High Level Assembler for z/OS & z/VM & z/VSE

IBM

Toolkit Feature Installation and Customization Guide

Version 1 Release 6

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About this document

This document provides information needed to plan for, install, customize and maintain HLASM Toolkit Feature on z/OS® and z/VM® and z/VSE®.

CMS is used in this manual to refer to Conversational Monitor System on z/VM.

Brief overview of HLASM Toolkit Feature

HLASM Toolkit Feature is an IBM® licensed program that helps you in the development of programs and subroutines using assembler language. This product provides an interactive debugging facility along with a disassembler, a suite of structured programming macros, a program understanding tool, (sometimes referred to as ASMPUT), a source code cross reference facility, and a comparison and search facility.

Who should use this book

This book is for system programmers and system administrators who plan for, install, customize, and maintain the HLASM Toolkit Feature on z/OS or z/VM or z/VSE.

To use this book, you need to be familiar with the z/OS or z/VM or z/VSE operating system, the publications that describe your system, and job control language (JCL) or EXEC processing.

Experienced users installing on z/OS

If you are installing on z/OS and are experienced in installing products with SMP/E, use these fast path items:

1. DASD storage for target and distribution libraries is in Table 7 on page 7 and Table 8 on page 8.
2. DASD storage for SMP/E data sets is outlined in Table 5 on page 7 and Table 6 on page 7.
3. Carry out steps "Step 1: SMP/E considerations for installing HLASM Toolkit Feature" on page 14 through to "Step 8: Run the installation verification program" on page 18.

Experienced users installing on z/VM

If you are installing on z/VM and are experienced in installing products with VMSES/E, use these fast path items:

1. Refer to Table 20 on page 30 for DASD storage requirements.
2. Carry out steps "Step 1: Prepare to install HLASM Toolkit Feature" on page 34 through to "Step 5: Put HLASM Toolkit Feature into production" on page 41.

Experienced users installing on z/VSE

If you are installing on z/VSE and are experienced in installing products with z/VSE, use these fast path items:

1. Refer to Table 30 on page 61 and Table 31 on page 61 for DASD storage requirements.

2. Carry out steps "Step 1: Allocate space for the library (omit if using the default)" on page 68 through to "Step 4: Verify the installation of HLASM Toolkit Feature" on page 75.

Terminology in this book

For simplicity, many of the full IBM product names are shortened to just the generic acronym. For example, MVS™ is used to mean z/OS.

List of APARs and PTFs in this book

This book includes the numbers for APARs and PTFs that are included in this product (see Appendix A, "HLASM Toolkit Feature Service," on page 87). You might want to use this list, for example, to determine whether a fix that you have applied to the previous release is in this release that is to be installed.

To obtain current service recommendations and to identify current product service requirements, get the Preventive Service Planning (PSP) information or check with the IBM Support Center.

Other documentation you might need

The complete list of HLASM Toolkit Feature publications and order numbers are listed on page 4, page 28 and page 60. Publications for related IBM products are in the "Bibliography" on page 101.

Syntax notation

Throughout this book, syntax descriptions use this structure:

- Read the syntax diagrams from left to right, from top to bottom, following the path of the line.

    The ►►── symbol indicates the beginning of a statement.

    The ──► symbol indicates that the statement syntax is continued on the next line.

    The ►── symbol indicates that a statement is continued from the previous line.

    The ──►◄ indicates the end of a statement.

    Diagrams of syntactical units other than complete statements start with the ►── symbol and end with the ──► symbol.

- **Keywords** appear in uppercase letters (for example, ASPACE) or uppercase and lowercase (for example, PATHFile). They must be spelled exactly as shown. Lowercase letters are optional (for example, you could enter the PATHFile keyword as PATHF, PATHFI, PATHFIL, or PATHFILE).

    Variables appear in all lowercase letters in a special typeface (for example, *integer*). They represent user-supplied names or values.

- If punctuation marks, parentheses, or such symbols are shown, they must be entered as part of the syntax.

- Required items appear on the horizontal line (the main path).

```
►►──INSTRUCTION──required item───────────────────────────────────►◄
```

- Optional items appear below the main path. If the item is optional and is the default, the item appears above the main path.

```
               ┌─default item─┐
►►──INSTRUCTION─┼──────────────┼──────────────────────────►◄
               └─optional item─┘
```
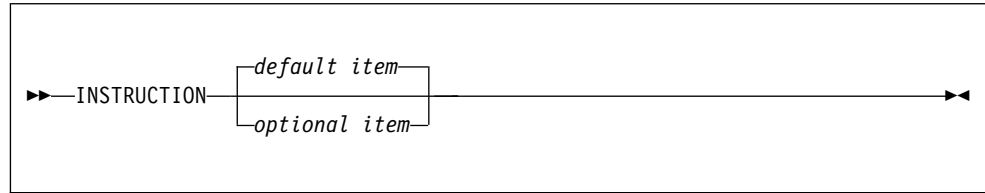
- When you can choose from two or more items, they appear vertically in a stack. If you **must** choose one of the items, one item of the stack appears on the main path.

```
►►──INSTRUCTION──┬─required choice1─┬──────────────────────►◄
                 └─required choice2─┘
```
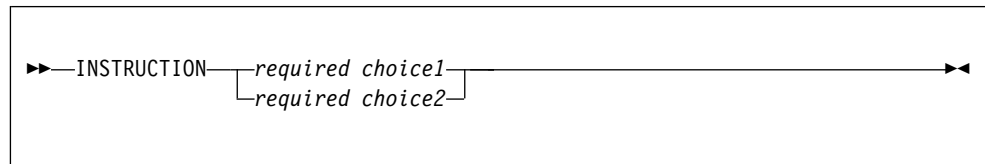
If choosing one of the items is optional, the whole stack appears below the main path.

```
►►──INSTRUCTION──┬──────────────────┬─────────────────────►◄
                 ├─optional choice1─┤
                 └─optional choice2─┘
```
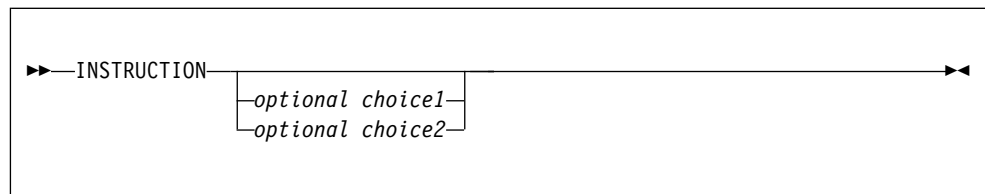
- An arrow returning to the left above the main line indicates an item that can be repeated. When the repeat arrow contains a separator character, such as a comma, you must separate items with the separator character.

```
                    ┌─,─────────────┐
►►──INSTRUCTION──────▼─repeatable item─┴───────────────────►◄
```
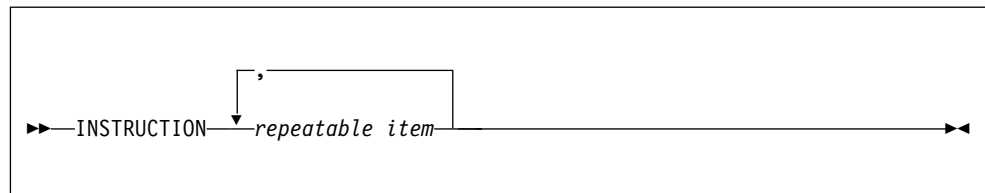
A repeat arrow above a stack indicates that you can make more than one choice from the stacked items, or repeat a single choice.

Format

The following example shows how the syntax is used.

```
 A              B                  C


                                 ,
                          ┌───────────────┐
►►──────────────INSTRUCTION─┴──▼─── fragment ──┴────────────────►◄
      └─optional item─┘


fragment:

┌─operand choice1──────────────────────────────────────────────┐
├─operand choice2─┐   (1)                                        ┤
└─operand choice3─┘
```

Notes:

1 *operand choice2* and *operand choice3* must not be specified together
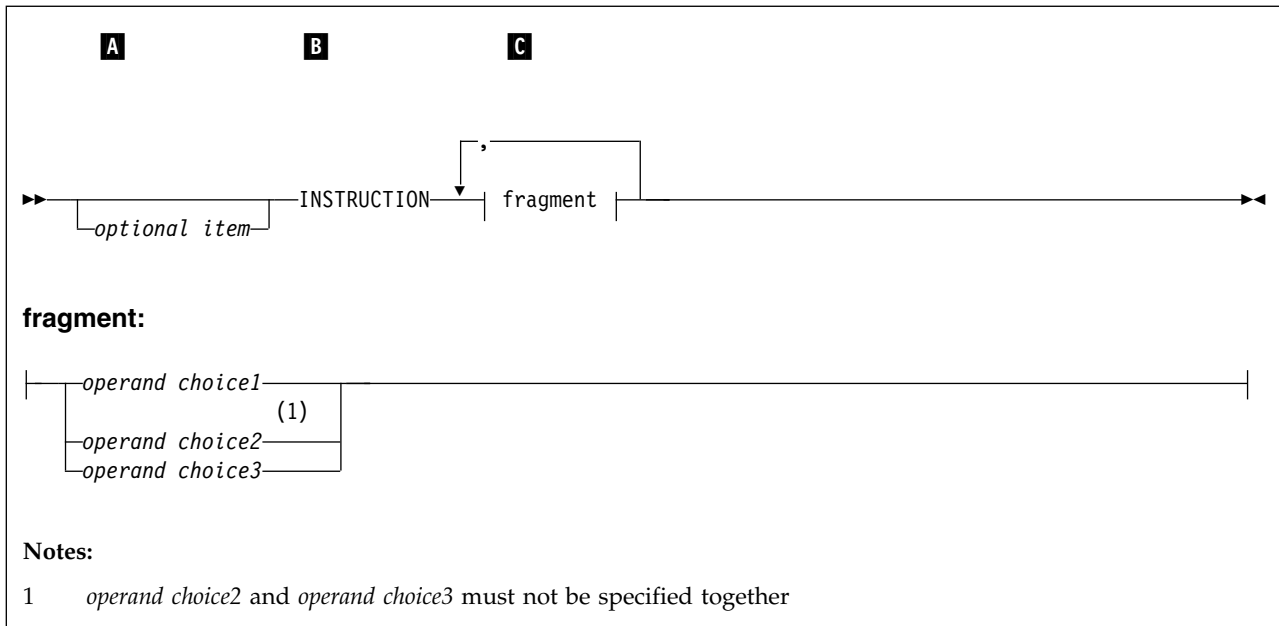
- A The item is optional, and can be coded or not.
- B The INSTRUCTION key word must be specified and coded as shown.
- C The item referred to by "fragment" is a required operand. Allowable choices for this operand are given in the fragment of the syntax diagram shown below "fragment" at the bottom of the diagram. The operand can also be repeated. That is, more than one choice can be specified, with each choice separated by a comma.

How to send your comments to IBM

Your feedback is important in helping to provide the most accurate and high-quality information. If you have any comments about this book, use IBM Knowledge Center to comment.

When you send us comments, you grant to IBM a nonexclusive right to use or distribute the information in any way it believes appropriate without incurring any obligation to you.

