OS/390

SMP/E Diagnosis Guide

SC28-1737-06

OS/390

SMP/E Diagnosis Guide

SC28-1737-06

Note!

Before using this information and the product it supports, be sure to read the general information under Chapter 5, “Notices” on page 33.

Seventh Edition, September 2000

This book replaces the previous edition, SC28-1737-05, which is now obsolete. Changes or additions to text and illustrations are indicated by a vertical line to the left of the change.

This edition applies to OS/390 V2R7 SMP/E, program number 5647-A01, and to all subsequent releases and modifications, unless otherwise indicated in new editions.

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About This Book

When to Use This Publication

Use this publication if you suspect a problem with OS/390 V2R7 SMP/E or need to report such a problem to the IBM Support Center. You should be familiar with SMP/E, as well as Multiple Virtual Storage (MVS), Virtual Storage Access Method (VSAM), Interactive System Productivity Facility (ISPF), Time Sharing Option Extensions (TSO/E), and system utility programs.

After reading this publication, you should be able to determine whether you can solve a suspected SMP/E problem. If you cannot solve the problem, you should be able to gather the information needed to report the problem to IBM.

How to Use This Publication

When you have a suspected SMP/E problem, refer to the following chapters in the order shown:

Chapter	Description
Chapter 1. “Is SMP/E the Problem?”	Describes how to check whether SMP/E is actually the cause of the problem.
Chapter 2. “Handling SMP/E Problems without Calling IBM”	Describes how to solve certain SMP/E problems without calling IBM.
Chapter 3. “Reporting SMP/E Problems”	Describes the procedures to follow when you report an SMP/E problem to IBM.
Chapter 4. “Collecting Documentation for SMP/E Problems”	Describes dumps, commands, and reports you can use to gather information about an SMP/E problem.

The book concludes with a glossary and index.

You will probably need to refer to Chapter 4, Collecting Documentation for SMP/E Problems while reading the other chapters.

Bibliography

This section tells you more about the SMP/E library, and additional publications you might find helpful.

The OS/390 V2R7 SMP/E publications are available in hardcopy and BookManager-viewable softcopy.

- Table 1 on page viii lists the OS/390 V2R7 SMP/E publications and briefly describes each one.
- Once OS/390 V2R7 SMP/E is generally available, softcopy versions of the OS/390 V2R7 SMP/E books will be available on the subsequent edition of the *IBM Online Library Omnibus Edition OS/390 Collection*, SK2T-6700.

Bibliography

Table 1. Publications for OS/390 V2R7 SMP/E

Title	Description
OS/390 SMP/E Diagnosis Guide, SC28-1737	Explains how to handle suspected SMP/E problems
OS/390 SMP/E Messages and Codes, SC28-1738	Explains SMP/E messages and return codes and the actions to take for each
OS/390 SMP/E User's Guide, SC28-1740	Describes how to use SMP/E to install programs and service. Also contains a primer section that introduces the basic principles needed for using SMP/E, without the expert-level details found in other SMP/E publications.
OS/390 SMP/E Commands, SC28-1805	Explains SMP/E commands and processing in detail
OS/390 SMP/E Reference, SC28-1806	Explains SMP/E modification control statements, data sets, exit routines, and API in detail and provides additional SMP/E reference material
MVS Packaging Rules, SC23-3695	Explains how to package programs for installation by SMP/E

Summary of Changes

Summary of Changes for SC28-1737-06

This section describes changes to SMP/E, as well as changes to the contents and organization of the SMP/E documentation.

Revision SC28-1737-06 (September 2000)

SMPPTS Spill Data Sets. If the required PTF for APAR IR42960 is installed, SMP/E RECEIVE processing can use SMPPTS spill data sets, if defined, to store SYSMODs when the primary SMPPTS data set is full. Up to 99 spill data sets, named SMPPTS1 through SMPPTS99, can be defined with DD statements or DDDEFs.

This manual contains various editorial and technical changes. Technical changes or additions to the text and illustrations are indicated by a vertical line to the left of the change.

OS/390 Version 2 Release 7 SMP/E (March 1999)

This section summarizes the changes for OS/390 Version 2 Release 7 SMP/E.

- **SMP/E Planning and Migration Assistant.** OS/390 V2R7 SMP/E provides a Planning and Migration Assistant to assist users in managing their existing system and planning to migrate to a new OS/390 system.
- **Pre-built Load Module Support.** OS/390 V2R7 SMP/E can add, replace, or delete pre-built load modules and program objects in PDS and PDSE data sets as complete entities in functions and PTFs. This can simplify shipment, because the individual parts making up a load module or program object would not have to be shipped. Additionally, shipping the executable ensures that the customer is running exactly what was tested, since additional parts provided in compiler libraries are built into the load module or program object.
- **Product Data.** OS/390 V2R7 SMP/E enables product developers and packagers to supply additional product data to be processed by SMP/E. This may consist of the product name (in text), the model, type, and feature description. This additional SMP/E information assists customers in easily obtaining an inventory of the software installed on their systems, provides an association of products and features with FMIDs, and enables the presentation of products in an easier to use format. Furthermore, the Planning and Migration Assistant provided with SMP/E uses this data to create reports that help customers to install or migrate to OS/390.
- **Reformatting of Data Elements.** OS/390 V2R7 SMP/E can install data elements during APPLY, ACCEPT, RESTORE, and GENERATE into the output data sets based on their physical attributes. For example, SMP/E now allows the installation of CLIST data elements into variable block target libraries.
- **Sequential Data Set Support.** OS/390 V2R7 SMP/E can now install data elements into sequential data sets.

- **SYSMOD Description.** OS/390 V2R7 SMP/E enables product developers and packagers to include additional descriptive information in the SYSMOD header MCS (that is, in a ++APAR, ++FUNCTION, ++PTF, or ++USERMOD statement).
- **Symbolic Link Support.** OS/390 V2R7 SMP/E adds support for symbolic links. This support is similar to the support SMP/E provides for hard links for hierarchical file system elements using the LINK operand on the hierarchical file system element MCS, and for aliases for load modules. Symbolic links can be associated with specific SMP/E-managed hierarchical file system files, enabling SMP/E to automatically establish and correctly maintain these symbolic links, in conjunction with the hierarchical file system copy utility and the Binder.

  Symbolic links allow a user to refer to a file by a more familiar name than might be possible through the use of the real file name or hard links to it. The use by packagers of the symbolic link support supplied by SMP/E, BPXCOPY, and the Binder can reduce the number of required pre-installation and post-installation jobs.
- **Improved Protection for Hierarchical File System Files.** OS/390 V2R7 SMP/E enables customers to use the OS/390 Unix System Service BPX.SUPERUSER security facility to protect files in the hierarchical file system from accidental erasure or alteration. Before manipulating files in the hierarchical file system, SMP/E temporarily switches the SMP/E user to superuser authority (UID=0) when manipulating files in the hierarchical file system and restores the user to the previous level of authority when the SMP/E updates are done. This means that the SMP/E user doesn't have to have UID=0 (superuser) authority all the time, which reduces the chance of such users accidentally erasing or damaging files in the hierarchical file system while performing non-SMP/E work. The SMP/E user must be defined to the security class BPX.SUPERUSER for this process to work properly.
- **Shell Script Support.** OS/390 V2R7 SMP/E enables the execution of UNIX shell scripts during SMP/E installation of code into the OS/390 UNIX Services environment. This support is a generic interface to enable a packager to deliver a shell script that can be executed during SMP/E installation, thus reducing the pre-install and post-install requirements of OS/390 UNIX Services application programs.
- **Sample Assembler Program for GIMAPI.** OS/390 V2R7 SMP/E now supplies a macro and sample application program for GIMAPI in assembler.

Revision of Softcopy Manual (June 1998)

This manual contains various editorial and technical changes. Technical changes or additions to the text and illustrations are indicated by a vertical line to the left of the change.

As part of the name change of OpenEdition to OS/390 UNIX System Services, occurrences of OS/390 OpenEdition have been changed to OS/390 UNIX System Services or its abbreviated name, OS/390 UNIX. OpenEdition may continue to appear in messages, panel text, and other code with OS/390 UNIX System Services.

OS/390 Version 2 Release 5 SMP/E (March 1998)

This section summarizes the changes for OS/390 Version 2 Release 5 SMP/E.

- **Client code installation.** OS/390 Version 2 Release 5 SMP/E provides facilities to simplify the installation of cooperative or client/server products (such as OS/2). This is done by means of a common SMP/E packaging structure, a common S/390 server repository for client components, and a server repository accessible from any client platform. These facilities would allow, for example, storing the client parts in a hierarchical file system (HFS) and thereby allowing them to be packaged and installed along with the host parts, rather than separately.
- **Global zone merge.** OS/390 Version 2 Release 5 SMP/E provides a method to merge information from one global zone into another global zone, which customers can use to reduce the number of global zones that they must manage. The merged information includes:
  - SYSMOD and HOLDDATA entries,
  - SYSMOD members in the SMPPTS data set,
  - OPTIONS, UTILITY, DDDEF, ZONESET, and FMIDSET entries
  - Global zone entry information, such as zone indexes, FMID list, and SRELs.

  This facility will be useful to customers who use ServerPac.
- **Library change interface.** OS/390 Version 2 Release 5 SMP/E provides a programming interface that can be used to obtain a synopsis of SMP/E APPLY and RESTORE processing at the library or member level. Customers can use this interface to propagate the libraries and members modified by SMP/E APPLY and RESTORE processing to other systems requiring the changes, thereby facilitating the integration of SMP/E-managed information in multisystem environments.
- **Improved load module build processing.** OS/390 Version 2 Release 5 SMP/E will no longer build a load module if SMP/E cannot include all of the load module's component modules that have been installed or are being installed. If such a load module can not be completely built, SMP/E terminates APPLY processing for all affected SYSMODs. In addition, OS/390 Version 2 Release 5 SMP/E reduces the likelihood of termination owing to incomplete load modules by expanding its search for the component modules to include copies of modules from within previously installed SYSMODs in the SMPPTS data set.
- **Load module return code.** OS/390 Version 2 Release 5 SMP/E allows product packagers to provide information in the JCLIN to identify the highest return code allowable for each load module. In addition, IBM will provide toleration PTFs for this function for prior releases of OS/390 and currently supported releases of SMP/E.
- **Report ERRSYSMODS with OS/390 Enhanced HOLDDATA.** OS/390 Version 2 Release 5 SMP/E enhances the Exception SYSMOD Report to include new IBM OS/390 Enhanced HOLDDATA that is provided in ++HOLD statements. The report has been reformatted so that it is ordered by FMID within each requested zone. (Previously, the report was ordered by SYSMOD within each zone.) A summary section has been placed at the end of the report.

The OS/390 Enhanced HOLDDATA allows the REPORT ERRSYSMODS command to handle held SYSMODs. Previously, a held, resolving SYSMOD was placed in the SMPPUNCH output, but was commented out. The customer had to rerun REPORT ERRSYSMODS command against the GLOBAL zone to determine if the held, resolving SYSMOD had an available resolving SYSMOD. REPORT ERRSYSMODS with OS/390 Enhanced HOLDDATA does this research for the customer and produces one SMPPUNCH output.

The enhanced REPORT ERRSYSMODS continues to support legacy HOLDDATA.

- **Performance enhancement.** OS/390 Version 2 Release 5 SMP/E provides for multitasking of link-edit operations during APPLY, ACCEPT, and RESTORE processing.
- **PTF compaction in the SMPPTS data set.** OS/390 Version 2 Release 5 SMP/E now compacts inline element data in SYSMODs for storage in the SMPPTS data set in order to reduce the storage requirements of the SMPPTS data set.
- **Enhanced RECEIVE command processing.** OS/390 Version 2 Release 5 SMP/E enables users to prevent the RECEIVE command from processing SYSMODs that are already applied or accepted. Users can specify this with the OPTIONS entry, on the RECEIVE command, or both. This enhancement reduces the need for the user to manually manage the SMPPTS with REJECT commands.
- **Reduced SMP/E message output.** OS/390 Version 2 Release 5 SMP/E has reduced the number of messages issued during APPLY, ACCEPT, and RESTORE processing for easier identification of potential problems. Also, the user may now specify that messages issued to SMPOUT be formatted to an 80 character width, instead of the previous 120 character width, to make the messages easier to view when displayed on a terminal screen.
- **S/390 Update Facility SPE.** OS/390 Version 2 Release 5 SMP/E, along with other System/390 products, provides a common tool across multiple platforms to help customers to maintain their systems with System/390 service facilities.
- **All entries and subentries support in GIMAPI.** For OS/390 Version 2 Release 5 SMP/E, an application program using the GIMAPI QUERY command may specify an asterisk (*) on entry and subentry parameters to retrieve the Consolidated Software Inventory (CSI) data for all entry types, all subentries, or both.
- **Version support in GIMAPI.** OS/390 Version 2 Release 5 SMP/E can supply to the user application program the version of GIMAPI being executed to retrieve information from the CSI. This allows the application program to determine whether information stored in the CSI is supported with the level of the QUERY program that is being executed.

Revision of Softcopy Manual (December 1997)

This manual contains various editorial and technical changes. Technical changes or additions to the text and illustrations are indicated by a vertical line to the left of the change.

OS/390 Version 2 Release 4 SMP/E (September 1997)

This section summarizes the changes for OS/390 Version 2 Release 4 SMP/E.

- **Enhanced Exception SYSMOD Report.** The enhanced Exception SYSMOD Report will be available as a small programming enhancement (SPE) for OS/390 Release 3. The enhanced Exception SYSMOD Report includes new IBM OS/390 Enhanced HOLDDATA that is provided in ++HOLD statements. The report has been reformatted so that it is ordered by FMID within each requested zone. (Previously, the report was ordered by SYSMOD within each zone.) A summary section has been placed at the end of the report. The enhanced REPORT ERRSYSMODS command continues to support legacy HOLDDATA.

  The REPORT ERRSYSMODS command has also been enhanced by this SPE to handle held SYSMODs. Previously, a held, resolving SYSMOD was placed in the SMPPUNCH output, but was commented out. The customer had to rerun REPORT ERRSYSMODS command against the GLOBAL zone to determine if the held, resolving SYSMOD had an available resolving SYSMOD. REPORT ERRSYSMODS now does this research for the customer and produces one SMPPUNCH output.

- **S/390 Update Facility.** The System/390 Update Facility, will be available as a small programming enhancement (SPE) for OS/390 Release 3. OS/390 SMP/E, along with other System/390 products, provides a common tool across multiple platforms to help customers to maintain their systems with System/390 service facilities.

OS/390 Release 3 SMP/E (March 1997)

This section summarizes the changes for OS/390 Release 3 SMP/E.

- **API for User Access to the CSI.** A programming interface is provided for read only access to SMP/E's consolidated software inventory (CSI) data. The data in the CSI can be used to further automate systems management tasks.

  A program called GIMAPI is used to invoke the API. The function can be called from different languages. Examples are provided for C/370 and PL/I.

  The following commands are used with the GIMAPI call:

  QUERY Request data from the SMP/E CSI and return it to the calling program.

  FREE Free storage allocated by invocations of the QUERY command.

