify the journal to be used to record the journaled data. The operations that cause data records to be journaled are specified in the JREQ parameter.

NO No automatic journaling activity for this file is to take place.

number
: The journal identifier to be used for automatic journaling. This may be any number in the range 01 through 99. The number is appended to the letters DFHJ to give a journal name of the form DFHJ*nn*, which maps to an MVS system logger general log stream.

Note: Automatic journaling can be specified if you want to record file activity for subsequent processing by yourself (for example, user-written data set I/O recovery). It must not be confused with automatic logging (specified with LOG=YES), which is required if CICS is to perform data set backout to remove in-flight task activity during emergency restart or dynamic transaction backout.

JREQ={ALL∨(request[,request,...])}
: Code this with the file operations that are to be automatically journaled, and whether the journaling operation is to be **synchronous** or **asynchronous** with file activity.

When a synchronous journal operation is executed for a READ request, control is not returned to the program that issued the file control request until the data read is written in the journal data set. When a synchronous journal operation is executed for a WRITE request, the output operation to the data set is not initiated until the data is written in the journal data set.

When an asynchronous journal operation is executed for a READ request, control can be returned as soon as the data read is moved to the journal I/O buffer. When an asynchronous journal operation is executed for a WRITE request, the output operation to the data set can be initiated as soon as the data is moved to the journal I/O buffer.

Synchronization defaults provide asynchronous operation for READs and synchronous operation for WRITEs.

If you have requested automatic journaling, the contents of the journal may not accurately reflect the actual changes to a data set, because the request is journaled before the response from the I/O operation is tested.

If this operand is omitted and JID is coded, JREQ defaults to JREQ=(WU,WN).

Here are the possible values for *request*:

ALL Journal all file activity with READ asynchronous and WRITE synchronous.

ASY Asynchronous journal operation for WRITE operations.

RO Journal READ ONLY operations.

RU Journal READ UPDATE operations.

SYN Synchronous journal operation for READ operations.

WN Journal WRITE NEW operations.

WU Journal WRITE UPDATE operations.

KEYLEN=length
Code this with the length of the logical key for the deblocking of the BDAM data set to which this file refers.

The logical key for BDAM data sets is embedded and located through the use of the RKP operand. The length of the physical key is coded in the BLKKEYL operand, and can be different from the value specified for KEYLEN.

This operand must always be coded when logical keys are used in blocked BDAM data sets.

LOG={NO∨YES}
This operand specifies the recovery attributes of the file. Specify LOG=YES if you want automatic logging. This enables backout (recovery) of incomplete changes to the data set referenced by this file, in the event of an emergency restart or transaction abend. Whenever a change—update, deletion, or addition—is made to the data set, the “before” image is automatically recorded in the CICS system log. (Automatic logging should not be confused with automatic journaling.)

NO Automatic logging is not to be performed.

YES
Automatic logging is to be performed.

When a request is made to change the contents of the data set referenced by the file, the record being updated, added, or deleted is enqueued upon, using the record identification together with the address of the CICS control block representing the base data set. This enqueue is maintained until the task terminates or the application issues a syncpoint request to signal the end of a logical unit of work. This ensures the integrity of the altered data.

Because the enqueues are thus maintained for a longer period of time, an enqueue lockout can occur if an application program that accesses this data set performs what is effectively more than one logical unit of work against it, without defining each separate logical unit of work to CICS by issuing a syncpoint request. Also, long-running tasks could tie up storage resources.

LRECL=length
Code this with the maximum length (in bytes) of the logical record. The value specified is also the length of records in a fixed length remote file. See the DFHFCT TYPE=REMOTE macro for further information on remote files.

RECFORM=([{UNDEFINED∨VARIABLE∨FIXED}], [{BLOCKED∨UNBLOCKED}],[DCB format])
Code this to describe the format of physical records in the data set.

For BDAM data sets, **blocking** refers to CICS blocking, and has no meaning for BDAM. You must specify BLOCKED or UNBLOCKED for all data sets of FIXED or VARIABLE format.

BLOCKED
: Specify this option when each physical record is to be viewed by CICS as a block consisting of more than one logical record.

DCB
: Code this with the record format to be inserted in the DCB; for example, RECFORM=(FIXED,BLOCKED,FBS).

  The DCB format sub-parameter of the RECFORM operand is the only way you can put record format information into the DCB when the FCT is assembled. The first two sub-parameters of the RECFORM operand do not generate information in the DCB.

FIXED
: Records are fixed length.

UNBLOCKED
: Specify this option when no CICS block structure is to be used. That is, when there is one CICS logical record for each BDAM physical record.

UNDEFINED
: Records are of undefined length. (If you specify a data set as UNDEFINED, allow for an additional 8 bytes for the count field, when calculating the BLKSIZE.)

VARIABLE
: Records are variable length.

RELTYPE={BLK∨DEC∨HEX}
: Code this if relative addressing is being used in the block reference portion of the record identification field of the BDAM data set referenced by this file. If the RELTYPE operand is omitted, absolute addressing is assumed (that is, MBBCCHHR).

BLK	Relative block addressing is being used.
DEC	The zoned decimal format is being used.
HEX	The hexadecimal relative track and record format is being used.

RKP=number
: Code this with the starting position of the key field in the record relative to the beginning of the record. With variable-length records, this operand must include space for the 4-byte LLbb field at the beginning of each logical record. This operand must always be coded for data sets that have keys within each logical record, or when browsing.

SERVREQ=(request[,request],...)
: Code this to define the types of service request that can be processed against the file. The parameters that can be included are as follows:

ADD
: Records can be added to the file.

BROWSE
: Records may be sequentially retrieved from the file.

KEY
Records can be retrieved from or added to the file. This parameter is mandatory if the data set referenced by the file is a keyed BDAM data set. It must not be coded for other files.

NOEXCTL
Records are not to be placed under exclusive control when a read for update is requested.

If you do not specify NOEXCTL, BDAM exclusive control is provided by default. This provides integrity in the system. For BDAM, you may specify LOG=YES with SERVREQ=NOEXCTL. This requests only a CICS enqueue and suppress the BDAM exclusive control, thus providing CICS integrity for the update only until a syncpoint.

Note: The CICS enqueue is at the record level within the CICS region, and lasts until a syncpoint, whereas the BDAM exclusive control operates on a physical block, is system-wide, and lasts only until the update is complete.

READ
Records in this file can be read. READ is assumed, if you specify BROWSE or UPDATE.

UPDATE
Records in this file can be changed.

SRCHM=number
Code this if multiple track search for keyed records is to be provided. This operand is applicable only to BDAM keyed data sets.

number
The number of tracks or blocks to be searched. The default is 0.

VERIFY=YES
Code this if you want to check the parity of disk records after they are written. If this operand is omitted, records are not verified after a write request.

Summary table

This section is intended to help you use the DFHFCT TYPE=FILE macro to define your files. Each TYPE=FILE instruction describes the characteristics of the file, and of the data set referenced by the file.

Table 30. DFHFCT TYPE=FILE instructions for BDAM files

	Blocked with key	**Blocked without key**	**Unblocked with key**	**Unblocked without key**
BLKKEYL	R		R	
SRCHM	O		O	
VERIFY	O	O	O	O
RELTYPE	R[1]	R[1]	R[1]	R[1]
LRECL	R	R	R	R
BLKSIZE	R[3]	R	R[2]	R
KEYLEN	R[5]			
RKP	R[4]		R[4]	
RECFORM	O	O	O	O
FILSTAT	O	O	O	O
SERVREQ	R[6]	O	R[6]	O

Table 30. DFHFCT TYPE=FILE instructions for BDAM files (continued)

	Blocked with key	Blocked without key	Unblocked with key	Unblocked without key
Notes: **R** Required **O** Optional 1. Required if relative type addressing is to be used. 2. If SERVREQ=BROWSE or SERVREQ=ADD, this value must be BLKSIZE + BLKKEYL for unblocked records. 3. If SERVREQ=BROWSE or SERVREQ=ADD, this value must be (LRECL x blocking factor) + BLKKEYL for blocked records. 4. Required if key exists within logical records. 5. Required if deblocking by key for BDAM. 6. SERVREQ=KEY is required.				

DFHFCT example

An example of an FCT entry for a BDAM file.

Figure 41 illustrates the coding required to create an FCT entry for a BDAM file.

```
DFHFCT TYPE=FILE,                              *
       FILE=DAM83,                             *
       ACCMETH=BDAM,                           *
       SERVREQ=(READ,BROWSE,KEY),              *
       BLKSIZE=172,                            *
       RECFORM=(FIXED,BLOCKED),                *
       LRECL=86,                               *
       RELTYPE=HEX,                            *
       KEYLEN=6,                               *
       BLKKEYL=6,                              *
       RKP=0,                                  *
       FILSTAT=(ENABLED,OPENED)
```

Figure 41. File control table example—BDAM file

MCT - monitoring control table

The monitoring control table (MCT) defines the user data fields in CICS monitoring performance class records and describes how they are manipulated at event monitoring points (EMPs). It also controls which system-defined performance class data fields are recorded.

See the*CICS Performance Guide* for details of the MCT and performance.

The MCT is required only in these circumstances:

- You call EMPs in your application programs.
- You need to exclude specific system-defined fields from being recorded.
- You want to use monitoring resource classes.
- You want to collect additional monitoring performance data for the resource managers used by your transaction.
- You want to deactivate data compression on monitoring records.

If no MCT is present in the CICS region, CICS assumes the following defaults:

- The performance, transaction resource, and exception monitoring classes are available.
- All CICS system-defined data fields are collected.
- Data compression is performed on monitoring records.

In your application programs, you can call EMPs using the **`EXEC CICS MONITOR`** command.

The MCT consists of the following macro instructions:
- Control section, DFHMCT TYPE=INITIAL
- User event monitoring points, DFHMCT TYPE=EMP
- Control data recording, DFHMCT TYPE=RECORD
- End of monitoring control table, DFHMCT TYPE=FINAL (described in "TYPE=FINAL (end of table)" on page 507)

Control section—DFHMCT TYPE=INITIAL

The control section name for the MCT is established by the DFHMCT TYPE=INITIAL macro. This macro also creates the necessary linkage editor control statements for subsequent link-editing.

```
                              ┌─,APPLNAME=NO──┐  ┌─,COMPRESS=YES─┐
►►──DFHMCT──TYPE=INITIAL──────┼───────────────┼──┼───────────────┼──────────────────────►
                              └─,APPLNAME=YES─┘  └─,COMPRESS=NO──┘

   ┌─,DPL=0───────┐  ┌─,FILE=8───────┐  ┌─,RMI=NO──┐
►──┼──────────────┼──┼───────────────┼──┼──────────┼───────────────────────────────────►
   └─,DPL=number──┘  └─,FILE=number──┘  └─,RMI=YES─┘  └─,SUFFIX=xx─┘

   ┌─,TSQUEUE=8──────┐
►──┼─────────────────┼─────────────────────────────────────────────────────────────────►◄
   └─,TSQUEUE=number─┘
```

For general information about TYPE=INITIAL macros, including the use of the SUFFIX operand, see "TYPE=INITIAL (control section)" on page 506.

Note: The combined length of all the transaction resource monitoring data must not exceed 32244 bytes.

APPLNAME={NO|YES}
This option specifies that you want to use the application naming support provided by CICS monitoring.

Application naming is an enabling function that allows application programs to call special CICS event monitoring points. Data collected at these CICS-generated EMPs can be used by any CICS monitoring software package.

NO Application naming support is not enabled in the CICS region and the application naming event monitoring points, DFHAPPL.1 and DFHAPPL.2, are not generated.

YES Application naming support is enabled in the CICS region. When you assemble the MCT, CICS generates the application naming event monitoring points (DFHAPPL.1 and DFHAPPL.2). Note that the monitoring data moved at these EMPs by an **`EXEC CICS MONITOR`** command calling these application naming EMPs is preserved until the end of the task, or until changed by another call of the EMPS by a subsequent **EXEC CICS MONITOR** command. See the *CICS Application Programming Reference* for more information.

The application naming (DFHAPPL) EMPs are created by CICS as if defined with the following TYPE=EMP macro parameters:

```
DFHMCT TYPE=EMP,CLASS=PERFORM,                                      X
               ID=(DFHAPPL.1),FIELD=(1,APPLNAME)                    X
               PERFORM=(MOVE(0,4))
DFHMCT TYPE=EMP,CLASS=PERFORM,                                      X
               ID=(DFHAPPL.2),                                      X
               PERFORM=(MOVE(4,8))
```

For more information about how to use the application naming event monitoring points in your applications, see the *CICS Performance Guide*.

COMPRESS={YES|NO}

This option specifies whether you want data compression to be performed for the CICS SMF 110 monitoring records produced by the CICS monitoring facility.

YES This default specifies that you want monitoring record data compression to be performed for the CICS SMF 110 monitoring records produced by the CICS monitoring facility. For information about data compression, see .

NO Specifies that you do not want monitoring record data compression to be performed for the CICS SMF 110 monitoring records output by the CICS monitoring facility.

DPL={0|number}

This option specifies the maximum number of distributed program link (DPL) requests for which you want CICS to perform transaction resource monitoring. This option applies only if transaction resource monitoring is enabled, either by specifying MNRES=ON as a system initialization parameter, or by enabling it dynamically using the monitoring facility transaction CEMN or an EXEC CICS, or CEMT, SET MONITOR command.

CICS standard monitoring performance class data includes totals for *all* programs accessed by a transaction, including distributed program links. Transaction resource monitoring, on the other hand, collects information about individual distributed program links, up to the number specified. This data is collected:
- Program name
- System identifier (sysid) where the request is routed
- Number of distributed program link (DPL) requests

0 This default specifies that CICS is not to perform transaction resource monitoring for any distributed program links.

number

Specifies the maximum number of distributed program link requests, in the range 0 - 64, for which CICS is to perform transaction resource monitoring. CICS collects monitoring performance data at the resource level for each distributed program link request issued by a transaction, up to the maximum specified by *number*. If the transaction issues more distributed program link requests than the number specified, any requests over the maximum are ignored, but a flag is set to indicate that the transaction has exceeded the DPL limit.

If you specify DPL=0, specifying MNRES=YES either as a system initialization parameter or dynamically while CICS is running has no effect, and transaction resource monitoring data is not collected for distributed program links.

FILE={8|number}

This option specifies the maximum number of files for which you want CICS to perform transaction resource monitoring. This option applies only if transaction resource monitoring is enabled, either by specifying MNRES=ON as a system initialization parameter, or by enabling it dynamically using the monitoring facility transaction CEMN or an EXEC CICS, or CEMT, SET MONITOR command.

CICS standard monitoring performance class data includes totals for *all* files accessed by a transaction. Transaction resource monitoring, on the other hand, collects information about individual files, up to the number specified. This data is collected:

- File name
- Number and total time of file **get** requests
- Number and total time of file **put** requests
- Number and total time of file **browse** requests
- Number and total time of file **add** requests
- Number and total time of file **delete** requests
- Total number and total time of all requests against the file
- File access method request count
- File I/O wait time and number of waits
- RLS-mode file I/O wait time
- Coupling facility data table (CFDT) I/O wait time

8 This default specifies that CICS is to perform transaction resource monitoring for a maximum of 8 files.

number

Specifies the maximum number of files, in the range 0 - 64, for which CICS is to perform transaction resource monitoring. CICS collects monitoring performance data at the resource level for each file accessed by a transaction, up to the maximum specified by *number*. If the transaction accesses more files than the number specified, any files over the maximum are ignored, but a flag is set to indicate that the transaction has exceeded the file limit.

If you specify FILE=0, specifying MNRES=ON either as a system initialization parameter or dynamically while CICS is running has no effect, and transaction resource monitoring data is not collected for files.

RMI={NO|YES}

This option specifies whether you want additional monitoring performance class data to be collected for the resource managers used by your transactions.

NO This default specifies that you do not want monitoring performance data for the resource managers used by your transactions.

YES Specifies that you do want additional monitoring performance data to be collected for the resource managers used by your transactions.

For information about the data that is collected see the*CICS Performance Guide*

TSQUEUE={8|number}

This option specifies the maximum number of temporary storage queues for which you want CICS to perform transaction resource monitoring. This option applies only if transaction resource monitoring is enabled, either by specifying MNRES=ON as a system initialization parameter, or by enabling it dynamically using the monitoring facility transaction CEMN or an EXEC CICS, or CEMT, SET MONITOR command.

CICS standard monitoring performance class data includes totals for *all* temporary storage queues accessed by a transaction. Transaction resource monitoring, on the other hand, collects information about individual temporary storage queues, up to the number specified.

8
: This default specifies that CICS is to perform transaction resource monitoring for a maximum of 8 temporary storage queues.

number
: Specifies the maximum number of temporary storage queues, in the range 0 - 64, for which CICS is to perform transaction resource monitoring. CICS collects monitoring performance data at the resource level for each temporary storage queue accessed by a transaction, up to the maximum specified by *number*. If the transaction accesses more temporary storage queues than the number specified, any temporary storage queues over the maximum are ignored, but a flag is set to indicate that the transaction has exceeded the temporary storage queue limit.

  If you specify TSQUEUE=0, specifying MNRES=ON either as a system initialization parameter or dynamically while CICS is running has no effect, and transaction resource monitoring data is not collected for temporary storage queues. This data is collected:
  - Temporary storage queue name
  - Number and total time of temporary storage queue **get** requests
  - Number and total time of temporary storage queue **put** requests to auxiliary temporary storage
  - Number and total time of temporary storage queue **put** requests to main temporary storage
  - Total number and total time of all requests against the temporary storage queue
  - Total length of all the items obtained from temporary storage
  - Total length of all the items written to auxiliary temporary storage
  - Total length of all the items written to main temporary storage
  - Temporary storage I/O wait time and number of waits
  - Shared temporary storage I/O wait time and number of waits

User event monitoring points—DFHMCT TYPE=EMP

You can use the DFHMCT TYPE=EMP macro to specify how the user data fields in performance class data records are added to or changed at each user event monitoring point. One TYPE=EMP macro must be coded for each user event monitoring point (EMP) at which user data is required.

The TYPE=EMP macro must be coded between the TYPE=INITIAL macro and the first TYPE=RECORD macro instruction.

```
►►──DFHMCT──TYPE=EMP──,CLASS=PERFORM──,ID=──┬─number──────────┬──────────────────►
                                            ├─PP,number───────┤
                                            └─entryname.number┘
```

```
►─┬─────────────────────────────────────────────┬──────────────────────────────────────►
  └─,CLOCK=(number,name1─┬──────────────┬─)─────┘
                         └─,name2,...───┘

►─┬─────────────────────────────────────────────┬──┬────────────────────┬──────────────►
  └─,COUNT=(number,name1─┬──────────────┬─)─────┘  └─,FIELD=(1,name)────┘
                         └─,name2,...───┘

►─┬───────────────────────────────────┬───────────────────────────────────────────────►◄
  └─,PERFORM=(option─┬────────┬─)─────┘
                     └─,...───┘
```

TYPE=EMP
Indicates that this macro defines the user data to be collected at a user event monitoring point.

CLASS=PERFORM
Code this with the monitoring classes for which you want user data to be collected at this user EMP. The value PERFORM must be coded. The corresponding PERFORM operand must also be coded.

ID={*number*|(PP,*number*)|*entryname*.*number*}
Code this with the identifier of the user event monitoring point at which the user data defined in this macro is to be collected. If one of the forms *number* or (PP,*number*) is coded, a default entry name, USER, is provided.

number
A decimal integer in the range 1 through 255. Identification numbers between 1 and 199 are available for user EMPs. Numbers between 200 and 255 are reserved for IBM program product EMPs. Code these numbers if you want to collect user data at EMPs defined in the code of IBM program products.

(PP,*number*)
An IBM program product EMP identification number. It is equivalent to specifying an ID value of 199 + number. The value of *number* is a decimal integer in the range 1 through 56.

entryname.*number*
Allows multiple use of *number*, a decimal integer in the range 1 through 255. Thus UNIQUE.3, DSN.3, and 3 are three different EMPs. A maximum of 98 entrynames can be specified against any particular number. Also, any count, clock, or byte-offset referred to by one of them is a different object from that referred to by any other.

In the following descriptions, any reference to a constant means a hexadecimal constant of up to eight hexadecimal digits; any shorter string is padded on the left with zeros. For example, to add or subtract decimal 14, the constant would be coded as 0000000E or just E (no quotation marks are required).

Any reference to the fields DATA1 and DATA2 means the two binary fullwords supplied by the user EMP coded in the application program. These are specified by the DATA1 and DATA2 operands of the EXEC CICS MONITOR command for defining user EMPs. Depending on the options coded, the DATA1 and DATA2 fields can be interpreted as numbers, masks for performing logical operations, or pointers to further information.

Any reference to a number means a decimal integer in the range defined in the description of the option.

CLOCK=(*number*,*name1*[,*name2*,...])
Assigns an informal name to one or more clocks. The informal name of any clock appears in its dictionary entry and is available to a postprocessor for use as, for example, a column heading.

The character string *name1* is assigned to the clock specified by *number* at MCT generation. If specified, *name2* is assigned to the clock *number* + 1. Similarly, any subsequent names are assigned to subsequent clocks. Any clock not named by this option receives the entry name value from the ID operand (the default is USER).

number must be in the range 1 through 256. The names specified must each be a character string up to eight characters long. If any string contains one or more blanks or commas, it must be enclosed in quotes.

COUNT=(number,*name1*[,*name2*,...])
Assigns an informal name to one or more count fields. The informal name of any count field appears in its dictionary entry and is available to a postprocessor for use as, for example, a column heading.

The character string *name1* is assigned to the count field specified by number at MCT generation. If specified, *name2* is assigned to the count field *number*+1. Similarly, any subsequent names are assigned to subsequent count fields. Any count fields not named by this option receive the entry name value from the ID operand (the default is USER).

number must be in the range 1 through 256. The names specified must each be a character string up to eight characters long. If any string contains one or more blanks or commas, it must be enclosed in quotes.

FIELD=(1,*name*)
Assigns an informal name to the user byte-string field. This appears in its dictionary entry and is available to a postprocessor for use as, for example, a column heading.

name must be a character string up to 8 characters long. If it contains one or more blanks or commas, it must be enclosed in quotes.

PERFORM=(*option*[,...])
Code this operand when CLASS=PERFORM is specified. It specifies that information is to be added to or changed in the user fields of the performance class data record at this EMP.

The user fields for each user distinguished by a separate entry name in the ID operand can comprise:
1. Up to 256 counters
2. Up to 256 clocks, each made up of a 4-byte accumulator and 4-byte count
3. A byte string of up to 8192 bytes.

Note: If the combined sizes of the objects (clocks, counts, and fields) implied in the specified options exceed 16384 bytes, assembly-time errors occur. You can avoid this by using fewer objects, either by collecting less data, or by clustering references to clocks and counts to avoid implied, but unused, objects.

Note: When you define user data to be collected at a user event monitoring point, this extends the size of all CICS performance class monitoring records. Each CICS monitoring record is the same size as the largest record; bear this in mind when specifying user data fields.

Actions are performed on the user fields according to the options specified.

PERFORM can be abbreviated to PER. Valid options for the PERFORM operand are:

ADDCNT(*number***,{***constant***|DATA1|DATA2})**
: The value of the user count field specified by *number* is to be incremented by *constant* or by the value of the field DATA1 or DATA2. *number* is a decimal integer in the range 1 through 256.

EXCNT(*number***,{***constant***|DATA1|DATA2})**
: A logical exclusive OR operation is to be performed on the value of the user count field specified by *number*, using *constant* or the value of the field DATA1 or DATA2. *number* is a decimal integer in the range 1 through 256.

MLTCNT(*number1***,***number2***)**
: A series of adjacent user count fields are to be updated by adding the values contained in adjacent fullwords in an area addressed by the DATA1 field. To use this option, both the DATA1 and DATA2 fields must be passed from the user EMP.

  The user count fields that are to be updated start at the field specified by *number1*. The number of user count fields that are updated is the smaller of the values of *number2* and the DATA2 field. If the DATA2 field is zero, the value of *number2* is used. The series of adjacent fullwords used to add into the user count fields starts at the address specified in the DATA1 field. Successive fullwords are added into successive user count fields.

  number1 and *number2* are decimal integers in the range 1 through 256. The number of user counts generated is (*number1* + *number2* - 1). This value must also be in the range 1 through 256.

  Note: Only one of the MLTCNT and MOVE options can be used in each DFHMCT TYPE=EMP macro.

MOVE(*number3***,***number4***)**
: A string of data is to be moved into the user byte-string field. To use this option, both the DATA1 and DATA2 fields must be passed from the user EMP.

  The user byte-string field is updated starting at the offset specified by *number3*. The data to be moved starts at the address supplied in the DATA1 field. The maximum length of data that can be moved is given by *number4* (in bytes), and the actual length of data that is to be moved is given by the value of the DATA2 field. If the value of DATA2 is zero, the length of the data given by *number4* is moved.

  number3 is a decimal integer in the range 0 to 8191, and *number4* is a decimal integer in the range 1 to 8192. The maximum length of the user character field is (*number3* + *number4*), and must be in the range 1 to 8192.

  Note: Only one of the MLTCNT and MOVE options can be used in each DFHMCT TYPE=EMP macro instruction.

NACNT(*number***,{***constant***|DATA1|DATA2})**
: A logical AND operation is to be performed on the value of the user count field specified by *number*, using *constant* or the value of the field DATA1 or DATA2. *number* is a decimal integer in the range 1 through 256.

ORCNT(*number***,{***constant***|DATA1|DATA2})**
: A logical inclusive OR operation is to be performed on the value of the user count field specified by *number*, using *constant* or the value of the field DATA1 or DATA2. *number* is a decimal integer in the range 1 through 256.

PCLOCK(*number*)
The clock specified by number is to be stopped. The 4-byte count in the user clock field is flagged to indicate that the clock is now stopped. The accumulator is set to the sum of its contents before the previous SCLOCK and the elapsed period between that SCLOCK and this PCLOCK. *number* is a decimal integer in the range 1 through 256.

PCPUCLK(*number*)
This option performs the same function as PCLOCK, but uses the CPU-time of the CICS main task instead of elapsed time.

SCLOCK(*number*)
The clock specified by *number* is to be started. The value of the 4-byte count in the user clock field is incremented by 1 and flagged to show its running state. *constant* is a decimal integer in the range 1 through 256.

SCPUCLK(*number*)
This option performs the same function as SCLOCK, but uses the CPU-time of the CICS main task instead of elapsed time.

SUBCNT(*number*,{*constant*|DATA1|DATA2})
The value of the user count field specified by *number* is to be decremented by *constant* or by the value of the field DATA1 or DATA2. *number* is a decimal integer in the range 1 through 256.

DELIVER
Performance class data accumulated for this task up to this point is delivered to the monitoring buffers. Any running clocks are stopped. The performance class section of the monitoring area for this task is reset to X'00', except for the key fields (transid, termid) and any data stored as a result of invoking the DFHAPPL special EMPs. Any clocks that were stopped by this option are restarted from zero for the new measurement period. The high watermark fields are reset to their current values.

Control data recording—DFHMCT TYPE=RECORD

The DFHMCT TYPE=RECORD macro identifies the performance class data fields that are selected for monitoring.

```
►►──DFHMCT──TYPE=RECORD──,CLASS=PERFORM──┬──────────────────────────────┬──────►
                                         └─,EXCLUDE=──┬─ALL──────────────┬┘
                                                      └─(──n1─┬──────┬─)─┘
                                                              └─,...─┘

►─┬──────────────────────────┬──────────────────────────────────────────────►◄
  └─,INCLUDE=(─m1─┬──────┬─)─┘
                  └─,...─┘
```

TYPE=RECORD
Indicates that monitoring data for selected performance class data fields will be recorded.

CLASS=PERFORM
Code this operand to record performance class data fields. You can abbreviate PERFORM to PER.

EXCLUDE={ALL|(n1[,...])}
Code this operand to prevent one or more CICS fields from being reported by the monitoring facility. By default, all documented performance class fields are reported.

The EXCLUDE operand is always honored before the INCLUDE operand, regardless of the order in which they are coded. (The INCLUDE operand is only relevant when the EXCLUDE operand is coded.)

ALL

This option prevents all fields that are eligible for exclusion from being reported. The following fields cannot be excluded:

- 1
- 2
- 4
- 5
- 6
- 89

You can use the INCLUDE operand at the same time as EXCLUDE=ALL if you want to include some fields but exclude the majority.

Table 31 shows the fields that are eligible for exclusion. Each field has a group name associated with it, which identifies the group of fields to which it belongs. Each field also has its own numeric field identifier.

To exclude a group of fields you code the name of the group (a character string) as *n1*, for example, `EXCLUDE=(DFHTASK)`.

To exclude a single field you code the numeric identifier of the field as *n1*, for example, `EXCLUDE=(98,70)`.

Note: Do not code leading zeros on numeric identifiers. Do not code numeric identifiers of fields that are ineligible for exclusion.

You can code combinations of names and numeric identifiers, for example, `EXCLUDE=(DFHFILE,DFHTERM,112,64)`.

Table 31. Data groups and fields that can be excluded/included

Group Name	Field Id	Description
DFHCBTS	200	CICS BTS process name
DFHCBTS	201	CICS BTS process type
DFHCBTS	202	CICS BTS process id
DFHCBTS	203	CICS BTS activity id
DFHCBTS	204	CICS BTS activity name
DFHCBTS	205	CICS BTS run process/activity synchronous count
DFHCBTS	206	CICS BTS run process/activity asynchronous count
DFHCBTS	207	CICS BTS link process/activity count
DFHCBTS	208	CICS BTS define process count
DFHCBTS	209	CICS BTS define activity count
DFHCBTS	210	CICS BTS reset process/activity count
DFHCBTS	211	CICS BTS suspend process/activity count
DFHCBTS	212	CICS BTS resume process/activity count
DFHCBTS	213	CICS BTS delete activity or cancel process/activity request count
DFHCBTS	214	CICS BTS acquire process/activity request count
DFHCBTS	215	CICS BTS total process/activity request count
DFHCBTS	216	CICS BTS delete/get/put process container count
DFHCBTS	217	CICS BTS delete/get/put activity container count
DFHCBTS	218	CICS BTS total process/activity container request count

Table 31. Data groups and fields that can be excluded/included (continued)

Group Name	Field Id	Description
DFHCBTS	219	CICS BTS retrieve reattach request count
DFHCBTS	220	CICS BTS define input event request count
DFHCBTS	221	CICS BTS timer associated event requests count
DFHCBTS	222	CICS BTS total event related request count
DFHCHNL	321	Number of CICS requests for channel containers
DFHCHNL	322	Number of browse requests for channel containers
DFHCHNL	323	Number of GET CONTAINER requests for channel containers
DFHCHNL	324	Number of PUT CONTAINER requests for channel containers
DFHCHNL	325	Number of MOVE CONTAINER requests for channel containers
DFHCHNL	326	Length of data in the containers of all GET CONTAINER CHANNEL commands
DFHCHNL	327	Length of data in the containers of all PUT CONTAINER CHANNEL commands
DFHCHNL	328	Number of containers created by MOVE and PUT CONTAINER requests for channel containers
DFHCHNL	329	Maximum amount (high watermark) of container storage allocated
DFHCICS	25	CICS OO foundation class request count
DFHCICS	103	Transaction exception wait time
DFHCICS	112	Performance record type
DFHCICS	130	Transaction routing sysid
DFHCICS	131	Performance record count
DFHCICS	167	MVS Workload Manager Service Class name
DFHCICS	168	MVS Workload Manager Report Class name
DFHCICS	360	Applid of the CICS region in which this work request originated
DFHCICS	361	Time at which the originating task was started
DFHCICS	362	Number of the originating task
DFHCICS	363	Transaction ID (TRANSID) of the originating task
DFHCICS	364	Originating Userid-2 or Userid-1, depending on the originating task
DFHCICS	365	Originating user correlator
DFHCICS	366	Name of the originating TCPIPSERVICE
DFHCICS	367	Port number used by the originating TCPIPSERVICE
DFHCICS	369	TCP/IP port number of the originating client
DFHCICS	370	Originating transaction flags
DFHCICS	371	Facility name of the originating transaction
DFHCICS	372	IP address of the originating client or Telnet client.
DFHCICS	402	EXEC CICS API and SPI request count
DFHCICS	405	ASKTIME request count
DFHCICS	406	TIME request total count
DFHCICS	408	BIF DIGEST request count
DFHCICS	409	BIF request total count
DFHCICS	415	SIGNAL EVENT request count
DFHCICS	416	Event filter operations count
DFHCICS	417	Events captured count
DFHDATA	179	IMS (DBCTL) request count
DFHDATA	180	DB2 request count
DFHDATA	186	IMS (DBCTL) wait time
DFHDATA	187	DB2 Readyq wait time

Table 31. Data groups and fields that can be excluded/included (continued)

Group Name	Field Id	Description
DFHDATA	188	DB2 Connection wait time
DFHDATA	189	DB2 wait time
DFHDATA	395	MQ request count
DFHDATA	396	MQ GETWAIT wait time
DFHDATA	397	WebSphere MQ API SRB time
DFHDEST	41	TD get count
DFHDEST	42	TD put count
DFHDEST	43	TD purge count
DFHDEST	91	TD total count
DFHDEST	101	TD I/O wait time
DFHDOCH	223	Document handler Delete count
DFHDOCH	226	Document handler Create count
DFHDOCH	227	Document handler Insert count
DFHDOCH	228	Document handler Set count
DFHDOCH	229	Document handler Retrieve count
DFHDOCH	230	Document handler Total count
DFHDOCH	240	Document handler total created document length
DFHEJBS	311	CorbaServer for which the request processor instance is handling requests
DFHEJBS	312	Number of enterprise bean activations that have occurred in this request processor
DFHEJBS	313	Number of enterprise bean passivations that have occurred in this request processor
DFHEJBS	314	Number of enterprise bean creation calls that have occurred in this request processor
DFHEJBS	315	Number of enterprise bean removal calls that have occurred in this request processor
DFHEJBS	316	Number of enterprise bean method calls executed in this request processor
DFHEJBS	317	Total for this request processor of fields 312 - 316
DFHFEPI	150	FEPI allocate count
DFHFEPI	151	FEPI receive count
DFHFEPI	152	FEPI send count
DFHFEPI	153	FEPI start count
DFHFEPI	154	FEPI CHARS sent
DFHFEPI	155	FEPI CHARS received
DFHFEPI	156	FEPI suspend time
DFHFEPI	157	FEPI allocate timeout count
DFHFEPI	158	FEPI receive timeout count
DFHFEPI	159	FEPI total count
DFHFILE	36	FC get count
DFHFILE	37	FC put count
DFHFILE	38	FC browse count
DFHFILE	39	FC add count
DFHFILE	40	FC delete count
DFHFILE	63	FC I/O wait time
DFHFILE	70	FC access-method count
DFHFILE	93	FC total count
DFHFILE	174	RLS FC I/O wait time
DFHFILE	175	RLS File request CPU (SRB) time
DFHFILE	176	CFDT I/O wait time
DFHJOUR	10	Journal I/O wait time
DFHJOUR	58	Journal write count

Table 31. Data groups and fields that can be excluded/included (continued)

Group Name	Field Id	Description
DFHJOUR	172	Log stream write count
DFHMAPP	50	BMS MAP count
DFHMAPP	51	BMS IN count
DFHMAPP	52	BMS OUT count
DFHMAPP	90	BMS total count
DFHPROG	55	Program LINK count
DFHPROG	56	Program XCTL count
DFHPROG	57	Program LOAD count
DFHPROG	71	Program name
DFHPROG	72	Program LINK_URM count
DFHPROG	73	Program DPL count
DFHPROG	113	Original abend code
DFHPROG	114	Current abend code
DFHPROG	115	Program load time
DFHPROG	286	Length of data in the containers of all DPL requests with the CHANNEL option
DFHPROG	287	Length of data in the containers of all DPL RETURN CHANNEL commands
DFHPROG	306	Number of local LINK requests with CHANNEL option
DFHPROG	307	Number of XCTL requests with CHANNEL option
DFHPROG	308	Number of DPL requests with CHANNEL option
DFHPROG	309	Number of remote RETURN requests with CHANNEL option
DFHPROG	310	Length of data in the containers of all remote RETURN CHANNEL commands
DFHSOCK	241	Inbound socket I/O wait time
DFHSOCK	242	Bytes encrypted for secure socket
DFHSOCK	243	Bytes decrypted for secure socket
DFHSOCK	245	TCP/IP service name
DFHSOCK	246	TCP/IP service port number
DFHSOCK	288	Number of allocate requests for IPCONNs
DFHSOCK	289	Socket extract request count
DFHSOCK	290	Create nonpersistent socket request count
DFHSOCK	291	Create persistent socket request count
DFHSOCK	292	Nonpersistent socket high watermark
DFHSOCK	293	Persistent socket high watermark
DFHSOCK	294	Socket receive request count
DFHSOCK	295	Socket characters received
DFHSOCK	296	Socket send request count
DFHSOCK	297	Socket characters sent
DFHSOCK	298	Socket total request count
DFHSOCK	299	Outbound socket I/O wait time
DFHSOCK	300	Elapsed time a user task waited for control at this end of an IPCONN
DFHSOCK	301	Inbound socket receive request count
DFHSOCK	302	Inbound socket characters received
DFHSOCK	303	Inbound socket send request count
DFHSOCK	304	Inbound socket characters sent
DFHSOCK	305	Name of the IPCONN whose TCPIPSERVICE attached the user task
DFHSOCK	318	IP address of the originating client or Telnet client
DFHSOCK	330	Port number of the client or Telnet client

Table 31. Data groups and fields that can be excluded/included (continued)

Group Name	Field Id	Description
DFHSTOR	33	User storage high watermark (UDSA)
DFHSTOR	54	User storage get count (UDSA)
DFHSTOR	87	Program storage high watermark - total
DFHSTOR	95	User storage occupancy (bytes-ms) (UDSA)
DFHSTOR	105	User storage get count above 16 MB (EUDSA)
DFHSTOR	106	User storage high watermark above 16 MB (EUDSA)
DFHSTOR	107	User storage occupancy (bytes-ms) above 16 MB (EUDSA)
DFHSTOR	108	Program storage high watermark below 16 MB
DFHSTOR	116	User storage high watermark below 16 MB (CDSA)
DFHSTOR	117	User storage get count below 16 MB (CDSA)
DFHSTOR	118	User storage occupancy (bytes-ms) below 16 MB (CDSA)
DFHSTOR	119	User storage high watermark above 16 MB (ECDSA)
DFHSTOR	120	User storage get count above 16 MB (ECDSA)
DFHSTOR	121	User storage occupancy (bytes-ms) above 16 MB (ECDSA)
DFHSTOR	122	Program storage high watermark (ERDSA)
DFHSTOR	139	Program storage high watermark above 16 MB
DFHSTOR	142	Program storage high watermark (ECDSA)
DFHSTOR	143	Program storage high watermark (CDSA)
DFHSTOR	144	Shared storage count of getmain requests below 16 MB (CDSA and SDSA)
DFHSTOR	145	Shared storage bytes allocated by using a getmain request below 16 MB (CDSA and SDSA)
DFHSTOR	146	Shared storage released by using a freemain request below 16 MB (CDSA and SDSA)
DFHSTOR	147	Shared storage count of getmain requests above 16 MB (ECDSA and ESDSA)
DFHSTOR	148	Shared storage bytes allocated by using a getmain request above 16 MB (ECDSA and ESDSA)
DFHSTOR	149	Shared storage bytes released by using a freemain request above 16 MB (ECDSA and ESDSA)
DFHSTOR	160	Program storage high watermark (SDSA)
DFHSTOR	161	Program storage high watermark (ESDSA)
DFHSTOR	162	Program storage high watermark (RDSA)
DFHSYNC	60	Sync point count
DFHSYNC	173	Sync point elapsed time
DFHSYNC	177	CFDT server syncpoint wait time
DFHSYNC	196	Syncpoint delay time
DFHSYNC	199	OTS indoubt wait time
DFHTASK	7	User task dispatch time
DFHTASK	8	User task CPU time
DFHTASK	14	User task suspend time
DFHTASK	31	Task number
DFHTASK	59	IC put/initiate count
DFHTASK	64	Error flag field
DFHTASK	65	Number of local START requests with CHANNEL option
DFHTASK	66	IC total count
DFHTASK	82	Transaction group id
DFHTASK	97	Network name of the originating terminal or system
DFHTASK	98	Unit-of-work id on the originating system

Table 31. Data groups and fields that can be excluded/included (continued)

Group Name	Field Id	Description
DFHTASK	102	User task wait-for-dispatch time
DFHTASK	109	Transaction priority
DFHTASK	123	Task global ENQ delay time
DFHTASK	124	3270 Bridge transaction id
DFHTASK	125	First dispatch delay time
DFHTASK	126	First dispatch delay time due to TRANCLASS
DFHTASK	127	First dispatch delay due to MXT
DFHTASK	128	Lock manager delay time
DFHTASK	129	Task ENQ delay time
DFHTASK	132	Recovery manager unit-of-work id
DFHTASK	163	Transaction facility name
DFHTASK	164	Transaction flags
DFHTASK	166	Transaction class name
DFHTASK	170	Resource Manager Interface elapsed time
DFHTASK	171	Resource Manager Interface suspend time
DFHTASK	181	EXEC CICS WAIT EXTERNAL wait time
DFHTASK	182	EXEC CICS WAITCICS and WAIT EVENT wait time
DFHTASK	183	Interval Control delay time
DFHTASK	184	"Dispatch Wait" wait time
DFHTASK	190	RRMS/MVS unit-of-recovery id (URID)
DFHTASK	191	RRMS/MVS wait time
DFHTASK	192	Request receiver wait time
DFHTASK	193	Request processor wait time
DFHTASK	194	OTS Transaction id (Tid)
DFHTASK	195	CICS BTS run process/activity synchronous wait time
DFHTASK	249	User task QR TCB wait-for-dispatch time
DFHTASK	250	CICS MAXOPENTCBS delay time
DFHTASK	251	CICS TCB attach count
DFHTASK	252	User task peak open TCB count
DFHTASK	253	CICS JVM elapsed time
DFHTASK	254	CICS JVM suspend time
DFHTASK	255	User task QR TCB dispatch time
DFHTASK	256	User task QR TCB CPU Time
DFHTASK	257	User task MS TCB dispatch time
DFHTASK	258	User task MS TCB CPU Time
DFHTASK	259	User task L8 TCB CPU Time
DFHTASK	260	User task J8 TCB CPU Time
DFHTASK	261	User task S8 TCB CPU Time
DFHTASK	262	User task key 8 TCB dispatch time
DFHTASK	263	User task key 8 TCB CPU time
DFHTASK	264	User task key 9 TCB dispatch time
DFHTASK	265	User task key 9 TCB CPU time
DFHTASK	267	User task J9 TCB CPU Time
DFHTASK	268	User task TCB mismatch wait time
DFHTASK	269	User task RO TCB dispatch time
DFHTASK	270	User task RO TCB CPU Time
DFHTASK	273	CICS JVM initialize elapsed time
DFHTASK	275	CICS JVM reset elapsed time
DFHTASK	277	CICS MAXJVMTCBS delay time
DFHTASK	279	MVS storage constraint delay time
DFHTASK	283	CICS MAXTHRDTCBS delay time
DFHTASK	285	3270 bridge partner wait time

Table 31. Data groups and fields that can be excluded/included (continued)

Group Name	Field Id	Description
DFHTASK	345	Length of data in the containers of all locally-executed START CHANNEL requests
DFHTASK	346	Number of interval control START CHANNEL requests to be executed on remote systems
DFHTASK	347	Length of data in the containers of all remotely-executed START CHANNEL requests
DFHTASK	400	User task T8 TCB CPU time
DFHTASK	401	JVMSERVER thread wait time
DFHTEMP	11	TS I/O wait time
DFHTEMP	44	TS get count
DFHTEMP	46	TS put auxiliary count
DFHTEMP	47	TS put main count
DFHTEMP	92	TS total count
DFHTEMP	178	Shared TS I/O wait time
DFHTERM	9	TC I/O wait time
DFHTERM	34	TC principal facility input messages
DFHTERM	35	TC principal facility output messages
DFHTERM	67	TC alternate facility input messages
DFHTERM	68	TC alternate facility output messages
DFHTERM	69	TC allocate count
DFHTERM	83	TC principal facility CHARS input
DFHTERM	84	TC principal facility CHARS output
DFHTERM	85	TC alternate facility CHARS input
DFHTERM	86	TC alternate facility CHARS output
DFHTERM	100	IR I/O wait time
DFHTERM	111	z/OS Communications Server terminal LU name
DFHTERM	133	TC I/O wait time - LU6.1
DFHTERM	134	TC I/O wait time - LU6.2
DFHTERM	135	TC alternate facility input messages - LU6.2
DFHTERM	136	TC alternate facility output messages - LU6.2
DFHTERM	137	TC alternate facility CHARS input - LU6.2
DFHTERM	138	TC alternate facility CHARS output - LU6.2
DFHTERM	165	Terminal information
DFHTERM	169	Terminal session connection name
DFHTERM	197	Network qualified name network ID
DFHTERM	198	Network qualified name network name
DFHWEBB	224	Web read request count
DFHWEBB	225	Web write request count
DFHWEBB	231	Web receive request count
DFHWEBB	232	Web characters received
DFHWEBB	233	Web send request count
DFHWEBB	234	Web characters sent
DFHWEBB	235	Web total request count
DFHWEBB	236	Web header or formfield read request count
DFHWEBB	237	Web header or formfield write request count
DFHWEBB	238	Web extract request count
DFHWEBB	239	Web browse request count
DFHWEBB	331	Web header read request count, client
DFHWEBB	332	Web header write request count, client
DFHWEBB	333	Web client receive or converse request count
DFHWEBB	334	Web characters received, client
DFHWEBB	335	Web client send or converse request count
DFHWEBB	336	Web characters sent, client

Table 31. Data groups and fields that can be excluded/included (continued)

Group Name	Field Id	Description
DFHWEBB	337	Web client parse URL request count
DFHWEBB	338	Web client browse request count
DFHWEBB	340	EXEC CICS INVOKE SERVICE or WEBSERVICE request count
DFHWEBB	380	URIMAP resource name
DFHWEBB	381	PIPELINE resource name
DFHWEBB	382	ATOMSERVICE resource name
DFHWEBB	383	WEBSERVICE resource name
DFHWEBB	384	WEBSERVICE operation name
DFHWEBB	385	PROGRAM resource name
DFHWEBB	386	SOAPFAULT create request count
DFHWEBB	387	Total SOAPFAULT request count
DFHWEBB	388	EXEC CICS INVOKE SERVICE SOAP faults
DFHWEBB	390	SOAP request body length
DFHWEBB	392	SOAP response body length
DFHWEBB	411	z/OS XML System Services CPU time
DFHWEBB	412	Total incoming converted document length
DFHWEBB	413	EXEC CICS TRANSFORM request count
DFHWEBB	420	WS-Addressing context build request count
DFHWEBB	421	WS-Addressing context get request count
DFHWEBB	422	WS-Addressing endpoint reference (EPR) create request count
DFHWEBB	423	WS-Addressing total request count

INCLUDE=(*m1*[,...])

Code this operand to enable one or more CICS fields to be reported by the monitoring facility. By default, all documented performance class fields are reported, so this operand is relevant only if you code the EXCLUDE operand in the same macro.

The fields that are eligible to be coded for inclusion on this operand are the same as those that are eligible for exclusion. (See the description of the EXCLUDE operand.) Each field has a numeric field identifier associated with it. To include a field, you code *m1* as the numeric identifier of the field. You can code multiple numeric identifiers.

Note: Do not code leading zeros on numeric identifiers. Do not code numeric identifiers of fields that are ineligible for exclusion, and that are therefore included by default.

The EXCLUDE operand is always honored first. The INCLUDE operand, if coded, then overrides some of its effects. For example, the following code secures the collection and reporting of file control PUTs and the total number of file control requests, but excludes the file control browse count and other file control fields:

```
EXCLUDE=DFHFILE,
INCLUDE=(37,93)
```

If you want to exclude the majority of fields, but include a few, you can use the operands in the way shown in the following example:

```
EXCLUDE=ALL,
INCLUDE=(DFHTERM,97,98)
```

This is more convenient than coding individually all the fields you want to exclude.

CICSTS42.SDFHSAMP provides the following sample monitoring control tables:
- For terminal-owning region (TOR): DFHMCTT$
- For application-owning region (AOR): DFHMCTA$
- For an application-owning region (AOR) with DBCTL: DFHMCTD$
- For file-owning region (FOR): DFHMCTF$

These samples show how to use the EXCLUDE and INCLUDE operands to reduce the size of the performance class record in order to reduce the volume of data written by CICS to SMF.

DFHMCT examples

These examples show the use of the DFHMCT TYPE=INITIAL, DFHMCT TYPE=RECORD and DFHMCT TYPE=EMP macros to create the control section for the monitoring control table, specify user event monitoring points, and exclude system-defined fields.

Figure 42 demonstrates the coding for the control statements in the DFHMCT TYPE=INITIAL macro. In the example, the suffix C2 is specified, so the name of this monitoring control table is DFHMCTC2. The other parameters are set to their default values.

```
DFHMCT   TYPE=INITIAL,SUFFIX=C2,COMPRESS=YES,       *
        APPLNAME=NO,RMI=NO,FILE=8,DPL=0,TSQUEUE=8
DFHMCT   TYPE=FINAL
         END
```

Figure 42. Example: DFHMCT TYPE=INITIAL

Figure 43 demonstrates the coding to create a monitoring control table (MCT) for two user event monitoring points (EMPs).

```
DFHMCT   TYPE=INITIAL,SUFFIX=MF,COMPRESS=YES
DFHMCT   TYPE=EMP,                                  *
         ID=180,                                    *
         CLASS=PERFORM,                             *
         PERFORM=(SCLOCK(1),ADDCNT(2,1))
DFHMCT   TYPE=EMP,                                  *
         ID=181,                                    *
         CLASS=PERFORM,                             *
         PERFORM=PCLOCK(1)
DFHMCT   TYPE=FINAL
         END
```

Figure 43. Example: DFHMCT TYPE=EMP, user event monitoring points

Figure 44 on page 543 demonstrates the coding to create a monitoring control table (MCT) that excludes specific data fields from the performance data record. If you do not have any applications that use certain CICS functions, you can safely exclude the performance data groups and fields relating to those functions. The example shows DFHMCT TYPE=RECORD macros to exclude fields for these functions:

Front End Programming Interface (FEPI)

```
DFHMCT   TYPE=RECORD,CLASS=PERFORM,                 *
         EXCLUDE=(DFHFEPI)
```

Enterprise JavaBeans (EJB) support

```
DFHMCT   TYPE=RECORD,CLASS=PERFORM,                 *
        EXCLUDE=(DFHEJBS,192,193,194,199)
```

Business transaction services (BTS)

```
DFHMCT   TYPE=RECORD,CLASS=PERFORM,                 *
         EXCLUDE=(DFHCBTS,195,196)
```

Support for Java applications

```
DFHMCT   TYPE=RECORD,CLASS=PERFORM,                 *
         EXCLUDE=(253,254,260,267,273,275,277)
```

```
DFHMCT   TYPE=INITIAL,SUFFIX=CB,COMPRESS=YES,       *
        APPLNAME=NO,RMI=NO,FILE=16,TSQUEUE=12
DFHMCT   TYPE=RECORD,CLASS=PERFORM,                 *
        EXCLUDE=(DFHFEPI)
DFHMCT   TYPE=RECORD,CLASS=PERFORM,                 *
        EXCLUDE=(DFHEJBS,192,193,194,199)
DFHMCT   TYPE=RECORD,CLASS=PERFORM,                 *
        EXCLUDE=(DFHCBTS,195,196)
DFHMCT   TYPE=RECORD,CLASS=PERFORM,                 *
        EXCLUDE=(253,254,260,267,273,275,277)
DFHMCT   TYPE=FINAL
         END
```

Figure 44. Example: DFHMCT TYPE=RECORD, excluding fields

PLT—program list table

A program list table (PLT) specifies programs that you want to run during CICS startup and shutdown, and groups of programs that you want to enable and disable together.

You may want to generate several PLTs for one or more of the following reasons:

- To specify a list of programs that you want to be executed in the second and third initialization stages of CICS startup. For more detail about the initialization stages, see the *CICS Recovery and Restart Guide*. For programming information about restrictions on using programs in the initialization stages, see the *CICS Customization Guide*. The selected list should be specified at initialization time by the PLTPI=*xx* system initialization parameter, where *xx* is the suffix of the PLT that contains the required list of programs.

  For convenience, the list of programs selected for execution during initialization is referred to as the 'PLTPI' list.
- To specify a list of programs that you want to be executed during the first and second quiesce stages of controlled shutdown. The selected list should be specified at initialization time by the PLTSD=*xx* system initialization parameter, where *xx* is the suffix of the PLT that contains the required list of programs.

  The PLT specified in the PLTSD system initialization parameter can be overridden at shutdown time by the PLT option in the CEMT PERFORM SHUTDOWN command.

  The shutdown PLT is normally loaded as CICS is being shutdown. However, it is possible to use the same PLT for both initialization and shutdown, and under these circumstances the PLT is loaded during initialization and CICS does not need to reload it during shutdown. If this is the case and the PLT is updated while CICS is operational, a CEMT SET PROGRAM NEWCOPY command must be issued for the PLT to ensure that the updated version is used when CICS is shutdown.

For convenience, the list of programs selected for execution during shutdown is referred to as the 'PLTSD' list.

- To specify a list of programs that you want to have enabled or disabled as a group by a master terminal ENABLE or DISABLE command. This use of PLTs means that a master terminal operator can enable or disable a set of programs with just one command, instead of using a separate command for each program.

Any number of PLTs can be generated for the above purposes, provided that:

1. Each PLT has a unique suffix
2. Each program named in a PLT either has a program resource definition entry in the CSD file, or is capable of being autoinstalled (that is, the appropriate system initialization parameters have been specified for program autoinstall).

   Note: PLTs should not be defined as programs in the CSD.

First-phase PLT programs must be placed in the DFHRPL concatenated data sets, but second-phase PLT programs can be placed in a dynamic LIBRARY concatenation. However, CICS scans the LPA for phase 1 PLTPI programs if they are not already installed.

The following macros are available to define the PLT entries:

- Control section—DFHPLT TYPE=INITIAL
- Entries in program list table—DFHPLT TYPE=ENTRY
- End of Program List Table—DFHPLT TYPE=FINAL (see “TYPE=FINAL (end of table)” on page 507)

Control section—DFHPLT TYPE=INITIAL

The DFHPLT TYPE=INITIAL macro establishes the entry point and start address of the PLT being defined.

```
►►──DFHPLT──TYPE=INITIAL──┬─────────────┬──────────────────────────────►◄
                          └─,SUFFIX=xx──┘
```

For general information about TYPE=INITIAL macros, including the use of the SUFFIX operand, see “TYPE=INITIAL (control section)” on page 506.

TYPE=INITIAL
: Generates the PLT control section.

  Note that the CSD file must define a program entry for each PLT generated.

SUFFIX=xx
: Code this with the suffix character(s) that uniquely identify this particular table.

  Note: The PLT suffix is referenced by:
  - CEMT {INQUIRE∨SET} PROGRAM CLASS(*suffix*)
  - CEMT or EXEC CICS PERFORM SHUTDOWN PLT(*suffix*)
  - System initialization parameters PLTPI and PLTSD keywords.

Entries in program list table—DFHPLT TYPE=ENTRY

Use the DFHPLT TYPE=ENTRY macro to specify an entry in the program list table (PLT).

```
►►──DFHPLT──TYPE=ENTRY──,PROGRAM=(program─┬──────────────┬─)──────────────►◄
                                          └─,program,...─┘
```

TYPE=ENTRY
Indicates that one or more program names are to be listed in this table.

Note: As shown below, a TYPE=ENTRY macro is also needed to specify the PROGRAM=DFHDELIM entry.

PROGRAM=program
Code this with a program name of up to eight characters. Each program must either have a definition in the CSD file or must be capable of being autoinstalled (that is, the appropriate system initialization parameters must be specified for program autoinstall). Undefined programs before the DFHDELIM statement are system autoinstalled.

For PLTPI and PLTSD lists, only initial programs should be named: other programs that are linked to by initial programs should not be listed (but must be defined or be capable of being autoinstalled). For programming information about restrictions on using PLT programs during initialization, see the *CICS Customization Guide*

```
►►──DFHPLT──TYPE=ENTRY──,PROGRAM=DFHDELIM─────────────────────────────────►◄
```

PROGRAM=DFHDELIM
Code this to delimit the programs to run in the first or second passes of PLTPI or PLTSD. The DFHDELIM entry is not a program—it serves as a delimiter only.

Note that:

- Programs listed before the PROGRAM=DFHDELIM entry in a PLTPI are executed during the second stage of initialization. These are to enable user exit programs needed during recovery. Define the user exit programs in the CSD file, otherwise CICS might not be able to access them after CICS initialization is complete, for example in **EXEC CICS DISABLE** commands. However, note that the properties defined by RDO have no effect during the second stage of initialization.
- Programs listed after the PROGRAM=DFHDELIM entry in a PLTPI are executed during the third stage of initialization. If these programs are used to enable user exits, the user exit programs must also be defined in the CSD file or must be capable of being autoinstalled.
- Programs listed before the PROGRAM=DFHDELIM entry in a PLTSD are executed during the first quiesce stage of shutdown.
- Programs listed after the PROGRAM=DFHDELIM entry in a PLTSD are executed during the second quiesce stage of shutdown.

Second stage initialization and second stage quiesce PLT programs do not require program resource definitions. If they are not defined, they are system autoinstalled (irrespective of the program autoinstall system initialization parameters). This means that the autoinstall exit is not called to allow the definition to be modified. The programs are defined with the following attributes:

LANGUAGE(ASSEMBLER)   STATUS(ENABLED)   CEDF(NO)
DATALOCATION(BELOW)   EXECKEY(CICS)
EXECUTIONSET(FULLAPI)

As a result, system autoinstalled programs have a default CONCURRENCY setting of QUASIRENT, and a default API setting of CICSAPI.

- For those threadsafe PLT programs that are defined with the OPENAPI value for the API attribute, or are C or C++ programs compiled with the XPLINK compiler option, provide an appropriate resource definition. Alternatively, for Language Environment conforming programs, use the CICSVAR runtime option to set the appropriate CONCURRENCY and API values. See the *CICS Application Programming Guide*.

Third stage initialization and first stage quiesce PLT programs can be defined using program autoinstall, depending upon the program autoinstall system initialization parameters. If program autoinstall is not used, these programs must have program resource definitions in the CSD file.

DFHPLT example

The coding required to generate a PLT can be clarified with an example.

Figure 45 and Figure 46 on page 547 illustrate the coding required to generate a PLT.

```
*
* LIST OF PROGRAMS TO BE EXECUTED SEQUENTIALLY DURING SYSTEM
* INITIALIZATION.
* REQUIRED SYSTEM INITIALIZATION PARAMETER: PLTPI=I1
*
  DFHPLT TYPE=INITIAL,SUFFIX=I1
*
*  The following programs are run in the first pass of PLTPI
*
  DFHPLT TYPE=ENTRY,PROGRAM=TRAQA  EXECUTED DURING 2ND INIT. PHASE
  DFHPLT TYPE=ENTRY,PROGRAM=TRAQB  (PROGRAMS SHOULD ALSO BE DEFINED
  DFHPLT TYPE=ENTRY,PROGRAM=TRAQC  BY RDO)
*
  DFHPLT TYPE=ENTRY,PROGRAM=DFHDELIM
*
*
*  The following programs are run in the second pass of PLTPI
*
  DFHPLT TYPE=ENTRY,PROGRAM=TRASA  EXECUTED DURING 3RD INIT. PHASE
  DFHPLT TYPE=ENTRY,PROGRAM=TRASB  (PROGRAMS MUST ALSO BE DEFINED
  DFHPLT TYPE=ENTRY,PROGRAM=TRASC  BY RDO)
  DFHPLT TYPE=FINAL
*
  END
```

Figure 45. PLTPI program list table—example

```
*
*
* LIST OF PROGRAMS TO BE EXECUTED SEQUENTIALLY DURING SYSTEM
* TERMINATION
* REQUIRED SYSTEM INITIALIZATION PARAMETER: PLTSD=T1
*
   DFHPLT TYPE=INITIAL,SUFFIX=T1
*
*  The following programs are run in the 1st pass of PLTSD
*
*
   DFHPLT TYPE=ENTRY,PROGRAM=TRARA  EXECUTED DURING 1st QUIESCE PHASE
   DFHPLT TYPE=ENTRY,PROGRAM=TRARB  (PROGRAMS MUST ALSO BE DEFINED
   DFHPLT TYPE=ENTRY,PROGRAM=TRARC  BY RDO)
*
   DFHPLT TYPE=ENTRY,PROGRAM=DFHDELIM
*
*
*  The following programs are run in the 2nd pass of PLTSD
*
   DFHPLT TYPE=ENTRY,PROGRAM=TRAFA  EXECUTED DURING 2nd QUIESCE PHASE
   DFHPLT TYPE=ENTRY,PROGRAM=TRAFB  (PROGRAMS MUST ALSO BE DEFINED
*                                   BY RDO)
   DFHPLT TYPE=FINAL
*
   END
```

Figure 46. PLTSD program list table—example

RST—recoverable service table

Note on terminology: DBCTL refers to the CICS—IMS/ESA® DBCTL (database control) interface.

The recoverable service table (RST) is used for CICS DBCTL XRF (extended recovery facility) support. It contains a description of the DBCTL configuration. On detection of a DBCTL failure, the **active** CICS system uses the RST together with the MVS subsystem VERIFY to determine the existence of a suitable alternative DBCTL subsystem. The **alternate** CICS system uses the RST to check for the presence of a DBCTL subsystem. For security reasons, the RST should be link-edited into a library authorized using APF. The RST is not loaded as part of the CICS nucleus.

You can code the following macros in a recoverable service table:

- DFHRST TYPE=INITIAL establishes the control section.
- DFHRST TYPE=RSE specifies the start of a recoverable service element (RSE). An RSE consists of a (nonempty) set of identifiers of equivalent DBCTL subsystems, the CICS applids associated with these DBCTL subsystems, and the application identifiers of the CICS systems which use the DBCTL subsystems.
- DFHRST TYPE=SUBSYS specifies one of the DBCTL subsystems in an RSE.
- DFHRST TYPE=FINAL concludes the RST (see "TYPE=FINAL (end of table)" on page 507).

The RST to be used by the system must be defined in the system initialization table by the following system initialization parameter:

```
                        ┌─NO─┐
►►──DFHSIT──...──,RST=──┤    ├──────────────────────────────────────────►◄
                        └─xx─┘
```

Control section—DFHRST TYPE=INITIAL

The DFHRST TYPE=INITIAL macro establishes the recoverable service table control section.

```
►►──DFHRST──TYPE=INITIAL──┬────────────┬──────────────────────────────►◄
                          └─,SUFFIX=xx─┘
```

For general information about TYPE=INITIAL macros, including the use of the SUFFIX operand, see “TYPE=INITIAL (control section)” on page 506.

Recoverable service elements—DFHRST TYPE=RSE

The DFHRST TYPE=RSE macro contains information about a recoverable service element and the CICS systems expected to connect to the DBCTL subsystems within the recoverable service element.

```
►►──DFHRST──TYPE=RSE──┬──────────────────────────────────┬────────────►◄
                      └─,CTLAPPLS=(applid1,applid2,...)──┘
```

TYPE=RSE
: Indicates the start of a set of identifiers of equivalent DBCTL systems. Equivalent DBCTL subsystems have the same database (DB) name.

CTLAPPLS=(applid1,applid2,....)
: Specifies the application identifiers of the CICS systems that are authorized to restart the DBCTL subsystems in the RSE.

DBCTL subsystems—DFHRST TYPE=SUBSYS

The DFHRST TYPE=SUBSYS macro contains information about a specific DBCTL subsystem within an RSE.

For each subsystem in an RSE there must be a DFHRST TYPE=SUBSYS macro.

```
►►──DFHRST──TYPE=SUBSYS──,SYBSYSID=subsystem-identifier─────────────────►

►──┬──────────────────────────────────┬─────────────────────────────────►◄
   └─,JOBNAME=(jobname1,jobname2,...)─┘
```

TYPE=SUBSYS
: Defines one of the DBCTL subsystems in an RSE.

SUBSYSID=subsystem-identifier
: Code this with the 4-character name of the DBCTL subsystem-identifier. This identifier must be unique within the RST.

JOBNAME=(jobname1,jobname2,....)
: Code this with the **MVS JOBNAME(S)** associated with the DBCTL subsystem identified in the SUBSYSID parameter statement. This is a form of security check. If CICS needs to cancel the DBCTL subsystem, it is authorized to do so

only if the appropriate MVS jobname associated with the DBCTL subsystem is one of those specified by the **JOBNAME** parameter.

DFHRST example

The coding required to generate an RST can be clarified with an example.

Figure 47 illustrates the coding required to generate an RST.

```
DFHRST   TYPE=INITIAL
         ,SUFFIX=K1
DFHRST   TYPE=RSE
         ,CTLAPPLS=(applid1,applid2,applid3)
DFHRST   TYPE=SUBSYS
         ,SUBSYSID=CTL1
         ,JOBNAME=(job1,job2,job3,job4)
DFHRST   TYPE=SUBSYS
         ,SUBSYSID=CTL2
         ,JOBNAME=(job5,job6,job7,job8)
DFHRST   TYPE=FINAL
END
```

Figure 47. Recoverable service table—example

SRT—system recovery table

The system recovery table (SRT) contains a list of codes for abends that CICS intercepts. After it intercepts one, CICS attempts to remain operational by causing the offending task to abend.

You can modify the default recovery action by writing your own recovery program. You do this by means of the XSRAB global user exit point within the System Recovery Program (SRP). (See the *CICS Customization Guide* for programming information about the XSRAB exit.)

Note that recovery is attempted if a user task (but not a system task) is in control at the time the abend occurs.

The following macros may be coded in a system recovery table:
- DFHSRT TYPE=INITIAL establishes the control section
- DFHSRT TYPE=SYSTEM|USER specifies the abend codes that are to be handled
- DFHSRT TYPE=FINAL concludes the SRT (see “TYPE=FINAL (end of table)” on page 507)

Control section—DFHSRT TYPE=INITIAL

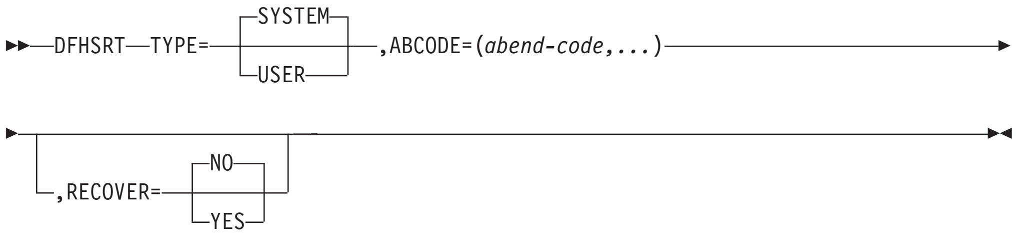
The DFHSRT TYPE=INITIAL macro generates the system recovery table control section.

```
►►──DFHSRT──TYPE=INITIAL──┬─────────────┬───────────────────────────────►◄
                          └─,SUFFIX=xx──┘
```

For general information about TYPE=INITIAL macros, including the use of the SUFFIX operand, see “TYPE=INITIAL (control section)” on page 506.

Abend codes—DFHSRT TYPE=SYSTEM|USER

The DFHSRT TYPE=SYSTEM and TYPE=USER macros specify system and user abend codes that are to be intercepted by CICS.



TYPE={SYSTEM|USER}
Indicates the type of abend code to be intercepted.

SYSTEM
The abend code is an operating system abend code corresponding to an MVS S*xxx* abend code.

USER
The abend code is a user (including CICS) abend code corresponding to an MVS U*nnnn* abend code.

ABCODE=(abend-code,...)
Code this with the abend code (or codes) to be intercepted. If you specify a single abend code, parentheses are not required.

If you code TYPE=SYSTEM, this abend code must be three hexadecimal digits (*xxx*) representing the MVS system abend code S*xxx*.

If you code TYPE=USER, this abend code must be a decimal number (*nnnn*) representing the user part of the MVS abend code U*nnnn*. This is usually the same number as the CICS message that is issued before CICS tries to terminate abnormally.

RECOVER={YES|NO}
specifies whether codes are to be added to or removed from the SRT.

YES
Code this to add the specified codes to the SRT.

NO Code this to remove the specified codes from the SRT.

Note:

1. CICS intercepts the following abend codes automatically and tries to recover:

```
001,002,013,020,025,026,030,032,033,034,035,
036,037,03A,03B,03D,052,053,067,0D3,0D4,0D5,
0D6,0D7,0D8,0E0,0F3,100,113,137,202,213,214,
237,283,285,313,314,337,400,413,437,513,514,
613,614,637,713,714,737,813,837,913,A13,A14,
B13,B14,B37,D23,D37,E37
```

   Abend code 0F3 covers various machine check conditions. It also covers the Alternate Processor Retry condition that can occur only when running on a multiprocessor. CICS-supplied recovery code attempts to recover from instruction-failure machine checks on the assumption that they are not permanent. It also attempts to recover from Alternate Processor Retry conditions.

CICS will try to recover from the standard abend codes above if you code the system recovery table (SRT) as:

```
DFHSRT  TYPE=INITIAL
DFHSRT  TYPE=FINAL
END
```

There is no need to list the standard codes individually.

2. If you want CICS to handle other errors, you can code the SRT as follows:

```
DFHSRT  TYPE=INITIAL
DFHSRT  TYPE=SYSTEM,or USER,
        ABCODE=(user or system codes),
        RECOVER=YES
DFHSRT  TYPE=FINAL
END
```

3. If you do not want CICS to try to recover after one or more of the above standard abend codes occurs, specify the code(s) with **RECOVER=NO**, or without the **RECOVER** parameter.
4. CICS tries to recover if a user task (but not a system task) is in control at the time the abend occurs.

DFHSRT example

The coding required to generate an SRT can be clarified with an example.

Figure 48 illustrates the coding required to generate a SRT.

```
DFHSRT TYPE=INITIAL,            *
       SUFFIX=K1
DFHSRT TYPE=SYSTEM,             *
       ABCODE=777,              *
       RECOVER=YES
DFHSRT TYPE=USER,
       ABCODE=(888,999),        *
       RECOVER=YES
DFHSRT TYPE=USER,               *
       ABCODE=020
DFHSRT TYPE=FINAL
END
```

Figure 48. System recovery table—example

TCT—terminal control table

Use the DFHTCT macro to define SNA logical units (LUs) that support logical device codes and sequential devices attached by BSAM.

A CICS system can communicate with terminals, sequential devices, logical units, and other systems. The TCT defines each of the devices in the configuration. Each TCT entry defines the optional and variable features of the device to CICS, and specifies the optional and variable features of CICS to be used.

CICS uses a telecommunication access method to communicate with terminals. This can be the z/OS Communications Server or (for sequential devices) BSAM; you can use one or both of these in your system.

An terminal can be a telecommunication device; for example, an IBM 3279 Color Display Station, or a subsystem such as an IBM 4700 Finance Communication System. Terminals can be local (channel-attached) or remote (link-attached).

You can use a sequential device to simulate a CICS terminal. You can define a card reader or punch, line printer, direct access storage device (disk drive), or magnetic tape drive as a sequential device.

A logical unit (LU) is a port through which a user of an SNA network gains access to the network facilities.

A system can be, for example, another CICS system, an IBM 8815 Scanmaster, an IBM Displaywriter, or an APPC/PC. Intercommunication with CICS systems can be:

- Between different processors (**intersystem communication** or **ISC**), using the LUTYPE 6.1 or LUTYPE 6.2 protocols, or using an intermediate system as an **indirect link**. (Intercommunication with non-CICS systems also uses ISC.)
- Within the same processor (**multiregion operation** or **MRO**), using interregion communication (IRC). (You can also use LUTYPE 6.2 ISC within the same processor.)

DFHTCT macro types

The DFHTCT macros you code depend on the device you are defining, and on the access method you are using.

You always start with one of these:

`DFHTCT TYPE=INITIAL,...` (See "Control section—DFHTCT TYPE=INITIAL" on page 553.)

There is a special macro to use when you assemble the TCT to migrate RDO-eligible definitions to the CSD file:

`DFHTCT TYPE=GROUP,...` (See "Migrating TCT definitions—DFHTCT TYPE=GROUP" on page 555.)

You can define your devices in any order you want. Each device needs one or more macros, and these sometimes have to be in a particular order. You are told when this is the case. The macros you need for each type of device or system are as follows:

Table 32. DFHTCT macro types

Logical device codes.	`DFHTCT TYPE=LDC,...`
	`DFHTCT TYPE=LDCLIST,...`

Sequential devices.	`DFHTCT TYPE=SDSCI,...`
	`DFHTCT TYPE=LINE,...`
	`DFHTCT TYPE=TERMINAL,...`

Remote non-SNA LUs, for transaction routing.	`DFHTCT TYPE=REMOTE,...`
	or:
	`DFHTCT TYPE=REGION,...`
	`DFHTCT TYPE=TERMINAL,...`

At the very end of your macros you code:

```
DFHTCT TYPE=FINAL
END
```

This macro is described in "TYPE=FINAL (end of table)" on page 507.

Notes:

SYSIDNT and TRMIDNT operands

CICS accepts both uppercase and lowercase characters for SYSIDNT and TRMIDNT, but the lowercase characters are not checked for duplication. Assembling a TCT containing lowercase SYSIDNT or TRMIDNT results in an MNOTE. If you want duplicate checking, use only uppercase characters for SYSIDNT and TRMIDNT.

Assembling the TCT

The assembly and link-edit of a TCT leads to the creation of two separate load modules. Assembly of a suffixed TCT (source name DFHTCT*xx*) produces a single text file. However, when this is link-edited into a load library, two members are created:

1. DFHTCT*xx*, which contains the non-RDO-eligible definitions in control block format
2. DFHRDTxx, which contains the RDO-eligible (SNA LU and system) definitions in RDO command format

This happens, **whether or not you intend to use RDO**. You need to be aware of the existence of these two tables if you copy or move assembled TCT tables between load libraries.

If you reassemble the TCT after starting CICS, any changes are picked up at a warm or emergency start.

Control section—DFHTCT TYPE=INITIAL

You code one DFHTCT TYPE=INITIAL macro before all the macros that define your resources.

The TYPE=INITIAL macro has two purposes:

1. To establish the area of storage into which the TCT is assembled.
2. To specify information that applies to the whole TCT, or to the individual non-z/OS Communications Server entries (and any z/OS Communications Server-LDC definitions).

```
                              ┌─,ACCMETH=VTAM────┐
►►──DFHTCT──TYPE=INITIAL──────┼──────────────────┼──────────────────────────────►
                              └─,ACCMETH=NONVTAM─┘

   ┌─,ERRAT=NO──────────────────────────────────────────────────────┐
►──┼────────────────────────────────────────────────────────────────┼───────────►
   └─,ERRAT=LASTLINE──┬────────────┬──┬────────────┬──┬───────────┬─┘
                      └─,INTENSIFY─┘  ├─,BLUE──────┤  ├─,BLINK─────┤
                                      ├─,RED───────┤  ├─,REVERSE───┤
                                      ├─,PINK──────┤  └─,UNDERLINE─┘
                                      ├─,GREEN─────┤
                                      ├─,TURQUOISE─┤
                                      ├─,YELLOW────┤
                                      └─,NEUTRAL───┘

   ┌─,MIGRATE=YES──────┐
►──┼───────────────────┼──┬────────────┬──┬─────────────────┬──────────────────►◄
   └─,MIGRATE=COMPLETE─┘  └─,SUFFIX=xx─┘  └─,SYSIDENT=name──┘
```

Note: SYSIDNT is Intercommunication only

Note: For general information about TYPE=INITIAL macros, see "TYPE=INITIAL (control section)" on page 506.

ACCMETH=([VTAM,]NONVTAM)
This specifies the access methods required in the running CICS system. VTAM is now z/OS Communications Server.

VTAM
Specify this if you are using the z/OS Communications Server as an access method.

NONVTAM
Specify this if you are using telecommunications access methods other than the z/OS Communications Server. These access methods include BSAM (for sequential devices).

Note: The default is to assume **both** VTAM and NONVTAM.

ERRATT={NO∨([LASTLINE][, INTENSIFY] [,{BLUE∨RED∨PINK∨GREEN∨TURQUOISE∨YELLOW∨ NEUTRAL}][,{BLINK∨REVERSE∨ UNDERLINE}])}
Indicates the way error messages are displayed on all 3270 display screens. You can either let it default to NO, or specify any combination of LASTLINE, INTENSIFY, one of the colors, and one of the highlights. Specifying INTENSIFY, one of the colors, or one of the highlights forces LASTLINE.

Any attributes that are not valid for a particular device are ignored.

NO Any error message is displayed at the current cursor position and without any additional attributes.

LASTLINE
Any error message is displayed starting at the beginning of the line nearest the bottom of the screen, such that the message fits on the screen.

Attention: If messages are received in quick succession, they overlay one another. The earlier messages may disappear before the operator has read them.

INTENSIFY
Error messages are intensified, and placed on the last line of the screen.

BLUE∨RED∨PINK∨GREEN∨TURQUOISE∨YELLOW∨ NEUTRAL
Error messages are shown in the color specified, and placed on the last line of the screen.

BLINK∨REVERSE∨UNDERLINE
Error messages are highlighted, and placed on the last line of the screen.

MIGRATE={YES∨COMPLETE}
This operand controls the building of TCT entries for z/OS Communications Server devices that are **eligible** for resource definition online (RDO). The only way RDO-eligible resources may be moved to the CSD file from the macro source is to use DFHCSDUP, as described under YES below.

YES
YES indicates that you want to generate the necessary data to migrate your RDO-eligible resources. The records generated from the macro source are designed to be used as input to the DFHCSDUP utility program. An MNOTE attention message is issued for each RDO-eligible resource.

Note: From CICS TS for z/OS, Version 4.1, the DFHCSDUP MIGRATE command is not supported. Use an earlier release of CICS to migrate your tables to the CSD.

COMPLETE

Use of COMPLETE means that TCT entries are not generated from the macro source for any RDO-eligible devices. For each one, the assembly produces an MNOTE. This means that you can keep your TCT macro source code after you have migrated your definitions.

If you continue to assemble a TCT for resources that are not eligible for RDO, continue to use MIGRATE=COMPLETE.

SYSIDNT={CICS∨name}

This 1- to 4-character name is a private name that the CICS system uses to identify itself. If you use DFHTCT TYPE=REGION macros to define remote terminals, you must code this operand. It is used to determine whether a remote or a local TCT terminal entry is generated from each TYPE=TERMINAL macro following the TYPE=REGION macro. If the SYSIDNT on the TYPE=REGION macro is the same as the SYSIDNT on the TYPE=INITIAL macro, a local definition is generated; otherwise a remote definition is generated.

The value you code for this operand is used to define the name of the local region during assembly of the TCT only. You must also define the name of the local region, for execution purposes, using the SYSIDNT system initialization parameter.

Migrating TCT definitions—DFHTCT TYPE=GROUP

Use this macro to name the groups into which TCT definitions are put when you migrate to resource definition online.

This macro can appear as many times as required and at any point in the macro source. Each time it appears, it defines the CSD file group into which subsequent definitions are put until the next DFHTCT TYPE=GROUP macro occurs.

```
►►──DFHTCT──TYPE=GROUP──┬───────────────┬──────────────────────────────────►◄
                        └─,GROUP=name───┘
```

GROUP=name

Code this with the name of the group to which subsequent definitions are migrated. The name can be up to eight alphanumeric characters, but must not begin with DFH. The default name is TCT*xx*, where *xx* is the value coded for SUFFIX in the DFHTCT TYPE=INITIAL macro. If an error is found, the existing group name continues.

If a group with the name you specify does not already exist, it will be created. If it does exist, subsequent definitions are added to it.

DFHTCT logical device codes: z/OS Communications Server non-3270

Certain types of logical unit may be used to gain access to more than one resource within a subsystem. For example, a card punch device may be attached to a 3770 logical unit: the CICS application program can direct punch output, through BMS, via the 3770 to the card punch device. The facility provided by CICS to permit communication to devices within logical units of this type is the *logical device code* (LDC).

Certain types of logical unit may be used to gain access to more than one resource within a subsystem. For example, a card punch device may be attached to a 3770 logical unit: the CICS application program can direct punch output, through BMS, via the 3770 to the card punch device. The facility provided by CICS to permit communication to devices within logical units of this type is the **logical device code** (LDC).

Although these are z/OS Communications Server units, they require macro definition, unlike other z/OS Communications Server devices.

The logical units that support LDCs are:
  3601 logical unit
  3770 batch logical unit
  3770 batch data interchange logical unit
  3790 batch data interchange logical unit
  LUTYPE 4 logical unit

To reference such a device in a CICS application program, or in the CMSG transaction for message switching, you specify an LDC mnemonic which CICS translates into a numeric LDC value. When CICS sends an output data stream to the logical unit, it includes the LDC value in the function management header (FMH). When the logical unit receives the data stream, it uses the LDC value to determine which component is to receive the output, or to perform some standard action.

Each LDC mnemonic to be referenced must be defined in the TCT, optionally with its associated LDC value and certain device characteristics for use by BMS functions. Such LDC information is contained in either the **system LDC table**, or in an **extended local LDC list**. You code the following DFHTCT macros to specify the system LDC table or an extended local LDC list:

- Code DFHTCT TYPE=LDC macro(s) to generate entries in the system LDC table. You may generate certain default LDC entries provided by CICS. For example,

  ```
  DFHTCT TYPE=LDC,LDC=SYSTEM
  ```

  generates the following entries in the system LDC table:

Table 33. System LDC table entries

LDC mnemonic	LDC value	Device	Pagesize (row,column)
DS	1	3604 Keyboard Display	6,40
JP	2	3610 Document Printer	1,80
PB	3	Passbook and Document Printer	1,40
LP	4	3618 Administrative Line Printer	50,80
MS	5	3604 Magnetic Stripe Encoder	1,40
CO	0	Console medium or default print data set group	
R1	32	Card input medium	1,80
H1	32	Card output medium	1,80
P1	48	Print medium or print data set group	50,80
W1	128	Word processing medium 1	50,80
W2	144	Word processing medium 2	50,80
W3	160	Word processing medium 3	50,80
W4	192	Word processing medium 4	50,80

You may also define LDCs specifically to add LDC entries to the system LDC table. For example,

```
DFHTCT TYPE=LDC,
       LDC=XX,
       DVC=BLUPRT,
       PGESIZE=(12,80),
       PGESTAT=PAGE
DFHTCT TYPE=LDC,
       LDC=YY,
       DVC=BLUPCH,
       PGESIZE=(1,80),
       PGESTAT=AUTOPAGE
```

adds the following entries to the system LDC table:

Table 34. System LDC table entries defined by LDCs

LDC mnemonic	LDC value	Device	Pagesize (row,column)	PGESTAT
XX	48	Batch LU printer	12,80	PAGE
YY	32	Batch LU card output	1,80	AUTOPAGE

- Instead of the system LDC table, you may code the following series of DFHTCT TYPE=LDC macros to create an extended local LDC list. Default entries may also be generated. For example,

```
LDC1  DFHTCT TYPE=LDC,LOCAL=INITIAL
*  the next line generates default CO,R1,H1,P1 LDCs
   DFHTCT TYPE=LDC,LDC=BCHLU
   DFHTCT TYPE=LDC,DVC=BLUPRT,LDC=AA,
          PGESIZE=(6,30)
   DFHTCT TYPE=LDC,DVC=BLUPCH,LDC=BB,
          PGESIZE=(1,80)
   DFHTCT TYPE=LDC,DVC=BLUCON,LDC=CC,
          PGESIZE=(1,132)
   DFHTCT TYPE=LDC,LOCAL=FINAL
```

generates an extended local LDC list named LDC1 containing the following entries:

Table 35. Extended local LDC list entries

LDC mnemonic	LDC value	Device	Pagesize (row,column)
CO	0	Console medium or default printer data set group	
R1	32	Card input medium	1,80
H1	32	Card output medium	1,80
P1	48	Print medium or print data set group	50,80
AA	48	BLUPRT batch LU printer	6,30
BB	32	BLUPCH batch LU card output	1,80
CC	0	BLUCON batch LU console printer	1,132

When you are defining a logical unit in the TCT, you can specify its LDCs in either of two ways:

1. Code a DFHTCT TYPE=LDCLIST macro to define a local list of LDC mnemonics (and optionally their LDC values); for example,

```
LDC2 DFHTCT TYPE=LDCLIST,
            LDC=(DS,JP,PB=5,LP,MS)
```

In the DFHTCT TYPE=TERMINAL macro defining the logical unit, you specify in the LDC operand the name of the local list as defined by the DFHTCT TYPE=LDCLIST macro. For example:

```
     DFHTCT TYPE=TERMINAL,
            TRMTYPE=3600,
            LDC=LDC2, ...
```

has associated the LDCs DS, JP, PB, LP, and MS with the 3601 logical unit that you are defining. The LDC values either may be specified in the local list, or are obtained from the system LDC table. If BMS uses these LDC mnemonics, their page size and page status must also be available from the system LDC table.

Note: A local list defined by a DFHTCT TYPE=LDCLIST macro may be shared by a number of 3601, LUTYPE 4 and batch logical units.

2. In the DFHTCT TYPE=TERMINAL macro defining the logical unit, you specify in the LDC operand the name of an extended local LDC list. For example:

```
LDC1 DFHTCT TYPE=LDC,LOCAL=INITIAL
     DFHTCT TYPE=LDC,LDC=BCHLU
     DFHTCT TYPE=LDC,DVC=BLUPRT,LDC=AA,
            PGESIZE=(6,30)
     DFHTCT TYPE=LDC,DVC=BLUPCH,LDC=BB,
            PGESIZE=(1,80)
     DFHTCT TYPE=LDC,DVC=BLUCON,LDC=CC,
            PGESIZE=(1,132)
     DFHTCT TYPE=LDC,LOCAL=FINAL
     DFHTCT TYPE=TERMINAL,TRMTYPE=BCHLU,
            LDC=LDC1, ...
```

has associated the LDCs CO, R1, H1, P1, AA, BB, and CC with the batch logical unit that you are defining. Their LDC values and device characteristics for BMS functions are described in the extended local LDC list, which is named LDC1.

When CICS requests an output or message switching operation using a particular LDC mnemonic for a logical unit, it tries to resolve the mnemonic from the list (whichever form) specified by the LDC operand of the DFHTCT TYPE=TERMINAL macro. If the LDC is not located in the local list or in the extended local list, the LDC specified is not valid for that terminal entry. In this case, X'00' is inserted in the logical device code portion of the FMH, and no destination name is inserted.

When a BMS function is requested for an LDC, and the LDC mnemonic is successfully resolved, the device characteristics (for example, device name and destination name) are accessed for the BMS function. If the LDC is in an extended local LDC list, these characteristics lie in the located extended local list entry. Otherwise, the system LDC table is searched for the LDC and the associated device characteristics.

Logical device codes—DFHTCT TYPE=LDC macro

The DFHTCT TYPE=LDC macro may only be used with 3600, LUTYPE4, 3770 batch logical unit, and 3770/3790 batch data interchange logical units.

You are responsible for setting up the LDC structure to be used with the terminal.

The expansion of this macro is the same, regardless of where it is specified in the TCT definition.

```
►►──DFHTCT──TYPE=LDC──┬──────────────────────┬─────────────────────────────────────►
                      └─,DSN=destination-name─┘

►──┬─────────────────────────────────┬──┬─────────────────────────────┬────────────►
   └─,DVC=(device-type,sub-address)──┘  └─,LDC=──┬─SYSTEM──────────────┬─┘
                                                 │                     │
                                                 ├─LUTYPE4─────────────┤
                                                 ├─3600────────────────┤
                                                 ├─BCHLU───────────────┤
                                                 └─aa──┬───────────┬───┘
                                                       └─=number───┘

►──┬─────────────────────────┬──┬────────────────────────────┬──────────────────────►
   └─,LOCAL=──┬─INITIAL─┬────┘  └─,PGESIZE=(row,column)──────┘
              └─FINAL───┘

►──┬──────────────────────────────┬─────────────────────────────────────────────────►◄
   │             ┌─AUTOPAGE─┐     │
   └─,PGESTAT=───┤          ├─────┘
                 └─PAGE─────┘
```

name
Code this with the name of the extended local LDC list. It should be the same as that specified in the LDC operand of the DFHTCT TYPE=TERMINAL macro, and is only required if LOCAL=INITIAL is coded.

TYPE=LDC
Code this if an LDC is being defined to the system LDC table or to the extended local LDC list.

DSN=destination-name
Code this with the name to be used by BMS for destination selection for the batch data interchange logical unit. See the relevant CICS subsystem guides for further information on destination selection.

DVC=(device-type,sub-address)
Code this with the device type associated with the LDC to be used for a BMS request. This operand can only be coded in conjunction with the LDC=*aa*[=*nnn*] operand.

device-type
May be coded as follows:

Table 36. DVC=device-type entries

Device type	Explanation
3604	Keyboard display
3610	Cut-forms document printer or journal printer (including the document/journal printer of a 3612)
3612	Passbook portion of a 3612
3618	Currently selected carriage
3618P	Primary carriage
3618S	Secondary carriage
3618B	Both carriages
BLUCON	Batch logical unit console printer
BLUPRT	Printer component of a batch logical unit
BLURDR	Card input component of a batch logical unit
BLUPCH	Card output component of a batch logical unit
WPMED1	Word processing medium 1

Table 36. DVC=device-type entries (continued)

Device type	Explanation
WPMED2	Word processing medium 2
WPMED3	Word processing medium 3
WPMED4	Word processing medium 4

The device types BLUPRT, BLURDR, BLUPCH, and BLUCON are devices attached to a batch, batch data interchange, or LUTYPE4 logical unit.

The WPMED1, 2, 3, and 4 options apply to LUTYPE4 logical units only. The component to which these options apply is defined by the particular type 4 logical unit implementation.

sub-address
Code this with the media sub-address. The range is 0 through 15, with a default of 0. A value of 15 indicates any sub-address. The sub-address differentiates between two units of the same device type (for example, (BLUPRT,0) and (BLUPRT,1)), which could be two print components attached to one logical unit.

LDC={SYSTEM∨LUTYPE4∨3600∨BCHLU∨(aa[=nnn])}
Code this with the LDC mnemonic and numeric value to be defined. Only the LDC=*aa*[=*nnn*] option can be used in conjunction with the DVC, PGESIZE, and PGESTAT operands.

SYSTEM
The following system-default LDCs for 3600, batch, and LUTYPE4 logical units are to be established:

Table 37. System default LDCs

LDC mnemonic	LDC value	Device	Pagesize (row, column)
DS	1	3604 Keyboard Display	6,40
JP	2	3610 Document Printer	1,80
PB	3	Passbook and Document Printer	1,40
LP	4	3618 Administrative Line Printer	50,80
MS	5	3604 Magnetic Stripe Encoder	1,40
CO	0	Console medium or default print data set group	
R1	32	Card input medium	1,80
H1	32	Card output medium	1,80
P1	48	Print medium or print data set group	50,80
W1	128	Word processing medium 1	50,80
W2	144	Word processing medium 2	50,80
W3	160	Word processing medium 3	50,80
W4	192	Word processing medium 4	50,80

LUTYPE4
System-default LDC mnemonics are to be established for an LUTYPE4 (word processing) logical unit. These consist of the CO, R1, P1, H1, W1, W2, W3, and W4 mnemonics, the corresponding LDC values, and the appropriate page sizes.