If you have a technical problem

Do not use the feedback methods listed above. Instead, do one of the following:

- Contact your IBM service representative
- Call IBM technical support
- Visit the IBM support web page

Summary of changes

Date of publication
July 2017

Form of publication
Eleventh Edition, GC26-8711-11

There are no major changes to the installation and customization procedures for HLASM Toolkit Feature with release 6.

Installation instructions for HLASM Toolkit feature release 6 on VM are provided for z/VM only. No reference is made to VM/ESA, as VM/ESA is no longer a supported product. Installation instructions for installing any part of the product on OS/2 have also been removed.

Any reference to obsolete DASD devices has been removed from the z/VSE chapters.

For information about changes to the HLASM Toolkit Feature product in release 6, please refer to *HLASM General Information*.

Part 1. On z/OS: planning for, installing, and maintaining High level Assembler Toolkit Feature

Chapter 1. Planning for installing HLASM Toolkit Feature on z/OS

This section contains the following planning information to help you properly install HLASM Toolkit Feature on z/OS:
- Worksheet
- What you receive with HLASM Toolkit Feature
- What you need to install HLASM Toolkit Feature
- Installing with CBPDO
- Planning to use SMP/E
- Planning to change installation jobs
- Program support
- Program and service level information
- Publications useful during installation

Worksheet: Planning for installing HLASM Toolkit Feature on z/OS

Before you begin the installation, you should:

1. Verify the product parts to be installed.

   FMID *JMQ416A*

   Feature number *5822*

   VOLSER *MQ416A*

   Refer to "What you receive with HLASM Toolkit Feature" on page 4.
2. Verify that required software (and optional software, if appropriate) is at the level needed.

   Refer to "What you need to install HLASM Toolkit Feature" on page 5.
3. Verify that adequate DASD storage is available:

   Target libraries

   Distribution libraries

   SMP/E data sets

   Refer to "DASD storage required for the target system" on page 6.
4. Determine how you are going to use SMP/E:

   Sample batch jobs

   SMP/E dialogs

   Refer to "Planning to use SMP/E" on page 8.
5. Plan for changes needed in installation jobs.

   Refer to "Planning to change installation jobs" on page 8.
6. Obtain latest service updates needed.

   Refer to "Program support" on page 9.
7. Plan to install Program Understanding Tool onto a workstation. See Appendix C, "Planning for installing Program Understanding Tool on Windows," on page 91.

What you receive with HLASM Toolkit Feature

You receive the following when you order HLASM Toolkit Feature for z/OS:

FMID	Feature Numbers	System Name
JMQ416A	5822	z/OS

Distribution media

HLASM Toolkit Feature is distributed on the following:
- 3480 tape cartridge

The cartridge contains all the programs and data needed for installation. The cartridge is in SMP/E relative file format. The first file contains the SMP/E modification control statements. Subsequent files contain IEBCOPY, unloaded partitioned data sets, which SMP/E processes.

Basic material

Table 1 describes the cartridge. Table 2 describes the file content of the program cartridge.

Table 1. Basic material: program cartridge

Medium	Feature Number	Physical Volume	External Label Identification	VOLSER
3480 cart.	5822	1	HLASM TLKT MVS R6	MQ416A

Table 2. Program cartridge: file content

Volser	File	Name	ORG	RECFM	LRECL	BLK SIZE
MQ416A	1	SMPMCS	SEQ	FB	80	6400
	2	IBM.JMQ416A.F1	PDS	FB	80	8800
	3	IBM.JMQ416A.F2	PDS	FB	80	8800
	4	IBM.JMQ416A.F3	PDS	U	0	6144
	5	IBM.JMQ416A.F4	PDS	FB	80	8800
	6	IBM.JMQ416A.F5	PDS	FB	80	8800

The RECFM, LRECL, and BLK SIZE reflect the original values of the partitioned data sets (relative files) before being unloaded by the IEBCOPY utility to tape.

Note: If you are installing HLASM Toolkit Feature using the MVS Custom-Built Product Delivery Offering (CBPDO) (5751-CS3), some of the information in these figures may not be valid. Consult the CBPDO documentation for actual values.

Optional material

There are no optional machine-readable materials for HLASM Toolkit Feature.

Program publications and softcopy

This section identifies the basic and optional publications for HLASM Toolkit Feature.
- *HLASM Toolkit Feature User's Guide*, GC26-8710

- *HLASM Toolkit Feature Debug Reference Summary*, GC26-8712
- *HLASM Toolkit Feature Interactive Debug Facility User's Guide*, GC26-8709
- *HLASM Toolkit Feature Installation and Customization Guide*, GC26-8711

For a list of books for related products, see "Bibliography" on page 101.

What you need to install HLASM Toolkit Feature

This section identifies the system requirements for installing HLASM Toolkit Feature. You need to plan for two different system environments:

- *Target system*—the system comprising the set of libraries that are updated by SMP/E and system utilities during installation
- *Driving system*—the system on which the jobs are run to install the program

The machine-readable components for HLASM Toolkit Feature are installed in target and distribution libraries.

- *Target libraries* are the data sets in which the run-time copy of HLASM Toolkit Feature is stored. These data sets include the executable program code and any other components used during execution, such as sample JCL and messages.

- *Distribution libraries* are the data sets in which additional copies of these components are stored. The copy of HLASM Toolkit Feature kept in the distribution libraries can be kept at a different service level than that in the target libraries. SMP/E can reconstruct the target libraries in whole or in part from the distribution libraries. Therefore, service or user modifications can be removed from the run-time copy of HLASM Toolkit Feature.

In many cases, the same system can be used as both a driving system and a target system. However, you may want to set up a clone of your system to use as a target system by making a separate IPL-able copy of the running system. The clone should include copies of all system libraries that SMP/E updates, copies of the SMP/E CSI data sets that describe the system libraries, and your PARMLIB and PROCLIB.

Some cases where two systems should be used include the following:

- When installing a new level of a product that is already installed, the new product will delete the old one. By installing onto a separate target system, you can test the new product while still keeping the old one in production.
- When installing a product that shares libraries or load modules with other products, the installation can disrupt the other products. Installing onto a test system or clone will allow you to assess these impacts without disrupting your production system.

Required and optional software for the target system

This section describes the other products that must be installed on the target system in order to install and use HLASM Toolkit Feature.

HLASM Toolkit Feature runs on z/OS with the required licensed programs listed in Table 3 on page 6.

You should install the **minimum release listed or any subsequent release** for all required licensed programs your site needs.

Table 3. Required programs

Required Licensed Program	Minimum Version Supported
z/OS	Version 1 Release 7
SMP/E	SMP/E for z/OS V3.4.0
High Level Assembler	Version 1 Release 6

Note: The IDF component of HLASM Toolkit Feature requires REXX™.

Check with the IBM Support Center for any PTFs you might need to apply.

DASD storage required for the target system

HLASM Toolkit Feature libraries can reside on any currently supported DASD.

Table 4 lists the total space required for each type of library. The values are for a 3390 DASD.

Table 4. Total DASD space required by HLASM Toolkit Feature

Library Type	Total Space Required
Target	303 Tracks
Distribution	351 Tracks

Notes:

1. The data set sizes specified contain 15% extra space. You may wish to revise these numbers based on your plans for adding additional function or service.

2. IBM recommends use of system determined blocksizes for efficient DASD utilization for all non-RECFM U data sets. For RECFM U data sets, IBM recommends a blocksize of 32760, which is the most efficient from a performance and DASD utilization perspective.

   If you choose not to use system determined blocksizes, use the blocksizes and numbers of blocks specified to allocate the data sets. Data sets can be reblocked to a larger size. The maximum allowable blocksize depends on the type of DASD on which the dataset will reside; for example, the blocksize of datasets on a 3350 DASD cannot exceed 19,069.

3. Abbreviations used for the data set type are:

   U   Unique data set used by only the FMIDs listed. In order to determine the correct storage needed for this data set, this table provides all required information; no other tables (or program directories) need to be referenced for the data set size.

   S   Shared data set used by more than the FMIDs listed. In order to determine the correct storage needed for this data set, the storage size given in this table needs to be added to other tables (perhaps in other program directories). If the data set already exists, it must have enough free space to accommodate the storage size given in this table.

   If you currently have a previous release of this product installed in these libraries, the installation of this release will delete the old one and reclaim the space used by the old release and any service that had been installed. You can determine whether these libraries have enough space by deleting the old release with a dummy function, compressing the libraries, and comparing the space requirements with the free space in the libraries.

For more information about the names and sizes of the required data sets, please refer to Table 7 and Table 8 on page 8.

Table 5. Storage requirements for SMP/E work data sets

Library DDNAME	TYPE	ORG	RECFM	LRECL	No. of 3390 Tracks	No. of DIR Blocks
SMPWRK1	S	PDS	FB	80	30	80
SMPWRK2	S	PDS	FB	80	30	80
SMPWRK3	S	PDS	FB	80	180	80
SMPWRK4	S	PDS	FB	80	30	80
SMPWRK6	S	PDS	FB	80	30	80
SYSUT1	U	SEQ	--	--	30	0
SYSUT2	U	SEQ	--	--	30	0
SYSUT3	U	SEQ	--	--	30	0
SYSUT4	U	SEQ	--	--	30	0

Table 6 provides an estimate of the storage needed in the SMP/E data sets for HLASM Toolkit Feature. The estimates must be added to those of any other programs and service being installed to determine the total additional storage requirements.

Table 6. Storage requirements for SMP/E data sets

Library DDNAME	TYPE	ORG	RECFM	LRECL	No. of 3390 Tracks	No. of DIR Blocks
SMPMTS	S	PDS	FB	80	30	5
SMPPTS	S	PDS	FB	80	30	5
SMPSCDS	S	PDS	FB	80	30	5
SMPSTS	S	PDS	FB	80	30	5

Table 7 and Table 8 on page 8 list the target and distribution libraries and their attributes required to install HLASM Toolkit Feature. The storage requirements of HLASM Toolkit Feature must be added to the storage required by other programs having data in the same library.

Table 7. Storage requirements for HLASM Toolkit Feature target libraries

Library DDNAME	Member Type	Target Volume	TYPE	ORG	RECFM	LRECL	No. of 3390 Tracks	No. of DIR Blocks
SASMMOD2	LMOD	Any	U	PDS	U	0	49	2
SASMSAM2	EXEC SOURCE SAMPLE DATA PROC	Any	U	PDS	FB	80	17	1
SASMMAC2	MACRO	Any	U	PDS	FB	80	6	1
SASMPUT2	DATA	Any	U	PDS	FB	80	231	1

Table 8. Storage requirements for HLASM Toolkit Feature distribution libraries

Library DDNAME	TYPE	ORG	RECFM	LRECL	No. of 3390 Tracks	No. of DIR Blocks
AASMMOD2	U	PDS	U	0	97	73
AASMSAM2	U	PDS	FB	80	17	1
AASMMAC2	U	PDS	FB	80	6	1
AASMPUT2	U	PDS	FB	80	231	1

The user may gain access to the supplied sample JCL after the SMP/E RECEIVE step in the install process. Alternatively, the user may copy the sample JCL directly from the installation tape into a temporary library. If this latter method is used then the dataset requirement is shown in the following table.