- **Enhanced Cross-Zone Requisite Checking.** Cross-zone requisite checking is enhanced. Immediate feedback from the **APPLY**, **ACCEPT**, and **RESTORE** commands will assist you with verifying that cross-zone requisites are installed and satisfied.

  Optional parameters with these commands now provide you the flexibility to:

  – Override SMP/E's default method for determining which zones are checked for cross-zone requisites

  – Install unsatisfied cross-zone requisites into the set-to zone

  – Lessen the severity of a missing cross-zone requisite to a warning versus a terminating error

- **Enhanced Internal HOLD SYS Processing.** Analysis of internal HOLD information may be simplified when one SYSMOD supersedes another. Now, when a SYSMOD has ++HOLD information and it is superseded by another SYSMOD, the ++HOLD may be brought forward unchanged. The SYSMOD ID on the ++HOLD need not change to that of the superseding SYSMOD.

  Even if the SYSMOD ID on the ++HOLD is not the same as the containing SYSMOD, the ++HOLD is effective only against the SYSMOD that contains it. If the SYSMOD ID on the ++HOLD is not the same as the containing SYSMOD, SMP/E can determine if internal HOLDs are satisfied during APPLY and ACCEPT processing and thereby eliminate manual analysis.

  The following Query dialogs were updated:

  – GIMQIX99 (CSI QUERY-SYSMOD ENTRY-HOLDDATA)

    The ++HOLD statements displayed can have a SYSMOD ID that differs from the Entry Name field.

  – GIMQIT26 (CSI QUERY-SYSMOD ENTRY)

    The HOLD_SYS line on the display now includes the reason ID and the SYSMOD ID on the ++HOLD statement.

- **Enhanced ZONEEDIT Command.** The ZONEEDIT command is enhanced to provide a simplified method of changing path names. A PATH subentry is now included on the unconditional CHANGE statement of the ZONEEDIT DDDEF command.

  An example of when you might want to use the PATH subentry on the CHANGE statement is to modify path names of DDDEFs during the service process for OS/390 UNIX System Services.

- **Enhancements to the Binder Utility in DFSMS/MVS.** SMP/E provides support for enhancements to the binder utility in DFSMS/MVS. The enhancements to the binder include elimination of the LE/370 prelinker utility, and building dynamic load library (DLL) program objects. Here are some highlights of SMP/E's support:

  – New link-edit parameters are recognized on the LEPARM operand of the ++MOD MCS and in JCLIN used to define a load module. The new parameters are ALIASES, DYNAM, FILL, HOBSET, REUS(NONE|REFR|RENT|SERIAL), RMODE=SPLIT, and UPCASE(YES|NO). All of these new parameters can be specified in JCLIN and all except ALIASES and DYNAM can be specified on the LEPARM operand.

  – SMP/E supports the binder in dynamically building a definition side deck file for DLL program objects when those program objects are installed. The library to contain the definition side deck file is identified by a new side deck library (SIDEDECKLIB) subentry in the LMOD entry.

  – Load modules that use DLLs can now reference the definition side deck files associated with the DLLs. This is accomplished by including the definition side deck files during a link-edit operation. The LMOD entry will contain a new utility input (UTIN) subentry list to record definition side deck files to be included during a link-edit operation.

- **Enhanced Exception SYSMOD Report.** The enhanced Exception SYSMOD Report is available as a small programming enhancement (SPE) for OS/390 Release 3. The enhanced Exception SYSMOD Report includes new IBM

OS/390 Enhanced HOLDDATA that is provided in ++HOLD statements. The report has been reformatted so that it is ordered by FMID within each requested zone. (Previously, the report was ordered by SYSMOD within each zone.) A summary section has been placed at the end of the report. The enhanced REPORT ERRSYSMODS command continues to support legacy HOLDDATA.

The REPORT ERRSYSMODS command has also been enhanced by this SPE to handle held SYSMODs. Previously, a held, resolving SYSMOD was placed in the SMPPUNCH output, but was commented out. The customer had to rerun REPORT ERRSYSMODS command against the GLOBAL zone to determine if the held, resolving SYSMOD had an available resolving SYSMOD. REPORT ERRSYSMODS now does this research for the customer and produces one SMPPUNCH output.

- **S/390 Update Facility.** The System/390 Update Facility, is available as a small programming enhancement (SPE) for OS/390 Release 3. OS/390 SMP/E, along with other System/390 products, provides a common tool across multiple platforms to help customers to maintain their systems with System/390 service facilities.

OS/390 Release 2 SMP/E (September 1996)

This section summarizes the changes for OS/390 Release 2 SMP/E.

- **BUILDMCS Command.** The new BUILDMCS command provides customers with a more automated and less error prone process for copying products from one pair of target and distribution zones and libraries, to another pair of target and distribution zones and libraries. This command generates the MCS and JCLIN required to reinstall the specified FMIDs.

  The data element, ++HFS, ++JCLIN, ++MAC, ++MOD, and ++SRC MCS created by the BUILDMCS command contain a new FROMDS operand that specifies a data set name, to enable an element's distribution library to be used as input to SMPTLIB creation. Also specified on the FROMDS operand is a number used as the low-level qualifier of the name of the SMPTLIB data sets.

  The RECEIVE, APPLY, and ACCEPT commands are updated to use the data set name specified on the FROMDS operands of the MCS as input when creating the SMPTLIB data sets.

- **Bypassing System Holds for Specific SYSMODs.** For APPLY and ACCEPT processing, you can now bypass a particular system hold for specific SYSMODs, instead of for all SYSMODs held for that reason ID. For example, a number of SYSMODs might be held because they require you to take some required action before installing them. If you have completed the required action for some (but not all) of the held SYSMODs, you can request SMP/E to bypass that hold reason ID only for the SYSMODs you specify. All other SYSMODs affected by that reason ID remain held.

  The flexibility provided by this support increases your control over which held SYSMODs are installed. You are no longer forced to install either all of the SYSMODs held for a given system reason ID (including those you might not yet want to install), or none of the SYSMODs held for that reason ID (causing you to miss needed maintenance).

- **Changes to the SMP/E Dialogs.** You can now use the FIND primary command in the SMP/E dialogs. The FIND command makes it easier for you to

quickly locate a specified character string in the table display section of panels in the following dialogs:

  - SYSMOD Management
  - Query
  - Receive

  Panels that support the FIND command state that you can use the command. The help panels for these dialog panels explain how to use the FIND command.

- **Compatibility with previous SMP/E releases.** SYSMOD input (modification control statements) created by the BUILDMCS command cannot be processed by earlier releases of SMP/E, except for SMP/E Release 8.1 or OS/390 Release 1 SMP/E with the appropriate compatibility PTF installed.
- **FMIDSET Selection.** OS/390 Release 2 SMP/E provides additional granularity of FMIDSET specification on the SELECT operand of the APPLY, ACCEPT, RESTORE, and RECEIVE commands to allow you to install sets of FMIDs.
- **Removed SMP/E GIMOPCDE Member from PARMLIB.** The GIMOPCDE member, which SMP/E optionally uses to determine valid OPCODES during the scanning of JCLIN, has been removed from PARMLIB. Instead, a ready-to-use default set of OPCODE definitions is contained within OS/390 Release 2 SMP/E.

  You may optionally provide an SMPPARM data set, which may contain your own OPCODE member to override the defaults supplied with OS/390 Release 2 SMP/E. The user-provided OPCODE member is a text member that you store in a user-allocated PDS named SMPPARM. You are not required to allocate the SMPPARM data set, unless you want to supply your own OPCODE member. If you provide an OPCODE member, it is used instead of SMP/E's default set.

  SMP/E also provides a sample text member, named GIMOPCDE, that you can use as a starting point for creating your own OPCODE member.
- **Products Supported or Required by OS/390 Release 2 SMP/E.** Some of the products required or supported by SMP/E in the past have changed:
  - SMP/E no longer runs on MVS/370. MVS/XA is now the lowest level of MVS that SMP/E runs on. As a result, the software prerequisites for SMP/E have been raised to the MVS/XA-supported level of these products.
  - SMP/E requires higher levels of DFP, ISPF, ISPF/PDF, and TSO/E.
- **Receiving Relative File Data Sets Created from PDSEs.** When allocating a new SMPTLIB data set during RECEIVE processing, SMP/E now checks the format of the associated relative file (RELFILE) data set, then uses the appropriate data set type (LIBRARY or PDS) for the SMPTLIB data set. Here are some benefits of this change:
  - When packaging SYSMODs, you can now ship program objects in RELFILEs, because SMP/E can load RELFILEs that were created from PDSEs into SMPTLIB data sets that are PDSEs.
  - When receiving SYSMODs, you do not have to preallocate SMPTLIB data sets with the appropriate data set type, because SMP/E can allocate the SMPTLIB data set as PDS or LIBRARY, based on the format of the corresponding RELFILE data set.

- **Verifying Dates Used in SMP/E Processing.** To ensure that SMP/E can run successfully in the year 2000 and beyond, its processing for verifying dates has been changed.

OS/390 Release 1 SMP/E (March 1996)

This manual contains information formerly found in *SMP/E R8.1 Diagnosis Guide*, SC23-3130-02.

This manual contains various editorial and technical changes. Major changes or additions to text and illustrations are indicated by a vertical line to the left of the change.

Chapter 1. Is SMP/E the Problem?

OS/390 V2R7 SMP/E works with a variety of other programs. It calls system utilities and depends on virtual storage access method (VSAM) support for the consolidated software inventory data set (SMPCSI). The SMP/E dialogs run under time-sharing option (TSO) and Interactive System Productivity Facility (ISPF). As a result, what may appear to be an SMP/E problem may actually be caused by one of these other products, or there may be a problem with the installation procedure you are following or with a system modification (SYSMOD) you are trying to install.

Before you report the problem to IBM, try to determine whether SMP/E is the cause. Check the items in the following lists to see if something other than SMP/E might be the source of the problem. If your problem matches one of those items, follow the suggested steps. Otherwise, go to Chapter 2 to see if you have an SMP/E problem that you can correct.

Installation Problems

To avoid installation problems:

- For all SMP/E processing, allocate a real data set for the log data set (SMPLOG), not a dummy data set. This helps make sure the log data is not lost.
- Get all the necessary service.

  The recommended method for obtaining service is to use the MVS Custom-Built Product Delivery Offering (CBPDO). This is a software package for adding products or service to an existing MVS system or subsystem. A CBPDO includes service for all the programs that each feature supports and for which you are licensed under a single customer number. In addition, there are recommendations for what program temporary fix (PTF) service to install, including recommendations for PTFs in hold status, and preventive service planning (PSP) information about the products and service on the CBPDO tape.

  For more information on CBPDOs, see *OS/390 Planning for Installation*.

  If you are not using CBPDOs, process file 1 and file 4 of the available cumulative service (CUM) tapes and ESOs to get service and exception SYSMOD data.

  If you have not received the exception SYSMOD data for an uninstalled product, but you have received other ESO tapes containing service for the product, the ++HOLD information for the product may be out of sequence. To prevent this difficulty, you should process file 4 of the CUM tape first, even if you do not plan to install the new product immediately.

  If you have Information/Access, you can check a PSP file for the latest service and exception SYSMOD data. Otherwise, you can call the IBM Support Center for this information.

  For more information on how to process exception SYSMOD data, see the *OS/390 SMP/E User's Guide*.
- Follow the directions in the program directory for the product you are installing. If you have an installation package, such as the Custom-Built Product Delivery

Offering (CBPDO), follow the directions in the installation materials that come with it, such as the related installation materials (RIMs) for the CBPDO. An installation problem may be due to the installation procedure itself rather than SMP/E. In such cases, report the product or the installation package as the cause of the problem.

If you have a problem during installation:

- If there is no error in SMP/E processing but you need help or additional information about using SMP/E in installing a product, contact your systems programmer.
- If you are having difficulty installing a function SYSMOD, check the PSP file for additional information about installing the function. If this information is not enough, or if the PSP file states that the function is not constructed correctly, the problem may be in the function itself and not SMP/E. In such cases, report the function as the cause of the problem.
- Always check the Element Summary Report for uninstalled elements, even if a SYSMOD appears to have been installed without errors.

Messages and Return Codes

Look up all SMP/E warning messages and error return codes in the *OS/390 SMP/E Messages and Codes* manual, and follow the recommended procedures.

Performance Problems

If you have a performance problem:

- Check to see whether any programs that do a lot of I/O operations, such as Information Management System (IMS), were running when you noticed the degraded performance.
- Check to see whether you have installed any engineering changes or service to SMP/E or other products that may have degraded system performance.

For information about collecting documentation and reporting an SMP/E performance problem, see Chapter 4, Collecting Documentation for SMP/E Problems.

Utility Problems

If you have a problem when running a utility program under SMP/E:

- Check the utility output in the SYSPRINT data set and SMP/E messages in SMPOUT for indications of problems during utility processing. SMP/E writes a time, date, and sequence number stamp on the completion messages for copy, link-edit, superzap, and update processing. Since the same sequence number is included in the utility SYSPRINT output, it can be used as an index to more easily find the desired information in the SYSPRINT data set. Assembler messages have a time and date stamp you can use to find assembler output.

  Note: These completion messages appear only after APPLY, ACCEPT, and RESTORE processing.

- Check to see whether the associated UTILITY entry refers to the correct program and return code. Note that the RETURN CODE value in the LMOD entry overrides (for that load module) the value in the UTILITY entry. Check to see whether this LMOD RC value is appropriate for this utility progam.
- If you still are not sure whether SMP/E or the utility caused the error, run the job outside SMP/E, if possible, to see if the same problem occurs. Use the same libraries and either recreate the same job or run a similar utility job.

  For example, you may find that a link-edit job runs out of storage under SMP/E but not outside SMP/E. This is because storage for the link-edit originates in the region allocated for SMP/E. In this case, you need to allocate a larger region for SMP/E.

SMPCSI Problems

If you have a problem with the SMPCSI, do the following to make sure your CSI is at the right level:

- Initialize your CSI with the GIMZPOOL record shipped with a supported release of SMP/E. A CSI to be used with OS/390 V2R7 SMP/E must be initialized with the appropriate GIMZPOOL record.
- Run OS/390 V2R7 SMP/E against a CSI created by a supported release of SMP/E. If your CSI was created by an unsupported release of SMP/E, you may have to convert it to the current format, using the SMP/E CONVERT command. See the *SMP/E R8.1 Reference* manual for more information.
- Check to see whether the necessary VSAM service has been installed.
- Check to see whether there are any user modifications to VSAM, SMP/E, or the catalog manager that might have caused the problem.
- Check whether message GIM27901S has been issued. If it has, you may want to use the VPLFUNCT specified in this message on the DEBUG DUMPRPL command to request a dump of the request parameter list (RPL). For more information on the DEBUG DUMPRPL command, see the *OS/390 SMP/E Commands* manual.
- Check to see whether the system has encountered VSAM problems outside of SMP/E processing.
- If VSAM is having trouble accessing or storing the index part of the SMPCSI, you may want to use the following procedure to fix the index part of the data set:

  1. Make a backup copy of the current level of the SMPCSI on tape.
  2. Enter the following command for the SMPCSI to obtain the key information:

     LISTCAT CLUSTER ENTRY('*name***')**
  3. Use the access method services (AMS) REPRO command to copy the data part of the SMPCSI to a sequential data set.
  4. Sort the data by key using the SORT utility and the key information from the LISTCAT output. Eliminate any duplicate records.
  5. Delete the SMPCSI and allocate a new one. Do not prime it with GIMZPOOL.
  6. Use the REPRO command to copy the sorted data into the new SMPCSI.