3600
System-default LDC mnemonics for the 3600 are to be established. These

consist of the DS, JP, PB, LP, and MS mnemonics, the corresponding LDC values, and the appropriate page-sizes and page-status.

BCHLU
System-default LDC mnemonics for a batch logical unit are to be established. These consist of the CO, R1, P1, and H1 mnemonics, the corresponding LDC values, and the appropriate page-sizes and page-status.

aa The 2-character mnemonic to be used for this LDC.

nnn
The numeric value to be associated with the LDC in the system or extended local LDC list. The value in the system list is used as a default value for this LDC if a value is not found in a local LDC list (that is, not in the extended list) associated with a TCTTE. A value must be specified for a 3600 device. A value need not be specified for a batch, batch data interchange, or LUTYPE4 logical unit but, if one is specified, it must correspond to the LDC value for the device type.

LOCAL={INITIAL∨FINAL}
An extended local LDC list is to be generated.

INITIAL
This is the start of an extended local LDC list.

FINAL
This is the end of an extended local LDC list.

Note: LOCAL=INITIAL or FINAL may not be coded in the same DFHTCT TYPE=LDC macro as other operands. All DFHTCT TYPE=LDC entries coded after LOCAL=INITIAL and before LOCAL=FINAL form part of one extended local LDC list; the entries coded outside the structure of this group are added to the system LDC table.

The following is an example of an extended local LDC list:

```
       DFHTCT TYPE=TERMINAL,TRMIDNT=BTCH,      *
       TRMTYPE=BCHLU,ACCMETH=VTAM,LDC=LDCA     *
LDCA   DFHTCT TYPE=LDC,LOCAL=INITIAL
       DFHTCT TYPE=LDC,DVC=BLUPRT,LDC=AA,      *
       PGESIZE=(6,30)
       DFHTCT TYPE=LDC,DVC=BLUPCH,LDC=BB,      *
       PGESIZE=(1,80)
       DFHTCT TYPE=LDC,DVC=BLUCON,LDC=CC,      *
       PGESIZE=(1,132),PGESTAT=AUTOPAGE
       DFHTCT TYPE=LDC,LOCAL=FINAL
```

Note: VTAM is now z/OS Communications Server.

PGESIZE=(row,column)
Code this with the logical page size to be used with this LDC when BMS requests are processed.

The product of *row* and *column* must not exceed 32767.

PGESTAT={AUTOPAGE∨PAGE}
Indicates whether the device is to use autopaging or not. Autopaging means that BMS multiple page messages are printed continuously, without operator intervention. This is what is normally required for a printer. (Contrast the requirement for multiple page messages, displayed on a 3270-type display, when the operator wants to finish reading a page, before requesting the next page to be delivered.)

Only BMS SEND commands with the PAGING option use autopaging. BMS SEND with TERMINAL or SET, does not use autopaging.

AUTOPAGE
Specify this for printers.

PAGE
Specify this for displays.

If the default PGESIZE or PGESTAT values provided by the LDC operand are to be overridden, code a specific LDC with the mnemonic to be overridden. Code this overriding LDC in the LDC table before coding the LDC operand.

PGESTAT=AUTOPAGE may be used to override the PGESTAT specification in DFHTCT TYPE=TERMINAL.

Logical device codes—DFHTCT TYPE=LDCLIST

The DFHTCT TYPE=LDCLIST macro, which may be used with 3600, LUTYPE4, and batch logical units, allows you to build a common list of logical device codes (LDCs) to be shared by more than one TCTTE.

You are responsible for setting up the LDC structure to be used with the terminal.

The expansion of this macro is the same, regardless of where it is coded in the TCT definition.

```
►►──DFHTCT──TYPE=LDCLIST──────────────────────────────────────────────►

►─,LDC=(aa─┬─────────┬─┬──────────────────┬─┬──────────────────┬─)──────────►◄
           └─=number─┘ └─,bb─┬─────────┬──┘ └─,cc─┬─────────┬──┘
                             └─=number─┘          └─=number─┘
```

listname
Is the required name of the LDC list. This name is referenced by TCTTEs through the LDC operand in DFHTCT TYPE=TERMINAL.

TYPE=LDCLIST
An LDC list is being defined.

LDC=(aa[=nnn][,bb[=nnn]][,cc[=nnn]][,...])
Code this with the LDCs (mnemonics and, optionally, the LDC numeric value) in this list.

(aa[=nnn][,bb[=nnn]] [,cc[=nnn]][,...])
Generates the LDCs in the list.

aa,bb,cc...
The 2-character mnemonics of the LDCs in this list.

nnn
A decimal value in the range 1 through 255 to be associated with an LDC. If a value is not specified, the system default value from the table defined by the DFHTCT TYPE=LDC macro, is used for this LDC. This value need not be coded for a batch or LUTYPE4 logical unit, but if it is, it must correspond to the LDC value for the device. LDCs for devices attached to a batch or LUTYPE4 logical unit are listed under the LDC parameter of the DFHTCT TYPE=LDC macro.

DFHTCT examples: LDC

An example showing how to code the DFHTCT TYPE=LDC macro for a 3770 batch logical unit.

```
DFHTCT TYPE=LDC,                        *
       LDC=XX,                          *
       DVC=BLUPRT,                      *
       PGESIZE=(12,80),                 *
       PGESTAT=PAGE
DFHTCT TYPE=LDC,                        *
       LDC=YY,                          *
       DVC=BLUPCH,                      *
       PGESIZE=(1,80),                  *
       PGESTAT=AUTOPAGE
DFHTCT TYPE=LDC,                        *
       LDC=SYSTEM
```

Figure 49. LDCs for 3770 batch logical unit TCT example

Sequential devices

CICS uses BSAM to control sequential devices such as card readers, line printers, magnetic tape units, and DASD to simulate terminals. Only unblocked data sets can be used with BSAM. These “sequential terminals” may be used before actual terminals are available, or during testing of new applications.

CICS uses BSAM to control sequential devices such as card readers, line printers, magnetic tape units, and DASD to simulate terminals. Only unblocked data sets can be used with BSAM. These “sequential terminals” may be used before actual terminals are available, or during testing of new applications.

To define a sequential device, code the following macro instructions:

```
DFHTCT TYPE=INITIAL,
       ACCMETH=(NONVTAM)    defining the access
                            method
```

(Define the following macro instructions contiguously.)

```
DFHTCT TYPE=SDSCI,
       DSCNAME=isadscn,     defining the input
       DDNAME=indd, ...      data set
DFHTCT TYPE=SDSCI,
       DSCNAME=osadscn,     defining the output
       DDNAME=outdd, ...     data set
DFHTCT TYPE=LINE,
       ISADSCN=isadscn,
       OSADSCN=osadscn, ...
DFHTCT TYPE=TERMINAL,
       TRMIDNT=name, ...
```

The two data sets defined by the DFHTCT TYPE=SDSCI macros simulate a CICS terminal known by the name specified in the TRMIDNT operand of the DFHTCT TYPE=TERMINAL macro. The DSCNAMEs of the input and output data sets must be specified in the ISADSCN and OSADSCN operands of the DFHTCT TYPE=LINE macro respectively.

The end of data indicator (EODI) for sequential devices may be altered using the EODI system initialization parameter.

JCL for sequential devices

The DDNAME operands on the DFHTCT TYPE=SDSCI macros specify the ddname of the DD statements which you must provide in the CICS startup job stream.

```
//indd   DD  ...              input data set
//outdd  DD  ...              output data set
```

where *indd* is the data set containing input from the simulated terminal, and *outdd* is the data set to which output to the simulated terminal is sent.

Sequential devices—DFHTCT TYPE=SDSCI

The DFHTCT TYPE=SDSCI macro specifies the characteristics of the input and output data sets that simulate a CICS terminal.

```
►►──DFHTCT──TYPE=SDSCI──,DEVICE=device──,DSCNAME=name──┬──────────────────┬───────────►
                                                       └─,BLKSIZE=length──┘

►──┬─────────────────────────────────┬─,MACRF=──┬─R─┬──┬──────────────────┬──────────►◄
   │            ┌─name-in-DSCNAME─┐  │          └─W─┘  │         ┌─U─┐    │
   └─,DDNAME=───┤                 ├──┘                 └─,RECFM=─┼───┼────┘
                └─name────────────┘                              ├─F─┤
                                                                 └─V─┘
```

BLKSIZE=length
: Code this with the maximum length in bytes of a block.

  The default is BLKSIZE=0. If this operand is omitted, the block size can be specified in the data definition (DD) statement associated with the data set. A more detailed explanation of this operand is given in the *MVS/ESA Data Administration: Macro Instruction Reference*.

DDNAME={name-in-DSCNAME|name}
: Supplies the name of the data definition (DD) statement associated with a particular data set (line group). If this operand is omitted, the DSCNAME becomes the DDNAME.

DEVICE=device
: One of the following values may be coded:

  - For card readers: **{1442|2501|2520|2540|2560|2596| 3505|3525|5425}**
  - For line printers: **{1403|1404|1443|1445|3203|3211|5203}**
  - For disk (DASD): **{2314|3330|3340|3350|DASD|DISK}**
  - For tapes: **TAPE**.

    The TAPE specification generates tape work files for both the input and the output data sets. Note that if an input tape with an expired label is used, the header may be rewritten, causing the first data records to be destroyed.

DSCNAME=name
: The name of either the input or the output data set. If you are defining the input data set, ISADSCN on the DFHTCT TYPE=LINE macro must match the name that you specify: if you are defining the output data set, OSADSCN on the DFHTCT TYPE=LINE macro must match it.

MACRF=([R][,W])
: Code this with the way in which access to the sequential device is to be gained.

  R Indicates the READ macro.
  W Indicates the WRITE macro.

The default is MACRF=R for a card reader and MACRF=W for a line printer. For other sequential devices, MACRF=R or MACRF=W must be coded.

RECFM={U|F|V}
Code this with the record format for the DCB.

U Indicates undefined records. Code this option for DEVICE=1403 or 3211, or if you are using DASD for sequential terminal output (that is, if DEVICE=DASD and MACRF=W).

F Indicates fixed-length records.

V Indicates variable-length records.

If you omit this operand, you can specify the record format in the data definition (DD) statement associated with the sequential data set.

Sequential devices—DFHTCT TYPE=LINE

The DFHTCT TYPE=LINE macro specifies further characteristics of the sequential data sets that simulate a CICS terminal.

```
►►──DFHFCT──TYPE=LINE──,ACCMETH=──┬─SAM────────┬─,INAREAL=length────────────────►
                                  ├─BSAM───────┤
                                  └─SEQUENTIAL─┘

►─,ISADSCN=input-name──,OSADSCN=outut-name──,TRMTYPE=──┬─U/R──┬────────────────►
                                                       ├─CRLP─┤
                                                       ├─DASD─┤
                                                       └─TAPE─┘

►──┬────────────────────────────┬──┬──────────────────────┬─────────────────────►◄
   └─,LINSTAT='OUT OF SERVICE'──┘  │         ┌─0──────┐   │
                                   └─,TCTUAL=─┤        ├───┘
                                             └─length─┘
```

ACCMETH={SAM∨BSAM∨SEQUENTIAL}
Specify SAM, BSAM, or SEQUENTIAL — they are equivalent in CICS.

INAREAL=length
Code this with the message input area length. The value should be equal to the length of the longest initial logical record of a transaction that may include multiple physical records.

ISADSCN=name
The name of the input data set. The TYPE=SDSCI DSCNAME operand for the input data set must match this.

LINSTAT='OUT OF SERVICE'
The line is to be initiated with an 'out of service' status.

The default is 'in service'.

OSADSCN=name
The name of the output data set. The TYPE=SDSCI DSCNAME operand for the output data set must match this.

TCTUAL={0∨length}
Indicates the length in bytes (0 through 255) of the user area (the process control information field or PCI) for all terminal entries (TCTTEs) associated with this line. Make it as small as possible. The TCT user area is initialized to zeros at system initialization. If you want fields of different (variable) lengths,

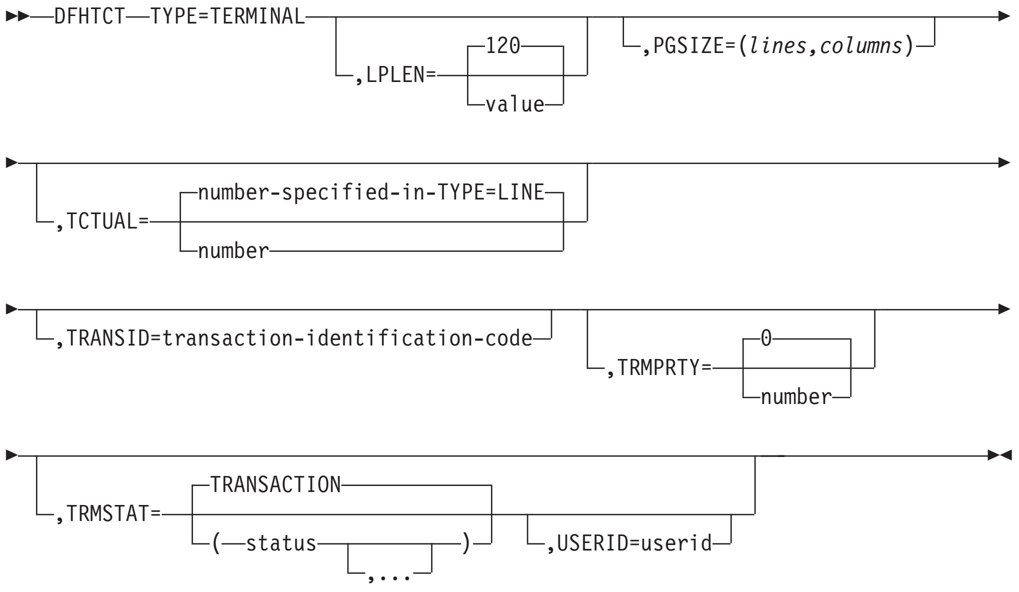
you can specify the TCTUAL value in one or more TYPE=TERMINAL macro instructions for terminals associated with this line.

TRMTYPE=(U/R∨CRLP∨DASD∨TAPE)
Indicates the sequential device type:

U/R	Any reader or printer
CRLP	A card reader and a line printer
DASD	A direct access storage device
TAPE	A magnetic tape device

Sequential devices—DFHTCT TYPE=TERMINAL

The DFHTCT TYPE=TERMINAL macro specifies the terminal name and other characteristics of a CICS terminal that is simulated by a pair of sequential data sets.



LPLEN={<u>120</u>∨value}
Controls the length of the print line for SAM output line printers. If no NL symbol is found in a segmented write, the print line length is the LPLEN value. The default is LPLEN=120.

PGESIZE=(lines,columns)
The default page size for a 1403 or CRLP terminal is (12,80). Code PGESIZE if BMS is required for a device that has TRMTYPE=DASD specified, and specify the number of lines and columns you want to use. These two values multiplied together must equal the value specified for INAREAL. The product of *lines* and *columns* must not exceed 32767.

TCTUAL={<u>number-specified-in-TYPE=LINE</u> ∨number}
Indicates the length in bytes (0 through 255) of the user area (the process control information field or PCI) for the terminal entry (TCTTE) associated with this terminal. Make it as small as possible. The TCT user area is initialized to zeros at system initialization.

Use the TCTUAL operand of the DFHTCT TYPE=TERMINAL macro if you want fields of different (variable) lengths for terminals associated with this line. In any case, the PCI field is generated for each terminal after the last terminal entry of the last line. The address of the PCI field is located at TCTTECIA; the length is located at TCTTECIL.

TRANSID=transaction-identification-code
Code this with a 1- to 4-character transaction code. This code specifies a transaction that is to be initiated each time input is received from the terminal when there is no active task.

If a TRANSID is not specified in the TCTTE, the TRANSID in a RETURN command from the previous transaction is used. Otherwise, the first one to four characters of the data passed in the TIOA are used as the transaction code. A delimiter is required for transaction identifications of fewer than four characters.

TRMIDNT=name
Code this with a unique 4-character symbolic identification of each terminal. The identification supplied is left-justified and padded with blanks to four characters if less than four characters are supplied.

The value CERR is reserved, as this is the identification generated for the error console.

TRMPRTY={0∨number}
Establishes the terminal priority. This decimal value (0 through 255) is used in establishing the overall transaction processing priority. (Transaction processing priority is equal to the sum of the terminal priority, transaction priority, and operator priority, and must not exceed 255.)

TRMSTAT={TRANSACTION∨(status,...)}
Code this with the types of activity that may occur at a given terminal. This terminal status is initially set in the TCTTE and is a combination of the processing status and the service status.

TRANSACTION
A terminal with TRANSACTION status is used in the processing of transactions such as inquiries or order entries. A display station or a hard-copy terminal, to which no messages are sent without a terminal request, and through which transactions are entered, is a TRANSACTION terminal.

INPUT
Indicates a terminal that can send messages to, but cannot receive messages from, CICS.

Note: System messages may be routed to an input terminal under conditions such as invalid transaction identification and ATP batch count. This causes DFHTACP to be scheduled. To handle this situation, code a DFHTEP to perform any action that the user requires.

'OUT OF SERVICE'
Indicates a terminal that can neither receive messages nor transmit input. Such terminals are not polled by CICS. The 'OUT OF SERVICE' parameter can be used in combination with any status setting.

Any terminal except the master terminal can be designated as 'OUT OF SERVICE'. When appropriate, the terminal can be placed in service by the master terminal and polling is resumed.

RECEIVE
Indicates a terminal to which messages are sent but from which no input is allowed. An example of this type of terminal is one that is located in a

remote location, such as a warehouse, and is unattended, but may receive messages. Automatic transaction initiation is implemented as for TRANSCEIVE, below.

TRANSCEIVE
A terminal with TRANSCEIVE status is a TRANSACTION terminal to which messages are sent automatically. The automatic transaction initiation, either by transient data control or interval control, sets a condition in an appropriate terminal control table terminal entry. If the terminal status is TRANSCEIVE and if there is no transaction at the terminal, terminal control initiates the user-defined task. This task is expected to send messages to the terminal.

USERID=userid
Code this to specify a user identifier for devices such as printers that are unable to sign on using CESN. (You can also specify USERID for a display device, in which case the display is permanently signed on. Operators are unable to sign on.) You must code this operand if you want to use preset security with this device. All access to protected resources depends on USERID.

The userid is referred to in security error messages, security violation messages, and the audit trail. It must be defined to the security manager.

Userid must be a unique 1- to 8-character user identification. (A-Z 0-9 # $ and @ are acceptable characters.)

Remote terminals for transaction routing

CICS can communicate with other systems that have similar communication facilities.

This kind of communication is known as **CICS intercommunication**. For more information, see the *CICS Intercommunication Guide*.

When you are concerned with resource definition, the system where the TCT is installed is the **local** system. The system that is being defined in the TCT is the **remote** system.

Transaction routing enables terminals in one CICS system to invoke transactions in another CICS system. You can use transaction routing between systems connected by MRO or by an LUTYPE 6.2 link.

Remote definitions for terminals for transaction routing

There are two possible methods of defining the terminals using macros.

The two methods are:

- **Method 1:**

```
DFHTCT TYPE=REGION, ...   (one for each region)

DFHTCT TYPE=SDSCI, ...    (for non-SNA LU only;
                           ignored for remote definitions)

DFHTCT TYPE=LINE, ...     (for non-SNA LU only)

DFHTCT TYPE=TERMINAL, ... (for non-SNA: one for each LU)
```

- **Method 2:**

```
  DFHTCT TYPE=REMOTE, ...   (one for each terminal)
```

Tip: Another method, called 'shipping terminal definitions', is possible using RDO. See "Terminals for transaction routing" on page 276.)

Both methods allow the same terminal definitions to be used to generate the required entries in both the local and the remote system.

Method 1:
: You can use copybooks to include the same source code in the TCTs for local and remote systems. The information not needed (that is, the whole of the TYPE=SDSCI macro, and some of the TYPE=LINE and TYPE=TERMINAL macros) is discarded for remote entries.

  CICS decides whether to create a remote or a local definition on the basis of the SYSIDNT operand on the TYPE=REGION macro. This is compared with the SYSIDNT operand in DFHTCT TYPE=INITIAL. If they are the same, the definition(s) are local. If they are different, the definition(s) are remote.

Method 2:
: Employs a single DFHTCT TYPE=REMOTE macro.

  CICS decides whether to create a remote or a local definition on the basis of the SYSIDNT operand on the TYPE=REMOTE macro. This is compared with the SYSIDNT operand in DFHTCT TYPE=INITIAL. If they are the same, the definition(s) are local. If they are different, the definition(s) are remote.

These terminals cannot use transaction routing and therefore cannot be defined as remote:
- IBM 7770 or 2260 terminals
- MVS system consoles
- Pooled 3600 or 3650 Pipeline Logical Units

Remote terminals, method 1—DFHTCT TYPE=REGION

The DFHTCT TYPE=REGION macro introduces information about the named region. The information consists of DFHTCT TYPE=LINE and TYPE=TERMINAL macros.

These macros must follow the DFHTCT TYPE=REGION macro. For a remote region, the DFHTCT TYPE=LINE macro does not generate a TCT line entry (TCTLE). Every terminal that participates in transaction routing must be defined. Only certain DFHTCT macro types and operands are relevant in remote region definitions; all others are ignored. The operands that are relevant are those listed in "Remote terminals, method 2—DFHTCT TYPE=REMOTE" on page 570.

```
►►──DFHTCT──TYPE=REGION──,SYSIDNT=──┬─name──┬─────────────────────────────►◄
                                    └─LOCAL─┘
```

SYSIDNT={name∨LOCAL}
: Indicates the 4-character name of the system or region whose information starts or resumes here. SYSIDNT=LOCAL can be specified to indicate that the TYPE=TERMINAL definitions following it refer to the home region, as do all definitions preceding the first DFHTCT TYPE=REGION macro. The name of the home region (that is, the region in which this terminal control table is used) is the value of the SYSIDNT operand of the DFHTCT TYPE=INITIAL macro. The name can instead be that of a previously defined MRO link or ISC link.

Remote terminals, method 1—DFHTCT TYPE=TERMINAL

TCT macro definitions for defining remote terminals using method 1.

Note: The DFHTCT TYPE=LINE macro and the additional operands of the DFHTCT TYPE=TERMINAL macro are valid, but are ignored if the SYSIDNT operand on the preceding DFHTCT TYPE=REGION macro indicates a remote region. (For details of the DFHTCT TYPE=LINE and DFHTCT TYPE=TERMINAL macros, see "Sequential devices" on page 563)

```
►►──DFHTCT──TYPE=TERMINAL──,ACCMETH=access-method──,SYSIDNT=name──────────────────►

►─,TRMIDNT=name──,TRMTYPE=terminal-type────────────────────────────────────────────►

►─┬─────────────────────────────────────┬──────────────────────────────────────────►◄
  │            ┌─name-specified-in-TRMIDNT─┐ │
  └─,RMTNAME=──┼───────────────────────────┼─┘
               └─name──────────────────────┘
```

ACCMETH=access-method
: Code this with the access method of the remote terminal.

RMTNAME={name-specified-in-TRMIDNT∨name}
: Specifies the 1- to 4-character name by which the terminal is known in the system or region that owns the terminal (that is, in the TCT of the **other** system). If this operand is omitted, the name in the TRMIDNT operand is used.

SYSIDNT=name
: Indicates the 4-character name of the system or region that owns this terminal. This may be the local system or region (that is, the name defined in the TYPE=INITIAL macro), in which case the TCT entry created is a local definition. It may be the name of a different system or region, in which case the TCT entry created is a remote definition. This SYSIDNT must be the same as the SYSIDNT on the TYPE=REGION macro that precedes this macro.

TRMIDNT=name
: Specifies the 1- to 4-character name by which the terminal is known in **this** system (that is, in the local system that owns this TCT, and that owns the transactions).

TRMTYPE=terminal-type
: Code this with the terminal type. For details, see "Sequential devices" on page 563.

Remote terminals, method 2—DFHTCT TYPE=REMOTE

Terminal entries for remote systems or regions can be defined to CICS using the DFHTCT TYPE=REMOTE macro as an alternative to defining them using DFHTCT TYPE=TERMINAL macro instructions in conjunction with a DFHTCT TYPE=REGION macro.

The expansion of the DFHTCT TYPE=REMOTE macro is independent of the region currently referenced.

Note: If the SYSIDNT operand indicates that the **home** region owns the terminal, all the operands of the DFHTCT TYPE=TERMINAL macro become valid on the DFHTCT TYPE=REMOTE macro and have the same meaning as for TYPE=TERMINAL. However, if (as is normally the case) the SYSIDNT operand indicates a remote region, the additional operands of DFHTCT TYPE=TERMINAL are valid on the DFHTCT TYPE=REMOTE macro, but are ignored.

```
►►──DFHTCT──TYPE=REMOTE──,ACCMETH=access-method──,SYSIDNT=name──,TRMIDNT=name──────►

►─,TRMTYPE=terminal-type──┬──────────────────────────────────────────────┬──────►◄
                          │             ┌─name-specified-in-TRMIDNT─┐    │
                          └─,RMTNAME=───┼───────────────────────────┼────┘
                                        └─name──────────────────────┘
```

ACCMETH=access-method
Code this with the access method of the remote terminal.

RMTNAME={name-specified-in-TRMIDNT|name}
Specifies the 1- to 4-character name by which the terminal is known in the system or region that owns the terminal (that is, in the TCT of the **other** system). If this operand is omitted the name in the TRMIDNT operand is used.

SYSIDNT=name
Specifies the name of the system or region that owns this terminal. The name must be the same as that used in the SYSIDNT operand of a previous TYPE=SYSTEM macro, or the TYPE=INITIAL macro.

TRMIDNT=name
Specifies the 1- to 4-character name by which the terminal is known in **this** system (that is, in the local system that owns this TCT, and that owns the transactions).

TRMTYPE=terminal-type
Code this with the terminal type. For details, see "Sequential devices" on page 563.

DFHTCT: CICS terminals list

This release of CICS is able to communicate with a wide range of terminals, either directly or indirectly.

New or current terminals are directly supported by CICS Transaction Server for z/OS if they conform to the z/OS Communications Server interface.

Table 38 summarizes how terminals are supported in CICS.

Table 38. IBM terminals and system types supported by CICS Transaction Server for z/OS.

Directly supported by CICS Transaction Server for z/OS using the z/OS Communications Server
3101 Display Terminal
3230 Printer
3268 Printer
3270 Information Display System
3270 PC
3270 PC/G
3270 PC/GX
3287 Printer
3600 Finance Communication System
3630 Plant Communication System
3640 Plant Communication System
3650 Retail Store System
3680 Programmable Store System

Table 38. IBM terminals and system types supported by CICS Transaction Server for z/OS. (continued)

Directly supported by CICS Transaction Server for z/OS using the z/OS Communications Server
3730 Distributed Office Communication System
3767 Communication Terminal
3770 Data Communication System
3790 Communication System
4300 Processors
4700 Finance Communication System
5280 Distributed Data System
5520 Administrative System
5550 Administrative System
5937 Rugged Terminal
6670 Information Distributor
8100 Information System
8775 Display Terminal
8815 Scanmaster
Displaywriter
Personal Computer, PS/2, PS/55
System/32
System/34
System/36
System/38
iSeries®
System z
Teletypewriter Exchange Service (TWX 33/35)
World Trade Typewriter Terminal (WTTY)

z/OS Communications Server LUs

For a detailed list of z/OS Communications Server for SNA-supported LUs, and how to define them to CICS, see "Devices supported" on page 336.

TLT—terminal list table

A terminal list table (TLT) generated by the DFHTLT macro instruction allows terminal and operator identifications to be grouped logically.

A TLT:

- Is **mandatory** for use by CEST (the supervisor terminal transaction), to define and limit the effective range of the operation. For example:
  ```
  CEST SET TERMINAL(*) SUPRID(CG) OUTSERVICE
  ```
  sets all terminals defined in DFHTLTCG out of service.
- May be used by CEST or CEMT (the master terminal transaction) to apply an operation to a predetermined group of terminals. (For a CEST operation, this TLT must define a subset of the TLT specified by SUPRID.) For example, each of the following commands:
  ```
  CEST SET TERMINAL(*) SUPRID(CG) CLASS(EM) INSERVICE
  CEMT SET TERMINAL(*) CLASS(EM) INSERVICE
  ```
  sets all terminals defined in DFHTLTEM in service.
- May be used singly or in combination with other TLTs to provide predefined destinations for message switching. For example:

```
CMSG ROUTE=PG,'PRODUCTION MEETING AT 11.00 IN
           ROOM 2124',SEND
```

sends a message to all terminals or operators defined in DFHTLTPG.

The same TLT can be used for message switching and for supervisory or master terminal functions. For example, a TLT defining the terminals that are under control of a supervisory terminal could also be used as a destination list for sending messages to those terminals.

For some logical units, logical device code (LDC) mnemonics (that may be associated with each table entry), are used for message switching and are ignored for master and supervisory terminal operations.

In an intercommunication network, all the terminals in a terminal list table must be owned by the system on which the table is used.

The following macros define the TLT entries:
- Control section—DFHTLT TYPE=INITIAL
- Entries in terminal list table—DFHTLT TYPE=ENTRY
- End of terminal list table—DFHTLT TYPE=FINAL (see “TYPE=FINAL (end of table)” on page 507)

Control section—DFHTLT TYPE=INITIAL

The DFHTLT TYPE=INITIAL macro establishes the entry point and the address of the start of the terminal list table being defined.

```
►►──DFHTLT──TYPE=INITIAL──┬──────────┬──┬──────────────┬──────────────────────►◄
                          └─,LDC=aa──┘  └─,SUFFIX=xx───┘
```

Note: For general information about TYPE=INITIAL macros, see “TYPE=INITIAL (control section)” on page 506.

LDC=aa
Code this with a 2-character logical device code (LDC) mnemonic. This is associated with every logical unit identification, except for those for which an LDC mnemonic is specified on a DFHTLT TYPE=ENTRY macro.

SUFFIX=xx
The module name of the TLT is DFHTLT*xx*, where *xx* is a 1-or 2-character suffix. This provides unique identification for each TLT used. Because the names TLTBA, TLTBB, TLTBC, and TLTEA are used within the TLT, suffixes BA, BB, BC, and EA must not be used.

A TLT must have a suffix to be used by the message switching transaction, CMSG.

Entries in terminal list table—DFHTLT TYPE=ENTRY

The DFHTLT TYPE=ENTRY defines an entry in the terminal list table (TLT).

Entries are coded in the TLT as follows:

```
                                 ┌─,──────────────────────────────────────┐
                                 ▼                                        │
►►──DFHTLT──TYPE=ENTRY──,TRMIDNT=(─┬─────────────────────┬──┬───────────┬─┴─)──────►◄
                                   └─termid-1─┬────────┬─┘  └─/opid-1──┘
                                              └─*ldc-1─┘
```

`TYPE=ENTRY`
Code this if one or more entries are to be generated in this table, up to a maximum of 1000 entries.

`TRMIDNT=([termid-1[*ldc-1]] [/opid-1][, termid-2[*ldc-2][/opid-2],...])`
Code this with a list of start-stop and BSC terminal, logical unit, and operator identifications. A logical unit identification can be qualified by an LDC mnemonic.

`termid`
Indicates a 1- to 4-character start-stop or BSC terminal or logical unit identification.

Note: A 3614 attached to a communications controller may be used in master or supervisory terminal operations but should not be used in message switching operations. (A 3614 is not valid for a message destination.)

`ldc`
Indicates a 2-character LDC mnemonic, which must be preceded by an asterisk (*) and is only used following the 'termid' parameter to which it is appended.

`opid`
Indicates a 1- to 3-character operator identification that must be preceded by a slash (/).

Any terminal or operator identification specified should also be specified in the TRMIDNT operand of the DFHTCT macro and in your external security manager, respectively. (If you employ RACF, you use the OPIDENT operand of the ADDUSER command to record the identification for each operator.) Any LDC mnemonic specified should also be specified in the LDC operand of the DFHTCT TYPE=LDC and DFHTCT TYPE=TERMINAL macros.

Supervisory and master terminal functions use the terminal and logical unit identifications included in the TLT, but ignore all references to LDC mnemonics and operator identifications.

DFHTLT example

An example of how to create a terminal list table (TLT).

```
Example 1

DFHTLT TYPE=INITIAL,                              *
       SUFFIX=AA
DFHTLT TYPE=ENTRY,                                *
       TRMIDNT=(NYC,CHI,LA,WDC)
DFHTLT TYPE=ENTRY,                                *
       TRMIDNT=SF
DFHTLT TYPE=ENTRY,                                *
       TRMIDNT=(BSTN/OP1,ATL/OP5,/OP9,DNVR)
DFHTLT TYPE=ENTRY,                                *
       TRMIDNT=/OP6
DFHTLT TYPE=FINAL
END

Example 2

DFHTLT TYPE=INITIAL,                              *
       SUFFIX=XX
DFHTLT TYPE=ENTRY,                                *
       TRMIDNT=(NYC,T361*LP,T362*LP/OP1)
DFHTLT TYPE=ENTRY,                                *
       TRMIDNT=(T363/OP2,T364/OP5,T365)
DFHTLT TYPE=FINAL
END
```

Figure 50. Terminal list table—example

TST—temporary storage table

The temporary storage table (TST) is a list of generic names (or prefixes) used to identify sets of temporary storage queues. Any unique temporary storage identifier generated dynamically in an application program that begins with the same characters as the generic names automatically acquires the same properties as the TST entries.

CICS still supports the use of the DFHTST macro in combination with or in place of TSMODEL resource definitions. You must use a TST in the following circumstances:

- You have application programs that reference temporary storage data sharing queues by specifying an explicit SYSID on EXEC CICS temporary storage commands.
- A SYSID is added for EXEC CICS temporary storage commands by an XTSEREQ global user exit program.
- You require the TSAGE attribute.

For temporary storage queues where you do not require these functions, you can use TSMODEL resource definitions, which provide all other functions of the TST and some additional functions.

The default TST=NO system initialization parameter means that CICS initializes with only RDO support for TS queues. To use a TST in combination with TSMODEL resource definitions, you must specify a TST suffix using the TST system initialization parameter. You must also assemble the TST load module with the MIGRATE option. If the TST is not assembled with the MIGRATE option, CICS loads the TST only and does not provide any RDO support for TS queues, and any attempts to install TSMODEL resource definitions are rejected.

If you use both a TST and TSMODEL resource definitions, the use of the TST is limited to the following:

- Support for TS data sharing queues that are referenced by an explicit SYSID option specified on a TS API command.
- The TSAGE attribute.

If you use a TST alone, all the functions of the TST are used.

Generic names

In a TST, generic names are formed from the leading characters of the appropriate queue names, and can be up to seven characters long.

- The generic names coded on a DFHTST TYPE=RECOVERY macro identify queues for which CICS provides backout of changes in the event of transaction failure or protection against system failure.
- The generic name coded on a DFHTST TYPE=REMOTE macro identifies queues for which CICS routes the temporary storage request to a remote CICS region or TS server, unless the remote system name (SYSIDNT) is the same as that of the local CICS. If SYSIDNT is the same name as the local CICS, the queues specified by the DATAID option are treated by CICS as local queues.
- The generic name coded on a DFHTST TYPE=LOCAL macro identifies queues as local queues that reside in the CICS region in which the TST is installed.
- The generic name coded on a DFHTST TYPE=SECURITY macro identifies queues for which resource security checking is required.

If you specify an eight-character name, this defines a unique temporary storage queue name.

Choose a naming convention for queue names that enables you to define many queues with only a few generic names. This reduces considerably the task of TST definition. Bear in mind that CICS searches the TST for the first prefix that satisfies the particular search criteria. For example, if CICS searches for temporary storage queue ABCDEFGH, and the TST contains prefix A followed by prefix AB, A is selected. To avoid any problems, define the less-generic entries to the TST before any more-generic entries, so that the first to be found is the least generic of all possible matches.

When CICS is looking for generic names to match against a TS queue name, it searches only the types of entry in which it is interested for that particular search. CICS searches:

- Local *and* remote entries when determining whether a queue is remote. Thus, local and remote entries are regarded as one search category when CICS is matching a queue name against generic names.
- Recovery and remote entries when determining whether a queue is recoverable. However, if the leading characters of a queue name match **both** TYPE=RECOVERY and TYPE=REMOTE generic names, TYPE=REMOTE takes precedence, and the recovery option must be redefined in the local region in which the queue resides. (Queues in a shared TS pool cannot be recoverable.)
- Security entries only when determining whether a queue is subject to security.

Use these macros to define the TST entries:

- Control section—DFHTST TYPE=INITIAL
- Recoverable temporary storage—DFHTST TYPE=RECOVERY
- Local temporary storage—DFHTST TYPE=LOCAL

- Remote temporary storage—DFHTST TYPE=REMOTE
- Temporary storage security checking— DFHTST TYPE=SECURITY
- Temporary storage data sharing—DFHTST TYPE=SHARED
- End of temporary storage table—DFHTST TYPE=FINAL (see “TYPE=FINAL (end of table)” on page 507)

Control section—DFHTST TYPE=INITIAL

The entry point and the beginning address for the temporary storage table being defined are established by the DFHTST TYPE=INITIAL macro.

```
►►──DFHTST──TYPE=(─INITIAL─┬──────────┬─)─┬─────────────┬────────────────►
                           └─,MIGRATE─┘   └─,SUFFIX=xx──┘

►─┬──────────────────────┬───────────────────────────────────────────────►◄
  │          ┌─0──────┐  │
  └─,TSAGE=──┴─number─┴──┘
```

```
►►──DFHTST──TYPE=REMOTE──────────────────────────────────────────────────►

►─,DATAID=(─character-string─┬──────────────────────────┬─)──,SYSIDNT=name──────►
                             └─,character-string,...────┘

►─┬──────────────────────────────┬───────────────────────────────────────►◄
  └─,RMTNAME=character-string────┘
```

For general information about TYPE=INITIAL macros, including the use of the SUFFIX operand, see “TYPE=INITIAL (control section)” on page 506.

MIGRATE
: Specify MIGRATE when you are assembling your TST for migration to the CSD file, or when you are using a TST in combination with TSMODEL resource definitions. When you specify a TST suffix using the TST system initialization parameter, if the TST is assembled with the MIGRATE option, CICS also processes TSMODEL resource definitions. If the TST is not assembled with the MIGRATE option, CICS loads the TST only and does not provide any RDO support for TS queues, and any attempts to install TSMODEL resource definitions are rejected.

TSAGE={0∨number}
: Defines the aging limit of temporary storage data used by the temporary storage domain during emergency restart of CICS. Data that has not been referenced for the specified interval is not recovered. The value is specified in days with a maximum value of 512. A value of zero indicates that no data is to be purged on this basis.

Recoverable temporary storage—DFHTST TYPE=RECOVERY

The DFHTST TYPE=RECOVERY macro specifies the generic names used for temporary storage queues for which recovery is applicable.

```
►►──DFHTST──TYPE=RECOVERY────────────────────────────────────────────────►
```

```
►─,DATAID=(─character-string──┬────────────────────┬─)──────────────────►◄
                              └─,character-string,...─┘
```

TYPE=RECOVERY
Code this to identify the temporary storage queue names that are recoverable. If a temporary storage queue name is such that it is defined by both a remote **and** a recovery DATAID, it is considered to be remote. Recoverability can only be specified in the CICS region in which the queue is local.

Note: TYPE=ENTRY is retained for compatibility with previous releases, and means exactly the same as TYPE=RECOVERY.

DATAID=(*character-string[,character-string,...]*)|()
Code this with one or more alphanumeric TS queue names that you want to be recoverable, where each name can be up to 8-characters in length. (See "TST—temporary storage table" on page 575 for information about generic names and matching criteria.)

character-string
Each character string can represent a generic queue name, or a unique TS queue name. Generic names are specified using 1 to 7 leading characters of TS queue names. DATAIDs that use all 8 characters define unique queues names.

Multiple names must be enclosed in parentheses, and separated by a comma. You can omit the parentheses if you specify only one name. Some CICS-generated TS queue names that you should consider for recovery are:

- **DF** refers to temporary storage queues used by CICS interval control for START commands with data, but which do not specify a REQID.
- ** refers to temporary storage queues used by the BMS ROUTE command, and to those commands that use the PAGING operand.
- **$$** refers to temporary storage queues used by the BMS CMSG transaction when the PROTECT=YES option is specified on a START TRANSID command.

() This special (null) operand, without any value between the parentheses, is interpreted by CICS as specifying any queue that is not more explicitly specified by other DATAIDs.

Note:

1. If a TST is generated with no TYPE=RECOVERY entries, no recovery processing is performed. If an EXEC CICS START command is issued with any of the FROM, RTRANSID, RTERMID, or QUEUE parameters specified, and a REQID is not specified, CICS generates request identifications starting with the prefix "DF". If recovery is required for these requests, the TST should be generated with the corresponding generic name.
2. All temporary storage queues used by restartable transactions (those defined with RESTART(YES) in the transaction resource definition) should be made recoverable (including those with the default DF prefix).
3. Only data on auxiliary storage can be made recoverable. Data written to main storage is not recoverable, regardless of any recovery options that you may specify.
4. When a task modifies temporary storage data designated as recoverable, the data is protected from modification by a concurrent task by enqueuing on the queue name. The queue name is not dequeued until the task terminates or issues a task syncpoint request to designate the end of a

logical unit of work. At this time a log record is written to the system log data set to provide external information sufficient to recover the data if the system subsequently terminates abnormally.

Example

This DFHTST TYPE=RECOVERY macro defines recoverable temporary storage queues:

```
DFHTST TYPE=RECOVERY,
       DATAID=(DF,**,
              $$(,character-string)...)
```

- The DATAID DF makes the temporary storage queues used on CICS start requests recoverable.
- The DATAIDs ** and $$ make the default temporary storage queues used by BMS recoverable.
- The DATAID character string represents the leading characters of each temporary storage queue identifier that you want to be recoverable. For example, DATAID=(R,ZIP) makes recoverable all temporary storage queues that have identifiers starting with the character "R" or the characters "ZIP".

Local temporary storage—DFHTST TYPE=LOCAL

The DFHTST TYPE=LOCAL macro defines temporary storage queue names that reside in the local CICS region in which the TST is installed. This macro enables you to define local queues without knowing the SYSIDNT (see the SYSIDNT option on the DFHTST TYPE=REMOTE macro for more information).

Used in conjunction with the all-generic DATAID specified on the TYPE=REMOTE macro for remote and shared queues, this macro can help you to simplify greatly the task of defining local and remote queues.

```
►►──DFHTST──TYPE=LOCAL──────────────────────────────────────────────────►

►─,DATAID=(─character-string──┬─────────────────────────┬─)──────────────►◄
                              └─,character-string,...───┘
```

TYPE=LOCAL
Indicates that this TST entry defines a set of local temporary storage queues.

DATAID=(*character-string[,character-string,...]***)|()**
Code this with one or more alphanumeric TS queue names, where each name can be up to 8-characters in length.

character-string
Each character string can represent a generic queue name, or a unique TS queue name. Typically, generic names are specified using 1 to 7 leading characters of TS queue names. DATAIDs that use all 8 characters define unique queue names.

Multiple names must be enclosed in parentheses, and separated by a comma. You can omit the parentheses if you specify only one name.

() This special (null) operand, without any value between the parentheses, is interpreted by CICS as specifying any queue that is not more explicitly specified by other DATAIDs. You can use this as a catch-all in the following way:

- If certain queues, which reside either in another region or in a shared TS pool, are specified on a TYPE=REMOTE macro with suitable generic DATAIDs, you can define all other queues as local by specifying DATAID=() on the TYPE=LOCAL macro.

This null option on the TYPE=LOCAL macro is mutually exclusive with DATAID=() on the TYPE=REMOTE macro, and the TST macro returns an assembly error if it is specified on both local and remote entries. Thus, if you specify DATAID=() on local TS queue entries, the TYPE=LOCAL macros must follow all TYPE=REMOTE macros.

Remote temporary storage—DFHTST TYPE=REMOTE

The DFHTST TYPE=REMOTE macro defines temporary storage queue names that reside in remote CICS regions when CICS intercommunication facilities are being used.

Use this macro also to define queues residing in a shared queue pool, which is treated like a remote region except that the name of the remote system matches the system name on a DFHTST TYPE=SHARED macro.

```
►►──DFHTST──TYPE=REMOTE──────────────────────────────────────────────────────►

►─,DATAID=(─character-string──┬────────────────────────┬─)──,SYSIDNT=name────►
                              └─,character-string,...──┘

►──┬──────────────────────────┬─────────────────────────────────────────────►◄
   └─,RMTNAME=character-string─┘
```

TYPE=REMOTE
: Indicates that this TST entry defines a set of remote temporary storage queues, which can reside either in a remote CICS region or in a shared TS pool in a coupling facility.

DATAID=(*character-string[,character-string,...]***)|()**
: Code this with one or more alphanumeric TS queue names, where each name can be up to 8 characters in length. Use 1 to 7 leading characters of TS queue names to form generic names of those queues for which requests are to be routed to a remote region or to a TS server. (See "TST—temporary storage table" on page 575 for information about generic names and matching criteria.)

  Note: You cannot use the list form of the DATAID operand when RMTNAME is specified. If you specify the RMTNAME parameter, the syntax for DATAID is DATAID=*character-string*.

  character-string
  : Each character string can represent a generic queue name, or a unique TS queue name. Typically, generic names are specified using 1 to 7 leading characters of TS queue names. The generic names are those used by application programs in the region in which this TST is installed.

    Multiple names must be enclosed in parentheses, and separated commas. You can omit the parentheses if you specify only one name.

  () This special operand, without any value between the parentheses, is interpreted by CICS as specifying any queue that is not more explicitly specified by other DATAIDs. You can use this as a catch-all in the following way:

- If the queues with names beginning with letters L, M, and N are local, and these are specified on a TYPE=LOCAL macro with suitable generic DATAIDs, you can define all other queues as remote by specifying DATAID=() on the TYPE=REMOTE macro, as follows:

```
      DFHTST TYPE=LOCAL,      *
             DATAID=(L,M,N)
*
      DFHTST TYPE=REMOTE,     *
             DATAID=()
```

The DATAID=() option on the TYPE=REMOTE macro is mutually exclusive with DATAID=() on the TYPE=LOCAL macro, and the TST macro returns an assembly error if it is specified on both local and remote entries.

DATAID=() must be the last entry in a set of local and remote entries. Thus, if you use DATAID=() on remote TS queue entries, the TYPE=REMOTE macros must follow any TYPE=LOCAL macros.

SYSIDNT=*name*
Identifies the region or server in which the remote or shared temporary storage queues reside. For a remote queue owned by another CICS region, the 4-character alphanumeric name specified must be the same as a REMOTENAME option specified in the CONNECTION definition, the first 4 chararcters of the IPCONN name on an IPCONN definition, or the SYSIDNT name specified on a DFHTST TYPE=SHARED entry.

You can use this parameter to specify the name of the local region in which the TST is installed. When the SYSIDNT operand matches the SYSIDNT specified on the system initialization parameter, the TS queues that match the DATAIDs are treated as local queues.

RMTNAME=*character-string*
Code this with the 1- to 8-character prefix that is to be used by CICS to replace that specified in the DATAID operand when a reference to the temporary storage queue is transmitted to a remote system or region. This operand defaults to the character string specified in the DATAID operand. The length of the character string specified in this operand must be the same as the length of the character string in the DATAID operand. This mechanism allows access to a temporary storage queue in the remote system with the same name as one in the local system.

Temporary storage security checking—DFHTST TYPE=SECURITY

The DFHTST TYPE=SECURITY macro indicates that security checking is required for the temporary storage queues specified in the TST.

```
►►──DFHTST──TYPE=SECURITY──────────────────────────────────────────────────►

►─,DATAID=(─character-string──┬───────────────────────┬─)──────────────────►◄
                              └─,character-string,...─┘
```

TYPE=SECURITY
Indicates that this TST entry defines a set of temporary storage queues that require security checking.

DATAID=(*character-string[,character-string,...]***)|()**
Code this with one or more alphanumeric TS queue names, where each name can be up to 8-characters in length. Use 1 to 7 leading characters from the

leading characters of queue names to form generic names of those queues that are subject to security checking. (See "TST—temporary storage table" on page 575 for information about generic names and matching criteria.)

Note:

1. When this macro is used, a suitable profile (see the *CICS RACF Security Guide* for information about profiles) must be defined to the external security manager to control access to the TSQ. Otherwise, the macro will not have the intended effect.
2. The full TSQ name is passed to the security manager.

character-string
Each character string can represent a generic queue name, or a unique TS queue name. Typically, generic names are specified using 1 to 7 leading characters of TS queue names. The generic names are those used by application programs in the region in which this TST is installed.

Multiple names must be enclosed in parentheses, and separated by a comma. You can omit the parentheses if you specify only one name.

() This null operand, without any value between the parentheses, is interpreted by CICS as specifying any queue that is not more explicitly specified by other DATAIDs.

Temporary storage data sharing—DFHTST TYPE=SHARED

The DFHTST TYPE=SHARED macro specifies the remote system name by which CICS identifies a temporary storage pool in the coupling facility.

```
►►──DFHTST──TYPE=SHARED──,SYSIDNT=system-name──,POOL=pool-name──────────────────►◄
```

TYPE=SHARED
indicates that this TST entry defines a mapping between a system identifier (SYSIDNT) specified on a TYPE=REMOTE entry and a pool of TS data sharing queues.

SYSIDNT=*system_name*
specifies the 1- to 4-character system name that corresponds to a TS pool name.

CICS uses this SYSIDNT to map remote queues (defined by a TYPE=REMOTE entry, or an explicit SYSID on an API command) to a TS server, as follows:

- If an API temporary storage command specifies a remote queue explicitly (by means of the SYSID option), CICS maps the SYSID to a matching SYSIDNT on a TYPE=SHARED entry:
  - If a matching SYSIDNT is found, CICS uses the corresponding POOL name to identify the TS server that manages the shared TS queue.
  - If the SYSID does not match any TYPE=SHARED entry, the request is function shipped to the remote queue-owning region (QOR) named by SYSID.
- If an API temporary storage command references a remote queue identified by a TYPE=REMOTE entry, CICS checks for a matching SYSIDNT in the TYPE=SHARED entries:
  - If a TYPE=SHARED entry with a matching SYSIDNT is found, CICS uses the corresponding POOL name to identify the TS server that manages the shared TS queue.

– If a TYPE=SHARED entry is not found, the queue is a remote queue and the request is function shipped to the QOR.

You can create multiple TYPE=SHARED entries, with different SYSIDNT names, that refer to the same POOL name. In this case, references to the same queue name refer to the same queue name regardless of which SYSID is used (on the API).

POOL=*pool_name*
specifies the 1- to 8-character name of the pool of TS queues that is to be used for TS requests that specify, implicitly or explicitly, the corresponding system name. The pool-name must match the name specified on the POOL parameter of the TS server that manages the TS pool.

DFHTST example

An example of how to code a temporary storage table (TST).

```
     DFHTST TYPE=INITIAL,              LIST OF GENERIC NAMES OF QUEUES *
            SUFFIX=01                  THAT ARE RECOVERABLE, REMOTE,
*                                      SHARED, LOCAL, OR REQUIRE
*                                      SECURITY CHECKING.
*
*  The following macro specifies that all LOCAL queues with
*  names beginning with the letter 'R' are RECOVERABLE:
*
     DFHTST TYPE=RECOVERY,                                             *
            DATAID=R
*
*  The following macro specifies that queues with names
*  beginning with C,D,E, and X are local queues:
*
     DFHTST TYPE=LOCAL,                                                *
            DATAID=(C,D,E,X)
*
*  The following macro specifies that queues with names
*  beginning with AB,L,M,N are remote queues on system RSYS:
*
     DFHTST TYPE=REMOTE,                                               *
            DATAID=(AB,L,M,N),                                         *
            SYSIDNT=RSYS,                                              *
*
*  The next macro specifies that all queues not local as defined
*  above, or remote in system RSYS as defined above, are remote
*  queues that reside in a shared TS pool TYPE=SHARE macro.
*
     DFHTST TYPE=REMOTE,                                               *
            DATAID=(),                                                 *
            SYSIDNT=SHR1
*
*  The next macro specifies that remote queues with SYSIDNT=SHR1
*  are mapped to shared TS pool named TSQSHR1.
*
     DFHTST TYPE=SHARED,                                               *
            SYSIDNT=SHR1,                                              *
            POOL=TSQSHR1

*
*  The following macro specifies that queues with names
*  beginning with SAQ require security checking.
*    Note that the full TS queue name is passed to the ESM.
*
     DFHTST TYPE=SECURITY,                                             *
            DATAID=SAQ
*
     DFHTST TYPE=FINAL
     END
```

Figure 51. Temporary storage table—example

XLT—transaction list table

The transaction list table specifies transactions that can be initiated from terminals during system termination, and groups of transactions that you want to enable or disable together. Use a TRANSACTION resource in preference to XLT.

The XLT can be used to define:

- A list of transaction identifications that can be initiated from terminals during the first quiesce stage of system termination. If there are no PLT programs to execute, the first quiesce time can be short, thus giving little time to enter any XLT program before going into the second quiesce stage. You specify the suffix of the table to be used with the XLT system initialization parameter. The master terminal operator can change the suffix at system termination, using the XLT option of the **CEMT PERFORM SHUTDOWN** command.

Note: As an alternative, you can create a PROGRAM resource to define the transaction list table. Defining it as a program also means that it can be autoinstalled; see “Autoinstalling programs, map sets, and partition sets” on page 497 for information on autoinstall for programs.

- A group of transaction identifications to be disabled or enabled through the master terminal. The master terminal operator specifies the suffix of the table to be used, using the CLASS option of the **CEMT SET TRANSACTION** command.

Figure 52 on page 586 illustrates the coding to create a XLT.

The following macros are available to define the XLT entries:
- Control section—DFHXLT TYPE=INITIAL
- Entries in transaction list table—DFHXLT TYPE=ENTRY
- End of transaction list table—DFHXLT TYPE=FINAL (see “TYPE=FINAL (end of table)” on page 507)

Control section—DFHXLT TYPE=INITIAL

The DFHXLT TYPE=INITIAL macro establishes the entry point and start address of the XLT being defined.

The DFHXLT TYPE=INITIAL macro establishes the entry point and start address of the XLT being defined.

```
►►──DFHXLT──TYPE=INITIAL──┬─────────────┬──────────────────────────────────►◄
                          └─,SUFFIX=xx─┘
```

For general information about TYPE=INITIAL macros, including the use of the SUFFIX operand, see “TYPE=INITIAL (control section)” on page 506.

Entries in transaction list table—DFHXLT TYPE=ENTRY

The DFHXLT TYPE=ENTRY macro specifies a list of transaction identifications that can be initiated from terminals during the first quiesce stage of system termination.

```
                                       ┌─,───┐
►►──DFHXLT──TYPE=ENTRY,──┬─TASKREQ=(──▼─kkkk─┴─)─┬──────────────────────────►◄
                         │             ┌─,───┐    │
                         └─TRANSID=(──▼─xxxx─┴─)─┘
```

TYPE=ENTRY
Code this if one or more entries are to be generated in the XLT.

TASKREQ=(kkkk[,kkkk],...)
kkkk can be one of the following:
- PA1 through PA3, and PF1 through PF24 indicates one of the special 3270 keys that can be used to initiate a task.
- LPA (light pen attention) indicates that a transaction is to be initiated when a light pen detectable field is selected.

- OPID (operator identification card reader) indicates that a transaction is initiated when the appropriate operator's identity badge has been read in.
- MSRE indicates that transactions are initiated when the 10/63 character magnetic slot reader is used.

Define each TASKREQ on the CSD file, and install it in the running system. (For further information, see the description of the TASKREQ attribute in TRANSACTION attributes.)

TRANSID=(xxxx[,xxxx],...)
Represents a 1- to 4-character transaction code. Define each TRANSID on the CSD file, and install it in the running system. (For further information, see the description of the TRANSACTION attribute in TRANSACTION attributes)

If the TRANSID contains a special character (for example, a comma), the TYPE=ENTRY instruction must contain only one TRANSID with quotation marks as delimiters.

Note: TASKREQ and TRANSID are mutually exclusive parameters.

DFHXLT example

An example of coding the a transaction list table (TLT).

```
   DFHXLT TYPE=INITIAL,                    LIST OF TRANSACTIONS     *
          SUFFIX=IN                        THAT ARE ACCEPTED
*                                          DURING THE FIRST QUIESCE
*                                          PHASE OF SYSTEM
*                                          TERMINATION.
   DFHXLT TYPE=ENTRY,TASKREQ=PF5           (TASKREQ MUST ALSO BE
*                                          DEFINED IN THE CSD AND
*                                          INSTALLED IN THE RUNNING
*                                          CICS SYSTEM. AN ENTRY FOR
*                                          THE XLT MUST BE MADE IN
   DFHXLT TYPE=ENTRY,TRANSID=(USR1,USR2)   THE CSD.)
   DFHXLT TYPE=ENTRY,TRANSID='AA,1'
   DFHXLT TYPE=ENTRY,TRANSID='AA,2'
   DFHXLT TYPE=FINAL
   END

   DFHXLT TYPE=INITIAL,                    LIST OF LOGICALLY RELATED*
          SUFFIX=G1                        TRANSIDS TO BE ENABLED OR
*                                          DISABLED BY MASTER
*                                          TERMINAL.
   DFHXLT TYPE=ENTRY,TRANSID=(TSSA,TSRA)   (TRANSIDS MUST ALSO BE
   DFHXLT TYPE=ENTRY,TRANSID=(TDSA,TDRA)   DEFINED IN THE CSD AND
   DFHXLT TYPE=ENTRY,TRANSID=ICSA          INSTALLED IN THE RUNNING
   DFHXLT TYPE=FINAL                       CICS SYSTEM.)
   END
```

Figure 52. Transaction list table—example

Chapter 44. Defining application bundles

You can create resources for your applications by defining each resource individually in a CICS region. Alternatively, you can deploy an application as a bundle and use the BUNDLE resource to create some of these resources dynamically for you. The BUNDLE resource represents the application, so you can also manage its availability in CICS by enabling and disabling the BUNDLE resource.

About this task

A *bundle* is a collection of CICS resources, artifacts, references, and a manifest that you can deploy into a CICS region to represent all or part of an application. The manifest is a file that describes the contents of the bundle, including any prerequisites that the application requires to run in CICS and any interfaces to other applications.

A bundle is created by an application developer using a tool such as the IBM CICS Explorer, Rational® Developer for System z, or the CICS XML assistant. It contains a set of application resources that CICS can dynamically create when the bundle is deployed. The bundle can also list the prerequisite system resources for the application. CICS does not dynamically create these system resources but can check that they are present in the CICS region. This separation of resources means that you can install the same application into multiple CICS regions without having to repackage or redeploy the bundle.

Procedure

1. Deploy the bundle to a suitable directory on z/OS UNIX. CICS must have permission to read this directory.
2. Optional: If you have manually copied the bundle as an archive to z/OS UNIX, you must expand the archive into its directory structures on z/OS UNIX. The tooling performs this step for you automatically.
3. Define and enable a BUNDLE resource for the application bundle. See "BUNDLE attributes" on page 42 for details of the attributes to specify. CICS reads the manifest in the bundle directory and dynamically creates the application resources. It also checks that any required references, for example to programs or files, outside the application are present in the CICS region, so that the application can run successfully.

What to do next

You can inquire on the installed BUNDLE resource and any of its associated resources using the IBM CICS Explorer. The resource signature of every dynamically created resource indicates that it was created by a bundle.

To refresh a bundle, disable and discard the BUNDLE resource and then install it again.

Application types that support bundles

The types of applications that you can deploy as bundles include Atom feeds, Java applications, event processing, channel-based services, and XML-based services. Each of these application types is represented by one or more CICS resources and these resources are dynamically created as part of the bundle deployment.

Atom feeds
: If you deploy an application that uses Atom feeds, installing the BUNDLE resource generates an ATOMSERVICE resource. The resource signature for the ATOMSERVICE resource indicates that it was created during a bundle deployment and contains the name of the BUNDLE resource.

Channel-based services
: Channel-based services are CICS applications that are described as components and assembled together using the Service Component Architecture (SCA) tooling in Rational Developer for System z. The SCA tooling deploys the composite application to CICS as a bundle. These services are available only to other CICS applications that use the **INVOKE SERVICE** API command and pass binary data in containers on a channel.

Event processing
: If you deploy an application that uses event bindings from the CICS event binding editor, installing the BUNDLE resource generates one or more EVENTBINDING and CAPTURESPEC resources. The resource signatures for each resource indicate that they were created during a bundle deployment and contain the name of the BUNDLE resource.

Java applications
: Java applications that are packaged as OSGi bundles can be deployed in a CICS bundle to run in a JVM server. The JVMSERVER resource must be enabled to deploy the application. Installing the BUNDLE resource dynamically creates the OSGIBUNDLE and OSGISERVICE resources that represent the OSGi bundles and services in the OSGi framework. The resource signature for each resource indicate that they were created during a bundle deployment and contain the name of the BUNDLE resource. CICS uses the resources to manage the life cycle of the OSGi bundles and OSGi services.

  If you want the Java application to be available to other applications outside the JVM server, you must still create a PROGRAM resource to name the main Java class of the application and the target JVM server.

XML-based services
: XML-based services are typically web service provider or requester applications that use XML to interface with other applications and use a binding to transform the data. XML-based services are available to CICS applications that use the **INVOKE SERVICE** API command or to business services that are on an external network. If you create a web service using the SCA tooling in Rational Developer for System z, you can deploy the web service as a bundle.

  Installing the BUNDLE resource for a web service can generate a number of CICS resources, including URIMAP and WEBSERVICE resources.

  An XML-based service can also be an application that uses the **TRANSFORM** API commands to map application data to and from XML. The XML assistant uses a language structure or an XML schema to generate the XML binding, and can also create a bundle. If you install the BUNDLE resource, CICS dynamically creates an XMLTRANSFORM resource that defines where the XML binding and schema are located.

You can extend the list of supported application types by using the callback interface in the resource life-cycle manager domain. With this interface, vendors can create new user resource types and manage them in BUNDLE resources.

Manifest contents

Each bundle contains a manifest that describes the contents of the bundle. A manifest describes which resources to create in the CICS region and the location of the supporting artifacts, which prerequisites are required for the application to run successfully, and any services that the application can offer to other applications.

The manifest is called `cics.xml` and is in the `META-INF` directory of the deployed bundle on z/OS UNIX. The manifest is written in XML and conforms to a schema. See The bundle manifest schema for details. The manifest is encoded in UTF-8 and contains information about the bundle itself, as well as definitions, exports, and imports:

Bundle information
: The manifest can contain an optional <meta-directives> element that contains information about the bundle; for example, it can contain a time stamp of the time when the bundle was created.

Definitions
: Every resource in the bundle is defined by its name, resource type, and location in a <define> element:

- The name of the artifact is defined in the tooling.
- The resource type is defined as a URI.
- The location is defined as a relative file path, including the file name, to the artifact that provides the definition and metadata for the resource.

Some definitions lead to CICS creating one or more resources dynamically; for example a `http://www.ibm.com/xmlns/prod/cics/bundle/EVENTBINDING` resource type creates an EVENTBINDING resource and one or more CAPTURESPEC resources. Other definitions, such as the `http://www.ibm.com/xmlns/prod/cics/bundle/SCACOMPOSITE` resource type, are used by CICS only in runtime processing and have no equivalent CICS resource definition.

A resource is installed only if its type has been registered with CICS. For vendor resource types, CICS provides a registration and callback interface. See Creating user resource types in bundles for details.

Exports
: The <export> element provides additional information about the resources or services that a bundle can provide. CICS does not use export statements in its processing of application bundles. You can view the list of exports in the IBM CICS Explorer.

Imports
: The <import> element defines references to resources that are required by the bundle for the application to run successfully. Each reference has a name and a type, but no path attributes. The reference also has an attribute that describes how CICS handles the BUNDLE resource installation if one of the required imports is not present in the CICS region. The BUNDLE

resource can fail, enable with warning messages, or enable with no warnings. The default behavior is for CICS to enable the BUNDLE resource and issue a warning message.

The <import> element can contain the following CICS resource types:

- `http://www.ibm.com/xmlns/prod/cics/bundle/ATOMSERVICE`
- `http://www.ibm.com/xmlns/prod/cics/bundle/DB2ENTRY`
- `http://www.ibm.com/xmlns/prod/cics/bundle/DB2TRAN`
- `http://www.ibm.com/xmlns/prod/cics/bundle/DOCTEMPLATE`
- `http://www.ibm.com/xmlns/prod/cics/bundle/ENQMODEL`
- `http://www.ibm.com/xmlns/prod/cics/bundle/EPADAPTER`
- `http://www.ibm.com/xmlns/prod/cics/bundle/EVENTBINDING`
- `http://www.ibm.com/xmlns/prod/cics/bundle/FILE`
- `http://www.ibm.com/xmlns/prod/cics/bundle/JOURNALMODEL`
- `http://www.ibm.com/xmlns/prod/cics/bundle/MAPSET`
- `http://www.ibm.com/xmlns/prod/cics/bundle/PARTITIONSET`
- `http://www.ibm.com/xmlns/prod/cics/bundle/PIPELINE`
- `http://www.ibm.com/xmlns/prod/cics/bundle/PROCESSTYPE`
- `http://www.ibm.com/xmlns/prod/cics/bundle/PROGRAM`
- `http://www.ibm.com/xmlns/prod/cics/bundle/SCACOMPOSITE`
- `http://www.ibm.com/xmlns/prod/cics/bundle/TRANSACTION`
- `http://www.ibm.com/xmlns/prod/cics/bundle/TSQMODEL`
- `http://www.ibm.com/xmlns/prod/cics/bundle/URIMAP`
- `http://www.ibm.com/xmlns/prod/cics/bundle/WEBSERVICE`
- `http://www.ibm.com/xmlns/prod/cics/bundle/XMLTRANSFORM`

Vendors can extend this list to include their own user resource types.

Example of a manifest

The following example shows a manifest that defines a Service Component Architecture composite:

```
<?xml version="1.0" encoding="UTF-8" standalone="yes"?>
<tns:manifest xmlns:tns="http://www.ibm.com/xmlns/prod/cics/bundle"
         bundleVersion="1">
    <tns:define name="CompositeA" 1
         type="http://www.ibm.com/xmlns/cics/bundle/SCACOMPOSITE"
         path="CompositeA.composite"/>
    <tns:import name="BASESCOP" 2
         type="http://www.ibm.com/xmlns/prod/cics/bundle/PROGRAM"
         optional="false"
         warn="true"/>
    <tns:import name="BNDRES07" 3
         type="http://www.ibm.com/xmlns/prod/cics/bundle/FILE"
         optional="false"
         warn="true"/>
    <tns:import name="BR14" 4
         type="http://www.ibm.com/xmlns/prod/cics/bundle/TRANSACTION"
         optional="true"
         warn="false"/>
</tns:manifest>
```

1. The definition for the SCA composite, including the name of the composite, its type, and the path to the composite SCDL in the bundle.

2. The bundle imports a program that is required in the CICS region. If this PROGRAM resource is not present in the CICS region, the bundle installs successfully but is placed in a disabled state. CICS also issues a warning message.
3. The bundle imports a file that is required in the CICS region. If this FILE resource is not present in the CICS region, the bundle installs successfully but is placed in a disabled state. CICS also issues a warning message.
4. The bundle imports a transaction that is optional. If this TRANSACTION resource is not present in the CICS region, the bundle installs successfully and no warning message is issued by CICS.

Scoping of bundles

The BUNDLE resource definition provides the BASESCOPE attribute as a way of grouping together related BUNDLE resources. You can also use this attribute to set a Service Component Architecture (SCA) domain for a bundle that contains SCA composite applications.

You can deploy different application types as bundles in a CICS region, including events and SCA composite applications. BASESCOPE is an optional attribute on the BUNDLE resource definition that you can use to group similar bundles together. You can use the IBM CICS Explorer to view all of the BUNDLE resources that are defined in a CICS region and order them by the value of the BASESCOPE attribute.

Scoping of bundles into SCA domains

The BASESCOPE attribute has a specific use for bundles that contain SCA composite applications. A composite application is deployed into an SCA domain. An *SCA domain* typically represents a set of services providing an area of business function that is controlled by a single organization; for example, the SCA domain for an accounts department in a business might cover all financial related functions and contain a series of composite applications dealing with specific areas of accounting.

In a CICS region, by default there is one SCA domain. Every bundle that is deployed into the CICS region has the same default SCA domain, although the value is empty. You can use the BASESCOPE attribute on the BUNDLE resource definition to set a value for the SCA domain.

You can also deploy the same bundle multiple times into the CICS region by specifying different SCA domains for the BASESCOPE attribute. CICS uses the SCA domain and the composite together to identify the service during runtime processing. The scope of the service is available to the task that is processing the request.

You are recommended to use a unique URI for the BASESCOPE attribute value; for example, `http://mycompany/HR` or `http://mycompany/warehouse`. CICS creates the names of services, composites, and references by extending the value of the BASESCOPE attribute; for example, installing a service with a local name of `location/taxService` into the HR SCA domain would create a scoped name of `http://mycompany/HR/location/taxService`.

Do not extend the same URI to create a new SCA domain. If you extend the same URI, you might get unexpected service or reference name clashes; for example, if you used `http://mycompany/HR` and `http://mycompany/HR/location` as different SCA domains and had a service with a local name of `location/taxService` and another service called `taxService`, installing these services into both the `http://mycompany/HR` and `http://mycompany/HR/location` SCA domains create clashes with the service names. Although you can install and enable BUNDLE resources successfully with these values, you might get unexpected results and errors when the services are called by other applications.

Recovery of resources in bundles

Application resources that are defined using bundles are not stored in the CSD. The BUNDLE resource itself is stored in the catalog, so that on a restart of the CICS region, the resources are dynamically re-created when restoring the BUNDLE resource.

On a cold, warm, or emergency restart of CICS, during post-initialization processing CICS tries to re-create all the BUNDLE resources that were installed before the restart. CICS uses the CRLR supplied transaction to start a program that resolves all of the resources that are defined in the bundle manifest, including the dynamic re-creation of all the required CICS resources. Although most dynamically created resources are not defined in the catalog, EVENTBINDING resources are stored in the catalog.

If CICS fails to create and enable a resource dynamically, the BUNDLE resource installs in the disabled state and a warning message is issued. Even if only one out of a number of resources fail to install, the BUNDLE resource installs in a disabled state. Use the IBM CICS Explorer to view the state of every resource in a BUNDLE resource.

Recovery of user resources

If a bundle contains a resource type that is handled outside CICS, for example a vendor resource, the bundle registration program must be available during post-initialization programming to register the callback program and re-create the resource type.

If the registration program does not register the callback program or the callback program is not available to recreate the user resources, the BUNDLE resource installs in the disabled state and the user resources install in the unusable state. You must ensure that both the registration and callback programs are available in CICS before discarding and re-creating the BUNDLE resources.

Chapter 45. Defining terminal resources

You can define terminal resources in two different ways, depending on the type of terminal access method that you want to use.

1. ACF/SNA LUs are defined in the CSD either explicitly, or by using model terminal definitions if you are using the CICS automatic installation facility (*autoinstall*). Using autoinstall, you leave it to CICS to install the terminal resource definition dynamically at logon time. CICS obtains the information needed to create a terminal entry from the TERMINAL and TYPETERM definitions recorded in the CSD. For guidance information about this process, see Chapter 42, “Autoinstall,” on page 477.

   You can add z/OS Communications Server definitions to the CSD offline using the DEFINE command of the CICS utility program, DFHCSDUP, or online using the CEDA DEFINE command. If you want the terminal definitions installed during CICS initialization, you must add the names of the groups containing the definitions to a group list used during a cold start. Otherwise you can install a group of definitions using the CEDA INSTALL GROUP(groupname) command online. For more information, see GRPLIST system initialization parameter in the System Definition Guide.

   Each LU must also be defined to ACF/SNA in a z/OS Communications Server definition statement.
2. Non-SNA LUs are defined in a terminal control table (TCT) using DFHTCT macros.

   During CICS initialization, CICS loads the TCT specified by the TCT system initialization parameter, and those LUs defined in the TCT are installed as CICS resources. You must also make these LUs known to the operating system, and include a DD statement in the CICS startup job stream for each LU.

Defining z/OS Communications Server terminals

A CICS region can communicate with terminals or other regions using z/OS Communications Server services.

To use z/OS Communications Server services, you must do the following:

1. Define CICS to ACF/Communications Server with an APPL statement in SYS1.VTAMLST. For more information about defining an APPL statement for CICS, see the *CICS Transaction Server for z/OS Installation Guide*.
2. Define to z/OS Communications Server the terminal resources that CICS is to use.
3. Define to CICS the terminal resources that it is to use.

Defining CICS terminal resources to z/OS Communications Server

Each terminal, or each logical unit (LU) in the case of SNA terminals, that CICS is to use must be defined to z/OS Communications Server.

The terminals can be defined as local or remote.

Local z/OS Communications Server terminals
can be SNA terminals connected to a channel-attached cluster controller, or they can be non-SNA 3270 terminals connected through a local control unit.

Remote z/OS Communications Server terminals
are attached to an SNA cluster controller, which is connected through an SDLC line with a channel-attached communications controller. The communications controller may also be loaded with code to enable remote terminals to be connected to it by a binary synchronous (BSC) line.

You define terminals, controllers, and lines in z/OS Communications Server tables. z/OS Communications Server has tables describing the network of terminals with which it communicates. z/OS Communications Server uses these tables to manage the flow of data between CICS and the terminals. as nodes in the network. Each terminal, or each logical unit (LU) in the case of SNA terminals, must be defined in the z/OS Communications Server tables with a z/OS Communications Server node name that is unique throughout the z/OS Communications Server domain.

If you are using z/OS Communications Server 3.3 or later, you can define the AUTINSTMODEL name, printer, and alternate printer to z/OS Communications Server by using z/OS Communications Server MDLTAB and ASLTAB macros. These definitions are passed to CICS to select autoinstall models and printers.

For information about defining resources to z/OS Communications Server, see the *VTAM Resource Definition Reference*.

Defining terminal resources to CICS

A given z/OS Communications Server terminal, or logical unit, can be defined explicitly in the CICS system definition file (CSD), in which case it has a TERMINAL name and a NETNAME, (which is the same as the z/OS Communications Server node name. Terminals defined in this way have terminal entries installed at CICS startup.

If a terminal does not have an explicit definition in the CSD, CICS can create and install a definition dynamically for the terminal when it logs on, using the CICS autoinstall facility. CICS can autoinstall terminals by reference to TYPETERM and model TERMINAL definitions created with the AUTINSTMODEL and AUTINSTNAME attributes. For information about TYPETERM and TERMINAL definitions, see “Autoinstalling model terminal definitions” on page 500 and “Model TERMINAL definitions in group DFHTERM” on page 875.

If you use autoinstall, you must ensure that the CICS resource definitions correctly match the z/OS Communications Server resource definitions. For programming information about z/OS Communications Server logmode definitions and their matching CICS autoinstall model definitions, see the *CICS Customization Guide*.

If you specify the system initialization parameter TCTUALOC=ANY, CICS stores the terminal control table user area (TCTUA) for z/OS Communications Server terminals above the 16 MB line if possible. See the *CICS System Definition Guide* for more information about this parameter.

Defining the terminal shutdown time limit

You can specify a time limit within which all SNA LUs used by CICS must shut down, when CICS is shutting down.

(This is to prevent a hung terminal stopping CICS shutting down.) You specify this time limit on the TCSWAIT system initialization parameter. You can also specify actions that CICS is to take, if the time limit is exceeded. You specify the actions on the TCSACTN system initialization parameter. More information about choosing appropriate values for TCSWAIT and TCSACTN is given in the following topics.

Choosing an appropriate value for TCSWAIT

The value that you specify on the TCSWAIT system initialization parameter should be large enough so that under normal circumstances all SNA LUs and connections shutdown in an orderly fashion.

To help choose this value, consider using a value slightly larger than the elapsed time between the following two CICS terminal control shutdown messages:

```
DFHZC2305 Termination of VTAM sessions beginning
DFHZC2316 VTAM ACB is closed
```

If you do not want a time limit (that is, you assume that all terminals never hang), specify the TCSWAIT=NO system initialization parameter.

Note: VTAM is now z/OS Communications Server for SNA.

Specifying that CICS is only to report hung terminals

To report hung terminals and not attempt to force-close them specify the TCSWAIT=mm (with an appropriate time interval) and TCSACTN=NONE system initialization parameters.

Specifying that CICS is to force close all hung terminals

To attempt to force-close all hung terminals specify the TCSWAIT=mm (with an appropriate time interval) and TCSACTN=UNBIND system initialization parameters.

Defining sequential (BSAM) devices

You can use a pair of input and output sequential data sets to simulate a terminal to CICS. For example, you might do this to test an application program before the intended terminal becomes available.

To do so, code the following DFHTCT TYPE= macros:

```
DFHTCT TYPE=INITIAL,
       ACCMETH=(NONVTAM)    defining the access
                            method
```

Define the following macro instructions contiguously:

```
DFHTCT TYPE=SDSCI,
       DSCNAME=isadscn,     defining the input
       DDNAME=indd, ...      data set
DFHTCT TYPE=SDSCI,
       DSCNAME=osadscn,     defining the output
       DDNAME=outdd, ...     data set
DFHTCT TYPE=LINE,
       ISADSCN=isadscn,
       OSADSCN=osadscn, ...
DFHTCT TYPE=TERMINAL,
       TRMIDNT=name, ...
```

The two data sets defined by the DFHTCT TYPE=SDSCI macros simulate a CICS terminal known by the name specified in the TRMIDNT operand of the DFHTCT

TYPE=TERMINAL macro. The DSCNAMEs of the input and output data sets must be specified in the ISADSCN and OSADSCN operands of the DFHTCT TYPE=LINE macro respectively.

You must code a DD statement for each sequential data set defined by an SDSCI macro. The DD name on the DD statement must be the same as the name coded on the DDNAME parameter (or, by default, on the DSCNAME parameter) of the SDSCI macro. For example, you could use the following DD statements for sequential input and output:

```
//CARDIN  DD  *,DCB=BLKSIZE=80
        .
    Statements containing valid transactions
        .
/*
//PRINTER DD  SYSOUT=A,DCB=BLKSIZE=132
```

This example of an I/O combination simulates a terminal to a CICS application program. There is an example of the SDSCI statements supporting this CARDIN/PRINTER combination in the copybook DFH$TCTS, which is defined in the sample TCT, DFHTCT5$. DFH$TCTS is supplied in CICSTS42.CICS.SDFHSAMP. Input to the application program is submitted through the input stream (CARDIN), and output to the terminal is sent to the output stream (PRINTER). If the BLKSIZE parameter is defined in the TCT for the data set, you can omit it from the JCL. However, if it is not defined in the TCT, the block size defaults to 0, and if you also omit it from the DD statement for the data set, you get message IEC141I 013-34. There are other examples of DD statements for I/O sequential data sets in some of the CICS-supplied installation verification procedures. You can find them in CICSTS42.CICS.SDFHINST after installation.

You can also use two DASD data sets to simulate a terminal. You must code a DD statement for each data set defined by an SDSCI macro, and the DD name on the DD statement must be the name coded on the DDNAME (or DSCNAME) parameter of the SDSCI macro.

For example, you might code:

```
//DISKIN1  DD DSN=SIMULATD.TERMINAL.IN,
//         UNIT=3380,DISP=OLD,VOL=SER=volid
//DISKOT1  DD DSN=SIMULATD.TERMINAL.OUT,
//         UNIT=3380,DISP=OLD,VOL=SER=volid
```

Input from this simulated terminal is read from the DISKIN1 data set. Output to the terminal is written to the DISKOT1 data set.

Each statement in the input file (from CARDIN or DISKIN1 in the examples used above), must end with a character representing X'E0'. The standard EBCDIC symbol for this end-of-data hexadecimal value is a backslash (\) character, and this is the character defined to CICS in the pregenerated system. You can redefine this for your installation on the EODI system initialization parameter; see the *CICS System Definition Guide* for details.

Terminating

End-of-file does not terminate sequential input. Use **CESF GOODNIGHT** as the last transaction, to close the device and stop reading from the device.

Otherwise, CICS invokes the terminal error program (DFHTEP), and issues the messages in Table 39 on page 597 at end-of-file on the sequential device.

Table 39. Warning messages if a sequential terminal is not closed

Message	*Destination*
DFHTC2507 *date time applid* `Input event rejected return code` *zz* `{on line w/term|at term}`*termid* `{, trans}`*tranid*`{, rel line=}` *rr,time*	CSMT
DFHTC2500 *date time applid* `{Line|CU|Terminal} out of service {Term|W/Term}` *termid*	CSMT

Using **CESF GOODNIGHT** puts the sequential device into RECEIVE status and terminates reading from the device. However, if you close an input device in this way, the receive-only status is recorded in the warm keypoint at CICS shutdown. This means that the terminal is still in RECEIVE status in a subsequent warm start, and CICS does not then read the input file.

You can also use **CESF LOGOFF** to close the device and terminate reading from the device, but CICS still invokes DFHTEP to issue messages DFHTC2507 and DFHTC2500 at end-of-file. However, the device is left in TTI status, and is available for use when restarting CICS in a warm start.

If you want CICS to read from a sequential input data set, either during or following a warm start, you can choose one of the following methods:

- Close the input with **CESF LOGOFF**, and ignore the resultant messages. This leaves the terminal in TTI state, and CICS reads input automatically in the next startup.
- Do not close the input, and ignore the resultant messages. This leaves the terminal in TRANSCEIVE state, and CICS reads input automatically in the next startup.
- Close the input with **CESF GOODNIGHT**. This puts the sequential terminal into RECEIVE status and terminates reading from the terminal. In this case, it is recommended that you code a PLT program to change the status of the terminal to TRANSCEIVE (see below).
- Code a user program, to be invoked from the program list table (PLT), to issue the appropriate **EXEC CICS INQUIRE** and **EXEC CICS SET** commands for each sequential device that is required to process input. For example, use the following statement to establish the state of a sequential terminal:

  ```
  EXEC CICS INQUIRE TERMINAL(termid) SERVSTATUS(cvda) TTISTATUS(cvda)
  ```

  For each terminal where SERVSTATUS returns DFHVALUE(INSERVICE) and TTISTATUS returns DFHVALUE(NOTTI), set the terminal to TRANSCEIVE with the following statement:

  ```
  EXEC CICS SET TERMINAL(termid) TTI
  ```

  For programming information about the use of EXEC CICS INQUIRE and EXEC CICS SET commands, see the *CICS System Programming Reference*. For programming information about writing post initialization-phase programs, see the *CICS Customization Guide*.

If you use BSAM devices for testing purposes, the final transaction to close down CICS could be **CEMT PERFORM SHUT.** The receive-only status is recorded in the warm keypoint at CICS shutdown. This means that on a subsequent warm start of CICS, the terminal is still in RECEIVE status and CICS does not then read the input file.

If you use the **CEMT PERFORM SHUT**, perform a cold or initial start of the CICS region to read the input file. This assumes that recoverability of resources is not important to you.

Defining console devices

You can operate CICS from a *console device*. A console device can be a locally-attached system console, a TSO user defined as a console, or an automated process such as NetView.

You can use a terminal as both a system console and a CICS terminal. To enable this, you must define the terminal as a console in the CSD. (You cannot define consoles in the TCT.)

Suitably authorized TSO users can enter MODIFY commands from terminals connected to TSO. To enable this, define the TSO user as a console device in the CSD.

You can use each console device for normal operating system functions and to invoke CICS transactions. In particular, you can use the console device for CICS master terminal functions to control CICS terminals or to control several CICS regions in conjunction with multiregion operation. Consequently, you can be a master terminal operator for several CICS regions.

Defining console devices to CICS

You can define console devices to CICS using either the **DEFINE TERMINAL** command of the DFHCSDUP utility, or the **CEDA DEFINE TERMINAL** command using RDO.

Each console can be defined explicitly, or you can define autoinstall model definitions, and use the CICS terminal autoinstall facility for consoles to install consoles automatically.

If want to use the console autoinstall facility, specify `AICONS=YES|AUTO` as a system initialization parameter, and define TERMINAL model definitions that specify AUTINSTMODEL(YES) and the AUTINSTNAME attribute.

System consoles

System consoles are defined to MVS in the SYS1.PARMLIB library, in a CONSOL*nn* member, that defines attributes such as NAME, UNIT, and SYSTEM.

The name is the most significant attribute, because it is the name that CICS uses to identify the console. The name is passed to CICS on an MVS **MODIFY** command. Although consoles also have a numeric identifier, this is allocated by MVS dynamically during IPL, and its use is not recommended for defining consoles to CICS.

For information about defining console devices to MVS, see the *z/OS MVS Initialization and Tuning Reference*.

For information about defining MVS consoles to CICS, see “Defining MVS consoles to CICS” on page 599.

TSO users as consoles

TSO users that issue commands to CICS, using either the TSO **CONSOLE** command or SDSF, do not require MVS definitions as consoles in the CONSOL*nn* member. MVS activates a console automatically using the user's TSO/E user ID as the console name

The TSO user issuing the **CONSOLE** command can use the NAME option to specify a console name different from the TSO user ID.

To communicate with a CICS region from TSO or SDSF, you must install a CICS console definition that specifies the TSO user ID (or the name specified on the console command) as the console name.

For information about the TSO **CONSOLE** command, see the *z/OS TSO/E System Programming Command Reference*.

For information about defining TSO users to CICS, see “Defining TSO users as console devices.”

Defining MVS consoles to CICS

To use an MVS console as a CICS master terminal, you either define it to CICS explicitly by a terminal definition entry in the CSD, or use the CICS console autoinstall facility.

Each console you define is identified on the TERMINAL definition by the CONSNAME(*name*) attribute. CICS no longer supports the CONSOLE(*number*) attribute. Identify a console device attached to an MVS in a sysplex by its name, using the CONSNAME attribute.

For an example of the DEFINE command required to define a console, see Figure 53.

```
//DEFTERM  JOB (accounting information),MSGCLASS=A,
//         MSGLEVEL=(1,1),CLASS=A,NOTIFY=userid
//CONSDEF  EXEC PGM=DFHCSDUP
//STEPLIB  DD DSN=CICSTS42.CICS.SDFHLOAD,DISP=SHR
//DFHCSD   DD DSN=CICSTS42.CICS.DFHCSD,DISP=SHR
//SYSPRINT DD SYSOUT=*
//SYSIN    DD *
*
*  Define a console for CICS
DEFINE TERMINAL(trmidnt)  GROUP(grpname)  TYPETERM(DFHCONS)
       CONSNAME(consname)  DESCRIPTION(MVS CONSOLE consname)
*
*  Define a TSO user as a console device for CICS
DEFINE TERMINAL(trmidnt)   GROUP(grpname)     TYPETERM(DFHCONS)
       CONSNAME(tsouser)   DESCRIPTION(TSO USER tsouser)
       USERID(tsouser)
*
*  Define an AUTOINSTALL model definition for a console device
DEFINE TERMINAL(autc)     GROUP(grpname)     TYPETERM(DFHCONS)
       CONSNAME(console)  DESCRIPTION(Autoinstall model for a console)
       USERID(*FIRST)     AUTINSTNAME(name) AUTINSTMODEL(YES)
*
ADD GROUP(grpname) LIST(yourlist)
*
LIST   LIST(yourlist)  OBJECTS
/*
//
```

Figure 53. Defining consoles and a TSO user in the CSD using DFHCSDUP

Defining TSO users as console devices

You can define TSO users as console devices to CICS using either an explicitly-defined TERMINAL definition for each TSO user, or use the console autoinstall facility.

To define a TSO user as a console, specify the console name used by the TSO user on the CONSNAME attribute of the DEFINE TERMINAL command. By default, the console name is the user's TSO user ID. You are recommended to define consoles to CICS with preset security by using the USERID operand, so that the TSO user does not have to sign on using the CESN transaction. Otherwise, the TSO user's CICS signon password is displayed when entered for the CESN transaction.

For an example of the DEFINE command required to define a TSO user, see Figure 53 on page 599.

For information about defining consoles (or terminals) with preset security, see the Security facilities in CICS in the RACF Security Guide.

Note: Substitute your own values for the operands that are shown in italics in the DEFTERM job shown in Figure 53 on page 599.

AUTINSTMODEL(YES)
Specifies whether this TERMINAL definition can be used as a model for autoinstall purposes.

AUTINSTNAME(*name*)
The name assigned to this autoinstall model definition, and by which the model is known to the autoinstall control program.

CONSNAME(*consname*)
A unique 8-character console name, which corresponds to the NAME parameter in the CONSOL*nn* PARMLIB member that defines the console, or matches the console name used by a TSO user.

You must define CONSNAME even for an autoinstall model.

GROUP(*grpname*)
A unique name for the group to which the console resource definition is to belong.

LIST(*yourlist*)
The startup group list containing the group in which you have defined the console definitions. If your new group list does not include the required CICS-supplied resources as well as your own, specify DFHLIST and *yourlist* on the GRPLIST system initialization parameter of your CICS startup job.

TERMINAL(*trmidnt*|*autc*)
A unique 4-character terminal identifier *trmidnt* as the name by which CICS is to identify the console in the TCT terminal entry (TCTTE), or a dummy name *autc* in the case of an autoinstall model definition.

USERID(*tsouser*)
The CICS preset security userid to be used to sign on this console device.

If you have defined a console device in your CSD as CONSNAME(INTERNAL), you can use it to issue commands using MVS job control language. It is also used by authorized programs that use the MGCR macro to issue MVS commands.

Having defined the console devices in the CSD, ensure that their resource definitions are installed in the running CICS region. You can install the definitions in one of two ways, as follows:
1. Include the group list that contains the resource definitions on the **GRPLIST** system initialization parameter in the CICS startup job.
2. During CICS execution, install the console device group by using the RDO command CEDA INSTALL GROUP(*groupname*), where *groupname* is the name of the resource group containing the console device definitions.

DFHLIST, the CICS-defined group list created when you initialize the CSD with the DFHCSDUP INITIALIZE command, does not include any resource definitions for console devices. However, the CSD is initialized with 2 groups that contain console definitions:

DFH$CNSL
: This group contains definitions for three consoles. The group is intended for use with the installation verification procedures and the CICS-supplied sample programs. You can add this to your own group list, and alter the definitions to define your own console devices.

DFHTERMC
: This group contains a single definition of an autoinstall model definition for an MVS console.

If you decide to create new terminal definitions for your console devices, you can specify the CICS-supplied TYPETERM definition, DFHCONS, on the TYPETERM(*name*) parameter. This TYPETERM definition for console devices is generated in the group DFHTYPE when you initialize the CSD.

Defining z/OS Communications Server persistent sessions support

If you choose to run a CICS region with z/OS Communications Server persistent sessions support, terminal users can have their sessions recovered and continue working in the event of a CICS or z/OS Communications Server failure.

About this task

Use the CICS system initialization parameters **PSTYPE** and **PSDINT** to set up persistent sessions support for a CICS region, and use options on the CONNECTION, TYPETERM, and SESSIONS resource definitions to customize the user experience for terminal users in the event of a recovery.