Table 9. Storage requirements for temporary library

Data Set Name	TYPE	ORG	RECFM	LRECL	No. of 3390 Tracks	No. of DIR Blocks
JCL	U	SEQ	FB	80	40	4

FMIDs deleted

Installing HLASM Toolkit Feature may result in the deletion of other FMIDs. To see what FMIDs will be deleted, examine the ++VER statement in the product's SMPMCS.

Installing with CBPDO

If you are installing HLASM Toolkit Feature with an MVS Custom-Built Product Delivery Offering (CBPDO) (5751-CS3), use the RCVPDO job in the CBPDO RIMLIB data set provided with the CBPDO to receive the product and service for this product. Any additional installation instructions should be obtained from the HLASM Toolkit Feature documentation. However, before installing HLASM Toolkit Feature, check with your IBM Support Center or use either Information/Access or SoftwareXcel Extended to see whether there is additional service information you need.

Planning to use SMP/E

You must decide how to use SMP/E to install HLASM Toolkit Feature. Some points to consider are:

1. This FMID must be installed in the same CSI as HMQ4160.
2. Choose to use an existing global and new target and distribution zones.
3. Choose to use existing global, target, and distribution zones.
4. Use supplied sample jobs or use SMP/E dialogs to RECEIVE, APPLY and ACCEPT. See Chapter 2, "Installing HLASM Toolkit Feature on z/OS," on page 11.

Planning to change installation jobs

Each sample job has instructions on how it is to be modified, to meet the requirements and standards at your site. Refer to these standards as needed for determining the values for these parameters.

Program support

This section describes the IBM support available for HLASM Toolkit Feature.

Program services

Contact your IBM representative for specific information about available program services.

Preventive Service Planning

Before installing HLASM Toolkit Feature, you should review the current Preventive Service Planning (PSP) information. If you obtained HLASM Toolkit Feature as part of a CBPDO, there is HOLDDATA and PSP information included on the CBPDO tape.

If you obtained HLASM Toolkit Feature on a product tape, or if the CBPDO is more than two weeks old when you install it, you should contact the IBM Support Center or use S/390® SoftwareXcel to obtain the current "PSP Bucket".

PSP Buckets are identified by UPGRADEs, which specify product levels, and SUBSETs, which specify the FMIDs for a product level. The UPGRADE and SUBSET values for HLASM Toolkit Feature for z/OS are:

Table 10. PSP upgrade and subset ID

UPGRADE	SUBSET	Description
HLASM160	JMQ416A	HLASM Toolkit MVS

Statement of support procedures

Report any difficulties you have using this program to your IBM Support Center. If an APAR is required, the Support Center will provide the address to which any needed documentation can be sent.

Table 11 identifies the component ID (COMPID) for HLASM Toolkit Feature for z/OS.

Table 11. Component IDs

FMID	COMPID	Component Name	RETAIN Release
JMQ416A	569623401	MVS HLA TOOLKIT FEATURE	16A

Program and service level information

This section identifies the program and any relevant service levels of HLASM Toolkit Feature. The program level refers to the APAR fixes incorporated into the program. The service level refers to the PTFs integrated. Information about the cumulative service tape is also provided.

Program level information

A list of APAR fixes against previous releases of HLASM Toolkit Feature that have been incorporated into this release is shown in Appendix A, "HLASM Toolkit Feature Service," on page 87.

Service level information

No PTFs against this release of HLASM Toolkit Feature have been incorporated into the product tape.

Cumulative service tape

A cumulative service tape, containing PTFs not incorporated into this release, might be included with this program. Installation instructions for cumulative service tapes can be found in the SMP/E publications.

If you received this product as part of a CBPDO or a ProductPac®, PTFs not incorporated into this release are provided on the tape, and a separate cumulative service tape will not be provided.

Publications useful during installation

The publications listed in Table 12 may be useful during the installation of High Level Assembler for z/OS.

Table 12. z/OS publications

Publication Title	Form Number
z/OS MVS Initialization and Tuning Guide	SA22-7591
z/OS MVS Initialization and Tuning Reference	SA22-7592
z/OS MVS JCL Reference	SA22-7597
SMP/E Messages, Codes, and Diagnosis	GA22-7770
SMP/E Commands	SA22-7771
SMP/E Reference	SA22-7772
SMP/E User's Guide	SA22-7773

Planning to install in the link pack area

Load modules that are not shipped with the RN attribute are not re-entrant, and therefore are not eligible for the LPA. They should not be copied to an LPA library or placed in an APF-authorized library.

Currently no HLASM Toolkit Feature load modules are re-entrant.

Toolkit product enablement

You must be licensed to use the HLASM Toolkit Feature, in which case the IFAPRD*xx* member of PARMLIB may need to be updated in one of the following ways:

- If HLASM Toolkit Feature is licensed as a separate product, add this entry:

```
PRODUCT OWNER ('IBM CORP')
    NAME('HI LVL ASSEMBLER')
    ID(5696-234)
    VERSION(*) RELEASE(*) MOD(*)
    FEATURENAME('TOOLKIT DEBUGGER')
    STATE(ENABLED)
```

- If HLASM Toolkit Feature is licensed as a feature of z/OS, refer to *z/OS Planning for Installation* for information about adding the entries to IFAPRD*xx*.

Chapter 2. Installing HLASM Toolkit Feature on z/OS

This chapter describes the installation method and the step-by-step procedures to install and to activate the functions of HLASM Toolkit Feature.

Please note the following:

- HLASM Toolkit Feature must be installed into the same SMP/E environment as High Level Assembler.
- Sample jobs have been provided to help perform some or all of the installation tasks. The SMP/E jobs assume that all DDDEF entries required for SMP/E execution have been defined in the appropriate zones.
- The SMP/E dialogs may be used instead of the sample jobs to accomplish the SMP/E installation steps.

Overview of installation

You install this release of HLASM Toolkit Feature by using the SMP/E RECEIVE, APPLY, and ACCEPT commands. This may be accomplished by using SMP/E dialogs or running batch jobs.

Modifying HLASM Toolkit Feature jobs

The installation jobs that IBM provides do not necessarily follow the conventions (such as file-naming conventions) for your site. You might need to modify them. Descriptions of possible modifications appear in the comments in the sample jobs.

If using a CBPDO

If you obtained HLASM Toolkit Feature as part of a CBPDO, you can use the RCVPDO job found in the CBPDO RIMLIB data set to RECEIVE the HLASM Toolkit Feature FMID as well as any service, HOLDDATA, or preventive service planning (PSP) information included on the CBPDO tape. For more information, refer to the documentation included with the CBPDO.

Installation checklist

Table 13 on page 12 lists the steps and associated jobs to install HLASM Toolkit Feature. The remaining sections in this chapter describe each step. You can use Table 13 on page 12 as a checklist.

Table 13. Summary of steps for installing HLASM Toolkit Feature

Step	Description	Installation Job	Page
_1	SMP/E Considerations for Installing HLASM Toolkit Feature		"Step 1: SMP/E considerations for installing HLASM Toolkit Feature" on page 14
_2	Copy the sample JCL from the Product Tape	ASMWTCPY	"Step 2: Copy the sample JCL from the product tape" on page 15
_3	Set up ISPF Editor Macro (Optional)	ASMWTEDT	"Step 3: Set up ISPF editor macro (optional)" on page 15
_4	Perform SMP/E Receive	ASMWTRCV	"Step 4: Perform SMP/E receive" on page 15
_5	Allocate Target and Distribution Libraries	ASMWTALC	"Step 5: Allocate target and distribution libraries" on page 16

Table 13. Summary of steps for installing HLASM Toolkit Feature (continued)

Step	Description	Installation Job	Page
_6	Create DDDEF Entries	ASMWTDDF	"Step 6: Create DDDEF entries" on page 16
_7	Perform SMP/E Apply	ASMWTAPL	"Step 7: Perform SMP/E apply" on page 17
_8	Run the Installation Verification Program	ASMWTIVP	"Step 8: Run the installation verification program" on page 18
_9	Perform SMP/E Accept	ASMWTACP	"Step 9: Perform SMP/E accept" on page 18
_10	Download Program Understanding Tool to workstation		"Step 10: Download Program Understanding Tool" on page 19
_11	Define Interactive Debug Facility to VTAM®		"Step 11: Define Interactive Debug Facility to VTAM" on page 19

Step 1: SMP/E considerations for installing HLASM Toolkit Feature

This release of HLASM Toolkit Feature is installed using the SMP/E RECEIVE, APPLY, and ACCEPT commands. The SMP/E dialogs may be used to accomplish the SMP/E installation steps.

SMP/E environment

All SMP/E installation jobs provided assume that all necessary DD statements for the execution of SMP/E are defined using DDDEFs.

Sample jobs are provided on the installation tape to help you install HLASM Toolkit Feature. After the RECEIVE step has been completed, the sample jobs can be found in SMPTLIB: **IBM.JMQ416A.F1**. Make a copy of these jobs in your own library and modify them to use during the installation of HLASM Toolkit Feature. The sample jobs are:

ASMWTEDT
> Sample EDIT macro

ASMWTRCV
> Sample RECEIVE job

ASMWTALC
> Sample job to allocate target and distribution libraries

ASMWTDDF
> Sample job to define HLASM Toolkit Feature DDDEFs

ASMWTAPL
> Sample APPLY job

ASMWTIVP
> Sample install verification job

ASMWTACP
> Sample ACCEPT job

In the sample SMP/E jobs provided, the name of the SMP/E CSI is `#globalcsi`. The global zone name in the SMP/E CSI is `GLOBAL`. The distribution zone name is `#dzone`. The target zone name is `#tzone`. The sample jobs should be updated to reflect the CSI and zone names where you installed High Level Assembler.

SMP/E options subentry values

The recommended values for some SMP/E CSI subentries are shown in Table 14. Use of values lower than these may result in failures in the installation process. DSSPACE is a subentry in the GLOBAL options entry. PEMAX is a subentry of the GENERAL entry in the GLOBAL options entry. Refer to the SMP/E manuals for instructions on updating the global zone.

Table 14. SMP/E options subentry values

SUB-ENTRY	Value	Comment
DSSPACE	(300,150,250)	Space Allocation for SMPTLIB data sets
PEMAX	SMP/E default	IBM recommends using the SMP/E default for PEMAX

Step 2: Copy the sample JCL from the product tape

This step can be bypassed if you plan to use the sample jobs from the SMPTLIB: **IBM.JMQ416A.F1** after the Receive Step.

The following sample JCL will copy the HLASM Toolkit Feature jobs from the tape. Add a job card and modify the parameters in boldface to uppercase values to meet your site's requirements before submitting.

```
//COPY   EXEC PGM=IEBCOPY
//SYSPRINT DD SYSOUT=A
//IN     DD DSN=IBM.JMQ416A.F1,UNIT=#tape,VOL=SER=MQ416A,
//       DISP=(OLD,KEEP),LABEL=(2,SL)
//OUT    DD DSN=#hlq.JCL,
//       DISP=(NEW,CATLG,DELETE),
//       RECFM=FB,LRECL=80,BLKSIZE=0,
//       SPACE=(8800,(40,2,4)),
//       UNIT=#unit,
//       VOL=SER=#dasdvol
//SYSUT3 DD UNIT=SYSALLDA,SPACE=(CYL,(1,1))
//SYSIN DD *
  COPY INDD=IN,OUTDD=OUT
/*
```

Figure 1. Load installation jobs

In this sample, **#tape** is the unit value matching the product cartridge, **#hlq.JCL** is the name of the data set where the sample jobs will reside, **#dasdvol** is the volume serial of the DASD device where the data set will reside, and **#unit** is the DASD unit type of the volume.