Exception SYSMOD Problems

Sometimes SMP/E cannot install a SYSMOD because one of the SYSMOD's requisites is being held. You must handle that exception SYSMOD before SMP/E can install the other SYSMOD.

- If the SYSMOD is held for a SYSTEM reason ID, list the associated HOLDDATA entry to see what action must be taken to install the SYSMOD. If the action was taken before the PTF was installed, you can bypass the HOLD to install the PTF. Otherwise, perform the action specified in the HOLDDATA and then bypass the HOLD to install the PTF.
- If the SYSMOD is held for an ERROR reason ID, which is associated with a program error PTF (PE-PTF), check the ++HOLD comment and the authorized program analysis report (APAR) that describes the problem to see whether installing the SYSMOD will cause any problems.

  If possible, install the APAR or the fixing PTF along with the PE-PTF. This automatically releases the ERROR HOLD. If the fixing PTF is unavailable and you want to install the PE-PTF anyway, you can bypass the HOLD.

Notes:

1. Generally, when doing preventive service, you do not need to research PE-PTFs. These PTFs remain held until the fixing PTF is installed. When you install the CBPDO tape or ESO that contains the fixing PTF, SMP/E automatically installs the fixing PTF along with the PE-PTF.
2. When you are doing corrective service, if the PTF you need to install to fix your specific problem is a PE-PTF, research the APAR that describes the PE-PTF to see if installing the PE-PTF will introduce an acceptable problem to your system.
3. You may not always have to correct the problem before you install a PE-PTF. For example, a PE-PTF that contains a syntax error in a comment in the cover letter is generally safe to install.

For more information on processing exception SYSMODs, see the *OS/390 SMP/E User's Guide*.

Chapter 2. Handling SMP/E Problems without Calling IBM

This chapter describes some problems that you may be able to correct without calling IBM. For example, you may be able to:

- Analyze error conditions indicated by SMP/E messages, return codes, and LIST output
- Resolve problems with the SMP/E region size
- Resolve *x*37 abends for data sets that run out of space
- Resolve VSAM access problems
- Handle SMP/E abends
- Prevent SMP/E dialog problems

If the problem you are experiencing falls into one of these categories, read the appropriate section in this chapter and follow the suggested procedure. If your problem is not described here, or if the suggested procedure does not correct the problem, go to Chapter 3, which discusses reporting a problem to IBM.

Analyzing Errors

Many suspected SMP/E problems can be corrected by responding to SMP/E error messages. Therefore, when you get an SMP/E error message, refer to the *OS/390 SMP/E Messages and Codes* manual to find its explanation and the recommended response. If you receive a message (such as GIM35302E) containing an MVS error code, refer also to *OS/390 MVS Programming: Authorized Assembler Services Guide*, GC28-1763, to find an explanation of the error code and the recommended response.

If the recommended response does not correct the problem, follow these steps to determine the cause of the problem and the correct recovery methods:

1. Examine the return codes contained in the SMPOUT data set.

   Starting with the final code (the one returned by the failing job step), trace back through the data set to find the SMP/E command return codes that caused the job step return code. Remember, a single return code can be the product of multiple errors.

   The job step return code issued for SMP/E is the highest return code generated by all SMP/E commands in that step. The job step return codes are:

Return Code	Meaning
00	SMP/E processing ran successfully and without errors. The severity code in associated SMP/E messages is I.
04	SMP/E processing ran, but warning messages were issued. The severity code in associated SMP/E messages is W.

Return Code	Meaning
08	SMP/E processing ran, but processing errors occurred and processing stopped for at least one SYSMOD. The severity code in associated SMP/E messages is E. Check the reports produced to see which SYSMODs were not successfully processed.
12	SMP/E processing stopped for at least one SMP/E command. The severity code in associated SMP/E messages is S.
16	SMP/E processing stopped because of a severe error. The severity code in associated SMP/E messages is T.
20	SMP/E processing stopped because of an internal SMP/E error. For example, there may be an interface problem between SMP/E modules or a data error on the SMPCSI data set. The severity code in associated SMP/E messages is T.

For specific return codes for each of the SMP/E commands, see the *OS/390 SMP/E Messages and Codes* manual.

2. As you trace back through the return codes in SMPOUT, check for error and warning messages issued with the return codes. Use the information supplied by the messages to help you interpret the meaning of the return codes.
3. If an APPLY, ACCEPT, or RESTORE command completes with a return code greater than 4, check the Causer SYSMOD Summary Report to determine which SYSMOD caused the error.
4. Check to see whether you coded the RC operand on any SMP/E commands.

   The RC operand enables you to specify the maximum acceptable return codes from specified SMP/E commands in order to bypass normal SMP/E return code processing. If a specified command returns a code higher than the maximum specified in the RC operand, the command that contains the RC operand is not processed and issues a return code of 12.

   For example, if you specify RC(RECEIVE=04) on the APPLY command, and the previous RECEIVE command returns a code of 08, APPLY processing is not performed and the APPLY return code is 12.

   For further information about the RC operand, refer to the discussion of it under the description in each command in the *OS/390 SMP/E Commands* manual.
5. Check the SYSPRINT data set for information about the success or failure of the system utility programs invoked by SMP/E commands.
6. Use the LIST command to check the contents of the SMPLOG data set. If you need to check SYSMOD status but do not have the reports and messages that include it, use the LIST command as follows:

   - Enter **`LIST LOG`** to display the contents of the SMPLOG data set. This log is cumulative and should be examined for the impact of prior SMP/E runs on the current problem.

     For more details on the LIST command, see the *OS/390 SMP/E Commands* manual.

   - Enter **`LIST SYSMOD ERROR`** for the desired target zone to obtain the status of any SYSMODs that were applied or restored but may be in error. Check whether the ERROR indicator is set for APPLY or RESTORE processing.

- Enter **LIST SYSMOD ERROR** for the desired distribution zone to obtain the status of any SYSMODs that were accepted but may be in error.
- Enter **LIST SYSMOD** for the global zone to obtain the status of SYSMODs that were received.

Resolving Problems with the SMP/E Region Size

If an SMP/E message indicates that there is not enough storage for processing, do one or more of the following:

- Check if you have allocated enough storage for SMP/E. See the *OS/390 SMP/E Reference* manual for more information on calculating SMP/E storage requirements. If necessary, allocate a larger region size for SMP/E and run the job step again.
- Make sure you are using the OPTIONS entry containing the desired PEMAX value. For example, if you are doing an ACCEPT, the DLIBZONE entry on the SET command must name the OPTIONS entry you want to use.
- Decrease the number of SYSMODs being processed. For example, run the command again and limit the SYSMODs to a particular type, function modification identifier (FMID), or SOURCEID.
- Remove a command operand that uses extra storage (such as XREF on the LIST command), and process the command again.
- Decrease the PEMAX value in the OPTIONS entry being used. Remember, however, that you may not be able to process SYSMODs that depend on the larger PEMAX size.

Resolving Space Problems (x37 Abends)

This section suggests ways to:

- Prevent *x*37 abends
- Recover from *x*37 abends

Preventing x37 Abends

You can prevent data sets from running out of space by doing the following:

- Periodically list the volume tables of contents (VTOCs) of the target library and distribution library volumes, especially after doing a system generation or compressing the data sets. If a data set has a small amount of free space, reallocate a larger data set and copy the old data set into it. This will help prevent future space problems.

  For more information about the initial allocation of system and SMP/E data sets, see the program directory shipped with SMP/E.
- Make sure the OPTIONS entry being used contains a RETRYDDN list reflecting the data sets you may need to compress. When this list is specified, if any data set runs out of space during processing, SMP/E tries to recover from the error by compressing the data set. If retry processing does not reclaim sufficient space and input to the utility was batched (copy or link-edit utility only), SMP/E debatches the input and retries the utility for each member separately.

For detailed information on the RETRY operand, see the explanation of ACCEPT, APPLY, LINK, and RESTORE commands in the *OS/390 SMP/E Commands* manual. For guidelines on how to set up the desired retry processing, see the *OS/390 SMP/E User's Guide*.

- Compress the affected data sets by specifying the COMPRESS operand on the APPLY, ACCEPT, REJECT, or RESTORE command. The affected data sets will be compressed even if they have enough space for SMP/E processing.

  If you specify COMPRESS(ALL) whenever you install a product, you can avoid space problems.

  For detailed information on the COMPRESS operand, see the explanation of ACCEPT, APPLY, REJECT, and RESTORE commands in the *OS/390 SMP/E Commands* manual.

- If you use the NUCID operand on the APPLY command, ensure that the NUCLEUS data set is large enough to hold the number of copies of IEANUC0*n* that you create. Every time you issue the APPLY command for modifications that cause IEANUC01 to be link-edited again, an ALIAS entry for the nucleus load module (IEANUC0*n*) is stored if one of the following is the case:

  – You specify a new value for *n* in the NUCID(*n*) operand.
  – NUCID has been preset in the global zone OPTIONS entry.

  For example, if you enter **APPLY** and specify **NUCID(3)**, a directory entry in the current load module is stored as IEANUC03. If you enter **APPLY** and specify **NUCID(7)**, a directory entry in the current load module is stored as IEANUC07. The NUCLEUS data set must be large enough to store both load modules.

- If you use JCLIN to define your own modules assembled with your own macros to SMP/E, and the SYSIN data set to be assembled is large, you may want to include the assembler COPY statement as part of the assembly SYSIN. This enables you to obtain large amounts of data from SYSLIB at assembly time and reduces the size of the assembly data stored in the target zone.

  Note: If you use this approach, SMP/E checks the COPY statement, but not the copied data. Therefore, it does not determine whether any modules need to be reassembled because of changes in macros being processed.

For examples of adding new load modules and module entries to the target or distribution zone, see the *OS/390 SMP/E Commands* manual.

Recovering from x37 Abends

You can often recover from *x*37 abends by using the following methods:

- If an SMP/E command fails because there is not enough space, check if the COMPRESS operand is allowed and was specified for that command. If the COMPRESS operand is valid, and if it was not specified the last time, rerun the SMP/E command with COMPRESS.
- To obtain additional space in the SMPLOG data set, use one of the following methods:

  – Allocate a new SMPLOG data set and create a backup copy of the old SMPLOG data set, retaining it according to your usual recovery procedures.

  - Create a backup copy of the old SMPLOG, and retain it according to your usual recovery procedures. The next time you run SMP/E commands, specify DISP=OLD for SMPLOG. This overlays the contents of the old SMPLOG that you saved.

    You **must** specify DISP=MOD every time you run SMP/E, or you will continue to overlay the SMPLOG every time SMP/E commands are processed.

  Note: You can also allocate an alternative SMPLOG data set, SMPLOGA, to be used when the primary SMPLOG data set is full. See the *OS/390 SMP/E Reference* manual for more information.

- To obtain additional space for the target libraries or the distribution libraries, allocate a new, larger data set and copy the old data set that is out of space into the new data set.
- To obtain additional space for the SMPCSI data set, you can do one of the following:
  - Allocate a new, larger CSI and copy the old data set that is out of space into the new one. (You can use the AMS REPRO command to copy the old CSI into a new, larger CSI.)
  - Use the AMS ALTER ADDVOLUMES command to add another volume to the CSI.
  - Use the AMS IMPORT and EXPORT commands to move the old CSI to a new, larger CSI.

  Note: If the job fails again after you have taken steps to get more space, the reason could be that SMP/E updated or created CSI entries before processing stopped for the original abend. If this was the case:

  1. Check which element entries (including LMOD entries) were affected by the processing. The Element Summary report from your first attempt to run the job will help you with this step.
  2. Use UCLIN to undo changes to updated entries and to delete any entries that were created.
  3. Then rerun the job.

- To obtain additional space in the SMPMTS, SMPPTS, SMPSCDS, or SMPSTS data set, use one of the following methods:
  - Run the CLEANUP command to delete unnecessary entries from SMPMTS, SMPSTS, or SMPSCDS. You may need to do this when you apply SYSMODs after accepting them, or when you accept SYSMODs that were applied to a group of target libraries built from the same distribution library.
  - Run the ACCEPT command or the REJECT command for any SYSMODs that have not been accepted. On the next ACCEPT or REJECT command you process, specify the COMPRESS operand with a value of SMPMTS, SMPPTS, or SMPSTS. For ACCEPT processing, you must specify PURGE in the OPTIONS entry that is in effect.
  - If no SYSMODs are candidates for an ACCEPT or REJECT command, allocate a new, larger data set, and copy the old data set that is out of space into the new data set.

Resolving VSAM Access Problems

If SMP/E has difficulty accessing a VSAM data set, it issues message GIM27901S to tell you that a VSAM error has occurred. The message contains a VPLFUNCT value, which may be specified on the DEBUG DUMPRPL command to request a dump of the RPL control block. This dump will be written to the SMPDEBUG data set. (For more information on this command, see "When VSAM Errors Occur during Attempts to Access a CSI Data Set" on page 26 and the *OS/390 SMP/E Commands* manual.) You may also see many other messages, depending on the particular VSAM problem. Here are the steps you should follow to correct these problems:

1. Look up any messages you received in the *OS/390 SMP/E Messages and Codes* manual to see if there is any information that can help you correct the problem. Sometimes, the information in the messages may not be definitive enough to correct the problem. However, save any information you can find; it will be important if you call the IBM Support Center.
2. Use the AMS EXAMINE command to analyze errors in the index and data portion of the cluster.
3. If you obtained an RPL dump, review its contents.

   The RPL fields that you should check first are in the feedback word at offset X'0C' (the RPL function, the RPL return code, and the error code), as shown below:

   X'00' ID word
   X'04' Pointer to placeholder
   X'08' ECB information
   X'0C' Feedback word
   - **X'0C'** **Function** <===
   - **X'0D'** Feedback area
     - **X'0D'** **RPL return code** <===
     - **X'0E'** RPL condition
     - **X'0F'** **Error code** <===

4. If none of the above steps corrects the problem, call the IBM Support Center. They will help you request a dump of the RPL control block to obtain further information.

Handling SMP/E Abends

When SMP/E abends, the SMP/E extended subtask abend exit (ESTAE) routine receives control and does the following processing:

- Issues message GIM43201T to inform you that ESTAE processing is in effect.
- Performs completion processing for processed or partially processed SYSMODs, and issues completion messages.
- Marks SYSMODs that were in process when the abend occurred, but were not completed, with the ERROR status.
- Produces reports that would have been produced by the command being processed had the abend not occurred.
- Passes control to the supervisor for termination processing with no attempt to retry processing.

If you cannot determine the cause of the abend from the reports, the dump, or the LIST output, you can use the VSAM VERIFY command against the SMPCSI cluster to close the cluster and see if you receive any further VSAM error messages. This also helps prevent future problems with the SMPCSI. Then resubmit the job to see if it runs without abending.

If you still cannot correct the abend, contact the IBM Support Center. Chapter 3, Reporting SMP/E Problems, describes the information you should have available when you make the call.