The default settings for the **PSTYPE** and **PSDINT** system initialization parameters mean that persistent sessions support is available to the CICS region, but that it is not being exploited. The *CICS Recovery and Restart Guide* explains what happens when you exploit persistent sessions support, and why you might want to run a CICS region without persistent sessions support.

The default values for **RECOVOPTION** and **RECOVNOTIFY** in TYPETERM definitions are SYSDEFAULT and NONE respectively but when used in this combination with persistent sessions can, in some circumstances, result in a recovered terminal becoming unusable. This condition can continue until a task is automatically initiated at the terminal, for example using **EXEC CICS START TRANSID(xxx) TERMID(yyy)**. While use of RECOVNOTIFY(NONE) may be appropriate for devices such as printers different values should be considered for user terminals.

If you want to change the type of persistent sessions support for an existing CICS region, you need to shut down the region and cold start it with the new settings. You cannot change between single-node persistent sessions support, multinode persistent sessions support, and no persistent sessions support while CICS is running. Because the persistence characteristics of a bound session are established when the session is created, you need to force an unbind and to rebind the sessions to acquire the correct persistence characteristics for the new level of persistent sessions support requested by CICS. The most straightforward way to achieve this is to carry out a cold or initial start of the CICS region.

You can change the persistent sessions delay interval while CICS is running, but the changed interval is not stored in the CICS global catalog, and therefore is not restored in an emergency restart.

If you do want to use persistent sessions support for a CICS region, follow these steps:

Procedure

1. Use the **PSTYPE** system initialization parameter to specify an appropriate level of persistent sessions support.
   a. If you have z/OS Communications Server V4R4 or later, in a Parallel Sysplex® with a coupling facility, specify MNPS for multinode persistent sessions support. This level of support enables recovery in the event of a z/OS Communications Server, z/OS, or CICS failure.
   b. If you do not have suitable facilities for multinode persistent sessions support, specify SNPS for single-node persistent sessions support. This level of support enables recovery in the event of a CICS failure, but not in the event of a z/OS Communications Server or z/OS failure.
2. Use the **PSDINT** system initialization parameter to specify a suitable persistent sessions delay interval. This value determines for how long z/OS Communications Server holds sessions in a recovery-pending state. The interval you specify must be able to cover the time from a CICS failure to the time when the z/OS Communications Server ACB is opened by CICS during a subsequent emergency restart.
3. Choose and set an appropriate value for the RECOVOPTION option of the SESSIONS and TYPETERM resource definitions used in the CICS region. Typically, this value can be the default SYSDEFAULT, which makes CICS select the optimum procedure for recovering sessions. This setting means that in the event of a recovery, the terminal user can clear the screen and continue to enter CICS transids.
4. Choose and set an appropriate value for the RECOVNOTIFY option of the TYPETERM resource definitions used in the CICS region.
   a. If you want a successful recovery to be transparent to terminal users, specify NONE.
   b. If you want to display a message on the screen to say that the system has recovered, specify MESSAGE.
   c. If you want to start a transaction at the terminal, such as the good-morning transaction, specify TRANSACTION.
5. If you are working with an existing CICS region, cold start the CICS region to implement the changes to persistent sessions support.

Part 4. Resource definition online (RDO) transaction CEDA

Use the CEDA transaction to add, remove, or change resource definitions online.

Chapter 46. The CEDA transaction tutorial

This tutorial shows you how to use the RDO transactions CEDA, CEDB, and CEDC.

It assumes that you have read the information on resources, groups, and lists in Chapter 3, "Groups and lists," on page 23.

At the end of this tutorial, you should be familiar with the CEDA panels, and be able to manage your resources efficiently.

The examples in the tutorial all use CEDA because, if you have CEDA authorization, you can issue all RDO commands. If you have access to only CEDB or CEDC, you can issue the following commands:

CEDB All RDO commands except INSTALL. You can update the CSD but not a running CICS system.

CEDC DISPLAY, EXPAND, and VIEW commands only. You cannot update the CSD or a running CICS system.

Accessing CEDA

You can access CEDA from a CICS terminal.

To access CEDA:

1. Enter `CEDA` at a CICS terminal. The cursor is indicated by the symbol '_'.

   A list of all the CEDA commands is displayed. The CEDB transaction does not support the INSTALL command; the CEDC transaction supports only the DISPLAY, EXPAND, and VIEW commands.

Using the CEDA panels

Use this tutorial to learn how to create, display, alter, and copy a resource definition.

About this task

The features and functions of the panels are described in "CEDA panel functions" on page 409. These topics are covered:

- "Creating a resource definition" on page 394
- "Displaying a resource definition" on page 396
- "Altering a resource definition" on page 401
- "Copying a resource definition" on page 401.

  Tutorial topics

  "Using the command line" on page 402
  So far, this tutorial has taken you through panels to execute CEDA commands, but when you become familiar with your system's resources and with CEDA, you can enter most CEDA commands on the command line.

"Displaying messages" on page 404
CEDA displays four levels of messages to tell you about errors and to provide other information.

"Using CEDA HELP" on page 404
Press the help function key (F1, also know as PF1) to display the CEDA help panels.

"CEDA panel functions" on page 409
This topic contains descriptions of the features and functions of the CEDA panels.

Tutorial overview

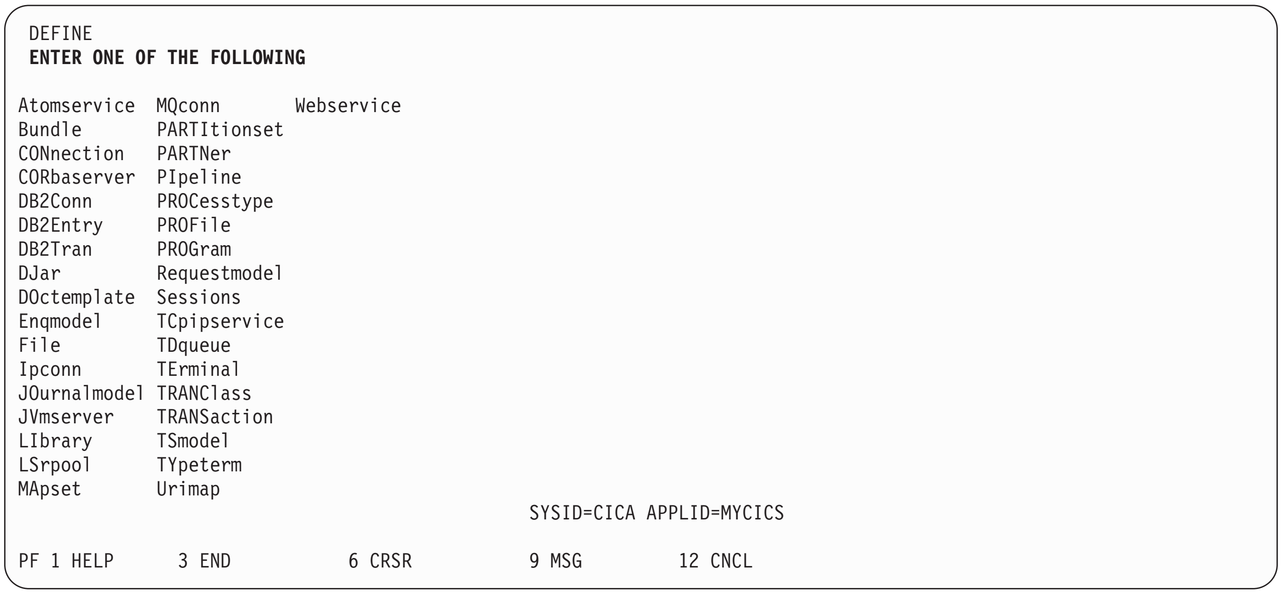
"The CEDA transaction tutorial" on page 393
This tutorial shows you how to use the RDO transactions CEDA, CEDB, and CEDC.

Creating a resource definition

You can use the CEDA transaction to create a new resource definition.

To create a map set definition:

1. Type `CEDA` to start the CEDA function.
2. To create a new resource definition, type:
   ```
   DEFINE
   ```
   See "Using abbreviations" on page 409 for information about abbreviating commands. Press the Enter key. You see the panel shown in Figure 11 on page 394.



```
 DEFINE
 ENTER ONE OF THE FOLLOWING

Atomservice  MQconn       Webservice
Bundle       PARTItionset
CONnection   PARTNer
CORbaserver  PIpeline
DB2Conn      PROCesstype
DB2Entry     PROFile
DB2Tran      PROGram
DJar         Requestmodel
DOctemplate  Sessions
Enqmodel     TCpipservice
File         TDqueue
Ipconn       TErminal
JOurnalmodel TRANClass
JVmserver    TRANSaction
LIbrary      TSmodel
LSrpool      TYpeterm
MApset       Urimap
                                        SYSID=CICA APPLID=MYCICS

PF 1 HELP     3 END          6 CRSR          9 MSG         12 CNCL
```

Figure 54. CEDA DEFINE panel

   This panel lists all the resource types that you can define for CICS using CEDA. The PF keys are described in "Using the PF keys" on page 411.
3. To create a map set definition, after DEFINE, type:
   ```
   MAPSET(NEW1) GROUP(AAA1)
   ```
   The panel in Figure 12 on page 395 is displayed.

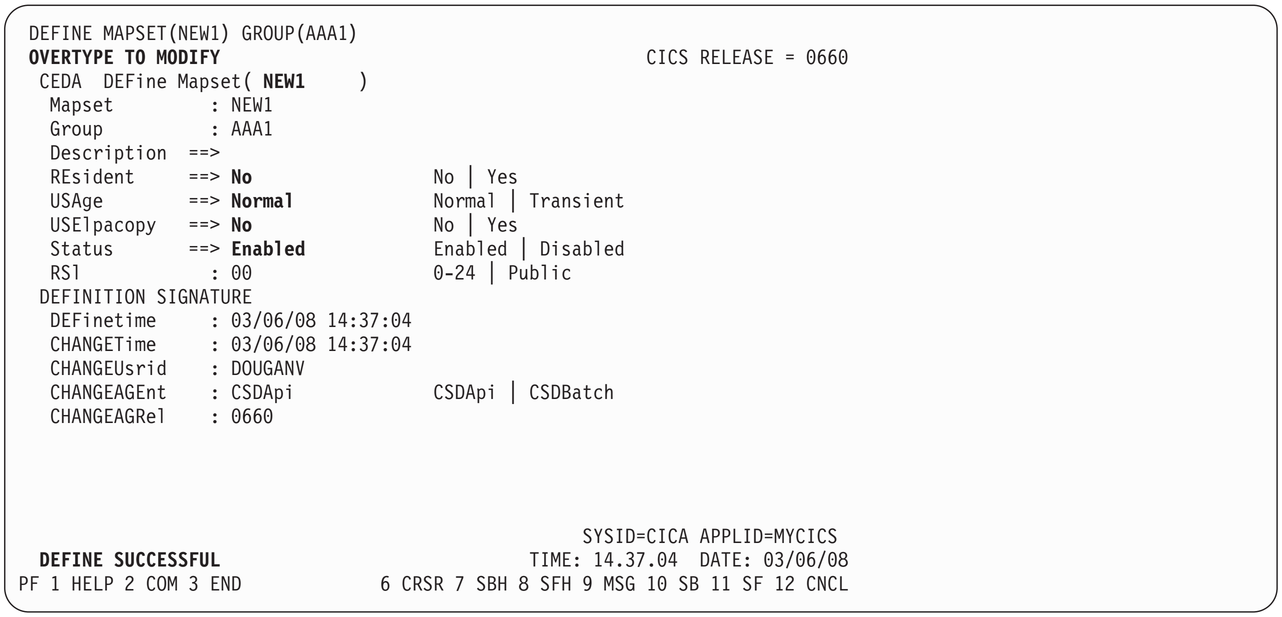

```
DEFINE MAPSET(NEW1) GROUP(AAA1)
OVERTYPE TO MODIFY                                         CICS RELEASE = 0660
 CEDA  DEFine Mapset( NEW1     )
  Mapset         : NEW1
  Group          : AAA1
  Description  ==>
  REsident     ==> No                  No | Yes
  USAge        ==> Normal              Normal | Transient
  USElpacopy   ==> No                  No | Yes
  Status       ==> Enabled             Enabled | Disabled
  RSl            : 00                  0-24 | Public
 DEFINITION SIGNATURE
  DEFinetime     : 03/06/08 14:37:04
  CHANGETime     : 03/06/08 14:37:04
  CHANGEUsrid    : DOUGANV
  CHANGEAGEnt    : CSDApi              CSDApi | CSDBatch
  CHANGEAGRel    : 0660




                                                   SYSID=CICA APPLID=MYCICS
 DEFINE SUCCESSFUL                            TIME: 14.37.04  DATE: 03/06/08
PF 1 HELP 2 COM 3 END             6 CRSR 7 SBH 8 SFH 9 MSG 10 SB 11 SF 12 CNCL
```

Figure 55. CEDA DEFINE MAPSET panel

The whole command (`DEFINE MAPSET(NEW1) GROUP(AAA1)`) remains at the top of the screen. You must specify a group name for every resource that you want to define or work with; if you do not, CEDA displays a severe error message informing you that you have not supplied a group.

The main part of the screen shows the attributes of the MAPSET that you have just defined. All the attributes and values that you see are described in "MAPSET attributes" on page 166; initially, the CEDA screen shows the default value (or the required value) for each attribute.

The screen also shows the definition signature for the resource. The definition signature shows your user ID and information about when and how you defined this resource. For more details, see "The definition signature for resource definitions" on page 14.

4. Press PF3 to exit CEDA. The panel shown in Figure 13 on page 395 is displayed.

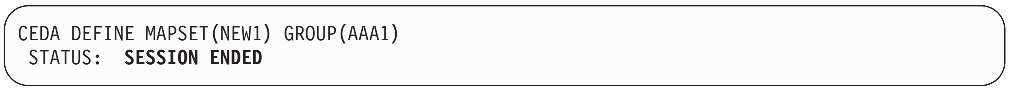

```
CEDA DEFINE MAPSET(NEW1) GROUP(AAA1)
 STATUS:  SESSION ENDED
```

Figure 56. SESSION ENDED panel

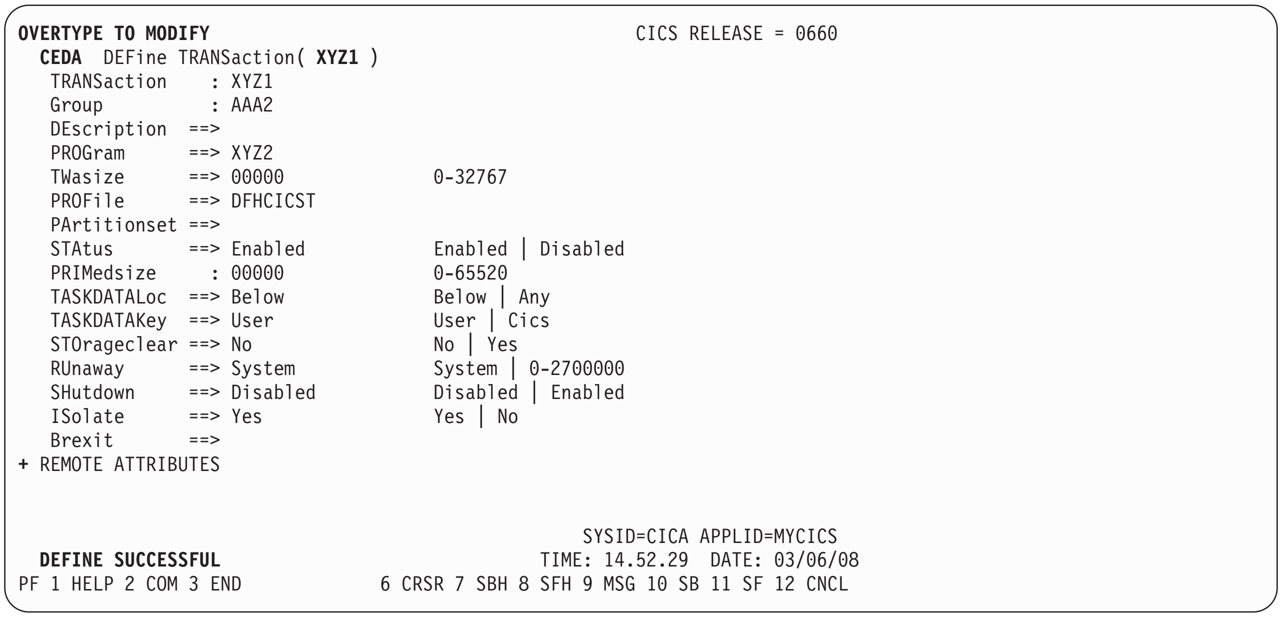
To create a transaction definition:

1. Clear the screen and start the CEDA transaction.
2. Create a transaction definition. You do not have to step through all the panels as you did when you created the map set definition. You can type the whole command on the CEDA initial panel. Type:

   ```
   DEFINE TRANSACTION(XYZ1) PROGRAM(XYZ2) GROUP(AAA2)
   ```

   A panel similar to Figure 14 on page 396 is displayed.

   .



```
OVERTYPE TO MODIFY                                        CICS RELEASE = 0660
  CEDA  DEFine TRANSaction( XYZ1 )
   TRANSaction    : XYZ1
   Group          : AAA2
   DEscription  ==>
   PROGram      ==> XYZ2
   TWasize      ==> 00000             0-32767
   PROFile      ==> DFHCICST
   PArtitionset ==>
   STAtus       ==> Enabled           Enabled | Disabled
   PRIMedsize     : 00000             0-65520
   TASKDATALoc  ==> Below             Below | Any
   TASKDATAKey  ==> User              User | Cics
   STOrageclear ==> No                No | Yes
   RUnaway      ==> System            System | 0-2700000
   SHutdown     ==> Disabled          Disabled | Enabled
   ISolate      ==> Yes               Yes | No
   Brexit       ==>
+ REMOTE ATTRIBUTES


                                                     SYSID=CICA APPLID=MYCICS
  DEFINE SUCCESSFUL                           TIME: 14.52.29  DATE: 03/06/08
PF 1 HELP 2 COM 3 END            6 CRSR 7 SBH 8 SFH 9 MSG 10 SB 11 SF 12 CNCL
```

Figure 57. CEDA DEFINE TRANSACTION panel

You must specify a PROGRAM whenever you define a new TRANSACTION; if you do not, CEDA displays a severe error message saying that you must specify either a PROGRAM or REMOTESYSTEM. The attributes of the TRANSACTION definition are described in "TRANSACTION attributes" on page 304.

You can see that the TRANSACTION definition has many more attributes than the MAPSET definition. The plus sign **+** to the left of the last attribute in the list means that there are more attributes, so you can use either PF8 or PF11 to scroll down through them, then PF7 or PF10 to scroll back up. See "Using the PF keys" on page 411.

You now have two new resources to work with: a MAPSET in group AAA1 and a TRANSACTION in group AAA2. These resources are used throughout the remainder of the tutorial to demonstrate the other CEDA commands.

3. Press PF3 to exit CEDA.

Tutorial topics - using the CEDA panels

"Displaying a resource definition" on page 396
You can use the CEDA transaction to display a resource definition that you defined previously.

Tutorial overview

"The CEDA transaction tutorial" on page 393
This tutorial shows you how to use the RDO transactions CEDA, CEDB, and CEDC.

Displaying a resource definition

You can use the CEDA transaction to display a resource definition that you defined previously.

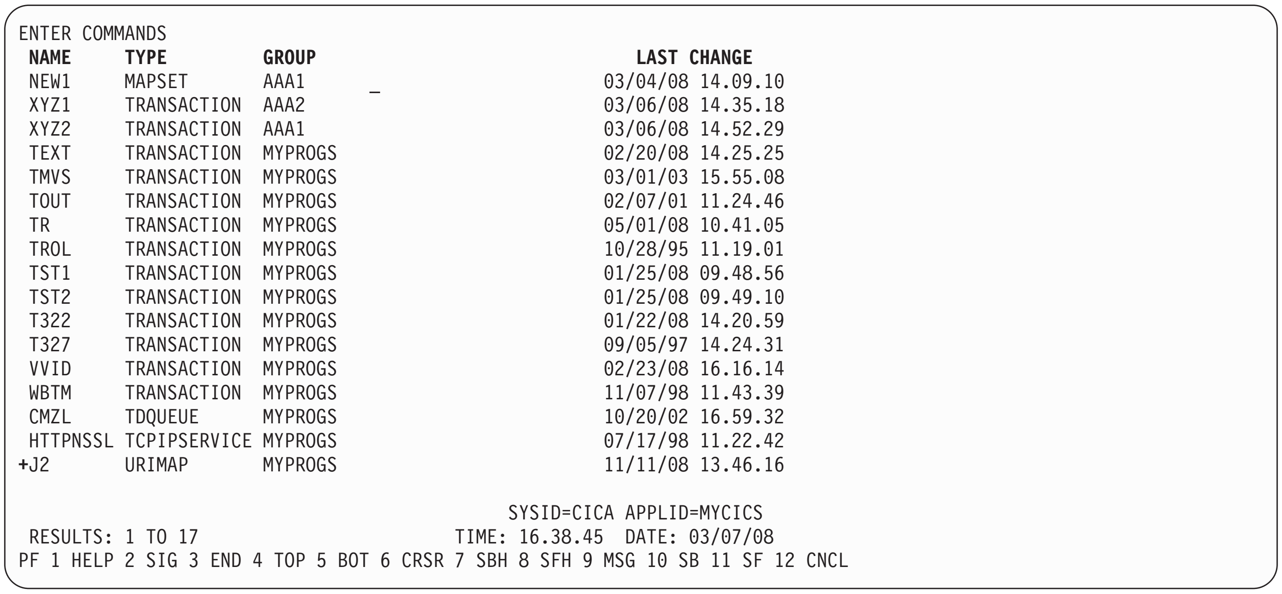
To display a resource definition:

1. Type `CEDA` to start the CEDA function.
2. Do not clear the screen this time. Type `DISPLAY` over `DEFINE` and delete the rest of the line. Press the Enter key. A panel similar to Figure 15 on page 397 is displayed.

```
 DISPLAY
 OVERTYPE TO MODIFY
  CEDA  DIsplay
   Group        ==> _
   LISt         ==>
   All          ==> *
   ATomservice  ==>
   Bundle       ==>
   CONnection   ==>
   CORbaserver  ==>
   DB2Conn      ==>
   DB2Entry     ==>
   DB2Tran      ==>
   DJar         ==>
   DOctemplate  ==>
   Enqmodel     ==>
   File         ==>
   Ipconn       ==>
   JOurnalmodel ==>
   JVmserver    ==>
   LIBrary      ==>
   LSrpool      ==>
   MApset       ==>
   MQconn       ==>
   PARTItionset ==>
   PARTNer      ==>
   PIpeline     ==>
   PROCesstype  ==>
   PROFile      ==>
   PROGram      ==>
   REQestmodel ==>
   Sessions     ==>
   TCpipservice ==>
   TDqueue      ==>
   TErminal     ==>
   TRANClass    ==>
   TRANSaction  ==>
   TSmodel      ==>
   TYpeterm     ==>
   Urimap       ==>
   Webservice   ==>

  S  No GROUP value has been previously specified so there is no current
       value to assume.                               SYSID=CICA  APPLID=MYCICS

PF 1 HELP        3 END             6 CRSR 7 SBH 8 SFH 9 MSG 10 SB 11 SF 12 CNCL
```

Figure 58. CEDA DISPLAY panel

3. You might not know any group names or list names yet, so type in an asterisk (*) where the cursor is, beside GROUP, and then press Enter. The asterisk means that you want to display all groups. If your system has many groups in it, this command can take some time to execute. You get a panel like the one in Figure 16 on page 398:



```
ENTER COMMANDS
 NAME     TYPE         GROUP                            LAST CHANGE
 NEW1     MAPSET       AAA1     _                    03/04/08 14.09.10
 XYZ1     TRANSACTION  AAA2                          03/06/08 14.35.18
 XYZ2     TRANSACTION  AAA1                          03/06/08 14.52.29
 TEXT     TRANSACTION  MYPROGS                       02/20/08 14.25.25
 TMVS     TRANSACTION  MYPROGS                       03/01/03 15.55.08
 TOUT     TRANSACTION  MYPROGS                       02/07/01 11.24.46
 TR       TRANSACTION  MYPROGS                       05/01/08 10.41.05
 TROL     TRANSACTION  MYPROGS                       10/28/95 11.19.01
 TST1     TRANSACTION  MYPROGS                       01/25/08 09.48.56
 TST2     TRANSACTION  MYPROGS                       01/25/08 09.49.10
 T322     TRANSACTION  MYPROGS                       01/22/08 14.20.59
 T327     TRANSACTION  MYPROGS                       09/05/97 14.24.31
 VVID     TRANSACTION  MYPROGS                       02/23/08 16.16.14
 WBTM     TRANSACTION  MYPROGS                       11/07/98 11.43.39
 CMZL     TDQUEUE      MYPROGS                       10/20/02 16.59.32
 HTTPNSSL TCPIPSERVICE MYPROGS                       07/17/98 11.22.42
+J2       URIMAP       MYPROGS                       11/11/08 13.46.16

                                              SYSID=CICA APPLID=MYCICS
 RESULTS: 1 TO 17                        TIME: 16.38.45  DATE: 03/07/08
PF 1 HELP 2 SIG 3 END 4 TOP 5 BOT 6 CRSR 7 SBH 8 SFH 9 MSG 10 SB 11 SF 12 CNCL
```

Figure 59. CEDA DISPLAY GROUP(*) panel

Plus sign
The plus sign (**+**) beside the last value means that there are more resources, so you can use PF8 or PF10 to scroll down to see them, then PF7 or PF11 to scroll back up again. Use PF7 and PF8, to scroll down and up half a screen at a time. Use PF10 and PF11 to scroll down and up a full screen at a time.

NAME
The list under the NAME heading tells you the name of each individual resource definition installed on your system. You can have duplicate resource names only if the resource definitions are in different groups. The resource names are listed alphabetically according to their resource types; that is, in any one group, all the transactions are listed alphabetically, then all the programs, and so on.

TYPE
`TYPE` tells you the resource type for each definition. The resource types are described in Part 2, "RDO resources," on page 33. In each group, the similar resource types are shown together; that is, all the transactions, then all the programs, and so on.

GROUP
This tells you to which group each resource definition belongs. This whole display of resource definitions is listed in alphabetic sequence of group names.

LAST CHANGE
`LAST CHANGE` shows the date and time when the resource definition was last updated. The time and date immediately above the PF key descriptions at the bottom of the screen are the current time and date.

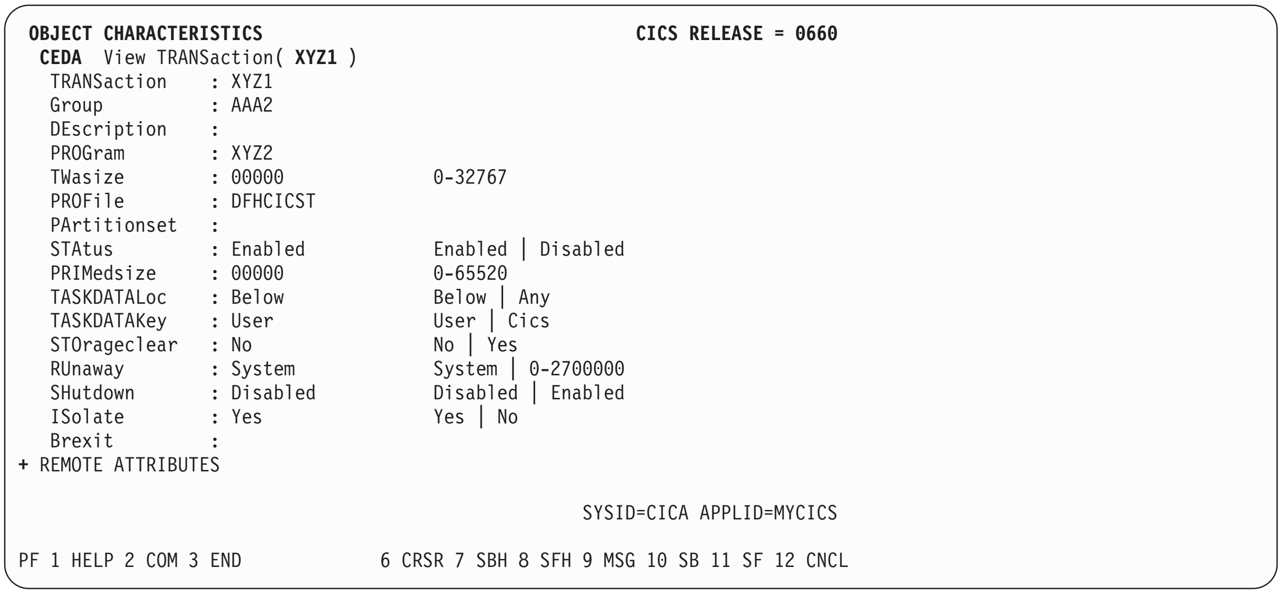
RESULTS: 1 TO 17
Below the list of groups, a line displays `RESULTS: 1 TO 17`, telling you how many group names are displayed on the screen. If there are more than 17 group names, this message changes as you scroll up and down the list of group names. At the beginning of a CEDA DISPLAY GROUP(*) command, it says `RESULTS: 1 TO 17`, but as you scroll down, CEDA builds up a count of the total number of groups, and eventually the message changes to be of

the form `RESULTS: 52 TO 68 OF 97`. If the list is long, you can use PF5 to go straight to the bottom of it and PF4 to get back to the top.

ENTER COMMANDS
You can enter commands in this area of the screen. You can enter these commands for each transaction:

Command	CEDA	CEDB	CEDC
ALTER	Yes	Yes	
COPY	Yes	Yes	
DELETE	Yes	Yes	
INSTALL	Yes		
MOVE	Yes	Yes	
RENAME	Yes	Yes	
VIEW	Yes	Yes	Yes
?	Yes	Yes	Yes
=	Yes	Yes	Yes

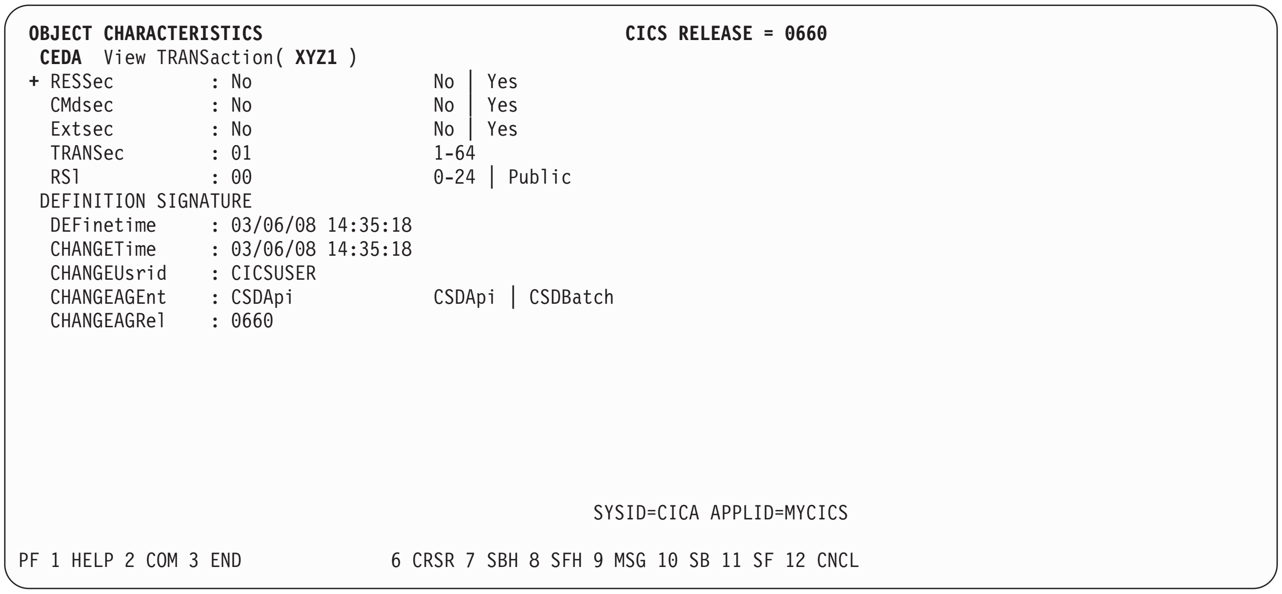
4. Move the cursor down to the TRANSACTION XYZ1 that you defined earlier and type `VIEW` beside it. A screen like this one is displayed.



```
 OBJECT CHARACTERISTICS                                  CICS RELEASE = 0660
  CEDA  View TRANSaction( XYZ1 )
   TRANSaction    : XYZ1
   Group          : AAA2
   DEscription    :
   PROGram        : XYZ2
   TWasize        : 00000             0-32767
   PROFile        : DFHCICST
   PArtitionset   :
   STAtus         : Enabled           Enabled | Disabled
   PRIMedsize     : 00000             0-65520
   TASKDATALoc    : Below             Below | Any
   TASKDATAKey    : User              User | Cics
   STOrageclear   : No                No | Yes
   RUnaway        : System            System | 0-2700000
   SHutdown       : Disabled          Disabled | Enabled
   ISolate        : Yes               Yes | No
   Brexit         :
+ REMOTE ATTRIBUTES

                                                   SYSID=CICA APPLID=MYCICS

PF 1 HELP 2 COM 3 END            6 CRSR 7 SBH 8 SFH 9 MSG 10 SB 11 SF 12 CNCL
```

Figure 60. CEDA VIEW panel

If you scroll down the expanded view of attributes to the end, you can see the definition signature fields. A panel similar to this one is displayed. These fields are always be protected to preserve the integrity of the information. You cannot change the fields in the definition signature. CICS writes them as a record of the actions taken for this resource definition.

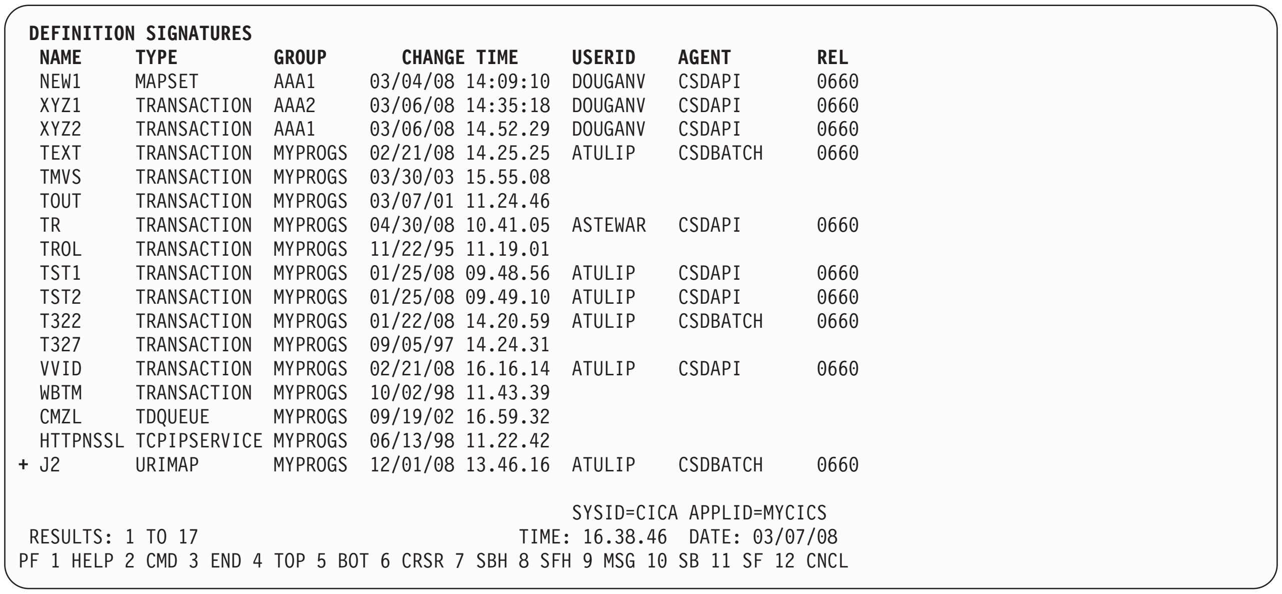


```
 OBJECT CHARACTERISTICS                                        CICS RELEASE = 0660
  CEDA  View TRANSaction( XYZ1 )
 + RESSec        : No                 No | Yes
   CMdsec        : No                 No | Yes
   Extsec        : No                 No | Yes
   TRANSec       : 01                 1-64
   RSl           : 00                 0-24 | Public
  DEFINITION SIGNATURE
   DEFinetime    : 03/06/08 14:35:18
   CHANGETime    : 03/06/08 14:35:18
   CHANGEUsrid   : CICSUSER
   CHANGEAGEnt   : CSDApi             CSDApi | CSDBatch
   CHANGEAGRel   : 0660







                                                            SYSID=CICA APPLID=MYCICS

PF 1 HELP 2 COM 3 END             6 CRSR 7 SBH 8 SFH 9 MSG 10 SB 11 SF 12 CNCL
```

Figure 61. CEDA EXPANDED VIEW panel

If you notice now that you have defined `TRANSACTION(XYZ1)` incorrectly, you might want to alter one or more of its values.

5. Press PF12 to return to the DISPLAY screen. An asterisk (*) is now beside the transaction to indicate that you have worked with it.
6. To display the definition signatures for all the resources listed on the screen, press PF2. A panel similar to this one is displayed. The information shows when the resource was defined, who defined the resource, what was used to define the resource, and the level of CICS that was running when it was defined. The resources that have blank fields for `USERID`, `AGENT`, and `REL` were defined in a release before CICS TS 4.1.



```
 DEFINITION SIGNATURES
  NAME     TYPE         GROUP       CHANGE TIME     USERID    AGENT        REL
  NEW1     MAPSET       AAA1     03/04/08 14:09:10  DOUGANV   CSDAPI       0660
  XYZ1     TRANSACTION  AAA2     03/06/08 14:35:18  DOUGANV   CSDAPI       0660
  XYZ2     TRANSACTION  AAA1     03/06/08 14.52.29  DOUGANV   CSDAPI       0660
  TEXT     TRANSACTION  MYPROGS  02/21/08 14.25.25  ATULIP    CSDBATCH     0660
  TMVS     TRANSACTION  MYPROGS  03/30/03 15.55.08
  TOUT     TRANSACTION  MYPROGS  03/07/01 11.24.46
  TR       TRANSACTION  MYPROGS  04/30/08 10.41.05  ASTEWAR   CSDAPI       0660
  TROL     TRANSACTION  MYPROGS  11/22/95 11.19.01
  TST1     TRANSACTION  MYPROGS  01/25/08 09.48.56  ATULIP    CSDAPI       0660
  TST2     TRANSACTION  MYPROGS  01/25/08 09.49.10  ATULIP    CSDAPI       0660
  T322     TRANSACTION  MYPROGS  01/22/08 14.20.59  ATULIP    CSDBATCH     0660
  T327     TRANSACTION  MYPROGS  09/05/97 14.24.31
  VVID     TRANSACTION  MYPROGS  02/21/08 16.16.14  ATULIP    CSDAPI       0660
  WBTM     TRANSACTION  MYPROGS  10/02/98 11.43.39
  CMZL     TDQUEUE      MYPROGS  09/19/02 16.59.32
  HTTPNSSL TCPIPSERVICE MYPROGS  06/13/98 11.22.42
+ J2       URIMAP       MYPROGS  12/01/08 13.46.16  ATULIP    CSDBATCH     0660

                                                    SYSID=CICA APPLID=MYCICS
 RESULTS: 1 TO 17                            TIME: 16.38.46  DATE: 03/07/08
PF 1 HELP 2 CMD 3 END 4 TOP 5 BOT 6 CRSR 7 SBH 8 SFH 9 MSG 10 SB 11 SF 12 CNCL
```

Figure 62. DEFINITION SIGNATURES panel

7. Press PF2 to return to the DISPLAY panel.

   Tutorial topics - using the CEDA panels

"Altering a resource definition" on page 401
You can use the CEDA transaction to alter a resource definition that you created previously.

Tutorial overview

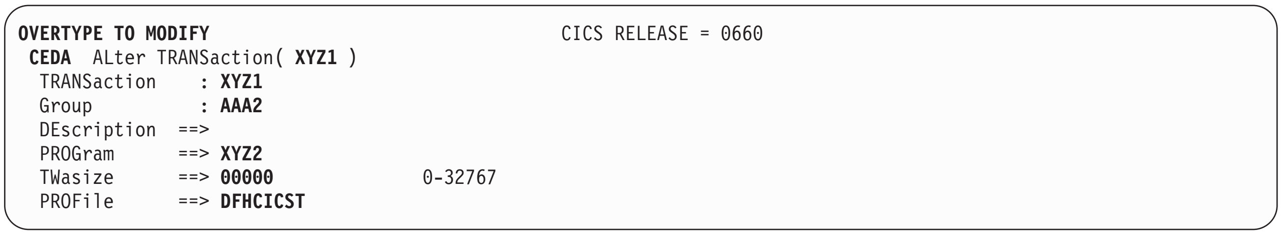
"The CEDA transaction tutorial" on page 393
This tutorial shows you how to use the RDO transactions CEDA, CEDB, and CEDC.

Altering a resource definition

You can use the CEDA transaction to alter a resource definition that you created previously.

To alter a resource definition:

1. Type `ALTER` over the asterisk. You will see a panel that begins like this one:



```
OVERTYPE TO MODIFY                                CICS RELEASE = 0660
 CEDA  ALter TRANSaction( XYZ1 )
  TRANSaction    : XYZ1
  Group          : AAA2
  DEscription  ==>
  PROGram      ==> XYZ2
  TWasize      ==> 00000              0-32767
  PROFile      ==> DFHCICST
```

Figure 63. CEDA ALTER panel

   This panel is almost identical to the one that you saw when you defined this transaction (shown in Figure 14 on page 396), with the difference that on the VIEW panel there is a colon (:) between each attribute and its value. You cannot change any values from a VIEW panel.

2. The highlighted text at the top left of the screen, `OVERTYPE TO MODIFY`', means that you can overtype any of the highlighted values. Overtype the `TWasize` value, changing it from `00000` to `32767`. When you press Enter, CEDA displays an `ALTER SUCCESSFUL` message at the bottom of the screen.

   Note: The definition signature fields, shown at the end of the list of attributes, are protected to preserve the integrity of the information displayed and direct modification is not allowed. However, when a resource has been altered, the definition signature displays details of the last change made.

3. Press PF12 to return to the DISPLAY screen, where the `ALTER SUCCESSFUL` message is displayed on the same line as the `TRANSaction`. Type `VIEW` against the `TRANSaction`, and you can see that the value of `TWasize` has been changed.

Tutorial topics - using the CEDA panel

"Copying a resource definition" on page 401
You can use the CEDA transaction to copy a resource definition from one group to another.

Tutorial overview

"The CEDA transaction tutorial" on page 393
This tutorial shows you how to use the RDO transactions CEDA, CEDB, and CEDC.

Copying a resource definition

You can use the CEDA transaction to copy a resource definition from one group to another.

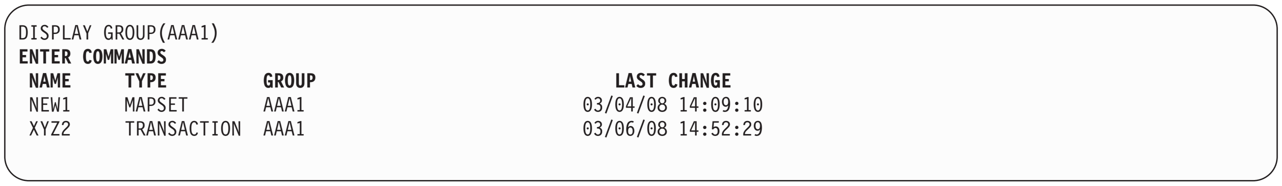
To copy a resource definition:

1. Press PF12 to return to the DISPLAY screen. Beside TRANSACTION(XYZ1) type:

   ```
   COPY TO(AAA1) AS(XYZ2)
   ```

   A COPY SUCCESSFUL message is displayed in the right column of the screen. The COPY command has copied the definition for TRANSACTION(XYZ1) from group AAA2 to group AAA1, renaming it as TRANSACTION(XYZ2). The original transaction, TRANSACTION(XYZ1), still exists in group AAA2.
2. Press PF3 to display the SESSION ENDED panel, and overtype the existing CEDA DISPLAY with:

   ```
   CEDA DISPLAY GROUP(AAA1)
   ```
3. Group AAA1 now contains two resource definitions: a MAPSET called NEW1 and a TRANSACTION called XYZ2. Because this screen is a DISPLAY screen similar in format to Figure 16 on page 398, you can enter the same commands against the definitions.



```
DISPLAY GROUP(AAA1)
ENTER COMMANDS
 NAME     TYPE         GROUP                                LAST CHANGE
 NEW1     MAPSET       AAA1                              03/04/08 14:09:10
 XYZ2     TRANSACTION  AAA1                              03/06/08 14:52:29
```

Figure 64. CEDA DISPLAY GROUP(AAA1) panel

Using the command line

So far, this tutorial has taken you through panels to execute CEDA commands, but when you become familiar with your system's resources and with CEDA, you can enter most CEDA commands on the command line.

About this task

Here is a sequence of commands; if you follow them, you can see that entering commands on the command line is quicker than going through all the CEDA panels. You do not need to use PF3 or PF12 at this point. The topics covered are:

- "Creating a resource definition" on page 403
- "Renaming a resource definition" on page 403
- "Moving a resource definition" on page 403
- "Checking resource definitions" on page 403
- "Removing resource definitions from the CSD file" on page 404.

Tutorial topics

"Displaying messages" on page 404
CEDA displays four levels of messages to tell you about errors and to provide other information.

"Using CEDA HELP" on page 404
Press the help function key (F1, also know as PF1) to display the CEDA help panels.

"CEDA panel functions" on page 409
This topic contains descriptions of the features and functions of the CEDA panels.

Tutorial overview

"The CEDA transaction tutorial" on page 393
This tutorial shows you how to use the RDO transactions CEDA, CEDB, and CEDC.

Creating a resource definition

You can create a resource definition using the command line.

1. Press PF6 to move the cursor to the top left corner of the screen.
2. Insert a transaction name and remove the group; the command now looks like this:
   ```
   CEDA DEFINE TRANSACTION(BBB1) PROGRAM(CCC1)
   ```
3. Press the Enter key.

When you press Enter, the new transaction BBB1 is defined. Note that it has been defined without an associated group name; this is because, as long as you are within the same CEDA session, the current group (that is, the one you have most recently been working with) is used by default. If you had used PF3 before this, your CEDA session would have ended, so there would be no current group name for CEDA to assume.

Renaming a resource definition

You can rename a resource definition by overtyping a command.

1. Rename the transaction by overtyping the command to read:
   ```
   RENAME TRANSACTION(BBB1) AS(DDD1)
   ```

Moving a resource definition

You can move a resource definition to another group by overtyping a command.

1. Move the transaction to group AAA2 by overtyping the command to read:
   ```
   MOVE TRANSACTION(DDD1) TO(AAA2)
   ```

Checking resource definitions

Before installing groups AAA1 and AAA2, you can check them by using the CHECK command. This ensures that all transactions have access to their related programs, that terminal definitions have access to their related typeterm definitions, and so on.

1. Overtype the command to read:
   ```
   CHECK GROUP(AAA1)
   ```

   This should result in the message:
   ```
   W PROGRAM CCC1 referenced by TRANSACTION DDD1 in group AAA2
     cannot be found
   ```

   This is because when you moved transaction DDD1, you did not also move its related program, CCC1.

   Note: You will not see this message if you have autoinstall programs active. If autoinstall programs is active, CEDA assumes that the program will be installed at execution time and does not check the program definitions.
2. You can remedy this by using the COPY command:
   ```
   COPY PROGRAM(CCC1) G(AAA1) TO G(AAA1)
   ```

If you repeat the CHECK command on both groups, there should be no more error messages.

3. Press PF3 to exit CEDA and clear the screen.

Removing resource definitions from the CSD file

The resource definitions that you have created for the tutorial can be removed; this allows other people to follow the tutorial, and ensures that your CSD file space is not being used unnecessarily.

Using the DELETE command, you can delete the whole of groups AAA1 and AAA2 from your CSD file:

```
CEDA DELETE ALL GROUP(AAA1)
CEDA DELETE ALL GROUP(AAA2)
```

Note that you cannot delete the group itself; it ceases to exist only when it contains no resource definitions.

Displaying messages

CEDA displays four levels of messages to tell you about errors and to provide other information.

About this task

If you have followed the tutorial, you will see that CEDA has produced the informational message 'I New group AAA1 created'. There are four levels of error messages in CEDA, as follows:

S	Severe. CEDA cannot continue until you correct what is wrong.
E	Error. Commands resulting in these messages will be executed when you press enter, but the results may not be what you intended; for example, if you abbreviate a command to the point where it becomes ambiguous, CEDA warns you, and tells you which command it is going to assume when you press enter. It may not be the command you intended.
W	Attention.
I	Information.

You can use PF9 to view CEDA messages. If you press PF9 now, the result will be as shown in Figure 12 on page 395 because there is only one message. When you have read the messages, press the Enter key to get back to where you were.

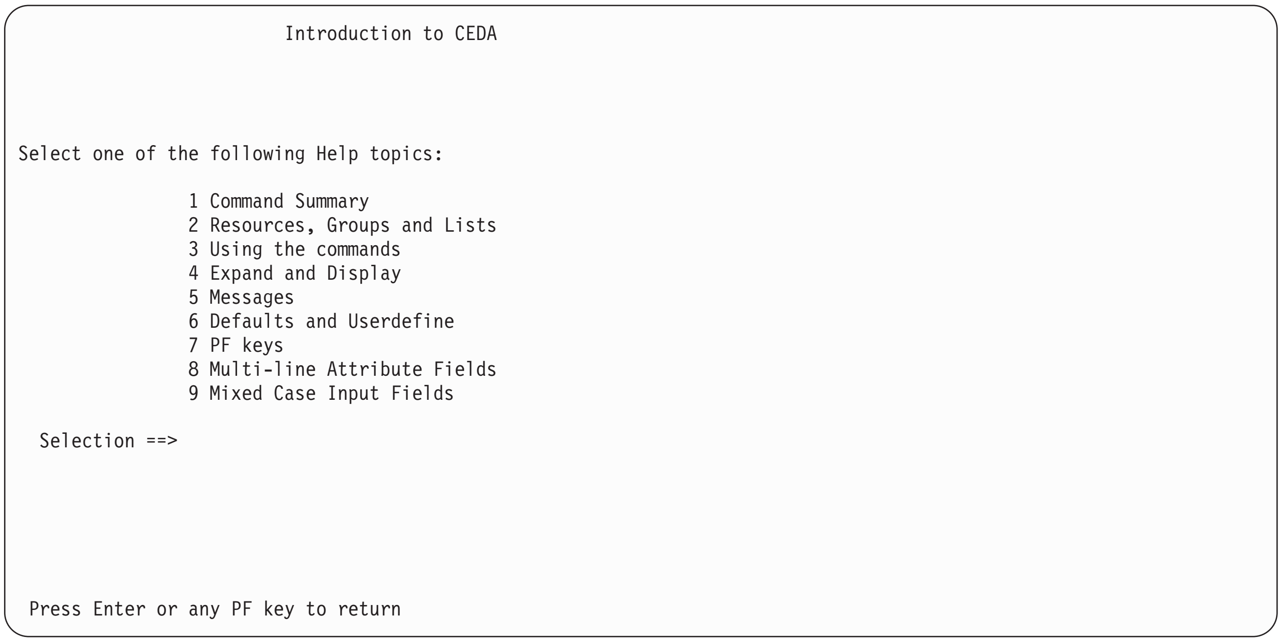
- **Invoking CMAC from CEDA**

  If the CMAC transaction is available, you can also place the cursor under any of the messages and press the Enter key to link to the Messages and Codes online information for that specific message.

Using CEDA HELP

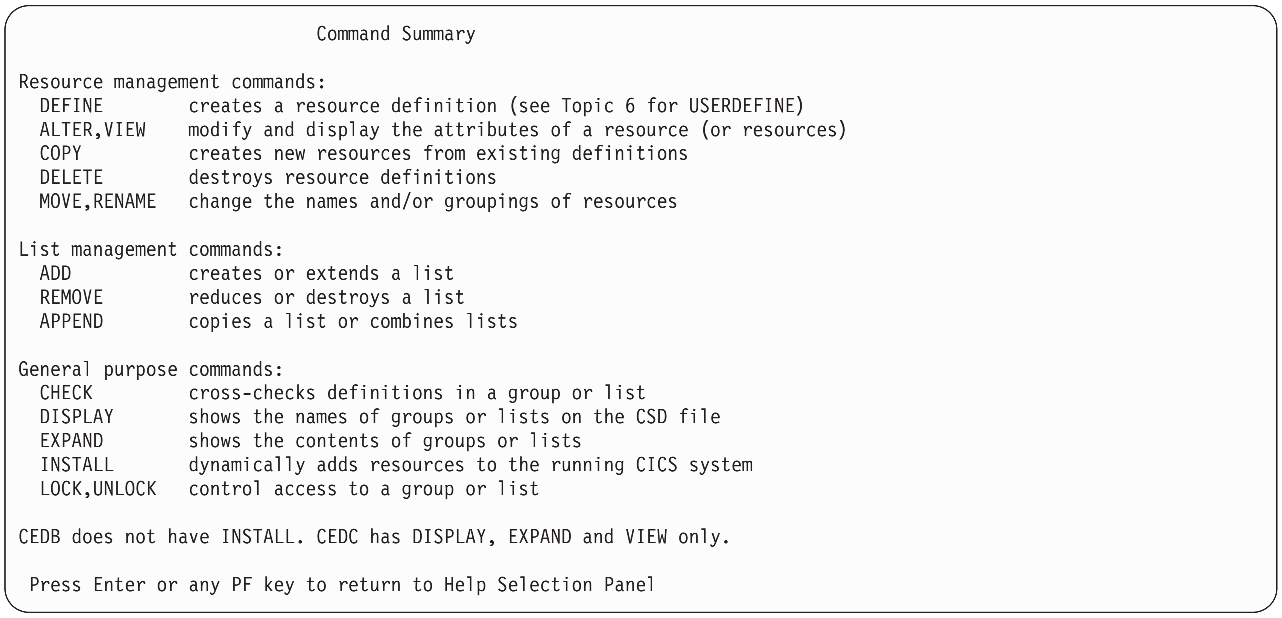
Press the help function key (F1, also know as PF1) to display the CEDA help panels.

About this task



```
                          Introduction to CEDA




Select one of the following Help topics:

                1 Command Summary
                2 Resources, Groups and Lists
                3 Using the commands
                4 Expand and Display
                5 Messages
                6 Defaults and Userdefine
                7 PF keys
                8 Multi-line Attribute Fields
                9 Mixed Case Input Fields

  Selection ==>






 Press Enter or any PF key to return
```

Figure 65. CEDA transaction: initial HELP panel



```
                             Command Summary

Resource management commands:
  DEFINE        creates a resource definition (see Topic 6 for USERDEFINE)
  ALTER,VIEW    modify and display the attributes of a resource (or resources)
  COPY          creates new resources from existing definitions
  DELETE        destroys resource definitions
  MOVE,RENAME   change the names and/or groupings of resources

List management commands:
  ADD           creates or extends a list
  REMOVE        reduces or destroys a list
  APPEND        copies a list or combines lists

General purpose commands:
  CHECK         cross-checks definitions in a group or list
  DISPLAY       shows the names of groups or lists on the CSD file
  EXPAND        shows the contents of groups or lists
  INSTALL       dynamically adds resources to the running CICS system
  LOCK,UNLOCK   control access to a group or list

CEDB does not have INSTALL. CEDC has DISPLAY, EXPAND and VIEW only.

 Press Enter or any PF key to return to Help Selection Panel
```

Figure 66. CEDA transaction: HELP Panel 1

```
                       Resources, Groups and Lists

You use CEDA to create and modify resource definitions. Using the DEFINE
command, you specify a resource's type, name and attributes, which are
then stored on the CICS System Definition (CSD) file.

You can see what types of resource there are by using DEFINE on its own
as a command. Similarly you can see what attributes any resource may have
by adding just the type of resource, as in, for example, DEFINE PROGRAM.

Each resource must belong to a GROUP, which is a collection of resources,
usually related in some way. A group of resources can be installed on
your running CICS system.

A LIST is a collection of group names, and can be used to specify large
numbers of resources during a cold start.

Note that program P, say, may be defined in more than one group. Such
definitions are separate resources and may have different attributes.
By contrast the same group names in different lists refer to the same group.
The DELETE command destroys a resource, but REMOVE does not destroy a group.
A group has no attributes and need not even exist to be used in a list.

 Press Enter or any PF key to return to Help Selection Panel
```

Figure 67. CEDA transaction: HELP Panel 2

```
                           Using the commands

You type CEDA commands on the first line of the screen and press ENTER.
You will then see a panel that shows your command in detail, and the
results of its execution. You can then either modify the panel to
execute a similar command with new values or type a different command
on the top line.

You can see the syntax of a command, without executing it, by typing ?
in front of the command.

You can shorten command keywords as much as you like provided the result
remains unique. Thus ALT and AL both mean ALTER but A is invalid
because of ADD. The minimum number of letters you can use is shown
in upper case.

You can specify generic names in some commands, by using * and +.
* means any number of characters, + means any single character.
Thus PROGRAM(P*) refers to all programs whose names begin with P.

Current values for GROUP and LIST are kept and are used when either
keyword is omitted from commands other than DISPLAY and EXPAND LIST.

 Press Enter or any PF key to return to Help Selection Panel
```

Figure 68. CEDA transaction: HELP Panel 3

```
                          Expand and Display

The commands you can use on each kind of panel are as follows:

  EXPAND GROUP panel  - Alter, Copy, Delete, Install, Move, Rename, View
  EXPAND LIST panel   - Add, Remove
  DISPLAY GROUP panel - Check, Expand, Install , Lock, Unlock
  DISPLAY LIST panel  - Append, Check, Expand, Lock, Unlock

All these commands operate on the thing beside which you enter them.
ALTER means ALTER PROGRAM(P) GROUP(G), if these are the object and
group values on the line. In this case, since no attributes are changed,
you will see a display of the object which you can then overtype.
The EXPAND command on a DISPLAY panel also results in a new panel.

You can enter as many commands as you like at one time and you can
use = to mean the same command as the last one.

The RENAME option of EXPAND GROUP gives a panel on which you can change the
names of objects directly, by overtyping the name fields displayed.
When you change a name field a RENAME command is put in the corresponding
command field, and causes anything entered there to be ignored.

 Press Enter or any PF key to return to Help Selection Panel
```

Figure 69. CEDA transaction: HELP Panel 4

```
                               Messages

Single messages appear near the bottom of panels. If there is more than one
message a summary appears instead. PF9 shows the details of such a summary.

Messages are preceded by a single letter indicating the severity:
   I-Informatory   W-Warning     E-Error    S-Severe

Commands with only I or W-level messages are executed. E-level messages
are given for errors that CEDA attempts to correct. Such commands can
be executed by pressing ENTER without making any changes. S-level
messages require you to correct the command.


For a command executed on an EXPAND or DISPLAY panel you can see the
messages by using ? in the command field or by means of the cursor and PF9.
Commands with errors that have apparently been fixed (E-level messages)
must still be corrected by you.
You can correct a command on the message panel or on the original panel.




 Press Enter or any PF key to return to Help Selection Panel
```

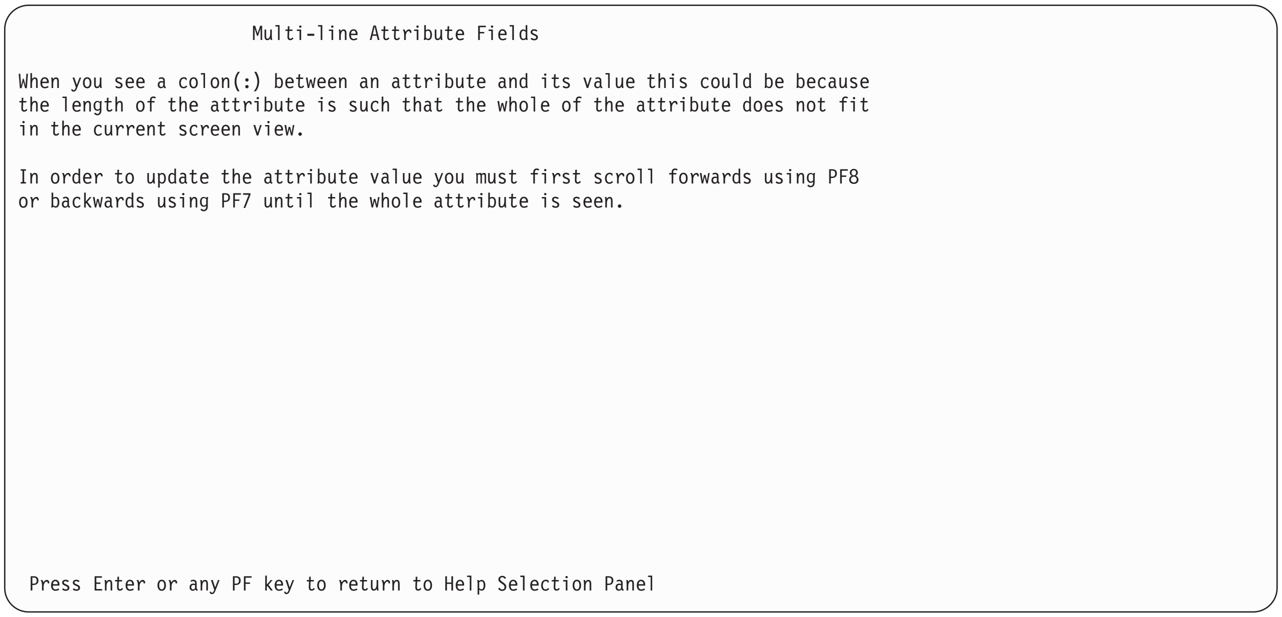
Figure 70. CEDA transaction: HELP Panel 5

```
                         Defaults and Userdefine

When you DEFINE a resource any attributes you do not specify are
defaulted. You cannot change the defaults that DEFINE uses.
You can however DEFINE "default resources" with whatever values you
like and then create new resources using USERDEFINE.

You DEFINE resources called USER in a group called USERDEF, giving
each one the values you would like to have as defaults. These are
now your default resources.

USERDEFINE will then behave just like DEFINE except that it will get
default values from the appropriate default resource. If a default
resource does not exist then USERDEFINE fails.

This facility is restricted to initial values only. Default values
are also given by CEDA to attributes you remove from a resource, by
overtyping with blanks for instance. These defaults are the same as
those used for the DEFINE command and you cannot change them.




 Press Enter or any PF key to return to Help Selection Panel
```

Figure 71. CEDA transaction: HELP Panel 6

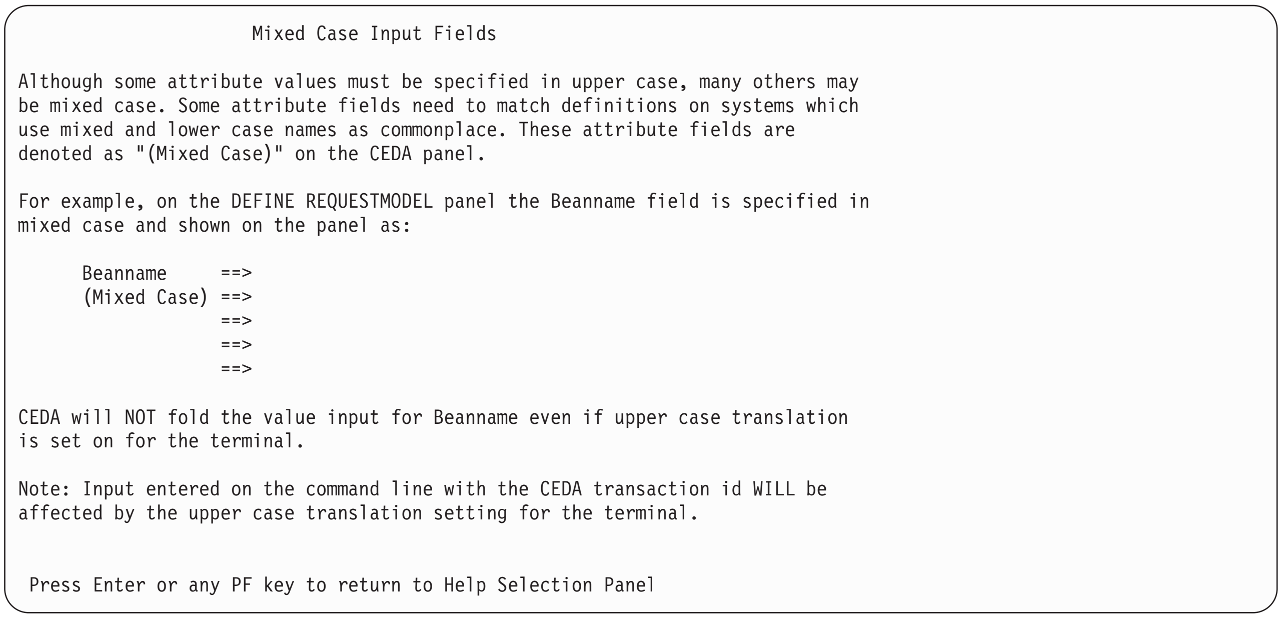
```
                                 PF keys

     1 HELP    Gives the initial help panel
     2 COM     Selects and deselects compatibility mode
  or 2 SIG     Toggles to definition signature for displayed resources
  or 2 CMD     Toggles back to normal display list for commands
     3 END     Terminates the CEDA transaction if no data has been entered
     4 TOP     Displays the first screen of items from the entire list
     5 BOT     Displays the last screen of items from the entire list
     6 CRSR    Moves the cursor to the command line or first input field
     7 SBH     Scrolls back half a screen
     8 SFH     Scrolls forward half a screen
     9 MSG     Displays the current set of messages
    10 SB      Scrolls back a full screen
    11 SF      Scrolls forward a full screen
    12 CNCL    Cancels changes not yet executed and returns to previous panel

When you press ENTER without having entered any data you will normally
be returned to the previous panel.

Positioning the cursor at a PF key and pressing ENTER will have the same
effect as pressing the key. PF13 to PF24 have the same effects as PF1 to PF12.

 Press Enter or any PF key to return to Help Selection Panel
```

Figure 72. CEDA transaction: HELP panel 7



```
                      Multi-line Attribute Fields

When you see a colon(:) between an attribute and its value this could be because
the length of the attribute is such that the whole of the attribute does not fit
in the current screen view.

In order to update the attribute value you must first scroll forwards using PF8
or backwards using PF7 until the whole attribute is seen.

 Press Enter or any PF key to return to Help Selection Panel
```

Figure 73. CEDA transaction: HELP panel 8



```
                      Mixed Case Input Fields

Although some attribute values must be specified in upper case, many others may
be mixed case. Some attribute fields need to match definitions on systems which
use mixed and lower case names as commonplace. These attribute fields are
denoted as "(Mixed Case)" on the CEDA panel.

For example, on the DEFINE REQUESTMODEL panel the Beanname field is specified in
mixed case and shown on the panel as:

      Beanname     ==>
      (Mixed Case) ==>
                   ==>
                   ==>
                   ==>

CEDA will NOT fold the value input for Beanname even if upper case translation
is set on for the terminal.

Note: Input entered on the command line with the CEDA transaction id WILL be
affected by the upper case translation setting for the terminal.


 Press Enter or any PF key to return to Help Selection Panel
```

Figure 74. CEDA transaction: HELP panel 9

CEDA panel functions

This topic contains descriptions of the features and functions of the CEDA panels.

Using abbreviations

Each command can be abbreviated. The minimum abbreviations are shown in uppercase—for example, you can enter REM for REMOVE, but not just R or RE, because to CEDA that would be ambiguous with RENAME.

Note: Minimum abbreviations may change between CICS releases because of the introduction of new commands.

SYSID
This is your system identifier specified in the SYSIDNT system initialization parameter.

APPLID
This is the z/OS Communications Server (for SNA or IP) application identifier for the CICS system, as specified in the APPLID system initialization parameter.

PF keys
The PF keys on this screen are:

PF1 HELP
Provides help in using CEDA.

PF3 END
Takes you out of CEDA. After using PF3, you can clear the screen and continue with another transaction.

PF6 CRSR
Puts the cursor in the top left corner of the screen.

PF9 MSG
Shows you any error messages produced by CEDA. If the CMAC transaction is available, after you press PF9, placing the cursor under a message and pressing the Enter key will link to the Messages and Codes Online transaction (CMAC) for that message.

PF12 CNCL
Takes you back to the previous panel.

Tutorial topics - CEDA panel functions

"Changing attribute values" on page 410
The attributes of a resource definition are listed in the first column, and their associated values are listed in the second column.

Tutorial overview

"The CEDA transaction tutorial" on page 393
This tutorial shows you how to use the RDO transactions CEDA, CEDB, and CEDC.

Changing attribute values

The attributes of a resource definition are listed in the first column, and their associated values are listed in the second column.

For example:

```
bg    Status       ==> Enabled            Enabled | Disabled
```

In this example:

Status is the attribute.
Enabled is the defined value.
Enabled | Disabled shows the possible values.

When you see a '==>' symbol between an attribute and its value, it means that you can change the value. The values that can be changed are also highlighted.

When you see a colon (:) between an attribute and its value, it means that you cannot change the value. This can be for several reasons:

- You do not have authority to change the values (for example, if you are a CEDC user).
- You are using the VIEW command.
- The length of the attribute is such that the whole of the attribute does not fit in the current screen view. In order to update the attribute value you must first scroll half a screen forward (PF8) or backwards (PF7) until the whole attribute is seen.
- The attribute is the resource name or the group name (in this example, MAPSET name NEW1 and GROUP name AAA1).
- The attribute is obsolete for the current release of CICS (for example, the RSL attribute). To change the value of obsolete attributes, you must use the **compatibility mode** option, as described in the PF keys below.

  Tutorial topics - CEDA panel functions

  "Using the PF keys" on page 411
  You can use the 3270 program function keys (PF keys) with the CEDA transaction.

  Tutorial overview

  "The CEDA transaction tutorial" on page 393
  This tutorial shows you how to use the RDO transactions CEDA, CEDB, and CEDC.

Using the PF keys

You can use the 3270 program function keys (PF keys) with the CEDA transaction.

The PF keys on this screen which were not on the previous screen are:

PF2 COM
: Allows you to use **compatibility mode** to change the value of obsolete attributes. In Figure 12 on page 395, if you press PF2, you see that the symbol between RSL and its value changes from '==>' to ':', the value is highlighted, and the display at the top right of the screen changes from `CICS RELEASE = 0620` to `COMPATIBILITY MODE`. You can now overtype the value to change it, then press PF2 again to get out of compatibility mode. Compatibility mode is described in "Compatibility mode (CSD file sharing)" on page 21.

PF7 SBH
: Scrolls back half a screen. Because MAPSET has a small number of attributes, this does not apply to this panel.

PF8 SFH
: Scrolls forward half a screen. Because MAPSET has a small number of attributes, this does not apply to this panel.

PF9 MSG
: Shows you any error messages produced by CEDA. If you now press PF9, you see the message "NEW GROUP AAA1 CREATED". This is the same message as is displayed on the screen. If you issue a command that generates more than one message, you may have to use PF9 to see them all. If the CMAC transaction is available, after you press PF9, placing the cursor under a message and pressing the Enter key will link to the Messages and Codes Online transaction (CMAC) for that message.

PF10 SB
: Scrolls up one full screen. Because MAPSET has a small number of attributes, this does not apply to this panel.

PF11 SF
Scrolls down one full screen. Because MAPSET has a small number of attributes, this does not apply to this panel.

Tutorial topics - CEDA panel functions

"Generic naming in CEDA" on page 412
Generic names allow you to use one command to perform the same operation on many objects.

Tutorial overview

"The CEDA transaction tutorial" on page 393
This tutorial shows you how to use the RDO transactions CEDA, CEDB, and CEDC.

Generic naming in CEDA

Generic names allow you to use one command to perform the same operation on many objects.

You used this feature of CEDA in "Using the CEDA panels" on page 393 when you used an asterisk to mean 'all' groups.

The asterisk can be used to mean 'all' resource names, groups, or lists. For example, CEDA VIEW TRANSACTION(DISC) GROUP(*) shows you transactions called DISC in any group where they occur. CEDA DISPLAY GROUP(*) TRANSACTION(*) shows you all the transactions in every group.

Another way to see groups without having to specify their exact names is to use the plus sign (+) as part of the group name to represent one character. For example, whereas CEDA DISPLAY GROUP(DFH*) displays all groups beginning with DFH, CEDA DISPLAY GROUP(DFH+++) displays only those groups that begin with DFH and are six characters long, CEDA DISPLAY GROUP(DFH++++) displays those that begin with DFH and are seven characters long, and so on.

You can also use the ALL attribute in some commands, instead of specifying a resource type. The command then operates on all resource definitions that fit the type specified with ALL.

Table 21 on page 412 tells you which CEDA commands that accept generic naming.

yes	means that you may use a generic name or an actual name.
no	means that you must use an actual name.
—	means that generic naming is not applicable for this command.

Table 40. CEDA commands accepting generic names

Command	Generic resource name	Generic group name	Generic list name	ALL resource types
ADD	—	no	no	—
ALTER	yes	yes	—	no
APPEND	—	—	no	—
CHECK GROUP	—	no	—	—
CHECK LIST	—	—	no	—
COPY	yes	no	—	yes

Table 40. CEDA commands accepting generic names (continued)

Command	Generic resource name	Generic group name	Generic list name	ALL resource types
DEFINE	no	no	—	no
DELETE	yes	no	—	yes
DISPLAY GROUP	—	yes	—	—
DISPLAY GROUP ALL	yes	yes	—	yes
DISPLAY LIST	—	—	yes	—
DISPLAY LIST GROUP	—	yes	yes	—
EXPAND GROUP	yes	yes	—	yes
EXPAND LIST	—	yes	yes	—
INSTALL	—	no	no	—
INSTALL GROUP	—	no	—	—
LOCK GROUP	—	no	—	—
LOCK LIST	—	—	no	—
MOVE	yes	no	—	yes
REMOVE	—	yes	no	—
RENAME	no	no	—	yes
UNLOCK GROUP	—	no	—	—
UNLOCK LIST	—	—	no	—
USERDEFINE	no	no	—	no
VIEW	yes	yes	—	no

Tutorial topics - CEDA panel functions

"Entering mixed-case attributes" on page 413
CEDA is often used in circumstances where the CICS system, or the particular terminals, are defined so that all input is folded (or translated) to upper case.

Tutorial overview

"The CEDA transaction tutorial" on page 393
This tutorial shows you how to use the RDO transactions CEDA, CEDB, and CEDC.

Entering mixed-case attributes

CEDA is often used in circumstances where the CICS system, or the particular terminals, are defined so that all input is folded (or translated) to upper case.

However there are some resource definition attribute values which must be entered in lower case or mixed case, because their values must match those in other systems, where the use of lowercase fields is commonplace.

Note: When uppercase translation is active for a terminal, characters that appear in lower case as you type them are translated to upper case before CICS processes them.

CEDA knows that certain fields may be required in mixed case. When you use the CEDA input panels, uppercase translation of the values entered in these fields does not occur, irrespective of the way uppercase translation is specified for your terminal. These fields are marked `(Mixed Case)` on the CEDA input panels. Figure 32 on page 414 shows an example:

```
DJar         ==>
Group        ==>
Description  ==>
Corbaserver  ==>
Hfsfile      ==>
(Mixed Case) ==>
             ==>
             ==>
```

Figure 75. The DEFINE panel for DJAR

The action of suppressing uppercase translation, if it is active, applies to input on the CEDA panels, but it does not apply when values for these fields are supplied on the CEDA command line. If you must enter mixed-case values when you use CEDA from the command line, ensure that the terminal you use is correctly configured, with uppercase translation suppressed.

So, for example, using a terminal which has UCTRAN set to cause uppercase translation, If you enter:

```
CEDA DEFINE DJAR GROUP(ONE) CORBASERVER(TWO) HFSFILE(three)
```

the result is HFSFILE `THREE` instead of the `three` that you intended.

If however you enter:

```
CEDA DEFINE DJAR GROUP(ONE) CORBASERVER(TWO)
```

and then supply the value `three` for HFSFILE using the panel, the result is as you intended.

CEDA has a help panel for mixed-case input, see Figure 31 on page 409

Tutorial overview

"The CEDA transaction tutorial" on page 393
This tutorial shows you how to use the RDO transactions CEDA, CEDB, and CEDC.

Altering the setting of UCTRAN

At times, you might need to specify mixed case values on the command line of a terminal that is defined to fold lower case input to upper case.

To make that possible:

- You can use the CEOT transaction to suppress upper case translation for your terminal for as long as you need to enter mixed case data. See *CICS Supplied Transactions* for more information about the CEOT transaction.
- You can specify the UCTRAN(NO) or UCTRAN(TRANID) in the TYPETERM definition for the terminal.
- You can specify UCTRAN(NO) in the profile for the CEDA transaction.

Chapter 47. Resource management transaction CEDA commands

The CEDA transaction has a number of commands for working with resource definitions on the CSD.

The CEDA ADD command

Use the **CEDA ADD** command to add a group to a list on the CSD.

Syntax

```
►►──CEDA──ADd──Group(groupname)──LISt(listname)──┬─────────────────────┬──────────►
                                                 └─After(groupname3)───┘

►──┬──────────────────────┬───────────────────────────────────────────────────────►◄
   └─Before(groupname2)───┘
```

Description

You can use the ADD command from a DISPLAY screen.

Options

After(*groupname3***)**
: You can use this to control the placing of the new group name. If you do not specify BEFORE or AFTER, the group name is added at the end of the list.

Before(*groupname2***)**
: You can use this to control the placing of the new group name. If you do not specify BEFORE or AFTER, the group name is added at the end of the list.

Group(*groupname1***)**
: specifies the name of the group to be added. The name must not already exist in the list. A generic group name is not accepted. If you do not specify a group, the current group name is added.

LISt(*listname***)**
: specifies the name of the list to which the group is to be added. If the list does not already exist, a new one is created. If LIST is not specified, the group name is added to the current list if there is one. A generic list name is not accepted.

Examples

1. To create a list LA01 by adding a group to it:
   ```
   ADD GROUP(GA001) LIST(LA01)
   ```
2. To add another group to list LA01, without specifying where:
   ```
   ADD GROUP(GA002) LIST(LA01)
   ```

   LA01 now looks like this:
      GA001

GA002

3. To add another group at the top of the list:

```
ADD GROUP(GA003) LIST(LA01) BEFORE(GA001)
```

   and another group between GA001 and GA002:

```
ADD GROUP(GA004) LIST(LA01) AFTER(GA001)
```

   LA01 now looks like this:

   GA003
   GA001
   GA004
   GA002

The CEDA ALTER command

Use the **CEDA ALTER** command to change some or all of the attributes of an existing resource definition.

Syntax

```
►►──CEDA──ALter──┬─Atomservice(name)───┬──Group(groupname)──────────────────────►
                 ├─Bundle(name)────────┤
                 ├─CONnection(name)────┤
                 ├─CORbaserver(name)───┤
                 ├─DB2Conn(name)───────┤
                 ├─DB2Entry(name)──────┤
                 ├─DB2Tran(name)───────┤
                 ├─DJar(name)──────────┤
                 ├─DOctemplate(name)───┤
                 ├─Enqmodel(name)──────┤
                 ├─File(name)──────────┤
                 ├─Ipconn(name)────────┤
                 ├─JOurnalmodel(name)──┤
                 ├─JVmserver(name)─────┤
                 ├─LIbrary(name)───────┤
                 ├─LSRpool(name)───────┤
                 ├─MApset(name)────────┤
                 ├─MQconn(name)────────┤
                 ├─PARTItionset(name)──┤
                 ├─PARTNer(name)───────┤
                 ├─PIpeline(name)──────┤
                 ├─PROCesstype(name)───┤
                 ├─PROFile(name)───────┤
                 ├─PROGram(name)───────┤
                 ├─Requestmodel(name)──┤
                 ├─Sessions(name)──────┤
                 ├─TCpipservice(name)──┤
                 ├─TDqueue(name)───────┤
                 ├─TErminal(name)──────┤
                 ├─TRANClass(name)─────┤
                 ├─TRANSaction(name)───┤
                 ├─TSmodel(name)───────┤
                 ├─TYpeterm(name)──────┤
                 ├─Urimap(name)────────┤
                 └─Webservice(name)────┘

►─attribute list(new value)────────────────────────────────────────────────────►◄
```

Description

Important: Do not use ALTER to change the value of the attributes of a TYPETERM definition on which other attributes depend. If you make a mistake with DEVICE, SESSIONTYPE, or TERMMODEL, delete the definition and define a new one with the correct values.

You can specify null attribute values, for example:

```
ALTER FILE(TEST) GROUP(ACT1) DESCRIPTION()
```

If an attribute for which you have specified a null value has a default, the value used depends upon the type of field. For example:

- The command:

  ```
  ALTER FILE(TEST) GROUP(ACT1) RLSACCESS()
  ```

behaves as if RLSACCESS was not specified. The RLSACCESS attribute has a CVDA default value which is ignored.

- The command:
  ```
  ALTER FILE(TEST) GROUP(ACT1) DESCRIPTION()
  ```
  has the effect of blanking out the description, as there is no default value for the DESCRIPTION field, and it is option.
- The command:
  ```
  ALTER FILE(TEST) GROUP(ACT1) PROFILE()
  ```
  puts the default value of DFHCICSA into the PROFILE field. In this case, the default value is a character string, not a CVDA value.

Changes to resource definitions in the CSD file do not affect the running CICS system until you install the definition, or the group in which the resource definition resides.

You can use CEDA ALTER from a DISPLAY panel. If you use PF12 after making your alterations, CEDA gives you the DISPLAY panel again, with an 'ALTER SUCCESSFUL' message in the Date and Time fields. If you do this but do not make any alterations, an asterisk replaces your 'ALTER' command.

With a generic name, you can use one ALTER command to change the same attributes in the same way on more than one resource definition.

Options

Attribute list
: specifies the attributes to be altered.

Group(*groupname*)
: specifies the name of the group containing the resource to be altered.

resource(*name*)
: specifies the type and name of the resource whose attributes you want to alter.

Examples

- To make a program resident:
  ```
  ALTER PROGRAM(ERR01) GROUP(GENMODS) RESIDENT(YES)
        DATALOCATION()
  ```
  If you do not specify an attribute list and type in:
  ```
  ALTER PROGRAM(ERR01) GROUP(GENMODS)
  ```
  CEDA gives an “ALTER SUCCESSFUL” message followed by the 'overtype to modify' panel.
- To change the status of a whole group of programs:
  ```
  ALTER PROGRAM(*) GROUP(GENMODS) STATUS(ENABLED)
  ```

The CEDA APPEND command

Use the **CEDA APPEND** command to append the groups in one list on the CSD to the end of another list.

Syntax

```
►►──CEDA──APpend──LISt(listname1)──To(listname2)──────────────────────►◄
```

Options

LISt(*listname1*)
: specifies the source list to be appended. A generic list name is not accepted.

To(*listname2*)
: specifies the target list to be appended to. A generic list name is not accepted. If **listname2** already exists, the source list is appended to it. If **listname2** does not exist, it is created.

Example

A list called LISTA contains the following groups:
GB001
GB002
GB003

A list called LISTB contains the following groups:
G001
G002
G003

Append LISTB to LISTA, like this:

```
APPEND LIST(LISTB) TO(LISTA)
```

After this, LISTA contains the following groups, in this order:
GB001
GB002
GB003
G001
G002
G003

and LISTB still contains:
G001
G002
G003

The CEDA CHECK command

Use the **CEDA CHECK** command to check the consistency of a set of resource definitions on the CSD.

Syntax

```
►►──CEDA──CHeck──┬─Group(groupname)──────────────────────────────────┬──────►
                 └─List(listname1, listname2, listname3, listname4)─┘

►──┬──────────────────────┬────────────────────────────────────────────────►◄
   └─Remotesystem(sysid)─┘
```

Description

The CHECK command performs a cross-check of a group, list, or lists of resource definitions, and should be used before the resource definitions are installed.

It checks that the resource definitions within the group or lists are consistent with one another.

For example: for each TRANSACTION in the list being checked, a check is made that the named PROGRAM definition exists in one of the groups. The success of the check does not necessarily mean that the PROGRAM is available to the running system.

Lists should be checked before being used to initialize CICS during an initial or cold start (when the list or lists are specified in the GRPLIST system initialization parameter).

A group should be checked before you use the INSTALL command to install it on the running CICS system.

A group can be checked before you use the ADD command to add the group to a list. (The group might not be self-contained, in which case there is no point in checking it alone. Put it into a list with the groups containing related resource definitions.)

You can use the CHECK command from a DISPLAY panel.

How CEDA checks the definitions

The CHECK command checks the consistency of definitions within a group or within all of the groups within a list. It does not, however, cross-check every attribute of a resource. You may still get error messages when installing a group although you found no problems when using the CHECK command.

If you use the CHECK GROUP command, CEDA cross-checks all of the resources in a specified group to ensure that the group is ready to be used. For example, CHECK might warn you that a transaction definition within the group does not name a program within the same group. (Note, however, that this might not be an error. The group might intentionally be paired with a group that does contain the program, or you may want the program to be autoinstalled, in which case it would not have a definition.)

If you use the CHECK LIST command, CEDA cross-checks every group named in the list or lists. It does not check each group in turn, but merges the definitions in all of the listed groups, and checks them all. In this way it warns you if there are duplicate resource definitions, or references to definitions that do not exist.

Options

Group(*groupname***)**
specifies the group you want to check. A generic group name is not accepted.

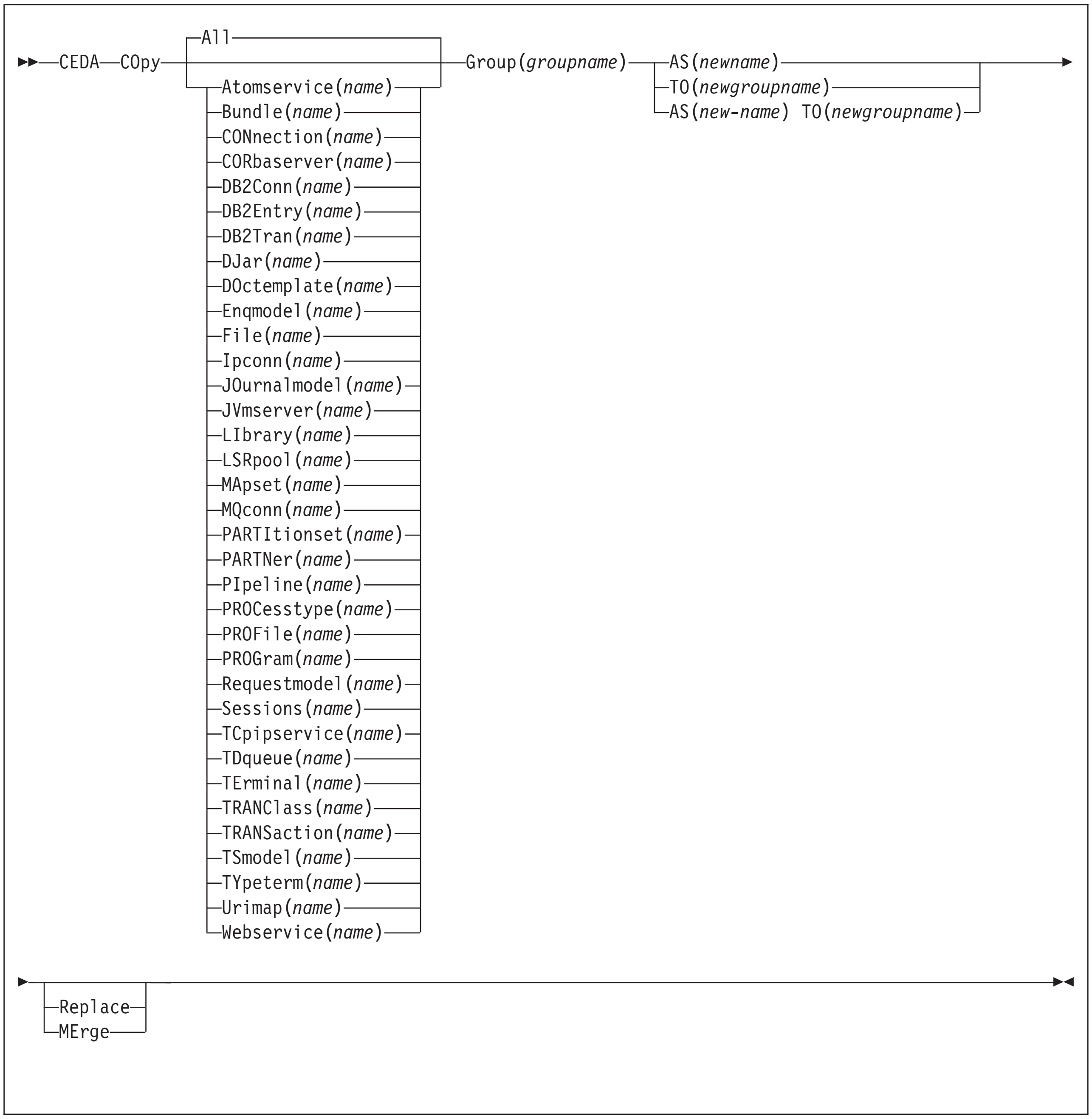
List(*listname1***,** *listname2***,** *etc.***)**
specifies the list or lists you want to check. A generic list name is not accepted.

Remotesystem(*sysid***)**
specifies that a check is to be run on a group or list in a CICS region with a different sysid from the region that the CHECK command is being issued from. If this option is not used, the CHECK command will use the sysid of the region from which the CHECK command is issued.

The CEDA COPY command

Use the **CEDA COPY** command to copy a resource definition, either within the same group or to a different group on the CSD.

Syntax



Description

If you do not specify either MERGE or REPLACE, a message warns you that you are attempting to create duplicate resources, and your COPY will be unsuccessful.

Options

AS(*newname***)**
If you copy a definition within a group, you must use AS to rename it. You can also use AS if you want to copy a definition to another group and rename it at the same time. You cannot use a generic name when using AS.

Group(*groupname***)**
specifies the group containing the definitions to be copied.

MErge
This applies when there are duplicate definition names in the groups named in the COPY command. If you specify MERGE, duplicate definitions in the TO group are not replaced.

Replace
This applies when there are duplicate definition names in the groups named in the COPY command. If you specify REPLACE, the definitions being copied replace those in the group named in the TO operand.

resource(*name*)
specifies the type and name of the resource whose attributes you want to copy.

TO(*newgroupname***)**
You can copy definitions to a different group, using TO to specify the new group.

Examples

You can copy a single resource definition into a new group, using the TO option to specify the new group. For example:

```
COPY SESSIONS(L122) GROUP(CICSC1) TO(CICSC2)
```

You can copy a resource definition within the same group. If you do this, you must rename it using the AS option. For example:

```
COPY TERMINAL(TD12) AS(TD34) GROUP(TERMVDU1)
```

When copying between groups, you can give the copy a new name, using the AS option to specify the new name.

```
COPY PROGRAM(ABC01) GROUP(XYZ) AS(ABC02) TO(NEWXYZ)
```

(If you leave the copy with the same name as the original definition, be careful that you install the one you want when the time comes.)