This job is also supplied as ASMWTCPY in SMPTLIB: **IBM.JMQ416A.F1**

Step 3: Set up ISPF editor macro (optional)

To aid you in making changes to the SMP/E installation jobs ASMWTACP, ASMWTALC, ASMWTAPL, ASMWTDDF, ASMWTIVP, and ASMWTRCV, an ISPF editor macro, called ASMWTEDT, is supplied and is copied to your output data set. This macro lets you substitute proper values for all of the required variables in those jobs, instead of making the changes repeatedly by hand.

Edit macro ASMWTEDT and provide the proper values. Then copy it to any data set in your TSO logon procedure SYSEXEC concatenation. Consult the instructions in the macro for more information.

Step 4: Perform SMP/E receive

There are two methods of receiving HLASM Toolkit Feature:
- The interactive capability of SMP/E described in "Method 1: Receive using SMP/E dialogs."
- The batch procedure described in "Method 2: Receive using a batch job" on page 16.

Method 1: Receive using SMP/E dialogs

Select the Command Generation option from the SMP/E Primary Option menu.

Supply the following information as you progress through subsequent command generation panels for the RECEIVE command:

Name of your CSI	_____
Zone name	Global
HOLDDATA	No
All	No
Select	Yes
FMID you are installing	JMQ416A
Data set name	_____
Volume serial	_____
Unit	_____
Label Type	_____
File	_____

Expected Return Codes and Messages: This should issue a return code of zero and no error messages.

Method 2: Receive using a batch job

Edit and submit job ASMWTRCV to receive HLASM Toolkit Feature. Consult the instructions in the sample job for more information.

Note: If you obtained HLASM Toolkit Feature as part of a CBPDO, you can use the RCVPDO job found in the CBPDO RIMLIB data set to RECEIVE the HLASM Toolkit Feature FMID as well as any service, HOLDDATA, or preventive service planning (PSP) information included on the CBPDO tape. For more information, refer to the documentation included with the CBPDO.

Expected Return Codes and Messages: This job should issue a return code of zero and no error messages.

Step 5: Allocate target and distribution libraries

Edit and submit job ASMWTALC to allocate the SMP/E target and distribution libraries for HLASM Toolkit Feature. Consult the instructions in the sample job for more information.

Expected Return Codes and Messages: This job should issue a return code of zero and no error messages.

Step 6: Create DDDEF entries

Edit and submit job ASMWTDDF to create DDDEF entries for the SMP/E target and distribution libraries for HLASM Toolkit Feature. Consult the instructions in the sample job for more information.

Expected Return Codes and Messages: This job should issue a return code of zero and no error messages.

After this job, the SYSLIB concatenation needs to be updated in the target and distribution zones.

- SASMMAC2 and AASMMAC2 libraries need to be added to the SYSLIB concatenation in the target zone.
- AASMMAC2 library needs to be added to the SYSLIB concatenation in the distribution zone.

Step 7: Perform SMP/E apply

There are two methods of applying HLASM Toolkit Feature:

- The interactive capability of SMP/E described in "Method 1: Apply using SMP/E dialogs."
- The batch procedure described in "Method 2: Apply using a batch job."

To receive the full benefit of the SMP/E Causer SYSMOD Summary Report, do *not* bypass the following on the APPLY CHECK: PRE, ID, REQ, and IFREQ. This is because the SMP/E root cause analysis identifies the cause only of **ERRORS** and not of **WARNINGS** (SYSMODs that are bypassed are treated as warnings, not errors, by SMP/E).

Method 1: Apply using SMP/E dialogs

1. Select the Command Generation option from the SMP/E Primary Option menu.

   You will be asked to supply some of the information above as you progress through subsequent command generation panels for APPLY.

2. Perform an APPLY CHECK before the APPLY. Examine the output from the APPLY CHECK run.

   Expected Return Codes and Messages: This should issue a return code of zero and no error messages.

3. If it shows no conflict, rerun the APPLY with CHECK=NO.

   Expected Return Codes and Messages: This should issue a return code of zero and no error messages.

Method 2: Apply using a batch job

1. Perform an Apply with Check

   Use the sample job ASMWTAPL to apply HLASM Toolkit Feature.

   The installation job ASMWTAPL invokes SMP/E to apply HLASM Toolkit Feature. ASMWTAPL performs an APPLY with the CHECK option to check for possible conflicts in the target zone.

   Edit and submit sample job ASMWTAPL to perform an SMP/E APPLY CHECK. Consult the instructions in the sample job for more information.

   Expected Return Codes and Messages: This job should issue a return code of zero and no error messages.

2. Perform an Apply

   Edit sample job ASMWTAPL to remove CHECK operand and resubmit.

   Expected Return Codes and Messages: This job should issue a return code of zero and no error messages.

Step 8: Run the installation verification program

A sample job, ASMWTIVP, is provided to verify that the product has installed correctly. This job carries out the following functions:

- Assembles test sample ASMTSAMP
- Link edits test sample ASMTSAMP
- Disassembles test module ASMTSAMP
- Create language extraction file

Edit and submit sample job ASMWTIVP. Consult the instructions in the sample job for more information. ASMWTIVP uses TSO BATCH to carry out its functions.

Expected Return Codes and Messages: This should issue a return code of zero and no error messages.

Step 9: Perform SMP/E accept

To permanently install HLASM Toolkit Feature, use SMP/E ACCEPT processing. You should accept HLASM Toolkit Feature *before* you apply any user modifications or install any maintenance because the SMP/E RESTORE command restores HLASM Toolkit Feature only to the level of the last version you accept.

To receive the full benefit of the SMP/E Causer SYSMOD Summary Report, do *not* bypass the following on the ACCEPT CHECK: PRE, ID, REQ, and IFREQ. This is because the SMP/E root cause analysis identifies the cause only of **ERRORS** and not of **WARNINGS** (SYSMODs that are bypassed are treated as warnings, not errors, by SMP/E).

There are two methods of accepting HLASM Toolkit Feature:

- The interactive capability of SMP/E described in "Method 1: Accept using SMP/E dialogs."
- The batch procedure described in "Method 2: Accept using a batch job."

Method 1: Accept using SMP/E dialogs

1. Select the Command Generation option from the SMP/E Primary Option menu.

   Supply the information requested as you progress through subsequent command generation panels for ACCEPT.

2. Perform an ACCEPT CHECK before running the ACCEPT command. Examine the output from the ACCEPT CHECK run. <

   Expected Return Codes and Messages: This should issue a return code of zero and no error messages.

3. Perform an ACCEPT.

   If the ACCEPT CHECK run shows no conflict, rerun the ACCEPT with CHECK=NO.

   Expected Return Codes and Messages: This should issue a return code of zero and no error messages.

Method 2: Accept using a batch job

1. Perform an ACCEPT with CHECK

   The job ASMWTACP performs an ACCEPT with the CHECK option to check for possible conflicts in the distribution zone.

Edit and submit sample job ASMWTACP to perform an SMP/E ACCEPT CHECK for HLASM Toolkit Feature. Consult the instructions in the sample job for more information.

Expected Return Codes and Messages: This job should issue a return code of zero and no error messages.

2. Perform an ACCEPT

When this job is successful, rerun this job without the CHECK option.

Before using SMP/E to load new distribution libraries, it is recommended that you set the ACCJCLIN indicator in the distribution zone. This will cause entries produced from JCLIN to be saved in the distribution zone whenever a SYSMOD containing inline JCLIN is ACCEPTed. For more information about the ACCJCLIN indicator, see the description of inline JCLIN in *SMP/E Commands*.

Note: The GROUPEXTEND operand indicates that SMP/E accept all requisite SYSMODs. The requisite SYSMODS might be applicable to other functions.

Expected Return Codes and Messages: This job should issue a return code of zero and no error messages.

Step 10: Download Program Understanding Tool

Instructions to download the Program Understanding Tool are contained in Appendix D, "Installing Program Understanding Tool on Windows," on page 93.

Step 11: Define Interactive Debug Facility to VTAM

If you plan to conduct IDF debugging via VTAM® sessions with your terminals, you must define the minor node names for IDF to VTAM. A minor node is defined by using the following naming convention:
- The first five characters must be ASMTL
- The last three characters must be consecutive 3-digit numbers, starting with 001

IDF uses the ASMTLnnn minor node names for internal processing. These names are not the terminal LU names that are specified by the user in the LUNAME invocation parameters.

The number of minor node names defined must be sufficient to allow for the maximum number of concurrent IDF users using VTAM terminal sessions. You can define up to 999 minor node names for IDF.

To place the statements into a new member, take the following steps:
1. Create a new member in the VTAM definitions library (VTAMLST).
2. Update the new member with the required definitions.
3. Add the new member's name to the VTAM start options configuration file, ATCCONxx.

To place the statements into an existing member, take the following steps:
1. Select a member in the VTAM definitions library (VTAMLST) that contains the major node definitions.
2. Update the selected member with the minor node name definitions (APPL statements) for IDF.

For example, the following statements define a major node and 10 minor node names, ASMTL001 to ASMTL010. These sample definitions can be placed into a new member or into an existing member in the VTAM definitions library (VTAMLST):

```
ASMAPPL  VBUILD TYPE=APPL
ASMTL001 APPL  AUTH=(PASS,ACQ),PARSESS=NO
ASMTL002 APPL  AUTH=(PASS,ACQ),PARSESS=NO
ASMTL003 APPL  AUTH=(PASS,ACQ),PARSESS=NO
ASMTL004 APPL  AUTH=(PASS,ACQ),PARSESS=NO
ASMTL005 APPL  AUTH=(PASS,ACQ),PARSESS=NO
ASMTL006 APPL  AUTH=(PASS,ACQ),PARSESS=NO
ASMTL007 APPL  AUTH=(PASS,ACQ),PARSESS=NO
ASMTL008 APPL  AUTH=(PASS,ACQ),PARSESS=NO
ASMTL009 APPL  AUTH=(PASS,ACQ),PARSESS=NO
ASMTL010 APPL  AUTH=(PASS,ACQ),PARSESS=NO
```

Configuring the TN3270 Telnet Server to access the terminal LUs

If you use the z/OS Communications Server for TN3270 Telnet Server to manage your terminals, you must configure TN3270 Telnet Server to support terminals and the configuration must meet the following requirements:

- You must access the terminal LUs that have a proper DLOGMOD parameter specified.
- You must specify the LUMAP KEEPOPEN statement so that VTAM allocates the ACB for the terminal LU when a terminal emulator session is connected to the terminal LU, rather than only when an application is started.
- The terminal LU name must be available to the user of the terminal emulator session.