Preventing Problems with the SMP/E Dialogs

You can avoid some problems with the SMP/E dialogs by following these suggestions:

- If you plan to browse or edit JCL created by the dialogs, either allow ISPF to allocate the ISPCTL1 and ISPCTL2 data sets, or allocate them yourself as real (non-virtual I/O) and cataloged.
- If you plan to use OPTIONS entries, use the Administration dialog to define them in the global zone before you specify them on other processing panels. You cannot dynamically create an OPTIONS entry in other SMP/E dialogs (such as the SYSMOD Management dialog) by entering its name on a dialog panel.

Chapter 3. Reporting SMP/E Problems

When you report a problem to IBM, you should provide information about your system and the problem you are experiencing. The service representative will use this information to see if your problem is already known to IBM and if a fix is available. You can expect a prompter problem resolution when you make this information readily available when you call.

Note: If you have Information/Access, you can check for yourself to see if a fix is available. Of course, you can still call IBM for additional help.

Information for All Failure Types

No matter what type of problem you are reporting, you should be ready to provide the IBM Support Center with information about it.

Note: To make sure that all the information you collect is for the same level of your system, you should obtain it by running a single job step. Otherwise, there could be discrepancies. For example, some information might reflect the state your system was in before certain SYSMODs were installed, and some might reflect the state it was in after they were installed.

Be prepared to give the following information to the IBM Support Center:

- Information about your system
  - Details such as the following:

Information about Your System

Product name	OS/390 V2R7 SMP/E.
Component ID	5647-A01.
Release	Version 2 Release 7.
CBPDO level	The ID of the most recent CBPDO tape you have installed.
PUT*xxxx* level	The identifier of the latest service level (PUT*xxxx*) you have installed.
SMP/E service level	See the report headings, output data sets, or SMP/E dialog options panel for the SMP/E service level, which will appear as SMP/E *nn.nn*. For example, SMP/E 27.*nn* is SMP/E for OS/390 V2R7 level *nn*.

  - Whether you recently installed products or service
  - Whether you have made any modifications to the SMP/E code
  - Whether you bypassed any SMP/E service
- Information about the problem:
  - The command being processed and all the operands specified
  - A list of messages issued, including the message ID and the complete message text, as found in the SMPOUT or SMPLOG data set

- The job entry subsystem (JES) job log and allocation messages for related JES messages
- Any reports that were produced
- LIST output from before and after command processing
- A description of what you think the problem is
- Whether you ran the job in error more than once with the same results
- Whether you have recently experienced any other unusual problems
- Failure keyword and associated documentation, as described in the next sections

Types of Failure Keywords

Failure keywords describe typical problems and can be used to search a database to determine whether your problem is known to IBM.

To determine the failure keyword for your SMP/E problem, read the list below and try to match the symptoms with one or more of those listed for a failure type. If you find a match, follow the procedure for that failure type, as described later in this chapter.

If you do not find a match, report the problem to the IBM Support Center with the information listed at the beginning of this chapter.

- **Abend (ABEND):** SMP/E or an SMP/E subtask has ended abnormally. For example:
  - Message GIM43201T indicates that SMP/E has abended. SMP/E stops running.
  - Message GIM4400*x* indicates that an SMP/E subtask has abended. SMP/E may keep running, but the SYSMOD it was processing fails.

  For information about reporting abends, see “Reporting Abends” on page 15.
- **Loop or Wait (LOOP, WAIT):** SMP/E seems to be looping uncontrollably or to have been suspended unexpectedly. For example, the same group of messages appears over and over.

  Note: SMP/E can appear to loop for a long time, depending on what it is doing and what system it is running on. This does not necessarily mean there is a problem.

  For information about reporting loops and waits, see “Reporting Loops and Waits” on page 17.
- **Message (MSG):** An SMP/E message indicates an error. For example:
  - An SMP/E message is the only symptom of a problem.
  - An SMP/E message is wrong, missing, or incorrectly formatted.
  - An SMP/E message does not adequately explain why it was issued.

  For information about reporting message problems, see “Reporting Message Problems” on page 18.
- **Incorrect Output (INCORROUT):** SMP/E output is missing or contains unexpected information. For example, the results of APPLY processing are

different from the results of APPLY CHECK processing for the same SYSMODs.

For information about reporting incorrect output, see “Reporting Incorrect Output” on page 19.

- **Performance (PERFM):** SMP/E command processing takes an unexpectedly long time.

  For information about reporting performance problems, see “Reporting Performance Problems” on page 19.

- **Documentation (DOC):** A programming problem appears to be caused by incorrect or missing information in an SMP/E manual. For example:
  - Documented descriptions of SMP/E processing do not match actual SMP/E processing.
  - Essential information for installing or using SMP/E is missing.
  - SMP/E information is so vague that it prevents the effective use of SMP/E.
  - Information in one SMP/E manual disagrees with information in another.

  For information about reporting documentation problems, see “Reporting Documentation Problems” on page 20.

  Note: Report a documentation problem only when it causes a programming error. For suggestions, comments, or questions about the documentation, use the Readers' Comment Form at the back of the publication.

- **Dialogs (DIALOG):** An SMP/E dialog does not work as expected.

  For information about reporting dialog problems, see “Reporting Dialog Problems” on page 20.

Reporting Abends

Recommended Documentation

Abend dump output containing the:

- Abend code
- Program status word (PSW) in effect at the time of the abend
- Name (ID) of the module that the PSW points to
- Address of the failing instruction
- Program interrupt code
- Save area trace
- Contents of the general registers at the time of the abend

Follow this procedure to gather the recommended documentation and report the problem.

Note: For help in locating items in the abend dump, see *OS/390 MVS Diagnosis: Tools and Service Aids*, SY28-1085.

1. Obtain the dump output.

   SMP/E produces various types of dumps, depending on the type of abend that has occurred and the dump data sets you have defined. For example:

- If you have defined SMPSNAP, a dump is taken before any cleanup operations are attempted. The dump reflects the state of SMP/E storage at the time of the abend.
- If you have defined SYSABEND or SYSUDUMP, a dump is taken by the ESTAE routine after the cleanup operations.
- If you have defined SMPSNAP and either SYSABEND or SYSUDUMP, dumps are taken before and after cleanup.

See Chapter 4, “Collecting Documentation for SMP/E Problems” on page 25 for additional information about abend dumps.

2. Find the abend code.

   The SMP/E abend messages show the abend code for the failure:

   - GIM43201T is issued when SMP/E abends.
   - GIM4400*x* is issued when the SMP/E subtask that interfaces with utilities abends.

3. Find the program interrupt code in the supervisor request block (SVRB).
4. Find the save area trace.
5. For a hex 0C1 or hex 0C4 abend:

   a. Find the PSW at the time of the abend.

      The location of the PSW in dump output depends on the type of dump taken. Generally, it is on the top of the first page of the dump. You can also find the PSW in the recovery termination manager 2 work area (RTM2WA).

      Note: For a SNAP dump, you do **not** want the PSW at the time the dump was taken (the first PSW), but rather the next one, which should be the load module PSW.

      Make sure the PSW is for the last SMP/E module that was in control, not for an ISPF or TSO module.

   b. Find the failing address.

      The PSW may contain the address of either the failing instruction or the next instruction that was to be processed when the abend occurred (this depends on the type of abend).

   c. Find the ID of the module that contains the address in the PSW. Then find its entry point address and the displacement within the module of the failing instruction.

      You can use the save area trace in a formatted dump to find the module ID, compile date, and entry point address.

      If you do not have a save area trace, follow these steps to find the information in the dump:

      1) To find the module ID, scan the dump output to find the address given in the PSW. Starting at the failing address, scan in descending address order along the right-hand side of the listing until you see an SMP/E module ID. The module ID will be printed in EBCDIC.

      2) To find the entry point address of the module, continue scanning the listing in descending address order and look for the 47F0F016

instruction. The address of this instruction is the module's entry point address.

3) To find the displacement of the failing instruction, subtract the entry point address from the address in the PSW.

d. Find the general registers.

You can find the general registers being used at the time of the abend in the save area trace, in RTM2WA, or in the abend SVRB register save area.

e. Determine which register has incorrect information.

Often the failing instruction refers to a general register with an incorrect address, or it points to an incorrect location (such as low-address storage). Use the principles-of-operation manual, the program interruption code from the PSW, and the general registers used in the failing instruction to determine (if possible) the register that contains or points to incorrect data.

You are now ready to report the problem. Go to step 7.

6. For other abend codes, see *OS/390 MVS System Codes*, GC28-1780.

A complete list of abend codes can be found in *OS/390 MVS System Codes*. Each code has an explanation of the documentation required, and problem-determination steps to follow. For example, abends may occur during the processing of supervisor call (SVC) instructions. Parameter lists and register contents passed to SVC routines are documented in *OS/390 MVS Diagnosis: Reference*. These manuals may suggest that you get additional information, such as a module name, a return code, a register containing incorrect information, or the name of a system control block containing incorrect parameters.

After making a complete check of these sources, you are ready to report the problem. Continue with the next step.

7. Report the problem to the IBM Support Center.

After asking for your account name, license number, and other customer identification, the service representative will ask for a brief description of the problem.

Reporting Loops and Waits

Recommended Documentation

- Dumps of the failure
- System generalized trace facility (GTF) trace output
- SMPLOG data

Follow this procedure to gather the recommended documentation and report the problem.

Attention: SMP/E can appear to loop for a long time, depending on what it is doing and what system it is running on. This does not necessarily indicate a problem. Do not cancel an SMP/E job unless you are sure it is looping or in a wait state. Canceling a job could damage the SMPCSI or the other data sets SMP/E uses. If the job seems to be looping or waiting too long, call your IBM Support Center to see if you should cancel it.

1. If you have an online I/O checker, such as resource measurement facility (RMF), use it to see if:
   - No I/O is being performed.
   - The same number of execute channel programs (EXCPs) is used continuously.
2. Check the SMPLOG to see if:
   - No messages are being printed.
   - The same message or group of messages is printed over and over.
3. Slip-trace the branch and link register commands (BALRs) in the system GTF trace, and look for repeated BALRs or repeated strings of BALRs between SMP/E modules.
4. If you have a backup copy of SMP/E, its data sets, and your system data sets, try to recreate the problem. Then, take several dumps of the failure to trace a consistent PSW instruction address or range of addresses. To take the dumps, use a SYSABEND DD card and cancel the job that contains the problem.
5. Report the problem to the IBM Support Center.

   After asking for your account name, license number, and other customer identification, the service representative will ask for a brief description of the problem.

Reporting Message Problems

Recommended Documentation

- Message number
- Issuing module and offset where issued
- Sequence of events leading to the problem
- SMPLOG output with the complete message text
- JES job log
- JES allocation messages

Follow this procedure to gather the recommended documentation and report the problem:

1. Look up the message in *OS/390 SMP/E Messages and Codes* and follow the recommended procedures.
2. Identify the issuing module.

   Rerun the job, if possible, and place the DEBUG MSGMODID command before the command that is causing the problem. This will prefix each SMP/E message with the name of the module that issued the message and the offset where the message was issued. See Chapter 4 for more information about the DEBUG MSGMODID command.
3. Check the JES job log for any messages associated with the SMP/E job.
4. Report the problem to the IBM Support Center.

   After asking for your account name, license number, and other customer identification, the service representative will ask for a brief description of the problem.

Reporting Incorrect Output

Recommended Documentation

- Documentation that led you to expect certain output
- Output that shows a discrepancy

Follow this procedure to gather the recommended documentation and report the problem:

1. Save a copy of the documentation that led you to expect certain output, such as output from APPLY CHECK or ACCEPT CHECK.
2. Rerun the job.
3. Save a copy of the output that shows any discrepancies.
4. Report the problem to the IBM Support Center.

   After asking for your account name, license number, and other customer identification, the service representative will ask for a brief description of the problem.

Reporting Performance Problems

Recommended Documentation

- Record of the unexpected performance
- Record of performance under another level of SMP/E

Follow this procedure to gather the recommended documentation and report the problem.

Note: You should measure and discuss performance in terms of EXCP counts and CPU time rather than wall-clock time, which can be affected by conditions outside the control of SMP/E.

1. Check to see whether any programs that do a lot of I/O operations, such as IMS, were running when you noticed the degraded performance.
2. Check to see whether you installed any engineering changes or service to SMP/E or other products that may have degraded system performance.
3. If the problem does not seem to be caused by another program or an engineering change, rerun the job under your current level of SMP/E.
4. Run the same job under a previous PTF level or release of SMP/E to demonstrate a difference in performance. Use the same environment, including the same operating system and DASD configuration.
5. If there is a difference in performance, report the problem to the IBM Support Center.

   After asking for your account name, license number, and other customer identification, the service representative will ask for a brief description of the problem.

Reporting Documentation Problems

Note: Report a documentation problem only when it causes a programming problem. For suggestions, comments, or questions about the documentation, use the Readers' Comment Form at the back of the publication.

Recommended Documentation

- Identification of the incorrect information
- Form number of the publication

Follow this procedure to gather the recommended documentation and report the problem:

1. Identify the incorrect information.

   Note the name of the command, operand, or procedure that is incorrectly explained in the documentation (for example, ACCEPT FORFMID).

2. Record the form number.

   Note the form number of the SMP/E publication that contains the error. Omit the dashes, but include the revision level. For example, you would report the form number of this publication as SC28173706.

3. Report the problem to the IBM Support Center.

   After asking for your account name, license number, and other customer identification, the service representative will ask for a brief description of the problem.

Reporting Dialog Problems

Recommended Documentation

- Job to be accomplished
- ISPF log data set
- Sequence of dialog panels
- Abend dump (if an abend occurred)
- Copy of the panel in error
- ISPF version and service level

Follow this procedure to gather the recommended documentation and report the problem:

1. Describe the job you intended to do with the dialogs.
2. Record the sequence of dialog panels. Enter **panelid** on the command line to have the ID of each panel appear in the upper left corner of the screen. Recreate the problem, and record the ID of each panel you go through and the data you enter on each panel. One way to get this information is to print each screen as you go through the dialog. This writes a copy of each screen to your LIST data set. You can then print that data set to obtain a record of the panels and what you entered. For an example of what to report, see the panel sequence in “Sample Dialog Problem” on page 21.

3. Print the panel on which the error occurred. Note the panel ID, and print that member from the appropriate data set. The name for the target library for the SMP/E dialog panels depends on which feature of SMP/E you are using:
   - English feature–GIM.SGIMPENU
   - Japanese feature–GIM.SGIMPJPN
4. Print the ISPF log data set. This log contains any dialog error messages that were issued. If you usually delete this data set, change the default to save the log. Then, recreate the problem and print the log.
5. If an abend occurred (such as 0C4), obtain an abend dump. Either add a SYSABEND DD statement to the logon procedure for the TSO session, or allocate a SYSABEND DD statement. Then recreate the problem. When the abend message appears, press ENTER to take the abend dump.
6. Report the problem to the IBM Support Center.

   After asking for your account name, license number, and other customer identification, the service representative will ask for a brief description of the problem.

Sample Dialog Problem

The following figures are a sample sequence of SMP/E dialog panels. Following the figures is the information you would report if a problem were to occur when you were using the panels.