Using the ALL option, without a name, you can copy all the resource definitions in the group to the new group. For example:

```
COPY ALL GROUP(N21TEST) TO(N21PROD)
```

You can copy more than one resource definition to a new group, using the TO option to specify the new group.

Using a generic resource definition name, you can copy all or some definitions of the same resource type to the new group. For example:

```
COPY CONNECTION(*) GROUP(CICSG1) TO(CICSG2)
COPY PROGRAM(N21++) GROUP(NTEST) TO(NPROD)
```

Using the ALL option with a generic name, you can copy all or some of the resource definitions in the group to the new group. For example:

```
COPY ALL(N21*) GROUP(N21OLD) TO(N21NEW)
```

Using the ALL option with a specific name, you can copy all the resource definitions of that name (which must necessarily be for different resource types) in the group to the new group. For example:

```
COPY ALL(XMPL) GROUP(EXAMPLE) TO(EX2)
```

If you are copying a number of definitions into another group, and the groups contain duplicate resource names, you must specify either MERGE or REPLACE. For example:

```
COPY ALL GROUP(TAX1) TO(TAX2) MERGE
COPY ALL GROUP(TAX1NEW) TO(TAX1) REPLACE
```

The following example copies a group named GA001 to a group named GA002, which already exists, replacing any duplicate resource definitions by those in group GA001.

```
COPY GROUP(GA001) TO(GA002) REPLACE
```

The following example copies group GA003 to group GA004, but if any duplicate definitions occur, preserves the group GA004 definitions.

```
COPY GROUP(GA003) TO(GA004) MERGE
```

The CEDA DEFINE command

Use the **`CEDA DEFINE`** command to create new resource definitions on the CSD.

Syntax

```
►►──CEDA──DEFine──┬─Atomservice(name)──┬──Group(groupname)────────────────►
                  ├─Bundle(name)───────┤
                  ├─CONnection(name)───┤
                  ├─CORbaserver(name)──┤
                  ├─DB2Conn(name)──────┤
                  ├─DB2Entry(name)─────┤
                  ├─DB2Tran(name)──────┤
                  ├─DJar(name)─────────┤
                  ├─DOctemplate(name)──┤
                  ├─Enqmodel(name)─────┤
                  ├─File(name)─────────┤
                  ├─Ipconn(name)───────┤
                  ├─JOurnalmodel(name)─┤
                  ├─JVmserver(name)────┤
                  ├─LIbrary(name)──────┤
                  ├─LSRpool(name)──────┤
                  ├─MApset(name)───────┤
                  ├─MQconn(name)───────┤
                  ├─PARTItionset(name)─┤
                  ├─PARTNer(name)──────┤
                  ├─PIpeline(name)─────┤
                  ├─PROCesstype(name)──┤
                  ├─PROFile(name)──────┤
                  ├─PROGram(name)──────┤
                  ├─Requestmodel(name)─┤
                  ├─Sessions(name)─────┤
                  ├─TCpipservice(name)─┤
                  ├─TDqueue(name)──────┤
                  ├─TErminal(name)─────┤
                  ├─TRANClass(name)────┤
                  ├─TRANSaction(name)──┤
                  ├─TSmodel(name)──────┤
                  ├─TYpeterm(name)─────┤
                  ├─Urimap(name)───────┤
                  └─Webservice(name)───┘

►─attribute list(newvalue)────────────────────────────────────────────────►◄
```

Description

You can use the same name for more than one resource definition in a group, if the definitions are for different resource types. For example:

```
DEFINE PROGRAM(N28A) GROUP(N28APPL)
DEFINE TRANSACTION(N28A) GROUP(N28APPL)

DEFINE TERMINAL(USER) GROUP(USERDEF)
DEFINE PROGRAM(USER) GROUP(USERDEF)
```

When you have any resource definitions with the same name, make sure that you install the one you really want. See "Duplicate resource definition names" on page 31.

You must specify the resource type and name on the command line. You can also specify the group and other attributes on the command line.

The whole definition is displayed on an overtype-to-modify panel, and you can change any of the attributes there, unless you entered a complete DEFINE command on the command line, in which case you cannot change the NAME or GROUPNAME attributes.

The definition was created when you entered the DEFINE command. If you do not want to further modify it, you can enter another command from the command line.

If a resource definition of the same name and type already exists in the group, any attributes specified on the command line are ignored, and the existing resource definition is displayed. You can then overtype and modify any of the existing values if you want. If you do not want to modify the definition, you can enter another command from the command line.

Beware of overtyping values on which other attribute values depend. See "Creating groups and lists" on page 27.

Options

`Attribute list`
: Depends on the resource type being defined; some resources have attributes that must be included in the definition. Attributes that you do not specify are given default values.

`Group(`*`groupname`*`)`
: Specifies the name of the group containing the resource definition being defined. Do not use a generic group name. If you specify the name of a group that does not already exist, the group is created.

`resource``(`*`name`*`)`
: Specifies the type and name of the resource that you want to define. Do not use a generic resource name.

The CEDA DELETE command

Use the **`CEDA DELETE`** command to delete one or more resource definitions from the CSD file.

Syntax

```
►►──CEDA──DELete──┬─All──────────────────┬──Group(groupname)──┬────────┬──────►◄
                  └─┬─Atomservice(name)─┬┘                    └─REMove─┘
                    ├─Bundle(name)──────┤
                    ├─CONnection(name)──┤
                    ├─CORbaserver(name)─┤
                    ├─DB2Conn(name)─────┤
                    ├─DB2Entry(name)────┤
                    ├─DB2Tran(name)─────┤
                    ├─DJar(name)────────┤
                    ├─DOctemplate(name)─┤
                    ├─Enqmodel(name)────┤
                    ├─File(name)────────┤
                    ├─Ipconn(name)──────┤
                    ├─JOurnalmodel(name)┤
                    ├─JVmserver(name)───┤
                    ├─LIbrary(name)─────┤
                    ├─LSRpool(name)─────┤
                    ├─MApset(name)──────┤
                    ├─MQconn(name)──────┤
                    ├─PARTItionset(name)┤
                    ├─PARTNer(name)─────┤
                    ├─PIpeline(name)────┤
                    ├─PROCesstype(name)─┤
                    ├─PROFile(name)─────┤
                    ├─PROGram(name)─────┤
                    ├─Requestmodel(name)┤
                    ├─Sessions(name)────┤
                    ├─TCpipservice(name)┤
                    ├─TDqueue(name)─────┤
                    ├─TErminal(name)────┤
                    ├─TRANClass(name)───┤
                    ├─TRANSaction(name)─┤
                    ├─TSmodel(name)─────┤
                    ├─TYpeterm(name)────┤
                    ├─Urimap(name)──────┤
                    └─Webservice(name)──┘
```

Description

Deleting a resource definition is different from removing a group from a list (see "The CEDA REMOVE command" on page 438). A deleted resource definition really does disappear from the CSD file.

When you DELETE the last resource in a group, the group is automatically deleted. An empty group cannot exist.

This command does **not** affect definitions installed on the active CICS system. To remove installed definitions from the active CICS system, you can use either the CEMT DISCARD transaction or the EXEC CICS DISCARD command.

Options

`All`
: specifies that all resources are to be deleted from the group.

`Group(`*`groupname`*`)`
: specifies the group containing the resource. Do not use a generic group name.

`REMove`
: specifies that, when a group is deleted, the group is to be removed from all lists that had contained it.

`resource``(`*`name`*`)`
: specifies the type and name of the resource you want to delete. You can use a generic resource name.

Examples

- To delete all resources in a group:
  ```
  DELETE ALL GROUP(TOPS)
  ```
- To delete all programs in a group:
  ```
  DELETE PROGRAM(*) GROUP(NSOS)
  ```

The CEDA DISPLAY command

Use the **`CEDA DISPLAY`** command to display one or more group names, list names, or resources.

Syntax

```
►►──CEDA──DISplay──┬─List(listname)─┬─────────────────┬───────────────────────────┬──►◄
                   │                └─Group(groupname)─┘                           │
                   └─Group(groupname)─┬──────────────────────┬──┬────────┬─────────┘
                                      ├─All(name)────────────┤  └─REname─┘
                                      └─┬─Atomservice(name)──┬┘
                                        ├─Bundle(name)───────┤
                                        ├─CONnection(name)───┤
                                        ├─CORbaserver(name)──┤
                                        ├─DB2Conn(name)──────┤
                                        ├─DB2Entry(name)─────┤
                                        ├─DB2Tran(name)──────┤
                                        ├─DJar(name)─────────┤
                                        ├─DOctemplate(name)──┤
                                        ├─Enqmodel(name)─────┤
                                        ├─File(name)─────────┤
                                        ├─Ipconn(name)───────┤
                                        ├─JOurnalmodel(name)─┤
                                        ├─JVmserver(name)────┤
                                        ├─LIbrary(name)──────┤
                                        ├─LSRpool(name)──────┤
                                        ├─MApset(name)───────┤
                                        ├─MQconn(name)───────┤
                                        ├─PARTItionset(name)─┤
                                        ├─PARTNer(name)──────┤
                                        ├─PIpeline(name)─────┤
                                        ├─PROCesstype(name)──┤
                                        ├─PROFile(name)──────┤
                                        ├─PROGram(name)──────┤
                                        ├─Requestmodel(name)─┤
                                        ├─Sessions(name)─────┤
                                        ├─TCpipservice(name)─┤
                                        ├─TDqueue(name)──────┤
                                        ├─TErminal(name)─────┤
                                        ├─TRANClass(name)────┤
                                        ├─TRANSaction(name)──┤
                                        ├─TSmodel(name)──────┤
                                        ├─TYpeterm(name)─────┤
                                        ├─Urimap(name)───────┤
                                        └─Webservice(name)───┘
```

Options

Group(*groupname*)
specifies the name of the group to be displayed. You can use a generic group name.

List(*listname*)
specifies the name of the list to be displayed. You can use a generic list name.

REname
This option applies only to GROUP. Specifying RENAME allows you to rename resource definitions within the group.

resource(*name*)
specifies the type and name of the resource you want to display.

Examples

- To display all groups on the CSD file:
  ```
  DISPLAY GROUP(*)
  ```
- To display all groups with seven-character names that begin with PROD:
  ```
  DISPLAY GROUP(PROD+++)
  ```
- To display all the lists on the CSD file:
  ```
  DISPLAY LIST(*)
  ```
- To display all lists with five-character names that begin with PROD:
  ```
  DISPLAY LIST(PROD+)
  ```

The CEDA DISPLAY GROUP command

Use the **CEDA DISPLAY GROUP** command to display one or more group names on a full screen panel.

You can enter the following commands next to the names on the panel:
CHECK
DISPLAY ALL
EXPAND
INSTALL
LOCK
UNLOCK

Restriction: You cannot install CONNECTION and SESSIONS resources from a DISPLAY panel. They have to be installed in groups.

On this panel, all these commands can be abbreviated down to their initial letter. It is unnecessary to type the group name. For the syntax of each command, see that command in this section.

To DISPLAY the group names, you must use a generic name. For more information about using the DISPLAY panel, see "Displaying a resource definition" on page 396.

The CEDA DISPLAY LIST command

Use the **CEDA DISPLAY LIST** command to display one or more list names on a full screen panel.

- You can enter the following commands next to the names on the panel:
  CHECK
  DISPLAY GROUP
  EXPAND
  LOCK
  UNLOCK

  On this panel, all these commands can be abbreviated down to their initial letter. It is not necessary to type the list name. For the syntax of each command, see that command in this section.
- To DISPLAY the list names, you must use a generic list name.
- For more information about using the DISPLAY panel, see "Displaying a resource definition" on page 396.

The CEDA EXPAND command

Use the **CEDA EXPAND** command to display the resource definitions that are contained in one or more groups or lists. You can enter other CEDA commands against the resource names that are displayed.

Syntax

```
►►──CEDA──EXPand──────────────────────────────────────────────────────────►

►──┬─List(listname)──┬─────────────────┬─────────────────────────┬───────►◄
   │                 └─Group(groupname)┘                         │
   └─Group(groupname)─┬─────────────────────┬─────┬────────┬─────┘
                      ├─ALl(name)───────────┤     └─REname─┘
                      └─┬─Atomservice(name)─┴┘
                        ├─Bundle(name)──────┤
                        ├─CONnection(name)──┤
                        ├─CORbaserver(name)─┤
                        ├─DB2Conn(name)─────┤
                        ├─DB2Entry(name)────┤
                        ├─DB2Tran(name)─────┤
                        ├─DJar(name)────────┤
                        ├─DOctemplate(name)─┤
                        ├─Enqmodel(name)────┤
                        ├─File(name)────────┤
                        ├─Ipconn(name)──────┤
                        ├─JOurnalmodel(name)┤
                        ├─JVmserver(name)───┤
                        ├─LIbrary(name)─────┤
                        ├─LSRpool(name)─────┤
                        ├─MApset(name)──────┤
                        ├─MQconn(name)──────┤
                        ├─PARTItionset(name)┤
                        ├─PARTNer(name)─────┤
                        ├─PIpeline(name)────┤
                        ├─PROCesstype(name)─┤
                        ├─PROFile(name)─────┤
                        ├─PROGram(name)─────┤
                        ├─Requestmodel(name)┤
                        ├─Sessions(name)────┤
                        ├─TCpipservice(name)┤
                        ├─TDqueue(name)─────┤
                        ├─TErminal(name)────┤
                        ├─TRANClass(name)───┤
                        ├─TRANSaction(name)─┤
                        ├─TSmodel(name)─────┤
                        ├─TYpeterm(name)────┤
                        ├─Urimap(name)──────┤
                        └─Webservice(name)──┘
```

Options

Group(*groupname***)**
specifies the group to be expanded.

List(*listname*)
specifies the list to be expanded.

REname
This option applies only to GROUP. Specifying RENAME allows you to rename resource definitions within the group.

resource(*name*)
specifies the type and name of the resource you want to see within the expanded group.

The CEDA EXPAND GROUP command

Use the **EXPAND GROUP** command to display the resource definitions that are contained in one or more groups. You can enter other CEDA commands against the resource names that are displayed.

You can enter the following commands next to the names on the panel:
ALTER
COPY
DELETE
INSTALL
MOVE
RENAME
VIEW

All these commands can be abbreviated down to their initial letter. It is unnecessary to type the group or list name. For the syntax of each command, see that command in this section.

You may EXPAND a generic group name. For example:

- Show all the resource definitions in all groups on the CSD file:
```
EXPAND GROUP(*)
```
- Show all the resource definitions in groups whose names begin with PROD and are seven characters long:
```
EXPAND GROUP(PROD+++)
```

You may EXPAND a group to show only one resource type. The name you specify as the resource name may be a generic name. For example:

- Show all PROFILE definitions in all groups on the CSD file:
```
EXPAND GROUP(*) PROFILE(*)
```
- Show all TERMINAL definitions that begin with SZ in a group:
```
EXPAND GROUP(ZEMGROUP) TERMINAL(SZ++)
```

You may EXPAND a group or groups, limiting the resource definitions to those that share a generic name. For example:

- Show all resource definitions, of all types, ending in A1:
```
EXPAND GROUP(REINDEER) ALL(*A1)
```

If you use the RENAME option, you get a special panel on which you can overtype the resource definition names. This is a quick way of renaming many resource definitions.

The CEDA EXPAND LIST command

Use the **EXPAND LIST** command to display the groups that are contained in one or more lists. You can enter other CEDA commands against the group names that are displayed.

When expanding a list, you can enter the following commands next to the names on the panel:

ADD
REMOVE

You may EXPAND part of a list, by using a generic group name, for example:

```
EXPAND LIST(INITLIST) GROUP(DFH*)
```

You may EXPAND more than one list, by using a generic list name. For example, to show the groups in all lists on the CSD file:

```
EXPAND LIST(*)
```

Show the groups in lists whose names begin with PROD and are five characters long:

```
EXPAND LIST(PROD+)
```

The CEDA INSTALL command

Use the **CEDA INSTALL** command to make the resource definitions in the named group or group list available to the active CICS system.

Syntax

```
►►──CEDA──Install──┬─────────────────────┬──┬─Group(groupname)─┬──────────────────►◄
                   ├─All(name)───────────┤  └─List(listname)──┘
                   └─┬─Atomservice(name)─┤
                     ├─Bundle(name)──────┤
                     ├─CONnection(name)──┤
                     ├─CORbaserver(name)─┤
                     ├─DB2Conn(name)─────┤
                     ├─DB2Entry(name)────┤
                     ├─DB2Tran(name)─────┤
                     ├─DJar(name)────────┤
                     ├─DOctemplate(name)─┤
                     ├─Enqmodel(name)────┤
                     ├─File(name)────────┤
                     ├─Ipconn(name)──────┤
                     ├─JOurnalmodel(name)┤
                     ├─JVmserver(name)───┤
                     ├─LIbrary(name)─────┤
                     ├─LSRpool(name)─────┤
                     ├─MApset(name)──────┤
                     ├─MQconn(name)──────┤
                     ├─PARTItionset(name)┤
                     ├─PARTNer(name)─────┤
                     ├─PIpeline(name)────┤
                     ├─PROCesstype(name)─┤
                     ├─PROFile(name)─────┤
                     ├─PROGram(name)─────┤
                     ├─Requestmodel(name)┤
                     ├─Sessions(name)────┤
                     ├─TCpipservice(name)┤
                     ├─TDqueue(name)─────┤
                     ├─TErminal(name)────┤
                     ├─TRANClass(name)───┤
                     ├─TRANSaction(name)─┤
                     ├─TSmodel(name)─────┤
                     ├─TYpeterm(name)────┤
                     ├─Urimap(name)──────┤
                     └─Webservice(name)──┘
```

Description

You can use single-resource installation to install only the resources you require.

When applied to telecommunication and intercommunication resources, restrictions apply to the single-resource INSTALL command. The restrictions apply to resource definitions that are linked; for example, CONNECTION and SESSIONS definitions.

You can install the following resource types *only* as part of a group:

- CONNECTION definitions, except a CONNECTION with ACCESSMETHOD(INDIRECT)
- SESSIONS definitions
- TERMINAL definitions for pipeline terminals that share the same POOL

If you want to use single-resource INSTALL for TERMINAL and related TYPETERM definitions, you must install the TYPETERM that is referred to by a TERMINAL definition *before* you install the TERMINAL definition.

The same restriction applies when installing groups containing TERMINAL and TYPETERM definitions; install the group containing the TYPETERM definition before you install the group containing the TERMINAL definition. Similarly, if you install a list that contains groups containing TERMINAL and TYPETERM definitions, the group containing the TYPETERM definition must be before the group containing the TERMINAL definition. Also, in a list containing groups of DB2 resource definitions (DB2CONN, DB2ENTRY, and DB2TRAN definitions), the DB2CONN must be defined in the first group in the list.

A CORBASERVER definition must be either in the same group as the DJAR definitions that refer to it or in a group that is installed before the group containing those DJAR definitions.

If you want to use singe-resource install for ENQMODEL, note that ENQMODEL definitions usually have the default status of ENABLED, so the order of installing ENQMODELs must follow the rules for enabling ENQMODEL definitions; that is, ENQMODEL definitions forming nested generic ENQnames must be enabled in order from the most to the least specific. For example, ABCD* then ABC* then AB*.

If the named resource already exists in the active CICS system, the existing definition is replaced by the new one.

Replacement of an existing definition occurs only if it is not in use.

If the installation of one or more of the resources in the group or groups being installed fails because the resource is in use or for any other reason, the following takes place:

1. The installation process continues with the next resource in the group.
2. When the group installation is complete, if the resource that failed was part of an *installable set*, all the resources in the installable set are backed out. Resources that were committed at the individual resource level are not backed out. For a list of the resource types that are committed as part of an installable set, see "What happens when you use the INSTALL command" on page 30.
3. A message is displayed to indicate that the group has been only partially installed. A message is also produced on the message panel for each of the resources that failed to install, stating the reason for each failure. No messages are produced for those resources that have been backed out.

In addition, a message is written to the CEMT log, saying that the install completed with errors.

You can run the CEDA INSTALL from a console, using the MVS MODIFY command.

Options

Group(*groupname*)
: Specifies the group to be installed, or containing the resource to be installed. A generic group name is not accepted.

List(*listname*)
Specifies the list of groups to be installed, or containing the resource to be installed. A generic list name is not accepted.

resource(*name*)
Specifies the type and name of the resource that you want to install.

The CEDA LOCK command

Use the **CEDA LOCK** command to restrict update and delete access to a single operator identifier.

Syntax

```
►►──CEDA──Lock──┬─Group(groupname)─┬──────────────────────────────────────►◄
                └─List(listname)───┘
```

Description

The group or list can be used, looked at, and copied by other users of RDO, but cannot be changed or deleted by them.

You can LOCK a nonexistent group or list, thereby reserving the named group or list for your own future use.

The only RDO command that releases a lock is the UNLOCK command. No other RDO commands can unlock a group or list. For example, if you DELETE all the resources in a group, or all the groups in a list, the lock remains.

You must specify either GROUP or LIST, even if you are locking the current group or list.

A generic group or list name is not accepted.

Locking and unlocking resources

The LOCK and UNLOCK commands enable you to control update access to a group or list so that only operators with the same operator identifier can make changes.

The lock is held on the CSD file and remains in effect across restarts of CICS. The lock is owned by the user, who is identified by a combination of the CICS generic applid (specified by the APPLID system initialization parameter), and the user's operator identifier (OPIDENT).

The OPIDENT is the one associated with the user when he or she signs on to the terminal used for RDO. For further information on OPIDENT, see the *CICS RACF Security Guide*. Any user who is not signed on or who has a different OPIDENT is not allowed to perform any operation that would change the locked group. However, any user is allowed to do the following things to a locked group:
- CHECK
- COPY
- DISPLAY

- INSTALL
- VIEW

The lock can be removed, using the UNLOCK command, only by a user on the same system and with the same operator identifier.

Options

Group(*groupname*)
specifies the group to be locked.

List(*listname*)
specifies the list to be locked.

Examples

- To lock a list L1:
```
LOCK LIST(L1)
```
- To lock a group G1:
```
LOCK GROUP(G1)
```

The CEDA MOVE command

Use the **CEDA MOVE** command to move one or more resource definitions from one group to another.

Syntax

```
                  ┌─All──────────────────────┐
►►──CEDA──Move────┼──────────────────────────┼──Group(groupname)──┬─────────┬──────────►
                  └──┬─Atomservice(name)───┬─┘                    └─REMove──┘
                     ├─Bundle(name)────────┤
                     ├─CONnection(name)────┤
                     ├─CORbaserver(name)───┤
                     ├─DB2Conn(name)───────┤
                     ├─DB2Entry(name)──────┤
                     ├─DB2Tran(name)───────┤
                     ├─DJar(name)──────────┤
                     ├─DOctemplate(name)───┤
                     ├─Enqmodel(name)──────┤
                     ├─File(name)──────────┤
                     ├─Ipconn(name)────────┤
                     ├─JOurnalmodel(name)──┤
                     ├─JVmserver(name)─────┤
                     ├─LIbrary(name)───────┤
                     ├─LSRpool(name)───────┤
                     ├─MApset(name)────────┤
                     ├─MQconn(name)────────┤
                     ├─PARTItionset(name)──┤
                     ├─PARTNer(name)───────┤
                     ├─PIpeline(name)──────┤
                     ├─PROCesstype(name)───┤
                     ├─PROFile(name)───────┤
                     ├─PROGram(name)───────┤
                     ├─Requestmodel(name)──┤
                     ├─Sessions(name)──────┤
                     ├─TCpipservice(name)──┤
                     ├─TDqueue(name)───────┤
                     ├─TErminal(name)──────┤
                     ├─TRANClass(name)─────┤
                     ├─TRANSaction(name)───┤
                     ├─TSmodel(name)───────┤
                     ├─TYpeterm(name)──────┤
                     ├─Urimap(name)────────┤
                     └─Webservice(name)────┘

►──┬─AS(newname)──────────────────────┬──┬─────────┬──────────────────────►◄
   ├─TO(newgroupname)─────────────────┤  ├─REPlace─┤
   └─AS(newname) TO(newgroupname)─────┘  └─MErge───┘
```

Description

This command moves the resource definitions from the group named by the GROUP option to the group named by the TO option.

When you MOVE the last resource in a group TO a different group, the group is automatically deleted. An empty group cannot exist.

If you do not specify either MERGE or REPLACE, a message warns you that you are attempting to create duplicate resource definitions. The definitions are not moved.

Options

AS(*newname***)**
: If you move a definition within a group, you must use AS to rename it. You can also use AS if you want to move a definition to another group and rename it at the same time. You cannot use a generic name when using AS.

Group(*groupname***)**
: specifies the group containing the definitions to be moved.

MErge
: This applies when there are duplicate definition names in the groups named in the MOVE command. If you specify MERGE, duplicate definitions in the TO group are not replaced.

REMove
: specifies that, when a group is deleted because the last resource in the group is moved elsewhere, the group is to be removed from all lists that had contained it.

REPlace
: This applies when there are duplicate definition names in the groups named in the MOVE command. If you specify REPLACE, the definitions being moved replace those in the group named in the TO operand.

resource(*name*)
: specifies the type and name of the resource you want to move. The default is ALL, which moves all the resource definitions in a group to another group.

TO(*newgroupname***)**
: You can move definitions to a different group, using TO to specify the new group.

Examples

- When you move a single resource definition, you can simultaneously rename it, using the AS option to specify the new name. For example:
  ```
  MOVE PARTITIONSET(PSETQ1) GROUP(PSET1) AS(PSETQ4)
  TO(PSET2)
  ```
- A generic resource definition name can be specified, to move all or some definitions of the same resource type. For example:
  ```
  MOVE TRANSACTION(*) GROUP(DENTRY) TO(TEST1)
  MOVE MAPSET(ACCT+++) GROUP(ACCOUNTS1) TO(ACCOUNTS2)
  ```
- To move all the resource definitions in a group to the new group, you can use ALL. For example:
  ```
  MOVE ALL GROUP(N21TEST) TO(N21PROD)
  ```
- You can use ALL with a generic name, to move all qualifying resource definitions in the group to the new group. For example:
  ```
  MOVE ALL(N21*) GROUP(N21OLD) TO(N21NEW)
  ```
- You can use ALL with a specific name, to move all the resource definitions of that name (which must be for different resource types) in the group to the new group. For example:
  ```
  MOVE ALL(XMPL) GROUP(EXAMPLE) TO(EXAMPLE2)
  ```

- To merge definitions from group X in with the definitions in group Y, keeping the Y version of any duplicates:

```
MOVE GROUP(X) TO(Y) MERGE
```

- To combine definitions from group X in with definitions in group Y, keeping the X version of any duplicates:

```
MOVE GROUP(X) TO(Y) REPLACE
```

The CEDA REMOVE command

Use the **CEDA REMOVE** command to remove the name of a group from a list.

Syntax

```
►►──CEDA──Remove──Group(groupname)──LISt(listname)──────────────────────►◄
```

Description

The group, and all its resource definitions, still exists on the CSD file. When the last group is removed from a list, the list no longer exists on the CSD file.

A generic list name is not accepted.

A generic group name can be specified to remove many or all groups from a list with one command.

When a group is deleted, the user can request that the group be removed from all lists that had contained it. When the last group is removed from a list, the list is deleted.

Options

Group(*groupname*)
specifies the group to be removed.

List(*listname*)
specifies the list from which the group is to be removed.

Examples

- A list LL02 contains the following groups:
  G001
  X001
  XG001
  G002
  G003
  X002
  G004

  To remove all groups beginning with G:

  ```
  REMOVE GROUP(G*) LIST(LL02)
  ```

  This leaves:
  X001

XG001
X002

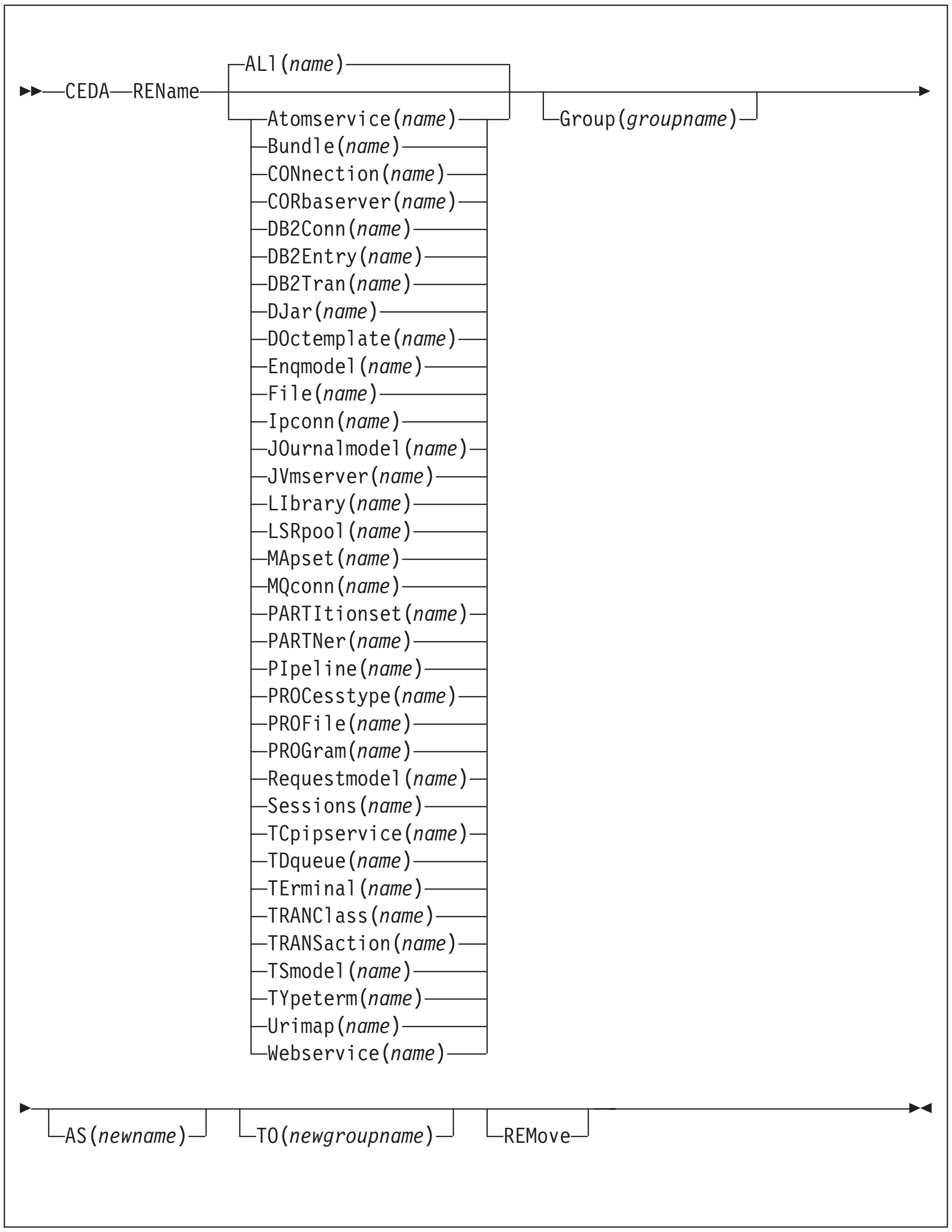
- To remove the list completely:

```
REMOVE GROUP(*) LIST(LL02)
```

The CEDA RENAME command

Use the **CEDA RENAME** command to change the name of a resource on the CSD or move it to a different group.

Syntax



Description

You can also rename a resource definition by using the DISPLAY command or the EXPAND command with the RENAME option. See "The CEDA DISPLAY command" on page 427 and "The CEDA EXPAND command" on page 429 for information about these commands.

You cannot rename a resource definition to a name that already exists in the target group.

Options

AS(*newname*)
: If you copy a definition within a group, you must use AS to rename it. You can also use AS if you want to move a definition to another group and rename it at the same time. You cannot use a generic name when using AS.

Group(*groupname*)
: specifies the group containing the definitions to be renamed or moved. A generic group name is not accepted.

REMove
: specifies that, when a group is deleted, the group is to be removed from all lists that had contained it.

resource(*name*)
: specifies the type and name of the resource you want to move or rename. The default is ALL, which copies all the resource definitions in a group to another group. A generic resource definition name is not accepted.

TO(*newgroupname*)
: You can move definitions to a different group, using TO to specify the new group.

Examples

- To rename a resource and keep it in its current group:
```
RENAME PROFILE(PROF1) AS(NEWPROF) GROUP(PROFS)
```
- You can rename all resource definitions which share the same name, to a new name, using the ALL option instead of a resource type. For example:
```
RENAME ALL(TVA) AS(XTVA) GROUP(XTVA1)
RENAME ALL(USER) AS(OLDU) GROUP(USERDEF)
```
- You can move a resource definition to a new group, which you specify in the TO option, at the same time as renaming it. (You can also do this with the MOVE command.) For example:
```
RENAME PROGRAM(N20ZA) AS($SOSERR) GROUP(N20) TO($MODULES)
```
- You can move all the resource definitions of the same name from one group to another, using the TO option, at the same time as renaming them. For example:
```
RENAME ALL(USER) GROUP(USERDEF) AS(TEMP) TO(TEMPGRP)
```

The CEDA UNLOCK command

Use the **CEDA UNLOCK** command to remove the lock from a group or a list of definitions.

Syntax

```
►►──CEDA──UNLock──┬─Group(groupname)─┬────────────────────────────────────►◄
                  └─List(listname)──┘
```

Description

The UNLOCK command is the only RDO command that can remove a lock on a list or group put there by use of the RDO LOCK command.

You can UNLOCK a nonexistent group or list.

You must specify either the GROUP or the LIST option, even if you are unlocking the current group or list, because the UNLOCK command can be used with both.

Locking and unlocking resources

The LOCK and UNLOCK commands enable you to control update access to a group or list so that only operators with the same operator identifier can make changes.

The lock is held on the CSD file and remains in effect across restarts of CICS. The lock is owned by the user, who is identified by a combination of the CICS generic applid (specified by the APPLID system initialization parameter), and the user's operator identifier (OPIDENT).

The OPIDENT is the one associated with the user when he or she signs on to the terminal used for RDO. For further information on OPIDENT, see the *CICS RACF Security Guide*. Any user who is not signed on or who has a different OPIDENT is not allowed to perform any operation that would change the locked group. However, any user is allowed to do the following things to a locked group:
- CHECK
- COPY
- DISPLAY
- INSTALL
- VIEW

The lock can be removed, using the UNLOCK command, only by a user on the same system and with the same operator identifier.

Options

Group(*groupname***)**
specifies the group to be unlocked. A generic group name is not accepted.

List(*listname***)**
specifies the list to be unlocked. A generic list name is not accepted.

Examples

- To unlock a group G1:
```
UNLOCK GROUP(G1)
```
- To unlock a LIST L1:

```
UNLOCK LIST(L1)
```

The CEDA USERDEFINE command

Use the **CEDA USERDEFINE** command to create a new resource definition on the CSD with user-defined default attributes.

Syntax

```
►►──CEDA──USerdefine──┬─Atomservice(name)───┬──Group(groupname)──────────►
                      ├─Bundle(name)────────┤
                      ├─CONnection(name)────┤
                      ├─CORbaserver(name)───┤
                      ├─DB2Conn(name)───────┤
                      ├─DB2Entry(name)──────┤
                      ├─DB2Tran(name)───────┤
                      ├─DJar(name)──────────┤
                      ├─DOctemplate(name)───┤
                      ├─Enqmodel(name)──────┤
                      ├─File(name)──────────┤
                      ├─Ipconn(name)────────┤
                      ├─JOurnalmodel(name)──┤
                      ├─JVmserver(name)─────┤
                      ├─LIbrary(name)───────┤
                      ├─LSRpool(name)───────┤
                      ├─MApset(name)────────┤
                      ├─MQconn(name)────────┤
                      ├─PARTItionset(name)──┤
                      ├─PARTNer(name)───────┤
                      ├─PIpeline(name)──────┤
                      ├─PROCesstype(name)───┤
                      ├─PROFile(name)───────┤
                      ├─PROGram(name)───────┤
                      ├─Requestmodel(name)──┤
                      ├─Sessions(name)──────┤
                      ├─TCpipservice(name)──┤
                      ├─TDqueue(name)───────┤
                      ├─TErminal(name)──────┤
                      ├─TRANClass(name)─────┤
                      ├─TRANSaction(name)───┤
                      ├─TSmodel(name)───────┤
                      ├─TYpeterm(name)──────┤
                      ├─Urimap(name)────────┤
                      └─Webservice(name)────┘

►─attribute list(newvalue)─────────────────────────────────────────────►◄
```

Description

USERDEFINE is an alternative to the DEFINE command. Instead of using CICS-supplied default values, USERDEFINE uses your own defaults. Otherwise it operates in exactly the same way as DEFINE.

To set up your own defaults, use DEFINE to create a dummy resource definition named USER in a group named USERDEF. Each dummy resource definition must be complete (for example, a transaction definition must name a program definition, even though you always supply a program name when you USERDEFINE a transaction). You need not install the dummy resource definitions before using USERDEFINE.

Do this for each type of resource for which you want to set default values. Although every definition in the group has the same name (USER), each is unique because it defines a different resource type.

Options

Attribute list
The attribute list depends on the resource type being defined; some resources have attributes that must be included in the definition. Attributes that you do not specify are given default values.

Group(*groupname*)
The name of the group to be defined.

Examples

Assembler programmers at an installation have created a dummy program definition called USER with Assembler as the default language. They use USERDEFINE to define their programs to CICS.

1. First you must define a program called USER in group USERDEF. You could do this with the command:

   ```
   CEDA DEFINE PROGRAM(USER) GROUP(USERDEF)
   ```

   The following figure shows the panel you would see as a result of this command:

   ```
     DEFINE PROGRAM(USER)
   GROUP(USERDEF)            CICS RELEASE = 0620
     OVERTYPE TO MODIFY
      CEDA  DEFine
       PROGram       : USER
       Group         : USERDEF
       DEscription  ==>
       Language     ==>                 CObol | Assembler | Le370 | C | Pli
       RELoad       ==> No              No | Yes
       RESident     ==> No              No | Yes
       USAge        ==> Normal          Normal | Transient
       USElpacopy   ==> No              No | Yes
       Status       ==> Enabled         Enabled | Disabled
       RSl           : 00               0-24 | Public
       Cedf         ==> Yes             Yes | No
       DAtalocation ==> Below           Below | Any
    I New group USERDEF created
                                                 SYSID=ABCD    APPLID=DBDCCICS
      DEFINE SUCCESSFUL                   TIME:  11.24.39   DATE:  97.359
    PF 1 HELP 2 COM 3 END           6 CRSR 7 SBH 8 SFH 9 MSG 10 SB 11 SF 12 CNCL
   ```

2. Type in `ASSEMBLER` as the LANGUAGE option and press ENTER:

```
 OVERTYPE TO MODIFY
  CEDA  USerdefine
   PROGram       : USER
   Group         : USERDEF
   DEscription  ==>
   Language     ==> Assembler         CObol | Assembler | Le370 | C | Pli
   RELoad       ==> No                No | Yes
   RESident     ==> No                No | Yes
   USAge        ==> Normal            Normal | Transient
   USElpacopy   ==> No                No | Yes
   Status       ==> Enabled           Enabled | Disabled
   RSl           : 00                 0-24 | Public
   Cedf         ==> Yes               Yes | No
   DAtalocation ==> Below             Below | Any



                                               SYSID=ABCD    APPLID=DBDCCICS
  DEFINE SUCCESSFUL                     TIME:  11.24.41   DATE:  97.359
PF 1 HELP 2 COM 3 END           6 CRSR 7 SBH 8 SFH 9 MSG 10 SB 11 SF 12 CNCL
```

Now, each time you want to define a new program, you can use the USERDEFINE command to get the default value ASSEMBLER automatically. So, if you want to define a new program P2 in group GRP you enter the command:

```
CEDA USERDEFINE PROGRAM(P2) GROUP(GRP)
```

The following figure shows the panel resulting from this command.

```
  USERDEFINE PROGRAM(P2)
GROUP(GRP)
  OVERTYPE TO MODIFY
   CEDA  USerdefine
    PROGram       : P2
    Group         : GRP
    DEscription  ==>
    Language     ==> Assembler         CObol | Assembler | Le370 | C | Pli
    RELoad       ==> No                No | Yes
    RESident     ==> No                No | Yes
    USAge        ==> Normal            Normal | Transient
    USElpacopy   ==> No                No | Yes
    Status       ==> Enabled           Enabled | Disabled
    RSl           : 00                 0-24 | Public
    Cedf         ==> Yes               Yes | No
    DAtalocation ==> Below             Below | Any
                                                       APPLID=DBDCCICS
   USERDEFINE SUCCESSFUL                 TIME:  11.25.48   DATE:  97.359
 PF 1 HELP 2 COM 3 END           6 CRSR 7 SBH 8 SFH 9 MSG 10 SB 11 SF 12 CNCL
```

You see that the ASSEMBLER option has appeared for the LANGUAGE attribute. You can overtype the option values on this panel to complete the definition just as you can with the DEFINE command panel.

After you have set up your own defaults in a USER resource definition, anyone using the USERDEFINE command for that resource type gets those default values.

By renaming your USER to something else and defining your own dummy resource definition, you can use your own default values. Normally, however, your installation probably agrees on default values for standardization reasons, and puts a LOCK on the USERDEF GROUP.

The CEDA VIEW command

Use the **CEDA VIEW** command to view the attributes of a resource definition on the CSD.

Syntax

```
►►──CEDA ──View──Group(groupname)──┬────────────────────────┬──────────────►◄
                                   ├─All(name)──────────────┤
                                   └─┬─Atomservice(name)──┬─┘
                                     ├─Bundle(name)───────┤
                                     ├─CONnection(name)───┤
                                     ├─CORbaserver(name)──┤
                                     ├─DB2Conn(name)──────┤
                                     ├─DB2Entry(name)─────┤
                                     ├─DB2Tran(name)──────┤
                                     ├─DJar(name)─────────┤
                                     ├─DOctemplate(name)──┤
                                     ├─Enqmodel(name)─────┤
                                     ├─File(name)─────────┤
                                     ├─Ipconn(name)───────┤
                                     ├─JOurnalmodel(name)─┤
                                     ├─JVmserver(name)────┤
                                     ├─LIbrary(name)──────┤
                                     ├─LSRpool(name)──────┤
                                     ├─MApset(name)───────┤
                                     ├─MQconn(name)───────┤
                                     ├─PARTItionset(name)─┤
                                     ├─PARTNer(name)──────┤
                                     ├─PIpeline(name)─────┤
                                     ├─PROCesstype(name)──┤
                                     ├─PROFile(name)──────┤
                                     ├─PROGram(name)──────┤
                                     ├─Requestmodel(name)─┤
                                     ├─Sessions(name)─────┤
                                     ├─TCpipservice(name)─┤
                                     ├─TDqueue(name)──────┤
                                     ├─TErminal(name)─────┤
                                     ├─TRANClass(name)────┤
                                     ├─TRANSaction(name)──┤
                                     ├─TSmodel(name)──────┤
                                     ├─TYpeterm(name)─────┤
                                     ├─Urimap(name)───────┤
                                     └─Webservice(name)───┘
```

Description

The VIEW command lets you look at the resource definition attributes in the same way as the ALTER command. However, you cannot update any of the definitions.

Options

Group(*groupname***)**
specifies the group to be viewed. If no name is given, the current group is assumed.

Examples

```
VIEW TERMINAL(SZT1) GROUP(ZEMTERMS)
VIEW MAPSET(N20MAP01) GROUP(N20)
```

Part 5. The resource definition batch utility DFHCSDUP

The CICS system definition utility program, DFHCSDUP, is a component of resource definition online (RDO). DFHCSDUP is an offline utility program that allows you to read from and write to a CICS system definition (CSD) file, either while CICS is running or while it is inactive.

Chapter 48. System definition file utility program (DFHCSDUP)

The CICS system definition utility program, DFHCSDUP, is a component of resource definition online (RDO). You can use the DFHCSDUP offline utility program to read from and write to a CICS system definition (CSD) file, either while CICS is running or while it is inactive.

You can use the DFHCSDUP program to:

- ADD a group to the end of a named list in a CSD file
- ALTER attributes of an existing resource definition
- APPEND a group list from one CSD file to a group list in another, or in the same, CSD file
- COPY all of the resource definitions in one group or several generically named groups to another group or several other generically named groups in the same, or in a different, CSD file
- DEFINE a single resource, or a group of resources, on the CSD
- DELETE from the CSD a single resource definition, all of the resource definitions in a group, or all of the group names in a list
- EXTRACT data from the CSD and pass it to a user program for processing
- INITIALIZE a new CSD file, and add to it CICS-supplied resource definitions
- LIST selected resource definitions, groups, and lists
- LIST a specific APAR
- REMOVE a single group from a list on the CSD file
- SCAN all IBM-supplied groups and user defined groups for a resource. The definition of the matched resource in an IBM supplied group is compared to the definition or definitions of the corresponding matched resource in the user-groups.
- SERVICE a CSD file when necessary
- UPGRADE the CICS-supplied resource definitions in a primary CSD file for a new release of CICS
- Define resources using a set of user-defined default values (USERDEFINE command)
- VERIFY a CSD file by removing internal locks on groups and lists.

See “Resource management utility DFHCSDUP commands” on page 454 for information on each of these commands.

Note that the DFHCSDUP utility opens the CSD in non-RLS mode, even when you request RLS access on your JCL. This means that, if you access the CSD from CICS in RLS mode, it cannot be open when you run DFHCSDUP. The reason for the restriction is that the DFHCSDUP utility does not have the capabilities that are needed in order to open a recoverable file in RLS mode. The restriction also applies, however, if your CSD is nonrecoverable.

You can invoke the DFHCSDUP program in two ways:

- As a batch program, for details see “Invoking DFHCSDUP as a batch program” on page 448.

- From a user program running either in batch mode or in a TSO environment, for details see “Invoking the DFHCSDUP program from a user program” on page 451.

Sharing the CSD between CICS Transaction Server for z/OS, Version 4 Release 2 and earlier releases

If you want to share the CSD between CICS regions at different release levels, to enable you to share common resource definitions, you must update the CSD from the higher level region - CICS Transaction Server for z/OS, Version 4 Release 2.

About this task

In CICS Transaction Server for z/OS, Version 4 Release 2, some attributes are obsolete, and are removed from the CSD definitions.

Procedure

- Use the **ALTER** command on definitions that specify obsolete attributes. This does not cause the loss of these attributes in CICS Transaction Server for z/OS, Version 4 Release 2, so you can safely update resource definitions from a CICS TS for z/OS, Version 4.2 region.
- If you are sharing the CSD between a CICS TS for z/OS, Version 4.2 region and a region at an earlier release of CICS, you can use the CICS TS for z/OS, Version 4.2 CSD utility, DFHCSDUP, to update resources that specify obsolete attributes.
  1. Specify if you want to use the compatibility option. Use the **PARM** parameter on the EXEC PGM=DFHCSDUP statement, using the option COMPAT. The default is NOCOMPAT, which means that you cannot update obsolete attributes. (See Figure 33 on page 449.)
  2. You cannot use the **EXTRACT** command of the DFHCSDUP utility in this release when the COMPAT option is specified.

What to do next

The *CICS Transaction Server for z/OS Upgrading from CICS TS Version 4.1* manual discusses these obsolete attributes and their compatibility with earlier releases.

Invoking DFHCSDUP as a batch program

The example job shows you the job control statements that you can use to invoke DFHCSDUP as a batch program.

About this task

```
//CSDJOB  JOB  accounting info,name,MSGLEVEL=1
//STEP1   EXEC PGM=DFHCSDUP,REGION=0M,                              1
//             PARM='CSD(READWRITE),PAGESIZE(60),NOCOMPAT'
//STEPLIB DD   DSN=CICSTS42.CICS.SDFHLOAD,DISP=SHR
//DFHCSD   DD  UNIT=SYSDA,DISP=SHR,DSN=CICSTS42.CICS.DFHCSD
//SECNDCSD DD  UNIT=SYSDA,DISP=SHR,DSN=CICSTS42.CICS.SECNDCSD       2
//indd     DD  UNIT=SYSDA,DISP=SHR,DSN=extract.input.dataset        3
//outdd    DD  UNIT=SYSDA,DISP=SHR,DSN=extract.output.dataset       4 5
//* or                                                              4
//outdd    DD  SYSOUT=A                                             4 5
//SYSPRINT DD  SYSOUT=A
//SYSIN    DD  *
⋮
     DFHCSDUP commands                                              6
/*
//
```

Figure 76. Sample job to run DFHCSDUP

To use this job, you need to edit it as follows:

Procedure

1. Change the EXEC statement to specify a suitable REGION size and a **PARM** parameter:

   Use the **PARM** parameter to specifiy any of the following options:

   UPPERCASE
      specifies that you want all output from DFHCSDUP to be in uppercase. If you want all output to be in mixed case (the default), do not code this option.

   CSD({READWRITE|READONLY})
      specifies whether you want read and write access or read-only access to the CSD from this batch job. The default value is READWRITE.

   PAGESIZE(*nnnn*)
      specifies the number of lines per page on output listings. Values for *nnnn* are 4 through 9999. The default value is 60.

   NOCOMPAT or COMPAT
      specifies whether the DFHCSDUP utility program is to run in compatibility mode (that is, whether it can update definitions that are obsolete in CICS Transaction Server for z/OS, Version 4 Release 2). The default is NOCOMPAT, which means that you cannot update obsolete attributes. For further information about this option, see "Sharing the CSD between CICS Transaction Server for z/OS, Version 4 Release 2 and earlier releases" on page 448.
2. If you specify the **FROMCSD** parameter on an APPEND, COPY, or SERVICE command, you need a DD statement for a secondary CSD . The ddname for this DD statement is the name you specify on the **FROMCSD** parameter. The secondary CSD must be a different data set from the primary; you must not define primary and secondary DD statements that reference the same data set.
3. If you specify the EXTRACT command, you might need to:
   a. Concatenate with STEPLIB the libraries that contain your USERPROGRAM programs.

b. Include a DD statement for any input data set that is defined in your user program. For example, the CICS-supplied user program, DFH$CRFA, needs a DD statement with a ddname of CRFINPT.

   The input file specified by CRFINPT is needed by the user programs DFH$CRF*x* (where *x*=A for Assembler or *x*=P for PL/I) and DFH0CRFC (for COBOL) to supply the list of resource types or attributes for which you want a cross reference listing. You can specify (in uppercase) any resource type known to CEDA, one resource type per line (starting in column 1). For example, your CRFINPT file may contain the following resource types (one per line) to be cross referenced:

   PROGRAM
   TRANSACTION
   TYPETERM
   XTPNAME
   DSNAME

   For programming information about the use of the CRFINPT file by the programs DFH$CRFx or DFH0CRFC (for COBOL), see the *CICS Customization Guide*.

4. If you specify the EXTRACT command, you need to include the DD statements for any data sets that receive output from your extract program. The ddname is whatever ddname you define in the user program. The CICS-supplied sample programs need DD statements for the following ddnames:

Table 41. DD statements for the CICS-supplied sample programs

program name	ddname	example DD statement
DFH$CRFx or DFH0CRFC (COBOL)	CRFOUT	`//CRFOUT DD SYSOUT=A`
DFH$FORx or DFH0FORC (COBOL)	FOROUT	`//FOROUT DD SYSOUT=output.dataset`

DFH0CBDC	CBDOUT
	SYSABOUT
		`//CBDOUT DD SYSOUT=A`
		`//SYSABOUT DD SYSOUT=A`

5. The output data sets in these examples are opened and closed for each EXTRACT command specified in SYSIN.
   - If you are writing the output to a sequential disk data set, specify DISP=MOD to ensure that data is not overwritten by successive EXTRACT commands.
   - Alternatively, provided you do not specify SYSOUT on the DD statement, you can change the OPEN statement in the program (for example, in the COBOL versions, to OPEN EXTEND).

   For programming information about the CICS-supplied user programs, see the *CICS Customization Guide*.

6. You can code commands and keywords using abbreviations and mixed case, as given in the syntax box in the description of each command. You can use a data set or a partitioned data set member for your commands, rather than coding them in the input stream if you prefer. Keyword values can be longer than one line, if you use the continuation character (an asterisk) at the end of a

line (in column 72). Subsequent lines start in column 1. For example, you can use this facility to specify XTPNAME values of up to 128 hexadecimal characters. If you enter an ambiguous command or keyword, the DFHCSDUP program issues a message indicating the ambiguity.

Invoking the DFHCSDUP program from a user program

Invoking the DFHCSDUP program from a user program enables you to create a flexible interface to the utility.

About this task

By specifying the appropriate entry parameters, your program can cause the DFHCSDUP program to pass control to an exit routine at any of five exit points. The exits can be used, for example, to pass commands to the DFHCSDUP program, or to respond to messages produced by its processing.

You can run your user program:
- In batch mode
- Under TSO.

Note:
1. In a TSO environment, it is normally possible for the terminal user to interrupt processing at any time by means of an ATTENTION interrupt. In order to protect the integrity of the CSD file, the DFHCSDUP program does not respond to such an interrupt until after it has completed the processing associated with the current command. It then writes message number DFH5618 to the put-message exit, where this is available, and also to the default output file:

   ```
   AN ATTENTION INTERRUPT HAS BEEN REQUESTED DURING DFHCSDUP PROCESSING
   ```

   Your put-message exit routine can terminate the DFHCSDUP program, if desired. (You **must** supply a put-message routine if you want your operators to regain control after an ATTENTION interrupt.)
2. Suitably authorized TSO users can use the CEDA INSTALL transaction to install resources that have previously been defined with the DFHCSDUP program.

The CICS-supplied sample program, DFH$CUS1, illustrates how the DFHCSDUP program can be invoked from a user program. It is written as a command processor (CP) for execution under the TSO/E operating system.

The following sections outline the entry parameters of the DFHCSDUP program and the responsibilities of the user program. For programming information about invoking the DFHCSDUP program from a user program, see the *CICS Customization Guide*.

Entry parameters for the DFHCSDUP program

When invoking the DFHCSDUP program, your program passes a list of up to five parameters.

These are described below:

OPTIONS
A list of character strings, separated by commas. (The information passed here is that which would otherwise be passed on the PARM keyword of the EXEC statement of JCL.)

Note: A maximum of three options may be specified:

UPPERCASE
specifies that you want all output from DFHCSDUP to be in uppercase. If you want all output to be in mixed case (the default), do not code this option.

CSD({READWRITE|READONLY})
specifies whether you require read/write or read-only access to the CSD. The default value is READWRITE.

PAGESIZE(nnnn)
specifies the number of lines per page on output listings. Valid values for nnnn are 4 through 9999. The default value is 60.

NOCOMPAT|COMPAT
specifies whether the DFHCSDUP utility program is to run in compatibility mode (that is, whether it can update definitions that are obsolete in Version 4 Release 2). The default is NOCOMPAT, which means that you cannot update obsolete attributes. For further information about this option, see "Sharing the CSD between CICS Transaction Server for z/OS, Version 4 Release 2 and earlier releases" on page 448.

DDNAMES
A list of ddnames that, if specified, are substituted for those normally used by the DFHCSDUP program.

HDING
The starting page number of any listing produced by the DFHCSDUP program. You can use this parameter to ensure that subsequent invocations produce logically numbered listings. If this parameter is not specified, the starting page number is set to 1.

The page number, if supplied, must be four numeric EBCDIC characters.

DCBs
The addresses of a set of data control blocks for use internally by the DFHCSDUP program. Any DCBs (or ACBs) that you specify are used internally, instead of those normally used by the DFHCSDUP program.

Note that if you specify both replacement DDNAMES and replacement DCBs, the alternative DCBs are used, but the alternative DDNAMES are disregarded.

EXITS
The addresses of a set of user exit routines to be invoked during processing of the DFHCSDUP program.

Responsibilities of the user program

Before invoking the DFHCSDUP program, your calling program must ensure that:

- AMODE(24) and RMODE(24) are in force
- S/370 register conventions are obeyed
- If the **EXITS** parameter is passed, any programming environment needed by the exit routines has been initialized

- Any ACBs or DCBs passed for use by the DFHCSDUP program are OPEN.

Rules for the syntax and preparation of commands for the DFHCSDUP program

Enter the commands in columns 1 through 71 of 80-character input records. You can specify keyword values longer than one line, if you use the continuation character (an asterisk) at the end of a line (in column 72). Subsequent lines start in column 1. For example, you can use this facility to specify XTPNAME values of up to 128 hexadecimal characters.

The command keywords can be specified by abbreviations and in mixed case, as shown in the command syntax under each command description. The minimum abbreviation is given in uppercase in the command syntax, with the optional characters given in lower case; for example:

```
ALter Connection(name) Group(groupname)
```

Leading blanks are ignored, and blanks between keywords and operands are permitted.

Comment records are permitted; they must have an asterisk (*) in column 1. Comment material is not permitted on a record that contains a command.

Blank records between commands are ignored.

Follow the conventions for the names of groups and lists when coding the **GROUP**, **LIST**, **TO**, and **TYPESGROUP** parameters. If you use a generic specification for the GROUP or LIST parameter in the LIST command, you can use the symbols * and + in the same way as for CEDA.

The **FROMCSD** parameter must contain a valid ddname conforming to the rules for the JCL of the operating system.

An example of a valid sequence of commands is shown in Figure 34 on page 453. Other examples of commands are given in the command descriptions that follow.

```
*                               SET UP INITIAL CSD FILE
INITialize
*
LIst LIst(DFHLIST) Objects
*                               UPGRADE FROM EARLIER RELEASE
UPgrade
*
LI Group(PPTM1)
LI G(SETM*)
*                                  CREATE GROUP PCTZ4
Copy G(PCTM1)  To(PCTZ4)
C G(SETMP3) T(PCTZ4) Replace
LI G(P++M+)
*                                  CREATE LIST MODLIST
APpend LIst(TESTLIST) TO(MODLIST) FRomcsd(CSDF1)
AP LI(SECLIST)  To(MODLIST) FR(CSDF1)
AP LI(DFHLIST)  To(MODLIST)
*
LI ALL OBJECTS
```

Figure 77. Sample commands of the DFHCSDUP program

Command processing in DFHCSDUP following internal error detection

If you have provided a put-message-exit routine for the DFHCSDUP program, it is invoked whenever a message is issued. You can use this exit to respond to error messages produced by DFHCDSUP processing, when the DFHCSDUP program is invoked from a user program.

The put-message-exit routine is not used if the DFHCSDUP program is running as a batch program. For programming information about the DFHCSDUP exits, see the *CICS Customization Guide*.

The reaction of the DFHCSDUP program to an error (with return code 8 or greater) depends on the nature of the error and on how the DFHCSDUP program is invoked.

If an error is detected while the DFHCSDUP program is running as a batch program, one of the following two reactions occurs:
1. If the error occurs during connection of the CSD, no subsequent commands are completed.
2. If the error occurs elsewhere, no subsequent commands are executed other than LIST commands.

If an error is detected while the DFHCSDUP program is receiving commands from a get-command exit, all subsequent commands are processed if possible.

Resource management utility DFHCSDUP commands

This section describes the commands available with the DFHCSDUP utility program. Commands can be abbreviated, but the minimum abbreviation allowed differs from some of the CEDA command abbreviations.

The DFHCSDUP ADD command

Add a group to a list.

ADD syntax

```
►►──ADd──Group──(──groupname──)──LIst──(──listname──)────────────────────►

►──┬──────────────────────────┬─────────────────────────────────────────►◄
   ├─After──(──groupname2──)──┤
   └─Before──(──groupname3──)─┘
```

Options

After*(groupname2)*
: specify AFTER to place the new group name after the existing group name. The group name is added at the end of the list if BEFORE or AFTER is not specified.

Before*(groupname3)*
: specify BEFORE to place the new group name before the existing group name. The group name is added at the end of the list if BEFORE or AFTER is not specified.

Group_(groupname)_
: specifies the name of the group to be added. The name must not already exist in the list. A generic group name is not accepted.

LIst_(listname)_
: specifies the name of the list to which the group is to be added. If the list does not already exist, a new one is created. A generic list name is not accepted.

Examples

To create a list LA01, by adding a group to it

```
ADD GROUP(GA001) LIST(LA01)
```

To add another group to list LA01, withot specifying where

```
ADD GROUP(GA002) LIST(LA01)
```

LA01 now looks like this
- GA001
- GA002

To add another group at the top of the list

```
ADD GROUP(GA003) LIST(LA01) BEFORE(GA001)
```

To add another group between GA001 and GA002

```
ADD GROUP(GA004) LIST(LA01) AFTER(GA001)
```

LA01 now looks like this
- GA003
- GA001
- GA004
- GA002

The DFHCSDUP ALTER command

Change some or all of the attributes of an existing resource definition.

ALTER syntax

```
►►──ALter──┬─Atomservice(name)───┬──Group──(──groupname──)──────────────►
           ├─Bundle(name)────────┤
           ├─CONnection(name)────┤
           ├─CORbaserver(name)───┤
           ├─DB2Conn(name)───────┤
           ├─DB2Entry(name)──────┤
           ├─DB2Tran(name)───────┤
           ├─DJar(name)──────────┤
           ├─DOctemplate(name)───┤
           ├─Enqmodel(name)──────┤
           ├─File(name)──────────┤
           ├─Ipconn(name)────────┤
           ├─JOurnalmodel(name)──┤
           ├─JVmserver(name)─────┤
           ├─LIbrary(name)───────┤
           ├─LSRpool(name)───────┤
           ├─MApset(name)────────┤
           ├─MQconn(name)────────┤
           ├─PARTItionset(name)──┤
           ├─PARTNer(name)───────┤
           ├─PIpeline(name)──────┤
           ├─PROCesstype(name)───┤
           ├─PROFile(name)───────┤
           ├─PROGram(name)───────┤
           ├─Requestmodel(name)──┤
           ├─Sessions(name)──────┤
           ├─TCpipservice(name)──┤
           ├─TDqueue(name)───────┤
           ├─TErminal(name)──────┤
           ├─TRANClass(name)─────┤
           ├─TRANSaction(name)───┤
           ├─TSmodel(name)───────┤
           ├─TYpeterm(name)──────┤
           ├─Urimap(name)────────┤
           └─Webservice(name)────┘

►─attribute list──(──new value──)─────────────────────────────────────►◄
```

Description

For information about the attributes that you can specify on the ALTER command for the various resource types, and for a description of the attributes and default values of each resource type, see the *CICS Resource Definition Guide*.

Do not use ALTER to change the value of the attributes of a TYPETERM definition on which other attributes depend. If you make a mistake with DEVICE, SESSIONTYPE, or TERMMODEL, delete the definition and define a new one with the correct values.

You can specify null attribute values, for example:

```
ALTER FILE(TEST) GROUP(ACT1) DESCRIPTION()
```

If an attribute for which you have specified a null value has a default, the value used depends upon the type of field:

- The command:
  ```
  ALTER FILE(TEST) GROUP(ACT1) RLSACCESS() DESCRIPTION()
  ```

uses the default value of NO for RLSACCCESS and the description is blanked out.

- The command:

```
ALTER FILE(TEST) GROUP(ACT1) PROFILE()
```

uses the default value DFHCICSA for the PROFILE field.

Changes to resource definitions in the CSD file do not take effect, in a running CICS system, until you install the group in which the resource definition resides.

Generic naming in the ALTER command

The ALTER command accepts both generic resource names and group names.

For each resource in the CSD file matching the specified combination of resource name and group name, an ALTER is attempted. In the case of an individual ALTER failing, processing terminates when all attempts for the command have been processed.

Options

Attribute list
specifies the attributes to be altered.

Group*(groupname)*
specifies the name of the group containing the resource to be altered.

Resource*(name)*
specifies the resource whose attributes you want to alter. You can specify a generic name by using the characters + and *.

Examples

To make a program resident:

```
ALTER PROGRAM(ERR01) GROUP(GENMODS) RESIDENT(YES)
     DATALOCATION()
```

To make all programs in the group GENMOD resident:

```
ALTER PROGRAM(*) GROUP(GENMOD) RESIDENT(YES)
    DATALOC()
```

The DFHCSDUP APPEND command

Add the groups in one list to the end of another list.

APPEND syntax

```
►►──APpend──FRomcsd──(──ddname──)──LIst──(──listname1──)──To──(──listname2──)────►◄
```

Description

No duplicate group names are allowed in a list. If DFHCSDUP finds any duplicate names during the APPEND operation it ignores them, and they are not appended. The DFHCSDUP output listing contains a warning message if this happens.

Note: If you are appending from one CSD to another, you should be aware that this command does not copy the groups themselves; you should use a separate COPY command to do this.

Options

FRomcsd*(ddname)*
: specifies the ddname of the secondary CSD file from which you are appending *listname1*.

List*(listname1)*
: specifies the name of the list that is appended. Do not use a generic list name.

  The list being appended can be on the primary CSD file, or on another CSD file. If you are appending from another CSD file, you must identify it by specifying the FROMCSD parameter.

To*(listname2)*
: specifies the name of the list to which you want the group names appended. If you are appending from another CSD file, you can give this list the same name as the one you are appending from. Do not use a generic list name.

  If this target list already exists, the source list is appended to the end of it. If the target list does not exist, it is created. (In effect, you are copying the source list.)

Examples

A list called LISTA contains the following groups:
- GB001
- GB002
- GB003

A list called LISTB contains the following groups:
- G001
- G002
- G003

Append LISTB to LISTA, like this:

```
APPEND LIST(LISTB) TO(LISTA)
```

After this, LISTA contains the following groups, in this order:
- GB001
- GB002
- GB003
- G001
- G002
- G003

and LISTB still contains:
- G001
- G002
- G003

The DFHCSDUP COPY command

Copy a resource definition from one group to a different group. Single resources cannot be copied as in the CEDA version of the COPY command.

COPY syntax

```
►►──Copy──Group──(──groupname1──)──To──(──groupname2──)──┬─────────┬──────────────►
                                                         ├─Replace─┤
                                                         └─MErge───┘

►─FRomcsd──(──ddname──)──────────────────────────────────────────────────────────►◄
```

Description

The COPY command copies all the resource definitions in **groupname1** to **groupname2**. The group to be copied (*groupname1*) can be on the primary CSD, or it can be on the CSD file specified by the **FROMCSD** parameter.

The group is copied to the group named on the TO parameter (*groupname2*) in the primary file. If this group already exists, the definitions from the source group (*groupname1*) are added to those already in the *groupname2* group. If the group specified on the TO parameter does not already exist, a new group of that name is created. However, if duplicate definitions exist in the two groups, the whole copy operation fails unless you specify REPLACE or MERGE to indicate how duplicates should be handled.

Generic naming in the COPY command

The COPY command accepts generic group names, both on the GROUP option and on the TO option, subject to the following rules:

- The only generic character permitted on the COPY command is the asterisk (*) symbol.
- The prefix length of *groupname1* must be equal to or greater than the prefix length of *groupname2*. Thus COPY GROUP(DFHCOMP*) TO(USRCMP*) is valid, but COPY GROUP(DFHCO*) TO(USRCOMP*) is not.

You can use the asterisk (*) symbol to copy from generically named groups to other generically named groups or from generically named groups to a specific group, as shown in "Examples" on page 460.

Note: There is no AS parameter as in the CEDA version of the COPY command.

The DFHCSDUP output listing tells you which definitions were copied, and what happened if duplicates were found.

Options

FRomcsd*(ddname)*
: specifies the ddname of the secondary CSD file from which you are copying *groupname1*.

Group*(groupname1)*
: specifies the name of the group to be copied. You can specify a generic name by using an asterisk (*).

MErge
: If *groupname2* already exists and duplicate definitions occur, the original definitions in *groupname2* are preserved.

Replace
: If *groupname2* already exists and duplicate definitions occur, the definitions in *groupname1* replace those in *groupname2*.

To*(groupname2)*
: specifies the name of the group to which the definitions are copied. If you are copying from another CSD file, you can give this group the same name as the one you are copying from. You can specify a generic name by using an asterisk (*).

Examples

The following example copies a group named GA001 to a group named GA002, which already exists, replacing any duplicate resource definitions with those in group GA001.

```
COPY GROUP(GA001) TO(GA002) REPLACE
```

The following example copies group GA003 to group GA004, but if any duplicate definitions occur, preserves the group GA004 definitions.

```
COPY GROUP(GA003) TO(GA004) MERGE
```

The following example copies all the CICS-supplied groups to user-named groups with a prefix of USR, with the result that DFHOPER becomes USROPER, DFHSTAND becomes USRSTAND, and so on.

```
COPY GROUP(DFH*) TO(USR*)
```

The following example copies every group starting with ABCD to the group called NEWGROUP:

```
COPY GROUP(ABCD*) TO(NEWGROUP)
```

The DFHCSDUP DEFINE command

Create new resource definitions.

DEFINE syntax

```
►►──DEFine──┬─Atomservice(name)───┬─Group──(──groupname──)──────────────►
            ├─Bundle(name)────────┤
            ├─CONnection(name)────┤
            ├─CORbaserver(name)───┤
            ├─DB2Conn(name)───────┤
            ├─DB2Entry(name)──────┤
            ├─DB2Tran(name)───────┤
            ├─DJar(name)──────────┤
            ├─DOctemplate(name)───┤
            ├─Enqmodel(name)──────┤
            ├─File(name)──────────┤
            ├─Ipconn(name)────────┤
            ├─JOurnalmodel(name)──┤
            ├─JVmserver(name)─────┤
            ├─LIbrary(name)───────┤
            ├─LSRpool(name)───────┤
            ├─MApset(name)────────┤
            ├─MQconn(name)────────┤
            ├─PARTItionset(name)──┤
            ├─PARTNer(name)───────┤
            ├─PIpeline(name)──────┤
            ├─PROCesstype(name)───┤
            ├─PROFile(name)───────┤
            ├─PROGram(name)───────┤
            ├─Requestmodel(name)──┤
            ├─Sessions(name)──────┤
            ├─TCpipservice(name)──┤
            ├─TDqueue(name)───────┤
            ├─TErminal(name)──────┤
            ├─TRANClass(name)─────┤
            ├─TRANSaction(name)───┤
            ├─TSmodel(name)───────┤
            ├─TYpeterm(name)──────┤
            ├─Urimap(name)────────┤
            └─Webservice(name)────┘

►─attribute list──(──value──)──────────────────────────────────────────►◄
```

Options

Attribute list
: The attribute list depends on the resource type being defined; some resources have attributes that must be included in the definition. For a description of the attributes and default values of each resource type, see the *CICS Resource Definition Guide*. Attributes that you do not specify are given default values.

Group*(groupname)*
: Specifies the name of the group that contains the resource definition that is created. Do not use a generic group name. If you specify the name of a group that does not already exist, the group is created.

Resource*(name)*
: Specifies the name of the resource you want to define. Do not use a generic resource name. The resource option must always be the first operand of the DEFINE command.

Examples

You can use the same name for more than one resource definition in a group, if the definitions are for different resource types. For example:

```
DEFINE PROGRAM(N28A) GROUP(N28APPL)
DEFINE TRANSACTION(N28A) GROUP(N28APPL)

DEFINE TERMINAL(USER) GROUP(USERDEF)
DEFINE PROGRAM(USER) GROUP(USERDEF)
```

The next example defines two consoles to CICS. You do not need continuation symbols if a definition spans several lines.

```
DEFINE TERMINAL(CON0)     GROUP(CONTERMS)
       CONSNAME(CONSJCL)  TYPETERM(DFHCONS)
       DESCRIPTION(MVS CONSOLE FOR ISSUING JCL COMMANDS)

DEFINE TERMINAL(CON1)     GROUP(CONTERMS)
       CONSNAME(CONSMAS)  TYPETERM(DFHCONS)
       DESCRIPTION(MVS MASTER CONSOLE)
```

The INITIALIZE command generates a TYPETERM definition, but not a TERMINAL definition, for a console. You must have at least one console defined to issue MVS MODIFY commands to CICS.

The DFHCSDUP DELETE command

Delete a single resource definition in a group, all the resource definitions in a group, or all the group names in a group list.

DELETE syntax

```
►►──DELete──┬─All─────────────────────┬──┬─Group──(──groupname──)─┬──Remove──────►◄
            └──┬─Atomservice(name)──┬─┘  └─List──(──listname──)───┘
               ├─Bundle(name)───────┤
               ├─CONnection(name)───┤
               ├─CORbaserver(name)──┤
               ├─DB2Conn(name)──────┤
               ├─DB2Entry(name)─────┤
               ├─DB2Tran(name)──────┤
               ├─DJar(name)─────────┤
               ├─DOctemplate(name)──┤
               ├─Enqmodel(name)─────┤
               ├─File(name)─────────┤
               ├─Ipconn(name)───────┤
               ├─JOurnalmodel(name)─┤
               ├─JVmserver(name)────┤
               ├─LIbrary(name)──────┤
               ├─LSRpool(name)──────┤
               ├─MApset(name)───────┤
               ├─MQconn(name)───────┤
               ├─PARTItionset(name)─┤
               ├─PARTNer(name)──────┤
               ├─PIpeline(name)─────┤
               ├─PROCesstype(name)──┤
               ├─PROFile(name)──────┤
               ├─PROGram(name)──────┤
               ├─Requestmodel(name)─┤
               ├─Sessions(name)─────┤
               ├─TCpipservice(name)─┤
               ├─TDqueue(name)──────┤
               ├─TErminal(name)─────┤
               ├─TRANClass(name)────┤
               ├─TRANSaction(name)──┤
               ├─TSmodel(name)──────┤
               ├─TYpeterm(name)─────┤
               ├─Urimap(name)───────┤
               └─Webservice(name)───┘
```

Description

Deleting a resource definition is different from removing a group from a list (see "The DFHCSDUP REMOVE command" on page 469). A deleted resource definition really does disappear from the CSD file.

Note:

When you DELETE the last resource in a group, the group is automatically deleted. An empty group cannot exist.

If a group is deleted, the group is not removed from all lists that contain it.

You cannot delete the definitions of groups and lists supplied by IBM.

If you delete a list, the definitions of the resources within the groups contained in the list are not deleted. To do this, you must also delete each group individually.

Options

Group*(groupname)*
If this is specified alone, it indicates the name of the group to be deleted. If a resource is also specified, it indicates the group to which the resource belongs. Do not use a generic group name.

List*(listname)*
specifies the name of the list to be deleted. Do not use a generic list name.

Remove
If this is specified when the group is deleted, the group is removed from all lists that contained it unless UPGRADE commands are running.

Resource*(name)*
specifies the name of the resource to be deleted. Do not use a generic resource name.

This operand can be used only with the GROUP option.

Examples

A list in the primary CSD file called LISTA contains the following groups:
- GB001
- GB002

Group GB001 contains the following resource definitions:

TERMINAL(CON0)
TERMINAL(CON1)
TERMINAL(TEST)

The following command deletes the resource definition for the terminal TEST from group GB001:

```
DELETE TERMINAL(TEST) GROUP(GB001)
```

The following command deletes all the resource definitions in group GB002:

```
DELETE GROUP(GB002)
```

This leaves only group GB001 in the group list LISTA. The following command deletes all group names in the group list LISTA:

```
DELETE LIST(LISTA)
```

Note: The resource definitions in the groups in LISTA are not deleted.

The DFHCSDUP EXTRACT command

Extract a resource definition, group, or list from the CSD file.

EXTRACT syntax

```
►►──EXtract──┬─Group──(──groupname──)─┬────────────────────────────────────────►
             └─LIst──(──listname──)───┘
```

```
►──┬─USerprogram──(──DFHxCRFy──)──────────────┬──┬─────────┬──────────────────►◄
   ├─USerprogram──(──DFHxFORy──)──────────────┤  └─Objects─┘
   ├─USerprogram──(──DFH0CBDC──)──────────────┤
   └─USerprogram──(──user-written program──)──┘
```

Description

You can use the **EXTRACT** command to extract resource definition data from the CSD file, either from a list or from a group, and invoke a user program to process the extracted data. You specify the user program on the **USERPROGRAM** parameter.

Note: For programming information about coding user programs for the EXTRACT command, see http://publib.boulder.ibm.com/infocenter/cicsts/v4r2/topic/com.ibm.cics.ts.doc/dfha3/topics/dfha37e.html .

Options

Group*(groupname)*
Specifies only those resource definitions within the named group. You can specify a generic group name.

LIst*(listname)*
Specifies only those resource definitions within the groups contained in the named list. You can use a generic list name only if you are not using the OBJECTS option.

Objects
Returns the detail of each resource definition. You can extract resource definition data at two levels of detail:

- Without the OBJECTS option, the command extracts either the names of all the groups within a specified list, or the names of all the resource definitions within a specified group.
- With the OBJECTS option, all the resource definition attributes are also extracted.

You must specify OBJECTS for the supplied sample user programs DFHxCRFy and DFHxFORy. It is optional for DFH0CBDC and user-written user programs.

USerprogram*(user-written program)*
Specifies the name of the user-written program that is to process the data retrieved by the **EXTRACT** command. You must supply a USERPROGRAM value.

CICS supplies three types of sample user program: DFHxCRFy, DFHxFORy, and DFH0CBDC. The letter *x* in the program name is $ for assembler or PL/I and 0 for COBOL. The letter *y* in the program name denotes the programming language, where y=A is the assembler version, y=C is the COBOL version, and y=P is the PL/I version. .

All other user programs are available in source form, in CICSTS42.CICS.SDFHSAMP, and the assembler versions are also available in pregenerated form in CICSTS42.CICS.SDFHLOAD.

Examples

The following command uses the supplied user program, DFH0CBDC, to extract the resource definitions in group DFHTYPE and create the **DEFINE** commands needed to create them. It stores these commands in the file specified by the CBDOUT DD statement.

```
EXTRACT GROUP(DFHTYPE) USERPROGRAM(DFH0CBDC) OBJECTS
```

The DFHCSDUP INITIALIZE command

Prepare a newly defined data set for use as a CSD file.

INITIALIZE syntax

```
►►──INITialize ─────────────────────────────────────────────────────►◄
```

Description

You must initialize your CSD file before you can use any of the other DFHCSDUP commands, or the RDO transactions. After you have initialized your CSD file, you do not need to execute this function again.

The standard entries for the CICS-supplied resource definitions are created on the CSD file. The INITIALIZE command arranges these definitions into groups, and defines these groups in a group list named DFHLIST. This list contains only the CICS-supplied groups that are required by a CICS system.

CICS supports RDO for transient data. The DFHDCTG group contains sample definitions of all the CICS-supplied queues. You can add the names of other queues that you want to be installed at the same time to DFHDCTG. Place DFHDCTG at the top of DFHLIST so that the queues become available for use at the earliest possible point during CICS initialization.

If you use another group to install the CICS-supplied queues, make sure that this group is at the top of the first list to be installed using GRPLIST as part of an initial or cold start.

You can put other transient data resource definitions into different groups, from which they can be installed either during an initial or cold start, or at some point after initialization has completed.

INITIALIZE also creates a control record at the start of the CSD file. This record contains fields identifying the CICS release and the current level of service applied to the CSD. It also has fields containing the date and time of creation of the CSD file, and the date and time the file was last updated. Both these fields appear on the hard copy listing of the CSD file produced by the LIST command.

If you want to prepare a newly defined recoverable data set for use as a CSD file, you must INITIALIZE it using non-RLS mode, because a recoverable data set cannot be opened for output from batch in RLS mode, but the data set needs to be opened for output in order to initialize it.

The DFHCSDUP LIST command

Produces listings of the current status of the CSD file.

LIST syntax

```
        ┌─All──────────────────────┐
►►──LIst─┤                          ├──┬─────────┬─────────────────────────────►◄
        ├─Group──(──groupname──)───┤  ├─Objects─┤
        └─LIst──(──listname──)─────┘  └─Sigsumm─┘
```

Description

The listings are sent to the SYSOUT data set, with the messages issued by the command processing. The contents of all the qualifying groups or lists are printed.

Options

Group*(groupname)*
: Specifies only those resource definitions in the named group. You can specify a generic group name.

LIst*(listname)*
: Specifies only those resource definitions in the groups that are contained in the named list. You can use a generic list name only if you are not using the OBJECTS option. The only command for which a generic list name is not acceptable is LIST LIST(*listname*) OBJECTS.

Objects
: Specifies the level of detail required for each resource definition. You can extract resource definition data at two levels of detail:
  - Without the OBJECTS option, the command extracts either the names of all the groups in a specified list or the names of all the resource definitions in a specified group.
  - With the OBJECTS option, all the resource definition attributes are also extracted, including the definition signature fields.

Sigsumm
: Shows the definition signature for each of the resource definitions displayed.

Examples

The listings produced by the various commands are as follows:

- LIST ALL
  - Names of defined lists and groups
  - Summary of lists
  - Summary of groups

  The LIST ALL command prints summaries of all the definitions of lists and groups that are on the CSD file.
- LIST ALL OBJECTS
  - Names of defined lists and groups
  - Summary of lists
  - Summary of groups
  - Objects in groups

  The LIST ALL OBJECTS command prints summaries of all the definitions of lists and groups that are on the CSD file, with the properties of the resources in all the groups.
- LIST GROUP(*groupname*)

  - Summary of groups
  - Group name can be generic

  The LIST GROUP command summarizes the names of all the resources in one or more groups. They are organized in each group into resource type categories; for example: map sets, and programs.
- LIST GROUP(*groupname*) OBJECTS
  - Summary of groups
  - Objects in groups
  - Group name can be generic

  With this command, you can tabulate the properties of the resources, organized according to resource type. The creation time for each resource is given, with all its attributes, as originally set up by using DEFINE and ALTER commands or by migrating it from a CICS table. The properties of transactions and profiles are arranged in the same subcategories that appear on the CEDA DEFINE screen.
- LIST GROUP(*groupname*) SIGSUMM
  - Group name can be generic

  Use this command to tabulate the definition signature of the resources, organized according to resource type.
- LIST LIST(*listname*)
  - Summary of lists
  - List name can be generic

  The contents of one or more group lists are tabulated. The groups are displayed in the same sequence as their position in the list. This order is set by the commands ADD and APPEND, which were used in the CEDA transaction to build the list.
- LIST LIST(*listname*) OBJECTS
  - Summary of lists
  - Objects of groups in list
  - Generic list name is not allowed

  Use this command to tabulate the properties of all the resources to be defined in a CICS system at startup time. They are identified by one or more list names specified in the GRPLIST=(*list1*,*list2*,*list3*,*list4*) system initialization parameter. The names of all the groups in the list appear in the summary of lists. Then, for each group that is contained in the list, the properties of the individual resources in the group are tabulated.

  The "Objects in Groups in Lists" tabulation arranges the groups in the same order as they were added to the group list. This order is important if duplication occurs, when definitions of the same resource might be in more than one group. If a list of this type is used at system startup time, the resource definitions used when there is duplication are those belonging to the group that is latest in the list.

The DFHCSDUP PROCESS command

Apply maintenance to the CSD file for a specific APAR.

PROCESS syntax

```
►►──PROCESS──Apar──(──aparnumber──)──────────────────────────────────────►◄
```

Description

The PROCESS APAR command is used to apply maintenance to your CSD file for a specific APAR. Only use this command in accordance with the instructions in the associated PTF cover letter.

Options

Apar*(aparnumber)*
The number of the APAR providing the maintenance; for example, PROCESS APAR(PQ12417) is used to apply maintenance for APAR PQ12417.

The DFHCSDUP REMOVE command

Remove a group name from a list.

REMOVE syntax

```
►►──Remove──Group──(──groupname──)──LIst──(──listname──)──────────────────────►◄
```

Description

The group, and all its resource definitions, still exists on the CSD file.

Options

Group*(groupname)*
specifies the name of the group to be removed. Do not use a generic group name.

LIst*(listname)*
specifies the name of the list from which a group is to be removed. Do not use a generic list name. When the last group is removed from a list, the list no longer exists on the CSD file.

Examples

A list LL02 contains the following groups:

G001 G002 G003 G004

To remove group G003:

```
REMOVE GROUP(G003) LIST(LL02)
```

This leaves:

G001 G002 G004

The DFHCSDUP SCAN command

SCAN all the IBM-supplied groups and user-defined groups for a specified resource. The definition of the matched resource in an IBM supplied group is compared with the definition(s) of the corresponding matched resource in the user groups.

SCAN syntax

```
►►──SCAN──┬─Atomservice(name)───┬──┬───────────────────────┬──────────────►◄
          ├─Bundle(name)────────┤  └─ALIAS──(──aliasname──)─┘
          ├─CONnection(name)────┤
          ├─CORbaserver(name)───┤
          ├─DB2Conn(name)───────┤
          ├─DB2Entry(name)──────┤
          ├─DB2Tran(name)───────┤
          ├─DJar(name)──────────┤
          ├─DOctemplate(name)───┤
          ├─Enqmodel(name)──────┤
          ├─File(name)──────────┤
          ├─Ipconn(name)────────┤
          ├─JOurnalmodel(name)──┤
          ├─JVmserver(name)─────┤
          ├─LIbrary(name)───────┤
          ├─LSRpool(name)───────┤
          ├─MApset(name)────────┤
          ├─MQconn(name)────────┤
          ├─PARTItionset(name)──┤
          ├─PARTNer(name)───────┤
          ├─PIpeline(name)──────┤
          ├─PROCesstype(name)───┤
          ├─PROFile(name)───────┤
          ├─PROGram(name)───────┤
          ├─Requestmodel(name)──┤
          ├─Sessions(name)──────┤
          ├─TCpipservice(name)──┤
          ├─TDqueue(name)───────┤
          ├─TErminal(name)──────┤
          ├─TRANClass(name)─────┤
          ├─TRANSaction(name)───┤
          ├─TSmodel(name)───────┤
          ├─TYpeterm(name)──────┤
          ├─Urimap(name)────────┤
          └─Webservice(name)────┘
```

Description

For information about the types of resource that you can specify on the SCAN command, and for a description of the attributes and default values of each resource type, see the *CICS Resource Definition Guide*.

The SCAN command searches all the IBM supplied groups in the CSD for a resource definition of a specified name and type. A message is issued with the results of the search. The user-defined groups are then searched for the same resource definition. The outcome of this can be one of the following:

- If an IBM-supplied group and one or more user-defined groups contain the resource definition, a comparison is made between the definition in the IBM-supplied group and the user group(s). A message is issued indicating whether the definition in the IBM supplied group matches the definition(s) in the user group(s).
- If the resource definition is not found in the user defined groups a message is issued.

- If the resource definition is not found in an IBM-supplied group but is found in one or more user defined groups a message is issued indicating the group(s) that contained it.

If *aliasname* is specified, the user groups are searched using *aliasname*.

Note:

1. The compatibility groups DFHCOMPx are not scanned as part of the IBM supplied groups but as user defined groups.
2. The DESCRIPTION attribute is not used in the comparison.

You can use the SCAN command to check for differences between IBM-supplied definitions that you have modified and the latest IBM-supplied versions after an upgrade.

Options

Alias*(aliasname)*
: specifies the alias name of the resource type to be searched for in the user-defined groups.

  This operand is optional.

Resource*(name)*
: specifies the name of the resource type to be searched for in the IBM-supplied groups, and in the user-defined groups if *aliasname* is not specified. The resource option must always be the first operand of the SCAN command.

Examples

To search the CSD for transaction CEDA:

```
SCAN TRANSACTION(CEDA)
```

The result of this could look like:

```
 DFH5130 I PRIMARY CSD OPENED;  DDNAME: DFHCSD
 DFH5633 I TRANSACTION CEDA FOUND IN GROUP DFHSPI
 DFH5631 I TRANSACTION CEDA FOUND IN GROUP A1
           MATCHES THE IBM SUPPLIED DEFINITION IN GROUP DFHSPI
 DFH5631 I TRANSACTION CEDA FOUND IN GROUP A2
           MATCHES THE IBM SUPPLIED DEFINITION IN GROUP DFHSPI
 DFH5632 I TRANSACTION CEDA FOUND IN GROUP DFHCOMP1
           DOES NOT MATCH THE IBM SUPPLIED DEFINITION
           IN GROUP DFHSPI
 DFH5101 I SCAN COMMAND EXECUTED SUCCESSFULLY.
```

To search the CSD for transaction CEDA with an alias name of AEDA:

```
SCAN TRANSACTION(CEDA) ALIAS(AEDA)
```

The result of this could look like:

```
 DFH5130 I PRIMARY CSD OPENED;  DDNAME: DFHCSD
 DFH5633 I TRANSACTION CEDA FOUND IN GROUP DFHSPI
 DFH5631 I TRANSACTION AEDA FOUND IN GROUP A3
           MATCHES THE IBM SUPPLIED DEFINITION IN GROUP DFHSPI
 DFH5101 I SCAN COMMAND EXECUTED SUCCESSFULLY.
```

The DFHCSDUP SERVICE command

Carry out maintenance to your CSD file.

SERVICE syntax

```
►►──Service──FRomcsd──(──ddname──)──LEvel──(──nnn──)──────────────────────────►◄
```

Description

You might occasionally (between CICS releases) have to apply a service routine to carry out preventive or corrective maintenance to your CSD file. You do this by loading and running a special service program (DFHCUS1), which is supplied with CICS as a separately loadable module.

You can use the SERVICE command to create a new copy of the CSD file, from the existing CSD file. All the definitions are preserved, with the corrections (if any) applied.

Options

FRomcsd(*ddname*)
: specifies the ddname of the current CSD file, which for the purposes of the command is treated as the secondary CSD file.

LEvel(*nnn*)
: Associated with your CSD file is a current service level, initially set to 000 when the file was initialized. Applying the service routine causes the service level to be incremented in steps of one, from a “current level” to a “target level”.

  This operand specifies the target service level to which the CSD file is to be upgraded, and must be 1 higher than the current level of FROMCSD. Specify it as a 3-character integer; for example, LEVEL(001).

The DFHCSDUP UPGRADE command

Change the CICS-supplied resource definitions in a primary CSD file.

UPGRADE syntax

```
►►──UPgrade──┬─────────────────────┬──┬─────────┬─────────────────────────────►◄
             └─USing──(──filename──)─┘  └─Replace─┘
```

Description

Upgrades the IBM-supplied definitions in the CSD. Definitions are added to, modified in, or deleted from DFH-groups. Note that deleted definitions are added to compatibility groups with names of the form DFHCOMP*n*. This enables you to share the CSD with earlier releases of CICS after you have run the upgrade command.

The upgrade command can also be used to apply any package of IBM-supplied resource definitions to the CSD file. For example, the definitions for the CICS sample programs and transactions can be transferred to the CSD file with the UPGRADE statement.

Options

Replace
: Specify the REPLACE option when you need to rerun the UPGRADE command (for example, because of a previous failure).

USing*(filename)*

To upgrade a CSD, do not specify the **USING** operand. All IBM-supplied definitions from **any** release are deleted and then the CSD file is initialized, so you do not need to say which release you came from.

To install IBM features onto CICS, specify `UPGRADE USING(`*filename*`)`. For example, `UPGRADE USING(DFHRDJPN)` is used to place the double-byte character set feature definitions onto the CSD file.

The DFHCSDUP USERDEFINE command

Create new resource definitions using your own default values instead of the default values supplied by CICS.