Alternatively, you can set up a new TN3270 Telnet port to enable terminal support. Here is an example of the VTAM definition for a TN3270 Telnet port:

```
BEGINVTAM
 PORT 2023
 USSTCP USSCOPS
 ; Define the VTAM terminal LUs to use for this port
 LUGROUP ASMIDF
    ASMLU001..ASMLU050
 ENDLUGROUP
 IPGROUP EVERYONE
    0.0.0.0:0.0.0.0
 ENDIPGROUP
 ; Indicate that the ACBs are always allocated
 LUMAP ASMIDF EVERYONE KEEPOPEN
 ; Allow only HLASM IDF to use this port
 ALLOWAPPL   ASMTL*
ENDVTAM
```

Chapter 3. Installing HLASM Toolkit Feature on z/OS

This chapter describes the installation method and the step-by-step procedures to install and to activate the functions of HLASM Toolkit Feature.

Please note the following:

- HLASM Toolkit Feature must be installed into the same SMP/E environment as High Level Assembler.
- Sample jobs have been provided to help perform some or all of the installation tasks. The SMP/E jobs assume that all DDDEF entries required for SMP/E execution have been defined in the appropriate zones.
- The SMP/E dialogs may be used instead of the sample jobs to accomplish the SMP/E installation steps.

Maintaining HLASM Toolkit Feature on z/OS

This chapter describes how to re-install HLASM Toolkit Feature and how to apply service updates to HLASM Toolkit Feature. To use the maintenance procedures effectively, you should have already installed HLASM Toolkit Feature and any required products.

In addition, this chapter describes how to remove HLASM Toolkit Feature.

Re-installing HLASM Toolkit Feature

The action required here depends on the circumstance. If you want to re-install HLASM Toolkit Feature and you did not use the SMP/E ACCEPT command then use an SMP/E APPLY REDO command. However, if you did use the SMP/E ACCEPT command, then the product should be deleted before installing again. For more information refer to "Removing HLASM Toolkit Feature" on page 23.

Applying service updates

You might need to apply maintenance or service updates to HLASM Toolkit Feature periodically.

What you receive

If you report a problem with HLASM Toolkit Feature to your IBM Support Center, you will receive a tape containing one or more APARs or PTFs that have been created to solve your problem.

You might also receive a list of pre-requisite APARs or PTFs, which should have been applied to your system before applying the current service. These prerequisite APARs or PTFs, might relate to HLASM Toolkit Feature or any other licensed product you have installed, including z/OS.

To help you understand the service process, the following overview familiarizes you with applying service for HLASM Toolkit Feature.

Checklist for applying service

Table 15 on page 22 lists the steps and associated SMP/E commands for installing corrective service on HLASM Toolkit Feature. You can use Table 15 on page 22 as a checklist.

Table 15. Summary of steps for installing service on HLASM Toolkit Feature

Step	Description	SMP/E Command	Page
__ 1	Prepare to install service.	—	"Step 1: Prepare to install service"
__ 2	Receive service.	RECEIVE	"Step 2: Receive the service"
__ 3	Accept previously applied service (optional).	ACCEPT	"Step 3: Accept applied service (optional)"
__ 4	Apply service.	APPLY	"Step 4: Apply the service"
__ 5	Test service.	—	"Step 5: Test the service" on page 23
__ 6	Accept service.	ACCEPT	"Step 6: Accept the service" on page 23
__ 7	Service on Program Understanding Tool.	—	"Step 7: Service on Program Understanding Tool" on page 23

Step 1: Prepare to install service

Before you start applying service:

1. Create a backup copy of the current HLASM Toolkit Feature. Save this copy of HLASM Toolkit Feature until you have completed installing the service and you are confident that the service runs correctly.

2. Research each service tape through the IBM Support Center for any errors and/or additional information. Note all errors on the tape that were reported by APARs and apply the applicable fixes.

Step 2: Receive the service

Receive the service using SMP/E RECEIVE command. This can be done from the SMP/E dialogs in ISPF or using a batch job.

Step 3: Accept applied service (optional)

Accept any service you applied earlier but did not accept, if you are satisfied that the earlier service is not causing problems in your installation. This can be done from the SMP/E dialogs in ISPF or using a batch job. Accepting the earlier service allows you to use the SMP/E RESTORE command to return to your current level if you encounter a problem with the service you are currently applying. This can be done from the SMP/E dialogs in ISPF or using a batch job.

Step 4: Apply the service

Apply the service using SMP/E APPLY command. You should use the SMP/E APPLY command with the CHECK operand first. Check the output; if it shows no conflict, rerun the APPLY without the CHECK option. This can be done from the SMP/E dialogs in ISPF or using a batch job.

Step 5: Test the service

Thoroughly test your updated HLASM Toolkit Feature. Run the installation verification program to ensure that the product functions properly. You can use the job, ASMWTIVP, from the target library ASM.SASMSAM2, to do this. Do not accept a service update until you are confident that it runs correctly.

In the event of a serious problem, you can restore the backup copy of HLASM Toolkit Feature.

Step 6: Accept the service

Accept the service using SMP/E ACCEPT command. You should use the SMP/E ACCEPT command with the CHECK operand first. Check the output; if it shows no conflict, rerun the ACCEPT without the CHECK option. This can be done from the SMP/E dialogs in ISPF or using a batch job.

Step 7: Service on Program Understanding Tool

Service which has an impact on the Program Understanding Tool will be indicated in the cover letter supplied with the service. Once service has been applied then the Program Understanding Tool should be updated on the workstation. Refer to Appendix E, "Maintaining Program Understanding Tool on Windows," on page 97 for information about how to do this.

Removing HLASM Toolkit Feature

To delete HLASM Toolkit Feature, you must:

- Make sure no other products depend on it.
- Use a dummy function SYSMOD to delete it.
- Receive, apply, and accept the dummy function, and run the UCLIN to delete the SYSMOD entries for the deleted function and the dummy function.

Edit and submit job ASMTDEL0 to delete HLASM Toolkit Feature. Consult the instructions in the sample job for more information.

Expected Return Codes and Messages: You receive message `GIM39701W` because the dummy function SYSMOD has no elements. The SMP/E RECEIVE command returns a return code of 4. If any USERMODs have been applied then the SMP/E APPLY command issues a `GIM44502W` message indicating USERMOD changes will be lost with a return code of 4. Both these warning messages can be ignored.

The target and distribution libraries can now be deleted. They are shown in Table 7 on page 7 and Table 8 on page 8.

Reporting a problem with HLASM Toolkit Feature

To assist with reporting any difficulties, refer to the diagnostic process as shown in the *HLASM Installation and Customization Guide*.

Report any difficulties with this product to your IBM Support Center. If an APAR is required, the Support Center will provide the address to which any needed documentation can be sent.

Table 16 on page 24 identifies the component ID (COMP ID) for HLASM Toolkit Feature for z/OS.

Table 16. Component IDs

FMID	COMP ID	Component Name	REL
JMQ416A	569623401	MVS HLA TOOLKIT FEATURE	16A

Obtaining service information

Preventive Service Planning (PSP) information is continually updated as fixes are made available for problems. Check with your IBM Support Center or use either Information/Access or SoftwareXcel Extended to see whether there is additional PSP information you need. To obtain this information, specify the following UPGRADE and SUBSET values: HLASM160 and JMQ416A.

Part 2. On z/VM: planning for, installing, and maintaining High level Assembler Toolkit Feature

Chapter 4. Planning for installing HLASM Toolkit Feature on z/VM

This section contains the following planning information to help you properly install HLASM Toolkit Feature on VM:
- Worksheet
- What you receive with HLASM Toolkit Feature
- Identifying required and optional software
- VMSES/E considerations
- Verifying that you have enough DASD storage
- Program support
- Program and service level information
- Publications useful during installation

Worksheet: Planning for installing HLASM Toolkit Feature on z/VM

Before you begin the installation you should:

1. Determine which of the following you are installing HLASM Toolkit Feature as:

   Part of a z/VM System Delivery Offering

   By itself

   If installing HLASM Toolkit Feature by itself, determine the product parts to be installed:

   COMPID *569623401*

   Feature number *5832*

   See "What you receive with HLASM Toolkit Feature."

2. Verify that required software (and optional software, if appropriate) is at the level needed. See "What you need to install HLASM Toolkit Feature" on page 29.

3. Ensure you are familiar with VMSES/E. See "VMSES/E considerations" on page 29.

4. Verify that adequate storage is available:

   Minidisks

   Shared File System

   See "DASD storage required" on page 29.

5. Obtain latest service updates needed. See "Program support" on page 30.

6. Plan to install Program Understanding Tool onto a workstation. See Appendix C, "Planning for installing Program Understanding Tool on Windows," on page 91.

What you receive with HLASM Toolkit Feature

You receive the following when you order HLASM Toolkit Feature:

COMPIDs	Feature Numbers	System Name
569623401	5832	z/VM

Distribution media

HLASM Toolkit Feature is available through the z/VM SDO on 3590 and 3592 tape cartridge. You can also receive this program electronically by ordering it through the z/VM SDO using IBM ShopzSeries. For more information about IBM ShopzSeries go to

`www.ibm.com/software/ShopzSeries.`

The tape cartridge or electronic envelope contains all the programs and data needed for installation.

Basic material

Table 17 describes the cartridge. Table 18 describes the file content of the program cartridge.

Table 17. Basic material: program cartridge

Medium	Feature Number	Physical Volume	External Label Identification	VOLSER
3480 cart.	5832	1	HLASM TLKT VM R6	unlabeled

Table 18. Program cartridge: file content

File	Content
1	Tape Header
2	Tape Header
3	Product Header
4	Product Memo
5	Service Apply Lists
6	PTFPARTS
7	HLASM Toolkit Feature Service
8	HLASM Toolkit Feature Service summary
9	HLASM Toolkit Feature Base code
10	HLASM Toolkit Feature Sample files
11	HLASM Toolkit Feature Executable product code

Optional material

There are no optional materials for HLASM Toolkit Feature.

Cumulative service tape

You might receive an additional tape containing cumulative service with your order. The PTFs on this tape have not yet been incorporated into this release.

If you received this product as part of a z/VM System Delivery Offering, PTFs that have not been incorporated into this release are provided on the tape. A separate cumulative service tape is **not** provided.

Program publications and softcopy

This section identifies the basic and optional publications for High Level Assembler.
- *HLASM Licensed Program Specifications* GC26-4944

- *HLASM Installation and Customization Guide* SC26-3494
- *HLASM Language Reference* SC26-4940
- *HLASM Programmer's Guide* SC26-4941
- *HLASM General Information* GC26-4943

For a list of books for related products, see "Bibliography" on page 101.

What you need to install HLASM Toolkit Feature

The following sections identify the system requirements for installing HLASM Toolkit Feature.

Operating system requirements

HLASM Toolkit Feature supports the following z/VM operating systems and subsequent releases and versions:

- z/VM Version 5

Other program product requirements

Table 19. Required programs

Required Licensed Program	Minimum Version Supported
HIGH LEVEL ASSEMBLER for z/OS & z/VM & z/VSE	Version 1 Release 6

Note: The IDF component of HLASM Toolkit Feature requires REXX.

VMSES/E considerations

This section describes items that should be considered before you install HLASM Toolkit Feature.

- VMSES/E is required to install and service this product.
- If multiple users install and maintain licensed products on your system there might be a problem getting the necessary write access to MAINT's 51D disk. If you find that there is contention for write access to the 51D disk, you can eliminate it by converting the software inventory from minidisk to the Shared File System (SFS). See *z/VM: VMSES/E Introduction and Reference* for information about how to make this change.
- HLASM Toolkit Feature is installed and serviced using the user ID P696234K. IBM recommends that you use this userid, however, you can change the userid name if you wish. If you change this name, you must create a PPF override. Generally this section of this installation and customization guide assumes that you have used the IBM-recommended userid, P696234K.
- If you plan to change the userid, it might be easier to do so during Step 1, substep 6 on page 35, while you are installing the product.