When you invoke ISPF, there are modes of processing you can specify to obtain additional information that can help you diagnose dialog problems. For example, you could specify TEST when you call ISPF. If an error occurs while you are using a dialog panel, you can request the help panel. This panel will display the ID of the help panel, the ID of the preceding dialog or help panel, and the ID of the error message that was issued.

For more information on the ISPF TEST mode, see *OS/390 ISPF Dialog Developer's Guide and Reference*.

For the following figures, assume that you had wanted to display a particular SYSMOD entry in the global zone, but you did not get a panel showing the SYSMOD entry. When you recreate the problem, you would go through the following screens:

```
GIM@PRIM                  SMP/E PRIMARY OPTION MENU            SMP/E 27.nn
===> 3

    1  ADMINISTRATION     - Administer the SMPCSI contents
    2  SYSMOD MANAGEMENT  - Receive SYSMODs and HOLDDATA
                            and install SYSMODs
    3  QUERY              - Display SMPCSI information
    4  COMMAND GENERATION - Generate SMP/E commands
    5  RECEIVE            - Receive SYSMODs, HOLDDATA and
                            support information
    6  MIGRATION ASSISTANT- Generate Planning and Migration Reports
    D  DESCRIBE           - An overview of the dialogs
    T  TUTORIAL           - Details on using the dialogs

Specify the name of the CSI that contains the global zone:
   SMPCSI DATA SET   ===> 'DESCTEST.VSAM.CSI'
(Leave blank for a list of SMPCSI data set names.)

Specify YES to have DD statements for SYSOUT and temporary
data sets generated. Specify NO, to use DDDEFs.
   Generate DD statements   ===> NO

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LICENSED MATERIAL - PROGRAM PROPERTY OF IBM
```

Figure 1. SMP/E Primary Option Menu

```
GIMQUPO                       QUERY SELECTION MENU
===> 1

   1  CSI QUERY           - Display SMPCSI entries
   2  CROSS-ZONE QUERY    - Display status of an entry in
                            all zones
   3  SOURCEID QUERY      - Display SOURCEIDs for specified zone


   D  DESCRIBE            - Overview of using QUERY

   T  TUTORIAL            - Information on using QUERY

To return to the SMP/E primary option menu, enter  END .


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```

Figure 2. Query Selection Menu

```
GIMQU1PO                          CSI QUERY
===>

Specify the zone, entry type, and name to be queried:

      ZONE NAME      ===> global       Name of the zone to be queried.
                                       To display a list of all zones,
                                       leave blank

      ENTRY TYPE     ===> sysmod       Entry type to be queried.
                                       To display a list of all valid
                                       entry types, leave ENTRY TYPE
                                       and ENTRY NAME blank

      ENTRY NAME     ===>              Entry name to be queried.
                                       To display a list of all entries
                                       for the selected zone and entry
                                       type, leave blank


To return to the Query selection menu, enter  END .
```

Figure 3. CSI Query Panel

```
GIMQUSEA               CSI QUERY - SELECT ENTRY
===>                                                      SCROLL ===>

 Select one entry to query from global zone global  :

 S   NAME         ACTION
 s   F000000
     P000001
     P000002
```

Figure 4. CSI Query–Select Entry Panel

This is the information you would report for this panel sequence:

- **Job to be accomplished:**

  Display SYSMOD entry F000000 in the global zone.

- **Sequence of dialog panels and data entered:**

Panel	Data Entered
GIM@PRIM	Command line: **3** to select QUERY SMPCSI DATA SET: **'DESCTEST.VSAM.CSI'** Generate DD statements: left as **NO**
GIMQUPO	Command line: **1** to select CSI QUERY

GIMQU1PO

ZONE NAME: **global**
ENTRY TYPE: **sysmod**

GIMQUSEA Line command: **s** to select SYSMOD entry F000000.

- **Problem:**

  Panel GIMQIT26 was not displayed after SYSMOD entry F000000 was selected from the global zone.

Chapter 4. Collecting Documentation for SMP/E Problems

This chapter describes SMP/E dumps, commands, and reports that provide helpful diagnostic information.

Obtaining Dumps When Abends Occur

If an abend occurs while you are processing a command, define an SMPSNAP data set and rerun the command to get a dump. A diagnostic dump of SMP/E storage is automatically written to the SMPSNAP data set when:

- An unexpected VSAM error occurs (dump ID 083).

  SMP/E issues message GIM443*xx* or GIM442*xx* (or both) to describe the condition that caused the dump.

- A nonrecoverable SMP/E error occurs (dump ID 084).

  This dump is made upon entry to the SMP/E ESTAE routine for nonrecoverable abends. In addition to the SMPSNAP data set, you may also define a SYSABEND or SYSUDUMP data set.

  – If SMPSNAP was defined, a dump is taken before any cleanup operations are attempted. This dump reflects the state of SMP/E storage at the time of the abend.

  – If SYSABEND or SYSUDUMP was defined, a dump is taken after the cleanup operations by the ESTAE routine.

  – If SMPSNAP and either SYSABEND or SYSUDUMP were defined, dumps are taken before and after cleanup.

If an error occurs while SMP/E is trying to access a VSAM data set, message GIM27901S informs you that a VSAM error has occurred. The message contains a VPLFUNCT value, which may be specified on the DEBUG DUMPRPL command to request a dump of the VSAM RPL control block. You may also see many other messages; look these up in the *OS/390 SMP/E Messages and Codes* manual to see if you can correct the problem.

If you cannot correct the problem after checking the messages you received from running the job, call the IBM Support Center. They will help you obtain a dump of the RPL control block, which will provide them with further information.

Using the DEBUG Command

The DEBUG command helps you to collect diagnostic information. If you are experiencing a problem with an SMP/E command, the IBM Support Center may ask you to use the SMP/E DEBUG command to gather more information about the problem. The DEBUG command is used with other SMP/E commands to:

- Obtain dumps of SMP/E storage
- Obtain dumps of VSAM RPL control blocks
- Trace the source of SMP/E messages

These uses of the DEBUG command are described later in this chapter.

Obtaining DEBUG Dumps

Since most SMP/E problems are not serious enough to cause abends, you do not always have an abend dump to help you find the source of the problem. To obtain this information, you can use the DEBUG command to request dumps of SMP/E control blocks, storage, and work areas. There are several types of dumps you can get, depending on whether you want SMP/E to take the dump:

- When specific messages are issued
- When VSAM errors occur during an attempt to access a CSI data set
- At specific points in SMP/E processing

When Specific Messages Are Issued

SMP/E storage and work areas can be dumped whenever specific SMP/E messages are issued. To obtain this dump, use the DEBUG DUMPMSG and DEBUG DUMPOFF DUMPMSG commands with the command where the problem is occurring. For the dump output, you must define the SMPSNAP data set with either a DD statement or a DDDEF entry.

- To request a dump of SMP/E storage and work areas, enter:

  DEBUG DUMPMSG(*msg-id***)[,(***msg-id***)...] .**

  msg-id
  is the first 8 characters of an SMP/E message ID (such as GIM62801). You must specify at least one message ID.

- To stop these dumps, enter:

  DEBUG DUMPOFF DUMPMSG.

  DUMPOFF DUMPMSG
  stops dumps for all messages that were specified on a previous DEBUG DUMPMSG command. You cannot stop dumps for a particular message ID.

  Note: DEBUG DUMPOFF without the DUMPMSG operand stops **all** DEBUG dumps, including those requested with DEBUG DUMPMSG and those requested with DEBUG DUMPON and DEBUG DUMPRPL, which are also described in this chapter. Use this command only if you want to stop **all** DEBUG dumping.

For more information on the DEBUG command, see the *OS/390 SMP/E Commands* manual.

When VSAM Errors Occur during Attempts to Access a CSI Data Set

VSAM RPL control blocks can be dumped when an error occurs during an attempt to access a CSI data set. This RPL dump can be used to analyze the cause of the error.

Note: Because VPLFUNCT values refer to types of internal SMP/E processing, they can be used only in conjunction with the IBM Support Center and are not described in this publication.

To obtain this dump, use the DEBUG DUMPRPL and DEBUG DUMPOFF commands. For the dump output, you must define the SMPDEBUG data set with either a DD statement or a DDDEF entry.

- To request a dump of the VSAM RPL control block, enter the following command after the SET command and before the command experiencing the error:

  DEBUG DUMPRPL(*vplfunct***[,***vplfunct***]...) .**

  vplfunct
  is a VPLFUNCT value supplied by IBM.

  Note: You can combine VPLFUNCT values and dump points on the same DEBUG DUMPOFF command.

- To stop specific dumps, enter the following command after the command experiencing the error:

  DEBUG DUMPOFF(*vplfunct***[,***vplfunct***]...) .**

  vplfunct
  is a VPLFUNCT value specified on a previous DEBUG DUMPRPL command.

- To stop all DEBUG dumps, enter the following command after the command experiencing the error:

  DEBUG DUMPOFF .

  Note: This stops **all** DEBUG dumps, including those requested with DEBUG DUMPMSG, which is described in "When Specific Messages Are Issued" on page 26. Use this command only if you want to stop **all** DEBUG dumping.

If you specify DUMPON or DUMPRPL and DUMPOFF on the same DEBUG command, these operands are processed in the order in which they occur. If you specify the same dump ID on both operands, the last specification is used.

The DEBUG commands cause an RPL dump to be written to the SMPDEBUG data set.

The RPL fields that you should check first are in the feedback word at offset X'0C' (the RPL function, the RPL return code, and the error code), as shown below:

X'00' ID word
X'04' Pointer to placeholder
X'08' ECB information
X'0C' Feedback word
- **X'0C'** **Function** <===
- **X'0D'** Feedback area
  - **X'0D'** **RPL return code** <===
  - **X'0E'** RPL condition
  - **X'0F'** **Error code** <===

For more information on the DEBUG command, see the *OS/390 SMP/E Commands* manual.

At a Specific Point in SMP/E Processing

SMP/E control blocks and data areas can be dumped and formatted for various dump points within SMP/E.

Note: Because the dump points correspond to specific areas of SMP/E code, they can be used only in conjunction with the IBM Support Center and are not described in this publication.

To obtain this dump, use the DEBUG DUMPON and DEBUG DUMPOFF commands with the command in which the problem is occurring. You can request a formatted dump and give it a title, or you can request a SNAP dump without a title. For a formatted dump, you must define the SMPDEBUG data set with either a DD statement or a DDDEF entry. For a SNAP dump, you must define the SMPSNAP data set with either a DD statement or a DDDEF entry.

There are various ways to start and stop these dumps, depending on which dump you are interested in:

- To request a formatted dump, enter:

  DEBUG DUMPON((*dump-id***[,***dump-title***])[,(***dump-id***[,***dump-title***])...]).**

  dump-id
  is the name of the dump point provided by IBM. You must specify at least one dump point.

  dump-title
  is an optional header page title that you can give a formatted dump. The dump title may have up to 100 characters. If it contains parentheses, right and left parentheses must be in matched pairs.

- To request a SNAP dump, enter:

  DEBUG DUMPON((*dump-id***)[,(***dump-id***])...]) SNAP .**

  dump-id
  is the name of the dump point provided by IBM. You must specify at least one dump point.

  Note: You cannot specify a dump title for a SNAP dump.

- To stop specific dumps, enter:

  DEBUG DUMPOFF(*dump-id***[,***dump-id***]...) .**

  dump-id
  is the name of a dump point that was specified on a previous DEBUG DUMPON command.

  Note: You can combine dump points and VPLFUNCT values on the same DEBUG DUMPOFF command.

- To stop all DEBUG dumps, enter:

  DEBUG DUMPOFF .

  Note: This stops **all** DEBUG dumps, including those requested with DEBUG DUMPMSG, which is also described in this chapter. Use this command only if you want to stop **all** DEBUG dumping.

If you specify DUMPON or DUMPRPL and DUMPOFF on the same DEBUG command, these operands are processed in the order in which they occur. If you specify the same dump ID on both operands, the last specification is used.

For more information on the DEBUG command, see the *OS/390 SMP/E Commands* manual.

Tracing SMP/E Messages

By use of the DEBUG command, you can determine which module issued a particular message and the offset in that module in which the message was issued.

- To trace the source of SMP/E messages, enter:

  ```
  DEBUG MSGMODID(ON) .
  ```

  This prefixes all SMP/E messages with the following string:

  @*module*+X'*offset*'

  module
  is the name of the SMP/E module (without the GIM prefix) that issued the message.

  offset
  is the hexadecimal offset into the module where the message was issued.

- To stop SMP/E message tracing, enter:

  ```
  DEBUG MSGMODID(OFF) .
  ```

  Messages are no longer prefixed with the name and offset of the module.

Using the SMP/E Reports

SMP/E produces a variety of reports that describe the results of the commands it processed. Following is a list of these reports, along with a brief description of each. For a complete description and an example of each report, see *OS/390 SMP/E Commands*.

Note: If you get only the File Allocation Report when a function SYSMOD is processed, processing failed before SMP/E called any utilities.

- **BUILDMCS Entry Summary Report.** This report, produced by the BUILDMCS command, summarizes the processing done for every eligible entry. It lists the entries alphabetically by type and, within types, alphabetically by name.
- **BUILDMCS Function Summary Report.** This report, produced by the BUILDMCS command, summarizes the processing done for every FMID specified on the BUILDMCS command. It lists the functions alphabetically by base function, and dependent functions are listed alphabetically after its base function.
- **CALLLIBS Summary Report.** This report is produced by the REPORT CALLLIBS command. It provides information about load modules whose LMOD entries contain a CALLLIBS subentry list.
- **Causer SYSMOD Summary Report.** This report is produced when errors occur during the processing of APPLY, ACCEPT, and RESTORE commands. It

contains a list of causer SYSMODs and helpful information about the errors that caused the SYSMODs to fail.

- **CLEANUP Summary Report.** This report, produced at the completion of CLEANUP processing, lists the elements or aliases that were deleted and the ddnames of the data sets they were deleted from.
- **Cross-Zone Requisite SYSMOD Report.** This report, produced when you execute the ACCEPT, APPLY, or REPORT command, lists the SYSMODs that must be installed in a zone as a result of installing SYSMODs in another zone.
- **Cross-Zone Summary Report.** This report, produced during APPLY and RESTORE processing, summarizes the cross-zone work that has been done and the cross-zone work that has not been done and why. The cross-zone work resulting from renamed LMODs is summarized in the Move/Rename/Delete report.
- **Deleted SYSMOD Report.** This report is produced at the completion of APPLY and ACCEPT processing, but only when a SYSMOD with the DELETE operand on its ++VER MCS is processed. It shows the function SYSMODs that have been deleted, and the service SYSMODs that apply to those functions.
- **Element Summary Report.** This report, produced at the completion of APPLY, ACCEPT, and RESTORE processing, describes the status of the libraries that have been updated for each module, macro, or source module.
- **Exception SYSMOD Report.** This report is produced at the completion of REPORT ERRSYSMODS processing when the checking of exception SYSMODs has been completed and HOLDERROR reason IDs are not resolved for SYSMODs installed in the specified zone. The report describes the exception SYSMODs previously installed, the HOLDERROR reason IDs that have made them exception SYSMODs, the resolving SYSMODs received but not yet installed, and the ++HOLD statements for the HOLDERROR reason IDs.
- **File Allocation Report.** This report, produced at the completion of each SMP/E command (except SET, RESETRC, and DEBUG), identifies all the DD statements used during the command, tells how each DD statement was obtained, and gives significant information about each DD statement.
- **GENERATE Summary Report.** This report, produced during GENERATE processing, summarizes the jobs that have been created.
- **GZONEMERGE Report.** This report, produced during GZONEMERGE processing, shows the entries that were merged.
- **JCLIN Cross-Reference Report.** This report, produced at the completion of JCLIN processing, lists each module, macro, LMOD, SRC, and DLIB, and the pages in the JCLIN Summary Report that each appears on.
- **JCLIN Summary Report.** This report, produced during JCLIN processing, lists the changed, added, and deleted entries for the CSI, and the EXEC statements that have been ignored because the program or procedure was not recognized. No error return codes are set when EXEC statements are ignored.
- **LIST Summary Report.** This report, produced during LIST processing, summarizes which entries were or were not found in the set-to zone.
- **MOVE/RENAME/DELETE Report.** This report is produced during the processing of a SYSMOD that contains ++MOVE, ++RENAME, or ++DELETE

modification control statements. The report lists the elements and load modules that have been moved, renamed, or deleted.

- **RECEIVE Exception SYSMOD Data Report.** This report, produced at the completion of RECEIVE processing, lists the ++HOLD and ++RELEASE MCS statements processed.
- **RECEIVE Summary Report.** This report, produced at the completion of RECEIVE processing, lists the SYSMODs processed from the SMPPTFIN data set.
- **REJECT Summary Report.** This report, produced while the REJECT command is processing, summarizes the successful or unsuccessful deletions of SYSMODs and FMIDs. Also, if SMP/E could not reject a SYSMOD, the report explains why not.
- **SOURCEID Report.** This report, produced for REPORT SOURCEID processing, summarizes the SOURCEIDs found in the specified zones. A separate report is written for each zone specified on the REPORT SOURCEID command.
- **SYSMOD Comparison Report.** This report, produced for REPORT SYSMODS processing, summarize the SYSMODs found in the input zone but not in the comparison zone. If no such SYSMODs are found in the input zone, the SYSMOD Comparison Report states `THERE WERE NO SYSMODS TO REPORT`.
- **SYSMOD Regression Report.** This report is produced at the completion of APPLY and ACCEPT processing, but only when **`BYPASS(ID)`** is specified and at least one element is regressed. It summarizes the elements that were regressed when the **`BYPASS(ID)`** operand was specified.
- **SYSMOD Status Report.** This report, produced at the completion of APPLY, ACCEPT, and RESTORE processing, summarizes the processing that has occurred for every eligible SYSMOD.
- **UNLOAD Summary Report.** This report, produced during UNLOAD processing, summarizes which entries were found in the set-to zone and which entries were not.
- **ZONEEDIT Summary Report.** This report, produced at the completion of ZONEEDIT processing, lists all the DDDEF and UTILITY entries that have been changed.
- **ZONEMERGE Report.** This report, produced while the ZONEMERGE command is processing, shows whether or not each merge (or copy) entry was successful.

Chapter 5. Notices

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Glossary

This glossary defines technical terms and abbreviations used in OS/390 SMP/E documentation. If you do not find the term you are looking for, refer to the index of the appropriate SMP/E manual or view *IBM Dictionary of Computing*, located at:
http://www.ibm.com/networking/nsg/nsgmain.htm

Sequence of Entries: For clarity and consistency of style, this glossary arranges the entries alphabetically on a letter-by-letter basis. In other words, only the letters of the alphabet are used to determine sequence; special characters and spaces between words are ignored.

Organization of Entries: Each entry consists of a single-word or multiple-word term or the abbreviation or acronym for a term, followed by a commentary. A commentary includes one or more items (definitions or references) and is organized as follows:

1. An item number, if the commentary contains two or more items.
2. A usage label, indicating the area of application of the term, for example, “In programming,” or “In SMP/E.” Absence of a usage label implies that the term is generally applicable to SMP/E, to IBM, or to data processing.
3. A descriptive phrase, stating the basic meaning of the term. The descriptive phrase is assumed to be preceded by “the term is defined as ...” The part of speech being defined is indicated by the opening words of the descriptive phrase: “To ...” indicates a verb, and “Pertaining to ...” indicates a modifier. Any other wording indicates a noun or noun phrase.
4. Annotative sentences, providing additional or explanatory information.
5. References, directing the reader to other entries or items in the dictionary.

References: The following cross-references are used in this glossary:

Contrast with. This refers to a term that has an opposed or substantively different meaning.
Synonym for. This indicates that the term has the same meaning as a preferred term, which is defined in its proper place in the glossary.
Synonymous with. This is a backward reference from a defined term to all other terms that have the same meaning.
See. This refers you to multiple-word terms that have the same last word.
See also. This refers the reader to related terms that have a related, but not synonymous, meaning.
Deprecated term for or **Deprecated abbreviation for**. This indicates that the term or abbreviation should not be used. It refers to a preferred term, which is defined in its proper place in the glossary.

Selection of Terms: A term is a word or group of words to be defined. In this glossary, the singular form of the noun and the infinitive form of the verb are the terms most often selected to be defined. If the term may be abbreviated, the abbreviation is given in parentheses immediately following the term. The abbreviation is also defined in its proper place in the glossary.

A

ACCEPT. The SMP/E command used to install SYSMODs in the distribution libraries.

accept. In SMP/E, to install SYSMODs in the distribution libraries. This is done with the ACCEPT command.

accepted SYSMOD. A SYSMOD that has been successfully installed by the SMP/E ACCEPT command. Accepted SYSMODs do not have the ERROR flag set and are found as SYSMOD entries in the distribution zone.

Access method services (AMS). The system utility program used to support VSAM data sets.

AMS. Access method services.

APAR. Authorized program analysis report.

APAR fix. A temporary correction of a defect in an IBM system control program or licensed program that affects a specific user. An APAR fix is usually replaced later by a permanent correction called a PTF. APAR fixes are identified to SMP/E by the ++APAR statement.

applied SYSMOD. A SYSMOD that has been successfully processed by the SMP/E APPLY command. Applied SYSMODs do not have the ERROR flag set and are found as SYSMOD entries in the target zone.

APPLY. The SMP/E command used to install SYSMODs in the target libraries.

apply. In SMP/E, to install SYSMODs in the target libraries. This is done with the APPLY command.

ASSEM entry. An SMP/E entry containing assembler statements that can be assembled to create an object module.

authorized program analysis report (APAR). A report of a problem caused by a suspected defect in a current unaltered release of a program. The correction is called an APAR fix.

B

BACKUP entries. A collection of SMP/E target zone entries that are copied into the SMPSCDS data set during APPLY processing before they are updated by inline JCLIN, a ++MOVE MCS, or a ++RENAME MCS, or before they are deleted by an element MCS with the DELETE operand.

BACKUP entries consist of:

- A SYSMOD entry indicating what entries have been added, deleted, or updated
- ASSEM entries for updated target zone ASSEM entries
- LMOD entries for updated target zone LMOD entries
- MAC entries for updated or deleted target zone MAC entries
- MOD entries for updated or deleted target zone MOD entries
- SRC entries for updated or deleted target zone SRC entries
- Data element entries for deleted target zone data element entries
- DLIB entries for updated target zone DLIB entries

BALR. Branch and link register commands.

base function. A SYSMOD defining elements of the base system or other products that were not previously present in the target libraries. Base functions are identified to SMP/E by the ++FUNCTION statement. SMP/E is an example of a base function.

base level system. The level of the target system modules, macros, source, and DLIBs created by system generation, to which function and service modifications are applicable.

base version of a load module. Some load modules include modules both explicitly (through INCLUDE statements) and implicitly (through a SYSLIB allocation). The base version of such a load module includes only the explicitly-defined modules for the load module. It is maintained by SMP/E in the SMPLTS data set. The base version of a load module is used with the SYSLIB allocation as input to the link-edit utility in order to build the load module in its target libraries.

binder. A program that processes the output of language translators and compilers into an executable program (load module). It is part of the DFSMS/MVS element of OS/390.

bypass. In SMP/E, to circumvent errors that would otherwise cause SYSMOD processing to fail. This is done by using the BYPASS operand on an SMP/E command.

C

causer SYSMOD. A SYSMOD identified by root cause analysis to be at the base of errors that caused other SYSMODs to fail. See *root cause analysis*.

CBPDO. MVS Custom-Built Product Delivery Offering.

CICS. Customer Information Control System.

CLEANUP. The SMP/E command used to delete entries from the SMPMTS, SMPSTS, and SMPSCDS data sets after a SYSMOD has been accepted into the related distribution zone.

CNTL. See *SMPCNTL*.

coexisting functions. Functions that meet these requirements: (1) they are for the same system or subsystem and have the same SREL value, (2) they do not delete or supersede each other and are not negative prerequisites, and (3) if they are base functions, they are for different products. See also *conditionally coexisting functions* and *unconditionally coexisting functions*.

conditional requisites. Requisites defined by an ++IF statement. These are requisites that must be installed if the functions specified on the ++IF statements are installed.

conditionally coexisting functions. Functions that coexist but do not have to be in the same zone.

consolidated software inventory. See *SMPCSI*.

corequisite SYSMODs. SYSMODs each of which can be installed properly only if the other is present. Corequisites are defined by the REQ operand on the ++VER statement.

corrective service. Any SYSMOD used to selectively fix a system problem. Generally, corrective service refers to APAR fixes.

cross-zone. (1) A target zone other than the set-to zone that defines a load module containing modules

from set-to zone. Also called a *TIEDTO zone.* The modules were added to the load module through the SMP/E LINK command. The relationship between the cross-zone and the set-to zone is established through the TIEDTO subentry in their zone definition entries. See also *set-to zone* and *TIEDTO relationship*. (2) Pertaining to relationships between zones, especially as a result of conditional requisites (++IF statements) or LINK processing. See also *cross-zone requisite, cross-zone load module,* and *cross-zone module*.

cross-zone load module. A load module containing modules from a different zone as a result of LINK processing.

cross-zone module. A module included in a load module from a different zone as a result of LINK processing.

cross-zone requisite. A conditional requisite that must be installed in one zone because of another SYSMOD that is installed in a different zone. The REPORT command can be used to check information saved from ++IF statements and determine where any cross-zone requisites should be installed.

CSI. Consolidated software inventory data set. See *SMPCSI*.

CSSF. Customer Software Support Facility.

CUM tape. Cumulative service tape.

cumulative service tape (CUM tape). The tape sent with an order for a new function that contains all the current PTFs for that function.

Customer Software Support Facility (CSSF). A database in Information/Access that can be used to research APARs and to obtain information about preventive service planning.

D

data element. An element that is not a macro, module, or source—for example, a dialog panel or sample code.

DDDEF entry. An SMP/E entry containing the information SMP/E needs in order to dynamically allocate a particular data set.

DEBUG. The SMP/E command used to obtain additional information for problem determination—for example, to trace messages or take dumps.

debug. In SMP/E, to obtain additional information for problem determination—for example, to trace messages or take dumps. This is done with the DEBUG command.

definition side deck. A file in the hierarchical file system, a member of a partitioned data set, or a sequential data set that contains binder IMPORT control statements.

deleted function. In SMP/E, a function that was removed from the system when another function was installed. This is indicated by the DELBY subentry in the SYSMOD entry for the deleted function. See also *explicitly deleted function* and *implicitly deleted function*.

deleting function. A function that removes other functions from the system. This is done by specifying them on the DELETE operand of the ++VER statement.

dependent function. A function that introduces new elements or redefines elements of the base level system or other products. A dependent function cannot exist without a base function. Dependent functions are identified to SMP/E by the ++FUNCTION statement.

dialog. The interactive support provided by SMP/E through ISPF. Instead of entering specific commands and operands, you can use panels to specify the desired processing.

distribution library (DLIB). A library that contains the master copy of all the elements in a system. A distribution library can be used to create or back up a target library.

distribution zone. In SMP/E, a group of records in a CSI data set that describes the SYSMODs and elements in a distribution library.

DLIB. Distribution library.

DLIB entry. An SMP/E entry describing a distribution library that has been totally copied into a target library.

DLIBZONE entry. An SMP/E entry containing information used by SMP/E to process a specific distribution zone and the associated distribution libraries.

DLL. Dynamic link library

E

EC. Engineering change.

element. In SMP/E, part of a product, such as a macro, module, dialog panel, or sample code.

element MCS. An MCS used to replace or update an element.

element selection. The process by which SMP/E chooses the appropriate changes for an element

affected by several SYSMODs being installed at the same time.

entry. In SMP/E, a collection of records in a CSI data set. An entry can be created, updated, or deleted by use of UCL statements.

environment. The functions (FMIDs) installed on a particular system or subsystem (SREL).

ERROR indicator. In SMP/E, an indicator in a target or distribution zone SYSMOD entry that shows that SYSMOD processing failed. The ERROR indicator is set before SMP/E updates any libraries and is reset if processing is successful. If processing fails, it remains set to show that an error occurred.

ESO. Expanded service options.