USERDEFINE syntax

```
►►──USERDEFINE──┬─Atomservice(name)──┬──Group──(──groupname──)────────────────►
                ├─Bundle(name)───────┤
                ├─CONnection(name)───┤
                ├─CORbaserver(name)──┤
                ├─DB2Conn(name)──────┤
                ├─DB2Entry(name)─────┤
                ├─DB2Tran(name)──────┤
                ├─DJar(name)─────────┤
                ├─DOctemplate(name)──┤
                ├─Enqmodel(name)─────┤
                ├─File(name)─────────┤
                ├─Ipconn(name)───────┤
                ├─JOurnalmodel(name)─┤
                ├─JVmserver(name)────┤
                ├─LIbrary(name)──────┤
                ├─LSRpool(name)──────┤
                ├─MApset(name)───────┤
                ├─MQconn(name)───────┤
                ├─PARTItionset(name)─┤
                ├─PARTNer(name)──────┤
                ├─PIpeline(name)─────┤
                ├─PROCesstype(name)──┤
                ├─PROFile(name)──────┤
                ├─PROGram(name)──────┤
                ├─Requestmodel(name)─┤
                ├─Sessions(name)─────┤
                ├─TCpipservice(name)─┤
                ├─TDqueue(name)──────┤
                ├─TErminal(name)─────┤
                ├─TRANClass(name)────┤
                ├─TRANSaction(name)──┤
                ├─TSmodel(name)──────┤
                ├─TYpeterm(name)─────┤
                ├─Urimap(name)───────┤
                └─Webservice(name)───┘
```

```
►─Attribute list──(──value──)──────────────────────────────────────────►◄
```

Description

The USERDEFINE command is an alternative to the DEFINE command. Instead of using the default values supplied by CICS, the USERDEFINE command uses your own default values to create a resource definition. Otherwise it operates in exactly the same way as the DEFINE command.

To set up your own default values for the USERDEFINE command, use the normal DEFINE command to create resource definitions named USER in a group named USERDEF:

- Create a resource definition named USER in the USERDEF group for each resource for which you want to provide default values. For example, if you want to provide default values for PROGRAM, TRANSACTION, and TCPIPSERVICE resource definitions, create the resource definitions PROGRAM(USER), TRANSACTION(USER), and TCPIPSERVICE(USER) in the USERDEF group. It does not matter that all the resource definitions in the USERDEF group are named USER; they are unique because they are different resource types. Any resource definitions in the USERDEF group that are not named USER are ignored by the USERDEFINE command.
- In each resource definition in the USERDEF group, specify the default values that are to be applied when you use the USERDEFINE command to create a resource of that type. For example, if you want Assembler to be the default language in PROGRAM resource definitions created with the USERDEFINE command, issue the following DEFINE command to create the resource definition:

  ```
  DEFINE PROGRAM(USER) GROUP(USERDEF) LANGUAGE(ASSEMBLER)
  ```
- Each resource definition in the USERDEF group must be a complete, valid resource definition. For example, a transaction definition must name a program definition, even if you always supply a program name when you use the USERDEFINE command to define a transaction.
- You do not have to install the resource definitions in the USERDEF group.

When you have created resource definitions in the USERDEF group, you can use the USERDEFINE command to define those types of resources, and the default values that you set up are used in the resource definitions. For example, if you have created a PROGRAM resource definition in the USERDEF group that specifies LANGUAGE(ASSEMBLER), the following command creates a resource definition for program P2 in group GRP and specifies Assembler as the language:

```
USERDEFINE PROGRAM(P2) GROUP(GRP)
```

Options

Attribute list*(value)*
: The attribute list depends on the resource type that is being defined; some resources have attributes that must be included in the definition. For a description of the attributes and default values of each resource type, see RDO resources in the Resource Definition Guide. Attributes that you do not specify are given default values.

Group*(groupname)*
: Specifies the name of the group that will contain the resource definition to be created. Do not use a generic group name. If you specify the name of a group which does not already exist, the group is created.

Resource(name)
Specifies the name of the resource you want to define. Do not use a generic resource name. The resource option must always be the first operand of the USERDEFINE command.

The DFHCSDUP VERIFY command

Remove internal locks on groups and lists.

VERIFY syntax

```
►►──VERIFY──────────────────────────────────────────────────────────────►◄
```

Description

Use the VERIFY command only when the CSD file is not in use and no backout processing is pending on the CSD file; preferably use it only when no CICS systems that may use the CSD file are running. In particular, do not use the VERIFY command while CICS systems could be accessing the CSD file in RLS access mode.

VERIFY acts on the whole CSD file, and is for use in the extreme condition where internal lock records have been left behind. These records are normally removed when a function that changes the CSD file has been completed. However, this may not have happened if there was a system failure when the CEDA transaction was running, or if an offline utility failed to finish. The locks may prevent CEDA users from accessing certain groups and lists on the CSD file.

Note that VERIFY removes only the internal locks. It does not affect the normal user locks applied by the LOCK command in the CEDA transaction.

Part 6. Autoinstall

Autoinstall is a method of creating and installing CICS resources dynamically as they are required. You can use autoinstall for SNA LUs, MVS consoles, APPC connections, IPIC connections, programs, map sets, partition sets, and journals.

With autoinstall, you do not have to define and install every resource that you intend to use. Instead, CICS dynamically creates and installs a definition for you when a resource is requested. CICS bases the new definition on a *model* definition that you provide.

You can use an *autoinstall control program* to control the way autoinstall operates in your CICS region.

Using autoinstall saves the time that is otherwise used to define and install every resource, and it saves storage, because each installed resource occupies storage whether the resource is being used or not.

Chapter 49. Autoinstall models

You must provide at least one *model* resource definition for each type of resource to be autoinstalled.

When a resource is requested that does not have an installed definition, CICS creates a definition based on what you have specified in the model. You can have more than one model, depending on what properties you want the autoinstalled resources to have; for example, if you had 500 terminals all with the same properties and another 500 with a different set of properties, you could have two model terminal definitions, one for each of the two sets of properties.

Chapter 50. Autoinstall control program

You control autoinstall by means of an *autoinstall control program*, either user-written or supplied by CICS. This program is responsible for, among other things, providing the model name or names to CICS and, providing z/OS Communications Server information to CICS for autoinstall for terminals, and so on.

CICS provides several autoinstall control programs; one for terminals; one for MVS consoles; one for connections; and one for programs, map sets, and partition sets. You can use the CICS-supplied ones or you can customize them to suit your installation.

Chapter 51. Autoinstalling z/OS Communications Server terminals

How to use autoinstall for z/OS Communications Server terminals and connections.

For information on autoinstalling MVS consoles, see “Autoinstalling MVS consoles” on page 489.

For information on autoinstalling connections and parallel sessions, see “Autoinstalling APPC connections” on page 493.

For programming information about the autoinstall control program, see the *CICS Customization Guide*.

Deciding which terminals to autoinstall

This section will help you to decide which terminal devices to autoinstall.

Automatic transaction initiation

If a BMS ROUTE message is sent to a terminal that has a TCT entry but is not logged on, CICS saves the message for subsequent delivery.

In addition, if the TCT entry so specifies, CICS attempts to acquire the terminal and log it on for that purpose. CICS attempts to satisfy other ATI requests (EXEC CICS START or a transient data trigger level) in the same way.

The use of autoinstall for printers is severely limited because almost all transactions for printers are initiated automatically. It is possible to autoinstall printers, however, if you arrange for them to be logged on. Entering VARY NET,...,LOGON as a console command does this.

For an autoinstalled terminal, a TCT entry **may** be available even when the terminal is logged off. This happens only if the terminal has been logged on earlier in the CICS run, and depends on the TYPETERM definition, the system initialization parameters, and the SNT entry for the last user of the terminal. For details, see “Automatic sign-off, logoff, and TCTTE deletion” on page 487. If a TCT entry exists, an autoinstalled terminal can accept an ATI request just like an individually defined terminal.

If you choose autoinstall for terminals that might receive ATI requests, make use of the AUTOCONNECT attribute on the TYPETERM definition for your models. AUTOCONNECT(YES) means that the terminal is logged on to CICS automatically at an emergency restart (see Figure 38 on page 489), by CICS requesting a z/OS Communications Server SIMLOGON (simulated logon). (Because this requires a TCT entry, it does not happen at cold or warm start.)

You may find that setting up a printer-owning region is the best approach, especially if you have distributed printing with many small printers.

Whether or not you autoinstall your printers, you can associate a printer and an alternate printer with a display device. The association is made when the display device is autoinstalled. Definitions for these printers need not have been installed at the time the display device is autoinstalled, but they must exist at the time of use.

The TCT user area (TCTUA)

The TCT user area is an optional extension to the TCT entry.

The TCTUA is available for application use (the rest of the TCT entry belongs to CICS). It has traditionally been used for two purposes:

- To pass data from one transaction of a pseudo-conversational sequence to the next.
- To maintain user profile information and statistics during a terminal session. (This is not necessarily a z/OS Communications Server session, but a period of access to a particular application, as defined by the application.)

The first use has gradually been supplanted by COMMAREA and other CICS facilities, but the second is still fairly common. An application may store statistics, such as teller totals, in the TCTUA, which is initialized by a PLTPI program at the beginning of execution and retrieved by a PLTSD program at termination (shutdown). Autoinstall does not provide the ability to save this information between logoff and logon, because the TCTUA does not exist then. In addition, the TCTUA is not available to PLTPI and PLTSD programs at system initialization and termination. A new technique must be devised to allow the initialization of TCTUA and user data when the user logs on or logs off.

As noted earlier, the autoinstall process creates the TCT entry (including the TCTUA) before the first transaction is executed at the terminal, but after the autoinstall control program has done its initial execution. Thus you cannot access the TCTUA in the autoinstall control program and so any TCTUA initialization must be done later. You could write your own 'good morning' transaction to do this, or use the first transaction of the application in question.

Furthermore, the autoinstall control program does not have access to the TCTUA at logoff either, because CICS deletes the TCT entry (including the TCTUA) before invoking this program. Therefore, if an application needs to capture statistics or other information from such a TCTUA, it must get access before CICS does this. The place to do this is in the **node error program (NEP)**, the user-written component of the terminal error processing routines, because CICS drives the NEP exit before it deletes the TCT entry.

The terminal list table (TLT)

A terminal list table is a list of terminals, defined either by four-character CICS terminal names or by three-character CICS operator identifiers.

It is used principally for routing messages to multiple destinations and for giving limited operational control of a group of terminals to a supervisor. Both of these uses must be rethought in an autoinstall environment. If a TLT lists terminals that do not have TCT entries, because they are not logged on at the time the TLT is used, supervisory operations against those terminals fails. For example, you cannot put a nonexistent TCT entry into or out of service.

Similarly, message routing works differently for individually defined terminals and for autoinstalled terminals. When a message is sent to an individually defined terminal that is not logged on, the message is saved in temporary storage, and delivered when the terminal logs on. When a message is sent to a terminal that is not defined because it is an autoinstalled terminal and is not logged on, CICS gives a route fail condition, indicating that it knows nothing of that terminal. Indeed, if terminal names are generated and assigned randomly, as they may be in an autoinstall environment, the whole TLT mechanism breaks down.

Transaction routing

An autoinstall request to a local system overrides an autoinstall request for the same definition shipped from a different system.

If transaction routing can occur between two CICS systems, any terminal that can log on to both should be installed in both in the same way. Such a terminal should be:
- Autoinstalled in both systems, or
- Defined to each system at initialization

Autoinstall and output-only devices

Most of the benefits of autoinstall apply more to display devices than to printers.

Displays initiate transactions in CICS; usually, any transaction output is returned to the input terminal, so that neither CICS nor the application needs to know any other NETNAME than that of the display, which identifies itself in the process of logging on.

On the other hand, when output is directed to output-only printers, either CICS or the application must know what NETNAME to use, and this implies that some knowledge of the network is maintained somewhere. The primary and alternate printer names in an individually-defined TCT entry constitute this kind of information, as maintained by CICS. In the case of autoinstalled terminals, corresponding information—if it is required—must be maintained in tables or files, embedded in the application, supplied by z/OS Communications Server ASLTAB and ASLENT model terminal support (MTS), or supplied dynamically by the user.

Autoinstall and z/OS Communications Server

This topic explains how autoinstall works with z/OS Communications Server. It is intended to help you understand the processing that takes place when you use autoinstall.

The process of logging on to CICS using autoinstall

To help you understand the process, consider what takes place when you log on to CICS through z/OS Communications Server.

(The process is illustrated in Figure 35 on page 482 and Figure 36 on page 483.) CICS supports the model terminal support (MTS) function of z/OS Communications Server. Using MTS, you can define the model name, the printer (PRINTER), and the alternate printer (ALTPRINTER) for each terminal in a z/OS Communications Server table. CICS captures this information as part of autoinstall processing at logon, and uses it to create a TCTTE for the terminal. If you are using MTS, you must use a version of DFHZATDX that is suitable for use on CICS Transaction Server for z/OS. See the *CICS Customization Guide* for programming information about the user-replaceable autoinstall program.

1. z/OS Communications Server receives your request, determines that you want to use CICS, and passes your request to CICS.

2. CICS extracts your terminal's NETNAME name from the logon data. CICS searches the TCT for an entry with the same NETNAME.
3. If it finds such an entry, CICS issues an OPNDST to z/OS Communications Server to establish a session between CICS and the terminal. This is the normal CICS logon process.
4. If it fails to find a matching entry, CICS checks the system initialization parameters that were specified in the SIT, or reset using CEMT, to check whether it can allow an autoinstall.
5. If the system initialization parameters allow an autoinstall, CICS checks the terminal data passed by z/OS Communications Server, to check whether the terminal is eligible for autoinstall.
6. If the terminal is eligible, CICS examines the bind image to see if it carries sufficient information.
7. If the z/OS Communications Server bind image data proves sufficient, CICS searches the autoinstall model table (AMT) in sorted ascending order, and autoinstalls the terminal in one of the following ways:
   - If z/OS Communications Server has supplied CICS with a valid model name, CICS passes this name to the **autoinstall control program**. (If the logon request has come to CICS through z/OS Communications Server, and if you have supplied z/OS Communications Server with names of model terminals, CICS can obtain the name of the model terminal from the logon data.)
   - If z/OS Communications Server has not supplied CICS with a valid model name, CICS searches the AMT for suitable autoinstall models and passes these to an **autoinstall control program**, together with z/OS Communications Server logon data. If z/OS Communications Server has supplied CICS with an invalid model name, message DFHZC6936 results.
8. The autoinstall control program (either the CICS-supplied program or one written by you) selects one of the models and provides the rest of the information necessary to complete a TCT entry for the terminal.
9. When the autoinstall control program returns control, CICS builds a TCT entry using the autoinstall model, the data returned by the autoinstall control program, and the z/OS Communications Server logon data for the terminal. CICS then adds the new entry to the TCT and issues an OPNDST to z/OS Communications Server to establish a session between CICS and the terminal.
10. If the TYPETERM definition so specifies, CICS uses the QUERY function to find out about some of the features of the terminal. (These features are listed in Chapter 37, "TYPETERM resources," on page 327.)

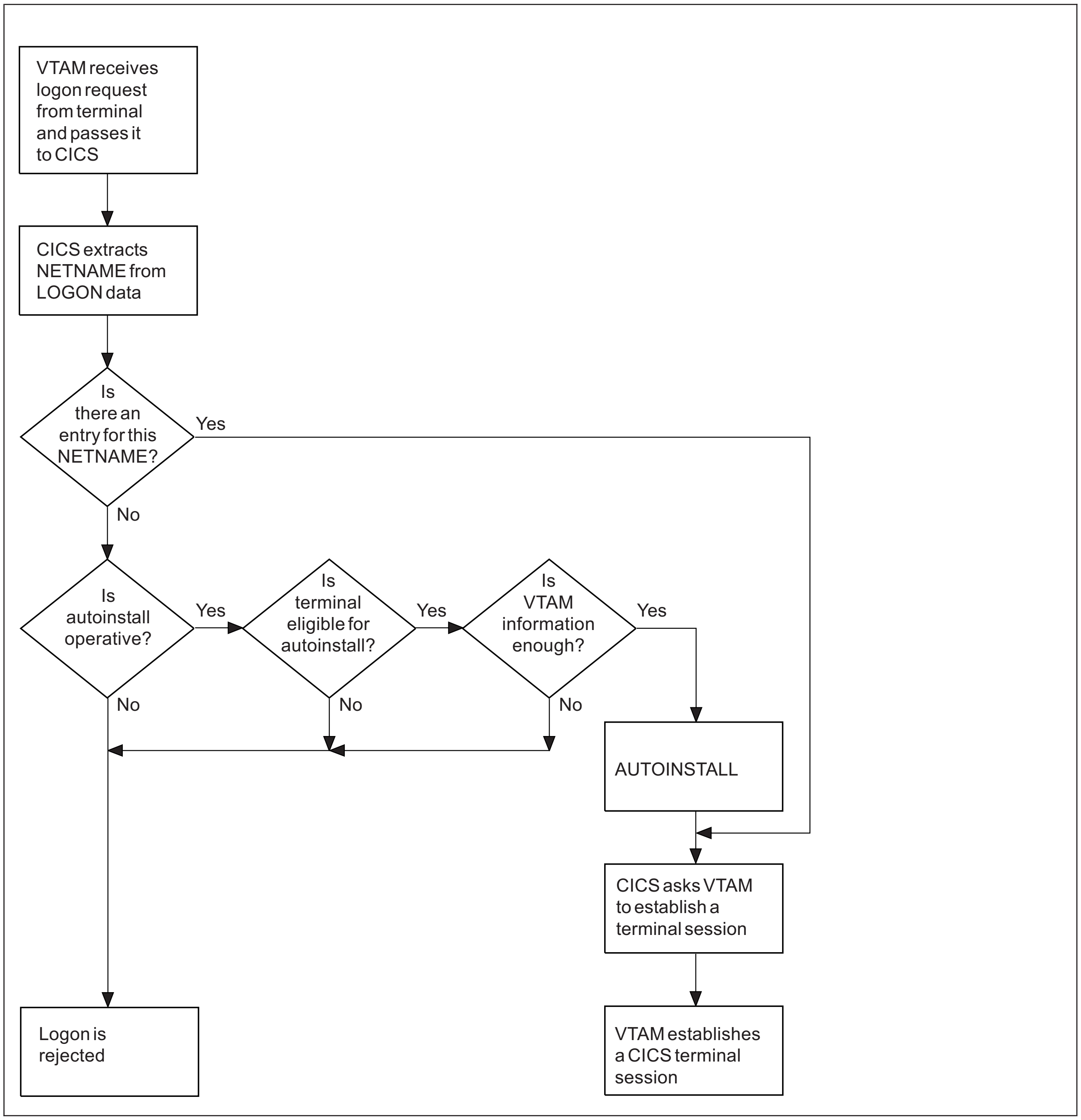

VTAM receives logon request from terminal and passes it to CICS
CICS extracts NETNAME from LOGON data
Is there an entry for this NETNAME?
Yes
No
Is autoinstall operative?
Yes
No
Is terminal eligible for autoinstall?
Yes
No
Is VTAM information enough?
Yes
No
AUTOINSTALL
CICS asks VTAM to establish a terminal session
VTAM establishes a CICS terminal session
Logon is rejected

Figure 78. The process of logging on to CICS using autoinstall.

Note that the autoinstall process itself is shown as a single box. What happens inside this box is depicted in Figure 36 on page 483

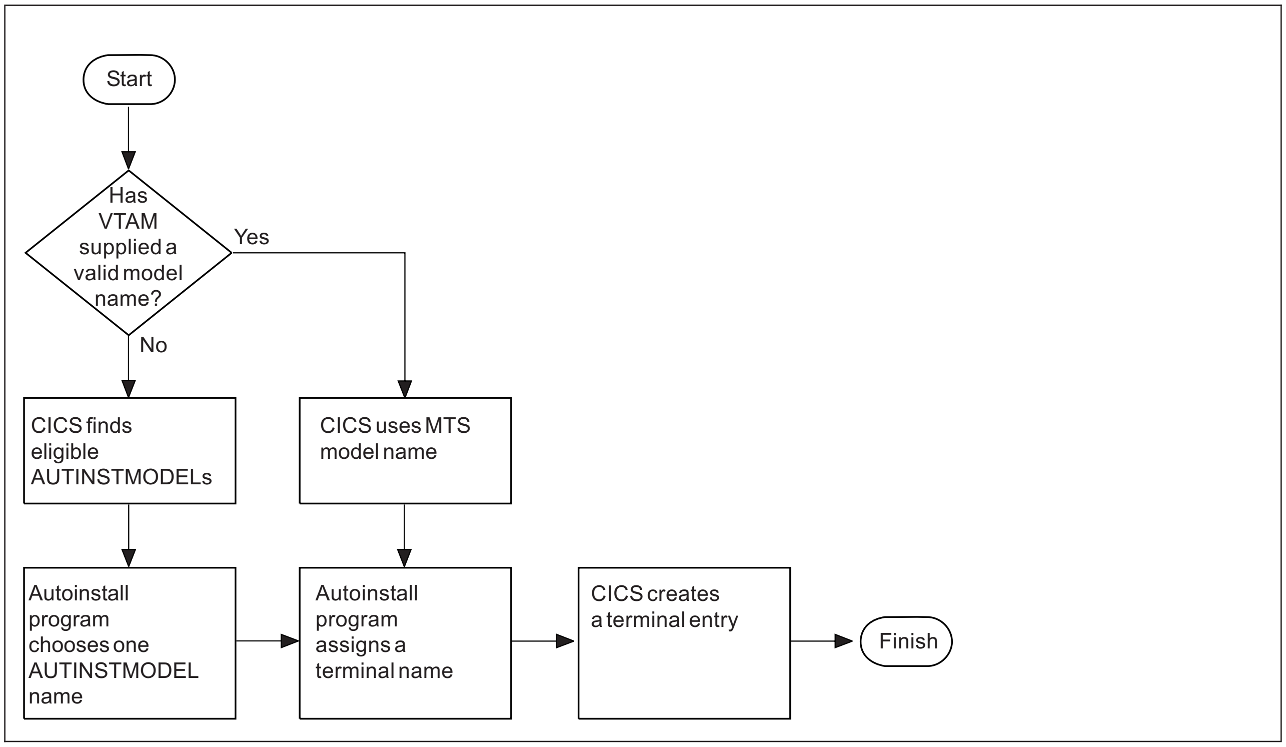

Start
Has VTAM supplied a valid model name?
Yes
No
CICS finds eligible AUTINSTMODELs
CICS uses MTS model name
Autoinstall program chooses one AUTINSTMODEL name
Autoinstall program assigns a terminal name
CICS creates a terminal entry
Finish

Figure 79. How CICS autoinstalls a terminal.

Note that the overall process in which this fits is shown in Figure 35 on page 482 .

What happens when the user logs off

CICS performs a number of processing steps when a terminal user logs off.

1. CICS issues a CLSDST to ask the z/OS Communications Server to end the session.
2. CICS attempts to delete the TCT entry after a delay specified in the AILDELAY system initialization parameter.

   Note that the TCT entry cannot be deleted if there is a lock effective at the time. For instance, CEMT INQUIRE TERMINAL or an outstanding ATI request locks the TCT entry.
3. CICS gives control to the autoinstall control program in case it has any further processing to do; for example, to free the TERMINAL name it gave to the terminal.

If the terminal's TYPETERM definition specifies SIGNOFF(LOGOFF) **and** the RACF segment specifies timeout, expiry of the timeout period causes the terminal to be logged off and the user to be signed off. After this automatic logoff, the delay period commences, leading to deletion of the TCT entry unless the terminal logs on again before the period ends. For details, see “Automatic sign-off, logoff, and TCTTE deletion” on page 487.

Implementing z/OS Communications Server autoinstall

You need to perform a number of steps to set up autoinstall for your z/OS Communications Server terminals.

Procedure

1. Determine if your terminals are eligible for autoinstall.

   The terminals that can be autoinstalled are:
   - z/OS Communications Server locally attached 3270 terminals (non-SNA), both displays and printers
   - z/OS Communications Server logical unit type 0 terminals
   - z/OS Communications Server logical unit type 1 terminals, including SCS printers
   - z/OS Communications Server logical unit type 2 terminals
   - z/OS Communications Server logical unit type 3 terminals
   - z/OS Communications Server logical unit type 4 terminals
   - z/OS Communications Server logical unit type 6.2 single-session terminals
   - TLX or TWX terminals using NTO

   Terminals that cannot be autoinstalled are:
   - Pipeline terminals
   - Automatic teller machines (3614 and 3624)
   - Non-z/OS Communications Server resources
   - z/OS Communications Server logical unit type 6.1 ISC and MRO sessions
2. Decide whether you can benefit from using autoinstall.

   You are likely to benefit from autoinstall if your system has:
   - A significant number of z/OS Communications Server terminals
   - Frequent changes to your network
   - Many z/OS Communications Server terminals logged off much of the time
   - Many z/OS Communications Server terminals using other applications much of the time
   - Many z/OS Communications Server terminals that need access to multiple, but unconnected, CICS systems

   Autoinstall might be less beneficial if you have:
   - A small, static network
   - Many terminals more or less permanently logged on to one CICS system
   - Many terminals logging on and off frequently
   - Many terminals logging on and off at the same time
3. Decide which devices to autoinstall.

   This decision depends on how you use your z/OS Communications Server terminals. For example, a terminal that is logged on all the time can be autoinstalled, but you might choose to define it individually.

   An autoinstall logon is slower than a logon to a terminal individually defined to CICS, so if you switch continually between applications and have to log on to CICS frequently, you may require individual definitions for some terminals.

   You should also consider your use of automatic transaction initiation (ATI), terminal list tables (TLTs), and the intercommunication methods in use in your installation. See "Deciding which terminals to autoinstall" on page 478.
4. Create your TYPETERM and model TERMINAL definitions.

   CICS supplies some TERMINAL and TYPETERM definitions; these are listed in "TYPETERM definitions in group DFHTYPE" on page 870 and "Model TERMINAL definitions in group DFHTERM" on page 875. You can use these definitions if they are suitable; if not, create your own using CEDA or DFHCSDUP.

   Define an autoinstall model for each different kind of terminal to be autoinstalled. Try to keep the number of definitions to a minimum, so that the autoinstall control program can be as simple as possible.

When you create your definitions, consider whether you want to use the QUERY structured field (see TYPETERM attributes in the Resource Definition Guide). It can help the autoinstall control program to choose which model on which to base a definition, and so speed up the autoinstall process.

5. Redefine DFHZCQ. For every region using autoinstall, redefine DFHZCQ to be RESIDENT(YES). (DFHZCQ is in the CICS-supplied group DFHSPI). See the *CICS Performance Guide* for guidance on why you should consider making programs resident.
6. Ensure that your z/OS Communications Server LOGMODE table entries are correct. "Autoinstall and z/OS Communications Server" on page 480 explains the relationship between CICS autoinstall and z/OS Communications Server. For programming information, including a list of z/OS Communications Server LOGMODE table entries, see the *CICS Customization Guide*.
7. Design and write an autoinstall control program.

   The terminal autoinstall control program is invoked by CICS every time there is a valid request for a TCT entry to be autoinstalled, and every time an autoinstalled TCT entry is deleted.

   For programming information about the autoinstall control program, see the *CICS Customization Guide*.

   Before beginning your program, look at the CICS-supplied autoinstall control program DFHZATDX in group DFHSPI to see if it is suitable for what you want to do with autoinstall.
8. Enable terminal autoinstall.

   You can enable autoinstall for terminals either by specifying suitable system initialization parameters, or by using the EXEC CICS or CEMT SET and INQUIRE SYSTEM commands.

   Five system initialization parameters relate to terminal autoinstall:

   AIEXIT
   : specifies the name of the autoinstall program to be used. It defaults to DFHZATDX, the name of the IBM-supplied autoinstall control program.

   AIQMAX
   : specifies the maximum number of terminals that can be queued concurrently for autoinstall. When this limit is reached, CICS requests z/OS Communications Server to stop passing LOGON and BIND requests to CICS until CICS has processed one more autoinstall request.

     The purpose of the limit is to protect the system from uncontrolled consumption of operating system storage by the autoinstall process, as a result of some other abnormal event. Normally, in the process of autoinstall, the principal consumer of CICS storage is the autoinstall task (CATA) itself. The amount of CICS storage consumed by the autoinstall process during normal operation can therefore be controlled by creating an appropriate TRANCLASS definition to limit the number of autoinstall tasks that can exist concurrently.

   AILDELAY
   : specifies the time interval, expressed as hours, minutes, and seconds (hhmmss), which elapses after an autoinstall terminal logs off before its TCTTE is deleted. The default value is 0, indicating that TCTTEs are deleted at logoff time and at warm shutdown as CLSDST is issued for the autoinstall terminals still in session. Specifying an AILDELAY interval permits the TCTTE to be reused should the terminal log back on before the interval has expired.

AIRDELAY
: specifies the time interval, expressed as hours, minutes, and seconds (hhmmss), which elapses after emergency restart before terminal entries are deleted if they are not in session. The default value is 700, indicating a restart delay of 7 minutes.

GRPLIST
: specifies the list or lists containing the group or groups of autoinstall models created.

For information on how to specify these system initialization parameters, see CICS system initialization.

Three options relate to terminal autoinstall on the INQUIRE and SET AUTOINSTALL command:

CUR(*value*)
: specifies the number of autoinstall logon requests that are currently being processed.

MAXREQS(*value*)
: specifies the largest number of autoinstall requests that are allowed to queue at one time, in the range 0-999.

  You can prevent more terminals from logging on through autoinstall by setting this value to 0. This allows autoinstalled entries for terminals currently logged on to be deleted by the autoinstall program when they log off.

PROGRAM(*pgrmid*)
: specifies the name of the user program that is controlling the autoinstall process. The default is the CICS-supplied program DFHZATDX.

Recovery and restart of autoinstalled terminal definitions

This topic explains what happens to autoinstalled terminal definitions at logoff and system restart times.

What happens at CICS restart

At an emergency restart, autoinstalled TCT entries are recovered unless you specify a restart delay period of zero in the **AIRDELAY** system initialization parameter.

Users can log on again after an emergency restart without going through the autoinstall process. Those terminals with AUTOCONNECT(YES) specified in their TYPETERM definition are automatically logged on during the restart process, without the need for operator intervention. The recovery of autoinstalled TCT entries avoids the performance impact of many concurrent autoinstall requests following a CICS restart. A terminal user logging on after restart uses the TCT entry created for that terminal's NETNAME during the previous CICS run. It is just as if that terminal had an individual TERMINAL definition installed in the TCT.

Because this could pose a threat to security, CICS checks for operator activity after recovery. After a delay, all autoinstalled TCT entries that were recovered but are not in session again are deleted. As well as improving security, this ensures that CICS storage is not wasted by unused TCT entries. You can specify the length of the delay using the system initialization parameters.

If z/OS Communications Server persistent sessions support is in use for the CICS region and AIRDELAY is not equal to zero, autoinstalled TCT entries are treated exactly like other TCT entries.

At a warm start, TCT entries that were previously autoinstalled are lost, unless you logoff and CICS is shut down before the AILDELAY time has expired.

If a TCTTE is recovered during emergency restart, a specification of AUTOCONNECT(YES) prevents deletion of the TCTTE by AIRDELAY. If you want the TCTTE storage to be deleted in this case, specify AUTOCONNECT(NO).

Automatic sign-off, logoff, and TCTTE deletion

If a session ends through expiry of the user's TIMEOUT period, the terminal entry is deleted as described in the preceding section only if SIGNOFF(LOGOFF) is specified in the TYPETERM definition of the model.

Table 23 on page 487 summarizes the automatic deletion and recovery of TCTTEs for autoinstalled terminals.

Figure 37 on page 488 shows how automatic sign-off, logoff, and TCTTE deletion occur if a session is timed out. Figure 38 on page 489 shows how logon and TCTTE deletion occur if, at a warm start or emergency restart, a TCTTE exists for an autoinstalled terminal. Table 24 on page 488 shows how automatic TCTTE deletion occurs if a session ends for any reason other than timeout.

Table 42. AUTOINSTALL—summary of TCTTE recovery and deletion

CICS RUNNING:	
Restart delay = 0	TCTTE entries are not cataloged and therefore cannot be recovered in a subsequent run.
Restart delay > 0	TCTTE entries are cataloged. If they are not deleted during this run or at shutdown, they can be recovered in a subsequent emergency restart.
SHUTDOWN:	
Warm	Terminals are logged off and their TCTTEs are deleted, except for those terminals which were logged off before shutdown but whose AILDELAY has not expired.
Immediate	No TCTTEs are deleted. All can be recovered in a subsequent emergency restart.
Abnormal termination	No TCTTEs are deleted. All can be recovered in a subsequent emergency restart.
STARTUP:	
Cold	No TCTTEs are recovered.
Warm	No TCTTEs are recovered.
Emergency restart when restart delay = 0	No TCTTEs are recovered (but see note in Figure 38 on page 489). This session is unbound if it persists.
Emergency restart when restart delay > 0	TCTTEs are recovered. For details see Figure 38 on page 489. This session is recovered if it persists.

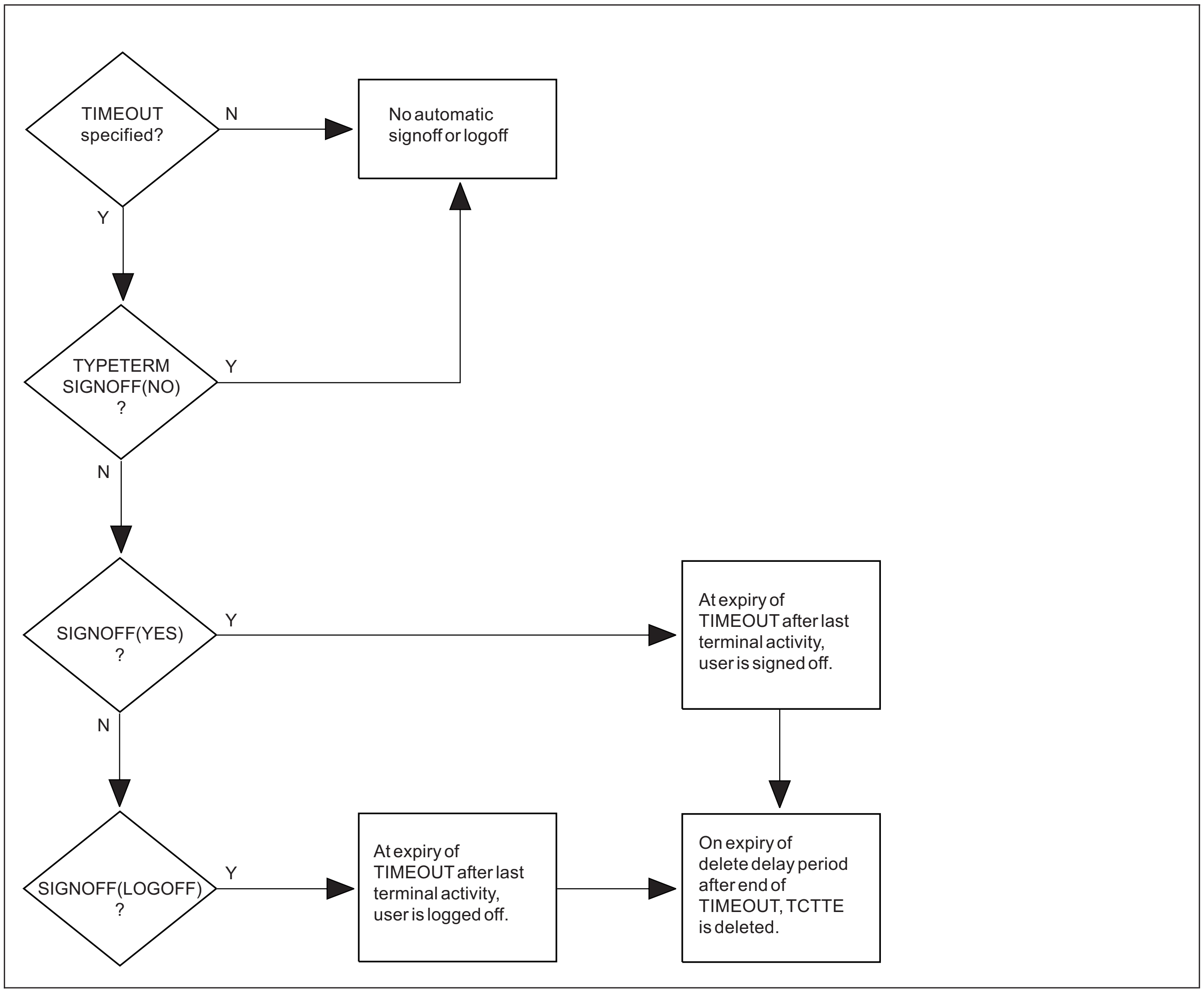

TIMEOUT specified?
N
No automatic signoff or logoff
Y
TYPETERM SIGNOFF(NO) ?
Y
N
SIGNOFF(YES) ?
Y
At expiry of TIMEOUT after last terminal activity, user is signed off.
N
SIGNOFF(LOGOFF) ?
Y
At expiry of TIMEOUT after last terminal activity, user is logged off.
On expiry of delete delay period after end of TIMEOUT, TCTTE is deleted.

Figure 80. Automatic sign-off, logoff and deletion of autoinstalled terminals.

When a session is timed out because there is no terminal activity, CICS uses these steps to determine whether to delete an autoinstalled terminal definition:

1. If no timeout is specified in the RACF segment, the user is not automatically signed off or logged off.
2. If SIGNOFF(NO) is specified in the TYPETERM definition, the user is not automatically signed off or logged off.
3. If SIGNOFF(YES) is specified in the TYPETERM definition, and a timeout is specified in the RACF segment, the user is signed off when the timeout period has expired.

   Before the timeout period has expired, the user can resume terminal activity.
4. If SIGNOFF(LOGOFF) is specified in the TYPETERM definition, and a timeout is specified in the RACF segment, the user is signed off and the terminal is logged off. The terminal definition is deleted after a further interval, which is specified in the AILDELAY attribute of the TYPETERM definition.

   Before the timeout period has expired, the user can resume terminal activity. After the timeout has expired, but before the terminal definition is deleted, the user can log on again without the overhead of the autoinstall process.

Table 43. AUTOINSTALL—automatic TCTTE deletion after non-automatic logoff

Non-automatic LOGOFF:	<---------**Delete delay period**--------->	TCTTE entry deleted.
z/OS Communications Server informs CICS of a session outage, terminal logs off, or transaction disconnects terminal	The terminal can log on during this period without repeating the autoinstall process.	

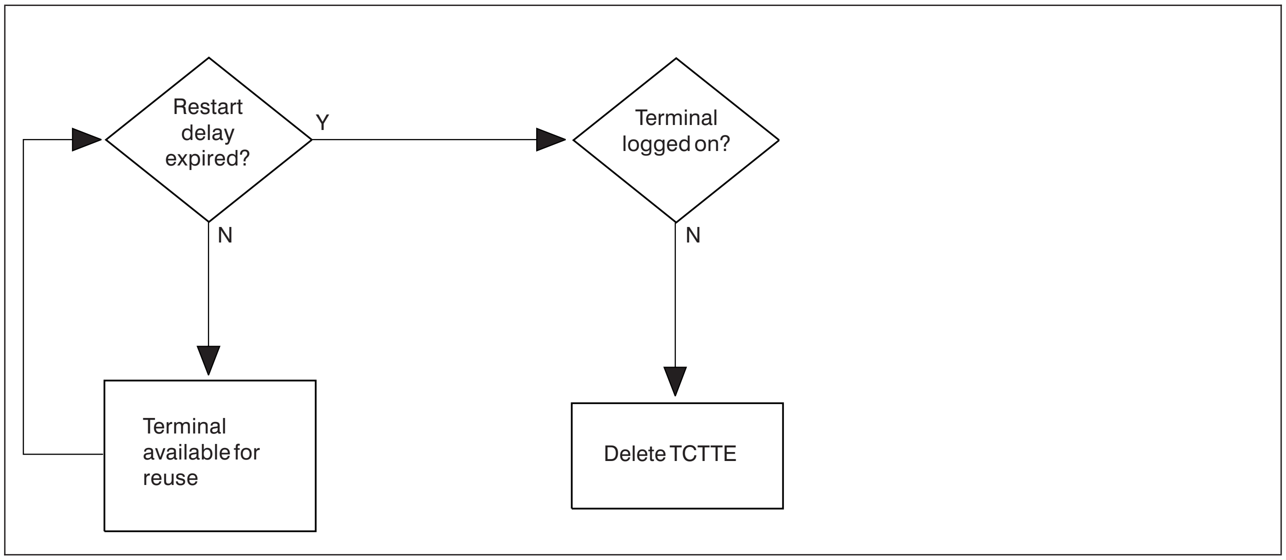


Figure 81. AUTOINSTALL—automatic logoff and TCTTE deletion after an emergency restart.

During a warm or emergency start, CICS uses these steps to determine whether an autoinstalled terminal definition that has been recovered should be deleted:

1. Before the restart delay period, specified in the AIRDELAY attribute of the TYPETERM definition, expires, the terminal definition is available for use.
2. After the restart delay period expires, the terminal definition is deleted. If a user attempts to log on at the terminal, the definition is autoinstalled.

Note:

1. Successive CICS runs are assumed to use the same restart delay period. If a run with restart delay > 0 is followed by an emergency restart with restart delay = 0, undeleted TCTTEs are recoverd. If the recovered TCTTE specifies AUTOCONNECT(YES), the associated terminal is logged on; otherwise the TCTTE is deleted after startup
2. Emergency restart: If the restart delay peiod = 0, there is no TCTTE recovery during emergeny restart.

Chapter 52. Autoinstalling MVS consoles

Commands issued at an MVS console (or in a job stream) can be directed to a CICS region running as a started task, or job, using the MVS MODIFY command. Before CICS can accept the MVS command, it needs an entry in the terminal control table for the console issuing the command, which CICS terminal control can use to display a response.

This is how CICS handles commands (transaction invocations) it receives from an MVS operator console:

Pre-installed console definitions

When MVS receives your request, it identifies the CICS region from the task or job name, and passes your request to CICS.

CICS extracts the console's name from the MODIFY data, and searches the terminal control table (TCT) for a CONSNAME entry that matches the console name. If CICS finds a matching entry, it starts the transaction specified on the MODIFY command, and the transaction can send the results to the console using the termid of the console's entry in the terminal control table.

Autoinstalled console definitions

If CICS fails to find a matching entry, it checks the autoinstall status for consoles to determine whether it can perform an autoinstall for the console.

If autoinstall for consoles is active, CICS searches the autoinstall model table (AMT) and initiates the autoinstall process for the console. CICS either:

- Passes a list of autoinstall model definitions to the autoinstall control program, together with information about the console, or
- Automatically uses the first console model definition it finds, or a console model with the same name as the console, and autoinstalls the console using a CICS-generated termid, without calling your autoinstall control program.

Which of these options CICS takes is determined by the autoinstall status for consoles. The autoinstall status for consoles is either set at startup by the AICONS system initialization parameter, or dynamically by a CEMT (or EXEC CICS) SET AUTOINSTALL CONSOLES command.

The terminal autoinstall control program

You use the same autoinstall control program for console autoinstall as for z/OS Communications Server terminals and APPC connections, specifying the name of the control program on the AIEXIT system initialization parameter.

If the autoinstall control program is invoked (either the CICS-supplied program or your own) it selects one of the models and provides the rest of the information necessary to complete a TCT terminal entry for the console. When the autoinstall control program returns control, CICS builds a terminal control table terminal entry (TCTTE) for the console using the autoinstall model, the termid, and other data returned by the autoinstall control program, and MVS console data. CICS then adds the new entry to the TCT and starts the transaction specified on the MODIFY command.

Preset security for autoinstalled consoles

If the model terminal specifies USERID(*FIRST) or USERID(*EVERY), CICS uses the user ID passed by MVS on the MODIFY command to sign on the console, in effect using the MVS-passed user ID as the preset userid for the new console.

Automatic deletion of autoinstalled consoles

CICS automatically deletes autoinstalled consoles if they are unused for a specified delay period (the default is 60 minutes). As part of the install function, the autoinstall control program can set a 'delete-delay' value for the console. The delete-delay period is the length of time (in minutes) that an autoinstalled console can remain installed without being used before CICS deletes it. Setting this value to 0 inhibits automatic deletion. Autoinstalled consoles are not recorded on the catalog and not recovered at restart. Note that a console is deleted even if there is a currently signed-on user.

Implementing autoinstall for MVS consoles

CICS autoinstall support for consoles is not provided automatically—there are some tasks to be completed to enable the support.

About this task

Basically, you need to specify that you want the support, and ensure that the required model resource definitions are installed. This is because the autoinstall models supplied in DFHLIST do not contain models suitable for console autoinstall. The IBM-supplied group DFHTERMC contains an autoinstall model definition for a console, but this is not included in DFHLIST. Also, an optional requirement is the support of an autoinstall control program

The following steps describe how to enable autoinstall for consoles:

1. Define a console terminal definition that:
   - Specifies AUTINSTMODEL(YES), or AUTINSTMODEL(ONLY)
   - Specifies the CONSNAME(name)
   - References a TYPETERM that specifies DEVICE(CONSOLE)

   You can use the model console definition defined in the group DFHTERMC, which is added to your CSD by the INITIALIZE and UPGRADE commands.

   Note: When a model terminal definition is used by the console autoinstall function, CICS ignores the console name specified on the model definition.
2. Install the model console definition either by adding its group to a group list and perform a cold start, or use the CEDA INSTALL command.
3. If you decide that you want the autoinstall control program to be invoked for console autoinstall, modify your autoinstall control program to handle console install and delete requests. To reactivate your modified program, either restart CICS or use the CEMT, or EXEC CICS, SET PROGRAM(...) NEWCOPY command.

   To ensure CICS invokes your autoinstall control program, specify system initialization parameter AICONS=YES, or use the CEMT, or EXEC CICS, SET AUTOINSTALL CONSOLES(PROGAUTO) command to specify console autoinstall dynamically.
4. If you decide to let CICS autoinstall consoles without invoking your autoinstall control program, specify system initialization parameter AICONS=AUTO, or

use the CEMT, or EXEC CICS, SET AUTOINSTALL CONSOLES(FULLAUTO) command to specify console autoinstall dynamically. With the AUTO option, CICS allocates the termid automatically.
5. As in the case of z/OS Communications Server terminal autoinstall, ensure that the necessary autoinstall programs and transactions are installed. These are your autoinstall control program, the transactions CATA and CATD, and the programs DFHZATD and DFHZATA. The CICS-supplied autoinstall control program, DFHZATDX or DFHZATDY, accepts a request from any console, provided an autoinstall model for a console is found in the AMT. Use the model definition supplied in group DFHTERMC, or alternatively create your own autoinstall console models (see "The autoinstall control program for MVS consoles" on page 492)

If, when your CICS system is in production, you want to restrict the consoles that are allowed to be autoinstalled, control this in the autoinstall control program. There are other reasons why you might write your own autoinstall control program, such as security requirements or varying the default delete-delay period. See the *CICS Customization Guide* for information about including support for consoles in your autoinstall console program. You may have to change the way you use console names and terminal names, or you may have to make special arrangements in the autoinstall control program to allow you to continue to use the names in the way that you do.

Defining model TERMINAL definitions for consoles

Whenever CICS receives a command from an unknown console, and autoinstall for consoles is active, CICS searches the AMT for autoinstall models that describe a console.

These models must specify a CONSNAME, and reference a TYPETERM definition that specifies DEVICE(CONSOLE). The console name in a model definition is a dummy value in the case of autoinstall, and is ignored by CICS, which passes a list of AUTINSTNAME attribute values to the autoinstall control program, so that it can choose one of them.

Specifying automatic preset security

One attribute that your autoinstall control program may require in a model definition is a USERID that provides the correct preset security.

Selecting a model that has preset security defined ensures that the operator's security authority is predetermined. This avoids an operator having to logon to CICS, using the CESN signon transaction, in order to issue a MODIFY command. Two special operands of the USERID parameter provide for an automatic signon of consoles:

- USERID(*EVERY) means that CICS is to use the userid passed on the MVS MODIFY command every time a MODIFY command is received. The console is signed on using the MVS userid as the preset userid for the console being autoinstalled. The console remains signed on with this userid until the console is deleted or another MODIFY command is received with another userid. If a MODIFY command is received without a userid, CICS signs on the default CICS userid until a MODIFY command is received that has a valid userid. For non-console terminals, or if security is not enabled, this value is ignored.
- USERID(*FIRST) means that CICS is to use the userid passed on the first MVS MODIFY command that requires the console to be autoinstalled. The console is signed on with the MVS userid as the preset userid. The console remains signed

on with this userid until the console is deleted. If a MODIFY command is received without a userid, CICS signs on the default CICS userid. For non-console terminals, or if security is not enabled, this value is ignored.

The autoinstall control program for MVS consoles

The console name and other MVS data about the console are not sufficient to build a terminal control table terminal entry (TCTTE) for the console.

The autoinstall control program must create a CICS terminal identifier (termid) for the console, and choose a suitable model from the list of models passed by CICS in the communications area.

IBM supplies two assembler versions of an autoinstall control program (DFHZATDX and DFHZATDY in SDFHLOAD) that perform the basic functions, but it these may not perform all the functions that you require. For example, you may have your own conventions for terminal names and their relationship to console names. Terminal names are up to four characters long, and console names are up to eight characters long, hence it is often not possible to derive one from the other.

In addition to providing the termid, you can code your program to perform other functions associated with console definition. For example, your program could:
- Perform security checks
- Monitor the number of autoinstalled consoles currently logged on.

The autoinstall control program runs in a transaction environment as a user-replaceable program, rather than as a CICS exit. This means that you can read files, and issue other CICS commands, to help you determine the terminal name. The TCTTE entry for the console, however, does not exist at either of the times that the program is invoked, because (1) for the install function it has not yet been created, and (2) for the delete function it has already been deleted. The program therefore runs in transaction-without-terminal mode.

You can write an autoinstall control program in the following languages: assembler language, C, COBOL, or PL/I. The CICS-supplied autoinstall program source is available in all four languages. The assembler version, which is used by default, is also shipped in executable form in SDFHLOAD. If you decide to write your own program, you can use one of the IBM-supplied programs as a pattern.

You specify the name of your autoinstall control program on the AIEXIT system initialization parameter. CICS supports only one autoinstall control program at a time, and therefore your program must handle console and terminal autoinstall requests if support for both is required.

When you test your autoinstall control program, you will find that CICS writes install and delete messages to the transient data destination, CADL, each time CICS installs and deletes a TCT entry. If there are no autoinstall models installed for consoles, CICS does not call the autoinstall control program, and fails the autoinstall request.

For information on implementing the CICS-supplied autoinstall control program, or designing and writing your own program, see the *CICS Customization Guide*.

Chapter 53. Autoinstalling APPC connections

When you decide whether to use autoinstall for connections, there are several factors to consider.

Security
: Before using autoinstall for connections, consider whether the security considerations are suitable for your purposes.

  The autoinstalled connection inherits the security attributes specified in the model. The security attributes from the CONNECTION definition are:
  - SECURITYNAME
  - ATTACHSEC
  - BINDSECURITY

  If you are using compatibility mode to share a CSD file with an earlier release of CICS, the BINDPASSWORD attribute is also inherited. See "CONNECTION attributes" on page 49 for information on these attributes.

  From the SESSIONS definition, the autoinstalled connection inherits the preset security attribute USERID. See "SESSIONS attributes" on page 221 for a description of this attribute. If you are attempting to autoinstall an attachsec verify connection from a non-EBCDIC based system, then you should refer to the *CICS RACF Security Guide*

Model terminal support (MTS)
: MTS is not supported for connection autoinstall. This means that you must code the routines yourself to select the model definition name; you cannot get z/OS Communications Server to do it for you. MTS is described in "The process of logging on to CICS using autoinstall" on page 480.

Deletion of autoinstalled connections
: Unlike autoinstalled terminal definitions, autoinstalled connection definitions are not deleted when they are no longer in use. This means that they continue to occupy storage.

  The rules for cataloging and deletion of autoinstalled APPC connections have changed in CICS Transaction Server for z/OS. All autoinstalled connections are now cataloged, depending on the **AIRDELAY** system initialization parameter. If AIRDELAY=0, synclevel 1 connections are not cataloged.

  The rules for deletion are:
  - Autoinstalled synclevel 1 connections are deleted when they are released.
  - If CICS is not registered as a generic resource, autoinstalled synclevel 2 connections are not deleted.
  - If CICS is registered as a generic resource, autoinstalled synclevel 2 and limited resources connections are deleted when the affinity is ended.

If autoinstall is enabled, and an APPC BIND request is received for an APPC service manager (SNASVCMG) session that does not have a matching CICS CONNECTION definition, or a BIND is received for a single session, a new connection is created and installed automatically.

Implementing APPC connection autoinstall

You are most likely to benefit from autoinstall for connections if you have large numbers of workstations all with the same characteristics.

Procedure

1. Decide whether to use autoinstall for connections

   The main **benefits** of using autoinstall for connections are that cold, warm, and emergency restarts are faster, you have fewer CSD file definitions to manage, and less storage is taken up by unused definitions.

   However, some possible restrictions are discussed in “Autoinstalling APPC connections” on page 493 and “Recovery and restart for connection autoinstall” on page 496.
2. Decide which sessions to autoinstall

   You can use autoinstall for CICS-to-CICS connections, but it is intended primarily for workstations.
3. Create your model connection definitions

   A model definition provides CICS with one definition that can be used for all connections with the same properties. See “Model definitions for connection autoinstall” on page 495.
4. Design and write an autoinstall control program

   The autoinstall control program provides CICS with the extra information it needs to complete an autoinstall request, such as the autoinstall model name.

   For programming information about the autoinstall control program, see Writing a program to control autoinstall of LUs.
5. Enable autoinstall for connections

   Autoinstall for connections is enabled when you enable autoinstall for terminals; see “Implementing z/OS Communications Server autoinstall” on page 483 for information about the system initialization parameters and the CEMT and EXEC CICS INQUIRE and SET options used.

   If terminal autoinstall has been enabled but you want to prevent autoinstall for connections, set the model connection out of service by using the **`SET CONNECTION`***(connection-name)* **`OUTSERVICE`** command. For details, see CEMT SET CONNECTION in CICS Supplied Transactions and SET CONNECTION in CICS System Programming Reference. When the model connection is out of service, the autoinstall control program cannot access it and copy it, so the autoinstall function for connections is effectively disabled.

Model definitions for connection autoinstall

Model definitions for connection autoinstall are different from those for terminal autoinstall in that they do not have to be defined explicitly as models. Any installed connection definition can be used as a “template” for an autoinstalled connection.

For performance reasons, use an installed connection definition that is not otherwise in use. The definition is locked while CICS copies it and, if you have a very large number of sessions autoinstalling, the delay may be noticeable.

You can set the model connection definition out of service by using the CEMT or EXEC CICS SET CONNECTION OUTSERVICE command. This effectively disables autoinstall for connections, because the autoinstall control program cannot access and copy the model definition.

For CICS-to-CICS connection autoinstall, the MAXIMUM attribute in the SESSIONS definition of the model connection should be large enough to accommodate the largest device using the model.

When creating model connections, you must ensure that the usergroup modenames specified in the session's MODENAME field match the usergroup modenames in the connection to be autoinstalled.

The autoinstall control program for connections

The autoinstall control program is invoked at installation for APPC single- and parallel-session connections initiated by a BIND. The autoinstall control program provides CICS with any extra information it needs to complete an autoinstall request. For APPC parallel sessions, the control program provides a SYSID for the new definition.

When an APPC BIND request is received by CICS, CICS receives the partner's z/OS Communications Server NETNAME and passes it to the autoinstall control program. The control program uses the information contained in the partner's NETNAME and in the z/OS Communications Server BIND to select the most appropriate model on which to base a new connection. In order to return the name of the most suitable model to CICS, the control program must know the NETNAME or SYSID of every model.

CICS supplies a sample control program, DFHZATDY, for connection autoinstall. You can use DFHZATDY unchanged if both of the following conditions are met:
- Your model connections are called CCPS, CBPS, or CBSS
- You use the last four characters of the NETNAME as the SYSID or terminal name

If these conditions are not met, you have to change DFHZATDY to suit your installation. Its source is supplied in CICSTS42.SDFHSAMP.DFHZATDY is defined as follows:

```
DEFINE PROGRAM(DFHZATDY)  GROUP(DFHAI62)  LANGUAGE(ASSEMBLER)
       RELOAD(NO)  RESIDENT(NO)  STATUS(ENABLED)  CEDF(NO)
       DATALOCATION(ANY)  EXECKEY(CICS)
```

The definitions for the supplied model connections and sessions are:

```
DEFINE CONNECTION(CBPS)  GROUP(DFHAI62)  NETNAME(TMPLATE1)
       ACCESSMETHOD(VTAM)  PROTOCOL(APPC)  SINGLESESS(NO)
DEFINE SESSION(CBPS)  GROUP(DFHAI62)  CONNECTION(CBPS)
       MODENAME(LU62PS)  PROTOCOL(APPC)  MAXIMUM(10,5)

DEFINE CONNECTION(CBSS)  GROUP(DFHAI62)  NETNAME(TMPLATE2)
       ACCESSMETHOD(VTAM)  PROTOCOL(APPC)  SINGLESESS(YES)
DEFINE SESSION(CBSS)  GROUP(DFHAI62)  CONNECTION(CBSS)
       MODENAME(LU62SS)  PROTOCOL(APPC)  MAXIMUM(1,0)

DEFINE CONNECTION(CCPS)  GROUP(DFHAI62)  NETNAME(TMPLATE3)
       ACCESSMETHOD(VTAM)  PROTOCOL(APPC)  SINGLESESS(NO)
DEFINE SESSION(CCPS)  GROUP(DFHAI62)  CONNECTION(CCPS)
       MODENAME(LU62PS)  PROTOCOL(APPC)  MAXIMUM(10,5)
```

If you want to use these definitions, you must add group DFHAI62 to your group list. Do not try to use the terminal autoinstall exit DFHZATDX to autoinstall connections; any sessions installed by DFHZATDX are terminated and message DFHZC6921 is issued.

Note: VTAM is now the z/OS Communications Server.

For programming information on customizing the autoinstall control program, see the *CICS Customization Guide*.

Recovery and restart for connection autoinstall

Information about autoinstalled connections are recovered in some, but not all, restart situations.

Because autoinstalled connections are not cataloged, they cannot benefit from persistent sessions support. This means that when a session does persist, any autoinstalled connections relating to it are unbound.

Autoinstalled connections are recovered only at a cold start of CICS; they are not recovered at warm and emergency restarts.

Unit-of-recovery descriptors (URDs) for autoinstalled connections are recovered after cold, warm, and emergency restarts, as long as the SYSIDs of the connections are consistent.

The SYSIDs of the autoinstalled connections must be consistent if you are using recoverable resources.

Chapter 54. Autoinstalling IPIC connections

Unlike autoinstalling other resources, autoinstalling an IPCONN does not require a model definition (although this is recommended).

Unlike the model definitions used to autoinstall terminals, the definitions used to autoinstall IPCONNs do not need to be defined explicitly as models. Instead, CICS can use any previously-installed IPCONN definition as a template for a new definition.

For more information on autoinstalling IPCONNs, see the *CICS Customization Guide*.

Chapter 55. Autoinstalling programs, map sets, and partition sets

If autoinstall for programs is active, and an implicit or explicit load request is issued for a previously undefined program, map set, or partition set, CICS dynamically creates a definition, and installs it and catalogs it as appropriate.

An implicit or explicit load occurs when:

- CICS starts a transaction
- An application program issues one of the following commands:
  EXEC CICS LINK (without a SYSID)
  EXEC CICS XCTL
  EXEC CICS LOAD
  EXEC CICS ENABLE (for global user exit, or task-related user exit, program)
- When, after an EXEC CICS HANDLE ABEND PROGRAM(...), a condition is raised and CICS transfers control to the named program.
- CICS calls a user-replaceable program for the first time
- An application program issues one of the following commands:
  EXEC CICS RECEIVE or SEND MAP
  EXEC CICS SEND PARTNSET
  EXEC CICS RECEIVE PARTN

Implementing program autoinstall

The only program that cannot be autoinstalled is the program autoinstall control program.

Procedure

1. Decide whether your programs are eligible for autoinstall

   All other programs can be autoinstalled, including:
   - All other user-replaceable programs
   - Global user exits (GLUEs) and task-related user exits (TRUEs)
   - PLT programs

   User-replaceable programs and PLT programs are autoinstalled on first reference. GLUEs and TRUEs are autoinstalled when enabled.
2. Decide whether to use autoinstall for programs

   Using autoinstall for programs can save time spent on defining individual programs, mapsets, and partitionsets. Savings can also be made on storage, because the definitions of autoinstalled resources do not occupy space until they are referenced.

   Use of autoinstall for programs can reduce the number of definitions to be installed on a COLD start, thereby reducing the time taken.
3. Decide which programs to autoinstall

   Depending on your programs, you can choose to use a mixture of RDO and autoinstall. A suggested way to manage program autoinstall is to continue to use RDO for existing program definitions and for installing groups containing related programs. Use autoinstall as you develop and install new applications, and in test environments, where you might otherwise install large numbers of programs at CICS startup.

4. Enable autoinstall for programs

   You can enable autoinstall for programs either by specifying system initialization parameters by using the **SET SYSTEM** command.

   Three system initialization parameters relate to program autoinstall:

   PGAICTLG
   The PGAICTLG parameter specifies whether autoinstalled program definitions are cataloged. See "Cataloging for program autoinstall" on page 498.

   PGAIPGM
   The PGAIPGM parameter specifies whether the program autoinstall function is active or inactive.

   PGAIEXIT
   The PGAIEXIT parameter specifies the name of the program autoinstall exit.

   Three options relate to program autoinstall on the **SET SYSTEM** command:

   PROGAUTOCTLG
   The PROGAUTOCTLG option specifies whether autoinstalled program definitions are to be cataloged. See "Cataloging for program autoinstall" on page 498.

   PROGAUTOEXIT
   The PROGAUTOEXIT option specifies the name of the program autoinstall exit.

   PROGAUTOINST
   The PROGAUTOINST option specifies whether the program autoinstall function is active or inactive.

   For programming information on how to specify EXEC CICS commands, see System programming overview in CICS System Programming Reference, and for information on how to use CEMT, see CEMT - master terminal.

5. Create your model program definitions

   A model definition provides CICS with one definition that can be used for all programs with the same properties. See "Model definitions for program autoinstall" on page 499

6. Design and write an autoinstall control program

   The autoinstall control program provides CICS with the extra information it needs to complete an autoinstall request, such as the autoinstall model name. You can write your autoinstall program in any language supported by CICS, with full access to the CICS application programming interface. See "The autoinstall control program for programs" on page 499.

Cataloging for program autoinstall

You can specify whether an autoinstalled program definition is cataloged or not (that is, whether the definition is retained over a warm or emergency start) by using either the PGAICTLG system initialization parameter or the PROGAUTOCTLG option on the CEMT INQUIRE∨SET SYSTEM command.

The values you can specify are:

ALL
Autoinstalled program definitions are written to the global catalog at the time of the autoinstall, and following any subsequent modification.

MODIFY
Autoinstalled program definitions are cataloged only if the program definition is modified by a SET PROGRAM command subsequent to the autoinstall.

NONE
Autoinstalled program definitions are not cataloged. This gives a faster CICS restart (warm and emergency) compared with the MODIFY or ALL options, because CICS does not reinstall definitions from the global catalog. Definitions are autoinstalled on first reference.

The effects of specifying cataloging for program autoinstall apply mainly to recovery and restart. See "Program autoinstall and recovery and restart" on page 500.

Model definitions for program autoinstall

Model definitions for program autoinstall are different from those for terminal autoinstall in that they do not have to be defined explicitly as models. Any installed program, mapset, or partitionset definition can be used as a "template" for program autoinstall.

If you do not want to use your own definitions, you can use the CICS-supplied model definitions. These are:
- DFHPGAPG for programs
- DFHPGAMP for mapsets
- DFHPGAPT for partitionsets

They are listed in Appendix B, "CICS-supplied resource definitions, groups, and lists," on page 839.

Note: Although the DFHPGAPG definition does not specify a program language, the CICS autoinstall routine detects the program language from the program being loaded.

The autoinstall control program for programs

You specify the name of the control program you want to use in the PGAIEXIT system initialization parameter, or use the CEMT or EXEC CICS INQUIRE∨SET SYSTEM command.

For detailed programming information about the autoinstall control program for programs, see the *CICS Customization Guide*. This topic is a summary of that information.

When the autoinstall control program is invoked for program autoinstall

The autoinstall program is invoked in a number of different situations for programs, mapsets, and partitionsets.

For programs, the autoinstall control program is invoked when:
- Any of these commands references a previously undefined program:
  - EXEC CICS LINK
  - EXEC CICS XCTL
  - EXEC CICS LOAD
- The program is the first program in a transaction.

- An EXEC CICS ENABLE is issued for a GLUE or a TRUE.
- An abend occurs after an EXEC CICS HANDLE ABEND PROGRAM command is issued and CICS invokes the named program.
- CICS calls a user-replaceable program.

For mapsets, the autoinstall control program is invoked when an EXEC CICS SEND MAP or EXEC CICS RECEIVE MAP refers to a previously undefined mapset.

For partitionsets, the autoinstall control program is invoked when an EXEC CICS SEND PARTNSET or EXEC CICS RECEIVE PARTN command refers to a previously undefined partitionset.

Sample programs

CICS supplies a number of sample programs for the program autoinstall exit.

The following sample programs are supplied by CICS:
- DFHPGADX—assembler program for program autoinstall exit
- DFHPGAHX—C program for program autoinstall exit
- DFHPGALX—PL/I program for program autoinstall exit
- DFHPGAOX—COBOL definition for program autoinstall exit

The source for these programs is supplied in the CICSTS42.SDFHSAMP sample library, but only the assembler version is supplied in executable form, in the CICSTS42.SDFHLOAD load library.

Program autoinstall functions

The program autoinstall facility uses model definitions, together with a user-replaceable program, to create explicit definitions for programs, mapsets, and partitionsets that need to be autoinstalled.

CICS calls the user-replaceable program with a parameter list that gives the name of the appropriate model definition. On return from the program (depending on the return code), CICS creates a resource definition from information in the model and from parameters which the program returns.

Note: CICS does not call the user-replaceable program for any CICS programs, mapsets, or partitionsets (that is, any objects beginning with the letters DFH).

Program autoinstall and recovery and restart

There is a difference in performance between warm and emergency restarts using program autoinstall without cataloging, and warm and emergency restarts using autoinstall with cataloging.

If you are using autoinstall **with** cataloging, restart times are similar to those of restarting a CICS region that is not using program autoinstall. This is because, in both cases, resource definitions are reinstalled from the catalog during the restart. The definitions after the restart are those that existed before the system was terminated.

If you are using autoinstall **without** cataloging, CICS restart times are improved because CICS does not install definitions from the CICS global catalog. Instead, definitions are autoinstalled as required whenever programs, mapsets, and partitionsets are referenced following the restart.

Chapter 56. Autoinstalling model terminal definitions

If you define a model terminal for autoinstall, you install it just as you would an ordinary resource definition; that is, by installing the group containing it.

However, terminal definitions specified as AUTINSTMODEL(ONLY) are stored only in the autoinstall model table (AMT) at this time; they do not result in a TCTTE on the active CICS system. These model terminal definitions are stored in the AMT until needed by CICS to create a definition for an actual terminal logging on through the z/OS Communications Server using autoinstall. The resulting terminal definition is "automatically installed" at this time.

This is what happens when you install a TERMINAL definition, either at system initialization or using INSTALL:

AUTINSTMODEL(NO)
: A TCT entry is created for the terminal.

AUTINSTMODEL(YES)
: A TCT entry is created for the terminal, and the model definition is stored for later use by the autoinstall process.

AUTINSTMODEL(ONLY)
: The model definition is stored for later use by the autoinstall process.

If you install two model TERMINAL definitions with the same AUTINSTNAME, the second one replaces the first.

For further information about autoinstall and model TERMINAL definitions, see "Autoinstalling z/OS Communications Server terminals" on page 477.

Chapter 57. Autoinstalling journals

CICS writes journal data to journals or logs on log streams managed by the MVS system logger, or to SMF.

You must define JOURNALMODELs so that the connection between the journal name, or identifier, and the log stream, or SMF log, can be made. You can use RDO, DFHCSDUP, or an EXEC CICS CREATE JOURNALMODEL command to define a journalmodel.

CICS resolves the link between the log stream and the journal request by using user-defined JOURNALMODELs or, in the situation where an appropriate JOURNALMODEL does not exist, by using default names created by resolving symbolic names. See JOURNALMODEL attributes for more information about this.

Journals are not user-definable resources.

Part 7. Macro resource definition

Reference information for resource definition macros used to create CICS tables.

Chapter 58. Introduction to CICS control tables and macros

You can define most CICS resources by using resource definition online (RDO), but for some resources you must use CICS macros.

You use macros to define:
- Non-SNA networks
- Non-SNA LUs
- Non-VSAM files
- Monitoring resources
- System recovery resources

You must use **resource definition online (RDO)** for VSAM files, and to define programs, map sets, partition sets, queues, transactions, and profiles. You must also use RDO to define SNA LUs, and links and sessions with MRO (multiregion operation) and ISC (intersystem communication) systems. RDO is described in Chapter 1, "An overview of resource definition," on page 3.

CICS is configured under your control during system initialization. You select a system initialization table (SIT) and, through it, CICS selects other control tables. Each control table is created separately and can be recreated at any time before system initialization. You prepare the required control tables by coding the appropriate macros. For each table, the macros automatically generate the necessary linkage editor control statements.

You might need to read about the following areas related to control tables:
- The **system initialization table (SIT)**, required for the system to be operational. Other tables are required only if you are using the corresponding CICS facilities. For details of the SIT, see the *CICS System Definition Guide*.
- The **job control language (JCL)** required for the control tables and how to link-edit and assemble the macro statements that you specify. See "Defining resources in CICS control tables" on page 507.
- Whether CICS loads a table above or below 16 MB (also known as above the line or below the line). The CICS table macros contain linkage editor control statements that determines this. Table 25 on page 504 shows whether specific tables are loaded above or below 16 MB.

The control tables that can be defined by macros are shown in Table 25 on page 504.

Table 44. Control tables that can be defined by macros. The third column shows whether the table is loaded above or below the 16 MB line.

Control table	Contents	Above the line?	Reference
Command list table (CLT)	Sets of commands and messages for an XRF takeover. The command list table (CLT) is used for XRF (extended recovery facility). If you are using XRF, you must have a CLT; it is used only by the alternate CICS system. The CLT contains a list of commands that are passed to JES or MVS for execution. It also provides the authorization for canceling the active CICS system.	Yes	"CLT—command list table" on page 512
Data conversion table	A data conversion table might be needed if the CICS system is using ISC to communicate with a member of the CICS family that runs on a hardware platform that does not use EBCDIC. The conversion table defines how data is to be changed from ASCII format at the workstation to EBCDIC format at the CICS host.		The DFHCNV macros used to create the table are described in the *CICS Intercommunication Guide*.
DL/I directories (PDIR)	Databases and program specification blocks. If you use CICS-IMS DBCTL (database control) exclusively to manage your CICS system's use of DL/I, you need not define the DL/I directory (PDIR) using CICS. The PDIR is a directory of all the remote program specification blocks (PSBs) that are accessed by the CICS system. If you function-ship requests to a remote database manager (remote DL/I), you need only one directory, the PDIR.	No	"PDIR—DL/I directory" on page 515
File control table (FCT)	BDAM file definitions. The file control table (FCT) is retained to allow you to define BDAM files.	No	"FCT—file control table" on page 517
Monitoring control table (MCT)	Monitoring actions (data collection) to be taken at each user event monitoring point (EMP). Different actions can be specified for each monitoring class at each EMP.	Yes	"MCT - monitoring control table" on page 525
Program list table (PLT)	A list of related programs. You may want to generate several PLTs to specify a list of programs that are to be executed in the initialization programs phase of CICS startup; executed during the first or second quiesce stages of controlled shutdown; or both, or enabled or disabled as a group by a CEMT ENABLE or DISABLE command.	Yes	"PLT—program list table" on page 543

Table 44. Control tables that can be defined by macros (continued). The third column shows whether the table is loaded above or below the 16 MB line.

Control table	Contents	Above the line?	Reference
Recoverable service table (RST)	Sets of recoverable service elements. The recoverable service table (RST) is used for IBM CICS IMS DBCTL (database control) support. If you are using XRF and DBCTL, you must have an RST: it is used by the active CICS system. The RST contains a list of recoverable service elements that define the DBCTL configuration. It defines which DBCTL CICS connects to.	Yes	"RST—recoverable service table" on page 547
System initialization table (SIT)	Parameters used by the system initialization process. In particular, the SIT identifies (by suffix characters) the versions of CICS system control programs and CICS tables that you have specified are to be loaded.		See the *CICS System Definition Guide*
System recovery table (SRT)	A list of codes for abends that CICS intercepts.		"SRT—system recovery table" on page 549.
Temporary storage table (TST)	Generic names (or prefixes) for temporary storage queues. CICS still supports the use of a TST in combination with or in place of TSMODEL resource definitions. You must use a TST if you have application programs that reference temporary storage data sharing queues by specifying an explicit SYSID on EXEC CICS temporary storage commands, or if a SYSID is added by an XTSEREQ global user exit program. You must also use a TST if you require the TSAGE attribute. For temporary storage queues where you do not require these functions, you can use TSMODEL resource definitions, which provide all other functions of the TST and some additional functions.	Yes	"TST—temporary storage table" on page 575
Terminal control table (TCT)	Retained to define non- SNA LU networks.	No	"TCT—terminal control table" on page 551
Terminal list table (TLT)	Sets of related terminals. The terminal list table (TLT) allows terminal or operator identifications, or both, to be grouped logically. A TLT is required by the supervisory terminal operation (CEST), to define and limit the effective range of the operation. It can also be used by a supervisory or master terminal operation (CEMT) to apply a function to a predetermined group of terminals. A TLT can be used, singly or in combination with other TLTs, to provide predefined destinations for message switching.	No	"TLT—terminal list table" on page 572

Table 44. Control tables that can be defined by macros (continued). The third column shows whether the table is loaded above or below the 16 MB line.

Control table	Contents	Above the line?	Reference
Transaction list table (XLT)	Sets of logically related transaction identifications. A list of identifications that can be initiated from terminals during the first quiesce stage of system termination, or a group of identifications that can be disabled or enabled through the master terminal.	Yes	"XLT—transaction list table" on page 584

Format of macros

The CICS macros are written in assembler language and, like all assembler language instructions, must be written in a standard format.

Name	Operation	Operand	Comments
blank or symbol	DFHxxxxx	One or more operands separated by commas	

TYPE=INITIAL (control section)

Most of the tables must start with a TYPE=INITIAL macro.

For some tables you can provide information that applies to the whole table, on the TYPE=INITIAL macro.

The TYPE=INITIAL macro establishes the control section (CSECT) for the CICS system table, and produces the necessary linkage editor control statements. CICS automatically generates the address of the entry point of each table through the DFHVM macro that is generated from each TYPE=INITIAL macro. The entry point label of the table is DFHxxxBA. Only the END statement need be specified.

Naming and suffixing the tables

You can have more than one version of a table. Each table has a name consisting of six fixed characters followed by a two character suffix.

The tables are named as follows:

Table 45. Names of the control tables

Table	Name
Command list table	DFHCLT*xx*
File control table	DFHFCT*xx*
Monitoring control table	DFHMCT*xx*
Program list table	DFHPLT*xx*
Recoverable service table	DFHRST*xx*
Resource control table	DFHRCT*xx*
System recovery table	DFHSRT*xx*

Table 45. Names of the control tables (continued)

Table	Name
Terminal control table	DFHTCT*xx*
Terminal list table	DFHTLT*xx*
Temporary storage table	DFHTST*xx*
Transaction list table	DFHXLT*xx*

The first six characters of the name of each table are fixed. You can specify the last two characters of the name, using the SUFFIX operand. The SUFFIX operand is specified on the TYPE=INITIAL macro for each table.

Suffixes allow you to have more than one version of a table. A suffix may consist of one or two characters. The acceptable characters are: A-Z 0-9 @. (Do not use **NO** or **DY**.) Select the version of the table to be loaded into the system during system initialization, by specifying the suffix in the appropriate system initialization parameter operand.

For example:

```
DFHSIT...,FCT=MY,...
```

Note: The TYPE=INITIAL macros have a STARTER operand that is not listed in the descriptions of the individual macros in the main body of this book. Coding STARTER=YES enables you to use the $ and # characters in your table suffixes. The default is STARTER=NO. This operand should be used only with starter system modules.

TYPE=FINAL (end of table)

Most of the tables, again with the single exception of the SIT, must end with a TYPE=FINAL macro.

The TYPE=FINAL macro creates a dummy entry to signal the end of the table. It must be the last statement before the assembler END statement. The format is always like this:

	DFHxxT	TYPE=FINAL

Chapter 59. Defining resources in CICS control tables

Some CICS resource are defined in CICS control tables.

The tables and their resource definitions are created by macros. You must use macros to define non-z/OS Communications Server networks and terminals, non-VSAM files, databases, and resources for monitoring and system recovery. You must use RDO for VSAM files, programs, map sets, partition sets, queues, transactions, and profiles.

For each of the CICS tables listed in Table 25 on page 504, complete the following steps:

1. Code the resource definitions you require.
2. Assemble and link-edit these definitions, using the CICS-supplied procedure DFHAUPLE, to create a load module in the required CICS load library. The load library is either CICSTS42.SDFHLOAD or CICSTS42.SDFHAUTH, which you must specify by the NAME parameter of the DFHAUPLE procedure. The CICS-supplied macros used to create the CICS tables determine whether tables are loaded above the 16MB line. All tables, other than the TCT, are loaded above the 16MB line.
3. Name the suffix of the load module by a system initialization parameter. For most of the CICS tables, if you do not require the table you can code *tablename=NO*. The exceptions to this rule are as follows:
   - CLT: specifying CLT=NO causes CICS to try and load DFHCLTNO. The CLT is used only in the alternate CICS, when you are running CICS with XRF, and is always required in that case.
   - SIT: specifying SIT=NO causes CICS to try and load DFHSITNO. The SIT is always needed, and you can specify the suffix by coding the SIT system initialization parameter.
   - TCT: specifying TCT=NO causes CICS to load a dummy TCT, DFHTCTDY.
   - TLT: terminal list tables are specified by program entries in the CSD, and do not have a system initialization parameter.
   - MCT: specifying MCT=NO causes the CICS monitoring domain to dynamically build a default monitoring control table. This ensures that default monitoring control table entries are always available for use when monitoring is on and a monitoring class (or classes) are active.
4. If you are running CICS with XRF, the active and the alternate CICS regions share the same versions of tables. However, to provide protection against DASD failure, you could run your active and alternate CICS regions from separate sets of load libraries—in which case, you should make the separate copies **after** generating your control tables.

Table 27 on page 508 lists all the CICS tables that can be assembled, link-edited, and installed in your CICS libraries.

Table 46. CICS tables that you can assemble, link-edit, and install in CICS libraries

Table	Module Name	Abbreviation	Required load library
Command list table	DFHCLTxx	CLT	SDFHAUTH

Table 46. CICS tables that you can assemble, link-edit, and install in CICS libraries (continued)

Table	Module Name	Abbreviation	Required load library
Data conversion table	DFHCNV	CNV	SDFHLOAD
File control table	DFHFCTxx	FCT	SDFHLOAD
Monitor control table	DFHMCTxx	MCT	SDFHLOAD
Program list table	DFHPLTxx	PLT	SDFHLOAD
DL/I program specification block	DFHPSBxx	PSB	SDFHLOAD
Recoverable service element table	DFHRSTxx	RST	SDFHAUTH
System initialization table	DFHSITxx	SIT	SDFHAUTH
System recovery table	DFHSRTxx	SRT	SDFHLOAD
Terminal control table	DFHTCTxx	TCT	SDFHLOAD
Terminal list table	DFHTLTxx	TLT	SDFHLOAD
Temporary storage table	DFHTSTxx	TST	SDFHLOAD
Transaction list table	DFHXLTxx	XLT	SDFHLOAD

You can generate several versions of each CICS control table by specifying SUFFIX=xx in the macro that generates the table. This suffix is then appended to the default 6-character name of the load module.

To get you started, CICS provides the sample tables listed in Table 28 on page 509 in the CICSTS42.SDFHSAMP library:

Table 47. Sample CICS system tables in the CICSTS42.SDFHSAMP library

Table	Suffix	Notes
Command list table (CLT)	1$	XRF regions only
Monitor control table (MCT)	A$	For a CICS AOR
Monitor control table (MCT)	F$	For a CICS FOR
Monitor control table (MCT)	T$	For a CICS TOR
Monitor control table (MCT)	2$	
System initialization table (SIT)	$$	Default system initialization parameters
System initialization table (SIT)	6$	
System recovery table (SRT)	1$	
Terminal control table (TCT)	5$	Non-z/OS Communications Server terminals only

Although you can modify and reassemble the tables while CICS is running, you must shut down and restart CICS to make the new tables available to CICS. (The command list table (CLT) is exceptional in that a new table can be brought into use without shutting down either the active CICS region or the alternate CICS region.)

Defining control tables to CICS

You can assemble and link-edit more than one version of a table, and (except for the CNV) use a suffix to distinguish them. To specify which version you want CICS to use, code a system initialization parameter of the form `tablename=xx` as a startup override.

About this task

Other tables that have special requirements are program list tables (PLTs), terminal list tables (TLTs), and transaction list tables (XLTs). For each TLT, autoinstall for programs must be active or you must specify a program resource definition in the CSD, using the table name (including the suffix) as the program name. PLTs or XLTs are autoinstalled if there is no program resource definition in the CSD. For example, to generate a TLT with a suffix of AA (DFHTLTAA), the CEDA command would be as follows:

```
CEDA DEFINE PROGRAM(DFHTLTAA) GROUP(grpname) LANGUAGE(ASSEMBLER)
```

See "Naming and suffixing the tables" on page 506 for information about single and two-character suffixes.

For information about program and terminal list tables, see "PLT—program list table" on page 543 and "TLT—terminal list table" on page 572.

The DFHCNV conversion table is required when communicating with CICS on a non-System z platform. For information about the data conversion process, see Data conversion in an intersystem environment in the Intercommunication Guide.

Assembling and link-editing control tables: the DFHAUPLE procedure

To assemble and link-edit your tables, write a job that calls the CICS-supplied sample procedure DFHAUPLE.

About this task

The DFHAUPLE procedure needs the following libraries to be online:

Table 48. Library requirements for the DFHAUPLE procedure

Library name	Tables required for
SYS1.MACLIB	All
CICSTS42.SDFHMAC	All
CICSTS42.SDFHLOAD	All except the CLT, RST, and SIT
CICSTS42.SDFHAUTH	CLT, RST, and SIT
SMP/E global zone	All
SMP/E target zone	All

When you have assembled and link-edited your tables, define them to CICS by system initialization parameters.

Steps in the DFHAUPLE procedure

The DFHAUPLE procedure is tailored to your CICS environment and stored in the CICSTS42.XDFHINST library when you run the DFHISTAR job.

About this task

The DFHAUPLE procedure contains the following steps:

1. ASSEM: This step puts your table definition macros into a temporary partitioned data set (PDS) member that is used as input to the ASM and SMP steps. The BLDMBR step subsequently adds further members to this temporary PDS.

2. ASM: In this assembly step, SYSPUNCH output goes to a temporary sequential data set. This output consists of IEBUPDTE control statements, lin-edit control statements, SMP control statements, and the object deck.
3. BLDMBR: In this step, the IEBUPDTE utility adds further members to the temporary PDS created in the ASSEM step. These members contain link-edit control statements and SMP control statements, and the object deck from the assembly step.
4. LNKEDT: The link-edit step uses the contents of the PDS member LNKCTL as control statements. The object code produced in step 2 comes from the temporary PDS. The output goes to the load library that is specified by the NAME parameter on the procedure. You must specify NAME=SDFHAUTH for the CLT, RST, and SIT, and NAME=SDFHLOAD for all the others.
5. ZNAME: This step creates a temporary data set that passes to the SMP/E JCLIN job step; it contains a SET BDY command that defines a target zone name. This tells SMP/E which target zone to update.
6. SMP: The SMP step uses the temporary PDS members MACROS, SMPCNTL, SMPJCL1, SMPJCL2, LNKCTL, SMPEOF, and the object deck to update the control data set (CDS).
7. DELTEMP: This final step deletes the temporary partitioned data set, &&TEMPPDS.

   This step must run successfully if you want SMP to reassemble CICS tables automatically when applying later maintenance.

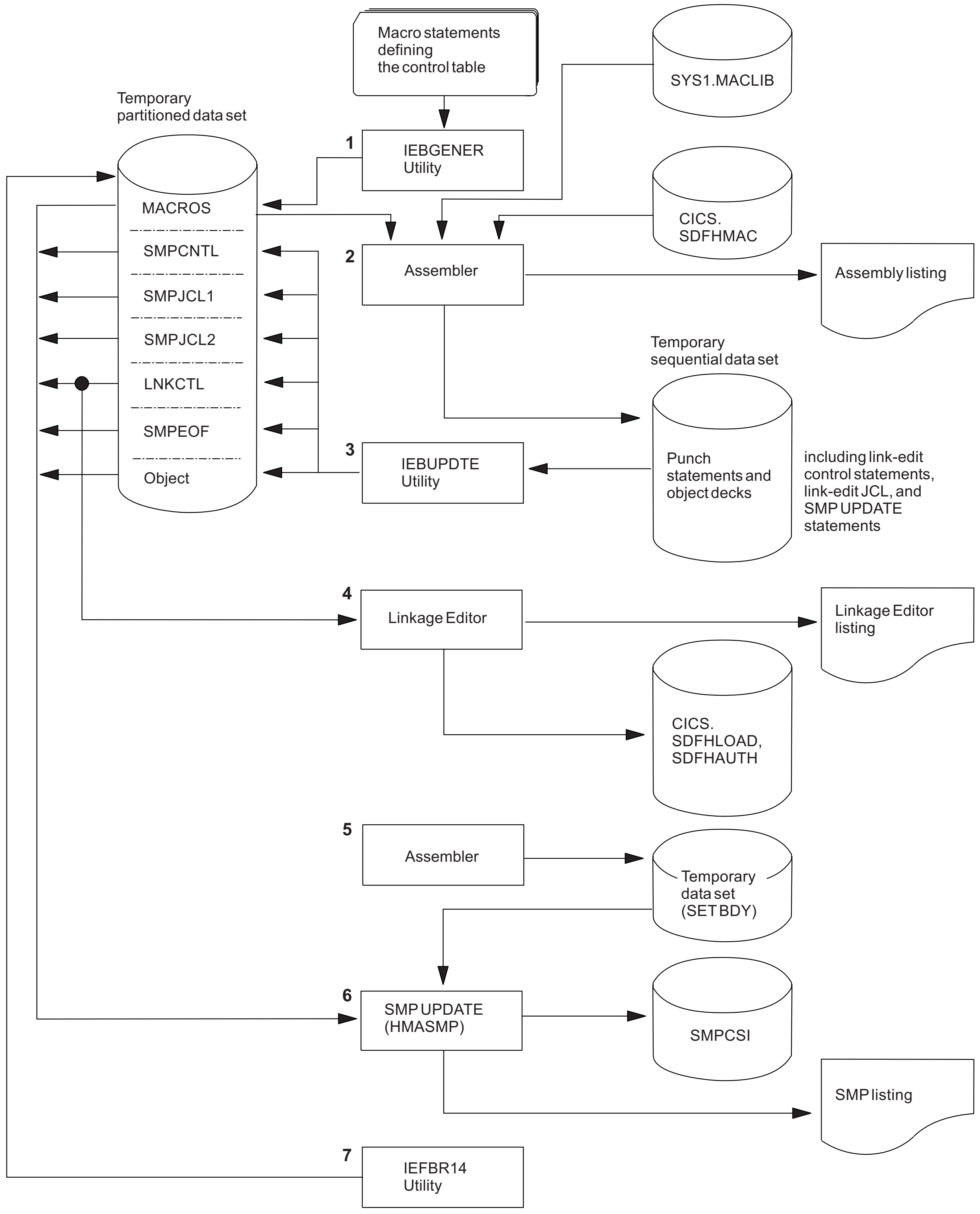


Figure 82. Assembling and link-editing the control tables using the DFHAUPLE procedure

For information about DFHISTAR, see the*CICS Transaction Server for z/OS Installation Guide*).

Sample job stream for control tables

You can use a single job stream to assemble and link-edit all of the CICS control tables except for the CLT and the RST

Use the following job stream:

```
//jobname      JOB     (accounting information),
//             CLASS=A,MSGCLASS=A,MSGLEVEL=(1,1)
//ASMTAB       EXEC    PROC=DFHAUPLE[,NAME={SDFHLOAD|SDFHAUTH}]
//*
//ASSEM.SYSUT1 DD   *
         .
      Control table macro statements
         .
/*
```

Figure 83. Job stream for control tables

Specify NAME=SDFHAUTH on this job for the system initialization table only; link-edit all other tables (except the CLT and RST) into SDFHLOAD.

Chapter 60. CLT—command list table

The command list table (CLT) is used by the *extended recovery facility* (XRF) and contains a list of MVS system commands and messages to the operator, to be issued during takeover. Typically, the function of these commands is to tell alternate systems to take over from their active systems in the same MRO-connected configuration.

The command list table also contains the name of the alternate system, with the jobname of the active system that it is allowed to cancel. (See DFHCLT TYPE=LISTSTART FORALT operand.) This provides a security check against the wrong job being canceled, when the alternate system takes over.

In addition, the DFHCLT TYPE=INITIAL macro gives JES routing information, needed to send cancel commands to the appropriate MVS system. If you are using XRF, you **must** have a CLT: it is used only by the alternate CICS system.

For security reasons, link-edit the CLT into a library authorized using APF. For virtual storage constraint relief considerations, link-edit using a MODE control statement specifying AMODE(31),RMODE(ANY). The table should be link-edited as reentrant. The CLT is not loaded into the CICS nucleus.

Your CLT can contain the following statements:
- DFHCLT TYPE=INITIAL
- DFHCLT TYPE=LISTSTART
- DFHCLT TYPE=COMMAND
- DFHCLT TYPE=WTO
- DFHCLT TYPE=LISTEND
- DFHCLT TYPE=FINAL (see "TYPE=FINAL (end of table)" on page 507)

Note: Although the CLT may be shared by a number of alternate systems, take care that MVS is not given too many redundant commands during takeover. For example, in multiregion operation and using one CLT with commands for several regions, region 1 would send valid commands to other regions, but they would in turn send redundant commands to region 1 and to each other.

Control section—DFHCLT TYPE=INITIAL

The DFHCLT TYPE=INITIAL macro establishes the entry point and the beginning address of the CLT being defined.

```
►►──DFHCLT──TYPE=INITIAL──┬──────────────────┬──,JESCHAR=value─────────────►
                          │      ┌─JES2─┐    │
                          └─,JES=┤      ├────┘
                                 └─JES3─┘

►──┬──────────────────────────────────────┬──┬────────────┬────────────────►◄
   │          ┌─,─────────────────────────┐│  └─,SUFFIX=xxx─┘
   │          ▼                           ││
   └─JESID=───(mvsname,jesname,spoolno)───┘┘
```

For general information about TYPE=INITIAL macros, including the use of the SUFFIX operand, see “TYPE=INITIAL (control section)” on page 506.

JES={JES2∨JES3}
Specifies the version of JES being used. If you have active and alternate CICS systems in different CPCs, you must use the same version of JES on both CPCs.