DASD storage required

Before installing you need to understand the user ID and DASD storage requirements. They are shown in Table 20 on page 30. Some important points to consider are:

- The installation user ID and minidisks or SFS are defined in "Step 2: Allocate resources for installing HLASM Toolkit Feature" on page 36. Table 20 on page 30 gives an estimate of the storage required to install HLASM Toolkit Feature.

- P696234K is the default user ID and can be changed. If you choose to change the name you need to create a Product Parameter File (PPF) override to change the name. This can be done in Step 1, substep 6 on page 35.
- If you choose to install HLASM Toolkit Feature on a common user ID, the default minidisk addresses for HLASM Toolkit Feature might already be defined. If any of the default minidisks required by HLASM Toolkit Feature are already in use, create an override to change the minidisks for HLASM Toolkit Feature so they are unique.

Table 20. DASD storage requirements for target minidisks

| Minidisk Owner (user ID) | Default Address | Storage in Cylinders | | SFS 4K Blocks | Usage |
		DASD	CYLS		Default SFS Directory Name
P696234K	2B2	3390	50	9000	Contains all the base code shipped with HLASM Toolkit Feature.
					VMSYS:P696234K.HLASMTL.OBJECT
P696234K	2C2	3390	4	720	Contains a sample file
					VMSYS:P696234K.HLASMTL.LOCAL
P696234K	2D2	3390	50	9000	Contains serviced files.
					VMSYS:P696234K.HLASMTL.DELTA
P696234K	2A6	3390	1	180	Contains AUX files and software inventory files that represents your test service level of HLASM Toolkit Feature.
					VMSYS:P696234K.HLASMTL.APPLYALT
P696234K	2A2	3390	1	180	Contains AUX files and software inventory files that represents the service level of HLASM Toolkit Feature that is currently in production.
					VMSYS:P696234K.HLASMTL.APPLYPROD
P696234K	29E	3390	50	9000	Test build disk. This code is copied to a production disk, (for example, MAINT 19E) so the production disk may also require this amount of free space.
					VMSYS:P696234K.HLASMTL.TBUILD
P696234K	191	3390	5	900	P696234K 191 minidisk.
					VMSYS:P696234K.
Note: Cylinder values defined in this table are based on 4K block size.					

If you plan to use SFS directories, then calculate the number of 4K blocks required from Table 20.

Program support

This section describes the IBM support available for HLASM Toolkit Feature.

Program services

Contact your IBM representative for specific information about available program services.

Preventive Service Planning

Before installing HLASM Toolkit Feature, you should review the current Preventive Service Planning (PSP) information.

PSP Buckets are identified by UPGRADEs, which specify product levels, and SUBSETs, which specify the FMIDs for a product level. The UPGRADE and SUBSET values for HLASM Toolkit Feature are:

Table 21. PSP upgrade and subset ID

UPGRADE	SUBSET	Description
HLASM160	HLASMVM36A	HLASM Toolkit VM

Statement of support procedures

Report any difficulties you have using this program to your IBM Support Center. If an APAR is required, the Support Center will provide the address to which any needed documentation can be sent.

Table 11 on page 9 identifies the component ID (COMPID) for HLASM Toolkit Feature for z/VM.

Table 22. Component IDs

COMPID	Component Name	RETAINRelease
569623401	VM HLA TOOLKIT FEATURE	36A

Program and service level information

This section identifies the program and any relevant service levels of HLASM Toolkit Feature. The program level refers to the APAR fixes incorporated into the program. The service level refers to the PTFs integrated. Information about the cumulative service tape is also provided.

Program level information

A list of APAR fixes against previous releases of HLASM Toolkit Feature that have been incorporated into this release is shown in Appendix A, "HLASM Toolkit Feature Service," on page 87.

Service level information

No PTFs against this release of HLASM Toolkit Feature have been incorporated into the product tape.

Publications useful during installation

The publications listed in Table 23 may be useful during the installation of HLASM Toolkit Feature for z/VM.

Table 23. z/VM publications

Publication Title	Form Number
z/VM: VMSES/E Introduction and Reference	GC24-6243
z/VM: Service Guide	GC24-6247

Table 23. z/VM publications (continued)

Publication Title	Form Number
z/VM: CMS Commands and Utilities Reference	SC24-6166
z/VM: CMS File Pool Planning, Administration, and Operation	SC24-6167
z/VM: CP Planning and Administration	SC24-6178
z/VM: Saved Segments Planning and Administration	SC24-6229
z/VM: Other Components Messages and Codes	GC24-6207
z/VM: CMS and REXX/VM Messages and Codes	GC24-6161
z/VM: CP System Messages and Codes	GC24-6177

Chapter 5. Installing HLASM Toolkit Feature on z/VM

This chapter describes the installation method and the step-by-step procedures you use to install and activate the functions of HLASM Toolkit Feature.

Overview of installation

You install this release of HLASM Toolkit Feature by using VMSES/E commands.

Checklist for installing HLASM Toolkit Feature

Table 24 lists the steps and associated VMSES/E commands for installing HLASM Toolkit Feature. The remaining sections in this chapter describe each step. You can use Table 24 as a checklist.

Table 24. Summary of steps for installing HLASM Toolkit Feature

Step	Description	VMSES/E Command	Page
__ 1	Prepare to install HLASM Toolkit Feature.	VMFINS	"Step 1: Prepare to install HLASM Toolkit Feature" on page 34
__ 2	Allocate resources for installing HLASM Toolkit Feature.		"Step 2: Allocate resources for installing HLASM Toolkit Feature" on page 36
__ 3	Install HLASM Toolkit Feature.	VMFINS	"Step 3: Install HLASM Toolkit Feature" on page 39

Table 24. Summary of steps for installing HLASM Toolkit Feature (continued)

Step	Description	VMSES/E Command	Page
__ 4	Verify the installation in a test environment.	VMFINS	"Step 4: Verify the installation in a test environment" on page 40
__ 5	Place HLASM Toolkit Feature into production.	VMFCOPY	"Step 5: Put HLASM Toolkit Feature into production" on page 41
__ 6	Download Program Understanding Tool to workstation.		"Step 6: Download Program Understanding Tool" on page 43

Step 1: Prepare to install HLASM Toolkit Feature

Carry out the following preparatory tasks:

1. Log on as the HLASM Toolkit Feature installer planner, typically the MAINT user ID. IBM recommends that you use P696234K as the product installation user ID.

   Normally, the MAINT user ID is used for the planning and setup for HLASM Toolkit Feature, then the P696234K user ID is used to install the product.

   However, you can log on as any user ID that has read access to MAINT's 5E5 minidisk and write access to the MAINT 51D minidisk.

2. Make the installation media available.

   If you are installing from tape, attach the tape to the user ID at virtual address 181. Using virtual address 181 is required by the VMFINS EXEC.

   If you have received HLASM Toolkit Feature as an Envelope file, ensure the Envelope file exists on the A-disk, or any disk accessed as C.

3. Establish read access to VMSES/E, using the following command:

Command	Explanation
`link MAINT 5e5 5e5 rr` `access 5e5 b`	Commands to access VMSES/E code.

4. Establish write access to the software inventory disk.

Command	Explanation
`link MAINT 51d 51d mr` `access 51d d`	Commands to acquire write access to software inventory disk.

If another user already has the software inventory disk linked in write mode (R/W), you are not allowed to link to that disk in write mode. The other user must relink to the software inventory disk in read-only mode, then you can try the above procedure again.

The VMSES/E system-level software inventory and other dependent files reside on the MAINT 51D disk.

You cannot proceed with the installation procedure until you have write access to the software inventory disk.

5. Load the HLASM Toolkit Feature product control files onto the software inventory disk.

If you are installing from tape:

Command
`vmfins install info (nomemo`

If you are installing from an Envelope file:

Command
`vmfins install info (nomemo env` *filename*

This command will:
- Load the Memo-to-Users file
- Load the product control files including the Product Parameter File (PPF) and the PRODPART files
- Create VMFINS PRODLIST on your A-disk. The VMFINS PRODLIST contains a list of products on the installation tape.

Options:

filename
> The name of your Envelope file, for example, P696234K.

nomemo
> Loads the memo but does not issue a prompt to send it to the system printer. Specify the **memo** option if you want to be prompted to print the memo.

6. Obtain the resource planning information.

If you are installing from tape:

Command
`vmfins install ppf P696234K {HLASM|HLASMSFS} (plan nomemo`

If you are installing from an Envelope file:

Command
`vmfins install ppf P696234K {HLASM|HLASMSFS} (plan nomemo env` *filename*

Note: This command *does not* load HLASM Toolkit Feature.

Options:

filename
> The name of your Envelope file, for example, P696234K.

nomemo
> Loads the memo but does not issue a prompt to send it to the system printer. Specify the **memo** option if you want to be prompted to print the memo.

plan　VMFINS performs requisite checking, plans system resources, and provides an opportunity to override the defaults in the product parameter file.

HLASM│HLASMSFS
> This command creates the P696234K PLANINFO file on your A disk.
> - Use HLASM if HLASM Toolkit Feature is to be installed on a minidisk.
> - Use HLASMSFS if HLASM Toolkit Feature is to be installed in SFS.

You are prompted to change the installation defaults with message VMFINS2601R. You can override:

- You can override:
  - The name of the product parameter file
  - The default user IDs
  - Minidisk/directory definitions

- If you change the PPF name, a default user ID, or other parameters via a PPF override, you must use your changed values instead of those indicated (when appropriate), throughout the rest of the installation instructions, as well as the instructions for servicing HLASM Toolkit Feature. For example, you must specify your PPF override file name instead of P696234K for certain VMSES/E commands.

- If you are not familiar with creating PPF overrides using VMFINS, refer to *z/VM: VMSES/E Introduction and Reference* before you continue. Also see Appendix B, "Create Product Parameter File (PPF) override (z/VM)," on page 89.

7. Review the install message log file

Command	Explanation
`vmfview install`	View the install message log.

Review the install message log ($VMFINS $MSGLOG). If necessary, correct any problems before going on. For information about specific error messages, see *z/VM: Other Components Messages and Codes*.

Step 2: Allocate resources for installing HLASM Toolkit Feature

Use the information from the P696234K PLANINFO file to allocate storage resources for your installation.

In the planning chapter, you decided whether to install on minidisk or shared file system (SFS). See "DASD storage required" on page 29 for the relevant storage requirements.

Common instructions for allocating storage resources

1. Obtain the user directory from the P696234K PLANINFO file.

- User directory entries contain all of the links and privilege classes necessary for the P696234K user ID.
- Use the directory entry in the PLANINFO as a model for input to your system directory.

The user directory entry resides at the bottom of the PLANINFO file at the end of the resource requirements section.

2. Add the P696234K directory to the system directory.

   Change the password for P696234K from xxxxx to a valid password in accordance with the security guidelines at your site.

Minidisk installers: Go to "If installing on a minidisk."

SFS installers: Go to "If installing on a shared file system."