exception SYSMOD. A SYSMOD that is in error or that requires special processing before it can be installed. ++HOLD and ++RELEASE statements identify exception SYSMODs.

EXCP. Execute channel programs.

expanded service options (ESO). A tape that includes preventive service PTFs. Where available, it replaces PUTs as the vehicle for delivering preventive service. An ESO contains PTFs and ++ASSIGN statements assigning source IDs for the PTFs. In the United States, this tape is available from the IBM Support Center and can be ordered either by subscription or as needed.

explicitly deleted function. A function deleted because it was specified on the DELETE operand of a ++VER statement in another SYSMOD.

exported zone. A zone copied into a sequential data set by use of the SMP/E ZONEEXPORT command.

external HOLDDATA. ++HOLD statements contained in SMPHOLD. Contrast with *internal HOLDDATA*.

F

FE. Field engineering.

feature. See *dependent function*.

FMID. Function modification identifier.

FMIDSET. A group of FMIDs to be used in processing an SMP/E command—for example, to indicate that SYSMODs applicable to certain functions should be installed.

FMIDSET entry. An SMP/E entry defining an FMIDSET.

function. In SMP/E, a product (such as a system component or licensed program) that can be installed in a user's system if desired. Functions are identified to SMP/E by the ++FUNCTION statement. Each function must have a unique FMID.

function modification identifier (FMID). The SYSMOD ID of a function SYSMOD. It identifies the function that currently owns a given element.

functionally higher SYSMOD. A SYSMOD that uses the function contained in an earlier SYSMOD (called the *functionally lower SYSMOD*) and contains additional functions as well.

functionally lower SYSMOD. A SYSMOD whose function is also contained in a later SYSMOD (called the *functionally higher SYSMOD*).

G

GENASM. A subentry in the MAC entry that lists the ASSEM or SRC entries that must be assembled if the macro is replaced or updated.

GENERATE. The SMP/E command used to create a job stream that builds a set of target libraries from a set of distribution libraries.

generate. In SMP/E, to create a job stream that builds a set of target libraries from a set of distribution libraries. This is done with the GENERATE command.

GTF. Generalized trace facility.

global zone. A group of records in a CSI data set used to record information about SYSMODs received for a particular system. The global zone also contains information that (1) enables SMP/E to access target and distribution zones in that system, and (2) enables you to tailor aspects of SMP/E processing.

GLOBALZONE entry. An SMP/E entry containing information that SMP/E uses to process the global zone, the associated target and distribution zones, and the SMPPTS data set.

H

header MCS. An ++APAR, ++FUNCTION, ++PTF, or ++USERMOD statement. The header MCS indicates the type of SYSMOD.

HFS. Hierarchical file system.

hierarchical file system element. An element that has a hierarchical file system as its “target library.”

hierarchy. In SMP/E, the top-down structure of function and service SYSMODs, in which each SYSMOD is dependent on the one above it.

higher functional level. An element version that contains all the functions of all other relevant versions of that element.

HOLDDATA. In SMP/E, MCSs used to indicate that certain SYSMODs contain errors or require special processing before they can be installed. ++HOLD and ++RELEASE statements are used to define HOLDDATA. SYSMODs affected by HOLDDATA are called *exception SYSMODs*.

HOLDDATA entry. An SMP/E entry containing ++HOLD statements that either were received from SMPHOLD (external HOLDDATA) or were within a SYSMOD that was received (internal HOLDDATA).

I

ICF. Integrated Catalog Facility.

IFREQ. A conditional requisite. Conditional requisites are specified on the REQ operand of the ++IF statement.

IMASPZAP. The system utility program used to install superzaps, which are changes for modules, load modules, or CSECTs within modules.

implicitly deleted function. A function deleted because of its dependency on an explicitly deleted function that is specified on the DELETE operand of the ++VER statement.

imported zone. A zone copied from a sequential data set into another zone by use of the SMP/E ZONEIMPORT command.

IMS. Information Management System.

IMSGEN. IMS generation.

indicator. See *subentry indicator*.

in effect. Having control over SMP/E processing. For example, an OPTIONS entry is in effect if (1) it is specified on the SET command or (2) it is defined as the default OPTIONS entry for the set-to zone.

Information/Access. A feature of Information/System 1, an interactive retrieval program. Information/Access provides direct customer access to a database that contains APAR and PTF information (CSSF), APAR fixes and PTFs, and preventive service planning information.

inline data. Information (such as utility control statements or code for an element) that is packaged directly after the associated MCS, rather than in a separate file or data set.

inline JCLIN. The JCL statements associated with a ++JCLIN statement. Inline JCLIN may immediately follow the ++JCLIN statement, or it may be in the RELFILE or TXLIB data set pointed to by the ++JCLIN statement. Inline JCLIN is used to update the target zone when a SYSMOD is applied, or the distribution zone when a SYSMOD is accepted. Contrast with *JCLIN input*.

inner macro. A macro invoked by another macro. In particular, inner macros are those that SMP/E does not detect during JCLIN processing of assembler job steps.

install. In SMP/E, to apply a SYSMOD to the target libraries or to accept a SYSMOD into the distribution libraries.

internal HOLDDATA. ++HOLD statements contained within a SYSMOD. Contrast with *external HOLDDATA*.

I/O. Input or output.

IOGEN. Input/output device generation.

IPL. Initial program load.

ISMD. IBM Software Manufacturing and Delivery (formerly called *PID*).

ISPF. Interactive System Productivity Facility.

ISPF/PDF. Interactive System Productivity Facility/Program Development Facility.

IVP. Installation verification procedure.

J

JCL. Job control language.

JCLIN. (1) The SMP/E command used to process data from the SMPJCLIN data set. (2) The ++JCLIN statement, which is associated with JCLIN data that is included in a SYSMOD. (3) The SMPJCLIN data set. See *SMPJCLIN*.

See also *inline JCLIN* and *JCLIN data*.

JCLIN data. The JCL statements associated with the ++JCLIN statement or saved in the SMPJCLIN data set. They are used by SMP/E to update the target zone when the SYSMOD is applied. Optionally, SMP/E can use JCLIN data to update the distribution zone when the SYSMOD is accepted.

JCLIN input. The JCL statements contained in the SMPJCLIN data set and used as input for the JCLIN command. Contrast with *inline JCLIN*.

job control language (JCL). A problem-oriented language designed to express statements in a job that are used to identify the job or describe its requirements to an operating system.

L

licensed program. A program that performs a function for the user, and usually interacts with and relies upon the system control program or some other IBM-provided control program. Generally, a licensed program is a software package that can be ordered from the program libraries, such as IBM Software Distribution (ISMD). IMS and CICS are examples of licensed programs.

link library (LKLIB). A data set containing link-edited object modules.

LIST. The SMP/E command used to display entries in SMP/E data sets.

list. In SMP/E, to display entries in SMP/E data sets. This is done with the LIST command.

LKLIB. Link library.

LMOD. In SMP/E, an abbreviation for load module.

LMOD entry. An SMP/E entry containing all the information needed to replace or update a given load module.

load module. A computer program in a form suitable for loading into main storage for execution. It is usually the output of a link-edit utility.

LOG. (1) The SMP/E command used to write user-supplied information to the SMPLOG data set. (2) The SMPLOG data set. See *SMPLOG*.

lower functional level. An element version that is contained in a later element version.

M

MAC. The SMP/E entry or MCS that describes a macro.

macro. An instruction in a source language that is to be replaced by a defined sequence of instructions in the same source language.

MACUPD. The SMP/E MCS used to update a macro.

mass-mode processing. In SMP/E, processing that includes all eligible SYSMODs, regardless of whether they were individually selected.

master CSI. The CSI data set that contains the global zone.

MCS. Modification control statement.

MCS entry. An SMP/E entry containing a copy of a SYSMOD exactly as it was received from the SMPPTFIN data set. MCS entries are in the SMPPTS data set, which is used as a warehouse for SYSMODs.

MOD. The SMP/E entry or MCS that describes an object module or a single-module load module.

MODID. Modification identifier.

modification. In SMP/E, an alteration or correction to a system control program, licensed program, or user program. Synonymous with *system modification* (SYSMOD).

modification control statement (MCS). An SMP/E control statement used to package a SYSMOD. MCSs describe the elements of a program and the relationships that program has with other programs that may be installed on the same system.

modification identifier (MODID). A list of SYSMOD IDs, including the last SYSMOD that totally replaced the element (RMID), any subsequent partial updates to the element (UMIDs), and the function that owns the element (FMID). MODIDs are contained in element entries.

modification level. A distribution of all temporary fixes that have been issued since the previous modification level. A change in modification level does not add new functions or change the programming support category of the release to which it applies. Contrast with *release* and *version*.

Note: Whenever a new release of a program is shipped, the modification level is set to 0. When the release is reshipped with the accumulated services changes incorporated, the modification level is incremented by 1.

module. Synonym for *object module* or *single-module load module*.

MTS. Macro temporary storage data set. See *SMPMTS*.

MTSMAC entry. An SMP/E entry that is a copy of a macro that resides only in a distribution library but is needed temporarily during APPLY processing. MTSMAC entries are in the SMPMTS data set.

MVS. Multiple Virtual Storage.

MVS Custom-Built Product Delivery Offering (CBPDO). A software delivery offering used to add products or service to an existing MVS, NCP, CICS, or IMS system.

N

NCP. Network Control Program.

negative prerequisite (NPRE). In SMP/E, a function that is mutually exclusive with another function. It is defined by the NPRE operand on the ++VER statement.

NPRE. Negative prerequisite.

O

object deck. Object module input to the link-edit utility that is placed in the input stream, in card format.

object module. A module that is the output from a language translator (such as a compiler or an assembler). An object module is in relocatable format with machine code that is not executable. Before an object module can be executed, it must be processed by the link-edit utility.

When an object module is link-edited, a load module is created. Several modules can be link-edited together to create one load module (for example, as part of SMP/E APPLY processing), or an object module can be link-edited by itself to create a single-module load module (for example, to prepare the module for shipment in RELFILE format or in an LKLIB data set or as part of SMP/E ACCEPT processing).

operating system. In SMP/E, the system updated by APPLY and RESTORE processing. It consists of the target libraries. Also called the target system.

OPTIONS entry. An SMP/E entry defining processing options that are to be used by SMP/E.

OS/390 UNIX System Services (OS/390 UNIX). The set of functions provided by the Shell and Utilities, kernel, debugger, file system, C/C++ Run-Time Library, Language Environment, and other elements of the OS/390 operating system that allow users to write and run application programs that conform to UNIX standards.

P

packaging. Adding the appropriate MCS statements to elements to create a SYSMOD, then putting the SYSMOD in the proper format on the distribution medium, such as a tape or direct access data sets.

partitioned data set extended (PDSE). A system-managed data set containing an indexed directory and members that are similar to the directory and members of partitioned data sets. A PDSE can be used instead of a partitioned data set.

PE. See *program error PTF*.

PE-PTF. See *program error PTF*.

PID. The former name for ISD.

PRE. Prerequisite.

prerequisite (PRE). In SMP/E, a SYSMOD that must be installed before or along with another SYSMOD in order for that other SYSMOD to be successfully installed. It is defined by the PRE operand on the ++VER statement.

preventive service. (1) The mass installation of PTFs to avoid rediscoveries of the APARs fixed by those PTFs. (2) The SYSMODs delivered on the program update tape.

preventive service planning (PSP). Installation recommendations and HOLDDATA for a product or a service level. PSP information can be obtained through CSSF or the IBM Support Center.

product. Generally, a software package, such as a licensed program or a user application. A product can contain one or more functions and can consist of one or more versions and releases.

product version. All the releases for a given version of a product.

program error PTF (PE-PTF). A PTF that has been found to contain an error. A PE-PTF is identified on a ++HOLD ERROR statement, along with the APAR that first reported the error.

program object. An executable program stored in a PDSE program library. It is similar to a load module, but has fewer restrictions. For SMP/E purposes, program objects are referred to as load modules.

program packaging. See *packaging*.

program product. The former term for licensed program.

program temporary fix (PTF). A temporary solution or bypass of a problem that may affect all users and that was diagnosed as the result of a defect in a current unaltered release of the program. In the absence of a new release of a system or component that incorporates the correction, the fix is not temporary but is the permanent and official correction mechanism. New elements can also be defined in a PTF. PTFs are identified to SMP/E by the ++PTF statement.

program update tape (PUT). The former vehicle for preventive service. See *expanded service options*.

PSP. Preventive service planning.

PSW. Program status word.

PTF. Program temporary fix.

PTS. PTF temporary store data set. See *SMPPTS*.

PTFIN. PTF input data set. See *SMPPTFIN*.

PUT. See *expanded service options*.

R

RACF. Resource Access Control Facility.

RECEIVE. The SMP/E command used to read in SYSMODs and other data from the SMPPTFIN and SMPHOLD data sets.

receive. In SMP/E, to read SYSMODs and other data from the SMPPTFIN and SMPHOLD data sets, and store them on the global zone for subsequent SMP/E processing. This is done with the RECEIVE command.

regressed SYSMOD. A SYSMOD one or more of whose elements are modified by subsequent SYSMODs that are not related to it.

regressing SYSMOD. A SYSMOD that causes regression of previous modifications when it is installed.

regression. In SMP/E, the condition that occurs when an element is changed by a SYSMOD that is not related to SYSMODs that previously modified the element.

REJECT. The SMP/E command used to remove SYSMODs from the global zone and the SMPPTS data set.

reject. In SMP/E, to remove SYSMODs from the global zone and SMPPTS and delete any related SMPTLIB data sets. This is done with the REJECT command.

related installation materials (RIMs). In IBM custom-built offerings, task-oriented documentation, jobs, sample exit routines, procedures, parameters, and examples developed by IBM.

related SYSMOD. A SYSMOD associated with other SYSMODs by the FMID, PRE, REQ, or SUP operands.

related zone. The zone named in the RELATED subentry of a TARGETZONE or DLIBZONE entry. For a target zone, the related zone is generally the distribution zone for the libraries used to create the target libraries. For a distribution zone, the related zone is generally the target zone for the libraries built from the distribution libraries.

relative file (RELFILE) format. A SYSMOD packaging method where elements and JCLIN data are in separate relative files from the MCSs. When SYSMODs are packaged in relative file format there is a file of MCSs for one or more SYSMODs, and one or more relative files containing unloaded source-code data sets and unloaded link-edited data sets containing executable modules. The relative files can be either unloaded files in IEBCOPY format, or they can be partitioned data sets. Relative file format is the typical method used for packaging function SYSMODs.

relative files (RELFILEs). Unloaded files containing modification text and JCL input data associated with a SYSMOD. These files are used to package a SYSMOD in relative file format.

release. A distribution of a new product or new function and APAR fixes for an existing product. Contrast with *modification level* and *version*.

replacement modification identifier (RMID). The SYSMOD ID of the last SYSMOD that completely replaced a given element.

REPORT. The SMP/E command used to obtain information about SYSMODs that have been installed. These are the types of REPORT commands:

- REPORT CALLLIBS: Identifies load modules that need to be relinked because implicitly-included modules in a particular library have been updated.
- REPORT CROSSZONE: Lists conditional requisites that must be installed in certain zones because of SYSMODs installed in other zones.
- REPORT ERRSYSMODS: Determines whether any SYSMODs already installed are now exception SYSMODs.
- REPORT SOURCEID: Lists the source IDs associated with SYSMODs in the specified zones.
- REPORT SYSMODS: Compares the SYSMODs installed in two target or distribution zones.

requisite. A SYSMOD that must be installed before or at the same time as the SYSMOD being processed. There are several types of requisites:

- Prerequisites, which are specified by the PRE operand on the SYSMOD's ++VER statement
- Corequisites, which are specified by the REQ operand on the SYSMOD's ++VER statement
- Conditional requisites, which are specified by the REQ operand on the SYSMOD's associated ++IF statement

RESETRC. The SMP/E command used to set the return codes for the previous commands to zero, so that SMP/E can process the current command.

RESTORE. The SMP/E command used to remove applied SYSMODs from the target libraries.

restore. In SMP/E, to remove applied SYSMODs from the target libraries by use of the RESTORE command.

restore group. All the SYSMODs that have a direct or indirect relationship with a SYSMOD being restored by use of the GROUP operand.

RETAIN. A database, accessible through Information/Access, that contains information about APARs and PTFs. The customer version of this database is called the Customer Service Support Facility (CSSF).