If you are using JES3, you need release 2.2.0 for full support of all CLT functions in a two-CPC environment. JES2 accepts commands issued by programs. For JES3, this feature was only introduced for release 2.2.0. With an earlier JES3 release, it is possible that a takeover in a two-CPC environment can only proceed after the operator has manually canceled the failing active CICS system. This should occur only when the active system does not realize that it is failing and continues to run.

JESCHAR=value
Specifies the one-character prefix to be used for commands to be passed to JES. If you omit this keyword:
- JESCHAR=$ is the default for JES=JES2
- JESCHAR=* is the default for JES=JES3

JESID=((mvsname,jesname,spoolno) [,(mvsname,jesname,spoolno),...])
Specifies the JES routing code that corresponds to the MVS name and JES name of an active CICS system. You must use this option if active and alternate CICS systems are in different CPCs.

You can specify several groups of *mvsname*, *jesname*, and *spoolno*, so that the CLT can be used to refer to more CPC/JES combinations.

mvsname
This is the SID, as specified in SYS1.PARMLIB member SMFPRM*xx*, for the CPC on which the active CICS system executes.

jesname
This is the JES2 or JES3 subsystem name for the JES under whose control the active system executes. It is defined in the MVS/ESA SCHEDULR sysgen macro and also in SYS1.PARMLIB member IEFSSN*xx*.

spoolno
For JES2, this is the multiaccess spool member number of the JES2 for the active CICS system. It is defined in the JES2 initialization parameter MASDEF SSID(*n*). For JES3, this is the processor name of the JES3 for the active CICS system. It is defined in the JES3 initialization parameter MAINPROC NAME=*name*. See *MVS/ESA JES2 Initialization and Tuning* or *MVS/ESA JES3 Initialization and Tuning*.

Specifying alternate systems—DFHCLT TYPE=LISTSTART

This macro defines the start of the set of commands and messages that the alternate CICS issues when it takes over from the active CICS. (There may be no commands or messages, but you still need a CLT, so that authorization checks can be made.)

```
►►──DFHLCT──TYPE=LISTSTART──────────────────────────────────────────────────►

►─,FORALT=(applid1,jobname1)──┬──────────────────────────┬──────────────────►◄
                              └─,(applid2,jobname2),...──┘
```

FORALT=((applid1,jobname1)[,(applid2,jobname2),...])
Specifies pairs of alternate and active CICS systems.

applid1
The name of the alternate CICS that issues the set of commands and messages when it takes over. This name must be the **specific APPLID**, defined in the APPLID system initialization parameter. It is used as an authorization check.

jobname1
The name of the active CICS system from which the alternate system is taking over. This name must be the **MVS JOBNAME** for the active CICS system. It is used as a security check, to ensure that the alternate system does not attempt to cancel any job other than one of that name.

You may extend this, using more pairs of *applid* and *jobname*, so that you can use one CLT for several alternate CICS systems.

Specifying takeover commands—DFHCLT TYPE=COMMAND

This macro allows you to specify the commands to be used by the alternate CICS system during takeover.

```
►►──DFHCLT──TYPE=COMMAND──,COMMAND=command-string──────────────────────────►◄
```

COMMAND=command-string
Defines a command that is passed to MVS for execution. CICS does not interpret this command.

The command that is issued in this way most frequently is `CEBT PERFORM TAKEOVER`.

In multiregion operation (MRO), where there is a simple hierarchy of **master** and **dependent** regions, a failing master region can issue this command to each of its dependent regions, if it is necessary that they also move to another CPC.

In a more complex multiregion operation, a failing master region can issue this to its **coordinator** region, and the coordinator can issue the same command to other master and dependent regions in the same hierarchy of regions. Hence, many MRO-connected regions can move together to another CPC, without operator intervention.

Here are some examples:

- A master region without a coordinator sends a command to a dependent region:

```
DFHCLT TYPE=COMMAND,
       COMMAND='MODIFY CICSDEP,CEBT PERFORM
       TAKEOVER'
```

- A master region sends a command to its coordinator region:

```
DFHCLT TYPE=COMMAND,
       COMMAND='MODIFY CICSCRD,CEBT PERFORM
       TAKEOVER'
```

- A coordinator region sends commands to master and dependent regions:

```
DFHCLT TYPE=COMMAND,
       COMMAND='MODIFY CICSMAS,CEBT PERFORM
       TAKEOVER'
DFHCLT TYPE=COMMAND,
       COMMAND='MODIFY CICSDEP,CEBT PERFORM
       TAKEOVER'
```

- You can also issue other commands to any other job running under MVS:

```
DFHCLT TYPE=COMMAND,
        COMMAND='MODIFY jobname,command
        string'
```

Messages to the operator—DFHCLT TYPE=WTO

These two instructions define a message that is written to the system operator.

```
►►──DFHCLT──TYPE=WTO──,WTOL=addr──addr──WTO──'message to operator'──────────────►

►─┬──────────────────┬──┬───────────────┬──,MF=L──────────────────────────────►◄
  └─,ROUTCDE=(number)─┘  └─,DESC=(number)─┘
```

WTOL=addr
: Specifies the address of a list format WTO macro that defines the message and any associated route codes and descriptor codes.

The MF (macro format), ROUTCDE (routing code), and DESC (descriptor) operands of the WTO macro are described in the *z/OS MVS Programming: Authorized Assembler Services Reference ALE-DYN* manual.

An example is to send a request to the operator:

```
          DFHCLT TYPE=WTO,
                WTOL=wtoad
wtoad     WTO   'switch local terminals, please',
                 MF=L
```

Closing the command list—DFHCLT TYPE=LISTEND

This instruction defines the end of the set of commands and messages issued by an alternate system when it takes over from an active system.

```
►►──DFHCLT──TYPE=LISTEND────────────────────────────────────────────────────►◄
```

Chapter 61. PDIR—DL/I directory

The PDIR is a directory of all the remote program specification blocks (PSBs) that are accessed by the CICS system.

To use remote DL/I, you must define the PDIR to CICS. For DBCTL, you must define the DL/I directories to DBCTL using IMS-supplied macros.

To create a program specification block directory (PDIR), code DFHDLPSB TYPE=INITIAL, TYPE=ENTRY, and TYPE=FINAL macros. The TYPE=FINAL (see "TYPE=FINAL (end of table)" on page 507) must be followed by:

```
END DFSIDIR0
```

Control section—DFHDLPSB TYPE=INITIAL

The TYPE=INITIAL macro establishes the control section (CSECT) for the table, and produces the necessary linkage editor control statements.

The DFHDLPSB TYPE=INITIAL macro has the following format and operands:

```
►►──DFHDLPSB──TYPE=INITIAL──────────────────────────────────────────────►◄
```

For general information about TYPE=INITIAL macros, including the use of the SUFFIX operand, see "TYPE=INITIAL (control section)" on page 506.

Program specification blocks—DFHDLPSB TYPE=ENTRY

The TYPE=ENTRY macro defines an entry to be generated in the PDIR.

The DFHDLPSB TYPE=ENTRY macro has the following format and operands:

```
►►──DFHDLPSB──TYPE=ENTRY──,PSB=psbname──,MXSSASZ=value──┬───────────────┬──►
                                                        └─,RMTNAME=name─┘

►─,SYSIDENT=name────────────────────────────────────────────────────────►◄
```

TYPE=ENTRY
Indicates that an entry is to be generated in the PDIR. The maximum number of entries that can be included in the PDIR is 32760.

PSB=psbname
Specifies the name of the program specification block (PSB) accessed through the remote DL/I. The entry must specify the SYSIDNT and MXSSASZ (and optionally, RMTNAME) operands.

MXSSASZ=value
Specifies the maximum size in bytes of a segment search argument to be used for this PSB.

Note: An excessively large value for MXSSASZ affects performance badly, and may lead to a data stream being shipped which is too large for the connected CICS system.

RMTNAME=name
: Indicates the name by which the PSB is known in the remote system or region. The default is the *psbname* specified in the PSB operand.

SYSIDNT=name
: Indicates the 4-character alphanumeric name of the remote system or region for which the PSB is applicable. The name specified must be the name of the CONNECTION definition for the remote system.

  If the SYSIDNT of the local system is specified, the request is routed to DBCTL and not function-shipped to a remote region. This allows the same PDIR to be used on both sides of the link if this is required. However, it is not necessary to have a PDIR when communicating with DBCTL.

Chapter 62. FCT—file control table

The file control table (FCT) describes to CICS the Basic Direct Access Method (BDAM) user files that are processed by file management.

CICS user files correspond to physical data sets that must have been defined to MVS and allocated to the CICS system before they are used.

Note:
1. To define VSAM files, use a FILE resource.
2. Because CICS file management processes only VSAM and BDAM data sets, you define any sequential data sets as extrapartition destinations with a TDQUEUE resource.

The following macros specify file characteristics, and some of the characteristics of BDAM data sets referenced by the files:
- DFHFCT TYPE=INITIAL establishes the beginning of the FCT.
- DFHFCT TYPE=FILE defines the characteristics of a file, such as record characteristics and types of service allowed.
- DFHFCT TYPE=FINAL concludes the FCT. (See "TYPE=FINAL (end of table)" on page 507.)

Control section—DFHFCT TYPE=INITIAL

The DFHFCT TYPE=INITIAL macro establishes the control sections into which the FCT is assembled, and must be coded as the first statement in the source used to assemble the FCT.

```
►►──DFHFCT──TYPE=INITIAL──┬─────────────┬──────────────────────────────►◄
                          └─,SUFFIX=xxx─┘
```

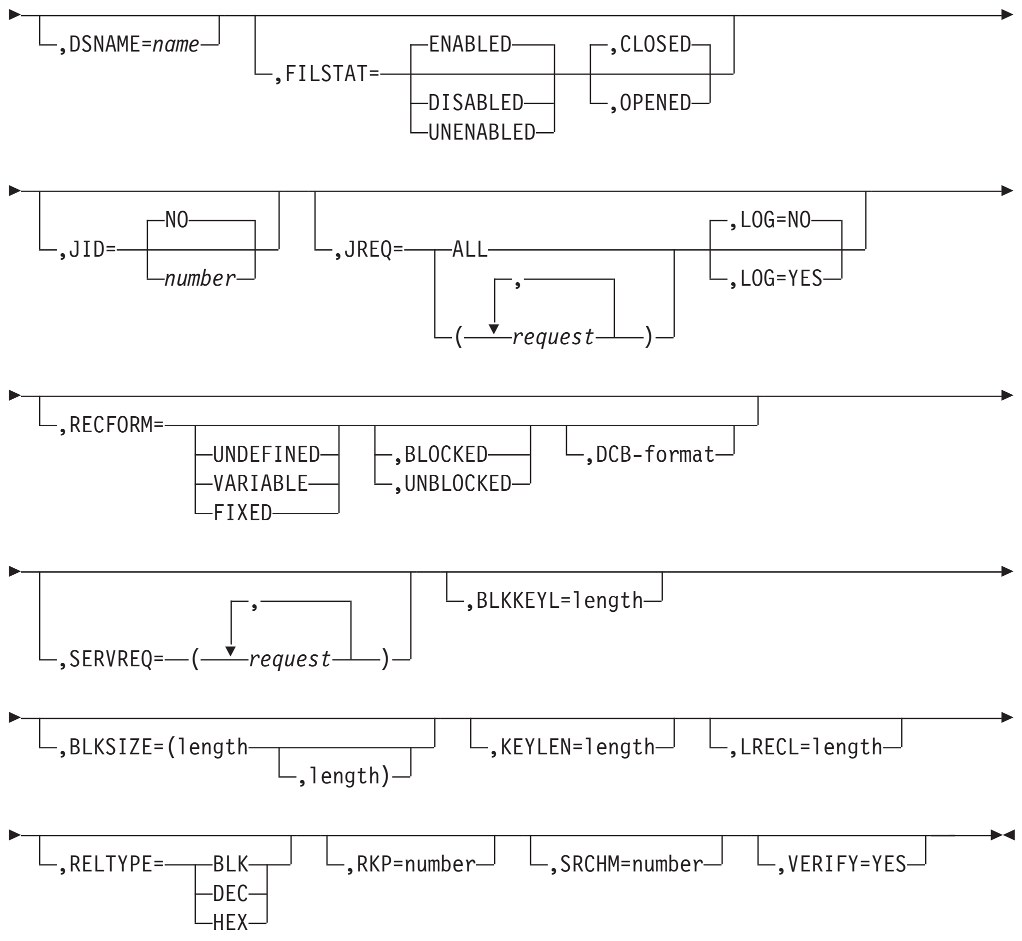
For general information about TYPE=INITIAL macros, including the use of the SUFFIX operand, see "TYPE=INITIAL (control section)" on page 506.

Local files—DFHFCT TYPE=FILE

The DFHFCT TYPE=FILE macro describes to CICS file control the physical and operational characteristics of a BDAM file.

This macro includes operands that provide information about the access method, record characteristics, and types of service allowed for the file. This information is used to generate control information used by CICS as well as a DCB .

```
►►──DFHFCT──TYPE=FILE──,ACCMETH=BDAM──,FILE=name──┬──────────────────┬──►
                                                  └─,DISP=──┬─OLD─┬──┘
                                                            └─SHR─┘
```



TYPE=FILE
Indicates that this macro describes the characteristics of a file.

ACCMETH=BDAM
specifies the basic direct access method of the data set is allocated to the file.

BLKKEYL=length
Code this with a decimal value from 1 through 255, which represents the length in bytes of the physical key in the BDAM physical record. You must code this operand only for files that reference data sets with physical keys (that is, those with SERVREQ=KEY specified). If a data set contains blocked records, and deblocking is to be performed by using a logical key (that is, a key embedded within each logical record), the logical key length must be specified by using the KEYLEN operand.

If necessary, CICS can place a record under exclusive control by building an ENQ argument by concatenating the data set name, the block reference, and the physical key. An ENQ is issued using a maximum of 255 bytes of this argument. If the argument exceeds 255 bytes in length, the ENQ places a range of keys under exclusive control.

BLKSIZE=(length[,length])
Code this with the length of the block, in bytes. The way you calculate the BLKSIZE depends on the RECFORM. For UNDEFINED or VARIABLE blocks, the length must be the maximum block length. For FIXED length blocks, you calculate the BLKSIZE as follows:

`BLKSIZE = LRECL` for unblocked records.

`BLKSIZE = (LRECL x blocking factor)` for blocked records.

If you want to have a BLKSIZE value generated in the DCB, you must specify that value in the second parameter of the operand; for example, BLKSIZE=(250,250), where the first 250 relates to the FCT and the second 250 relates to the DCB. If the second parameter is not coded, the DCB is generated without a BLKSIZE value.

Note:
1. CICS assumes that the block size of the BDAM data set is the size you have specified on the first BLKSIZE parameter. If the value specified is smaller than the actual block size of the data set, you will probably get storage violations or other unpredictable results when using the file.
2. If you specify the second parameter (the DCB value) the value that you code must always be the actual block size. We recommend that you either omit the second parameter, or make it equal to the first parameter.

DISP={OLD∨SHR}
Code this to specify the disposition of the data set which will be allocated to this file. If no JCL statement exists for this file when it is opened, the open is preceded by a dynamic allocation of the file using this disposition. If a JCL statement does exist, it will take precedence over this disposition.

OLD The disposition of the data set is set to OLD if dynamic allocation is performed.

SHR The disposition of the data set is set to SHR if dynamic allocation is performed.

Note: You must specify the disposition of the data set, either with the DISP operand, or:
- In a JCL statement
- With CEMT SET
- With EXEC CICS SET

If you specify the disposition in a JCL statement, specify the data set name in the JCL statement as well.

DSNAME=name
Code from 1 to 44 characters to specify the JCL data set name (DSNAME) to be used for this file. If no JCL statement exists for this file when it is opened, the open will be preceded by a dynamic allocation of the file using this DSNAME. If a JCL statement does exist, it will take precedence over this DSNAME.

You must specify the data set name, either with the DSNAME operand, or:
- In a JCL statement
- With CEMT SET
- With EXEC CICS SET

If you specify the data set in a JCL statement, you **must** specify the disposition in the JCL statement as well.

Note: You define the CICS system definition (CSD) file by system initialization parameters, not in the FCT.

FILE=name
Code this with a 1-to 8-character symbolic name by which this FCT entry is to

be identified. This name is known as the **file name** and is used by CICS or by CICS application programs to refer to the data set with which this FCT entry has been associated.

As well as identifying the FCT entry, this name is also used as the DDNAME when the associated data set is allocated to CICS. The allocation is achieved either by using JCL statements in the start-up job stream, or dynamically, by using the DSNAME and DISP values in the FCT.

Do not use file names that start with the character string DFH for your own files, because CICS reserves the right to use any file name beginning with DFH. In addition, using the character string FCT for a file name prefix can cause assembly errors.

FILSTAT=({ENABLED∨DISABLED∨UNENABLED},{OPENED∨CLOSED})
Code this to specify the initial status of the file.

The first operand determines the initial enablement state of the file. It is used only during an initial or a cold start. (On a warm or emergency start, the file state is determined by the state at the time of the previous shutdown.)

The second operand specifies whether an attempt is made to open the file at the end of CICS initialization. It applies to initial, cold, warm, and emergency starts.

ENABLED
Normal processing is to be allowed against this file.

DISABLED
Any request against this file from an application program causes the DISABLED condition to be passed to the program.

UNENABLED
This option is valid only with the CLOSED option. It may be used to prevent the file being opened on first reference. An attempt to access the file in this state raises the NOTOPEN condition.

OPENED
The file is opened by an automatically initiated CICS transaction (CSFU) after CICS initialization. (On a warm or emergency start, a file remains UNENABLED, if that was its state at the time of the previous shutdown. CSFU ignores an OPENED option on an UNENABLED file, and leaves the file closed.)

CLOSED
The file is to remain closed until a request is made to open it by the master terminal function, by an EXEC CICS SET command, or by an implicit open.

For each combination of initial states, files are opened as follows:

(ENABLED,CLOSED)
The file is opened on first reference. This is the default.

(ENABLED,OPENED)
The file is opened by the automatically-initiated transaction CSFU after CICS initialization, unless a user application or master terminal function has opened it first.

(DISABLED,CLOSED)
The file is opened only by an explicit OPEN request (for example, from the master terminal transaction).

(DISABLED,OPENED)
The file is opened by the automatically-initiated transaction CSFU after CICS initialization, unless a user application or master terminal function has explicitly opened it first.

(UNENABLED,CLOSED)
The file is opened only by an explicit OPEN request. The file state after it has been opened is (ENABLED,OPENED).

Note: For performance reasons, the default CSD file entry for transaction CSFU is defined with DTIMOUT=10 (seconds). This can cause a transaction timeout abend if there is a delay in opening a file during CICS startup. See TRANSACTION attributes for an explanation of the DTIMOUT value.

JID={NO∨number}
Code this if automatic journal activity is to take place for this FCT entry, and to identify the journal to be used to record the journaled data. The operations that cause data records to be journaled are specified in the JREQ parameter.

NO No automatic journaling activity for this file is to take place.

number
The journal identifier to be used for automatic journaling. This may be any number in the range 01 through 99. The number is appended to the letters DFHJ to give a journal name of the form DFHJ*nn*, which maps to an MVS system logger general log stream.

Note: Automatic journaling can be specified if you want to record file activity for subsequent processing by yourself (for example, user-written data set I/O recovery). It must not be confused with automatic logging (specified with LOG=YES), which is required if CICS is to perform data set backout to remove in-flight task activity during emergency restart or dynamic transaction backout.

JREQ={ALL∨(request[,request,...])}
Code this with the file operations that are to be automatically journaled, and whether the journaling operation is to be **synchronous** or **asynchronous** with file activity.

When a synchronous journal operation is executed for a READ request, control is not returned to the program that issued the file control request until the data read is written in the journal data set. When a synchronous journal operation is executed for a WRITE request, the output operation to the data set is not initiated until the data is written in the journal data set.

When an asynchronous journal operation is executed for a READ request, control can be returned as soon as the data read is moved to the journal I/O buffer. When an asynchronous journal operation is executed for a WRITE request, the output operation to the data set can be initiated as soon as the data is moved to the journal I/O buffer.

Synchronization defaults provide asynchronous operation for READs and synchronous operation for WRITEs.

If you have requested automatic journaling, the contents of the journal may not accurately reflect the actual changes to a data set, because the request is journaled before the response from the I/O operation is tested.

If this operand is omitted and JID is coded, JREQ defaults to JREQ=(WU,WN).

Here are the possible values for *request*:

ALL Journal all file activity with READ asynchronous and WRITE synchronous.

ASY Asynchronous journal operation for WRITE operations.

RO Journal READ ONLY operations.

RU Journal READ UPDATE operations.

SYN Synchronous journal operation for READ operations.

WN Journal WRITE NEW operations.

WU Journal WRITE UPDATE operations.

`KEYLEN=length`
Code this with the length of the logical key for the deblocking of the BDAM data set to which this file refers.

The logical key for BDAM data sets is embedded and located through the use of the RKP operand. The length of the physical key is coded in the BLKKEYL operand, and can be different from the value specified for KEYLEN.

This operand must always be coded when logical keys are used in blocked BDAM data sets.

`LOG={NO∨YES}`
This operand specifies the recovery attributes of the file. Specify LOG=YES if you want automatic logging. This enables backout (recovery) of incomplete changes to the data set referenced by this file, in the event of an emergency restart or transaction abend. Whenever a change—update, deletion, or addition—is made to the data set, the "before" image is automatically recorded in the CICS system log. (Automatic logging should not be confused with automatic journaling.)

`NO` Automatic logging is not to be performed.

`YES`
Automatic logging is to be performed.

When a request is made to change the contents of the data set referenced by the file, the record being updated, added, or deleted is enqueued upon, using the record identification together with the address of the CICS control block representing the base data set. This enqueue is maintained until the task terminates or the application issues a syncpoint request to signal the end of a logical unit of work. This ensures the integrity of the altered data.

Because the enqueues are thus maintained for a longer period of time, an enqueue lockout can occur if an application program that accesses this data set performs what is effectively more than one logical unit of work against it, without defining each separate logical unit of work to CICS by issuing a syncpoint request. Also, long-running tasks could tie up storage resources.

`LRECL=length`
Code this with the maximum length (in bytes) of the logical record. The value specified is also the length of records in a fixed length remote file. See the DFHFCT TYPE=REMOTE macro for further information on remote files.

`RECFORM=([{UNDEFINED∨VARIABLE∨FIXED}], [{BLOCKED∨UNBLOCKED}],[DCB format])`
Code this to describe the format of physical records in the data set.

For BDAM data sets, **blocking** refers to CICS blocking, and has no meaning for BDAM. You must specify BLOCKED or UNBLOCKED for all data sets of FIXED or VARIABLE format.

BLOCKED
Specify this option when each physical record is to be viewed by CICS as a block consisting of more than one logical record.

DCB
Code this with the record format to be inserted in the DCB; for example, RECFORM=(FIXED,BLOCKED,FBS).

The DCB format sub-parameter of the RECFORM operand is the only way you can put record format information into the DCB when the FCT is assembled. The first two sub-parameters of the RECFORM operand do not generate information in the DCB.

FIXED
Records are fixed length.

UNBLOCKED
Specify this option when no CICS block structure is to be used. That is, when there is one CICS logical record for each BDAM physical record.

UNDEFINED
Records are of undefined length. (If you specify a data set as UNDEFINED, allow for an additional 8 bytes for the count field, when calculating the BLKSIZE.)

VARIABLE
Records are variable length.

RELTYPE={BLK∨DEC∨HEX}
Code this if relative addressing is being used in the block reference portion of the record identification field of the BDAM data set referenced by this file. If the RELTYPE operand is omitted, absolute addressing is assumed (that is, MBBCCHHR).

BLK	Relative block addressing is being used.
DEC	The zoned decimal format is being used.
HEX	The hexadecimal relative track and record format is being used.

RKP=number
Code this with the starting position of the key field in the record relative to the beginning of the record. With variable-length records, this operand must include space for the 4-byte LLbb field at the beginning of each logical record. This operand must always be coded for data sets that have keys within each logical record, or when browsing.

SERVREQ=(request[,request],...)
Code this to define the types of service request that can be processed against the file. The parameters that can be included are as follows:

ADD
Records can be added to the file.

BROWSE
Records may be sequentially retrieved from the file.

KEY
Records can be retrieved from or added to the file. This parameter is mandatory if the data set referenced by the file is a keyed BDAM data set. It must not be coded for other files.

NOEXCTL
Records are not to be placed under exclusive control when a read for update is requested.

If you do not specify NOEXCTL, BDAM exclusive control is provided by default. This provides integrity in the system. For BDAM, you may specify LOG=YES with SERVREQ=NOEXCTL. This requests only a CICS enqueue and suppress the BDAM exclusive control, thus providing CICS integrity for the update only until a syncpoint.

Note: The CICS enqueue is at the record level within the CICS region, and lasts until a syncpoint, whereas the BDAM exclusive control operates on a physical block, is system-wide, and lasts only until the update is complete.

READ
Records in this file can be read. READ is assumed, if you specify BROWSE or UPDATE.

UPDATE
Records in this file can be changed.

SRCHM=number
Code this if multiple track search for keyed records is to be provided. This operand is applicable only to BDAM keyed data sets.

number
The number of tracks or blocks to be searched. The default is 0.

VERIFY=YES
Code this if you want to check the parity of disk records after they are written. If this operand is omitted, records are not verified after a write request.

Summary table

This section is intended to help you use the DFHFCT TYPE=FILE macro to define your files. Each TYPE=FILE instruction describes the characteristics of the file, and of the data set referenced by the file.

Table 49. DFHFCT TYPE=FILE instructions for BDAM files

	Blocked with key	**Blocked without key**	**Unblocked with key**	**Unblocked without key**
BLKKEYL	R		R	
SRCHM	O		O	
VERIFY	O	O	O	O
RELTYPE	R[1]	R[1]	R[1]	R[1]
LRECL	R	R	R	R
BLKSIZE	R[3]	R	R[2]	R
KEYLEN	R[5]			
RKP	R[4]		R[4]	
RECFORM	O	O	O	O
FILSTAT	O	O	O	O

Table 49. DFHFCT TYPE=FILE instructions for BDAM files (continued)

	Blocked with key	**Blocked without key**	**Unblocked with key**	**Unblocked without key**
SERVREQ	R[6]	O	R[6]	O

Notes:
R Required
O Optional
1. Required if relative type addressing is to be used.
2. If SERVREQ=BROWSE or SERVREQ=ADD, this value must be BLKSIZE + BLKKEYL for unblocked records.
3. If SERVREQ=BROWSE or SERVREQ=ADD, this value must be (LRECL x blocking factor) + BLKKEYL for blocked records.
4. Required if key exists within logical records.
5. Required if deblocking by key for BDAM.
6. SERVREQ=KEY is required.

DFHFCT example

An example of an FCT entry for a BDAM file.

Figure 41 on page 525 illustrates the coding required to create an FCT entry for a BDAM file.

```
DFHFCT TYPE=FILE,                                    *
       FILE=DAM83,                                   *
       ACCMETH=BDAM,                                 *
       SERVREQ=(READ,BROWSE,KEY),                    *
       BLKSIZE=172,                                  *
       RECFORM=(FIXED,BLOCKED),                      *
       LRECL=86,                                     *
       RELTYPE=HEX,                                  *
       KEYLEN=6,                                     *
       BLKKEYL=6,                                    *
       RKP=0,                                        *
       FILSTAT=(ENABLED,OPENED)
```

Figure 84. File control table example—BDAM file

Chapter 63. MCT - monitoring control table

The monitoring control table (MCT) defines the user data fields in CICS monitoring performance class records and describes how they are manipulated at event monitoring points (EMPs). It also controls which system-defined performance class data fields are recorded.

See the*CICS Performance Guide* for details of the MCT and performance.

The MCT is required only in these circumstances:
- You call EMPs in your application programs.
- You need to exclude specific system-defined fields from being recorded.
- You want to use monitoring resource classes.
- You want to collect additional monitoring performance data for the resource managers used by your transaction.
- You want to deactivate data compression on monitoring records.

If no MCT is present in the CICS region, CICS assumes the following defaults:
- The performance, transaction resource, and exception monitoring classes are available.
- All CICS system-defined data fields are collected.
- Data compression is performed on monitoring records.

In your application programs, you can call EMPs using the **EXEC CICS MONITOR** command.

The MCT consists of the following macro instructions:
- Control section, DFHMCT TYPE=INITIAL
- User event monitoring points, DFHMCT TYPE=EMP
- Control data recording, DFHMCT TYPE=RECORD
- End of monitoring control table, DFHMCT TYPE=FINAL (described in "TYPE=FINAL (end of table)" on page 507)

Control section—DFHMCT TYPE=INITIAL

The control section name for the MCT is established by the DFHMCT TYPE=INITIAL macro. This macro also creates the necessary linkage editor control statements for subsequent link-editing.

```
                         ┌─,APPLNAME=NO──┐ ┌─,COMPRESS=YES─┐
►►──DFHMCT──TYPE=INITIAL─┴─,APPLNAME=YES─┴─┴─,COMPRESS=NO──┴──────────────►

  ┌─,DPL=0──────┐ ┌─,FILE=8──────┐ ┌─,RMI=NO──┐
►─┴─,DPL=number─┴─┴─,FILE=number─┴─┴─,RMI=YES─┴──┬─────────────┬─────────►
                                                  └─,SUFFIX=xx──┘
```

```
   ┌─,TSQUEUE=8──────┐
►──┤                 ├──────────────────────────────────────────────────►◄
   └─,TSQUEUE=number─┘
```

For general information about TYPE=INITIAL macros, including the use of the SUFFIX operand, see “TYPE=INITIAL (control section)” on page 506.

Note: The combined length of all the transaction resource monitoring data must not exceed 32244 bytes.

APPLNAME={NO|YES}
This option specifies that you want to use the application naming support provided by CICS monitoring.

Application naming is an enabling function that allows application programs to call special CICS event monitoring points. Data collected at these CICS-generated EMPs can be used by any CICS monitoring software package.

NO Application naming support is not enabled in the CICS region and the application naming event monitoring points, DFHAPPL.1 and DFHAPPL.2, are not generated.

YES Application naming support is enabled in the CICS region. When you assemble the MCT, CICS generates the application naming event monitoring points (DFHAPPL.1 and DFHAPPL.2). Note that the monitoring data moved at these EMPs by an **EXEC CICS MONITOR** command calling these application naming EMPs is preserved until the end of the task, or until changed by another call of the EMPS by a subsequent **EXEC CICS MONITOR** command. See the *CICS Application Programming Reference* for more information.

The application naming (DFHAPPL) EMPs are created by CICS as if defined with the following TYPE=EMP macro parameters:

```
DFHMCT TYPE=EMP,CLASS=PERFORM,                                  X
               ID=(DFHAPPL.1),FIELD=(1,APPLNAME)                X
               PERFORM=(MOVE(0,4))
DFHMCT TYPE=EMP,CLASS=PERFORM,                                  X
               ID=(DFHAPPL.2),                                  X
               PERFORM=(MOVE(4,8))
```

For more information about how to use the application naming event monitoring points in your applications, see the *CICS Performance Guide*.

COMPRESS={YES|NO}
This option specifies whether you want data compression to be performed for the CICS SMF 110 monitoring records produced by the CICS monitoring facility.

YES This default specifies that you want monitoring record data compression to be performed for the CICS SMF 110 monitoring records produced by the CICS monitoring facility. For information about data compression, see .

NO Specifies that you do not want monitoring record data compression to be performed for the CICS SMF 110 monitoring records output by the CICS monitoring facility.

DPL={0|number}
This option specifies the maximum number of distributed program link (DPL) requests for which you want CICS to perform transaction resource monitoring. This option applies only if transaction resource monitoring is enabled, either

by specifying MNRES=ON as a system initialization parameter, or by enabling it dynamically using the monitoring facility transaction CEMN or an EXEC CICS, or CEMT, SET MONITOR command.

CICS standard monitoring performance class data includes totals for *all* programs accessed by a transaction, including distributed program links. Transaction resource monitoring, on the other hand, collects information about individual distributed program links, up to the number specified. This data is collected:
- Program name
- System identifier (sysid) where the request is routed
- Number of distributed program link (DPL) requests

<u>0</u> This default specifies that CICS is not to perform transaction resource monitoring for any distributed program links.

number
Specifies the maximum number of distributed program link requests, in the range 0 - 64, for which CICS is to perform transaction resource monitoring. CICS collects monitoring performance data at the resource level for each distributed program link request issued by a transaction, up to the maximum specified by *number*. If the transaction issues more distributed program link requests than the number specified, any requests over the maximum are ignored, but a flag is set to indicate that the transaction has exceeded the DPL limit.

If you specify DPL=0, specifying MNRES=YES either as a system initialization parameter or dynamically while CICS is running has no effect, and transaction resource monitoring data is not collected for distributed program links.

FILE={<u>8</u>|number}
This option specifies the maximum number of files for which you want CICS to perform transaction resource monitoring. This option applies only if transaction resource monitoring is enabled, either by specifying MNRES=ON as a system initialization parameter, or by enabling it dynamically using the monitoring facility transaction CEMN or an EXEC CICS, or CEMT, SET MONITOR command.

CICS standard monitoring performance class data includes totals for *all* files accessed by a transaction. Transaction resource monitoring, on the other hand, collects information about individual files, up to the number specified. This data is collected:
- File name
- Number and total time of file **get** requests
- Number and total time of file **put** requests
- Number and total time of file **browse** requests
- Number and total time of file **add** requests
- Number and total time of file **delete** requests
- Total number and total time of all requests against the file
- File access method request count
- File I/O wait time and number of waits
- RLS-mode file I/O wait time
- Coupling facility data table (CFDT) I/O wait time

<u>8</u> This default specifies that CICS is to perform transaction resource monitoring for a maximum of 8 files.

number
Specifies the maximum number of files, in the range 0 - 64, for which

CICS is to perform transaction resource monitoring. CICS collects monitoring performance data at the resource level for each file accessed by a transaction, up to the maximum specified by *number*. If the transaction accesses more files than the number specified, any files over the maximum are ignored, but a flag is set to indicate that the transaction has exceeded the file limit.

If you specify FILE=0, specifying MNRES=ON either as a system initialization parameter or dynamically while CICS is running has no effect, and transaction resource monitoring data is not collected for files.

RMI={NO|YES}
This option specifies whether you want additional monitoring performance class data to be collected for the resource managers used by your transactions.

NO This default specifies that you do not want monitoring performance data for the resource managers used by your transactions.

YES Specifies that you do want additional monitoring performance data to be collected for the resource managers used by your transactions.

For information about the data that is collected see the*CICS Performance Guide*

TSQUEUE={8|number}
This option specifies the maximum number of temporary storage queues for which you want CICS to perform transaction resource monitoring. This option applies only if transaction resource monitoring is enabled, either by specifying MNRES=ON as a system initialization parameter, or by enabling it dynamically using the monitoring facility transaction CEMN or an EXEC CICS, or CEMT, SET MONITOR command.

CICS standard monitoring performance class data includes totals for *all* temporary storage queues accessed by a transaction. Transaction resource monitoring, on the other hand, collects information about individual temporary storage queues, up to the number specified.

8 This default specifies that CICS is to perform transaction resource monitoring for a maximum of 8 temporary storage queues.

number
Specifies the maximum number of temporary storage queues, in the range 0 - 64, for which CICS is to perform transaction resource monitoring. CICS collects monitoring performance data at the resource level for each temporary storage queue accessed by a transaction, up to the maximum specified by *number*. If the transaction accesses more temporary storage queues than the number specified, any temporary storage queues over the maximum are ignored, but a flag is set to indicate that the transaction has exceeded the temporary storage queue limit.

If you specify TSQUEUE=0, specifying MNRES=ON either as a system initialization parameter or dynamically while CICS is running has no effect, and transaction resource monitoring data is not collected for temporary storage queues. This data is collected:
- Temporary storage queue name
- Number and total time of temporary storage queue **get** requests
- Number and total time of temporary storage queue **put** requests to auxiliary temporary storage

- Number and total time of temporary storage queue **put** requests to main temporary storage
- Total number and total time of all requests against the temporary storage queue
- Total length of all the items obtained from temporary storage
- Total length of all the items written to auxiliary temporary storage
- Total length of all the items written to main temporary storage
- Temporary storage I/O wait time and number of waits
- Shared temporary storage I/O wait time and number of waits

User event monitoring points—DFHMCT TYPE=EMP

You can use the DFHMCT TYPE=EMP macro to specify how the user data fields in performance class data records are added to or changed at each user event monitoring point. One TYPE=EMP macro must be coded for each user event monitoring point (EMP) at which user data is required.

The TYPE=EMP macro must be coded between the TYPE=INITIAL macro and the first TYPE=RECORD macro instruction.

```
►►──DFHMCT──TYPE=EMP──,CLASS=PERFORM──,ID=──┬─number───────────┬──────────────────────►
                                            ├─PP,number────────┤
                                            └─entryname.number─┘

►─┬──────────────────────────────────────────┬──────────────────────────────────────►
  └─,CLOCK=(number,name1─┬──────────────┬─)─┘
                         └─,name2,...─┘

►─┬──────────────────────────────────────────┬──┬───────────────────┬───────────────►
  └─,COUNT=(number,name1─┬──────────────┬─)─┘  └─,FIELD=(1,name)─┘
                         └─,name2,...─┘

►─┬────────────────────────────────┬────────────────────────────────────────────────►◄
  └─,PERFORM=(option─┬───────┬─)─┘
                     └─,...─┘
```

TYPE=EMP
: Indicates that this macro defines the user data to be collected at a user event monitoring point.

CLASS=PERFORM
: Code this with the monitoring classes for which you want user data to be collected at this user EMP. The value PERFORM must be coded. The corresponding PERFORM operand must also be coded.

ID={*number*|(PP,*number*)|*entryname.number*}
: Code this with the identifier of the user event monitoring point at which the user data defined in this macro is to be collected. If one of the forms *number* or (PP,*number*) is coded, a default entry name, USER, is provided.

number
: A decimal integer in the range 1 through 255. Identification numbers between 1 and 199 are available for user EMPs. Numbers between 200 and 255 are reserved for IBM program product EMPs. Code these numbers if you want to collect user data at EMPs defined in the code of IBM program products.

(PP,*number***)**
: An IBM program product EMP identification number. It is equivalent to specifying an ID value of 199 + number. The value of *number* is a decimal integer in the range 1 through 56.

*entryname***.***number*
: Allows multiple use of *number*, a decimal integer in the range 1 through 255. Thus UNIQUE.3, DSN.3, and 3 are three different EMPs. A maximum of 98 entrynames can be specified against any particular number. Also, any count, clock, or byte-offset referred to by one of them is a different object from that referred to by any other.

In the following descriptions, any reference to a constant means a hexadecimal constant of up to eight hexadecimal digits; any shorter string is padded on the left with zeros. For example, to add or subtract decimal 14, the constant would be coded as 0000000E or just E (no quotation marks are required).

Any reference to the fields DATA1 and DATA2 means the two binary fullwords supplied by the user EMP coded in the application program. These are specified by the DATA1 and DATA2 operands of the EXEC CICS MONITOR command for defining user EMPs. Depending on the options coded, the DATA1 and DATA2 fields can be interpreted as numbers, masks for performing logical operations, or pointers to further information.

Any reference to a number means a decimal integer in the range defined in the description of the option.

CLOCK=(*number***,***name1***[,***name2***,...])**
: Assigns an informal name to one or more clocks. The informal name of any clock appears in its dictionary entry and is available to a postprocessor for use as, for example, a column heading.

  The character string *name1* is assigned to the clock specified by *number* at MCT generation. If specified, *name2* is assigned to the clock *number* + 1. Similarly, any subsequent names are assigned to subsequent clocks. Any clock not named by this option receives the entry name value from the ID operand (the default is USER).

  number must be in the range 1 through 256. The names specified must each be a character string up to eight characters long. If any string contains one or more blanks or commas, it must be enclosed in quotes.

COUNT=(number,*name1***[,***name2***,...])**
: Assigns an informal name to one or more count fields. The informal name of any count field appears in its dictionary entry and is available to a postprocessor for use as, for example, a column heading.

  The character string *name1* is assigned to the count field specified by number at MCT generation. If specified, *name2* is assigned to the count field *number*+1. Similarly, any subsequent names are assigned to subsequent count fields. Any count fields not named by this option receive the entry name value from the ID operand (the default is USER).

  number must be in the range 1 through 256. The names specified must each be a character string up to eight characters long. If any string contains one or more blanks or commas, it must be enclosed in quotes.

FIELD=(1,*name***)**
: Assigns an informal name to the user byte-string field. This appears in its dictionary entry and is available to a postprocessor for use as, for example, a column heading.

name must be a character string up to 8 characters long. If it contains one or more blanks or commas, it must be enclosed in quotes.

PERFORM=(*option*[,...])
Code this operand when CLASS=PERFORM is specified. It specifies that information is to be added to or changed in the user fields of the performance class data record at this EMP.

The user fields for each user distinguished by a separate entry name in the ID operand can comprise:
1. Up to 256 counters
2. Up to 256 clocks, each made up of a 4-byte accumulator and 4-byte count
3. A byte string of up to 8192 bytes.

Note: If the combined sizes of the objects (clocks, counts, and fields) implied in the specified options exceed 16384 bytes, assembly-time errors occur. You can avoid this by using fewer objects, either by collecting less data, or by clustering references to clocks and counts to avoid implied, but unused, objects.

Note: When you define user data to be collected at a user event monitoring point, this extends the size of all CICS performance class monitoring records. Each CICS monitoring record is the same size as the largest record; bear this in mind when specifying user data fields.

Actions are performed on the user fields according to the options specified.

PERFORM can be abbreviated to PER. Valid options for the PERFORM operand are:

ADDCNT(*number*,{*constant*|DATA1|DATA2})
The value of the user count field specified by *number* is to be incremented by *constant* or by the value of the field DATA1 or DATA2. *number* is a decimal integer in the range 1 through 256.

EXCNT(*number*,{*constant*|DATA1|DATA2})
A logical exclusive OR operation is to be performed on the value of the user count field specified by *number*, using *constant* or the value of the field DATA1 or DATA2. *number* is a decimal integer in the range 1 through 256.

MLTCNT(*number1*,*number2*)
A series of adjacent user count fields are to be updated by adding the values contained in adjacent fullwords in an area addressed by the DATA1 field. To use this option, both the DATA1 and DATA2 fields must be passed from the user EMP.

The user count fields that are to be updated start at the field specified by *number1*. The number of user count fields that are updated is the smaller of the values of *number2* and the DATA2 field. If the DATA2 field is zero, the value of *number2* is used. The series of adjacent fullwords used to add into the user count fields starts at the address specified in the DATA1 field. Successive fullwords are added into successive user count fields.

number1 and *number2* are decimal integers in the range 1 through 256. The number of user counts generated is (*number1* + *number2* - 1). This value must also be in the range 1 through 256.

Note: Only one of the MLTCNT and MOVE options can be used in each DFHMCT TYPE=EMP macro.

MOVE(*number3***,***number4***)**
A string of data is to be moved into the user byte-string field. To use this option, both the DATA1 and DATA2 fields must be passed from the user EMP.

The user byte-string field is updated starting at the offset specified by *number3*. The data to be moved starts at the address supplied in the DATA1 field. The maximum length of data that can be moved is given by *number4* (in bytes), and the actual length of data that is to be moved is given by the value of the DATA2 field. If the value of DATA2 is zero, the length of the data given by *number4* is moved.

number3 is a decimal integer in the range 0 to 8191, and *number4* is a decimal integer in the range 1 to 8192. The maximum length of the user character field is (*number3* + *number4*), and must be in the range 1 to 8192.

Note: Only one of the MLTCNT and MOVE options can be used in each DFHMCT TYPE=EMP macro instruction.

NACNT(*number***,{***constant***|DATA1|DATA2})**
A logical AND operation is to be performed on the value of the user count field specified by *number*, using *constant* or the value of the field DATA1 or DATA2. *number* is a decimal integer in the range 1 through 256.

ORCNT(*number***,{***constant***|DATA1|DATA2})**
A logical inclusive OR operation is to be performed on the value of the user count field specified by *number*, using *constant* or the value of the field DATA1 or DATA2. *number* is a decimal integer in the range 1 through 256.

PCLOCK(*number***)**
The clock specified by number is to be stopped. The 4-byte count in the user clock field is flagged to indicate that the clock is now stopped. The accumulator is set to the sum of its contents before the previous SCLOCK and the elapsed period between that SCLOCK and this PCLOCK. *number* is a decimal integer in the range 1 through 256.

PCPUCLK(*number***)**
This option performs the same function as PCLOCK, but uses the CPU-time of the CICS main task instead of elapsed time.

SCLOCK(*number***)**
The clock specified by *number* is to be started. The value of the 4-byte count in the user clock field is incremented by 1 and flagged to show its running state. *constant* is a decimal integer in the range 1 through 256.

SCPUCLK(*number***)**
This option performs the same function as SCLOCK, but uses the CPU-time of the CICS main task instead of elapsed time.

SUBCNT(*number***,{***constant***|DATA1|DATA2})**
The value of the user count field specified by *number* is to be decremented by *constant* or by the value of the field DATA1 or DATA2. *number* is a decimal integer in the range 1 through 256.

DELIVER
Performance class data accumulated for this task up to this point is delivered to the monitoring buffers. Any running clocks are stopped. The performance class section of the monitoring area for this task is reset to X'00', except for the key fields (transid, termid) and any data stored as a result of invoking the DFHAPPL special EMPs. Any clocks that were

stopped by this option are restarted from zero for the new measurement period. The high watermark fields are reset to their current values.

Control data recording—DFHMCT TYPE=RECORD

The DFHMCT TYPE=RECORD macro identifies the performance class data fields that are selected for monitoring.

```
►►──DFHMCT──TYPE=RECORD──,CLASS=PERFORM──┬───────────────────────────────┬──────►
                                         └─,EXCLUDE=──┬─ALL────────────────┤
                                                      └─(──n1─┬──────┬─)─┘
                                                              └─,...─┘

►─┬───────────────────────────┬──────────────────────────────────────────────►◄
  └─,INCLUDE=(─m1─┬──────┬─)─┘
                  └─,...─┘
```

TYPE=RECORD
Indicates that monitoring data for selected performance class data fields will be recorded.

CLASS=PERFORM
Code this operand to record performance class data fields. You can abbreviate PERFORM to PER.

EXCLUDE={ALL|(n1[,...])}
Code this operand to prevent one or more CICS fields from being reported by the monitoring facility. By default, all documented performance class fields are reported.

The EXCLUDE operand is always honored before the INCLUDE operand, regardless of the order in which they are coded. (The INCLUDE operand is only relevant when the EXCLUDE operand is coded.)

ALL
This option prevents all fields that are eligible for exclusion from being reported. The following fields cannot be excluded:

- 1
- 2
- 4
- 5
- 6
- 89

You can use the INCLUDE operand at the same time as EXCLUDE=ALL if you want to include some fields but exclude the majority.

Table 31 on page 534 shows the fields that are eligible for exclusion. Each field has a group name associated with it, which identifies the group of fields to which it belongs. Each field also has its own numeric field identifier.

To exclude a group of fields you code the name of the group (a character string) as *n1*, for example, `EXCLUDE=(DFHTASK)`.

To exclude a single field you code the numeric identifier of the field as *n1*, for example, `EXCLUDE=(98,70)`.

Note: Do not code leading zeros on numeric identifiers. Do not code numeric identifiers of fields that are ineligible for exclusion.

You can code combinations of names and numeric identifiers, for example, `EXCLUDE=(DFHFILE,DFHTERM,112,64)`.

Table 50. Data groups and fields that can be excluded/included

Group Name	Field Id	Description
DFHCBTS	200	CICS BTS process name
DFHCBTS	201	CICS BTS process type
DFHCBTS	202	CICS BTS process id
DFHCBTS	203	CICS BTS activity id
DFHCBTS	204	CICS BTS activity name
DFHCBTS	205	CICS BTS run process/activity synchronous count
DFHCBTS	206	CICS BTS run process/activity asynchronous count
DFHCBTS	207	CICS BTS link process/activity count
DFHCBTS	208	CICS BTS define process count
DFHCBTS	209	CICS BTS define activity count
DFHCBTS	210	CICS BTS reset process/activity count
DFHCBTS	211	CICS BTS suspend process/activity count
DFHCBTS	212	CICS BTS resume process/activity count
DFHCBTS	213	CICS BTS delete activity or cancel process/activity request count
DFHCBTS	214	CICS BTS acquire process/activity request count
DFHCBTS	215	CICS BTS total process/activity request count
DFHCBTS	216	CICS BTS delete/get/put process container count
DFHCBTS	217	CICS BTS delete/get/put activity container count
DFHCBTS	218	CICS BTS total process/activity container request count
DFHCBTS	219	CICS BTS retrieve reattach request count
DFHCBTS	220	CICS BTS define input event request count
DFHCBTS	221	CICS BTS timer associated event requests count
DFHCBTS	222	CICS BTS total event related request count
DFHCHNL	321	Number of CICS requests for channel containers
DFHCHNL	322	Number of browse requests for channel containers
DFHCHNL	323	Number of GET CONTAINER requests for channel containers
DFHCHNL	324	Number of PUT CONTAINER requests for channel containers
DFHCHNL	325	Number of MOVE CONTAINER requests for channel containers
DFHCHNL	326	Length of data in the containers of all GET CONTAINER CHANNEL commands
DFHCHNL	327	Length of data in the containers of all PUT CONTAINER CHANNEL commands
DFHCHNL	328	Number of containers created by MOVE and PUT CONTAINER requests for channel containers
DFHCHNL	329	Maximum amount (high watermark) of container storage allocated
DFHCICS	25	CICS OO foundation class request count
DFHCICS	103	Transaction exception wait time
DFHCICS	112	Performance record type
DFHCICS	130	Transaction routing sysid
DFHCICS	131	Performance record count
DFHCICS	167	MVS Workload Manager Service Class name
DFHCICS	168	MVS Workload Manager Report Class name

Table 50. Data groups and fields that can be excluded/included (continued)

Group Name	Field Id	Description
DFHCICS	360	Applid of the CICS region in which this work request originated
DFHCICS	361	Time at which the originating task was started
DFHCICS	362	Number of the originating task
DFHCICS	363	Transaction ID (TRANSID) of the originating task
DFHCICS	364	Originating Userid-2 or Userid-1, depending on the originating task
DFHCICS	365	Originating user correlator
DFHCICS	366	Name of the originating TCPIPSERVICE
DFHCICS	367	Port number used by the originating TCPIPSERVICE
DFHCICS	369	TCP/IP port number of the originating client
DFHCICS	370	Originating transaction flags
DFHCICS	371	Facility name of the originating transaction
DFHCICS	372	IP address of the originating client or Telnet client.
DFHCICS	402	EXEC CICS API and SPI request count
DFHCICS	405	ASKTIME request count
DFHCICS	406	TIME request total count
DFHCICS	408	BIF DIGEST request count
DFHCICS	409	BIF request total count
DFHCICS	415	SIGNAL EVENT request count
DFHCICS	416	Event filter operations count
DFHCICS	417	Events captured count
DFHDATA	179	IMS (DBCTL) request count
DFHDATA	180	DB2 request count
DFHDATA	186	IMS (DBCTL) wait time
DFHDATA	187	DB2 Readyq wait time
DFHDATA	188	DB2 Connection wait time
DFHDATA	189	DB2 wait time
DFHDATA	395	MQ request count
DFHDATA	396	MQ GETWAIT wait time
DFHDATA	397	WebSphere MQ API SRB time
DFHDEST	41	TD get count
DFHDEST	42	TD put count
DFHDEST	43	TD purge count
DFHDEST	91	TD total count
DFHDEST	101	TD I/O wait time
DFHDOCH	223	Document handler Delete count
DFHDOCH	226	Document handler Create count
DFHDOCH	227	Document handler Insert count
DFHDOCH	228	Document handler Set count
DFHDOCH	229	Document handler Retrieve count
DFHDOCH	230	Document handler Total count
DFHDOCH	240	Document handler total created document length
DFHEJBS	311	CorbaServer for which the request processor instance is handling requests
DFHEJBS	312	Number of enterprise bean activations that have occurred in this request processor
DFHEJBS	313	Number of enterprise bean passivations that have occurred in this request processor
DFHEJBS	314	Number of enterprise bean creation calls that have occurred in this request processor
DFHEJBS	315	Number of enterprise bean removal calls that have occurred in this request processor

Table 50. Data groups and fields that can be excluded/included (continued)

Group Name	Field Id	Description
DFHEJBS	316	Number of enterprise bean method calls executed in this request processor
DFHEJBS	317	Total for this request processor of fields 312 - 316
DFHFEPI	150	FEPI allocate count
DFHFEPI	151	FEPI receive count
DFHFEPI	152	FEPI send count
DFHFEPI	153	FEPI start count
DFHFEPI	154	FEPI CHARS sent
DFHFEPI	155	FEPI CHARS received
DFHFEPI	156	FEPI suspend time
DFHFEPI	157	FEPI allocate timeout count
DFHFEPI	158	FEPI receive timeout count
DFHFEPI	159	FEPI total count
DFHFILE	36	FC get count
DFHFILE	37	FC put count
DFHFILE	38	FC browse count
DFHFILE	39	FC add count
DFHFILE	40	FC delete count
DFHFILE	63	FC I/O wait time
DFHFILE	70	FC access-method count
DFHFILE	93	FC total count
DFHFILE	174	RLS FC I/O wait time
DFHFILE	175	RLS File request CPU (SRB) time
DFHFILE	176	CFDT I/O wait time
DFHJOUR	10	Journal I/O wait time
DFHJOUR	58	Journal write count
DFHJOUR	172	Log stream write count
DFHMAPP	50	BMS MAP count
DFHMAPP	51	BMS IN count
DFHMAPP	52	BMS OUT count
DFHMAPP	90	BMS total count
DFHPROG	55	Program LINK count
DFHPROG	56	Program XCTL count
DFHPROG	57	Program LOAD count
DFHPROG	71	Program name
DFHPROG	72	Program LINK_URM count
DFHPROG	73	Program DPL count
DFHPROG	113	Original abend code
DFHPROG	114	Current abend code
DFHPROG	115	Program load time
DFHPROG	286	Length of data in the containers of all DPL requests with the CHANNEL option
DFHPROG	287	Length of data in the containers of all DPL RETURN CHANNEL commands
DFHPROG	306	Number of local LINK requests with CHANNEL option
DFHPROG	307	Number of XCTL requests with CHANNEL option
DFHPROG	308	Number of DPL requests with CHANNEL option
DFHPROG	309	Number of remote RETURN requests with CHANNEL option
DFHPROG	310	Length of data in the containers of all remote RETURN CHANNEL commands
DFHSOCK	241	Inbound socket I/O wait time

Table 50. Data groups and fields that can be excluded/included (continued)

Group Name	Field Id	Description
DFHSOCK	242	Bytes encrypted for secure socket
DFHSOCK	243	Bytes decrypted for secure socket
DFHSOCK	245	TCP/IP service name
DFHSOCK	246	TCP/IP service port number
DFHSOCK	288	Number of allocate requests for IPCONNs
DFHSOCK	289	Socket extract request count
DFHSOCK	290	Create nonpersistent socket request count
DFHSOCK	291	Create persistent socket request count
DFHSOCK	292	Nonpersistent socket high watermark
DFHSOCK	293	Persistent socket high watermark
DFHSOCK	294	Socket receive request count
DFHSOCK	295	Socket characters received
DFHSOCK	296	Socket send request count
DFHSOCK	297	Socket characters sent
DFHSOCK	298	Socket total request count
DFHSOCK	299	Outbound socket I/O wait time
DFHSOCK	300	Elapsed time a user task waited for control at this end of an IPCONN
DFHSOCK	301	Inbound socket receive request count
DFHSOCK	302	Inbound socket characters received
DFHSOCK	303	Inbound socket send request count
DFHSOCK	304	Inbound socket characters sent
DFHSOCK	305	Name of the IPCONN whose TCPIPSERVICE attached the user task
DFHSOCK	318	IP address of the originating client or Telnet client
DFHSOCK	330	Port number of the client or Telnet client
DFHSTOR	33	User storage high watermark (UDSA)
DFHSTOR	54	User storage get count (UDSA)
DFHSTOR	87	Program storage high watermark - total
DFHSTOR	95	User storage occupancy (bytes-ms) (UDSA)
DFHSTOR	105	User storage get count above 16 MB (EUDSA)
DFHSTOR	106	User storage high watermark above 16 MB (EUDSA)
DFHSTOR	107	User storage occupancy (bytes-ms) above 16 MB (EUDSA)
DFHSTOR	108	Program storage high watermark below 16 MB
DFHSTOR	116	User storage high watermark below 16 MB (CDSA)
DFHSTOR	117	User storage get count below 16 MB (CDSA)
DFHSTOR	118	User storage occupancy (bytes-ms) below 16 MB (CDSA)
DFHSTOR	119	User storage high watermark above 16 MB (ECDSA)
DFHSTOR	120	User storage get count above 16 MB (ECDSA)
DFHSTOR	121	User storage occupancy (bytes-ms) above 16 MB (ECDSA)
DFHSTOR	122	Program storage high watermark (ERDSA)
DFHSTOR	139	Program storage high watermark above 16 MB
DFHSTOR	142	Program storage high watermark (ECDSA)
DFHSTOR	143	Program storage high watermark (CDSA)
DFHSTOR	144	Shared storage count of getmain requests below 16 MB (CDSA and SDSA)
DFHSTOR	145	Shared storage bytes allocated by using a getmain request below 16 MB (CDSA and SDSA)
DFHSTOR	146	Shared storage released by using a freemain request below 16 MB (CDSA and SDSA)

Table 50. Data groups and fields that can be excluded/included (continued)

Group Name	Field Id	Description
DFHSTOR	147	Shared storage count of getmain requests above 16 MB (ECDSA and ESDSA)
DFHSTOR	148	Shared storage bytes allocated by using a getmain request above 16 MB (ECDSA and ESDSA)
DFHSTOR	149	Shared storage bytes released by using a freemain request above 16 MB (ECDSA and ESDSA)
DFHSTOR	160	Program storage high watermark (SDSA)
DFHSTOR	161	Program storage high watermark (ESDSA)
DFHSTOR	162	Program storage high watermark (RDSA)
DFHSYNC	60	Sync point count
DFHSYNC	173	Sync point elapsed time
DFHSYNC	177	CFDT server syncpoint wait time
DFHSYNC	196	Syncpoint delay time
DFHSYNC	199	OTS indoubt wait time
DFHTASK	7	User task dispatch time
DFHTASK	8	User task CPU time
DFHTASK	14	User task suspend time
DFHTASK	31	Task number
DFHTASK	59	IC put/initiate count
DFHTASK	64	Error flag field
DFHTASK	65	Number of local START requests with CHANNEL option
DFHTASK	66	IC total count
DFHTASK	82	Transaction group id
DFHTASK	97	Network name of the originating terminal or system
DFHTASK	98	Unit-of-work id on the originating system
DFHTASK	102	User task wait-for-dispatch time
DFHTASK	109	Transaction priority
DFHTASK	123	Task global ENQ delay time
DFHTASK	124	3270 Bridge transaction id
DFHTASK	125	First dispatch delay time
DFHTASK	126	First dispatch delay time due to TRANCLASS
DFHTASK	127	First dispatch delay due to MXT
DFHTASK	128	Lock manager delay time
DFHTASK	129	Task ENQ delay time
DFHTASK	132	Recovery manager unit-of-work id
DFHTASK	163	Transaction facility name
DFHTASK	164	Transaction flags
DFHTASK	166	Transaction class name
DFHTASK	170	Resource Manager Interface elapsed time
DFHTASK	171	Resource Manager Interface suspend time
DFHTASK	181	EXEC CICS WAIT EXTERNAL wait time
DFHTASK	182	EXEC CICS WAITCICS and WAIT EVENT wait time
DFHTASK	183	Interval Control delay time
DFHTASK	184	"Dispatch Wait" wait time
DFHTASK	190	RRMS/MVS unit-of-recovery id (URID)
DFHTASK	191	RRMS/MVS wait time
DFHTASK	192	Request receiver wait time
DFHTASK	193	Request processor wait time
DFHTASK	194	OTS Transaction id (Tid)
DFHTASK	195	CICS BTS run process/activity synchronous wait time
DFHTASK	249	User task QR TCB wait-for-dispatch time
DFHTASK	250	CICS MAXOPENTCBS delay time

Table 50. Data groups and fields that can be excluded/included (continued)

Group Name	Field Id	Description
DFHTASK	251	CICS TCB attach count
DFHTASK	252	User task peak open TCB count
DFHTASK	253	CICS JVM elapsed time
DFHTASK	254	CICS JVM suspend time
DFHTASK	255	User task QR TCB dispatch time
DFHTASK	256	User task QR TCB CPU Time
DFHTASK	257	User task MS TCB dispatch time
DFHTASK	258	User task MS TCB CPU Time
DFHTASK	259	User task L8 TCB CPU Time
DFHTASK	260	User task J8 TCB CPU Time
DFHTASK	261	User task S8 TCB CPU Time
DFHTASK	262	User task key 8 TCB dispatch time
DFHTASK	263	User task key 8 TCB CPU time
DFHTASK	264	User task key 9 TCB dispatch time
DFHTASK	265	User task key 9 TCB CPU time
DFHTASK	267	User task J9 TCB CPU Time
DFHTASK	268	User task TCB mismatch wait time
DFHTASK	269	User task RO TCB dispatch time
DFHTASK	270	User task RO TCB CPU Time
DFHTASK	273	CICS JVM initialize elapsed time
DFHTASK	275	CICS JVM reset elapsed time
DFHTASK	277	CICS MAXJVMTCBS delay time
DFHTASK	279	MVS storage constraint delay time
DFHTASK	283	CICS MAXTHRDTCBS delay time
DFHTASK	285	3270 bridge partner wait time
DFHTASK	345	Length of data in the containers of all locally-executed START CHANNEL requests
DFHTASK	346	Number of interval control START CHANNEL requests to be executed on remote systems
DFHTASK	347	Length of data in the containers of all remotely-executed START CHANNEL requests
DFHTASK	400	User task T8 TCB CPU time
DFHTASK	401	JVMSERVER thread wait time
DFHTEMP	11	TS I/O wait time
DFHTEMP	44	TS get count
DFHTEMP	46	TS put auxiliary count
DFHTEMP	47	TS put main count
DFHTEMP	92	TS total count
DFHTEMP	178	Shared TS I/O wait time
DFHTERM	9	TC I/O wait time
DFHTERM	34	TC principal facility input messages
DFHTERM	35	TC principal facility output messages
DFHTERM	67	TC alternate facility input messages
DFHTERM	68	TC alternate facility output messages
DFHTERM	69	TC allocate count
DFHTERM	83	TC principal facility CHARS input
DFHTERM	84	TC principal facility CHARS output
DFHTERM	85	TC alternate facility CHARS input
DFHTERM	86	TC alternate facility CHARS output
DFHTERM	100	IR I/O wait time
DFHTERM	111	z/OS Communications Server terminal LU name
DFHTERM	133	TC I/O wait time - LU6.1
DFHTERM	134	TC I/O wait time - LU6.2

Table 50. Data groups and fields that can be excluded/included (continued)

Group Name	Field Id	Description
DFHTERM	135	TC alternate facility input messages - LU6.2
DFHTERM	136	TC alternate facility output messages - LU6.2
DFHTERM	137	TC alternate facility CHARS input - LU6.2
DFHTERM	138	TC alternate facility CHARS output - LU6.2
DFHTERM	165	Terminal information
DFHTERM	169	Terminal session connection name
DFHTERM	197	Network qualified name network ID
DFHTERM	198	Network qualified name network name
DFHWEBB	224	Web read request count
DFHWEBB	225	Web write request count
DFHWEBB	231	Web receive request count
DFHWEBB	232	Web characters received
DFHWEBB	233	Web send request count
DFHWEBB	234	Web characters sent
DFHWEBB	235	Web total request count
DFHWEBB	236	Web header or formfield read request count
DFHWEBB	237	Web header or formfield write request count
DFHWEBB	238	Web extract request count
DFHWEBB	239	Web browse request count
DFHWEBB	331	Web header read request count, client
DFHWEBB	332	Web header write request count, client
DFHWEBB	333	Web client receive or converse request count
DFHWEBB	334	Web characters received, client
DFHWEBB	335	Web client send or converse request count
DFHWEBB	336	Web characters sent, client
DFHWEBB	337	Web client parse URL request count
DFHWEBB	338	Web client browse request count
DFHWEBB	340	EXEC CICS INVOKE SERVICE or WEBSERVICE request count
DFHWEBB	380	URIMAP resource name
DFHWEBB	381	PIPELINE resource name
DFHWEBB	382	ATOMSERVICE resource name
DFHWEBB	383	WEBSERVICE resource name
DFHWEBB	384	WEBSERVICE operation name
DFHWEBB	385	PROGRAM resource name
DFHWEBB	386	SOAPFAULT create request count
DFHWEBB	387	Total SOAPFAULT request count
DFHWEBB	388	EXEC CICS INVOKE SERVICE SOAP faults
DFHWEBB	390	SOAP request body length
DFHWEBB	392	SOAP response body length
DFHWEBB	411	z/OS XML System Services CPU time
DFHWEBB	412	Total incoming converted document length
DFHWEBB	413	EXEC CICS TRANSFORM request count
DFHWEBB	420	WS-Addressing context build request count
DFHWEBB	421	WS-Addressing context get request count
DFHWEBB	422	WS-Addressing endpoint reference (EPR) create request count
DFHWEBB	423	WS-Addressing total request count

INCLUDE=(*m1*[,...])
Code this operand to enable one or more CICS fields to be reported by the

monitoring facility. By default, all documented performance class fields are reported, so this operand is relevant only if you code the EXCLUDE operand in the same macro.

The fields that are eligible to be coded for inclusion on this operand are the same as those that are eligible for exclusion. (See the description of the EXCLUDE operand.) Each field has a numeric field identifier associated with it. To include a field, you code *m1* as the numeric identifier of the field. You can code multiple numeric identifiers.

Note: Do not code leading zeros on numeric identifiers. Do not code numeric identifiers of fields that are ineligible for exclusion, and that are therefore included by default.

The EXCLUDE operand is always honored first. The INCLUDE operand, if coded, then overrides some of its effects. For example, the following code secures the collection and reporting of file control PUTs and the total number of file control requests, but excludes the file control browse count and other file control fields:

```
EXCLUDE=DFHFILE,
INCLUDE=(37,93)
```

If you want to exclude the majority of fields, but include a few, you can use the operands in the way shown in the following example:

```
EXCLUDE=ALL,
INCLUDE=(DFHTERM,97,98)
```

This is more convenient than coding individually all the fields you want to exclude.

CICSTS42.SDFHSAMP provides the following sample monitoring control tables:

- For terminal-owning region (TOR): DFHMCTT$
- For application-owning region (AOR): DFHMCTA$
- For an application-owning region (AOR) with DBCTL: DFHMCTD$
- For file-owning region (FOR): DFHMCTF$

These samples show how to use the EXCLUDE and INCLUDE operands to reduce the size of the performance class record in order to reduce the volume of data written by CICS to SMF.

DFHMCT examples

These examples show the use of the DFHMCT TYPE=INITIAL, DFHMCT TYPE=RECORD and DFHMCT TYPE=EMP macros to create the control section for the monitoring control table, specify user event monitoring points, and exclude system-defined fields.

Figure 42 on page 542 demonstrates the coding for the control statements in the DFHMCT TYPE=INITIAL macro. In the example, the suffix C2 is specified, so the name of this monitoring control table is DFHMCTC2. The other parameters are set to their default values.

```
DFHMCT   TYPE=INITIAL,SUFFIX=C2,COMPRESS=YES,       *
        APPLNAME=NO,RMI=NO,FILE=8,DPL=0,TSQUEUE=8
DFHMCT   TYPE=FINAL
         END
```

Figure 85. Example: DFHMCT TYPE=INITIAL

Figure 43 on page 542 demonstrates the coding to create a monitoring control table (MCT) for two user event monitoring points (EMPs).

```
DFHMCT   TYPE=INITIAL,SUFFIX=MF,COMPRESS=YES
DFHMCT   TYPE=EMP,                                  *
         ID=180,                                    *
         CLASS=PERFORM,                             *
         PERFORM=(SCLOCK(1),ADDCNT(2,1))
DFHMCT   TYPE=EMP,                                  *
         ID=181,                                    *
         CLASS=PERFORM,                             *
         PERFORM=PCLOCK(1)
DFHMCT   TYPE=FINAL
         END
```

Figure 86. Example: DFHMCT TYPE=EMP, user event monitoring points

Figure 44 on page 543 demonstrates the coding to create a monitoring control table (MCT) that excludes specific data fields from the performance data record. If you do not have any applications that use certain CICS functions, you can safely exclude the performance data groups and fields relating to those functions. The example shows DFHMCT TYPE=RECORD macros to exclude fields for these functions:

Front End Programming Interface (FEPI)

```
DFHMCT   TYPE=RECORD,CLASS=PERFORM,                 *
         EXCLUDE=(DFHFEPI)
```

Enterprise JavaBeans (EJB) support

```
DFHMCT   TYPE=RECORD,CLASS=PERFORM,                 *
        EXCLUDE=(DFHEJBS,192,193,194,199)
```

Business transaction services (BTS)

```
DFHMCT   TYPE=RECORD,CLASS=PERFORM,                 *
         EXCLUDE=(DFHCBTS,195,196)
```

Support for Java applications

```
DFHMCT   TYPE=RECORD,CLASS=PERFORM,                 *
         EXCLUDE=(253,254,260,267,273,275,277)
```

```
DFHMCT   TYPE=INITIAL,SUFFIX=CB,COMPRESS=YES,       *
        APPLNAME=NO,RMI=NO,FILE=16,TSQUEUE=12
DFHMCT   TYPE=RECORD,CLASS=PERFORM,                 *
        EXCLUDE=(DFHFEPI)
DFHMCT   TYPE=RECORD,CLASS=PERFORM,                 *
        EXCLUDE=(DFHEJBS,192,193,194,199)
DFHMCT   TYPE=RECORD,CLASS=PERFORM,                 *
        EXCLUDE=(DFHCBTS,195,196)
DFHMCT   TYPE=RECORD,CLASS=PERFORM,                 *
        EXCLUDE=(253,254,260,267,273,275,277)
DFHMCT   TYPE=FINAL
         END
```

Figure 87. Example: DFHMCT TYPE=RECORD, excluding fields

Chapter 64. PLT—program list table

A program list table (PLT) specifies programs that you want to run during CICS startup and shutdown, and groups of programs that you want to enable and disable together.

You may want to generate several PLTs for one or more of the following reasons:

- To specify a list of programs that you want to be executed in the second and third initialization stages of CICS startup. For more detail about the initialization stages, see the *CICS Recovery and Restart Guide*. For programming information about restrictions on using programs in the initialization stages, see the *CICS Customization Guide*. The selected list should be specified at initialization time by the PLTPI=*xx* system initialization parameter, where *xx* is the suffix of the PLT that contains the required list of programs.

  For convenience, the list of programs selected for execution during initialization is referred to as the 'PLTPI' list.
- To specify a list of programs that you want to be executed during the first and second quiesce stages of controlled shutdown. The selected list should be specified at initialization time by the PLTSD=*xx* system initialization parameter, where *xx* is the suffix of the PLT that contains the required list of programs.

  The PLT specified in the PLTSD system initialization parameter can be overridden at shutdown time by the PLT option in the CEMT PERFORM SHUTDOWN command.

  The shutdown PLT is normally loaded as CICS is being shutdown. However, it is possible to use the same PLT for both initialization and shutdown, and under these circumstances the PLT is loaded during initialization and CICS does not need to reload it during shutdown. If this is the case and the PLT is updated while CICS is operational, a CEMT SET PROGRAM NEWCOPY command must be issued for the PLT to ensure that the updated version is used when CICS is shutdown.

  For convenience, the list of programs selected for execution during shutdown is referred to as the 'PLTSD' list.
- To specify a list of programs that you want to have enabled or disabled as a group by a master terminal ENABLE or DISABLE command. This use of PLTs means that a master terminal operator can enable or disable a set of programs with just one command, instead of using a separate command for each program.

Any number of PLTs can be generated for the above purposes, provided that:

1. Each PLT has a unique suffix
2. Each program named in a PLT either has a program resource definition entry in the CSD file, or is capable of being autoinstalled (that is, the appropriate system initialization parameters have been specified for program autoinstall).

   Note: PLTs should not be defined as programs in the CSD.

First-phase PLT programs must be placed in the DFHRPL concatenated data sets, but second-phase PLT programs can be placed in a dynamic LIBRARY concatenation. However, CICS scans the LPA for phase 1 PLTPI programs if they are not already installed.

The following macros are available to define the PLT entries:

- Control section—DFHPLT TYPE=INITIAL
- Entries in program list table—DFHPLT TYPE=ENTRY
- End of Program List Table—DFHPLT TYPE=FINAL (see "TYPE=FINAL (end of table)" on page 507)

Control section—DFHPLT TYPE=INITIAL

The DFHPLT TYPE=INITIAL macro establishes the entry point and start address of the PLT being defined.

```
►►──DFHPLT──TYPE=INITIAL──┬─────────────┬──────────────────────────────────►◄
                          └─,SUFFIX=xx──┘
```

For general information about TYPE=INITIAL macros, including the use of the SUFFIX operand, see "TYPE=INITIAL (control section)" on page 506.

TYPE=INITIAL
Generates the PLT control section.

Note that the CSD file must define a program entry for each PLT generated.

SUFFIX=xx
Code this with the suffix character(s) that uniquely identify this particular table.

Note: The PLT suffix is referenced by:
- CEMT {INQUIRE∨SET} PROGRAM CLASS(*suffix*)
- CEMT or EXEC CICS PERFORM SHUTDOWN PLT(*suffix*)
- System initialization parameters PLTPI and PLTSD keywords.

Entries in program list table—DFHPLT TYPE=ENTRY

Use the DFHPLT TYPE=ENTRY macro to specify an entry in the program list table (PLT).

```
►►──DFHPLT──TYPE=ENTRY──,PROGRAM=(program──┬───────────────┬──)──────────►◄
                                           └─,program,...──┘
```

TYPE=ENTRY
Indicates that one or more program names are to be listed in this table.

Note: As shown below, a TYPE=ENTRY macro is also needed to specify the PROGRAM=DFHDELIM entry.

PROGRAM=program
Code this with a program name of up to eight characters. Each program must either have a definition in the CSD file or must be capable of being autoinstalled (that is, the appropriate system initialization parameters must be specified for program autoinstall). Undefined programs before the DFHDELIM statement are system autoinstalled.

For PLTPI and PLTSD lists, only initial programs should be named: other programs that are linked to by initial programs should not be listed (but must be defined or be capable of being autoinstalled). For programming information about restrictions on using PLT programs during initialization, see the *CICS Customization Guide*

```
►►──DFHPLT──TYPE=ENTRY──,PROGRAM=DFHDELIM──────────────────────────────────►◄
```

PROGRAM=DFHDELIM

Code this to delimit the programs to run in the first or second passes of PLTPI or PLTSD. The DFHDELIM entry is not a program—it serves as a delimiter only.

Note that:

- Programs listed before the PROGRAM=DFHDELIM entry in a PLTPI are executed during the second stage of initialization. These are to enable user exit programs needed during recovery. Define the user exit programs in the CSD file, otherwise CICS might not be able to access them after CICS initialization is complete, for example in **EXEC CICS DISABLE** commands. However, note that the properties defined by RDO have no effect during the second stage of initialization.
- Programs listed after the PROGRAM=DFHDELIM entry in a PLTPI are executed during the third stage of initialization. If these programs are used to enable user exits, the user exit programs must also be defined in the CSD file or must be capable of being autoinstalled.
- Programs listed before the PROGRAM=DFHDELIM entry in a PLTSD are executed during the first quiesce stage of shutdown.
- Programs listed after the PROGRAM=DFHDELIM entry in a PLTSD are executed during the second quiesce stage of shutdown.

Second stage initialization and second stage quiesce PLT programs do not require program resource definitions. If they are not defined, they are system autoinstalled (irrespective of the program autoinstall system initialization parameters). This means that the autoinstall exit is not called to allow the definition to be modified. The programs are defined with the following attributes:

LANGUAGE(ASSEMBLER)	STATUS(ENABLED)	CEDF(NO)
DATALOCATION(BELOW)	EXECKEY(CICS)	
EXECUTIONSET(FULLAPI)		

As a result, system autoinstalled programs have a default CONCURRENCY setting of QUASIRENT, and a default API setting of CICSAPI.

- For those threadsafe PLT programs that are defined with the OPENAPI value for the API attribute, or are C or C++ programs compiled with the XPLINK compiler option, provide an appropriate resource definition. Alternatively, for Language Environment conforming programs, use the CICSVAR runtime option to set the appropriate CONCURRENCY and API values. See the *CICS Application Programming Guide*.

Third stage initialization and first stage quiesce PLT programs can be defined using program autoinstall, depending upon the program autoinstall system initialization parameters. If program autoinstall is not used, these programs must have program resource definitions in the CSD file.

DFHPLT example

The coding required to generate a PLT can be clarified with an example.

Figure 45 on page 546 and Figure 46 on page 547 illustrate the coding required to generate a PLT.

```
*
* LIST OF PROGRAMS TO BE EXECUTED SEQUENTIALLY DURING SYSTEM
* INITIALIZATION.
* REQUIRED SYSTEM INITIALIZATION PARAMETER: PLTPI=I1
*
   DFHPLT TYPE=INITIAL,SUFFIX=I1
*
*  The following programs are run in the first pass of PLTPI
*
   DFHPLT TYPE=ENTRY,PROGRAM=TRAQA  EXECUTED DURING 2ND INIT. PHASE
   DFHPLT TYPE=ENTRY,PROGRAM=TRAQB  (PROGRAMS SHOULD ALSO BE DEFINED
   DFHPLT TYPE=ENTRY,PROGRAM=TRAQC  BY RDO)
*
   DFHPLT TYPE=ENTRY,PROGRAM=DFHDELIM
*
*
*  The following programs are run in the second pass of PLTPI
*
   DFHPLT TYPE=ENTRY,PROGRAM=TRASA  EXECUTED DURING 3RD INIT. PHASE
   DFHPLT TYPE=ENTRY,PROGRAM=TRASB  (PROGRAMS MUST ALSO BE DEFINED
   DFHPLT TYPE=ENTRY,PROGRAM=TRASC  BY RDO)
   DFHPLT TYPE=FINAL
*
   END
```

Figure 88. PLTPI program list table—example

```
*
*
* LIST OF PROGRAMS TO BE EXECUTED SEQUENTIALLY DURING SYSTEM
* TERMINATION
* REQUIRED SYSTEM INITIALIZATION PARAMETER: PLTSD=T1
*
   DFHPLT TYPE=INITIAL,SUFFIX=T1
*
*  The following programs are run in the 1st pass of PLTSD
*
*
   DFHPLT TYPE=ENTRY,PROGRAM=TRARA  EXECUTED DURING 1st QUIESCE PHASE
   DFHPLT TYPE=ENTRY,PROGRAM=TRARB  (PROGRAMS MUST ALSO BE DEFINED
   DFHPLT TYPE=ENTRY,PROGRAM=TRARC  BY RDO)
*
   DFHPLT TYPE=ENTRY,PROGRAM=DFHDELIM
*
*
*  The following programs are run in the 2nd pass of PLTSD
*
   DFHPLT TYPE=ENTRY,PROGRAM=TRAFA  EXECUTED DURING 2nd QUIESCE PHASE
   DFHPLT TYPE=ENTRY,PROGRAM=TRAFB  (PROGRAMS MUST ALSO BE DEFINED
*                                   BY RDO)
   DFHPLT TYPE=FINAL
*
   END
```

Figure 89. PLTSD program list table—example

Chapter 65. RST—recoverable service table

Note on terminology: DBCTL refers to the CICS—IMS/ESA DBCTL (database control) interface.

The recoverable service table (RST) is used for CICS DBCTL XRF (extended recovery facility) support. It contains a description of the DBCTL configuration. On detection of a DBCTL failure, the **active** CICS system uses the RST together with the MVS subsystem VERIFY to determine the existence of a suitable alternative DBCTL subsystem. The **alternate** CICS system uses the RST to check for the presence of a DBCTL subsystem. For security reasons, the RST should be link-edited into a library authorized using APF. The RST is not loaded as part of the CICS nucleus.

You can code the following macros in a recoverable service table:
- DFHRST TYPE=INITIAL establishes the control section.
- DFHRST TYPE=RSE specifies the start of a recoverable service element (RSE). An RSE consists of a (nonempty) set of identifiers of equivalent DBCTL subsystems, the CICS applids associated with these DBCTL subsystems, and the application identifiers of the CICS systems which use the DBCTL subsystems.
- DFHRST TYPE=SUBSYS specifies one of the DBCTL subsystems in an RSE.
- DFHRST TYPE=FINAL concludes the RST (see "TYPE=FINAL (end of table)" on page 507).

The RST to be used by the system must be defined in the system initialization table by the following system initialization parameter:

```
                          ┌─NO─┐
►►──DFHSIT──...──,RST=────┼────┼──────────────────────────────────────►◄
                          └─xx─┘
```

Control section—DFHRST TYPE=INITIAL

The DFHRST TYPE=INITIAL macro establishes the recoverable service table control section.

```
►►──DFHRST──TYPE=INITIAL──┬─────────────┬─────────────────────────────►◄
                          └─,SUFFIX=xx──┘
```

For general information about TYPE=INITIAL macros, including the use of the SUFFIX operand, see "TYPE=INITIAL (control section)" on page 506.

Recoverable service elements—DFHRST TYPE=RSE

The DFHRST TYPE=RSE macro contains information about a recoverable service element and the CICS systems expected to connect to the DBCTL subsystems within the recoverable service element.

```
►►──DFHRST──TYPE=RSE──┬──────────────────────────────────┬──────────────►◄
                      └─,CTLAPPLS=(applid1,applid2,...)──┘
```

TYPE=RSE
: Indicates the start of a set of identifiers of equivalent DBCTL systems. Equivalent DBCTL subsystems have the same database (DB) name.

CTLAPPLS=(applid1,applid2,....)
: Specifies the application identifiers of the CICS systems that are authorized to restart the DBCTL subsystems in the RSE.

DBCTL subsystems—DFHRST TYPE=SUBSYS

The DFHRST TYPE=SUBSYS macro contains information about a specific DBCTL subsystem within an RSE.

For each subsystem in an RSE there must be a DFHRST TYPE=SUBSYS macro.

```
►►──DFHRST──TYPE=SUBSYS──,SYBSYSID=subsystem-identifier──────────────────►

►──┬──────────────────────────────────────┬──────────────────────────────►◄
   └─,JOBNAME=(jobname1,jobname2,...)─────┘
```

TYPE=SUBSYS
: Defines one of the DBCTL subsystems in an RSE.

SUBSYSID=subsystem-identifier
: Code this with the 4-character name of the DBCTL subsystem-identifier. This identifier must be unique within the RST.

JOBNAME=(jobname1,jobname2,....)
: Code this with the **MVS JOBNAME(S)** associated with the DBCTL subsystem identified in the SUBSYSID parameter statement. This is a form of security check. If CICS needs to cancel the DBCTL subsystem, it is authorized to do so only if the appropriate MVS jobname associated with the DBCTL subsystem is one of those specified by the **JOBNAME** parameter.

DFHRST example

The coding required to generate an RST can be clarified with an example.

Figure 47 on page 549 illustrates the coding required to generate an RST.

```
DFHRST   TYPE=INITIAL
         ,SUFFIX=K1
DFHRST   TYPE=RSE
         ,CTLAPPLS=(applid1,applid2,applid3)
DFHRST   TYPE=SUBSYS
         ,SUBSYSID=CTL1
         ,JOBNAME=(job1,job2,job3,job4)
DFHRST   TYPE=SUBSYS
         ,SUBSYSID=CTL2
         ,JOBNAME=(job5,job6,job7,job8)
DFHRST   TYPE=FINAL
END
```

Figure 90. Recoverable service table—example

Chapter 66. SRT—system recovery table

The system recovery table (SRT) contains a list of codes for abends that CICS intercepts. After it intercepts one, CICS attempts to remain operational by causing the offending task to abend.

You can modify the default recovery action by writing your own recovery program. You do this by means of the XSRAB global user exit point within the System Recovery Program (SRP). (See the *CICS Customization Guide* for programming information about the XSRAB exit.)

Note that recovery is attempted if a user task (but not a system task) is in control at the time the abend occurs.

The following macros may be coded in a system recovery table:
- DFHSRT TYPE=INITIAL establishes the control section
- DFHSRT TYPE=SYSTEM|USER specifies the abend codes that are to be handled
- DFHSRT TYPE=FINAL concludes the SRT (see "TYPE=FINAL (end of table)" on page 507)

Control section—DFHSRT TYPE=INITIAL

The DFHSRT TYPE=INITIAL macro generates the system recovery table control section.

```
►►──DFHSRT──TYPE=INITIAL──┬─────────────┬──────────────────────────►◄
                          └─,SUFFIX=xx──┘
```

For general information about TYPE=INITIAL macros, including the use of the SUFFIX operand, see "TYPE=INITIAL (control section)" on page 506.

Abend codes—DFHSRT TYPE=SYSTEM|USER

The DFHSRT TYPE=SYSTEM and TYPE=USER macros specify system and user abend codes that are to be intercepted by CICS.

```
                       ┌─SYSTEM─┐
►►──DFHSRT──TYPE=──────┴─USER───┴─,ABCODE=(abend-code,...)──────────►

►──┬─────────────────────┬──────────────────────────────────────────►◄
   │             ┌─NO──┐ │
   └─,RECOVER=───┴─YES─┴─┘
```

TYPE={SYSTEM|USER}
Indicates the type of abend code to be intercepted.

SYSTEM
The abend code is an operating system abend code corresponding to an MVS S*xxx* abend code.

USER
The abend code is a user (including CICS) abend code corresponding to an MVS U*nnnn* abend code.

ABCODE=(abend-code,...)
Code this with the abend code (or codes) to be intercepted. If you specify a single abend code, parentheses are not required.

If you code TYPE=SYSTEM, this abend code must be three hexadecimal digits (*xxx*) representing the MVS system abend code S*xxx*.

If you code TYPE=USER, this abend code must be a decimal number (*nnnn*) representing the user part of the MVS abend code U*nnnn*. This is usually the same number as the CICS message that is issued before CICS tries to terminate abnormally.

RECOVER={YES|NO}
specifies whether codes are to be added to or removed from the SRT.

YES
Code this to add the specified codes to the SRT.

NO Code this to remove the specified codes from the SRT.

Note:

1. CICS intercepts the following abend codes automatically and tries to recover:
   ```
   001,002,013,020,025,026,030,032,033,034,035,
   036,037,03A,03B,03D,052,053,067,0D3,0D4,0D5,
   0D6,0D7,0D8,0E0,0F3,100,113,137,202,213,214,
   237,283,285,313,314,337,400,413,437,513,514,
   613,614,637,713,714,737,813,837,913,A13,A14,
   B13,B14,B37,D23,D37,E37
   ```
   Abend code 0F3 covers various machine check conditions. It also covers the Alternate Processor Retry condition that can occur only when running on a multiprocessor. CICS-supplied recovery code attempts to recover from instruction-failure machine checks on the assumption that they are not permanent. It also attempts to recover from Alternate Processor Retry conditions.

   CICS will try to recover from the standard abend codes above if you code the system recovery table (SRT) as:
   ```
   DFHSRT  TYPE=INITIAL
   DFHSRT  TYPE=FINAL
   END
   ```
   There is no need to list the standard codes individually.
2. If you want CICS to handle other errors, you can code the SRT as follows:
   ```
   DFHSRT  TYPE=INITIAL
   DFHSRT  TYPE=SYSTEM,or USER,
           ABCODE=(user or system codes),
           RECOVER=YES
   DFHSRT  TYPE=FINAL
   END
   ```
3. If you do not want CICS to try to recover after one or more of the above standard abend codes occurs, specify the code(s) with **RECOVER=NO**, or without the **RECOVER** parameter.

4. CICS tries to recover if a user task (but not a system task) is in control at the time the abend occurs.

DFHSRT example

The coding required to generate an SRT can be clarified with an example.

Figure 48 on page 551 illustrates the coding required to generate a SRT.

```
DFHSRT TYPE=INITIAL,            *
       SUFFIX=K1
DFHSRT TYPE=SYSTEM,             *
       ABCODE=777,              *
       RECOVER=YES
DFHSRT TYPE=USER,
       ABCODE=(888,999),        *
       RECOVER=YES
DFHSRT TYPE=USER,               *
       ABCODE=020
DFHSRT TYPE=FINAL
END
```

Figure 91. System recovery table—example

Chapter 67. TCT—terminal control table

Use the DFHTCT macro to define SNA logical units (LUs) that support logical device codes and sequential devices attached by BSAM.

A CICS system can communicate with terminals, sequential devices, logical units, and other systems. The TCT defines each of the devices in the configuration. Each TCT entry defines the optional and variable features of the device to CICS, and specifies the optional and variable features of CICS to be used.

CICS uses a telecommunication access method to communicate with terminals. This can be the z/OS Communications Server or (for sequential devices) BSAM; you can use one or both of these in your system.

An terminal can be a telecommunication device; for example, an IBM 3279 Color Display Station, or a subsystem such as an IBM 4700 Finance Communication System. Terminals can be local (channel-attached) or remote (link-attached).

You can use a sequential device to simulate a CICS terminal. You can define a card reader or punch, line printer, direct access storage device (disk drive), or magnetic tape drive as a sequential device.

A logical unit (LU) is a port through which a user of an SNA network gains access to the network facilities.

A system can be, for example, another CICS system, an IBM 8815 Scanmaster, an IBM Displaywriter, or an APPC/PC. Intercommunication with CICS systems can be:

- Between different processors (**intersystem communication** or **ISC**), using the LUTYPE 6.1 or LUTYPE 6.2 protocols, or using an intermediate system as an **indirect link**. (Intercommunication with non-CICS systems also uses ISC.)
- Within the same processor (**multiregion operation** or **MRO**), using interregion communication (IRC). (You can also use LUTYPE 6.2 ISC within the same processor.)

DFHTCT macro types

The DFHTCT macros you code depend on the device you are defining, and on the access method you are using.

You always start with one of these:

`DFHTCT TYPE=INITIAL,...` (See “Control section—DFHTCT TYPE=INITIAL” on page 553.)

There is a special macro to use when you assemble the TCT to migrate RDO-eligible definitions to the CSD file:

`DFHTCT TYPE=GROUP,...` (See “Migrating TCT definitions—DFHTCT TYPE=GROUP” on page 555.)

You can define your devices in any order you want. Each device needs one or more macros, and these sometimes have to be in a particular order. You are told when this is the case. The macros you need for each type of device or system are as follows:

Table 51. DFHTCT macro types

Logical device codes.	`DFHTCT TYPE=LDC,...`
	`DFHTCT TYPE=LDCLIST,...`

Sequential devices.	`DFHTCT TYPE=SDSCI,...`
	`DFHTCT TYPE=LINE,...`
	`DFHTCT TYPE=TERMINAL,...`

Remote non-SNA LUs, for transaction routing.	`DFHTCT TYPE=REMOTE,...`
	or:
	`DFHTCT TYPE=REGION,...`
	`DFHTCT TYPE=TERMINAL,...`

At the very end of your macros you code:

```
DFHTCT TYPE=FINAL
END
```

This macro is described in "TYPE=FINAL (end of table)" on page 507.