If installing on a minidisk

After obtaining the user directory from the P696234K PLANINFO file:
- Add the MDISK statements to the directory entry for P696234K.
- Use Table 20 on page 30 in Chapter 4, "Planning for installing HLASM Toolkit Feature on z/VM," on page 27 to obtain the minidisk requirements.
- Place the new directory online using VM/Directory Maintenance (DIRMAINT) or an equivalent CP directory maintenance method.

Go to "Step 3: Install HLASM Toolkit Feature" on page 39.

If installing on a shared file system

After completing the common steps above, proceed as follows:

1. If you want to use an SFS directory as the work space for the P696234K top directory, include the following in the P696234K directory entry. This change requires the directory to be rebuilt and placed online.

Directory Statement	Explanation
`IPL CMS PARM FILEPOOL VMSYS`	This directory statement allows automatic access to the P696234K's top directory as file mode A.

2. Place the new directory online using VM/Directory Maintenance (DIRMAINT) or an equivalent CP directory maintenance method.
3. Use the number of 4K blocks calculated from Table 20 on page 30.
   - If you are installing all the default HLASM Toolkit Feature SFS directories, the block requirements are summarized in the table.
   - If you are selectively installing SFS directories, calculate the number of 4K blocks your installation requires by adding up the storage required by each of the directories you plan to install.
4. From a user ID that is an administrator for the VMSYS filepool, issue the following command:

Command	Explanation
`enroll user P696234K vmsys: (blocks `*blocks*``	This command enrolls the user P696234K in the VMSYS filepool. VMSYS is the default filepool.

Options:

blocks   The number of 4K blocks that you calculated previously.

This makes available a top directory of VMSYS:P696234K. to the user.

5. Compare your storage needs to the amount of storage available in the filepool.

Command	Explanation
`query filepool status vmsys:`	Command to get a list of directories in the filepool and the number of free blocks. *VMSYS* is the default filepool ID.

If the number of free blocks is smaller than the number of blocks you need to install HLASM Toolkit Feature (which you calculated in step 3 on page 37, above), you need to add space to the filepool.

For instructions on adding space to a filepool, see *z/VM: CMS File Pool Planning, Administration, and Operation*.

6. Create the necessary `vmsys:P696234K.HLASMTL` subdirectories used in the P696234K PLANINFO file.

Command	Explanation
`set filepool vmsys:` `create directory` *dirid*	Commands to create subdirectories

Options:

dirid   The name of the SFS directory you are creating.

Examples of the command above include:

```
create directory vmsys:P696234K.HLASMTL
create directory vmsys:P696234K.HLASMTL.object
```

⋮

A complete list of default HLASM Toolkit Feature SFS directories is provided in Table 20 on page 30. For information about the CREATE DIRECTORY command, see *z/VM: CMS Commands and Utilities Reference*.

There is no need to create the top directory (VMSYS:P696234K.) as this has been implicitly created by the ENROLL command.

7. Give the MAINT user ID READ authority to the general-use test build directory, using the GRANT AUTHORITY command.

Command	Explanation
`grant auth vmsys:P696234K.HLASMTL.TESTPROD to MAINT (read newread`	The GRANT command permits copying files to MAINT's 19E production disk.

Options:

read   Gives the user **read** authority on a file or directory.

newread
>   Indicates that the users automatically receive **read** authority for any new files added to the directory.

For more information about the GRANT AUTHORITY command, see *z/VM: CMS Commands and Utilities Reference*.

Step 3: Install HLASM Toolkit Feature

1. Log on to the installation user ID, P696234K.

2. Format minidisks

   If minidisks are to be used rather than SFS directories, then format these disks now. For a list of disk addresses, refer to Table 20 on page 30.

3. Create or modify the PROFILE EXEC with ACCESS commands for MAINT's 5E5 and 51D disks. To do this, insert the following statements into the PROFILE EXEC:

Command	Explanation
`'access 5e5 b'` `'access 51d d'`	Statements to access the 5E5 and 51D disks.

4. Execute the profile to access MAINT's minidisks.

Command	Explanation
`profile`	Command to execute profile.

5. Verify that you have write access to the software inventory disk.

Command	Explanation
`q 51d`	Command to query access status of the software inventory disk.

   If the disk is not in read write mode (R/W) then see Step 1, substep 4 on page 35.

6. Make installation media available:

   If you have received HLASM Toolkit Feature as a product tape, then attach the tape to the user ID at virtual address 181. Using virtual address 181 is required by the VMFINS EXEC.

   If you have received HLASM Toolkit Feature as an Envelope file, ensure the Envelope file exists on the A-disk.

7. Install HLASM Toolkit Feature product from tape or from the envelope file.

   You might be prompted for additional information during VMFINS INSTALL processing, depending on your installation environment. If you are unsure how to respond to a prompt, refer to the appropriate sections in *z/VM: VMSES/E Introduction and Reference*.

   If you are installing from tape:

Command
`vmfins install ppf P696234K {HLASM｜HLASMSFS} (nomemo nolink`

   If you are installing from an Envelope file:

Command
`vmfins install ppf P696234K {HLASM｜HLASMSFS} (nomemo nolink env` *filename*

   This command installs HLASM Toolkit Feature.

- Use `HLASM` if HLASM Toolkit Feature is installed on a minidisk.
- Use `HLASMSFS` if HLASM Toolkit Feature is installed in SFS.

You are prompted to create an override for HLASM Toolkit Feature when this command executes. Refer to the message text for your response.

Options:

nomemo

> Loads the memo but does not issue a prompt to send it to the system printer. Specify the **memo** option if you want to be prompted to print the memo.

nolink

> Indicates that VMFINS is not to link to the appropriate minidisks, only access them if they are not already accessed.

Note:

a. You can override:
   - The name of the product parameter file
   - The default user IDs
   - Minidisk/directory definitions

b. If you change the PPF name, a default user ID, or other parameters via a PPF override, you must use your changed values instead of those indicated (when appropriate), throughout the rest of the installation instructions, as well as the instructions for servicing HLASM Toolkit Feature. For example, you must specify your PPF override file name instead of P696234K for certain VMSES/E commands.

c. If you are not familiar with creating PPF overrides using VMFINS, refer to *z/VM: VMSES/E Introduction and Reference* before you continue. Also see Appendix B, "Create Product Parameter File (PPF) override (z/VM)," on page 89.

8. Review the install message log ($VMFINS $MSGLOG).

Command	Explanation
`vmfview install`	View the install message log.

Correct any problems before you go on. For information about specific error messages, see *z/VM: Other Components Messages and Codes*.

Step 4: Verify the installation in a test environment

1. Update Build Status Table

Command	Explanation
`vmfins build ppf P696234K  {HLASM|HLASMSFS} (serviced nolink`	Update VM SYSBLDS software inventory file for HLASM Toolkit Feature. Use `HLASM` if HLASM Toolkit Feature is installed on minidisk. Use `HLASMSFS` if HLASM Toolkit Feature is installed in SFS.

Options:

serviced

> Identifies build requirements and builds those objects flagged as **serviced** in the service-level build status table.

nolink
>
> Indicates that VMFINS is not to link to the appropriate minidisks, only to access them if they are not already accessed.

You may receive message VMFINB2173I, indicating that no verification EXEC is found for this product. This message is informational, and can be ignored from **this** invocation of the VMFBLD EXEC. The next substep manually invokes the verification process.

2. Verify Installation

Prior to running this verification, this userid must be able to access the High Level Assembler.

Command	Explanation
`T5696234`	This EXEC verifies the operation of the Disassembler and the Interactive Debug Facility.

This verification test is run to ensure that HLASM Toolkit Feature was installed successfully. Figure 2 shows sample screen output from the verification process.

```
--------------------------------------------------------
IBM HIGH LEVEL ASSEMBLER TOOLKIT FEATURE DISASSEMBLER
Verification
--------------------------------------------------------

Disassembly of ASMTSAMP module completed successfully

The disassembly listing can be found in ASMTSAMP LISTING

--------------------------------------------------------
--------------------------------------------------------
IBM HIGH LEVEL ASSEMBLER TOOLKIT FEATURE Interactive Debug
Facility Verification
--------------------------------------------------------

Interactive Debug Facility completed successfully.

The toolkit is installed successfully.

-----------------------------------------------------------------
Ready; T=0.10/0.18 10:53:01
```

Figure 2. Sample install verification output

Step 5: Put HLASM Toolkit Feature into production

1. Log on to MAINT if you plan to put HLASM Toolkit Feature general-use code on the 'Y' disk (MAINT's 19E disk). Alternatively, log on to the owner of the disk that is to contain the production level of the HLASM Toolkit Feature code.

2. Link to HLASM Toolkit Feature code and access MAINT's Y disk.

Choose which access is required depending on whether you have used a minidisk or SFS.

For minidisk access:

Command	Explanation
`link P696234K 29e 29e rr` `access 29e e`	Access HLASM Toolkit Feature code on a minidisk.
`access 19e f`	Access CMS's Y disk.

For SFS access:

Command	Explanation
`access vmsys:P696234K.HLASMTL.TESTPROD e`	
	Access HLASM Toolkit Feature code in an SFS directory.
`access 19e f`	Access CMS's Y disk.

3. Move HLASM Toolkit Feature to the Y disk.

   All the HLASM Toolkit Feature modules should be placed onto the Y disk using the VMFCOPY command.

   The ASMSMAC MACLIB should also be copied, if you wish to make the structured macros available to the users.

Command	Explanation
`vmfcopy * MODULE e = = f2 (prodid P696234K%HLASM olddate replace`	
	Copy Toolkit to CMS's Y disk.
`vmfcopy * MACLIB e = = f2 (prodid P696234K%HLASM olddate replace`	

   Options:

   olddate
   > Uses the date and time on each input file as the date and time of the last update of each corresponding output file.

   replace
   > Causes the output file to replace an existing file with the same file identifier.

   If you do not want to use the Y disk for general use code, log on as the owner of the disk where you put the production level of the HLASM Toolkit Feature code.

   The VMFCOPY command updates the VMSES PARTCAT file on the 19E disk.

   If you want to move the Enhanced SuperC (SuperC) then the following parts should also be copied to the Y disk.
   - ASMFSRCH OPTSLIST
   - ASMF3270 IOS3270
   - ASMF327 XMOD
   - ASMFPRT EXEC
   - ASMFSUPC NAMES
   - ASMFSUPC MENU
   - ASMFSUPC EXEC
   - ASMFSUPC OPTSLIST
   - ASMFSUPC HELP

   If you want to move the cross reference facility (ASMXREF) then the following parts should also be copied to the Y disk.
   - ASMTEST CNTL
   - ASMTEST DEFAULTS
   - ASMTEST EXEC
   - ASMTEST ASSEMBLE

- ASMXRPT EXEC
- ASMXSCAN EXEC
- ASMXSEP EXEC
- ASMXLANG SAMPLE
- ASMXTOKN SAMPLE

4. Resave the CMS saved system.

   This updates the shared Y-STAT (the saved Y disk file directory).

   a. Define named saved system

      This creates a named saved system for CMS.

Command	Explanation
`vmfsetup zvm cms`	On z/VM, allows access to the SAMPNSS EXEC which resides on MAINT's 193 disk.
`sampnss cms`	Create named saved system for CMS.

   b. Resave the CMS system

Command	Explanation
`ipl 190 clear parm savesys cms`	Resave CMS saved system to reflect the change to the Y-STAT (the saved Y disk file directory).