RIM. Related installation material.

RMID. Replacement modification identifier.

RMF. Resource measurement facility.

root cause analysis. Processing done by SMP/E for the ACCEPT, APPLY, and RESTORE commands to identify causer SYSMODs (SYSMODs whose failure has led to the failure of other SYSMODs). The types of errors SMP/E analyzes to determine causer SYSMODs include the following:

- Held SYSMODs
- Missing requisite SYSMODs
- Utility program failures: copy, update, assembler, link, zap
- Out-of-space conditions: *x*37 abends
- Missing DD statements and other allocation errors
- ID errors (a SYSMOD does not supersede or specify as a prerequisite an RMID or a UMID)
- JCLIN failures (syntax errors)

RPL. Request parameter list.

RTM2WA. Recovery termination manager 2 work area.

S

SCDS. Save control data set. See *SMPSCDS*.

SCP. System control program.

select-mode processing. In SMP/E, processing that includes individually selected SYSMODs.

service. PTFs and APAR fixes.

service level. The FMID, RMID, and UMID values for an element. The service level identifies the owner of the element, the last SYSMOD to replace the element, and all the SYSMODs that have updated the element since it was last replaced.

service order relationship. A relationship among service SYSMODs that is determined by the PRE and SUP operands, and the type of SYSMOD.

service SYSMOD. Any SYSMOD identified by an ++APAR or ++PTF statement.

service update. The integration of available service into the current release of a function. Since this is not a new release of the function, it does not change the function's FMID.

SET. The SMP/E command used to indicate the zone to be processed.

set. In SMP/E, to indicate which zone should be processed by the subsequent commands. This is done with the SET command.

set-to zone. The zone that was specified on the previous SET command and that is currently being processed. Contrast with *cross-zone*.

side deck. See *definition side deck.*

single-module load module. A load module created by link-editing a single object module by itself—for example, to prepare the module for shipment in RELFILE format or in an LKLIB data set or as part of SMP/E ACCEPT processing.

SMPCNTL. The SMP/E data set that contains the SMP/E commands to be processed.

SMPCSI. The SMP/E data set that contains information about the structure of a user's system as well as information needed to install the operating system on a user's system. The SMPCSI DD statement refers specifically to the CSI that contains the global zone. This is also called the *master CSI*.

SMPDEBUG. The SMP/E data set that contains a dump requested by the DEBUG command. Depending on the operands specified, it may contain (1) a dump of SMP/E control blocks and storage areas associated with the specified dump points or (2) a dump of the VSAM RPL control block for the specified SMP/E function.

SMP/E. System Modification Program Extended.

SMP/E commands. Commands defining the processing to be done by SMP/E, such as RECEIVE.

SMP/E entry. An entry in an SMP/E data set—for example, a MOD entry in a CSI data set.

SMPHOLD. The SMP/E file or data set that contains HOLDDATA (++HOLD and ++RELEASE statements) to be processed by the RECEIVE command.

SMPJCLIN. The SMP/E data set that contains a job stream of assembly, link-edit, and copy job steps. This data is typically the stage 1 output from the most recent full or partial system generation. However, it may also be other data in a similar format, such as the output of the GENERATE command. This job stream is used as input to the JCLIN command to update or create entries in a target zone.

SMPLIST. The SMP/E data set that contains the output of all LIST commands.

SMPLOG. The SMP/E data set that contains time-stamped records of SMP/E processing. The records in this data set can be written automatically by SMP/E or added by the user through the LOG command.

SMPLOGA. A secondary log data set for SMP/E processing. If SMPLOGA is defined, it is automatically used when the SMPLOG data set is full.

SMPLTS. The SMP/E data set used as a target load module library to maintain the base version of a load module that specifies a SYSLIB allocation in order to implicitly include modules.

SMPMTS. The SMP/E data set used as a target library for macros that exist only in a distribution library, such as macros in SYS1.AMODGEN. The SMPMTS enables the current version of these macros to be used for assemblies during APPLY processing.

SMPOBJ. The SMP/E data set used for source-maintained products. SMPOBJ contains preassembled modules that can be used to avoid reassembling those modules. These modules must be in load module format—that is, in the same format as modules residing in the distribution library.

SMPOUT. The SMP/E data set that contains messages issued during SMP/E processing. It may also contain a dump of the VSAM RPL, if a dump was taken. In addition, it may contain LIST output and reports if the SMPLIST and SMPRPT data sets are not defined.

SMPPARM. The data set that contains members to define parameters, such as macros and assembler operation codes.

SMPPTFIN. The SMP/E file or data set that contains SYSMODs and ++ASSIGN statements to be processed by the RECEIVE command.

SMPPTS. The SMP/E data set that contains SYSMODs received from the SMPPTFIN data set. The SMPPTS is a sort of warehouse, and is the source of SYSMODs that are installed in the target and distribution libraries.

SMPPUNCH. The SMP/E data set that contains output from various SMP/E commands. This output generally consists of commands or control statements.

- GENERATE: A job stream for building target libraries
- REPORT: Commands for installing or listing SYSMODs
- UNLOAD: UCLIN statements for recreating the entries that were unloaded

SMPRPT. The SMP/E data set that contains the reports produced during SMP/E processing.

SMPSCDS. The SMP/E data set that contains backup copies of target zone entries that are created during APPLY processing. These backup copies are made before the entries are (1) changed by inline JCLIN, a ++MOVE MCS, or a ++RENAME MCS, or (2) deleted by an element MCS with the DELETE operand. The backup copies are used during RESTORE processing to return the entries to the way they were before APPLY processing.

SMPSNAP. The SMP/E data set that is used for snap dump output. When a severe error such as an abend or severe VSAM return code occurs, SMP/E requests a snap dump of its storage before doing any error recovery. In addition, the DEBUG command can request a snap dump of SMP/E storage when specified messages are issued, or can request a snap dump of control blocks and storage areas associated with a specified dump point.

SMPSTS. The SMP/E data set used as a target library for source that exists only in a distribution library. The SMPSTS enables the current version of this source to be used for assemblies during APPLY processing.

SMPTLIB. The SMP/E data sets used as temporary storage for relative files loaded from SMPPTFIN during RECEIVE processing. The SMPTLIB data sets are deleted when the associated SYSMOD is deleted by REJECT, RESTORE, or ACCEPT processing.

SMPWRK1. The SMP/E data set used as temporary storage for macro updates and replacements that will be processed by an update or copy utility program. SMP/E places the input in SMPWRK1 during APPLY and ACCEPT processing before calling the utility.

SMPWRK2. The SMP/E data set used as temporary storage for source updates and source replacements that will be processed by an update or copy utility program. SMP/E places the input in SMPWRK2 during APPLY and ACCEPT processing before calling the utility.

SMPWRK3. The SMP/E data set used as temporary storage for object modules supplied by a SYSMOD, object modules created by assemblies, and zap utility input following ++ZAP statements.

SMPWRK4. The SMP/E data set used as temporary storage for zap utility or link-edit utility input that contains EXPAND control statements.

SMPWRK6. The SMP/E data set used during ACCEPT and APPLY processing as temporary storage for inline replacements for data elements. SMP/E places the input in this data set so that it can be directly accessed and installed by the copy utility or SMP/E.

source. The source statements that constitute the input to a language translator for a particular translation.

source ID. A 1- to 8-character identifier that indicates how a SYSMOD was obtained—for example, from a particular service level in an ESO. A source ID is associated with a specific SYSMOD by the RECEIVE command or the ++ASSIGN statement.

SOURCEID. The operand used to refer to a source ID.

source module. The source statements that constitute the input to a language translator, such as a compiler or an assembler, for a particular translation.

SRC. The SMP/E entry or MCS statement that describes a source.

SRCUPD. The MCS used to update a source.

SREL. System release identifier.

Storage Management Subsystem (SMS). A DFSMS/MVS facility used to automate and centralize the management of storage. Using SMS, a storage administrator describes data allocation characteristics, performance and availability goals, backup and retention requirements, and storage requirements to the system through data class, storage class, management class, storage group, and ACS routine definitions.

STS. Source temporary store data set. See *SMPSTS*.

STSSRC entry. An SMP/E entry that is a copy of source that resides only in a distribution library but is needed temporarily during APPLY processing. STSSRC entries are in the SMPSTS data set.

stub entry. An element entry or LMOD entry that does not contain the basic information SMP/E requires in order to process the element or load module (such as FMID, RMID, or library names), but does contain other information, such as subentries describing cross-zone relationships.

stub load module. A load module that does not contain the modules needed to perform its basic functions, but does contain other modules, such as cross-zone modules.

subentry. A field in an SMP/E entry. Each subentry has associated with it a type and a value. The same subentry type may occur several times in a single entry, each time with a different value. For example, the modules supplied by a PTF are saved as MOD subentries in the PTF's SYSMOD entry. Some subentries occur only once within an entry, such as the FMID subentry in a target zone MOD entry.

subentry indicator. A subentry that does not have a data value associated with it. An example of an indicator is the ERROR indicator in the SYSMOD entry. An indicator is either on or off.

subentry list. Multiple occurrences of the same subentry type in an entry, each with a different value. For example, the modules supplied by a PTF are saved as names in the MOD subentry list within the SYSMOD entry for that PTF.

SUP. Supersede.

superseded-only SYSMOD. A SYSMOD that has not been installed, but that has been superseded by another SYSMOD that has been installed.

superseded SYSMOD. In SMP/E, a SYSMOD that is contained in or replaced by the SYSMOD or requisite set of SYSMODs currently being processed. This is indicated by the SUPBY subentry in the SYSMOD entry for the superseded SYSMOD. A superseded SYSMOD is functionally lower than the SYSMOD that superseded it.

superseding SYSMOD. In SMP/E, a SYSMOD that contains all the functions in another SYSMOD and is recognized as the equivalent of that other SYSMOD.

The superseding SYSMOD uses SUP operand on its ++VER statement to specify the superseded SYSMOD.

superzap. A generic term for the process performed by IMASPZAP. It can also refer to the module updates processed by IMASPZAP.

SVC. Supervised call.

SVRB. Supervisor request block.

SYSGEN. System generation.

SYSLIB. (1) A subentry used to identify the target library in which an element is installed. (2) A concatenation of macro libraries to be used by the assembler. (3) A set of routines used by the link-edit utility to resolve unresolved external references.

SYSMOD. System modification.

SYSMOD entry. An SMP/E entry containing information about a SYSMOD that has been received into the SMPPTS, accepted into the distribution libraries, or applied to the target libraries.

SYSMOD ID. System modification identifier.

SYSMOD packaging. See *packaging*.

SYSMOD selection. The process of determining which SYSMODs are eligible to be processed.

SYSPRINT. The data set that contains output from the utilities called by SMP/E.

SYSPUNCH. The temporary data set containing object modules assembled by running the job stream produced by system generation or the GENERATE command. These modules are not installed in the distribution libraries at ACCEPT time.

system control program (SCP). IBM-supplied programming that is fundamental to the operation and maintenance of the system. It serves as an interface with licensed programs and user programs and is available without additional charge.

system generation (SYSGEN). The process of selecting optional parts of an operating system and of creating a particular operating system tailored to the requirements of a data processing installation.

system modification (SYSMOD). The input data to SMP/E that defines the introduction, replacement, or update of elements in the operating system and associated distribution libraries to be installed under the control of SMP/E. A system modification is defined by a set of MCS.

system modification identifier (SYSMOD ID). The name that SMP/E associates with a system modification. It is specified on the ++APAR, ++FUNCTION, ++PTF, or ++USERMOD statement.

System Modification Program Extended (SMP/E). An element of OS/390 used to install software and software changes on OS/390 and MVS systems. SMP/E consolidates installation data, allows more flexibility in selecting changes to be installed, provides a dialog interface, and supports dynamic allocation of data sets.

system release identifier (SREL). A 4-byte value representing the system or subsystem, such as Z038 for MVS-based products.

SYSUT1, SYSUT2, SYSUT3. Scratch data sets for SMP/E and the utilities it calls.

SYSUT4. A data set that is used instead of the SYSIN data sets when certain utilities are called.

T

target library. A library containing the executable code that makes up a system.

target system. The system updated during APPLY and RESTORE processing, also referred to as the operating system. See also target libraries.

target zone. In SMP/E, a group of records in a CSI data set that describes the SYSMODs, elements, and load modules in a target library.

TARGETZONE entry. An SMP/E entry containing information used by SMP/E to process a specific target zone and the associated target libraries.

temporary data set. A work data set (SMPWRK1–SMPWRK6) or utility data set (SYSUT1–SYSUT4). Temporary data sets are allocated when processing for an SMP/E command begins, and deleted when processing is finished.

text library (TXLIB). A data set containing JCLIN input or replacements for macros, source, or object modules that have not been link-edited. It is used when the JCLIN or elements are provided in partitioned data sets rather than inline or in relative files.

TGTLIB. Target library.

TIEDTO relationship. A cross-zone relationship between two target zones created when the LINK command updates a load module in one of the zones to include modules from the other zone. This relationship is established through the TIEDTO subentry in the zone definition entries for each of the zones.

TIEDTO zone. See *cross-zone*.

TLIB. Temporary library. See *SMPTLIB*.

transformed data. Data processed by the GIMDTS service routine so that it can be packaged inline in fixed-block 80 records.

TSO. Time-sharing option.

TXLIB. Text library.

U

UCL statement. An SMP/E control statement used to define or change information in an SMP/E data set entry. UCL statements are coded between the UCLIN and ENDUCL commands. The UCL statement specifies the action to be taken (ADD, REP, or DEL), the entry to be modified, and any indicators and subentries to be changed.

UCLIN. The SMP/E command used to mark the beginning of UCL statements, which are used to make changes to entries in SMP/E data sets.

UMID. Update modification identifier.

unconditionally coexisting functions. Functions that coexist and must be in the same zone.

UNLOAD. The SMP/E command used to copy data out of SMP/E data set entries in the form of UCL statements.

unload. In SMP/E, to copy data out of SMP/E data set entries in the form of UCL statements, by use of the UNLOAD command.

update. In SMP/E, to change an existing element without replacing it.

update modification identifier (UMID). The SYSMOD ID of a SYSMOD that updated the last replacement of a given element.

user modification (USERMOD). A change constructed by a user to modify an existing function, add to an existing function, or add a user-defined function. USERMODs are identified to SMP/E by the ++USERMOD statement.

USERMOD. User modification.

UTILITY entry. An SMP/E entry containing information used by SMP/E to invoke a particular system utility program.

V

VERSION. An operand on the ++VER or element statement. VERSION specifies one or more SYSMODs containing elements that are functionally lower than elements in the SYSMOD that specifies the operand. The VERSION operand is also used to change ownership of elements.

version. A separate licensed program that is based on an existing licensed program and that usually has significant new code or new functions. Contrast with *release* and *modification level*.

versioned element. An element that is part of more than one function—for example, one that is part of a base function and a dependent function.

VSAM. Virtual Storage Access Method.

VTOC. Volume table of contents.

Z

ZAP. (1) The SMP/E MCS used to package an update for an object module. (2) The superzap control statement used to update an object module. (3) A shortened name for the superzap utility, which is used to install these updates. See *IMASPZAP*.

zone. A partition in a CSI data set.

ZONECOPY. The SMP/E command used to copy a zone from one CSI data set to another.

ZONEDELETE. The SMP/E command used to delete a zone from a CSI data set.

ZONEEDIT. The SMP/E command used to change the values for a subentry in all the DDDEF or UTILITY entries in a given zone.

ZONEEXPORT. The SMP/E command used to copy a zone into a sequential data set.

ZONEIMPORT. The SMP/E command used to load an exported zone from a sequential data set into another zone.

ZONEMERGE. The SMP/E command used to copy one zone into another, or to merge two zones into one.

ZONERENAME. The SMP/E command used to change the name of a zone.

ZONESET. A group of zones to be used when processing an SMP/E command. For example, it may define the zones that the REPORT command is to check for cross-zone requisites. A ZONESET may also

define a group of zones to be checked or ignored by the REJECT command.

ZONESET entry. An SMP/E entry defining a ZONESET.

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