Notes:

SYSIDNT and TRMIDNT operands
CICS accepts both uppercase and lowercase characters for SYSIDNT and TRMIDNT, but the lowercase characters are not checked for duplication. Assembling a TCT containing lowercase SYSIDNT or TRMIDNT results in an MNOTE. If you want duplicate checking, use only uppercase characters for SYSIDNT and TRMIDNT.

Assembling the TCT
The assembly and link-edit of a TCT leads to the creation of two separate load modules. Assembly of a suffixed TCT (source name DFHTCT*xx*) produces a single text file. However, when this is link-edited into a load library, two members are created:

1. DFHTCT*xx*, which contains the non-RDO-eligible definitions in control block format
2. DFHRDTxx, which contains the RDO-eligible (SNA LU and system) definitions in RDO command format

This happens, **whether or not you intend to use RDO**. You need to be aware of the existence of these two tables if you copy or move assembled TCT tables between load libraries.

If you reassemble the TCT after starting CICS, any changes are picked up at a warm or emergency start.

Control section—DFHTCT TYPE=INITIAL

You code one DFHTCT TYPE=INITIAL macro before all the macros that define your resources.

The TYPE=INITIAL macro has two purposes:

1. To establish the area of storage into which the TCT is assembled.

2. To specify information that applies to the whole TCT, or to the individual non-z/OS Communications Server entries (and any z/OS Communications Server-LDC definitions).

```
                              ┌─,ACCMETH=VTAM────┐
►►──DFHTCT──TYPE=INITIAL──────┤                  ├──────────────────────────────────────────────►
                              └─,ACCMETH=NONVTAM─┘

   ┌─,ERRAT=NO──────────────────────────────────────────────────────────────────────────┐
►──┼────────────────────────────────────────────────────────────────────────────────────┼───────►
   └─,ERRAT=LASTLINE──┬────────────┬──┬─────────────┬───┬────────────┬──┘
                      └─,INTENSIFY─┘  ├─,BLUE───────┤   ├─,BLINK─────┤
                                      ├─,RED────────┤   ├─,REVERSE───┤
                                      ├─,PINK───────┤   └─,UNDERLINE─┘
                                      ├─,GREEN──────┤
                                      ├─,TURQUOISE──┤
                                      ├─,YELLOW─────┤
                                      └─,NEUTRAL────┘

   ┌─,MIGRATE=YES──────┐
►──┼───────────────────┼───┬────────────┬───┬────────────────┬──────────────────────────────────►◄
   └─,MIGRATE=COMPLETE─┘   └─,SUFFIX=xx─┘   └─,SYSIDENT=name─┘
```

Note: SYSIDNT is Intercommunication only

Note: For general information about TYPE=INITIAL macros, see "TYPE=INITIAL (control section)" on page 506.

ACCMETH=([VTAM,]NONVTAM)
This specifies the access methods required in the running CICS system. VTAM is now z/OS Communications Server.

VTAM
Specify this if you are using the z/OS Communications Server as an access method.

NONVTAM
Specify this if you are using telecommunications access methods other than the z/OS Communications Server. These access methods include BSAM (for sequential devices).

Note: The default is to assume **both** VTAM and NONVTAM.

ERRATT={NO∨([LASTLINE][, INTENSIFY] [,{BLUE∨RED∨PINK∨GREEN∨TURQUOISE∨YELLOW∨ NEUTRAL}][,{BLINK∨REVERSE∨ UNDERLINE}])}
Indicates the way error messages are displayed on all 3270 display screens. You can either let it default to NO, or specify any combination of LASTLINE, INTENSIFY, one of the colors, and one of the highlights. Specifying INTENSIFY, one of the colors, or one of the highlights forces LASTLINE.

Any attributes that are not valid for a particular device are ignored.

NO Any error message is displayed at the current cursor position and without any additional attributes.

LASTLINE
Any error message is displayed starting at the beginning of the line nearest the bottom of the screen, such that the message fits on the screen.

Attention: If messages are received in quick succession, they overlay one another. The earlier messages may disappear before the operator has read them.

INTENSIFY
Error messages are intensified, and placed on the last line of the screen.

BLUE∨**RED**∨**PINK**∨**GREEN**∨**TURQUOISE**∨**YELLOW**∨ **NEUTRAL**
Error messages are shown in the color specified, and placed on the last line of the screen.

BLINK∨**REVERSE**∨**UNDERLINE**
Error messages are highlighted, and placed on the last line of the screen.

MIGRATE={YES∨COMPLETE}
This operand controls the building of TCT entries for z/OS Communications Server devices that are **eligible** for resource definition online (RDO). The only way RDO-eligible resources may be moved to the CSD file from the macro source is to use DFHCSDUP, as described under YES below.

YES
YES indicates that you want to generate the necessary data to migrate your RDO-eligible resources. The records generated from the macro source are designed to be used as input to the DFHCSDUP utility program. An MNOTE attention message is issued for each RDO-eligible resource.

Note: From CICS TS for z/OS, Version 4.1, the DFHCSDUP MIGRATE command is not supported. Use an earlier release of CICS to migrate your tables to the CSD.

COMPLETE
Use of COMPLETE means that TCT entries are not generated from the macro source for any RDO-eligible devices. For each one, the assembly produces an MNOTE. This means that you can keep your TCT macro source code after you have migrated your definitions.

If you continue to assemble a TCT for resources that are not eligible for RDO, continue to use MIGRATE=COMPLETE.

SYSIDNT={CICS∨name}
This 1- to 4-character name is a private name that the CICS system uses to identify itself. If you use DFHTCT TYPE=REGION macros to define remote terminals, you must code this operand. It is used to determine whether a remote or a local TCT terminal entry is generated from each TYPE=TERMINAL macro following the TYPE=REGION macro. If the SYSIDNT on the TYPE=REGION macro is the same as the SYSIDNT on the TYPE=INITIAL macro, a local definition is generated; otherwise a remote definition is generated.

The value you code for this operand is used to define the name of the local region during assembly of the TCT only. You must also define the name of the local region, for execution purposes, using the SYSIDNT system initialization parameter.

Migrating TCT definitions—DFHTCT TYPE=GROUP

Use this macro to name the groups into which TCT definitions are put when you migrate to resource definition online.

This macro can appear as many times as required and at any point in the macro source. Each time it appears, it defines the CSD file group into which subsequent definitions are put until the next DFHTCT TYPE=GROUP macro occurs.

```
►►──DFHTCT──TYPE=GROUP──┬──────────────┬──────────────────────────────────►◄
                        └─,GROUP=name──┘
```

GROUP=name
Code this with the name of the group to which subsequent definitions are migrated. The name can be up to eight alphanumeric characters, but must not begin with DFH. The default name is TCT*xx*, where *xx* is the value coded for SUFFIX in the DFHTCT TYPE=INITIAL macro. If an error is found, the existing group name continues.

If a group with the name you specify does not already exist, it will be created. If it does exist, subsequent definitions are added to it.

DFHTCT logical device codes: z/OS Communications Server non-3270

Certain types of logical unit may be used to gain access to more than one resource within a subsystem. For example, a card punch device may be attached to a 3770 logical unit: the CICS application program can direct punch output, through BMS, via the 3770 to the card punch device. The facility provided by CICS to permit communication to devices within logical units of this type is the *logical device code* (LDC).

Certain types of logical unit may be used to gain access to more than one resource within a subsystem. For example, a card punch device may be attached to a 3770 logical unit: the CICS application program can direct punch output, through BMS, via the 3770 to the card punch device. The facility provided by CICS to permit communication to devices within logical units of this type is the **logical device code** (LDC).

Although these are z/OS Communications Server units, they require macro definition, unlike other z/OS Communications Server devices.

The logical units that support LDCs are:
- 3601 logical unit
- 3770 batch logical unit
- 3770 batch data interchange logical unit
- 3790 batch data interchange logical unit
- LUTYPE 4 logical unit

To reference such a device in a CICS application program, or in the CMSG transaction for message switching, you specify an LDC mnemonic which CICS translates into a numeric LDC value. When CICS sends an output data stream to the logical unit, it includes the LDC value in the function management header (FMH). When the logical unit receives the data stream, it uses the LDC value to determine which component is to receive the output, or to perform some standard action.

Each LDC mnemonic to be referenced must be defined in the TCT, optionally with its associated LDC value and certain device characteristics for use by BMS functions. Such LDC information is contained in either the **system LDC table**, or in an **extended local LDC list**. You code the following DFHTCT macros to specify the system LDC table or an extended local LDC list:

- Code DFHTCT TYPE=LDC macro(s) to generate entries in the system LDC table. You may generate certain default LDC entries provided by CICS. For example,

  ```
  DFHTCT TYPE=LDC,LDC=SYSTEM
  ```

  generates the following entries in the system LDC table:

  Table 52. System LDC table entries

LDC mnemonic	LDC value	Device	Pagesize (row,column)
DS	1	3604 Keyboard Display	6,40
JP	2	3610 Document Printer	1,80
PB	3	Passbook and Document Printer	1,40
LP	4	3618 Administrative Line Printer	50,80
MS	5	3604 Magnetic Stripe Encoder	1,40
CO	0	Console medium or default print data set group	
R1	32	Card input medium	1,80
H1	32	Card output medium	1,80
P1	48	Print medium or print data set group	50,80
W1	128	Word processing medium 1	50,80
W2	144	Word processing medium 2	50,80
W3	160	Word processing medium 3	50,80
W4	192	Word processing medium 4	50,80

  You may also define LDCs specifically to add LDC entries to the system LDC table. For example,

  ```
     DFHTCT TYPE=LDC,
            LDC=XX,
            DVC=BLUPRT,
            PGESIZE=(12,80),
            PGESTAT=PAGE
     DFHTCT TYPE=LDC,
            LDC=YY,
            DVC=BLUPCH,
            PGESIZE=(1,80),
            PGESTAT=AUTOPAGE
  ```

  adds the following entries to the system LDC table:

  Table 53. System LDC table entries defined by LDCs

LDC mnemonic	LDC value	Device	Pagesize (row,column)	PGESTAT
XX	48	Batch LU printer	12,80	PAGE
YY	32	Batch LU card output	1,80	AUTOPAGE

- Instead of the system LDC table, you may code the following series of DFHTCT TYPE=LDC macros to create an extended local LDC list. Default entries may also be generated. For example,

  ```
  LDC1  DFHTCT TYPE=LDC,LOCAL=INITIAL
  *  the next line generates default CO,R1,H1,P1 LDCs
     DFHTCT TYPE=LDC,LDC=BCHLU
     DFHTCT TYPE=LDC,DVC=BLUPRT,LDC=AA,
            PGESIZE=(6,30)
     DFHTCT TYPE=LDC,DVC=BLUPCH,LDC=BB,
  ```

```
         PGESIZE=(1,80)
  DFHTCT TYPE=LDC,DVC=BLUCON,LDC=CC,
         PGESIZE=(1,132)
  DFHTCT TYPE=LDC,LOCAL=FINAL
```

generates an extended local LDC list named LDC1 containing the following entries:

Table 54. Extended local LDC list entries

LDC mnemonic	LDC value	Device	Pagesize (row,column)
CO	0	Console medium or default printer data set group	
R1	32	Card input medium	1,80
H1	32	Card output medium	1,80
P1	48	Print medium or print data set group	50,80
AA	48	BLUPRT batch LU printer	6,30
BB	32	BLUPCH batch LU card output	1,80
CC	0	BLUCON batch LU console printer	1,132

When you are defining a logical unit in the TCT, you can specify its LDCs in either of two ways:

1. Code a DFHTCT TYPE=LDCLIST macro to define a local list of LDC mnemonics (and optionally their LDC values); for example,

   ```
   LDC2 DFHTCT TYPE=LDCLIST,
               LDC=(DS,JP,PB=5,LP,MS)
   ```

   In the DFHTCT TYPE=TERMINAL macro defining the logical unit, you specify in the LDC operand the name of the local list as defined by the DFHTCT TYPE=LDCLIST macro. For example:

   ```
        DFHTCT TYPE=TERMINAL,
               TRMTYPE=3600,
               LDC=LDC2, ...
   ```

   has associated the LDCs DS, JP, PB, LP, and MS with the 3601 logical unit that you are defining. The LDC values either may be specified in the local list, or are obtained from the system LDC table. If BMS uses these LDC mnemonics, their page size and page status must also be available from the system LDC table.

   Note: A local list defined by a DFHTCT TYPE=LDCLIST macro may be shared by a number of 3601, LUTYPE 4 and batch logical units.

2. In the DFHTCT TYPE=TERMINAL macro defining the logical unit, you specify in the LDC operand the name of an extended local LDC list. For example:

   ```
   LDC1 DFHTCT TYPE=LDC,LOCAL=INITIAL
        DFHTCT TYPE=LDC,LDC=BCHLU
        DFHTCT TYPE=LDC,DVC=BLUPRT,LDC=AA,
               PGESIZE=(6,30)
        DFHTCT TYPE=LDC,DVC=BLUPCH,LDC=BB,
               PGESIZE=(1,80)
        DFHTCT TYPE=LDC,DVC=BLUCON,LDC=CC,
               PGESIZE=(1,132)
        DFHTCT TYPE=LDC,LOCAL=FINAL
        DFHTCT TYPE=TERMINAL,TRMTYPE=BCHLU,
               LDC=LDC1, ...
   ```

has associated the LDCs CO, R1, H1, P1, AA, BB, and CC with the batch logical unit that you are defining. Their LDC values and device characteristics for BMS functions are described in the extended local LDC list, which is named LDC1.

When CICS requests an output or message switching operation using a particular LDC mnemonic for a logical unit, it tries to resolve the mnemonic from the list (whichever form) specified by the LDC operand of the DFHTCT TYPE=TERMINAL macro. If the LDC is not located in the local list or in the extended local list, the LDC specified is not valid for that terminal entry. In this case, X'00' is inserted in the logical device code portion of the FMH, and no destination name is inserted.

When a BMS function is requested for an LDC, and the LDC mnemonic is successfully resolved, the device characteristics (for example, device name and destination name) are accessed for the BMS function. If the LDC is in an extended local LDC list, these characteristics lie in the located extended local list entry. Otherwise, the system LDC table is searched for the LDC and the associated device characteristics.

Logical device codes—DFHTCT TYPE=LDC macro

The DFHTCT TYPE=LDC macro may only be used with 3600, LUTYPE4, 3770 batch logical unit, and 3770/3790 batch data interchange logical units.

You are responsible for setting up the LDC structure to be used with the terminal.

The expansion of this macro is the same, regardless of where it is specified in the TCT definition.

```
►►──DFHTCT──TYPE=LDC──┬─────────────────────────┬────────────────────────►
                      └─,DSN=destination-name───┘

►──┬──────────────────────────────────────┬──┬─────────────────────────┬──►
   └─,DVC=(device-type,sub-address)───────┘  │         ┌─SYSTEM───────┐ │
                                             └─,LDC=───┼──────────────┼─┘
                                                       ├─LUTYPE4──────┤
                                                       ├─3600─────────┤
                                                       ├─BCHLU────────┤
                                                       └─aa──┬──────────┬┘
                                                             └─=number──┘

►──┬──────────────────────┬──┬──────────────────────────────┬─────────────►
   └─,LOCAL=──┬─INITIAL─┬─┘  └─,PGESIZE=(row,column)────────┘
              └─FINAL───┘

►──┬──────────────────────────┬────────────────────────────────────────►◄
   │          ┌─AUTOPAGE─┐    │
   └─,PGESTAT=┴─PAGE─────┴────┘
```

name
Code this with the name of the extended local LDC list. It should be the same as that specified in the LDC operand of the DFHTCT TYPE=TERMINAL macro, and is only required if LOCAL=INITIAL is coded.

TYPE=LDC
Code this if an LDC is being defined to the system LDC table or to the extended local LDC list.

DSN=destination-name
Code this with the name to be used by BMS for destination selection for the batch data interchange logical unit. See the relevant CICS subsystem guides for further information on destination selection.

DVC=(device-type,sub-address)
Code this with the device type associated with the LDC to be used for a BMS request. This operand can only be coded in conjunction with the LDC=*aa*[=*nnn*] operand.

device-type
May be coded as follows:

Table 55. DVC=device-type entries

Device type	Explanation
3604	Keyboard display
3610	Cut-forms document printer or journal printer (including the document/journal printer of a 3612)
3612	Passbook portion of a 3612
3618	Currently selected carriage
3618P	Primary carriage
3618S	Secondary carriage
3618B	Both carriages
BLUCON	Batch logical unit console printer
BLUPRT	Printer component of a batch logical unit
BLURDR	Card input component of a batch logical unit
BLUPCH	Card output component of a batch logical unit
WPMED1	Word processing medium 1
WPMED2	Word processing medium 2
WPMED3	Word processing medium 3
WPMED4	Word processing medium 4

The device types BLUPRT, BLURDR, BLUPCH, and BLUCON are devices attached to a batch, batch data interchange, or LUTYPE4 logical unit.

The WPMED1, 2, 3, and 4 options apply to LUTYPE4 logical units only. The component to which these options apply is defined by the particular type 4 logical unit implementation.

sub-address
Code this with the media sub-address. The range is 0 through 15, with a default of 0. A value of 15 indicates any sub-address. The sub-address differentiates between two units of the same device type (for example, (BLUPRT,0) and (BLUPRT,1)), which could be two print components attached to one logical unit.

LDC={SYSTEM∨LUTYPE4∨3600∨BCHLU∨(aa[=nnn])}
Code this with the LDC mnemonic and numeric value to be defined. Only the LDC=*aa*[=*nnn*] option can be used in conjunction with the DVC, PGESIZE, and PGESTAT operands.

SYSTEM
The following system-default LDCs for 3600, batch, and LUTYPE4 logical units are to be established:

Table 56. System default LDCs

LDC mnemonic	LDC value	Device	Pagesize (row, column)
DS	1	3604 Keyboard Display	6,40
JP	2	3610 Document Printer	1,80
PB	3	Passbook and Document Printer	1,40
LP	4	3618 Administrative Line Printer	50,80
MS	5	3604 Magnetic Stripe Encoder	1,40
CO	0	Console medium or default print data set group	
R1	32	Card input medium	1,80
H1	32	Card output medium	1,80
P1	48	Print medium or print data set group	50,80
W1	128	Word processing medium 1	50,80
W2	144	Word processing medium 2	50,80
W3	160	Word processing medium 3	50,80
W4	192	Word processing medium 4	50,80

LUTYPE4
System-default LDC mnemonics are to be established for an LUTYPE4 (word processing) logical unit. These consist of the CO, R1, P1, H1, W1, W2, W3, and W4 mnemonics, the corresponding LDC values, and the appropriate page sizes.

3600
System-default LDC mnemonics for the 3600 are to be established. These consist of the DS, JP, PB, LP, and MS mnemonics, the corresponding LDC values, and the appropriate page-sizes and page-status.

BCHLU
System-default LDC mnemonics for a batch logical unit are to be established. These consist of the CO, R1, P1, and H1 mnemonics, the corresponding LDC values, and the appropriate page-sizes and page-status.

aa The 2-character mnemonic to be used for this LDC.

nnn
The numeric value to be associated with the LDC in the system or extended local LDC list. The value in the system list is used as a default value for this LDC if a value is not found in a local LDC list (that is, not in the extended list) associated with a TCTTE. A value must be specified for a 3600 device. A value need not be specified for a batch, batch data interchange, or LUTYPE4 logical unit but, if one is specified, it must correspond to the LDC value for the device type.

LOCAL={INITIAL∨FINAL}
An extended local LDC list is to be generated.

INITIAL
This is the start of an extended local LDC list.

FINAL
This is the end of an extended local LDC list.

Note: LOCAL=INITIAL or FINAL may not be coded in the same DFHTCT TYPE=LDC macro as other operands. All DFHTCT TYPE=LDC entries coded after LOCAL=INITIAL and before LOCAL=FINAL form part of one extended local LDC list; the entries coded outside the structure of this group are added to the system LDC table.

The following is an example of an extended local LDC list:

```
       DFHTCT TYPE=TERMINAL,TRMIDNT=BTCH,      *
       TRMTYPE=BCHLU,ACCMETH=VTAM,LDC=LDCA     *
LDCA   DFHTCT TYPE=LDC,LOCAL=INITIAL
       DFHTCT TYPE=LDC,DVC=BLUPRT,LDC=AA,      *
       PGESIZE=(6,30)
       DFHTCT TYPE=LDC,DVC=BLUPCH,LDC=BB,      *
       PGESIZE=(1,80)
       DFHTCT TYPE=LDC,DVC=BLUCON,LDC=CC,      *
       PGESIZE=(1,132),PGESTAT=AUTOPAGE
       DFHTCT TYPE=LDC,LOCAL=FINAL
```

Note: VTAM is now z/OS Communications Server.

PGESIZE=(row,column)
Code this with the logical page size to be used with this LDC when BMS requests are processed.

The product of *row* and *column* must not exceed 32767.

PGESTAT={AUTOPAGE∨PAGE}
Indicates whether the device is to use autopaging or not. Autopaging means that BMS multiple page messages are printed continuously, without operator intervention. This is what is normally required for a printer. (Contrast the requirement for multiple page messages, displayed on a 3270-type display, when the operator wants to finish reading a page, before requesting the next page to be delivered.)

Only BMS SEND commands with the PAGING option use autopaging. BMS SEND with TERMINAL or SET, does not use autopaging.

AUTOPAGE
Specify this for printers.

PAGE
Specify this for displays.

If the default PGESIZE or PGESTAT values provided by the LDC operand are to be overridden, code a specific LDC with the mnemonic to be overridden. Code this overriding LDC in the LDC table before coding the LDC operand.

PGESTAT=AUTOPAGE may be used to override the PGESTAT specification in DFHTCT TYPE=TERMINAL.

Logical device codes—DFHTCT TYPE=LDCLIST

The DFHTCT TYPE=LDCLIST macro, which may be used with 3600, LUTYPE4, and batch logical units, allows you to build a common list of logical device codes (LDCs) to be shared by more than one TCTTE.

You are responsible for setting up the LDC structure to be used with the terminal.

The expansion of this macro is the same, regardless of where it is coded in the TCT definition.

```
►►──DFHTCT──TYPE=LDCLIST──────────────────────────────────────────────►
```

```
►─,LDC=(aa──┬─────────┬─┬───────────────────┬─┬───────────────────┬─)──────────────►◄
            └─=number─┘ └─,bb──┬─────────┬─┘ └─,cc──┬─────────┬─┘
                               └─=number─┘          └─=number─┘
```

listname
Is the required name of the LDC list. This name is referenced by TCTTEs through the LDC operand in DFHTCT TYPE=TERMINAL.

TYPE=LDCLIST
An LDC list is being defined.

LDC=(aa[=nnn][,bb[=nnn]][,cc[=nnn]][,...])
Code this with the LDCs (mnemonics and, optionally, the LDC numeric value) in this list.

(aa[=nnn][,bb[=nnn]] [,cc[=nnn]][,...])
Generates the LDCs in the list.

aa,bb,cc...
The 2-character mnemonics of the LDCs in this list.

nnn
A decimal value in the range 1 through 255 to be associated with an LDC. If a value is not specified, the system default value from the table defined by the DFHTCT TYPE=LDC macro, is used for this LDC. This value need not be coded for a batch or LUTYPE4 logical unit, but if it is, it must correspond to the LDC value for the device. LDCs for devices attached to a batch or LUTYPE4 logical unit are listed under the LDC parameter of the DFHTCT TYPE=LDC macro.

DFHTCT examples: LDC

An example showing how to code the DFHTCT TYPE=LDC macro for a 3770 batch logical unit.

```
DFHTCT TYPE=LDC,                        *
       LDC=XX,                          *
       DVC=BLUPRT,                      *
       PGESIZE=(12,80),                 *
       PGESTAT=PAGE
DFHTCT TYPE=LDC,                        *
       LDC=YY,                          *
       DVC=BLUPCH,                      *
       PGESIZE=(1,80),                  *
       PGESTAT=AUTOPAGE
DFHTCT TYPE=LDC,                        *
       LDC=SYSTEM
```

Figure 92. LDCs for 3770 batch logical unit TCT example

Sequential devices

CICS uses BSAM to control sequential devices such as card readers, line printers, magnetic tape units, and DASD to simulate terminals. Only unblocked data sets can be used with BSAM. These "sequential terminals" may be used before actual terminals are available, or during testing of new applications.

CICS uses BSAM to control sequential devices such as card readers, line printers, magnetic tape units, and DASD to simulate terminals. Only unblocked data sets can be used with BSAM. These “sequential terminals” may be used before actual terminals are available, or during testing of new applications.

To define a sequential device, code the following macro instructions:

```
       DFHTCT TYPE=INITIAL,
              ACCMETH=(NONVTAM)    defining the access
                                   method
```

(Define the following macro instructions contiguously.)

```
  DFHTCT TYPE=SDSCI,
         DSCNAME=isadscn,     defining the input
         DDNAME=indd, ...      data set
  DFHTCT TYPE=SDSCI,
         DSCNAME=osadscn,     defining the output
         DDNAME=outdd, ...     data set
  DFHTCT TYPE=LINE,
         ISADSCN=isadscn,
         OSADSCN=osadscn, ...
  DFHTCT TYPE=TERMINAL,
         TRMIDNT=name, ...
```

The two data sets defined by the DFHTCT TYPE=SDSCI macros simulate a CICS terminal known by the name specified in the TRMIDNT operand of the DFHTCT TYPE=TERMINAL macro. The DSCNAMEs of the input and output data sets must be specified in the ISADSCN and OSADSCN operands of the DFHTCT TYPE=LINE macro respectively.

The end of data indicator (EODI) for sequential devices may be altered using the EODI system initialization parameter.

JCL for sequential devices

The DDNAME operands on the DFHTCT TYPE=SDSCI macros specify the ddname of the DD statements which you must provide in the CICS startup job stream.

```
    //indd   DD  ...               input data set
    //outdd  DD  ...               output data set
```

where *indd* is the data set containing input from the simulated terminal, and *outdd* is the data set to which output to the simulated terminal is sent.

Sequential devices—DFHTCT TYPE=SDSCI

The DFHTCT TYPE=SDSCI macro specifies the characteristics of the input and output data sets that simulate a CICS terminal.

```
►►──DFHTCT──TYPE=SDSCI──,DEVICE=device──,DSCNAME=name──┬─────────────────┬──────────►
                                                       └─,BLKSIZE=length─┘

►──┬──────────────────────────────────┬─,MACRF=──┬─R─┬──┬──────────────────┬──────►◄
   │            ┌─name-in-DSCNAME─┐   │          └─W─┘  │           ┌─U─┐  │
   └─,DDNAME=───┴─name────────────┴───┘                 └─,RECFM=───┼─F─┼──┘
                                                                    └─V─┘
```

BLKSIZE=length
: Code this with the maximum length in bytes of a block.

  The default is BLKSIZE=0. If this operand is omitted, the block size can be specified in the data definition (DD) statement associated with the data set. A more detailed explanation of this operand is given in the *MVS/ESA Data Administration: Macro Instruction Reference*.

DDNAME={name-in-DSCNAME|name}
Supplies the name of the data definition (DD) statement associated with a particular data set (line group). If this operand is omitted, the DSCNAME becomes the DDNAME.

DEVICE=device
One of the following values may be coded:

- For card readers: **{1442|2501|2520|2540|2560|2596| 3505|3525|5425}**
- For line printers: **{1403|1404|1443|1445|3203|3211|5203}**
- For disk (DASD): **{2314|3330|3340|3350|DASD|DISK}**
- For tapes: **TAPE**.

  The TAPE specification generates tape work files for both the input and the output data sets. Note that if an input tape with an expired label is used, the header may be rewritten, causing the first data records to be destroyed.

DSCNAME=name
The name of either the input or the output data set. If you are defining the input data set, ISADSCN on the DFHTCT TYPE=LINE macro must match the name that you specify: if you are defining the output data set, OSADSCN on the DFHTCT TYPE=LINE macro must match it.

MACRF=([R][,W])
Code this with the way in which access to the sequential device is to be gained.

R	Indicates the READ macro.
W	Indicates the WRITE macro.

The default is MACRF=R for a card reader and MACRF=W for a line printer. For other sequential devices, MACRF=R or MACRF=W must be coded.

RECFM={U|F|V}
Code this with the record format for the DCB.

U	Indicates undefined records. Code this option for DEVICE=1403 or 3211, or if you are using DASD for sequential terminal output (that is, if DEVICE=DASD and MACRF=W).
F	Indicates fixed-length records.
V	Indicates variable-length records.

If you omit this operand, you can specify the record format in the data definition (DD) statement associated with the sequential data set.

Sequential devices—DFHTCT TYPE=LINE

The DFHTCT TYPE=LINE macro specifies further characteristics of the sequential data sets that simulate a CICS terminal.

```
►►──DFHFCT──TYPE=LINE──,ACCMETH=──┬─SAM────────┬──,INAREAL=length──────────────►
                                  ├─BSAM───────┤
                                  └─SEQUENTIAL─┘
```

```
►─,ISADSCN=input-name──,OSADSCN=outut-name──,TRMTYPE=──┬─U/R──┬──────────────────────────►
                                                       ├─CRLP─┤
                                                       ├─DASD─┤
                                                       └─TAPE─┘

►──┬─────────────────────────┬──┬─────────────────────────┬───────────────────────────────►◄
   └─,LINSTAT='OUT OF SERVICE'─┘  │             ┌─0──────┐  │
                                  └─,TCTUAL=──┴─length─┴─┘
```

ACCMETH={SAM∨BSAM∨SEQUENTIAL}
Specify SAM, BSAM, or SEQUENTIAL — they are equivalent in CICS.

INAREAL=length
Code this with the message input area length. The value should be equal to the length of the longest initial logical record of a transaction that may include multiple physical records.

ISADSCN=name
The name of the input data set. The TYPE=SDSCI DSCNAME operand for the input data set must match this.

LINSTAT='OUT OF SERVICE'
The line is to be initiated with an 'out of service' status.

The default is 'in service'.

OSADSCN=name
The name of the output data set. The TYPE=SDSCI DSCNAME operand for the output data set must match this.

TCTUAL={0∨length}
Indicates the length in bytes (0 through 255) of the user area (the process control information field or PCI) for all terminal entries (TCTTEs) associated with this line. Make it as small as possible. The TCT user area is initialized to zeros at system initialization. If you want fields of different (variable) lengths, you can specify the TCTUAL value in one or more TYPE=TERMINAL macro instructions for terminals associated with this line.

TRMTYPE=(U/R∨CRLP∨DASD∨TAPE)
Indicates the sequential device type:

U/R	Any reader or printer
CRLP	A card reader and a line printer
DASD	A direct access storage device
TAPE	A magnetic tape device

Sequential devices—DFHTCT TYPE=TERMINAL

The DFHTCT TYPE=TERMINAL macro specifies the terminal name and other characteristics of a CICS terminal that is simulated by a pair of sequential data sets.

```
►►──DFHTCT──TYPE=TERMINAL──┬──────────────────────────┬──┬───────────────────────────┬────►
                           │            ┌─120───┐    │  └─,PGSIZE=(lines,columns)─┘
                           └─,LPLEN=──┴─value─┴────┘
```

```
►──┬──────────────────────────────────────────────────┬──────────────────────────►
   │            ┌─number-specified-in-TYPE=LINE─┐      │
   └─,TCTUAL=───┼───────────────────────────────┼──────┘
                └─number────────────────────────┘

►──┬──────────────────────────────────────────────┬──┬───────────────────────┬───►
   └─,TRANSID=transaction-identification-code─────┘  │            ┌─0──────┐ │
                                                     └─,TRMPRTY=──┼────────┼─┘
                                                                  └─number─┘

►──┬───────────────────────────────────────────────────────────────────┬───────►◄
   │           ┌─TRANSACTION──────────────┐                            │
   └─,TRMSTAT=─┼──────────────────────────┼──┬──────────────────────┬──┘
               └─(──status──┬───────┬──)──┘  └─,USERID=userid───────┘
                            └─,...──┘
```

LPLEN={120∨value}
Controls the length of the print line for SAM output line printers. If no NL symbol is found in a segmented write, the print line length is the LPLEN value. The default is LPLEN=120.

PGESIZE=(lines,columns)
The default page size for a 1403 or CRLP terminal is (12,80). Code PGESIZE if BMS is required for a device that has TRMTYPE=DASD specified, and specify the number of lines and columns you want to use. These two values multiplied together must equal the value specified for INAREAL. The product of *lines* and *columns* must not exceed 32767.

TCTUAL={number-specified-in-TYPE=LINE ∨number}
Indicates the length in bytes (0 through 255) of the user area (the process control information field or PCI) for the terminal entry (TCTTE) associated with this terminal. Make it as small as possible. The TCT user area is initialized to zeros at system initialization.

Use the TCTUAL operand of the DFHTCT TYPE=TERMINAL macro if you want fields of different (variable) lengths for terminals associated with this line. In any case, the PCI field is generated for each terminal after the last terminal entry of the last line. The address of the PCI field is located at TCTTECIA; the length is located at TCTTECIL.

TRANSID=transaction-identification-code
Code this with a 1- to 4-character transaction code. This code specifies a transaction that is to be initiated each time input is received from the terminal when there is no active task.

If a TRANSID is not specified in the TCTTE, the TRANSID in a RETURN command from the previous transaction is used. Otherwise, the first one to four characters of the data passed in the TIOA are used as the transaction code. A delimiter is required for transaction identifications of fewer than four characters.

TRMIDNT=name
Code this with a unique 4-character symbolic identification of each terminal. The identification supplied is left-justified and padded with blanks to four characters if less than four characters are supplied.

The value CERR is reserved, as this is the identification generated for the error console.

TRMPRTY={0∨number}
Establishes the terminal priority. This decimal value (0 through 255) is used in

establishing the overall transaction processing priority. (Transaction processing priority is equal to the sum of the terminal priority, transaction priority, and operator priority, and must not exceed 255.)

TRMSTAT={TRANSACTION∨(status,...)}
Code this with the types of activity that may occur at a given terminal. This terminal status is initially set in the TCTTE and is a combination of the processing status and the service status.

TRANSACTION
A terminal with TRANSACTION status is used in the processing of transactions such as inquiries or order entries. A display station or a hard-copy terminal, to which no messages are sent without a terminal request, and through which transactions are entered, is a TRANSACTION terminal.

INPUT
Indicates a terminal that can send messages to, but cannot receive messages from, CICS.

Note: System messages may be routed to an input terminal under conditions such as invalid transaction identification and ATP batch count. This causes DFHTACP to be scheduled. To handle this situation, code a DFHTEP to perform any action that the user requires.

'OUT OF SERVICE'
Indicates a terminal that can neither receive messages nor transmit input. Such terminals are not polled by CICS. The 'OUT OF SERVICE' parameter can be used in combination with any status setting.

Any terminal except the master terminal can be designated as 'OUT OF SERVICE'. When appropriate, the terminal can be placed in service by the master terminal and polling is resumed.

RECEIVE
Indicates a terminal to which messages are sent but from which no input is allowed. An example of this type of terminal is one that is located in a remote location, such as a warehouse, and is unattended, but may receive messages. Automatic transaction initiation is implemented as for TRANSCEIVE, below.

TRANSCEIVE
A terminal with TRANSCEIVE status is a TRANSACTION terminal to which messages are sent automatically. The automatic transaction initiation, either by transient data control or interval control, sets a condition in an appropriate terminal control table terminal entry. If the terminal status is TRANSCEIVE and if there is no transaction at the terminal, terminal control initiates the user-defined task. This task is expected to send messages to the terminal.

USERID=userid
Code this to specify a user identifier for devices such as printers that are unable to sign on using CESN. (You can also specify USERID for a display device, in which case the display is permanently signed on. Operators are unable to sign on.) You must code this operand if you want to use preset security with this device. All access to protected resources depends on USERID.

The userid is referred to in security error messages, security violation messages, and the audit trail. It must be defined to the security manager.

Userid must be a unique 1- to 8-character user identification. (A-Z 0-9 # $ and @ are acceptable characters.)

Remote terminals for transaction routing

CICS can communicate with other systems that have similar communication facilities.

This kind of communication is known as **CICS intercommunication**. For more information, see the *CICS Intercommunication Guide*.

When you are concerned with resource definition, the system where the TCT is installed is the **local** system. The system that is being defined in the TCT is the **remote** system.

Transaction routing enables terminals in one CICS system to invoke transactions in another CICS system. You can use transaction routing between systems connected by MRO or by an LUTYPE 6.2 link.

Remote definitions for terminals for transaction routing

There are two possible methods of defining the terminals using macros.

The two methods are:

- **Method 1:**

```
DFHTCT TYPE=REGION, ...   (one for each region)

DFHTCT TYPE=SDSCI, ...    (for non-SNA LU only;
                           ignored for remote definitions)

DFHTCT TYPE=LINE, ...     (for non-SNA LU only)

DFHTCT TYPE=TERMINAL, ... (for non-SNA: one for each LU)
```

- **Method 2:**

```
DFHTCT TYPE=REMOTE, ...   (one for each terminal)
```

Tip: Another method, called 'shipping terminal definitions', is possible using RDO. See “Terminals for transaction routing” on page 276.)

Both methods allow the same terminal definitions to be used to generate the required entries in both the local and the remote system.

Method 1:
You can use copybooks to include the same source code in the TCTs for local and remote systems. The information not needed (that is, the whole of the TYPE=SDSCI macro, and some of the TYPE=LINE and TYPE=TERMINAL macros) is discarded for remote entries.

CICS decides whether to create a remote or a local definition on the basis of the SYSIDNT operand on the TYPE=REGION macro. This is compared with the SYSIDNT operand in DFHTCT TYPE=INITIAL. If they are the same, the definition(s) are local. If they are different, the definition(s) are remote.

Method 2:
Employs a single DFHTCT TYPE=REMOTE macro.

CICS decides whether to create a remote or a local definition on the basis of the SYSIDNT operand on the TYPE=REMOTE macro. This is compared with the SYSIDNT operand in DFHTCT TYPE=INITIAL. If they are the same, the definition(s) are local. If they are different, the definition(s) are remote.

These terminals cannot use transaction routing and therefore cannot be defined as remote:
- IBM 7770 or 2260 terminals
- MVS system consoles
- Pooled 3600 or 3650 Pipeline Logical Units

Remote terminals, method 1—DFHTCT TYPE=REGION

The DFHTCT TYPE=REGION macro introduces information about the named region. The information consists of DFHTCT TYPE=LINE and TYPE=TERMINAL macros.

These macros must follow the DFHTCT TYPE=REGION macro. For a remote region, the DFHTCT TYPE=LINE macro does not generate a TCT line entry (TCTLE). Every terminal that participates in transaction routing must be defined. Only certain DFHTCT macro types and operands are relevant in remote region definitions; all others are ignored. The operands that are relevant are those listed in "Remote terminals, method 2—DFHTCT TYPE=REMOTE" on page 570.

```
►►──DFHTCT──TYPE=REGION──,SYSIDNT=──┬─name──┬──────────────────────────────►◄
                                    └─LOCAL─┘
```

SYSIDNT={name∨LOCAL}
Indicates the 4-character name of the system or region whose information starts or resumes here. SYSIDNT=LOCAL can be specified to indicate that the TYPE=TERMINAL definitions following it refer to the home region, as do all definitions preceding the first DFHTCT TYPE=REGION macro. The name of the home region (that is, the region in which this terminal control table is used) is the value of the SYSIDNT operand of the DFHTCT TYPE=INITIAL macro. The name can instead be that of a previously defined MRO link or ISC link.

Remote terminals, method 1—DFHTCT TYPE=TERMINAL

TCT macro definitions for defining remote terminals using method 1.

Note: The DFHTCT TYPE=LINE macro and the additional operands of the DFHTCT TYPE=TERMINAL macro are valid, but are ignored if the SYSIDNT operand on the preceding DFHTCT TYPE=REGION macro indicates a remote region. (For details of the DFHTCT TYPE=LINE and DFHTCT TYPE=TERMINAL macros, see "Sequential devices" on page 563)

```
►►──DFHTCT──TYPE=TERMINAL──,ACCMETH=access-method──,SYSIDNT=name───────────►

►─,TRMIDNT=name──,TRMTYPE=terminal-type────────────────────────────────────►

►──┬──────────────────────────────────────────┬────────────────────────────►◄
   │             ┌─name-specified-in-TRMIDNT─┐ │
   └─,RMTNAME=───┼───────────────────────────┼─┘
                 └─name──────────────────────┘
```

ACCMETH=access-method
Code this with the access method of the remote terminal.

RMTNAME={name-specified-in-TRMIDNT∨name}
Specifies the 1- to 4-character name by which the terminal is known in the system or region that owns the terminal (that is, in the TCT of the **other** system). If this operand is omitted, the name in the TRMIDNT operand is used.

SYSIDNT=name
Indicates the 4-character name of the system or region that owns this terminal. This may be the local system or region (that is, the name defined in the TYPE=INITIAL macro), in which case the TCT entry created is a local definition. It may be the name of a different system or region, in which case the TCT entry created is a remote definition. This SYSIDNT must be the same as the SYSIDNT on the TYPE=REGION macro that precedes this macro.

TRMIDNT=name
Specifies the 1- to 4-character name by which the terminal is known in **this** system (that is, in the local system that owns this TCT, and that owns the transactions).

TRMTYPE=terminal-type
Code this with the terminal type. For details, see “Sequential devices” on page 563.

Remote terminals, method 2—DFHTCT TYPE=REMOTE

Terminal entries for remote systems or regions can be defined to CICS using the DFHTCT TYPE=REMOTE macro as an alternative to defining them using DFHTCT TYPE=TERMINAL macro instructions in conjunction with a DFHTCT TYPE=REGION macro.

The expansion of the DFHTCT TYPE=REMOTE macro is independent of the region currently referenced.

Note: If the SYSIDNT operand indicates that the **home** region owns the terminal, all the operands of the DFHTCT TYPE=TERMINAL macro become valid on the DFHTCT TYPE=REMOTE macro and have the same meaning as for TYPE=TERMINAL. However, if (as is normally the case) the SYSIDNT operand indicates a remote region, the additional operands of DFHTCT TYPE=TERMINAL are valid on the DFHTCT TYPE=REMOTE macro, but are ignored.

```
►►──DFHTCT──TYPE=REMOTE──,ACCMETH=access-method──,SYSIDNT=name──,TRMIDNT=name──────►

►─,TRMTYPE=terminal-type──┬──────────────────────────────────────────┬──────────►◄
                          │             ┌─name-specified-in-TRMIDNT─┐ │
                          └─,RMTNAME=───┼───────────────────────────┼─┘
                                        └─name──────────────────────┘
```

ACCMETH=access-method
Code this with the access method of the remote terminal.

RMTNAME={name-specified-in-TRMIDNT|name}
Specifies the 1- to 4-character name by which the terminal is known in the system or region that owns the terminal (that is, in the TCT of the **other** system). If this operand is omitted the name in the TRMIDNT operand is used.

SYSIDNT=name
: Specifies the name of the system or region that owns this terminal. The name must be the same as that used in the SYSIDNT operand of a previous TYPE=SYSTEM macro, or the TYPE=INITIAL macro.

TRMIDNT=name
: Specifies the 1- to 4-character name by which the terminal is known in **this** system (that is, in the local system that owns this TCT, and that owns the transactions).

TRMTYPE=terminal-type
: Code this with the terminal type. For details, see "Sequential devices" on page 563.

DFHTCT: CICS terminals list

This release of CICS is able to communicate with a wide range of terminals, either directly or indirectly.

New or current terminals are directly supported by CICS Transaction Server for z/OS if they conform to the z/OS Communications Server interface.

Table 38 on page 571 summarizes how terminals are supported in CICS.

Table 57. IBM terminals and system types supported by CICS Transaction Server for z/OS.

Directly supported by CICS Transaction Server for z/OS using the z/OS Communications Server
3101 Display Terminal
3230 Printer
3268 Printer
3270 Information Display System
3270 PC
3270 PC/G
3270 PC/GX
3287 Printer
3600 Finance Communication System
3630 Plant Communication System
3640 Plant Communication System
3650 Retail Store System
3680 Programmable Store System
3730 Distributed Office Communication System
3767 Communication Terminal
3770 Data Communication System
3790 Communication System
4300 Processors
4700 Finance Communication System
5280 Distributed Data System
5520 Administrative System
5550 Administrative System
5937 Rugged Terminal
6670 Information Distributor
8100 Information System
8775 Display Terminal
8815 Scanmaster
Displaywriter
Personal Computer, PS/2, PS/55
System/32

Table 57. IBM terminals and system types supported by CICS Transaction Server for z/OS. (continued)

Directly supported by CICS Transaction Server for z/OS using the z/OS Communications Server
System/34
System/36
System/38
iSeries
System z
Teletypewriter Exchange Service (TWX 33/35)
World Trade Typewriter Terminal (WTTY)

z/OS Communications Server LUs

For a detailed list of z/OS Communications Server for SNA-supported LUs, and how to define them to CICS, see "Devices supported" on page 336.

Chapter 68. TLT—terminal list table

A terminal list table (TLT) generated by the DFHTLT macro instruction allows terminal and operator identifications to be grouped logically.

A TLT:

- Is **mandatory** for use by CEST (the supervisor terminal transaction), to define and limit the effective range of the operation. For example:

  ```
  CEST SET TERMINAL(*) SUPRID(CG) OUTSERVICE
  ```

  sets all terminals defined in DFHTLTCG out of service.
- May be used by CEST or CEMT (the master terminal transaction) to apply an operation to a predetermined group of terminals. (For a CEST operation, this TLT must define a subset of the TLT specified by SUPRID.) For example, each of the following commands:

  ```
  CEST SET TERMINAL(*) SUPRID(CG) CLASS(EM) INSERVICE
  CEMT SET TERMINAL(*) CLASS(EM) INSERVICE
  ```

  sets all terminals defined in DFHTLTEM in service.
- May be used singly or in combination with other TLTs to provide predefined destinations for message switching. For example:

  ```
  CMSG ROUTE=PG,'PRODUCTION MEETING AT 11.00 IN
              ROOM 2124',SEND
  ```

  sends a message to all terminals or operators defined in DFHTLTPG.

The same TLT can be used for message switching and for supervisory or master terminal functions. For example, a TLT defining the terminals that are under control of a supervisory terminal could also be used as a destination list for sending messages to those terminals.

For some logical units, logical device code (LDC) mnemonics (that may be associated with each table entry), are used for message switching and are ignored for master and supervisory terminal operations.

In an intercommunication network, all the terminals in a terminal list table must be owned by the system on which the table is used.

The following macros define the TLT entries:

- Control section—DFHTLT TYPE=INITIAL
- Entries in terminal list table—DFHTLT TYPE=ENTRY
- End of terminal list table—DFHTLT TYPE=FINAL (see “TYPE=FINAL (end of table)” on page 507)

Control section—DFHTLT TYPE=INITIAL

The DFHTLT TYPE=INITIAL macro establishes the entry point and the address of the start of the terminal list table being defined.

```
►►──DFHTLT──TYPE=INITIAL──┬──────────┬──┬──────────────┬──────────────────────►◄
                          └─,LDC=aa──┘  └─,SUFFIX=xx───┘
```

Note: For general information about TYPE=INITIAL macros, see “TYPE=INITIAL (control section)” on page 506.

`LDC=aa`

Code this with a 2-character logical device code (LDC) mnemonic. This is associated with every logical unit identification, except for those for which an LDC mnemonic is specified on a DFHTLT TYPE=ENTRY macro.

`SUFFIX=xx`

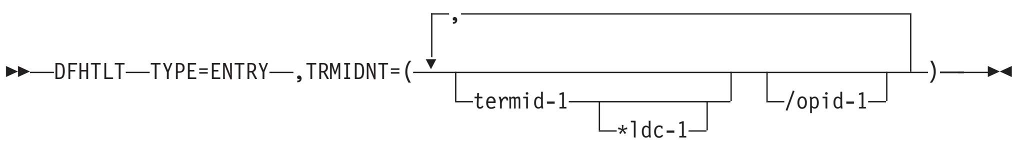
The module name of the TLT is DFHTLT*xx*, where *xx* is a 1-or 2-character suffix. This provides unique identification for each TLT used. Because the names TLTBA, TLTBB, TLTBC, and TLTEA are used within the TLT, suffixes BA, BB, BC, and EA must not be used.

A TLT must have a suffix to be used by the message switching transaction, CMSG.

Entries in terminal list table—DFHTLT TYPE=ENTRY

The DFHTLT TYPE=ENTRY defines an entry in the terminal list table (TLT).

Entries are coded in the TLT as follows:



`TYPE=ENTRY`

Code this if one or more entries are to be generated in this table, up to a maximum of 1000 entries.

`TRMIDNT=([termid-1[*ldc-1]] [/opid-1][, termid-2[*ldc-2][/opid-2],...])`

Code this with a list of start-stop and BSC terminal, logical unit, and operator identifications. A logical unit identification can be qualified by an LDC mnemonic.

`termid`

Indicates a 1- to 4-character start-stop or BSC terminal or logical unit identification.

Note: A 3614 attached to a communications controller may be used in master or supervisory terminal operations but should not be used in message switching operations. (A 3614 is not valid for a message destination.)

`ldc`

Indicates a 2-character LDC mnemonic, which must be preceded by an asterisk (*) and is only used following the 'termid' parameter to which it is appended.

`opid`

Indicates a 1- to 3-character operator identification that must be preceded by a slash (/).

Any terminal or operator identification specified should also be specified in the TRMIDNT operand of the DFHTCT macro and in your external security manager, respectively. (If you employ RACF, you use the OPIDENT operand of the ADDUSER command to record the identification for each operator.) Any LDC mnemonic specified should also be specified in the LDC operand of the DFHTCT TYPE=LDC and DFHTCT TYPE=TERMINAL macros.

Supervisory and master terminal functions use the terminal and logical unit identifications included in the TLT, but ignore all references to LDC mnemonics and operator identifications.

DFHTLT example

An example of how to create a terminal list table (TLT).

```
Example 1

DFHTLT TYPE=INITIAL,                            *
       SUFFIX=AA
DFHTLT TYPE=ENTRY,                              *
       TRMIDNT=(NYC,CHI,LA,WDC)
DFHTLT TYPE=ENTRY,                              *
       TRMIDNT=SF
DFHTLT TYPE=ENTRY,                              *
       TRMIDNT=(BSTN/OP1,ATL/OP5,/OP9,DNVR)
DFHTLT TYPE=ENTRY,                              *
       TRMIDNT=/OP6
DFHTLT TYPE=FINAL
END

Example 2

DFHTLT TYPE=INITIAL,                            *
       SUFFIX=XX
DFHTLT TYPE=ENTRY,                              *
       TRMIDNT=(NYC,T361*LP,T362*LP/OP1)
DFHTLT TYPE=ENTRY,                              *
       TRMIDNT=(T363/OP2,T364/OP5,T365)
DFHTLT TYPE=FINAL
END
```

Figure 93. Terminal list table—example

Chapter 69. TST—temporary storage table

The temporary storage table (TST) is a list of generic names (or prefixes) used to identify sets of temporary storage queues. Any unique temporary storage identifier generated dynamically in an application program that begins with the same characters as the generic names automatically acquires the same properties as the TST entries.

CICS still supports the use of the DFHTST macro in combination with or in place of TSMODEL resource definitions. You must use a TST in the following circumstances:

- You have application programs that reference temporary storage data sharing queues by specifying an explicit SYSID on EXEC CICS temporary storage commands.
- A SYSID is added for EXEC CICS temporary storage commands by an XTSEREQ global user exit program.
- You require the TSAGE attribute.

For temporary storage queues where you do not require these functions, you can use TSMODEL resource definitions, which provide all other functions of the TST and some additional functions.

The default TST=NO system initialization parameter means that CICS initializes with only RDO support for TS queues. To use a TST in combination with TSMODEL resource definitions, you must specify a TST suffix using the TST system initialization parameter. You must also assemble the TST load module with the MIGRATE option. If the TST is not assembled with the MIGRATE option, CICS loads the TST only and does not provide any RDO support for TS queues, and any attempts to install TSMODEL resource definitions are rejected.

If you use both a TST and TSMODEL resource definitions, the use of the TST is limited to the following:

- Support for TS data sharing queues that are referenced by an explicit SYSID option specified on a TS API command.
- The TSAGE attribute.

If you use a TST alone, all the functions of the TST are used.

Generic names

In a TST, generic names are formed from the leading characters of the appropriate queue names, and can be up to seven characters long.

- The generic names coded on a DFHTST TYPE=RECOVERY macro identify queues for which CICS provides backout of changes in the event of transaction failure or protection against system failure.
- The generic name coded on a DFHTST TYPE=REMOTE macro identifies queues for which CICS routes the temporary storage request to a remote CICS region or TS server, unless the remote system name (SYSIDNT) is the same as that of the local CICS. If SYSIDNT is the same name as the local CICS, the queues specified by the DATAID option are treated by CICS as local queues.
- The generic name coded on a DFHTST TYPE=LOCAL macro identifies queues as local queues that reside in the CICS region in which the TST is installed.

- The generic name coded on a DFHTST TYPE=SECURITY macro identifies queues for which resource security checking is required.

If you specify an eight-character name, this defines a unique temporary storage queue name.

Choose a naming convention for queue names that enables you to define many queues with only a few generic names. This reduces considerably the task of TST definition. Bear in mind that CICS searches the TST for the first prefix that satisfies the particular search criteria. For example, if CICS searches for temporary storage queue ABCDEFGH, and the TST contains prefix A followed by prefix AB, A is selected. To avoid any problems, define the less-generic entries to the TST before any more-generic entries, so that the first to be found is the least generic of all possible matches.

When CICS is looking for generic names to match against a TS queue name, it searches only the types of entry in which it is interested for that particular search. CICS searches:

- Local *and* remote entries when determining whether a queue is remote. Thus, local and remote entries are regarded as one search category when CICS is matching a queue name against generic names.
- Recovery and remote entries when determining whether a queue is recoverable. However, if the leading characters of a queue name match **both** TYPE=RECOVERY and TYPE=REMOTE generic names, TYPE=REMOTE takes precedence, and the recovery option must be redefined in the local region in which the queue resides. (Queues in a shared TS pool cannot be recoverable.)
- Security entries only when determining whether a queue is subject to security.

Use these macros to define the TST entries:

- Control section—DFHTST TYPE=INITIAL
- Recoverable temporary storage—DFHTST TYPE=RECOVERY
- Local temporary storage—DFHTST TYPE=LOCAL
- Remote temporary storage—DFHTST TYPE=REMOTE
- Temporary storage security checking— DFHTST TYPE=SECURITY
- Temporary storage data sharing—DFHTST TYPE=SHARED
- End of temporary storage table—DFHTST TYPE=FINAL (see "TYPE=FINAL (end of table)" on page 507)

Control section—DFHTST TYPE=INITIAL

The entry point and the beginning address for the temporary storage table being defined are established by the DFHTST TYPE=INITIAL macro.

```
►►──DFHTST──TYPE=(─INITIAL──────────────)──┬────────────┬─────────────────►
                           └─,MIGRATE─┘    └─,SUFFIX=xx─┘

►──┬─────────────────────┬──────────────────────────────────────────────►◄
   │          ┌─0──────┐ │
   └─,TSAGE=──┴─number─┴─┘


►►──DFHTST──TYPE=REMOTE──────────────────────────────────────────────────►
```

```
►─,DATAID=(─character-string──┬─────────────────────────┬─)──,SYSIDNT=name──────────►
                              └─,character-string,...───┘

►─┬───────────────────────────┬───────────────────────────────────────────────────►◄
  └─,RMTNAME=character-string─┘
```

For general information about TYPE=INITIAL macros, including the use of the SUFFIX operand, see “TYPE=INITIAL (control section)” on page 506.

MIGRATE
: Specify MIGRATE when you are assembling your TST for migration to the CSD file, or when you are using a TST in combination with TSMODEL resource definitions. When you specify a TST suffix using the TST system initialization parameter, if the TST is assembled with the MIGRATE option, CICS also processes TSMODEL resource definitions. If the TST is not assembled with the MIGRATE option, CICS loads the TST only and does not provide any RDO support for TS queues, and any attempts to install TSMODEL resource definitions are rejected.

TSAGE={0∨number}
: Defines the aging limit of temporary storage data used by the temporary storage domain during emergency restart of CICS. Data that has not been referenced for the specified interval is not recovered. The value is specified in days with a maximum value of 512. A value of zero indicates that no data is to be purged on this basis.

Recoverable temporary storage—DFHTST TYPE=RECOVERY

The DFHTST TYPE=RECOVERY macro specifies the generic names used for temporary storage queues for which recovery is applicable.

```
►►──DFHTST──TYPE=RECOVERY─────────────────────────────────────────────────────────►

►─,DATAID=(─character-string──┬─────────────────────────┬─)───────────────────────►◄
                              └─,character-string,...───┘
```

TYPE=RECOVERY
: Code this to identify the temporary storage queue names that are recoverable. If a temporary storage queue name is such that it is defined by both a remote **and** a recovery DATAID, it is considered to be remote. Recoverability can only be specified in the CICS region in which the queue is local.

  Note: TYPE=ENTRY is retained for compatibility with previous releases, and means exactly the same as TYPE=RECOVERY.

DATAID=(*character-string[,character-string,...]*)|()
: Code this with one or more alphanumeric TS queue names that you want to be recoverable, where each name can be up to 8-characters in length. (See “TST—temporary storage table” on page 575 for information about generic names and matching criteria.)

  character-string
  : Each character string can represent a generic queue name, or a unique TS queue name. Generic names are specified using 1 to 7 leading characters of TS queue names. DATAIDs that use all 8 characters define unique queues names.

Multiple names must be enclosed in parentheses, and separated by a comma. You can omit the parentheses if you specify only one name. Some CICS-generated TS queue names that you should consider for recovery are:

- **DF** refers to temporary storage queues used by CICS interval control for START commands with data, but which do not specify a REQID.
- ** refers to temporary storage queues used by the BMS ROUTE command, and to those commands that use the PAGING operand.
- **$$** refers to temporary storage queues used by the BMS CMSG transaction when the PROTECT=YES option is specified on a START TRANSID command.

() This special (null) operand, without any value between the parentheses, is interpreted by CICS as specifying any queue that is not more explicitly specified by other DATAIDs.

Note:

1. If a TST is generated with no TYPE=RECOVERY entries, no recovery processing is performed. If an EXEC CICS START command is issued with any of the FROM, RTRANSID, RTERMID, or QUEUE parameters specified, and a REQID is not specified, CICS generates request identifications starting with the prefix "DF". If recovery is required for these requests, the TST should be generated with the corresponding generic name.
2. All temporary storage queues used by restartable transactions (those defined with RESTART(YES) in the transaction resource definition) should be made recoverable (including those with the default DF prefix).
3. Only data on auxiliary storage can be made recoverable. Data written to main storage is not recoverable, regardless of any recovery options that you may specify.
4. When a task modifies temporary storage data designated as recoverable, the data is protected from modification by a concurrent task by enqueuing on the queue name. The queue name is not dequeued until the task terminates or issues a task syncpoint request to designate the end of a logical unit of work. At this time a log record is written to the system log data set to provide external information sufficient to recover the data if the system subsequently terminates abnormally.

Example

This DFHTST TYPE=RECOVERY macro defines recoverable temporary storage queues:

```
DFHTST TYPE=RECOVERY,
      DATAID=(DF,**,
             $$(,character-string)...)
```

- The DATAID DF makes the temporary storage queues used on CICS start requests recoverable.
- The DATAIDs ** and $$ make the default temporary storage queues used by BMS recoverable.
- The DATAID character string represents the leading characters of each temporary storage queue identifier that you want to be recoverable. For example, DATAID=(R,ZIP) makes recoverable all temporary storage queues that have identifiers starting with the character "R" or the characters "ZIP".

Local temporary storage—DFHTST TYPE=LOCAL

The DFHTST TYPE=LOCAL macro defines temporary storage queue names that reside in the local CICS region in which the TST is installed. This macro enables you to define local queues without knowing the SYSIDNT (see the SYSIDNT option on the DFHTST TYPE=REMOTE macro for more information).

Used in conjunction with the all-generic DATAID specified on the TYPE=REMOTE macro for remote and shared queues, this macro can help you to simplify greatly the task of defining local and remote queues.

```
►►──DFHTST──TYPE=LOCAL──────────────────────────────────────────────────►

►─,DATAID=(─character-string──┬───────────────────────┬─)──────────────►◄
                               └─,character-string,...─┘
```

TYPE=LOCAL
Indicates that this TST entry defines a set of local temporary storage queues.

DATAID=(*character-string[,character-string,...]***)|()**
Code this with one or more alphanumeric TS queue names, where each name can be up to 8-characters in length.

character-string
Each character string can represent a generic queue name, or a unique TS queue name. Typically, generic names are specified using 1 to 7 leading characters of TS queue names. DATAIDs that use all 8 characters define unique queue names.

Multiple names must be enclosed in parentheses, and separated by a comma. You can omit the parentheses if you specify only one name.

() This special (null) operand, without any value between the parentheses, is interpreted by CICS as specifying any queue that is not more explicitly specified by other DATAIDs. You can use this as a catch-all in the following way:

- If certain queues, which reside either in another region or in a shared TS pool, are specified on a TYPE=REMOTE macro with suitable generic DATAIDs, you can define all other queues as local by specifying DATAID=() on the TYPE=LOCAL macro.

This null option on the TYPE=LOCAL macro is mutually exclusive with DATAID=() on the TYPE=REMOTE macro, and the TST macro returns an assembly error if it is specified on both local and remote entries. Thus, if you specify DATAID=() on local TS queue entries, the TYPE=LOCAL macros must follow all TYPE=REMOTE macros.

Remote temporary storage—DFHTST TYPE=REMOTE

The DFHTST TYPE=REMOTE macro defines temporary storage queue names that reside in remote CICS regions when CICS intercommunication facilities are being used.

Use this macro also to define queues residing in a shared queue pool, which is treated like a remote region except that the name of the remote system matches the system name on a DFHTST TYPE=SHARED macro.

```
►►──DFHTST──TYPE=REMOTE─────────────────────────────────────────────────────►

►─,DATAID=(─character-string──┬──────────────────────┬─)──,SYSIDNT=name──────►
                               └─,character-string,...┘

►──┬───────────────────────────┬─────────────────────────────────────────────►◄
   └─,RMTNAME=character-string─┘
```

TYPE=REMOTE
Indicates that this TST entry defines a set of remote temporary storage queues, which can reside either in a remote CICS region or in a shared TS pool in a coupling facility.

DATAID=(*character-string[,character-string,...]***)|()**
Code this with one or more alphanumeric TS queue names, where each name can be up to 8 characters in length. Use 1 to 7 leading characters of TS queue names to form generic names of those queues for which requests are to be routed to a remote region or to a TS server. (See "TST—temporary storage table" on page 575 for information about generic names and matching criteria.)

Note: You cannot use the list form of the DATAID operand when RMTNAME is specified. If you specify the RMTNAME parameter, the syntax for DATAID is DATAID=*character-string*.

character-string
Each character string can represent a generic queue name, or a unique TS queue name. Typically, generic names are specified using 1 to 7 leading characters of TS queue names. The generic names are those used by application programs in the region in which this TST is installed.

Multiple names must be enclosed in parentheses, and separated commas. You can omit the parentheses if you specify only one name.

() This special operand, without any value between the parentheses, is interpreted by CICS as specifying any queue that is not more explicitly specified by other DATAIDs. You can use this as a catch-all in the following way:

- If the queues with names beginning with letters L, M, and N are local, and these are specified on a TYPE=LOCAL macro with suitable generic DATAIDs, you can define all other queues as remote by specifying DATAID=() on the TYPE=REMOTE macro, as follows:

```
         DFHTST TYPE=LOCAL,       *
                DATAID=(L,M,N)
*
         DFHTST TYPE=REMOTE,      *
                DATAID=()
```

The DATAID=() option on the TYPE=REMOTE macro is mutually exclusive with DATAID=() on the TYPE=LOCAL macro, and the TST macro returns an assembly error if it is specified on both local and remote entries.

DATAID=() must be the last entry in a set of local and remote entries. Thus, if you use DATAID=() on remote TS queue entries, the TYPE=REMOTE macros must follow any TYPE=LOCAL macros.

SYSIDNT=*name*
Identifies the region or server in which the remote or shared temporary storage queues reside. For a remote queue owned by another CICS region, the 4-character alphanumeric name specified must be the same as a

REMOTENAME option specified in the CONNECTION definition, the first 4 chararcters of the IPCONN name on an IPCONN definition, or the SYSIDNT name specified on a DFHTST TYPE=SHARED entry.

You can use this parameter to specify the name of the local region in which the TST is installed. When the SYSIDNT operand matches the SYSIDNT specified on the system initialization parameter, the TS queues that match the DATAIDs are treated as local queues.

RMTNAME=*character-string*
Code this with the 1- to 8-character prefix that is to be used by CICS to replace that specified in the DATAID operand when a reference to the temporary storage queue is transmitted to a remote system or region. This operand defaults to the character string specified in the DATAID operand. The length of the character string specified in this operand must be the same as the length of the character string in the DATAID operand. This mechanism allows access to a temporary storage queue in the remote system with the same name as one in the local system.

Temporary storage security checking—DFHTST TYPE=SECURITY

The DFHTST TYPE=SECURITY macro indicates that security checking is required for the temporary storage queues specified in the TST.

```
►►──DFHTST──TYPE=SECURITY──────────────────────────────────────────────►

►─,DATAID=(─character-string─┬─────────────────────────┬─)─────────────►◄
                             └─,character-string,...─┘
```

TYPE=SECURITY
Indicates that this TST entry defines a set of temporary storage queues that require security checking.

DATAID=(*character-string[,character-string,...]***)|()**
Code this with one or more alphanumeric TS queue names, where each name can be up to 8-characters in length. Use 1 to 7 leading characters from the leading characters of queue names to form generic names of those queues that are subject to security checking. (See "TST—temporary storage table" on page 575 for information about generic names and matching criteria.)

Note:

1. When this macro is used, a suitable profile (see the *CICS RACF Security Guide* for information about profiles) must be defined to the external security manager to control access to the TSQ. Otherwise, the macro will not have the intended effect.
2. The full TSQ name is passed to the security manager.

character-string
Each character string can represent a generic queue name, or a unique TS queue name. Typically, generic names are specified using 1 to 7 leading characters of TS queue names. The generic names are those used by application programs in the region in which this TST is installed.

Multiple names must be enclosed in parentheses, and separated by a comma. You can omit the parentheses if you specify only one name.

() This null operand, without any value between the parentheses, is interpreted by CICS as specifying any queue that is not more explicitly specified by other DATAIDs.

Temporary storage data sharing—DFHTST TYPE=SHARED

The DFHTST TYPE=SHARED macro specifies the remote system name by which CICS identifies a temporary storage pool in the coupling facility.

```
►►──DFHTST──TYPE=SHARED──,SYSIDNT=system-name──,POOL=pool-name──────────────────►◄
```

TYPE=SHARED
indicates that this TST entry defines a mapping between a system identifier (SYSIDNT) specified on a TYPE=REMOTE entry and a pool of TS data sharing queues.

SYSIDNT=*system_name*
specifies the 1- to 4-character system name that corresponds to a TS pool name.

CICS uses this SYSIDNT to map remote queues (defined by a TYPE=REMOTE entry, or an explicit SYSID on an API command) to a TS server, as follows:

- If an API temporary storage command specifies a remote queue explicitly (by means of the SYSID option), CICS maps the SYSID to a matching SYSIDNT on a TYPE=SHARED entry:
  - If a matching SYSIDNT is found, CICS uses the corresponding POOL name to identify the TS server that manages the shared TS queue.
  - If the SYSID does not match any TYPE=SHARED entry, the request is function shipped to the remote queue-owning region (QOR) named by SYSID.
- If an API temporary storage command references a remote queue identified by a TYPE=REMOTE entry, CICS checks for a matching SYSIDNT in the TYPE=SHARED entries:
  - If a TYPE=SHARED entry with a matching SYSIDNT is found, CICS uses the corresponding POOL name to identify the TS server that manages the shared TS queue.
  - If a TYPE=SHARED entry is not found, the queue is a remote queue and the request is function shipped to the QOR.

You can create multiple TYPE=SHARED entries, with different SYSIDNT names, that refer to the same POOL name. In this case, references to the same queue name refer to the same queue name regardless of which SYSID is used (on the API).

POOL=*pool_name*
specifies the 1- to 8-character name of the pool of TS queues that is to be used for TS requests that specify, implicitly or explicitly, the corresponding system name. The pool-name must match the name specified on the POOL parameter of the TS server that manages the TS pool.

DFHTST example

An example of how to code a temporary storage table (TST).

```
     DFHTST TYPE=INITIAL,              LIST OF GENERIC NAMES OF QUEUES *
            SUFFIX=01                  THAT ARE RECOVERABLE, REMOTE,
*                                      SHARED, LOCAL, OR REQUIRE
*                                      SECURITY CHECKING.
*
*  The following macro specifies that all LOCAL queues with
*  names beginning with the letter 'R' are RECOVERABLE:
*
     DFHTST TYPE=RECOVERY,                                             *
            DATAID=R
*
*  The following macro specifies that queues with names
*  beginning with C,D,E, and X are local queues:
*
     DFHTST TYPE=LOCAL,                                                *
            DATAID=(C,D,E,X)
*
*  The following macro specifies that queues with names
*  beginning with AB,L,M,N are remote queues on system RSYS:
*
     DFHTST TYPE=REMOTE,                                               *
            DATAID=(AB,L,M,N),                                         *
            SYSIDNT=RSYS,                                              *
*
*  The next macro specifies that all queues not local as defined
*  above, or remote in system RSYS as defined above, are remote
*  queues that reside in a shared TS pool TYPE=SHARE macro.
*
     DFHTST TYPE=REMOTE,                                               *
            DATAID=(),                                                 *
            SYSIDNT=SHR1
*
*  The next macro specifies that remote queues with SYSIDNT=SHR1
*  are mapped to shared TS pool named TSQSHR1.
*
     DFHTST TYPE=SHARED,                                               *
            SYSIDNT=SHR1,                                              *
            POOL=TSQSHR1

*
*  The following macro specifies that queues with names
*  beginning with SAQ require security checking.
*    Note that the full TS queue name is passed to the ESM.
*
     DFHTST TYPE=SECURITY,                                             *
            DATAID=SAQ
*
     DFHTST TYPE=FINAL
     END
```

Figure 94. Temporary storage table—example

Chapter 70. XLT—transaction list table

The transaction list table specifies transactions that can be initiated from terminals during system termination, and groups of transactions that you want to enable or disable together. Use a TRANSACTION resource in preference to XLT.

The XLT can be used to define:

- A list of transaction identifications that can be initiated from terminals during the first quiesce stage of system termination. If there are no PLT programs to execute, the first quiesce time can be short, thus giving little time to enter any XLT program before going into the second quiesce stage. You specify the suffix of the table to be used with the XLT system initialization parameter. The master terminal operator can change the suffix at system termination, using the XLT option of the **`CEMT PERFORM SHUTDOWN`** command.

  Note: As an alternative, you can create a PROGRAM resource to define the transaction list table. Defining it as a program also means that it can be autoinstalled; see "Autoinstalling programs, map sets, and partition sets" on page 497 for information on autoinstall for programs.
- A group of transaction identifications to be disabled or enabled through the master terminal. The master terminal operator specifies the suffix of the table to be used, using the CLASS option of the **`CEMT SET TRANSACTION`** command.

Figure 52 on page 586 illustrates the coding to create a XLT.

The following macros are available to define the XLT entries:

- Control section—DFHXLT TYPE=INITIAL
- Entries in transaction list table—DFHXLT TYPE=ENTRY
- End of transaction list table—DFHXLT TYPE=FINAL (see "TYPE=FINAL (end of table)" on page 507)

Control section—DFHXLT TYPE=INITIAL

The DFHXLT TYPE=INITIAL macro establishes the entry point and start address of the XLT being defined.

The DFHXLT TYPE=INITIAL macro establishes the entry point and start address of the XLT being defined.

```
►►──DFHXLT──TYPE=INITIAL──┬─────────────┬──────────────────────────────►◄
                          └─,SUFFIX=xx──┘
```

For general information about TYPE=INITIAL macros, including the use of the SUFFIX operand, see "TYPE=INITIAL (control section)" on page 506.

Entries in transaction list table—DFHXLT TYPE=ENTRY

The DFHXLT TYPE=ENTRY macro specifies a list of transaction identifications that can be initiated from terminals during the first quiesce stage of system termination.

```
                                        ┌─,───┐
►►──DFHXLT──TYPE=ENTRY,──┬─TASKREQ=(──▼─kkkk─┴─)─┬─────────────────────────►◄
                         │              ┌─,───┐  │
                         └─TRANSID=(──▼─xxxx─┴─)─┘
```

TYPE=ENTRY
Code this if one or more entries are to be generated in the XLT.

TASKREQ=(kkkk[,kkkk],...)
kkkk can be one of the following:

- PA1 through PA3, and PF1 through PF24 indicates one of the special 3270 keys that can be used to initiate a task.
- LPA (light pen attention) indicates that a transaction is to be initiated when a light pen detectable field is selected.
- OPID (operator identification card reader) indicates that a transaction is initiated when the appropriate operator's identity badge has been read in.
- MSRE indicates that transactions are initiated when the 10/63 character magnetic slot reader is used.

Define each TASKREQ on the CSD file, and install it in the running system. (For further information, see the description of the TASKREQ attribute in TRANSACTION attributes.)

TRANSID=(xxxx[,xxxx],...)
Represents a 1- to 4-character transaction code. Define each TRANSID on the CSD file, and install it in the running system. (For further information, see the description of the TRANSACTION attribute in TRANSACTION attributes)

If the TRANSID contains a special character (for example, a comma), the TYPE=ENTRY instruction must contain only one TRANSID with quotation marks as delimiters.

Note: TASKREQ and TRANSID are mutually exclusive parameters.

DFHXLT example

An example of coding the a transaction list table (TLT).

```
   DFHXLT TYPE=INITIAL,                    LIST OF TRANSACTIONS     *
          SUFFIX=IN                        THAT ARE ACCEPTED
*                                          DURING THE FIRST QUIESCE
*                                          PHASE OF SYSTEM
*                                          TERMINATION.
   DFHXLT TYPE=ENTRY,TASKREQ=PF5           (TASKREQ MUST ALSO BE
*                                          DEFINED IN THE CSD AND
*                                          INSTALLED IN THE RUNNING
*                                          CICS SYSTEM. AN ENTRY FOR
*                                          THE XLT MUST BE MADE IN
   DFHXLT TYPE=ENTRY,TRANSID=(USR1,USR2)   THE CSD.)
   DFHXLT TYPE=ENTRY,TRANSID='AA,1'
   DFHXLT TYPE=ENTRY,TRANSID='AA,2'
   DFHXLT TYPE=FINAL
   END

   DFHXLT TYPE=INITIAL,                    LIST OF LOGICALLY RELATED*
          SUFFIX=G1                        TRANSIDS TO BE ENABLED OR
*                                          DISABLED BY MASTER
*                                          TERMINAL.
   DFHXLT TYPE=ENTRY,TRANSID=(TSSA,TSRA)   (TRANSIDS MUST ALSO BE
   DFHXLT TYPE=ENTRY,TRANSID=(TDSA,TDRA)   DEFINED IN THE CSD AND
   DFHXLT TYPE=ENTRY,TRANSID=ICSA          INSTALLED IN THE RUNNING
   DFHXLT TYPE=FINAL                       CICS SYSTEM.)
   END
```

Figure 95. Transaction list table—example

Part 8. Appendixes

Appendix A. Obsolete attributes

Some resource definition attributes are obsolete, but are supported in order to provide compatibility with earlier releases.

Obsolete attributes retained for compatibility

Some resource definition attributes do not apply to resources used in CICS Transaction Server for z/OS, Version 4 Release 2, but are supported to provide CSD compatibility for earlier releases of CICS where they are still valid.

See Compatibility mode (CSD file sharing) for more information about compatibility mode.

Table 1 shows which resource or resources each attribute is associated with, and which release or releases it was supported in.

The following attributes are obsolete in CICS TS 4.2 but are retained to provide CSD compatibility for earlier releases of CICS:

BINDPASSWORD(*password*) **(APPC only)**
A password of up to 16 hexadecimal digits (0-9, A-F). A password of fewer than 16 digits is padded on the right with hexadecimal zeros.

CICS masks the password you supply to avoid unauthorized access. You should therefore find a safe way of recording the password.

If you supply a password, an identical password must be supplied in the remote system to ensure bind-time security, allowing a connection to be established.

CONSOLE({**NO**|*number*})
For upgrade purposes, it is possible to define a console using CONSOLE(*number*). However, when several MVS images are united to form a sysplex, the assignment of console identification numbers depends on the order in which the MVS images are IPLed. The identification numbers are determined from the sequence in which they are encountered in the several CONSOL*nn* members for the MVS images. Therefore, you are recommended to identify console devices attached to the sysplex by CONSNAME instead of CONSOLE. The results of using CONSOLE might be unpredictable.

Specify a number in the range 01 through 250, but not 128. However, before you can use the console, it must be either defined to MVS in the CONSOL*nn* member of SYS1.PARMLIB or dynamically allocated by a product such as NETVIEW.

If you specify this attribute, do not specify CONSNAME.

EXTSEC({**NO**|**YES**})
Specifies whether an external security manager (for example, RACF) is to be used for transaction security or resource security checking.

NO Only the security facilities provided by CICS are used by this transaction.

YES An external security manager may be used by this transaction.

INDOUBT({<u>BACKOUT</u>|COMMIT|WAIT})
Specifies the action required if the transaction is using intercommunication, and abends at a critical time during sync point or abend processing.

<u>BACKOUT</u>
The effects of the transaction are backed out. This must be specified for recoverable files.

COMMIT
The effects of the transaction are committed. Use INDOUBT(COMMIT) if you do not want dynamic transaction backout.

WAIT Changes to recoverable temporary storage are locked until the session is recovered. The resources are then committed or backed out in step with the remote system.

INSERVICE({YES|NO})
Specifies whether the session or sessions can be used for communication. This attribute applies only to LUTYPE 6.1 ISC sessions. It is invalid for LUTYPE 6.2, and is ignored for MRO sessions. For MRO the status (in service or out of service) is determined by the status of the corresponding MRO CONNECTION.

YES Transactions can be initiated and messages can automatically be sent across the session or sessions.

NO The session or sessions can neither receive messages nor transmit input.

LOGMODECOM({<u>NO</u>|YES})
LOGMODECOM indicates LOGMODE compatibility. It shows whether CICS is to make LOGMODE work the way it does in releases earlier than CICS/ESA 4.1. This parameter is unavailable in releases later than CICS/ESA 4.1.

NO Causes LOGMODE(0|name) to work as described under LOGMODE. This is the default value.

YES Causes LOGMODE(0|name) to work as it did in releases before CICS/ESA 4.1 for non *XRF-capable terminals. LOGMODECOM(YES) is ignored for XRF-capable terminals. Use this parameter only in exceptional circumstances - see the documentation supplied with CICS/ESA 4.1 for a fuller explanation.

LSRPOOLID({<u>1</u>|*lsrpool*})
Specifies the identifier of the local shared resource pool being defined. The value must be in the range 1 through 8.

OMGINTERFACE(*text*)
Defines a pattern that can match the IDL interface name. The maximum length of this field is 31 characters.

OMGMODULE(*text*)
Defines a pattern that can match the qualified module name (coded in CORBA IDL), which defines the name scope of the interface and operation whose implementation is to be executed.

OMGOPERATION(*text*)
Defines a pattern matching the IDL operation name. The maximum length of this field is 31 characters.

OPERID(*code*)
Specifies the 3-character operator identifier associated with the sessions. Use OPERID if you are not specifying SECURITYNAME on the CONNECTION

definition. Specifying OPERID is the only way of having an operator identifier if you have preset security (by specifying OPERRSL and OPERSECURITY).

OPERPRIORITY({**0**|*number*})
Specifies the operator priority code to be used to determine the task processing priority for each transaction attached to the sessions. The code can be any value from 0 through 255. Use OPERPRIORITY if you are not specifying SECURITYNAME on the CONNECTION definition. Specifying OPERPRIORITY is the only way of having an operator priority code if you have preset security (by specifying OPERRSL and OPERSECURITY).

OPERRSL({**0**|*number*[,...]})
Specifies the resource security key for these sessions.

number[,...]
Code the preset resource security keys for these sessions. The OPERRSL keys are checked to see that they include the resource RSL value, by transactions that request RSL checking (RSLC(YES)). They are referenced for function shipping and distributed transaction processing requests. The OPERRSL keys comprise one or more decimal values from 1 through 24. You can specify more than one value as an inclusive range, using a dash (for example: `5-12`), or as a series of numbers separated by commas, for example: `5,6,7,8,9,10,11,12`. These two examples are equivalent. You can use dashes and commas in the same specification if you need to.

Specify OPERRSL keys if you are not specifying SECURITYNAME on the CONNECTION definition. However, if you specify OPERRSL keys for the sessions, you cannot have a sign-on, using SECURITYNAME, when the link is established. Note that the OPERRSL keys give access only to resources with the RSL values specified in the OPERRSL keys, not to resources with lower RSL values.

0
The sessions have no OPERRSL keys specified and do not have access to any resources through transactions with RSLC(YES), except resources with RSL(PUBLIC).

OPERSECURITY({**1**|*number*[,...]})
Specifies the preset transaction security keys for the device. The transaction security keys are checked to see that they include the security value (TRANSEC) for a transaction about to be attached. They are referenced for function shipping and distributed transaction processing requests.

The security keys comprise one or more decimal values from 1 through 64. You can specify these values in the same way as for OPERRSL, above. In addition to the values you specify, a value of 1 is also assumed. The default value of 1 gives access to all unsecured transactions, because the default TRANSEC value is 1. For example: `5-10,12` is translated into: `1,5,6,7,8,9,10,12`.

Use OPERSECURITY if you are not specifying SECURITYNAME on the CONNECTION definition. However, if you specify OPERSECURITY keys for the sessions, you cannot have a sign-on, using SECURITYNAME, when the link is established.

OUTPRIVACY(**SUPPORTED**|**NOTSUPPORTED**|**REQUIRED**)
Reflects the level of SSL encryption required for inbound connections to this service that is specified by the CIPHERS attribute.

During the SSL handshake, the client and server advertise which cipher suites they support, and, from those they both support, select the suite that offers the most secure level of encryption.

NOTSUPPORTED
Encryption is not used. During the SSL handshake, CICS advertises only supported cipher suites that do not provide encryption.

REQUIRED
Encryption is used. During the SSL handshake, CICS advertises only supported cipher suites that provide encryption.

SUPPORTED
Encryption is used if both client and server support it. During the SSL handshake, CICS advertises all supported cipher suites.

PRIMEDSIZE({**0**|*value*})
Specifies the primed storage allocation size in bytes.

0 CICS takes care of the storage for the control blocks.

Note: Leave PRIMEDSIZE as 0 if this TRANSACTION definition has been set up with ANTICPG=YES.

value This value must not exceed 65520 bytes and, if specified at all, must include an allowance of 2800 bytes for CICS control blocks, and an allowance for the size of the TWA.

Storage acquired by a GETMAIN within the primed storage area is never freed (that is, the corresponding FREEMAIN is ignored).

Note that storage accounting areas within the primed storage allocation are doubleword-aligned, instead of the normal double-doubleword-aligned.

PRIVACY(**REQUIRED**|**SUPPORTED**|**NOTSUPPORTED**)
Reflects the level of SSL encryption required for inbound connections to this service that is specified by the CIPHERS attribute.

During the SSL handshake, the client and server advertise which cipher suites they support, and, from those they both support, select the suite that offers the most secure level of encryption. You can edit the list of ciphers to set a minimum as well as a maximum encryption level. For more information about cipher suites, see the *CICS RACF Security Guide*.

NOTSUPPORTED
Encryption is not used. During the SSL handshake, CICS advertises only supported cipher suites that do not provide encryption.

REQUIRED
Encryption is used. During the SSL handshake, CICS advertises only supported cipher suites that provide encryption.

SUPPORTED
Encryption is used if both client and server support it. During the SSL handshake, CICS advertises all supported cipher suites.

PROTECT({**NO**|**YES**}) **(SNA LUs only)**
Specifies whether output messages can be recovered (see the MSGINTEG option), and whether message logging is to take place.

NO Neither message integrity nor message logging is to take place.

YES Provides recovery for output messages. CICS also records the contents of deferred write requests that are pending at a sync point, and records the receipt of the definite response (associated with the deferred write) on the system log for message recovery and resynchronization purposes. Journaling support is required during generation of the CICS system.

If you specify PROTECT(YES):

- Specify MSGINTEG(YES). This ensures that the integrity response is received.
- Ensure that definitions for the transaction CSLG and program DFHZRLG are available.

RECOVNOTIFY({**NONE**|**MESSAGE**|**TRANSACTION**})
Specifies whether, and how, the terminal user is notified that an XRF takeover has occurred, in case the user must take some action such as signing on again.

NONE
The user is not notified.

MESSAGE
The user receives a message on the screen that the system has recovered. There are two BMS maps, DFHXRC1 and DFHXRC2, in map set DFHXMSG for the message. MESSAGE, rather than TRANSACTION, minimizes the takeover time.

The terminal must be defined with the ATI(YES) option, and must be capable of displaying a BMS map.

TRANSACTION
CICS initiates a transaction at the terminal. The name of the transaction is specified by the RMTRAN system initialization parameter. (The default transaction for this is the one specified in the GMTRAN system initialization parameter: the good-morning transaction.) TRANSACTION is more versatile than MESSAGE.

The terminal must be defined with ATI(YES).

RESSECNUM({**0**|*value*|**PUBLIC**})
Specifies the resource security value to be associated with this file. This attribute is used when an EXEC command is executed within a transaction that has been defined with RESSEC(YES), and the command is attempting to reference this file.

0 A transaction defined with RESSEC(YES) is not allowed access to the file.

value The resource security value, in the range 1 through 24. When a transaction defined with RESSEC(YES) attempts to reference this file, *value* is checked against the keys derived from RESSECKEYS either in the sign-on table, or from the TERMINAL definition. If one of these keys matches *value*, the transaction is allowed access to the file.

PUBLIC
Any transaction is allowed access to the file, regardless of whether security checking is specified or not.

RPG
RPG was a permitted value for the LANGUAGE option of a PROGRAM resource until CICS Transaction Server for OS/390.

RSL(**0**|*value*|**PUBLIC**)
Specifies the resource security value to be associated with this resource. This

operand is used when an EXEC command is executed within a transaction that has been defined with RSLC(YES), and the command is attempting to reference the partition set.

0 A transaction defined with RSLC(YES) is not allowed access to the partition set.

value The resource security value, in the range 1 through 24. When a transaction defined with RSLC(YES) attempts to reference this partition set, *value* is checked against the keys derived either from the RSLKEY in the sign-on table, or from the OPERRSL on the TERMINAL definition. If one of these keys matches *value*, the transaction is allowed access to the partition set.

PUBLIC
Any transaction is allowed access to the partition set, regardless of whether no security checking or RSL checking is specified. However, if an external security manager is in force, it checks access authorities no matter what RSL value (including PUBLIC) has been defined for the resource.

TCLASS({**NO**|*value*})
Specifies the class associated with the task.

NO No class is assigned to the task.

value The decimal value (from 1 to 10) of the class associated with a task.

Note: Do not specify a TCLASS for a CICS-supplied transaction, because it might not be able to start if the class threshold is reached.

TRANSACTION(*name*)
Allows only the specified transaction to be initiated from this device.

The name can be up to 4 characters in length. The acceptable characters are: A-Z a-z 0-9 $ @ # . / - _ % & ¢ ? ! : | " = ¬, ; < >.

If you code this operand for a 3270 display, the only CICS functions the operator is able to invoke, other than this transaction, are paging commands and print requests.

TRANSEC({**1**|*value*})
Specifies the transaction security value, in the range 1 through 64. When a user attempts to initiate the transaction, or when it is automatically initiated (through transient data or interval control), *value* is matched against the user's security keys defined in the DFHSNT SCTYKEY operand or, if the user is not signed on, the security keys defined in OPERSECURITY on the TERMINAL definition. If *value* is present in the security keys, the transaction is initiated.

Because all users and terminals have a security key of 1, any transaction with the default TRANSEC value of 1 is an unsecured transaction, and as such, it can be initiated by any user on the CICS system, whether they are signed on or not.

XRFSIGNOFF({**NOFORCE**|**FORCE**})
Specifies the sign-on characteristics of a group of terminals.

FORCE
CICS should force sign-off of these terminals after an extended recovery facility (XRF) takeover.

NOFORCE
CICS should not force sign-off of these terminals after an extended recovery facility (XRF) takeover.

If you have a collection of terminals in a security-sensitive area, for example, you might choose to force sign-off of those terminals after a takeover, to prevent the use of the terminal in the absence of the authorized user. (This could happen if the authorized user left the terminal during takeover, and the terminal became active again while it was unattended.) This option works with the XRFSOFF system initialization parameter and the XRFSOFF entry in the CICS RACF segment (if you are running RACF 1.9).

Related reference

Obsolete attributes - when were they supported?
Describes obsolete attributes and the CICS release in which they were supported.

Obsolete attributes - when were they supported?

Describes obsolete attributes and the CICS release in which they were supported.

Table 58 shows which resource or resources each attribute is associated with, and which release or releases it was supported in.

Table 58. Obsolete attributes and their valid releases of CICS

Attribute	Resource type	Supported in
CONSOLE	TERMINAL	CICS Transaction Server for z/OS, Version CICS Transaction Server for z/OS, Version
OUTPRIVACY	CORBASERVER	CICS Transaction Server for z/OS, Version 2 Release 3
PRIVACY	TCPIPSERVICE	CICS Transaction Server for z/OS, Version 2 Release 3
XRFSIGNOFF	TERMINAL TYPETERM	CICS Transaction Server for z/OS, Version 2 Release 1

Appendix B. CICS-supplied resource definitions, groups, and lists

IBM supplies definitions of resources that must be installed on your CICS region, and definitions of resources used by the sample application programs.

You initialize the CSD file by using the DFHCSDUP INITIALIZE command. Following initialization, the CSD file contains two categories of resource definition groups:

1. Groups named in DFHLIST, essential for using RDO and other CICS-supplied transactions
2. Groups of definitions for the sample application programs, which are described in the *CICS/ESA 4.1 Sample Applications Guide*.

The CICS transactions, the TYPETERM definitions, model TERMINAL definitions, and PROFILE definitions that are supplied by IBM are in four groups:

- DFHTYPE—TYPETERM definitions
- DFHTERM—model TERMINAL definitions for automatic installation
- DFHISC—PROFILE definitions for intersystem communication sessions
- DFHSTAND—PROFILE definitions

DFHLIST definitions

DFHLIST contains definitions of resources that are essential for using RDO and other CICS-supplied transactions

Table 59. DFHLIST resource definitions

Group name	Description	Programs	Transactions	Other resources
DFH$SOT	CICS-supplied TCPIPSERVICEs			**TCP/IP Services:** ECI HTTPNSSL HTPSSL
DFHADST	Request model creation	DFHADDRM DFHADJR	CREA CREC	**Mapsets:** DFHADMS
DFHBMS	Basic mapping support	DFHTPQ DFHTPR DFHTPS	CSPG CSPQ CSPS	
DFHBR	Bridge programs	DFHL3270 DFHBRMP DFHBRCV		
DFHCBTS	Local request queue file for BTS **Note:** This group is not protected by a lock. The definitions that it contains can be modified if required.			**File:** DFHLRQ
DFHCFC	Programs needed for CICS C++ foundation classes	ICCFCDLL		
DFHCLNT	CICS client CTIN and CCIN	DFHZCT1 DFHZCN1	CTIN CCIN	**Tranclass:** DFHCOMCL
DFHCONS	Write to CPU console	DFHCWTO	CWTO	

Table 59. DFHLIST resource definitions (continued)

Group name	Description	Programs	Transactions	Other resources
DFHDBCTL	DBCTL transactions	DFHDBAT DFHDBCON DFHDBCT DFHDBDI DFHDBDSC DFHDBIQ DFHDBME DFHDBMP DFHDBUEX	CDBC CDBD CDBI CDBM CDBN CDBO CDBT	**File:** DFHDBFK **Mapsets:** DFHDBIE DFHDBNE
DFHDB2	DB2 support	DFHD2CM0 DFHD2CM1 DFHD2CM2 DFHD2CM3 DFHD2EDF DFHD2EX1 DFHD2EX2 DFHD2INI DFHD2PXT DSNCUEXT DSNTIAC DSNTIA1	CDBF CDBQ CEX2 DSNC	

Table 59. DFHLIST resource definitions (continued)

Group name	Description	Programs	Transactions	Other resources
DFHDCTG	TD queues for basic CICS facilities **Note:** This group is not protected by a lock. The definitions that it contains can be modified if required.			**TD queues:** CADL CADO CAIL CCPI CCSE CCSO CCZM CDB2 CDBC CDEP CDUL CECO CEJL CEPO CESE CESO CIEO CIIL CISL CISO CJRM CKQQ CMIG CMQM CMLO CPIO CRDI CRLO CRPO CSBA CSBR CSCC CSCS CSDH CSDL CSFL CSJE CSJO CSKL CSLB CSML CSMT CSNE CSOO CSPL CSQL CSRL CSSH CSSL CSTL CSZL CSZX CWBO CWBW
DFHDOC	CICS document handler template reader	DFHDHEI		

Table 59. DFHLIST resource definitions (continued)

Group name	Description	Programs	Transactions	Other resources
DFHDP	Application debugging profile manager 3270 interface	DFHDPLU DFHDPIN DFHDPCP	CADP CIDP	**Mapset:** DFHDPMS
DFHDPWB	Application debugging profile manager Web interface	DFHDPWB DFHDPWM0 DFHDPWM1 DFHDPWM2 DFHDPWM3 DFHDPWM4 DFHDPWM5 DFHDPWM6 DFHDPWT0 DFHDPWT1 DFHDPWT2 DFHDPWT3 DFHDPWT4 DFHDPWT5 DFHDPWT6 DFHDPWF0		
DFHEDF	Execution diagnostic facility	DFHDBMS DFHDBTI DFHEDFBR DFHEDFD DFHEDFP DFHEDFR DFHEDFX DFHEIGDS DFHEITAB	CEBR CEDF CEDX	**Mapset:** DFHEDFM **Transclass:** DFHEDFTC
DFHEDP	EXEC DLI user exit	DFHEDP		
DFHEJBU	Enterprise bean event program	DFHEJEP		
DFHEP	Event processing	DFHECEAH DFHECEAM DFHECEAS DFHECEAT	CEPH CEPQ CEPT	**Profile:** DFHECEPH
DFHFE	FE terminal test facility	DFHFEP DFHTRAP	CSFE	
DFHFEPI	Front End Programming Interface	DFHEITSZ DFHSZRMP	CSZI	
DFHHARDC	3270 printer - z/OS Communications Server	DFHP3270	CSPP	
DFHIIOP	Programs for DFHIIOP and CORBA group	DFHIIRRS DFHXOPUS DFJIIRP DFJIIRQ	CIRP CIRR	**Profile:** DFHCICSI
DFHINDT	Indoubt test tool	DFHINDAP DFHINDT DFHINTRU	CIND	**Tranclass:** DFHTCIND
DFHINQUI	Command definition	DFHEITBS		
DFHINTER	Command interpreter	DFHECID DFHECIP DFHECSP	CECI CECS	
DFHIPECI	ECI over TCP/IP	DFHIEP	CIEP	

Table 59. DFHLIST resource definitions (continued)

Group name	Description	Programs	Transactions	Other resources
DFHISC	Intersystem communication	DFHCCNV DFHCHS DFHCLS3 DFHCLS4 DFHCLS5 DFHCNV DFHCRNP DFHCRQ DFHCRR DFHCRS DFHCRSP DFHCRT DFHDFST DFHDSRP DFHDYP DFHLUP DFHMIRS DFHMXP DFHRTC DFHRTE DFHSHRRP DFHSHRSP DFHUCNV DFHZLS1	CDFS CEHP CEHS CLQ2 CLR2 CLS1 CLS2 CLS3 CLS4 CMPX CPMI CQPI CQPO CRSQ CRSR CRTE CRTX CSHR CSMI CSM1 CSM2 CSM3 CSM5 CSNC CSSF CVMI CXRT	**Profiles:** DFHCICSF DFHCICSR DFHCICSS
DFHISCIP	IP interconnectivity support	DFHCIS4 DFHISAIP DFHISCIP DFHISCOP DFHISDIP DFHISEMP DFHISLQP DFHISIP DFHISREU DFHISREX DFHISRRP DFHISRSP	CISB CISC CISD CISE CISM CISR CISQ CISS CIST CISU CISX CIS4	**TS model:** DFHISLQ
DFHJAVA	Programs required for Java support	DFHDLLOD DFHJVCVT DFHEJDNX DFHSJGC DFHSJJI DFHSJPI DFJCICS DFJCICSB DFJDESN DFJCZDTC DFJ1ICS DFJ1ICSB DFJ1ESN DFJ1ZDTC	CJGC CJPI	
DFHLGMOD	CICS log manager			**Journalmodels:** DFHLOG DFHSHUNT DFHLGLOG
DFHLGQC	CICS log manager quiesce	DFHLGQC	CSQC	

Table 59. DFHLIST resource definitions (continued)

Group name	Description	Programs	Transactions	Other resources
DFHMISC	Miscellaneous programs	DFHLETRU DFHPEP DFHREST		

Table 59. DFHLIST resource definitions (continued)

Group name	Description	Programs	Transactions	Other resources
DFHMQ	Programs, transactions, and mapsets required for WebSphere MQ support	CSQCAPX CSQAVICM CSQCBDCI CSQCBE30 CSQCBP10 CSQCBP53 CSQCBP00 CSQCBP10 CSQCBR00 CSQCBR53 CSQCCB CSQCCLOS CSQCCONN CSQCCONX CSQCCTL CSQCDISC CSQCDSC CSQCDSPL CSQCQCON CSQCSSQ CSQCGET CSQCINQ CSQCOPEN CSQCPUT CSQCPUT1 CSQCRST CSQCSET CSQCSSQ CSQCSUB CSQCSUBR CSQFCTAB DFHMQBAS DFHMQBP0 DFHMQBP1 DFHMQBR0 DFHMQCOD DFHMQCON DFHMQCTL DFHMQDCI DFHMQDIS DFHMQDSC DFHMQDSL DFHMQMON DFHMQPLT DFHMQPOP DFHMQPRM DFHMQPUL DFHMQQCN DFHMQRET DFHMQRS DFHMQSSQ DFHMQTRU DFHMQTSK IMQB23IC IMQS23IC	CKAM CKBM CKBP CKBR CKCN CKDL CKDP CKQC CKRS CKRT CKSD CKSQ CKTI	**Mapsets:** DFHMQHC DFHMQHE DFHMQHK DFHMQHU DFHMQ1C DFHMQ1E DFHMQ1K DFHMQ1U DFHMQ2C DFHMQ2E DFHMQ2K DFHMQ2U
DFHMSWIT	Message switching program	DFHMSP	CMSG	
DFHOPCLS	Dynamic open and close program	DFHFCU	CSFU	

Table 59. DFHLIST resource definitions (continued)

Group name	Description	Programs	Transactions	Other resources
DFHOPER	Operator programs	DFHCEMNA DFHCEMNB DFHCEMNC DFHCEMND DFHCETRA DFHCETRB DFHCETRC DFHCETRD DFHCETRF DFHECBAM DFHEITMT DFHEITOT DFHEITST DFHEMTA DFHEMTD DFHEMTP DFHEOTP DFHESTP DFHLDMAP DFHSOCRL	CBAM CCRL CEMN CEMT CEOT CEST CETR CLDM	**Mapsets:** DFHSO1M DFHCMNH DFHCMNM DFHCTRH DFHCTRM
DFHOTS	OTS resynchronization	DFHOTR	CJTR	
DFHPGAIP	Autoinstall for programs	DFHPGADX DFHPGAHX DFHPGALX DFHPGAOX DFHPGAPG		**Mapset:** DFHPGAMP **Partition set:** DFHPGAPT
DFHPIPE	Web services processing	DFHMLBST DFHPIAP DFHPIDSH DFHPIDSQ DFHPIEP DFHPIIR DFHPILSQ DFHPIR DFHPIRT DFHPISN1 DFHPISN2 DFHPITE DFHPITP DFHPITQ1 DFHPIVAL DFHWSADH DFHWSSE1 DFHWSXXX C128N IOSTREAM IXM4C57 IXMI33UC IXMI33DA IXMI33IN	CPIA CPIH CPIL CPIS	

Note: Group DFHPLI is withdrawn. For PL/I Version 2 or later, see the PL/I installation manual (for example, *OS PL/I Version 2 Installation and Customization under MVS Guide*) for a complete list of the required program entries.

Table 59. DFHLIST resource definitions (continued)

Group name	Description	Programs	Transactions	Other resources
DFHPSSGN	Persistent sessions sign-on retention	DFHZSGN DFHZPCT DFHZRPT	CPSS CPCT CRTP	
DFHRL	Resource lifecycle management	DFHRLMF DFHRLR DFHRLSC DFHRLVC	CRLR	
DFHRMI	Resource manager interface	DFHRMSY	CRSY	
DFHRQS	Request stream join program	DFHRZJN		
DFHRS	Region status, file creation	DFHRSFDL		
DFHRSEND	z/OS Communications Server resend program	DFHZRSP	CSRS	
DFHSDAP	SHUTDOWN ASSIST	DFHCESD	CESD	
DFHSIGN	Sign-on and sign-off programs and table	DFHCESC DFHCEGN DFHSFP DFHSNP	CESC CEGN CESF CESN CESL	**Mapsets:** DFHSNLE DFHSNPE DFHSNSE
DFHSO	Emulate CICS sockets interface	DFHSOCI DFHSOLI		
DFHSPI	Resource definition online	DFHAMP DFHDMP DFHEDAD DFHEDAP DFHEITSP DFHPUP DFHTBS DFHTOR DFHZATA DFHZATD DFHZATDX DFHZATMD DFHZATMF DFHZATR DFHZATS DFHZCQ DFHZCTDX DFHZDTDX DFHZPTDX	CATA CATD CATR CATS CDTS CEDA CEDA CEDB CEDC CFTS CITS CMTS CRMD CRMF	

Table 59. DFHLIST resource definitions (continued)

Group name	Description	Programs	Transactions	Other resources
DFHSTAND	Standard CICS application programs	DFHACP DFHCXCU DFHEJITL DFHPIITL DFHPIPA DFHPIXC DFHPSIP DFHQRY DFHSJITL DFHSTP DFHTACP DFHTEP DFHTEPT DFHTFP DFHZXCU DFHZXRE DFHZXST	CEJR CJSR CPIR CQRY CSAC CSTE CXCU CXRE	**Profiles:** DFHCICSA DFHCICSE DFHCICSP DFHCICST DFHCICSV DFHPPF01 DFHPPF02 **Mapset:** DFHXMSG
DFHTCL	Compatibility TRANCLASS definitions			**Tranclasses:** DFHTCL00 DFHTCL00 DFHTCL01 DFHTCL03 DFHTCL04 DFHTCL05 DFHTCL06 DFHTCL07 DFHTCL08 DFHTCL09 DFHTCL10 DFHTCLQ2 DFHTSDEL
DFHTERM	Model TERMINAL definitions			**Terminals:** LU2 LU3 APPC SCSP 3270 3284 L0E2 L0M2 L0M3 L0M4 L0M5 L2E2 L2M2 L2E3 L2M3 L2E4 L2M4 L2M5

Table 59. DFHLIST resource definitions (continued)

Group name	Description	Programs	Transactions	Other resources
DFHTYPE	TYPETERM definitions			**Typeterms:** DFHCONS DFHLU2 DFHLU3 DFHLU62T DFHSCSP DFH3270 DFH3270P DFHLU0E2 DFHLU0M2 DFHLU0M3 DFHLU0M4 DFHLU0M5 DFHLU2E2 DFHLU2M2 DFHLU2E3 DFHLU2M3 DFHLU2E4 DFHLU2M4 DFHLU2M5
DFHVTAM	z/OS Communications Server programs	DFHGMM DFHZNAC DFHZNEP	CSGM CSNE	
DFHVTAMP	z/OS Communications Server terminal control print key function	DFHCPY DFHEXI DFHPRK DFHRKB	CSCY CSPK CSRK	

Table 59. DFHLIST resource definitions (continued)

Group name	Description	Programs	Transactions	Other resources
DFHWEB	CICS Web support definitions	DFH$WB1A DFHWBA DFHWBAAX DFHWBADX DFHWBAHX DFHWBALX DFHWBAOX DFHWBA1 DFHWBBLI DFHWBCLI DFHWBC00 DFHWBENV DFHWBEP DFHWBERX DFHWBGB DFHWBIMG DFHWBIP DFHWBLT DFHWBPA DFHWBPW DFHWBPW1 DFHWBPW2 DFHWBPW3 DFHWBPW4 DFHWBST DFHWBTC DFHWBTL DFHWBTRU DFHWBTTA DFHWBTTB DFHWBTTC DFHWBUN DFHWBXN	CWBA CWBC CWBG CWXN CWXU	**TSModels:** DFHWEB **Doctemplates:** DFHWBPW1 DFHWBPW2 DFHWBPW3 DFHWBPW4
DFHWEB2	Web 2.0 definitions	DFHW2A DFHW2FD DFHW2TS	CW2A	
DFHWU	CICS management client interface	DFHWUIPG DFHWUIPI DFHWUIP1 DFHWUIP3 DFHWUIP4 DFHWUIP5	CWWU	**Doctemplates:** DFHWUIPI DFHWUIP1 DFHWUIP3 DFHWUIP4 DFHWUIP5
Note: The DFHTYPE TYPETERM definitions match the z/OS Communications Server-supplied LOGMODE definitions. If you are not using the supplied z/OS Communications Server LOGMODES, you might have to modify the DFHTYPE TYPETERM definitions. For programming information about z/OS Communications Server LOGMODE definitions, see the *CICS Customization Guide*				

CICS-supplied groups not in DFHLIST

Not all CICS-supplied resource definition groups are defined in list DFHLIST.

Table 60. Resource definitions not in DFHLIST

Group Name	Description	Programs	Transactions	Other resources
DFHBRCF	Coupling facility data table sample for DFHBRNSF			**File:** DFHBRNSF
DFHBRUT	User maintained data table sample for DFHBRNSF			**File:** DFHBRNSF
DFHBRVR	VSAM RLS sample for DFHBRNSF			**File:** DFHBRNSF
DFHBRVSL	VSAM non-RLS local sample for DFHBRNSF			**File:** DFHBRNSF
DFHBRVSR	VSAM non-RLS remote sample for DFHBRNSF			**File:** DFHBRNSF
DFHCMAC	CICS online messages and codes	DFHCMAC	CMAC (alias CHLP)	**Mapset:** DFHCMCM **File:** DFHCMACD
Note: DFHCMAC is not included in DFHLIST for reasons of compatibility with earlier releases. If you want to use the online messages and codes transaction, you must add DFHCMAC to your start-up group list.				
DFHEJVS	File definitions required for enterprise beans	DFHEJDIR DFHEJOS		
DFHEJCF	Coupling facility definitions required for enterprise beans	DFHEJDIR DFHEJOS		
DFHEJVR	VSAM RLS definitions required for enterprise beans	DFHEJDIR DFHEJOS		
DFHMISC3	Miscellaneous group	DFHNET		
Note: DFHMISC3 is not included in DFHLIST for reasons of compatibility with earlier releases. If you require it in your system, add it to your start-up group list.				
DFHRPC	Remote procedure call	DFHRPAL DFHRPAS DFHRPC00 DFHRPMS DFHRPRP DFHRPTRU	CRPA CRPC CRPM	**Mapset:** DFHRP0
DFHTERMC	Model TERMINAL definition for console autoinstall			**Terminals:** AUTC

CICS-supplied compatibility groups

CICS supplies RDO groups for compatibility with earlier releases.

If, after upgrading a CSD, you plan to share the CSD file with earlier releases of CICS, you must include the appropriate DFHCOMP*x* compatibility groups in your startup group list.

the *CICS Transaction Server for z/OS Upgrading from CICS TS Version 4.1* has information about sharing the CSD between different releases of CICS. It shows you which DFHCOMPx groups you must include for the earlier releases. Do not attempt to share a CSD file with a CICS region running at a higher level than the CSD file.

The sample application program groups

These resource definitions are required to run the sample application programs supplied with CICS. The groups are not named in DFHLIST.

Table 61. CICS sample applications - resource definitions

Group Name	Language	Description	Resources Defined
DFH$AFLA	Assembler	FILEA sample applications	**Map sets**: DFH$AGA DFH$AGB DFH$AGC DFH$AGD DFH$AGK DFH$AGL **Programs**: DFH$AALL DFH$ABRW DFH$ACOM DFH$AMNU DFH$AREN DFH$AREP **Transactions**: AADD ABRW AINQ AMNU AORD AORQ AREP AUPD
DFH$BMSP	COBOL and PL/I	BMS partition support applications	**Partitionset**: DFH0PS **Map sets**: DFH0CGP DFH$PGP **Programs**: DFH0CPKO DFH0CPLA DFH$PPKO DFH$PPLA **Transactions**: PPKO PPLA XPKO XPLA
DFH$CFLA	COBOL	FILEA sample applications	**Map sets**: DFH0CGA DFH0CGB DFH0CGC DFH0CGD DFH0CGK DFH0CGL **Programs**: DFH0CALL DFH0CBRW DFH0CCOM DFH0CMNU DFH0CREN DFH0CREP **Transactions**: ADDS BRWS INQY MENU OREN OREQ REPT UPDT
DFH$CNSL		Sample console definitions	**Typeterms**: DFH$JCLC DFH$CONS **Terminals**: CJCL CNSL CN02

Table 61. CICS sample applications - resource definitions (continued)

Group Name	Language	Description	Resources Defined
DFH$CTXT	COBOL	CUA text model application	**Files**: DFH0FCAI DFH0FCUS DFH0FHLP **Map sets**: DFH0AB DFH0ABT DFH0BRW DFH0DEL DFH0FPD DFH0HLP DFH0HP DFH0HPD DFH0LST DFH0NEW DFH0OPN DFH0PRT DFH0SAS DFH0T1 DFH0UPD **Programs**: DFH0VAB DFH0VABT DFH0VBRW DFH0VDEL DFH0VDQ DFH0VHLP DFH0VHP DFH0VLIO DFH0VLST DFH0VNEW DFH0VOL DFH0VOPN DFH0VPRT DFH0VRIO DFH0VSAS DFH0VTBL DFH0VT1 DFH0VUPD **Profile**: DFH$CUA2 **Transactions:** AC2A AC2C AC2D AC2E AC2F AC20 AC21 AC22 AC23 AC24 AC25 AC26 AC27 AC28 DELQ
DFH$DFLA	C	FILEA sample applications	**Map sets**: DFH$DGA DFH$DGB DFH$DGC DFH$DGD DFH$DGK DFH$DGL **Programs**: DFH$DALL DFH$DBRW DFH$DCOM DFH$DMNU DFH$DREN DFH$DREP **Transactions**: DADD DBRW DINQ DMNU DORD DORQ DREP DUPD
DFH$DLIV		IMS installation verification procedure	**Programs**: DFH$DLAC DFH$DLAE DFH$DLCC DFH$DLCE DFH$DLPC DFH$DLPE **Transactions:** ASMC ASME COBC COBE PLIC PLIE
DFH$EJB		EJB installation verification procedure and EJB “Hello World” sample application	**TCP/IP service**: EJBTCP1 **CorbaServer:** EJB1
DFH$EXBS		Catalog application sample	**Files:** EXMPCAT EXMPCONF **Map sets**: DFH0XS1 DFH0XS2 DFH0XS3 **Programs**: DFH0XCMN DFH0XGUI DFH0XODE DFH0XSDS DFH0XSOD DFH0XSSM DFH0XVDS DFH0XWOD **Transactions**: ECFG EGUI

Table 61. CICS sample applications - resource definitions (continued)

Group Name	Language	Description	Resources Defined
DFH$EXCI		EXCI batch call interface samples	**Connections**: EXCG EXCS **Programs**: DFH$AXCS DFH$AXVS **Sessions**: EXCG EXCS **Transactions**: EXCI HPJC
DFH$EXWS		Catalog application sample	**Program**: DFH0XCUI **Transaction**: ECLI **TCP/IP service**: EXMPPORT **Pipelines**: EXPIPE01 EXPIPE02
DFH$FILA		FILEA samples	**File:** FILEA
DFH$ICOM	Assembler	Intersystem communication (ISC)	**Map sets**: DFH$IGB DFH$IGC DFH$IGS DFH$IGX DFH$IG1 DFH$IG2 **Programs**: DFH$ICIC DFH$IFBL DFH$IFBR DFH$IMSN DFH$IMSO DFH$IQRD DFH$IQRL DFH$IQRR DFH$IQXL DFH$IQXR **Transactions**: ICIC IFBL IFBR IMSN IMSO IQRD IQRL IQRR IQXL IQXR
DFH$IIOP	LE370	IIOP sample application	**CorbaServer**: IIOP **File**: BANKACCT **Map set**: BANKINQ **Programs**: DFH$IIBI DFH$IIBQ DFH$IICC **Request Models**: DFJ$IIRB DFJ$IIRH **TCP/IP services**: IIOPNSSL IIOPSSL **Transactions**: BNKI BNKQ BNKS IIHE
DFH$JVM	LE370	Sample applications for Java support using a pooled JVM	**Programs**: DFH$JSAM DFH$LCCA DFJ$JHE1 DFJ$JHE2 DFJ$JPC1 DFJ$JPC2 DFJ$JTD1 DFJ$JTS1 DFJ$JTSC **TDQueue**: JTD1 **Transactions**: JHE1 JHE2 JPC1 JPC2 JTD1 JTS1

Table 61. CICS sample applications - resource definitions (continued)

Group Name	Language	Description	Resources Defined
DFH$NACT		NACT sample application	**Files**: ACCTFILE ACCTNAM ACINUSE **Map set**: DFH0MNA **Programs**: DFH0CNA1 DFH0CNA2 DFH0CNA3 DFH0CNA4 DFH0CNA5 **Transactions**: NACP NACT
DFH$OSGI		Sample applications for Java support using a JVM server	**Bundle**: DFH$OSGB **JVM server**: DFH$JVMS **Programs**: DFH$JSAM DFH$LCCA DFJ$JHE1 DFJ$JHE2 DFJ$JPC1 DFJ$JPC2 DFJ$JTD1 DFJ$JTS1 DFJ$JTSC **TDQueue**: JTD1 **Transactions**: JHE1 JHE2 JPC1 JPC2 JTD1 JTS1
DFH$PFLA	PL/I	FILEA sample applications	**Map sets**: DFH$PGA DFH$PGB DFH$PGC DFH$PGD DFH$PGK DFH$PGL **Programs**: DFH$PALL DFH$PBRW DFH$PCOM DFH$PMNU DFH$PREN DFH$PREP **Transactions**: PADD PBRW PINQ PMNU PORD PORQ PREP PUPD
DFH$STAT		Statistics	**Program**: DFH$STED
DFH$SXP		Message domain exits	**Programs**: DFH$SXP1 DFH$SXP2 DFH$SXP3 DFH$SXP4 DFH$SXP5 DFH$SXP6
DFH$UTIL	Assembler	Transient data utility dynamic allocation	**Programs**: DFH$TDWT DFH99 **Transactions**: ADYN TDWT
DFH$VTAM		Terminal definitions	**Typeterms**: DFH$L77 DFH$L78 DFH$L79 DFH$L86 **Terminals**: L77C L77D L78A L79A L86A
DFHAI62		Starter APPC connections	**Program**: DFHZATDY **Connections**: CBPS CBSS CCPS **Sessions**: CBPS CBSS CCPS

Table 61. CICS sample applications - resource definitions (continued)

Group Name	Language	Description	Resources Defined
DFHMROAR		Starter MRO systems	**Connections**: CICD CICT **Sessions**: CICSRD CICSRT
DFHMRODR		Starter MRO systems	**Connection**: CICA **Session**: CICSRA
DFHMROFA		Starter MRO systems	**File**: FILEA **Map sets**: DFH$AGA DFH$AGB DFH$AGC DFH$AGD DFH$AGK DFH$AGL **Programs**: DFH$AALL DFH$ABRW DFH$ACOM DFH$AMNU DFH$AREN DFH$AREP **Transactions**: AADD ABRW AINQ AMNU AORD AORQ AREP AUPD
DFHMROFD		Starter MRO systems	**File**: FILEA
DFHMROFT		Starter MRO systems	**Transactions**: AADD ABRW AINQ AMNU AORD AORQ AREP AUPD
DFHMROTR		Starter MRO systems	**Connection**: CICA **Session**: CICSRA

CICS transactions supplied by IBM

These CICS transactions are supplied by IBM.

The first table lists in alphabetical order the transactions that are provided with the various sample application programs, and the second table lists in alphabetical order the remaining transactions that are either used internally by CICS or are provided to help terminal operators manage and change CICS system status.

Table 62. CICS sample transactions supplied by IBM

Transaction	Program	CSD group	Security category	Description
AADD	DFH$AALL	DFH$AFLA	2	FILEA IVP sample transaction
AADD	DFH$AALL	DFHMROFA	2	FILEA IVP sample transaction
AADD		DFHMROFT	2	FILEA IVP sample transaction
ABRW	DFH$ABRW	DFH$AFLA	2	FILEA IVP sample transaction
ABRW	DFH$ABRW	DFHMROFA	2	FILEA IVP sample transaction

Table 62. CICS sample transactions supplied by IBM (continued)

Transaction	Program	CSD group	Security category	Description
ACCT	ACCT00	DFH$ACCT	2	CICS application programming primer sample application transaction
ACEL	ACCT03	DFH$ACCT	2	CICS application programming primer sample application transaction
ACLG	ACCT03	DFH$ACCT	2	CICS application programming primer sample application transaction
AC01	ACCT01	DFH$ACCT	2	CICS application programming primer sample application transaction
AC02	ACCT02	DFH$ACCT	2	CICS application programming primer sample application transaction
AC03	ACCT03	DFH$ACCT	2	CICS application programming primer sample application transaction
AC05	ACCT03	DFH$ACCT	2	CICS application programming primer sample application transaction
AC06	ACCT03	DFH$ACCT	2	CICS application programming primer sample application transaction
AC2A	DFH0VSAS	DFH$CTXT	2	CUA text model application sample transaction
AC2C	DFH0VHLP	DFH$CTXT	2	CUA text model application sample transaction
AC2D	DFH0VAB	DFH$CTXT	2	CUA text model application sample transaction
AC2E	DFH0VHP	DFH$CTXT	2	CUA text model application sample transaction
AC2F	DFH0VABT	DFH$CTXT	2	CUA text model application sample transaction
AC20	DFH0VT1	DFH$CTXT	2	CUA text model application sample transaction
AC21	DFH0VOL	DFH$CTXT	2	CUA text model application sample transaction
AC22	DFH0VOPN	DFH$CTXT	2	CUA text model application sample transaction
AC23	DFH0VLST	DFH$CTXT	2	CUA text model application sample transaction
AC24	DFH0VNEW	DFH$CTXT	2	CUA text model application sample transaction
AC25	DFH0VBRW	DFH$CTXT	2	CUA text model application sample transaction
AC26	DFH0VUPD	DFH$CTXT	2	CUA text model application sample transaction

Table 62. CICS sample transactions supplied by IBM (continued)

Transaction	Program	CSD group	Security category	Description
AC27	DFH0VDEL	DFH$CTXT	2	CUA text model application sample transaction
AC28	DFH0VPRT	DFH$CTXT	2	CUA text model application sample transaction
ADDS	DFH0CALL	DFH$CFLA	2	FILEA IVP sample transaction
ADYN	DFH99	DFH$UTIL	2	Transient data utility dynamic allocation
AINQ	DFH$AALL	DFH$AFLA	2	FILEA IVP sample transaction
AINQ	DFH$AALL	DFHMROFA	2	FILEA IVP sample transaction
AINQ		DFHMROFT	2	FILEA IVP sample transaction
AMNU	DFH$AMNU	DFH$AFLA	2	FILEA IVP sample transaction
AMNU	DFH$AMNU	DFHMROFA	2	FILEA IVP sample transaction
AMNU		DFHMROFT	2	FILEA IVP sample transaction
AORD	DFH$AREN	DFH$AFLA	2	FILEA IVP sample transaction
AORD	DFH$AREN	DFHMROFA	2	FILEA IVP sample transaction
AORD		DFHMROFT	2	FILEA IVP sample transaction
AORQ	DFH$ACOM	DFH$AFLA	2	FILEA IVP sample transaction
AORQ	DFH$ACOM	DFHMROFA	2	FILEA IVP sample transaction
AORQ		DFHMROFT	2	FILEA IVP sample transaction
AREP	DFH$AREP	DFH$AFLA	2	FILEA IVP sample transaction
AREP	DFH$AREP	DFHMROFA	2	FILEA IVP sample transaction
AREP		DFHMROFT	2	FILEA IVP sample transaction
ASMC	DFH$DLAC	DFH$DLIV	2	IMS IVP sample transaction
ASME	DFH$DLAE	DFH$DLIV	2	IMS IVP sample transaction
AUPD	DFH$AALL	DFH$AFLA	2	FILEA IVP sample transaction
AUPD	DFH$AALL	DFHMROFA	2	FILEA IVP sample transaction
AUPD		DFHMROFT	2	FILEA IVP sample transaction

Table 62. CICS sample transactions supplied by IBM (continued)

Transaction	Program	CSD group	Security category	Description
BNKI		DFH$IIOP	2	IIOP sample application transaction
BNKQ		DFH$IIOP	2	IIOP sample application transaction
BNKS		DFH$IIOP	2	IIOP sample application transaction
BRWS	DFH0CBRW	DFH$CFLA	2	FILEA IVP sample transaction
COBC	DFH0DLCC	DFH$DLIV	2	IMS IVP sample transaction
COBE	DFH0DLCE	DFH$DLIV	2	IMS IVP sample transaction
CW2Q	DFH0W2TQ	DFH$WEB2	2	Web 2.0 scenario sample transaction
DADD	DFH$DALL	DFH$DFLA	2	FILEA IVP sample transaction
DBRW	DFH$DBRW	DFH$DFLA	2	FILEA IVP sample transaction
DELQ	DFH0VDQ	DFH$CTXT	2	CUA text model application transaction
DINQ	DFH$DALL	DFH$DFLA	2	FILEA IVP sample transaction
DMNU	DFH$DMNU	DFH$DFLA	2	FILEA IVP sample transaction
DORD	DFH$DREN	DFH$DFLA	2	FILEA IVP sample transaction
DORQ	DFH$DCOM	DFH$DFLA	2	FILEA IVP sample transaction
DREP	DFH$DREP	DFH$DFLA	2	FILEA IVP sample transaction
DUPD	DFH$DALL	DFH$DFLA	2	FILEA IVP sample transaction
EPAT	DFH0EPAC	DFH$EPAG	2	Sample Custom Event Processing Adapter transaction
EXCI	DFH$MIRS	DFH$EXCI	2	EXCI batch call interface sample transaction
HPJC	DFH$MIRS	DFH$EXCI	2	EXCI batch call interface sample transaction
ICIC	DFH$ICIC	DFH$ICOM	2	Intersystem communication (ISC) sample transaction
IFBL	DFH$IFBL	DFH$ICOM	2	Intersystem communication (ISC) sample transaction
IFBR	DFH$IFBR	DFH$ICOM	2	Intersystem communication (ISC) sample transaction
IIHE		DFH$IIOP	2	IIOP sample application transaction

Table 62. CICS sample transactions supplied by IBM (continued)

Transaction	Program	CSD group	Security category	Description
IMSN	DFH$IMSN	DFH$ICOM	2	Intersystem communication (ISC) sample transaction
IMSO	DFH$IMSO	DFH$ICOM	2	Intersystem communication (ISC) sample transaction
INQY	DFH0CALL	DFH$CFLA	2	FILA IVP sample transaction
IQRD	DFH$IQRD	DFH$ICOM	2	Intersystem communication (ISC) sample transaction
IQRL	DFH$IQRL	DFH$ICOM	2	Intersystem communication (ISC) sample transaction
IQRR	DFH$IQRR	DFH$ICOM	2	Intersystem communication (ISC) sample transaction
IQXL	DFH$IQXL	DFH$ICOM	2	Intersystem communication (ISC) sample transaction
IQXR	DFH$IQXR	DFH$ICOM	2	Intersystem communication (ISC) sample transaction
JHE1	DFH$JSAM	DFH$JVM	2	Java sample application transaction
JHE2	DFH$JSAM	DFH$JVM	2	Java sample application transaction
JPC1	DFH$JSAM	DFH$JVM	2	Java sample application transaction
JPC2	DFH$JSAM	DFH$JVM	2	Java sample application transaction
JTD1	DFH$JSAM	DFH$JVM	2	Java sample application transaction
MENU	DFH0CMNU	DFH$CFLA	2	FILEA IVP sample transaction
OREN	DFH0CREN	DFH$CFLA	2	FILEA IVP sample transaction
OREQ	DFH0COMM	DFH$PFLA	2	FILEA IVP sample transaction
PADD	DFH$PALL	DFH$PFLA	2	FILEA IVP sample transaction
PBRW	DFH$PBRW	DFH$PFLA	2	FILEA IVP sample transaction
PINQ	DFH$PALL	DFH$PFLA	2	FILEA IVP sample transaction
PLIC	DFH$DLPC	DFH$DLIV	2	IMS IVP sample transaction
PLIE	DFH$DLPE	DFH$DLIV	2	IMS IVP sample transaction
PMNU	DFH$PMNU	DFH$PFLA	2	FILEA IVP sample transaction
PORD	DFH$PREN	DFH$PFLA	2	FILEA IVP sample transaction
PORQ	DFH$PCOM	DFH$PFLA	2	FILEA IVP sample transaction

Table 62. CICS sample transactions supplied by IBM (continued)

Transaction	Program	CSD group	Security category	Description
PPKO	DFH$PPKO	DFH$BMSP	2	BMS partition support sample applications transaction
PPLA	DFH$PPLA	DFH$BMSP	2	BMS partition support sample applications transaction
PREP	DFH$PREP	DFH$PFLA	2	FILEA IVP sample transaction
PUDP	DFH$PALL	DFH$PFLA	2	FILEA IVP sample transaction
REPT	DFH0CREP	DFH$CFLA	2	FILEA IVP sample transaction
TDWT	DFH$TDWT	DFH$UTIL	2	Transient data utility dynamic allocation sample transaction
UPDT	DFH0CALL	DFH$CFLA	2	FILEA IVP sample transaction
WBCA_2	DFH$WBCA	DFH$WEB	2	Client chunking sample (Assembler)
WBCC_2	DFH$WBCC	DFH$WEB	2	Client chunking sample (C)
WBCO_2	DFH0WBCO	DFH$WEB	2	Client chunking sample (COBOL)
WBPA_2	DFH$WBPA	DFH$WEB	2	Pipelining sample (Assembler)
WBPC_2	DFH$WBPC	DFH$WEB	2	Pipelining sample (C)
WBPO_2	DFH0WBPO	DFH$WEB	2	Pipelining sample (COBOL)
XPKO	DFH0CPKO	DFH$BMSP	2	BMS partition support sample applications transaction
XPLA	DFH0CPLA	DFH$BMSP	2	BMS partition support sample applications transaction

Table 63. CICS transactions supplied by IBM

Transaction	Program	CSD group	Security category	Description
CADP*	DFHDPLU	DFHDP	2	Application debugging profile manager
CATA	DFHZATA	DFHSPI	1	Defines autoinstall automatic terminal
CATD	DFHZATD	DFHSPI	1	Deletes autoinstall terminal
CATR	DFHZATR	DFHSPI	3	Deletes autoinstall restart terminal
CATS	DFHZATS			
CAUT	DFHSTSP			Automatic System Statistics Program

Table 63. CICS transactions supplied by IBM (continued)

Transaction	Program	CSD group	Security category	Description
CBAM*	DFHECBAM	DFHOPER	2	BTS objects browser
CBRC	DFHBRCP	DFHDLI		
CCIN	DFHZCN1	DFHCLNT	3	CICS Client
CCMF	DFHCCMF			Monitoring ATI Program
CCRL*	DFHSOCRL	DFHOPER	2	CICS certificate revocation list transaction
CDBC*	DFHDBME	DFHDBCTL	2	DBCTL interface menu transaction
CDBD	DFHDBDI	DFHDBCTL	1	DBCTL disable function
CDBF	DFHD2CM3	DFHDB2	1	CICS DB2 attachment facility shutdown force transaction
CDBI*	DFHDBIQ	DFHDBCTL	2	DBCTL interface inquiry transaction
CDBM*	DFHDBMP	DFHDBCTL	2	DBCTL operator transaction
CDBN	DFHDBCON	DFHDBCTL	Exempt (See note)	DBCTL issue commands
CDBO	DFHDBCT	DFHDBCTL	1	DBCTL control function
CDBQ	DFHD2CM2	DFHDB2	1	CICS DB2 attachment facility shutdown quiesce transaction
CDBT	DFHDBDSC	DFHDBCTL	2	DBCTL interface disconnection transaction
CDFS	DFHDFST	DFHISC	2	Dynamic starts with interval
CDST	DFHMIRS		2	CICS Dynamic routing of non-term starts
CDTS	DFHZATS	DFHSPI	1	Provides remote single delete transaction
CEBR*	DFHEDFBR	DFHEDF	2	Browse temporary storage
CEBT*	-	-		Master terminal, alternate CICS
CECI*	DFHECIP	DFHINTER	2	Command level interpreter
CECS*	DFHECSP	DFHINTER	2	Command level interpreter
CEDA*	DFHEDAP	DFHSPI	2	Resource definition online - full (RDO)
CEDB*	DFHEDAP	DFHSPI	2	Resource definition online - restricted (RDO)
CEDC*	DFHEDAP	DFHSPI	2	Views resource definition online (RDO)
CEDF*	DFHEDFP	DFHEDF	2	Execution diagnostic facility
CEDX*	DFHEDFP	DFHEDF	2	Execution diagnostic facility for non-terminal tasks
CEGN	DFHCEGN	DFHSIGN	3	Schedules good night transaction
CEHP	DFHCHS	DFHISC	2	LU type 2 mirror transaction (obsolete)

Table 63. CICS transactions supplied by IBM (continued)

Transaction	Program	CSD group	Security category	Description
CEHS	DFHCHS	DFHISC	2	LU type 2 mirror transaction (obsolete)
CEJR	DFHEJITL	DFHSTAND	3	Corbaserver resolution
CEKL*			Exempt (See note)	Master terminal for emergency use
CEMN	DFHCEMNA	DFHOPER	2	CICS monitoring facility transaction
CEMS	DFHEMSP			Spooling Master Terminal Transaction
CEMT*	DFHEMTP	DFHOPER	2	Master terminal
CEOS	DFHEOSP			Spooling Terminal Operator Transaction
CEOT*	DFHEOTP	DFHOPER	2	Terminal status
CEPD	DFHEPDS	-	1	Event processing dispatcher
CEPF	DFHECDF	-	1	Event processing deferred filtering task
CEPH	DFHECEAH	-	2	HTTP EP adapter for event processing
CEPM	DFHEPSY	-	1	Event processing queue manager
CEPQ	DFHECEAM	DFHEP	2	WebSphere MQ EP adapter for event processing
CEPT	DFHECEAT	DFHEP	2	TSQ EP adapter for event processing
CESC*	DFHCESC	DFHSIGN	1	Processes timeout and signoff for idle terminals
CESD	DFHCESD	DFHSDAP	2	Shutdown assist
CESF*	DFHSFP	DFHSIGN	3	Signs off terminal user
CESL*	DFHSNP	DFHSIGN	3	Signs on terminal user with a password or password phrase
CESN*	DFHSNP	DFHSIGN	3	Signs on terminal user with a password
CEST*	DFHESTP	DFHOPER	2	Supervisory terminal
CETR*	DFHCETRA	DFHOPER	2	Inquire and set trace options
CEX2	DFHD2EX2	DFHDB2	1	CICS DB2 protected thread purge mechanism and other CICS DB2 services
CFCL	DFHFCDL	-	1	CFDT load
CFOR	DFHFCQT	-	1	RLS offsite recovery
CFQR	DFHFCQT	-	1	RLS quiesce receive
CFQS	DFHFCQT	-	1	RLS quiesce send
CFTI				Flowmark for MVS
CFTL	DFHDTLX	-	1	Shared DT load

Table 63. CICS transactions supplied by IBM (continued)

Transaction	Program	CSD group	Security category	Description
CFTM				Boeblingen Banking Project
CFTS	DFHZATS	DFHSPI	1	Provides remote mass flag transaction
CFUP				Boeblingen Banking Project
CGRP	DFHZCGRP	-	1	Provides z/OS Communications Server (previously called VTAM) persistent sessions
CHLP	DFHCMAC	DFHCMAC		Alias for CMAC
CIDP*	DFHDPIN	DFHDP	2	Inactivate debugging profiles utility
CIEP	DFHIEP	DFHIPECI	3	ECI for TCP/IP listener
CIND*	DFHINDT	DFHINDT	2	CICS indoubt testing tool
CINS				
CIOD	DFHIIOPA	DFHIIOP	1	Default IIOP interface, started by CIOR
CIOF	DFHIIOPA	DFHIIOP	1	CICS generic factory, started by CIOR
CIOR	DFHIIOP	DFHIIOP	1	CICS IIOP interface, started by SO_Domain
CIRB				SQL/DS Transaction ID
CIRD				SQL/DS Transaction ID
CIRP	DFHIIRP	DFHIIOP	2	Default CICS IIOP request processor transaction
CIRR	DFHIIRRS	DFHIIOP	1	Default CICS IIOP request receiver
CIS4	DFHISCIS4	DFHISCIP	1	IPIC External Security Interface (ESI) transaction
CISB	DFHISCOP	DFHISCIP	1	IPIC release IPCONN on the server side of a connection (BIS processing)
CISC	DFHISCOP	DFHISCIP	1	IPIC acquire IPCONN on the client side of a connection
CISD	DFHISCOP	DFHISCIP	1	IPIC release IPCONN on the client side of a connection
CISE	DFHISCIP	DFHISCIP	1	IPIC error and message program
CISM	DFHISRSP	DFHISCIP	1	IPIC remote scheduler
CISQ	DFHISLQP	DFHISCIP	1	IPIC local queue processing
CISR	DFHISRRP	DFHISCIP	1	IPIC request/response receiver
CISS	DFHISCOP	DFHISCIP	1	IPIC acquire IPCONN on the server side of a connection
CIST	DFHISCOP	DFHISCIP	1	IPIC terminate IPCONN
CISU	DFHISREU	DFHISCIP	1	IPIC recovery transaction

Table 63. CICS transactions supplied by IBM (continued)

Transaction	Program	CSD group	Security category	Description
CISX	DFHISREX	DFHISCIP	1	IPCONN recovery and resynchronization transaction for XA clients
CITS	DFHZATS	DFHSPI	1	Provides remote autoinstall transaction
CJGC	DFHSJGC	DFHJAVA	1	CICS JVM garbage collection transaction
CJPI	DFHSJPI	DFHJAVA	1	Starts JVMs following a PERFORM JVMPOOL command
CJSR	DFHCJSR	DFHSTAND	1	CICS JVM server resolution transaction
CJTR	DFHOTR	DFHOTS	1	CORBA Object Transaction Services (OTS) resynchronization transaction
CKAM	DFHMQMON	DFHMQ	2	CICS-MQ Adapter alert monitor
CKBM	DFHMQBAS	DFHMQ	2	CICS-MQ Adapter base panel transaction
CKCN	DFHMQQCN	DFHMQ	2	CICS-MQ Adapter start connection transaction
CKBP	CSQCBP00	DFHMQ	2	CICS-MQ Bridge DPL bridge task
CKBR	DFHMQBR0	DFHMQ	2	CICS-MQ Bridge Monitor task
CKDL	DFHMQDSL	DFHMQ	2	CICS-MQ Adapter, display status transaction
CKDP	DFHMQDIS	DFHMQ	2	CICS-MQ Adapter, display transaction
CKQC	DFHMQCTL	DFHMQ	2	CICS-MQ Adapter control transaction
CKRS	DFHMQRS	DFHMQ	2	CICS-MQ Adapter modify transaction
CKRT	DFHMQRET	DFHMQ	2	CICS-MQ Adapter screen return transaction
CKSD	DFHMQDSC	DFHMQ	2	CICS-MQ Adapter stop connection transaction
CKSQ	DFHMQSSQ	DFHMQ	2	CICS-MQ Adapter start/stop CKTI transaction
CKTI	DFHMQTSK	DFHMQ	2	CICS-MQ Adapter - task initiator transaction
CLDM*	DFHLDMAP	DFHOPER	2	CICS load module map
CLER				Language Environment runtime options
CLQ2	DFHLUP	DFHISCT	3	Outbound resynchronization for APPC and MRO

Table 63. CICS transactions supplied by IBM (continued)

Transaction	Program	CSD group	Security category	Description
CLR1	DFHZLS1	DFHISCT	3	Inbound CNOS for APPC and MRO
CLR2	DFHLUP	DFHISCT	3	Inbound resynchronization for MRO
CLS1	DFHZLS1	DFHISC	3	Provides ISC LU services model
CLS2	DFHLUP	DFHISC	3	Provides ISC LU services model
CLS3	DFHCLS3	DFHISC	3	ISC LU services model
CLS4	DFHCLS4	DFHISC	3	Manages password expiry
CMAC	DFHCMAC		2	Messages utility
CMPX	DFHMXP	DFHISC	3	Ships ISC local queuing
CMSG*	DFHMSP	DFHMSWIT	2	Message switching
CMTS	DFHZATS	DFHSPI	1	Remote mass delete transaction
COVR	DFHZCOVR	-	1	Provides open z/OS Communications Server retry transaction
CPCT	DFHZPCT	DFHPSSGN		Catalog signed on terminals for persistent session signon retention
CPIA*	DFHPITE	DFHPIPE	2	Invokes CPIS from the terminal
CPIH	DFHPIDSH	DFHPIPE	2	CICS pipeline HTTP inbound router
CPIL	DFHPILSQ	DFHPIPE	2	SOAP WebSphere MQ inbound listener
CPIQ	DFHPIDSQ	DFHPIPE	2	SOAP WebSphere MQ inbound router
CPIR	DFHPIITL	DFHSTAND	1	Pipeline resolution transaction
CPIS	DFHPIR	DFHPIPE	1	WS-AT transaction that is attached when resynchronization is required
CPLT	DFHSIPLT	-	1	Initializes PLT processing
CPMI	DFHMIRS	DFHISC	2	CICS LU 6.2 synchronization level 1 mirror
CPSS	DFHZSGN	DFHPSSGN	3	Persistent sessions signon
CQPI	DFHCLS5	DFHISC	3	Connection quiesce. Architected transaction (inbound).
CQPO	DFHCLS5	DFHISC	3	Connection quiesce. Architected transaction (outbound).
CQRY	DFHQRY	DFHSTAND	3	Provides ATI query support

Table 63. CICS transactions supplied by IBM (continued)

Transaction	Program	CSD group	Security category	Description
CRDR	DFHRD1			Asynchronous Transaction Processing in Put Routine 1
CREA*	DFHADDRM	DFHADST	2	Create REQUESTMODELs for enterprise beans
CREC*	DFHADDRM	DFHADST	2	Create REQUESTMODELs for enterprise beans (read only)
CRLR	DFHRLR	DFHRL	1	Bundle resource resolution transaction
CRMD	DFHZATMD	DFHSPI	1	Provides remote mass delete transaction
CRMF	DFHZATMF	DFHSPI	1	Provides remote mass flag transaction
CRPA	DFHRPAS	DFHRPC	2	ONC/RPC Alias transaction
CRPC	DFHRPC00	DFHRPC	2	ONC/RPC Update transaction
CRPM	DFHRPHS	DFHRPC	2	ONC/RPC Server controller
CRSQ	DFHCRQ	DFHISC	1	Remote schedule purging (ISC)
CRSR	DFHCRS	DFHISC	3	Provides ISC remote scheduler
CRSY	DFHRMSY	DFHRMI	1	Resource manager resynchronization
CRTE*	DFHRTE	DFHISC	2	Transaction routing
CRTP	DFHZRTP	DFHPSSGN	1	Persistent sessions restart timer transaction
CRTX	-	DFHISC	2	Dynamic transaction routing transaction definition
CSAC	DFHACP	DFHSTAND	3	Provides program abnormal condition
CSCY	DFHCPY	DFHVTAMP	3	Provides 3270 screen print
CSFE*	DFHFEP	DFHFE	2	Terminal test, trace, storage
CSFR	DFHFCRD	-	1	RLS cleanup
CSFU	DFHFCU	DFHOPCLS	1	File open utility
CSGM	DFHGMM	DFHVTAM	2	“Good-morning” signon
CSGX	DFHDLG	DFHDLI		
CSHA	-	-	1	Scheduler services (autoinstalled by CICS)
CSHQ	DFHSHSY	-	1	Scheduler services domain long running task
CSHR	DFHMIRS	DFHISC	2	Scheduler services remote routing
CSIR 160	DFHCRR			Interregion Session Recovery Program
CSJC	DFHJCBSP	-		Journal control bootstrap

Table 63. CICS transactions supplied by IBM (continued)

Transaction	Program	CSD group	Security category	Description
CSKP	DFHAKP	-	1	Writes system log activity keypoint
CSLG	DFHZRLG	DFHRSPLG		
CSMI	DFHMIRS	DFHISC	2	Mirror transaction
CSMT	DFHMTPA			Master Terminal Module A
CSM1	DFHMIRS	DFHISC	2	SYSMSG model
CSM2	DFHMIRS	DFHISC	2	Scheduler model
CSM3	DFHMIRS	DFHISC	2	Queue model
CSM5	DFHMIRS	DFHISC	2	DL/I model
CSNC	DFHCRNP	DFHISC	1	Interregion control program (MRO)
CSNE	DFHZNAC	DFHVTAM	1	Provides z/OS Communications Server (previously called VTAM) node error recovery
CSOL	DFHSOL	-	1	TCP/IP listener (autoinstalled by CICS)
CSOT	DFHMTPA			Master Terminal Module A
CSPG*	DFHTPR	DFHBMS	3	Provides BMS terminal paging
CSPK	DFHPRK	DFHVTAMP	3	Provides 3270 screen print support
CSPP	DFHP3270	DFHHARDC	3	Provides 3270 print support
CSPQ	DFHTPQ	DFHBMS	1	Terminal page cleanup (BMS)
CSPS	DFHTPS	DFHBMS	3	Schedules BMS terminal paging
CSQC	DFHLGQC	DFHLGQC	1	CICS quiesce after system log failure
CSRK	DFHRKB	DFHVTAMP	3	Provides 3270 screen print - release keyboard
CSRS	DFHZRSP	DFHRSEND	3	Synchronizes 3614 message
CSSC	DFHCSSC			Sign off inactive terminal
CSSF	DFHRTC	DFHISC	3	Cancels CRTE transaction routing session
CSSN	DFHSNP			Sign on program
CSST	DFHMTPA			Master terminal module A
CSSX	DFHDLS	DFHDLI		
CSSY	DFHAPATT	-	1	Provides entry point attach
CSTA	DFHTAJP			Time of day adjustment program
CSTE	DFHTACP	DFHSTAND	1	Processes terminal abnormal conditions
CSTP	DFHZCSTP	-	1	Provides terminal control transaction

Table 63. CICS transactions supplied by IBM (continued)

Transaction	Program	CSD group	Security category	Description
CSTT	DFHSTKC	DFHCOMP1		Supervisory Statistics Program
CSXM			Exempt	The transaction used by CICS services to get and free a transaction environment
CSZI	DFHSZRMP	DFHFEPI	1	Front End Programming Interface (FEPI), only active if FEPI installed
CTIN	DFHZCT1	DFHCLNT	2	CICS Client
CTSD	DFHTSDQ	-	1	Temporary storage delete recoverable queue
CVMI	DFHMIRS	DFHISC	2	CICS LU6.2 synchronization level 1 mirror
CVST	DFHVAP			Subtask Monitor Program
CWBA	DFHWBA	DFHWEB	2	CICS web support alias transaction
CWBC	DFHWBC00	DFHWEB		CICS web support connection manager
CWBG	DFHWBGB	DFHWEB	1	CICS web support cleanup transaction
CWBM	DFHWBM	DFHWEB		CICS web support server controller
CWTO*	DFHCWTO	DFHCONS	2	Write to console operator
CWWU	DFHWBA	DFHCURDI	2	Web support alias transaction for the CICS management client interface
CWXN	DFHWBXN	DFHWEB	1	CICS Web support attach transaction
CWXU	DFHWBXN	DFHWEB	1	CICS Web support USER protocol attach transaction
CW2A	DFHW2A	DFHWEB2	2	Atom feed alias transaction
CXCU	DFHCXCU	DFHSTAND	1	Performs XRF tracing catchup
CXRE	DFHZXRE	DFHSTAND	1	Reconnects terminals following XRF takeover
CXRT	DFHCRT	DFHISC	3	Provides Transaction routing relay
DSNC	DFHD2CM1	DFH$DB2	2	DB2 attachment facility transaction

Note:

1. Transactions CGRP, CSSY, CSTP, and CSXM are transaction names that are used by some CICS tasks.
2. Transactions CDBN, CEKL, and CSXM are not subject to security checking, and are exempt from security categorization. Any security definitions for these transactions are redundant. See Categories of CICS-supplied transactions.

TYPETERM definitions in group DFHTYPE

The CICS-supplied CSD group DFHTYPE contains TYPETERM definitions.

DFHCONS

MVS console:

```
TYPETERM(DFHCONS)  GROUP(DFHTYPE)
DEVICE(CONSOLE)
PAGESIZE(1,124)    AUTOPAGE(NO)
BRACKET(YES)       BUILDCHAIN(YES)     ROUTEDMSGS(NONE)
UCTRAN(YES)
```

DFHLU2

SNA logical unit type 2 (3270 displays):

```
TYPETERM(DFHLU2)   GROUP(DFHTYPE)
DEVICE(LUTYPE2)    TERMMODEL(2)
DEFSCREEN(24,80)   PAGESIZE(24,80)     AUTOPAGE(NO)
BRACKET(YES)       BUILDCHAIN(YES)     ROUTEDMSGS(ALL)
AUDIBLEALARM(YES)  EXTENDEDDS(YES)     UCTRAN(YES)
SENDSIZE(1536)     RECEIVESIZE(256)    IOAREALEN(256,4000)
ERRLASTLINE(YES)   ERRINTENSIFY(YES)   ATI(YES)  TTI(YES)
DISCREQ(YES)       RELREQ(YES)         AUTOCONNECT(YES)
LOGONMSG(YES)      QUERY(ALL)          CREATESESS(NO)
```

This definition is for a 3278 Model 2 display. It is suitable for the following devices: 3178, 3179, 3277, 3278, 3279, 3290, 3270PC, 3270PC/G, 3270PC/GX, 8775, and 5550.

DFHLU3

SNA logical unit type 3 (3270 printers):

```
TYPETERM(DFHLU3)   GROUP(DFHTYPE)
DEVICE(LUTYPE3)    TERMMODEL(2)
DEFSCREEN(24,80)   PAGESIZE(24,80)     AUTOPAGE(YES)
BRACKET(YES)       BUILDCHAIN(NO)      ROUTEDMSGS(ALL)
SENDSIZE(256)      RECEIVESIZE(256)    IOAREALEN(512,0)
EXTENDEDDS(YES)    QUERY(ALL)          ATI(YES)  TTI(YES)
DISCREQ(YES)       RELREQ(YES)         AUTOCONNECT(YES)
LOGONMSG(NO)                           CREATESESS(NO)
```

This definition is for a 3287 printer. It is suitable for the following devices: 3262, 3268, 3284, 3286, 3287, 3288, 3289, and 5550.

DFHSCSP

SNA logical unit type 1 (3270 SCS printers):

```
TYPETERM(DFHSCSP)  GROUP(DFHTYPE)
DEVICE(SCSPRINT)
PAGESIZE(24,80)    AUTOPAGE(YES)
BRACKET(YES)       BUILDCHAIN(NO)      ROUTEDMSGS(ALL)
SENDSIZE(256)      RECEIVESIZE(256)    IOAREALEN(512,0)
EXTENDEDDS(YES)    QUERY(ALL)          ATI(YES)  TTI(YES)
DISCREQ(YES)       RELREQ(YES)         AUTOCONNECT(YES)
LOGONMSG(NO)                           CREATESESS(NO)
```

This definition is for a 3287 printer. It is suitable for the following devices: 3262, 3268, 3287, 3289, and 5550.

DFH3270

Locally attached (non-SNA) 3270 displays:

```
TYPETERM(DFH3270)  GROUP(DFHTYPE)
DEVICE(3270)       TERMMODEL(2)
DEFSCREEN(24,80)   PAGESIZE(24,80)     AUTOPAGE(NO)
BRACKET(YES)       BUILDCHAIN(NO)      ROUTEDMSGS(ALL)
AUDIBLEALARM(YES)  EXTENDEDDS(YES)     UCTRAN(YES)
```

```
SENDSIZE(0)        RECEIVESIZE(0)   IOAREALEN(512,0)
ERRLASTLINE(YES)   ERRINTENSIFY(YES)   ATI(YES)  TTI(YES)
DISCREQ(YES)       RELREQ(YES)         AUTOCONNECT(YES)
LOGONMSG(YES)      QUERY(ALL)          CREATESESS(NO)
```

This definition is for a 3278 Model 2 display. It is suitable for the following devices: 3178, 3179, 3277, 3278, 3279, and 3290.

DFH3270P

Locally attached (non-SNA) 3270 printers:

```
TYPETERM(DFH3270P) GROUP(DFHTYPE)
DEVICE(3270P)      TERMMODEL(2)
DEFSCREEN(24,80)   PAGESIZE(24,80)     AUTOPAGE(YES)
BRACKET(YES)       BUILDCHAIN(NO)      ROUTEDMSGS(ALL)
SENDSIZE(0)        RECEIVESIZE(0)      IOAREALEN(512,0)
EXTENDEDDS(YES)    QUERY(ALL)          ATI(YES)  TTI(YES)
DISCREQ(YES)       RELREQ(YES)         AUTOCONNECT(YES)
LOGONMSG(NO)                           CREATESESS(NO)
```

This definition is for a 3284 Model 2 printer. It is suitable for the following devices: 3262, 3268, 3284, 3287, 3288, 3289, and 5550.

DFHLU62T

SNA logical unit type 6.2 (APPC) single session terminal:

```
TYPETERM(DFHLU62T) GROUP(DFHTYPE)
DEVICE(APPC)
                   PAGESIZE(1,40)      AUTOPAGE(YES)
BRACKET(YES)       BUILDCHAIN(YES)     ROUTEDMSGS(NONE)
SENDSIZE(2048)     RECEIVESIZE(2048)   IOAREALEN(0,0)
                                       ATI(YES) TTI(YES)
LOGONMSG(NO)                           CREATESESS(NO)
```

This definition is for an APPC single session terminal and is also suitable for the following devices: DISPLAYWRITER, SCANMASTER, and SYSTEM/38.

DFHLU0E2

Non-SNA model 2 with extended data stream (Query):

```
TYPETERM(DFHLU0E2) GROUP(DFHTYPE)
DEVICE(3270)       TERMMODEL(2)        SHIPPABLE(YES)
DEFSCREEN(24,80)   PAGESIZE(24,80)     AUTOPAGE(NO)
ALTSCREEN(0,0)     ALTPAGE(0,0)
BRACKET(YES)       BUILDCHAIN(NO)      ROUTEDMSGS(ALL)
AUDIBLEALARM(YES)  EXTENDEDDS(YES)     UCTRAN(YES)
RECEIVESIZE(0)     SENDSIZE(0)         IOAREALEN(512,0)
ERRASTLINE(YES)    ERRINTENSIFY(YES)   QUERY(ALL)
DISCREQ(YES)       RELREQ(YES)         AUTOCONNECT(NO)
LOGONMSG(YES)      CREATESESS(NO)
ATI(YES)           TTI(YES)
```

Non-SNA model 2 with extended data stream (Query). This definition matches the z/OS Communications Server-supplied LOGMODE NSX32702

DFHLU0M2

Non-SNA model 2:

```
TYPETERM(DFHLU0M2)  GROUP(DFHTYPE)
DEVICE(3270)        TERMMODEL(2)        SHIPPABLE(YES)
DEFSCREEN(24,80)    PAGESIZE(24,80)     AUTOPAGE(NO)
ALTSCREEN(0,0)      ALTPAGE(0,0)
BRACKET(YES)        BUILDCHAIN(NO)      ROUTEDMSGS(ALL)
AUDIBLEALARM(YES)   EXTENDEDDS(NO)      UCTRAN(YES)
RECEIVESIZE(0)      SENDSIZE(0)         IOAREALEN(512,0)
```

```
ERRLASTLINE(YES)    ERRINTENSIFY(YES)    QUERY(NO)
DISCREQ(YES)        RELREQ(YES)          AUTOCONNECT(NO)
LOGONMSG(YES)       CREATESESS(NO)
ATI(YES)            TTI(YES)
```

Non-SNA model 2 with extended data stream (Query). This definition matches the z/OS Communications Server-supplied LOGMODE D4B32782

DFHLU0M3
Non-SNA model 3:

```
TYPETERM(DFHLU0M3)  GROUP(DFHTYPE)
DEVICE(3270)        TERMMODEL(2)         SHIPPABLE(YES)
DEFSCREEN(24,80)    PAGESIZE(24,80)      AUTOPAGE(NO)
ALTSCREEN(32,80)    ALTPAGE(32,80)
BRACKET(YES)        BUILDCHAIN(NO)       ROUTEDMSGS(ALL)
AUDIBLEALARM(YES)   EXTENDEDDS(NO)       UCTRAN(YES)
RECEIVESIZE(0)      SENDSIZE(0)          IOAREALEN(512,0)
ERRLASTLINE(YES)    ERRINTENSIFY(YES)    QUERY(NO)
DISCREQ(YES)        RELREQ(YES)          AUTOCONNECT(NO)
LOGONMSG(YES)       CREATESESS(NO)
ATI(YES)            TTI(YES)
```

This definition matches the z/OS Communications Server-supplied LOGMODE D4B32783.

DFHLU0M4
Non-SNA model 4:

```
TYPETERM(DFHLU0M4)     GROUP(DFHTYPE)
DEVICE(3270)           TERMMODEL(2)           SHIPPABLE(YES)
DEFSCREEN(24,80)       PAGESIZE(24,80)        AUTOPAGE(NO)
ALTSCREEN(43,80)       ALTPAGE(43,80)
BRACKET(YES)           BUILDCHAIN(NO)         ROUTEDMSGS(ALL)
AUDIBLEALARM(YES)      EXTENDEDDS(NO)         UCTRAN(YES)
RECEIVESIZE(0)         SENDSIZE(0)            IOAREALEN(512,0)
ERRLASTLINE(YES)       ERRINTENSIFY(YES)      QUERY(NO)
DISCREQ(YES)           RELREQ(YES)            AUTOCONNECT(NO)
LOGONMSG(YES)          CREATESESS(NO)
ATI(YES)               TTI(YES)
```

This definition matches the z/OS Communications Server-supplied LOGMODE D4B32784.

DFHLU0M5
Non-SNA model 5:

```
TYPETERM(DFHLU0M5)     GROUP(DFHTYPE)
DEVICE(3270)           TERMMODEL(2)           SHIPPABLE(YES)
DEFSCREEN(24,80)       PAGESIZE(24,80)        AUTOPAGE(NO)
ALTSCREEN(27,132)      ALTPAGE(27,132)
BRACKET(YES)           BUILDCHAIN(NO)         ROUTEDMSGS(ALL)
AUDIBLEALARM(YES)      EXTENDEDDS(NO)         UCTRAN(YES)
RECEIVESIZE(0)         SENDSIZE(0)            IOAREALEN(512,0)
ERRLASTLINE(YES)       ERRINTENSIFY(YES)      QUERY(NO)
DISCREQ(YES)           RELREQ(YES)            AUTOCONNECT(NO)
LOGONMSG(YES)          CREATESESS(NO)
ATI(YES)               TTI(YES)
```

This definition matches the z/OS Communications Server-supplied LOGMODE D4B32785.

DFHLU2E2
SNA LU type 2 model 2 with extended data stream (Query):

```
TYPETERM(DFHLU2E2)      GROUP(DFHTYPE)
DEVICE(LUTYPE2)         TERMMODEL(2)            SHIPPABLE(YES)
DEFSCREEN(24,80)        PAGESIZE(24,80)         AUTOPAGE(NO)
ALTSCREEN(0,0)          ALTPAGE(0,0)
BRACKET(YES)            BUILDCHAIN(YES)         ROUTEDMSGS(ALL)
AUDIBLEALARM(YES)       EXTENDEDDS(YES)         UCTRAN(YES)
RECEIVESIZE(1024)       SENDSIZE(3840)          IOAREALEN(256,4000)
ERRLASTLINE(YES)        ERRINTENSIFY(YES)       QUERY(ALL)
DISCREQ(YES)            RELREQ(YES)             AUTOCONNECT(NO)
LOGONMSG(YES)           CREATESESS(NO)
ATI(YES)                TTI(YES)
```

SNA LU type 2 model 2 with extended data stream (Query). This definition matches the z/OS Communications Server-supplied LOGMODE SNX32702.

DFHLU2M2

SNA LU type 2 model 2:

```
TYPETERM(DFHLU2M2)      GROUP(DFHTYPE)
DEVICE(LUTYPE2)         TERMMODEL(2)            SHIPPABLE(YES)
DEFSCREEN(24,80)        PAGESIZE(24,80)         AUTOPAGE(NO)
ALTSCREEN(0,0)          ALTPAGE(0,0)
BRACKET(YES)            BUILDCHAIN(YES)         ROUTEDMSGS(ALL)
AUDIBLEALARM(YES)       EXTENDEDDS(NO)          UCTRAN(YES)
RECEIVESIZE(1024)       SENDSIZE(1536)          IOAREALEN(256,4000)
ERRLASTLINE(YES)        ERRINTENSIFY(YES)       QUERY(NO)
DISCREQ(YES)            RELREQ(YES)             AUTOCONNECT(NO)
LOGONMSG(YES)           CREATESESS(NO)
ATI(YES)                TTI(YES)
```

This definition matches the z/OS Communications Server-supplied LOGMODE D4A32782.

DFHLU2E3

SNA LU type 2 model 3 with extended data stream (Query):

```
TYPETERM(DFHLU2E3)      GROUP(DFHTYPE)
DEVICE(LUTYPE2)         TERMMODEL(2)            SHIPPABLE(YES)
DEFSCREEN(24,80)        PAGESIZE(24,80)         AUTOPAGE(NO)
ALTSCREEN(32,80)        ALTPAGE(32,80)
BRACKET(YES)            BUILDCHAIN(YES)         ROUTEDMSGS(ALL)
AUDIBLEALARM(YES)       EXTENDEDDS(YES)         UCTRAN(YES)
RECEIVESIZE(1024)       SENDSIZE(3840)          IOAREALEN(256,4000)
ERRLASTLINE(YES)        ERRINTENSIFY(YES)       QUERY(ALL)
DISCREQ(YES)            RELREQ(YES)             AUTOCONNECT(NO)
LOGONMSG(YES)           CREATESESS(NO)
ATI(YES)                TTI(YES)
```

SNA LU type 2 model 3 with extended data stream (Query). This definition matches the z/OS Communications Server-supplied LOGMODE SNX32703.

DFHLU2M3

SNA LU type 2 model 3:

```
TYPETERM(DFHLU2M3)      GROUP(DFHTYPE)
DEVICE(LUTYPE2)         TERMMODEL(2)            SHIPPABLE(YES)
DEFSCREEN(24,80)        PAGESIZE(24,80)         AUTOPAGE(NO)
ALTSCREEN(32,80)        ALTPAGE(32,80)
BRACKET(YES)            BUILDCHAIN(YES)         ROUTEDMSGS(ALL)
AUDIBLEALARM(YES)       EXTENDEDDS(NO)          UCTRAN(YES)
RECEIVESIZE(1024)       SENDSIZE(1536)          IOAREALEN(256,4000)
ERRLASTLINE(YES)        ERRINTENSIFY(YES)       QUERY(NO)
DISCREQ(YES)            RELREQ(YES)             AUTOCONNECT(NO)
LOGONMSG(YES)           CREATESESS(NO)
ATI(YES)                TTI(YES)
```

This definition matches the z/OS Communications Server-supplied LOGMODE D4A32783.

DFHLU2E4
SNA LU type 2 model 4 with extended data stream (Query):

```
TYPETERM(DFHLU2E4)      GROUP(DFHTYPE)
DEVICE(LUTYPE2)         TERMMODEL(2)            SHIPPABLE(YES)
DEFSCREEN(24,80)        PAGESIZE(24,80)         AUTOPAGE(NO)
ALTSCREEN(43,80)        ALTPAGE(43,80)
BRACKET(YES)            BUILDCHAIN(YES)         ROUTEDMSGS(ALL)
AUDIBLEALARM(YES)       EXTENDEDDS(YES)         UCTRAN(YES)
RECEIVESIZE(1024)       SENDSIZE(3840)          IOAREALEN(256,4000)
ERRLASTLINE(YES)        ERRINTENSIFY(YES)       QUERY(ALL)
DISCREQ(YES)            RELREQ(YES)             AUTOCONNECT(NO)
LOGONMSG(YES)           CREATESESS(NO)
ATI(YES)                TTI(YES)
```

SNA LU type 2 model 4 with extended data stream (Query). This definition matches the z/OS Communications Server-supplied LOGMODE SNX32704.

DFHLU2M4
SNA LU type 2 model 4:

```
TYPETERM(DFHLU2M4)      GROUP(DFHTYPE)
DEVICE(LUTYPE2)         TERMMODEL(2)            SHIPPABLE(YES)
DEFSCREEN(24,80)        PAGESIZE(24,80)         AUTOPAGE(NO)
ALTSCREEN(43,80)        ALTPAGE(43,80)
BRACKET(YES)            BUILDCHAIN(YES)         ROUTEDMSGS(ALL)
AUDIBLEALARM(YES)       EXTENDEDDS(NO)          UCTRAN(YES)
RECEIVESIZE(1024)       SENDSIZE(1536)          IOAREALEN(256,4000)
ERRLASTLINE(YES)        ERRINTENSIFY(YES)       QUERY(NO)
DISCREQ(YES)            RELREQ(YES)             AUTOCONNECT(NO)
LOGONMSG(YES)           CREATESESS(NO)
ATI(YES)                TTI(YES)
```

This definition matches the z/OS Communications Server-supplied LOGMODE D4A32784.

DFHLU2M5
SNA LU type 2 model 5:

```
TYPETERM(DFHLU2M5)      GROUP(DFHTYPE)
DEVICE(LUTYPE2)         TERMMODEL(2)            SHIPPABLE(YES)
DEFSCREEN(24,80)        PAGESIZE(24,80)         AUTOPAGE(NO)
ALTSCREEN(27,132)       ALTPAGE(27,132)
BRACKET(YES)            BUILDCHAIN(YES)         ROUTEDMSGS(ALL)
AUDIBLEALARM(YES)       EXTENDEDDS(NO)          UCTRAN(YES)
RECEIVESIZE(1024)       SENDSIZE(1536)          IOAREALEN(256,4000)
ERRLASTLINE(YES)        ERRINTENSIFY(YES)       QUERY(NO)
DISCREQ(YES)            RELREQ(YES)             AUTOCONNECT(NO)
LOGONMSG(YES)           CREATESESS(NO)
ATI(YES)                TTI(YES)
```

This definition matches the z/OS Communications Server-supplied LOGMODE D4A32785.

DFHLU2E5
SNA LU type 2 model 5 with extended data stream (Query):

```
TYPETERM(DFHLU2E5)      GROUP(DFHTYPE)
DEVICE(LUTYPE2)         TERMMODEL(2)            SHIPPABLE(YES)
DEFSCREEN(24,80)        PAGESIZE(24,80)         AUTOPAGE(NO)
ALTSCREEN(27,132)       ALTPAGE(27,132)
BRACKET(YES)            BUILDCHAIN(YES)         ROUTEDMSGS(ALL)
AUDIBLEALARM(YES)       EXTENDEDDS(NO)          UCTRAN(YES)
```

```
RECEIVESIZE(1024)      SENDSIZE(3480)         IOAREALEN(256,4000)
ERRLASTLINE(YES)       ERRINTENSIFY(YES)      QUERY(ALL)
DISCREQ(YES)           RELREQ(YES)            AUTOCONNECT(NO)
LOGONMSG(YES)          CREATESESS(NO)
ATI(YES)               TTI(YES)
```

SNA LU type 2 model 5 with extended data stream (Query). This definition matches the z/OS Communications Server-supplied LOGMODE LSX32705.

Model TERMINAL definitions in group DFHTERM

The CICS-supplied CSD group DFHTERM contains model TERMINAL definitions for automatic installation.

LU2 SNA 3270 Model 2 display using TYPETERM DFHLU2:

```
TERMINAL(LU2)       GROUP(DFHTERM)      TYPETERM(DFHLU2)
AUTINSTMODEL(ONLY)  AUTINSTNAME(DFHLU2)
```

This definition is for a 3278 Model 2 display. It is suitable for the following devices: 3178, 3179, 3277, 3278, 3279, 3290, 3270PC, 3270PC/G, 3270PC/GX, 8775, and 5550.

LU3 SNA 3270 Model 2 printer using TYPETERM DFHLU3:

```
TERMINAL(LU3)       GROUP(DFHTERM)      TYPETERM(DFHLU3)
AUTINSTMODEL(ONLY)  AUTINSTNAME(DFHLU3)
```

This definition is for a 3287 printer. It is suitable for the following devices: 3262, 3268, 3284, 3286, 3287, 3288, 3289, and 5550.

SCSP SNA 3278 Model 2 printer using TYPETERM DFHSCSP:

```
TERMINAL(SCSP)      GROUP(DFHTERM)      TYPETERM(DFHSCSP)
AUTINSTMODEL(ONLY)  AUTINSTNAME(DFHSCSP)
```

This definition is for a 3287 printer. It is suitable for the following devices: 3262, 3268, 3287, 3289, and 5550.

3270 Non-SNA 3270 Model 2 display using TYPETERM DFH3270:

```
TERMINAL(3270)      GROUP(DFHTERM)      TYPETERM(DFH3270)
AUTINSTMODEL(ONLY)  AUTINSTNAME(DFH3270)
```

This definition is for a 3278 Model 2 display. It is suitable for the following devices: 3178, 3179, 3277, 3278, 3279, and 3290.

3284 Non-SNA 3270 Model 2 printer using TYPETERM DFH3270P:

```
TERMINAL(3284)      GROUP(DFHTERM)      TYPETERM(DFH3270P)
AUTINSTMODEL(ONLY)  AUTINSTNAME(DFH3270P)
```

This definition is for a 3284 Model 2 printer. It is suitable for the following devices: 3262, 3268, 3284, 3287, 3288, 3289, and 5550.

LU62 APPC (LU6.2) single session terminal using TYPETERM DFHLU62T:

```
TERMINAL(LU62)      GROUP(DFHTERM)       TYPETERM(DFHLU62T)
AUTINSTMODEL(ONLY)  AUTINSTNAME(DFHLU62T)
```

This definition is for an APPC single session terminal and is also suitable for the following devices: DISPLAYWRITER, SCANMASTER, and SYSTEM/38.

L0E2 Non-SNA Model 2 display using TYPETERM DFHLU0E2:

```
TERMINAL(L0E2)      GROUP(DFHTERM)       TYPETERM(DFHLU0E2)
AUTINSTMODEL(ONLY)  AUTINSTNAME(DFHLU0E2)
```

Non-SNA model 2 with extended data stream (Query). This definition matches the z/OS Communications Server-supplied LOGMODE NSX32702.

L0M2 Non-SNA Model 2 display using TYPETERM DFHLU0M2:

```
TERMINAL(L0M2)      GROUP(DFHTERM)       TYPETERM(DFHLU0M2)
AUTINSTMODEL(ONLY)  AUTINSTNAME(DFHLU0M2)
```

This definition matches the z/OS Communications Server-supplied LOGMODE D4B32782.

L0M3 Non-SNA Model 3 display using TYPETERM DFHLU0M3:

```
TERMINAL(L0M3)      GROUP(DFHTERM)       TYPETERM(DFHLU0M3)
AUTINSTMODEL(ONLY)  AUTINSTNAME(DFHLU0M3)
```

This definition matches the z/OS Communications Server-supplied LOGMODE D4B32783.

L0M4 Non-SNA Model 4 display using TYPETERM DFHLU0M4:

```
TERMINAL(L0M4)      GROUP(DFHTERM)        TYPETERM(DFHLU0M4)
AUTINSTMODEL(ONLY)  AUTINSTNAME(DFHLU0M4)
```

This definition matches the z/OS Communications Server-supplied LOGMODE D4B32784.

L0M5 Non-SNA Model 5 display using TYPETERM DFHLU0M5:

```
TERMINAL(L0M5)      GROUP(DFHTERM)        TYPETERM(DFHLU0M5)
AUTINSTMODEL(ONLY)  AUTINSTNAME(DFHLU0M5)
```

This definition matches the z/OS Communications Server-supplied LOGMODE D4B32785.

L2E2 SNA LU2 Model 2 display using TYPETERM DFHLU2E2:

```
TERMINAL(L2E2)      GROUP(DFHTERM)        TYPETERM(DFHLU2E2)
AUTINSTMODEL(ONLY)  AUTINSTNAME(DFHLU2E2)
```

SNA LU type 2 model 2 with extended data stream (Query). This definition matches the z/OS Communications Server-supplied LOGMODE SNX32702.

L2M2 SNA LU2 Model 2 display using TYPETERM DFHLU2M2:

```
TERMINAL(L2M2)      GROUP(DFHTERM)        TYPETERM(DFHLU2M2)
AUTINSTMODEL(ONLY)  AUTINSTNAME(DFHLU2M2)
```

This definition matches the z/OS Communications Server-supplied LOGMODE D4A32782.

L2E3 SNA LU2 Model 3 display using TYPETERM DFHLU2E3:

```
TERMINAL(L2E3)      GROUP(DFHTERM)        TYPETERM(DFHLU2E3)
AUTINSTMODEL(ONLY)  AUTINSTNAME(DFHLU2E3)
```

SNA LU type 2 model 3 with extended data stream (Query). This definition matches the z/OS Communications Server-supplied LOGMODE SNX32703.

L2M3 SNA LU2 Model 3 display using TYPETERM DFHLU2M3:

```
TERMINAL(L2M3)      GROUP(DFHTERM)        TYPETERM(DFHLU2M3)
AUTINSTMODEL(ONLY)  AUTINSTNAME(DFHLU2M3)
```

This definition matches the z/OS Communications Server-supplied LOGMODE D4A32783.

L2E4 SNA LU2 Model 4 display using TYPETERM DFHLU2E4:

```
TERMINAL(L2E4)      GROUP(DFHTERM)        TYPETERM(DFHLU2E4)
AUTINSTMODEL(ONLY)  AUTINSTNAME(DFHLU2E4)
```

SNA LU type 2 model 4 with extended data stream (Query). This definition matches the z/OS Communications Server-supplied LOGMODE SNX32704.

L2M4 SNA LU2 Model 4 display using TYPETERM DFHLU2M4:

```
TERMINAL(L2M4)      GROUP(DFHTERM)        TYPETERM(DFHLU2M4)
AUTINSTMODEL(ONLY)  AUTINSTNAME(DFHLU2M4)
```

This definition matches the z/OS Communications Server-supplied LOGMODE D4A32784.

L2E5 SNA LU2 Model 5 display using TYPETERM DFHLU2E5:

```
TERMINAL(L2E5)      GROUP(DFHTERM)        TYPETERM(DFHLU2E5)
AUTINSTMODEL(ONLY)  AUTINSTNAME(DFHLU2E5)
```

SNA LU type 2 model 5 with extended data stream (Query). This definition matches the z/OS Communications Server-supplied LOGMODE LSX32705.

L2M5 SNA LU2 Model 5 display using TYPETERM DFHLU2M5:

```
TERMINAL(L2M5)      GROUP(DFHTERM)        TYPETERM(DFHLU2M5)
AUTINSTMODEL(ONLY)  AUTINSTNAME(DFHLU2M5)
```

This definition matches the z/OS Communications Server-supplied LOGMODE D4A32785.

CBRF Default template terminal for use with the 3270 bridge

```
TERMINAL(CBRF)      GROUP(DFHTERM)        TYPETERM(DFHLU2)
NETNAME(CBRF)       REMOTESYSTEM(CBR)     REMOTENAME(CBRF)
```

PROFILE definitions in group DFHEP

The CICS-supplied CSD group DFHEP contains PROFILE definitions for event processing.

DFHECEPH

CICS uses this profile for the CEPH transaction (HTTP EP adapter) to manage timeouts set by the RTIMOUT parameter.

Here is the definition:

```
PROFILE(DFHECEPH)
GROUP(DFHEP)
SCRNSIZE(DEFAULT)
MSGJRNL(NO)
MSGINTEG(NO)
ONEWTE(NO)
DVSUPRT(ALL)
INBFMH(NO)
RAQ(NO)
LOGREC(NO)
NEPCLASS(000)
RTIMOUT(0005)
```

PROFILE definitions in group DFHISC

The CICS-supplied CSD group DFHISC contains PROFILE definitions for intersystem communication sessions.

DFHCICSF
CICS uses this profile for the session to the remote system or region when a CICS application program issues a function shipping request.

The definition is:

```
PROFILE(DFHCICSF)
GROUP(DFHISC)
SCRNSIZE(DEFAULT)
MSGJRNL(NO)
MSGINTEG(NO)
ONEWTE(NO)
DVSUPRT(ALL)
INBFMH(ALL)
RAQ(NO)
LOGREC(NO)
NEPCLASS(000)
```

DFHCICSI
CICS uses this profile for the session to the remote system or region when a CICS application program issues an IIOP request.

The definition is:

```
PROFILE(DFHCICSI)
DESCRIPTION(CICS IIOP profile for outbound method requests)
RTIMOUT(NO)
```

DFHCICSR
CICS uses this profile in transaction routing for communication between the user transaction (running in the application-owning region) and the interregion link or APPC link.

The definition is:

```
PROFILE(DFHCICSR)
GROUP(DFHISC)
SCRNSIZE(DEFAULT)
MSGJRNL(NO)
MSGINTEG(NO)
ONEWTE(NO)
DVSUPRT(ALL)
INBFMH(ALL)
RAQ(NO)
LOGREC(NO)
NEPCLASS(000)
```

DFHCICSS
CICS uses this profile in transaction routing for communication between the relay transaction (running in the terminal-owning region) and the interregion link or APPC link. You can specify a different profile by means of the TRPROF option on the TRANSACTION definition.

The definition is:

```
PROFILE(DFHCICSS)
GROUP(DFHISC)
SCRNSIZE(DEFAULT)
MSGJRNL(NO)
MSGINTEG(NO)
ONEWTE(NO)
DVSUPRT(ALL)
```

```
INBFMH(ALL)
RAQ(NO)
LOGREC(NO)
NEPCLASS(000)
```

PROFILE definitions in group DFHSTAND

The CICS-supplied CSD group DFHSTAND contains PROFILE definitions.

The CICS-supplied CSD group DFHSTAND contains the following PROFILE definitions:

DFHCICSA
This is the default profile for alternate facilities acquired by the application program ALLOCATE command. A different profile can be named explicitly on the ALLOCATE command.

The definition is:

```
PROFILE(DFHCICSA)
GROUP(DFHSTAND)
SCRNSIZE(DEFAULT)
MSGJRNL(NO)
MSGINTEG(NO)
ONEWTE(NO)
PROTECT(NO)
DVSUPRT(ALL)
INBFMH(ALL)
RAQ(NO)
LOGREC(NO)
NEPCLASS(000)
```

DFHCICSE
This is the error profile for principal facilities. CICS uses this profile to pass an error message to the principal facility when the required profile cannot be found.

The definition is:

```
PROFILE(DFHCICSE)
GROUP(DFHSTAND)
SCRNSIZE(DEFAULT)
MSGJRNL(NO)
MSGINTEG(NO)
ONEWTE(NO)
PROTECT(NO)
DVSUPRT(ALL)
INBFMH(NO)
RAQ(NO)
LOGREC(NO)
NEPCLASS(000)
```

DFHCICSP
This is the default profile for the page retrieval transaction CSPG. You can specify a different profile for a particular transaction by means of the PROFILE option on the TRANSACTION definition.

The definition is:

```
PROFILE(DFHCICSP)
GROUP(DFHSTAND)
SCRNSIZE(DEFAULT)
UCTRAN(YES)
MSGJRNL(NO)
MSGINTEG(NO)
ONEWTE(NO)
PROTECT(NO)
```

```
DVSUPRT(ALL)
INBFMH(NO)
RAQ(NO)
LOGREC(NO)
NEPCLASS(000)
```

DFHCICST

This is the default profile for principal facilities. You can specify a different profile for a particular transaction by means of the PROFILE option on the TRANSACTION definition.

The definition is:

```
PROFILE(DFHCICST)
GROUP(DFHSTAND)
SCRNSIZE(DEFAULT)
MSGJRNL(NO)
MSGINTEG(NO)
ONEWTE(NO)
PROTECT(NO)
DVSUPRT(ALL)
INBFMH(NO)
RAQ(NO)
LOGREC(NO)
NEPCLASS(000)
```

DFHCICSV

This is the profile for principal facilities, when the transaction supports only z/OS Communications Server devices.

The definition is:

```
PROFILE(DFHCICSV)
GROUP(DFHSTAND)
SCRNSIZE(DEFAULT)
MSGJRNL(NO)
MSGINTEG(NO)
ONEWTE(NO)
PROTECT(NO)
DVSUPRT(VTAM)
INBFMH(NO)
RAQ(NO)
LOGREC(NO)
NEPCLASS(000)
```

Note: VTAM is now z/OS Communications Server.

DFHPPF01

Profile DFHPPF01 is used during CICS initialization, for tasks that are attached before the CSD file definitions have been installed.

The definitions are:

```
PROFILE(DFHPPF01)
GROUP(DFHSTAND)
DESCRIPTION(VTAM-ONLY PROFILE)
SCRNSIZE(DEFAULT)
MSGJRNL(NO)
MSGINTEG(NO)
ONEWTE(NO)
PROTECT(NO)
DVSUPRT(VTAM)
INBFMH(NO)
RAQ(NO)
LOGREC(NO)
NEPCLASS(000)
```

DFHPPF02

Profile DFHPPF02 is used during CICS initialization, for tasks that are attached before the CSD file definitions have been installed.

The definitions are:

```
PROFILE(DFHPPF02)
GROUP(DFHSTAND)
DESCRIPTION(ALL-NULLS PROFILE)
SCRNSIZE(DEFAULT)
MSGJRNL(NO)
MSGINTEG(NO)
ONEWTE(NO)
PROTECT(NO)
DVSUPRT(ALL)
INBFMH(NO)
RAQ(NO)
LOGREC(NO)
NEPCLASS(000)
```

Model definitions in group DFHPGAIP

CICS supplies a number of model definitions in group DFHPGAIP to support program autoinstall.

DFHPGAPG

This is the default PROGRAM definition for program autoinstall.

The definition is:

```
PROGRAM(DFHPGAPG)  GROUP(DFHPGAIP)
DESCRIPTION(default program for program autoinstall)
                   RELOAD(NO)            RESIDENT(NO)
USAGE(NORMAL)      USELPACOPY(NO)        STATUS(ENABLED)
RSL(00)            CEDF(YES)             DATALOCATION(BELOW)
EXECKEY(USER)      EXECUTIONSET(FULLAPI)
```

DFHPGAMP

This is the default MAPSET definition for program autoinstall.

The definition is:

```
MAPSET(DFHPGAMP)  GROUP(DFHPGAIP)
DESCRIPTION(default mapset for program autoinstall)
RESIDENT(NO)       USAGE(NORMAL)
USELPACOPY(NO)     STATUS(ENABLED)
RSL(00)
```

DFHPGAPT

This is the default PARTITION definition for program autoinstall.

The definition is:

```
PARTITIONSET(DFHPGAPT)  GROUP(DFHPGAIP)
DESCRIPTION(default partitionset for program autoinstall)
RESIDENT(NO)       USAGE(NORMAL)
USELPACOPY(NO)     STATUS(ENABLED)
RSL(00)
```

TCPIPSERVICE definition in group DFH$SOT

The CICS-supplied CSD group DFH$SOT contains a TCPIPSERVICE definition.

ECI The definition is:

```
TCPIPSERVICE(ECI)  GROUP(DFH$SOT)
DESCRIPTION(ECI TCPIPSERVICE)
PROTOCOL(ECI)      ATTACHSEC(VERIFY)
BACKLOG(10)        PORTNUMBER(1435)
TRANSACTION(CIEP)  SSL(NO)
STATUS(OPEN)
```

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Trademarks

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Other CICS publications

The following publications contain further information about CICS, but are not provided as part of CICS Transaction Server for z/OS, Version 4 Release 2.

Designing and Programming CICS Applications, SR23-9692

CICS Application Migration Aid Guide, SC33-0768

CICS Family: API Structure, SC33-1007

CICS Family: Client/Server Programming, SC33-1435

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CICS Family: General Information, GC33-0155

CICS 4.1 Sample Applications Guide, SC33-1173

CICS/ESA 3.3 XRF Guide , SC33-0661

Other IBM publications

The following publications contain information about related IBM products.

ACF/TCAM books

ACF/TCAM Version 3 Application Programming, SC30-3233

Miscellaneous books

DATABASE 2 Version 2 Administration Guide, SC26-4374
z/OS Language Environment Programming Guide, SA22-7561
Resource Access Control Facility (RACF) Security Administrator's Guide, SC28-1340.

DPPX/Distributed Presentation Services Version 2: System Programming Guide, SC33-0117

Accessibility

Accessibility features help a user who has a physical disability, such as restricted mobility or limited vision, to use software products successfully.

You can perform most tasks required to set up, run, and maintain your CICS system in one of these ways:
- using a 3270 emulator logged on to CICS
- using a 3270 emulator logged on to TSO
- using a 3270 emulator as an MVS system console

IBM Personal Communications provides 3270 emulation with accessibility features for people with disabilities. You can use this product to provide the accessibility features you need in your CICS system.

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