Step 6: Download Program Understanding Tool

Instructions to download the Program Understanding Tool are contained in Appendix D, "Installing Program Understanding Tool on Windows," on page 93.

This completes the installation process.

Installing HLASM Toolkit Feature on z/VM

This chapter describes the installation method and the step-by-step procedures you use to install and activate the functions of HLASM Toolkit Feature.

Chapter 6. Maintaining HLASM Toolkit Feature on z/VM

This chapter describes how to re-install, or remove HLASM Toolkit Feature and how to apply service updates. To effectively use the maintenance procedures, you must have already installed HLASM Toolkit Feature and any required products.

To become more familiar with service using VMSES/E, refer to *z/VM: VMSES/E Introduction and Reference*. This manual also contains the command syntax for the VMSES/E commands listed in the procedure.

Each step of the service instructions must be followed; do not skip any step unless otherwise directed. All instructions showing accessing of disks assume default minidisk addresses. If different minidisk addresses are used, or if using a shared-file system, change the instructions appropriately.

Re-installing HLASM Toolkit Feature

You should delete the product and commence the installation process from the beginning. To delete the product refer to "Removing HLASM Toolkit Feature" on page 55. When the product is deleted, start the installation from "Step 1: Prepare to install HLASM Toolkit Feature" on page 34.

Applying service updates

This section describes how to apply maintenance or service updates to HLASM Toolkit Feature.

What you receive

If you report a problem with HLASM Toolkit Feature to your IBM Support Center, you will receive a tape containing one or more APARs or PTFs which solve your problem.

You might also receive a list of pre-requisite APARs or PTFs, which should have been applied to your system before applying the current service. These pre-requisite APARs or PTFs might relate to HLASM Toolkit Feature or any other licensed product you have installed, including z/VM.

The following overview familiarizes you with some of the aspects of applying service for HLASM Toolkit Feature.

Checklist for applying service

Table 25 on page 46 lists the steps and associated VMSES/E commands for installing corrective service on HLASM Toolkit Feature. You can use Table 25 on page 46 as a checklist.

Table 25. Summary of steps for installing service on HLASM Toolkit Feature

Step	Description	VMSES/E Command	Page
__ 1	Prepare to install service.		"Step 1: Prepare to install service" on page 47
__ 2	Clear the alternate APPLY disk. Doing this allows you to remove the new service easily later if necessary.	VMFMRDSK	"Step 2: Clear the alternate APPLY disk" on page 49
__ 3	Receive the new service.	VMFREC	"Step 3: Receive the new service" on page 49
__ 4	Apply the new service.	VMFAPPLY	"Step 4: Apply the new service" on page 50
__ 5	Reapply local service by entering local service into the software inventory (if applicable).		"Step 5: Reapply local service" on page 50
__ 6	Update Build Status Table.	VMFBLD	"Step 6: Update build status table" on page 51

Table 25. Summary of steps for installing service on HLASM Toolkit Feature (continued)

Step	Description	VMSES/E Command	Page
__ 7	Rebuild Serviced Parts (objects).	VMFBLD	"Step 7: Rebuild serviced parts (objects)" on page 52
__ 8	Verify the service that has been applied and built.		"Step 8: Verify the service" on page 53
__ 9	Place into production		"Step 9: Place the service into production" on page 53
__ 10	Service on Program Understanding Tool		"Step 10: Service on Program Understanding Tool" on page 55

Step 1: Prepare to install service

Carry out preliminary steps prior to receiving service.

Electronic Service (envelope file)

If you have received the service electronically or on CD-ROM, follow the appropriate instructions to retrieve and decompress the envelope files to your A-disk. The decompression is currently done by using the DETERSE MODULE (shipped with VMSES/E).

The documentation envelope and the service envelope files must have a file type of SERVLINK. Make note of the file names that you are using as you will need to enter them in place of the variable *envfilename* in the VMFREC commands that follow.

1. Create a backup copy of the current HLASM Toolkit Feature before applying the service tape. Save this copy of HLASM Toolkit Feature until you have completed installing the service and you are confident that the service runs correctly.
2. Log on to the HLASM Toolkit Feature service user ID: P696234K.
3. Establish read-write (R/W) access to the software inventory disk.

Command	Explanation
`link MAINT 51d 51d mr` `access 51d d`	Commands to access the software inventory disk.

4. Mount the HLASM Toolkit Feature corrective service tape and verify that it is attached to user ID P696234K. Use an address of 181. (If you have a SERVLINK file make sure that it is available on the A-disk.)
5. Establish the correct minidisk access order.

   The VMFSETUP command accesses all the required disks or SFS directories to establish the needed file modes.

Command	Explanation
`vmfsetup P696234K {HLASM│HLASMSFS}`	P696234K is the PPF that is shipped with HLASM Toolkit Feature. If you have your own PPF override, substitute your PPF name for P696234K. Use `HLASM` if HLASM Toolkit Feature is installed on minidisk. Use `HLASMSFS` if HLASM Toolkit Feature is installed in SFS.

6. Receive Documentation. VMFREC with the INFO option loads the documentation and displays a list of all the products on the tape.

   a. If receiving the service from tape

Command	Explanation
`vmfrec info`	The **info** option loads the documentation (including the product service memo) to the 191 disk and displays a list of products on the tape.

   b. If receiving the service from an envelope file

Command	Explanation
`vmfrec info (env` *envfilename*	The **info** option loads the documentation (including the product service memo) to the 191 disk and displays a list of products. *envfilename* is the file name of the documentation envelope (SERVLINK) file.

7. Check the receive message log ($VMFREC $MSGLOG) for attention and error messages.

Command	Explanation

`vmfview receive`	View the receive message log

Make a note of which products and components have service on the tape. Press PF5 key to show all the status messages that identify the products on the tape.

Step 2: Clear the alternate APPLY disk

Clear the alternate APPLY disk to ensure that you have a clean disk for new service.

1. Clear disk

   Merge previously applied service to ensure that you have a clean alternate APPLY disk for new service.

Command	Explanation
`vmfmrdsk P696234K {HLASM|HLASMSFS} apply`	Command to clear the alternate APPLY disk. Use `HLASM` if HLASM Toolkit Feature is installed on minidisk. Use `HLASMSFS` if HLASM Toolkit Feature is installed in SFS.

2. Check merge message log

Command	Explanation
`vmfview mrd`	Command to review the merge message log ($VMFMRD $MSGLOG). Correct any problems before you go on. For information about specific error messages, refer to *z/VM: Other Components Messages and Codes*.

Step 3: Receive the new service

1. Receive new service

   Note: If you are installing multiple service tapes, you can receive all the service for this product before applying and building it. For each service tape or electronic envelope you want to receive, do the following:

   a. If receiving the service from tape:

Command	Explanation
`vmfrec ppf P696234K {HLASM|HLASMSFS}`	Command to receive service from the service tape. All new service is loaded to the alternate DELTA disk. Use `HLASM` if HLASM Toolkit Feature is installed on minidisk. Use `HLASMSFS` if HLASM Toolkit Feature is installed in SFS.

   b. If receiving the service from the PTF envelope file:

Command	Explanation

```
vmfrec ppf P696234K (HLASM |HLASMSFS) (env envfilename
```
This command receives service from your service envelope. All new service is loaded to the DELTA disk. *envfilename* is the filename of the service (PTF) envelope (SERVLINK) file. Use `HLASM` if HLASM Toolkit Feature is installed on minidisk. Use `HLASMSFS` if HLASM Toolkit Feature is installed in SFS.

2. Review receive message log

Command	Explanation
`vmfview receive`	Command to review the receive message log ($VMFREC $MSGLOG). Correct any problems before you go on. For information about specific error messages, refer to *z/VM: Other Components Messages and Codes*.

Step 4: Apply the new service

1. Apply the new service

Command	Explanation
`vmfapply ppf P696234K {HLASM|HLASMSFS}`	Command to apply the service you received in "Step 3: Receive the new service" on page 49 The version vector table (VVT) is updated with all service parts and all necessary AUX files are generated. Use `HLASM` if HLASM Toolkit Feature is installed on minidisk. Use `HLASMSFS` if HLASM Toolkit Feature is installed in SFS.

2. Review apply message log

Command	Explanation
`vmfview apply`	Command to review the apply message log ($VMFAPP $MSGLOG). Correct any problems before going on. For information about specific error messages, refer to *z/VM: Other Components Messages and Codes*.

Step 5: Reapply local service

Do this step only if you received message **VMFAPP2120W** during the VMFAPPLY step.

1. Reapply any local modifications **before** building the serviced HLASM Toolkit Feature. For further information, see *z/VM Service Guide*.
2. If you are following the process in *z/VM Service Guide*, follow the steps that are applicable to your local modification. Then return to this *Installation and Customization Guide* to continue with "Step 6: Update build status table" on page 51.
3. For the process in the *z/VM Service Guide* make the following substitutions:
   - zvm should be P696234K

- *compname* should be HLASM or HLASMSFS (minidisk or SFS)
- *appid* should be P696234K
- *fm-local* should be the file mode of disk 2C2
- *fm-applyalt* should be the file mode of disk 2A6
- if necessary, substitute your PPF override in all commands requiring the PPF name.

Step 6: Update build status table

Command	Explanation
`vmfbld ppf P696234K {HLASM｜HLASMSFS} (status`	Command to update the Build Status Table. Use `HLASM` if HLASM Toolkit Feature is installed on minidisk. Use `HLASMSFS` if HLASM Toolkit Feature is installed in SFS.

Options:

status Identifies build requirements.

If the $PPF files have been serviced this prompt is displayed:

```
VMFBLD2185R The following source product parameter files have been
            serviced.
VMFBLD2185R P696234K $PPF
VMFBLD2185R When source product parameter files are serviced, all
            product parameter files built from them must be recompiled
            using VMFPPF before VMFBLD can be run.
VMFBLD2185R Enter zero (0) to have the serviced source product
            parameter files built to your A-disk and exit VMFBLD so
            you can recompile your product parameter files with VMFPPF.
VMFBLD2185R Enter one (1) to continue only if you have already
            recompiled your product parameter files with VMFPPF.
```

Select 1 if you have previously compiled your product parameter files. In this case, go to "Step 7: Rebuild serviced parts (objects)" on page 52.

When you select 0, then these steps recompile the product parameter files (PPF).
1. Indicate $PPF file needs to be compiled

Command	Explanation
`0`	Enter a 0 and continue with the following commands.

The message

`VMFBLD2188I Building P696234K $PPF on 191 (A) from level $PFnnnnn`

is displayed.
2. Compile the product parameter file

Command	Explanation
`vmfppf P696234K *`	If you have your own PPF override, use your PPF name instead of P696234K.

3. Copy the product parameter file to software inventory disk

Command	Explanation
`copyfile P696234K $PPF a = = d (olddate replace`	
	Do not use your own PPF name in place of P696234K for this COPYFILE command.

Options:

olddate
Uses the date and time on each input file as the date and time of the last update of each corresponding output file.

replace
Causes the output file to replace an existing file with the same file identifier.

4. Erase product parameter file from A disk

Command	Explanation
`erase P696234K $PPF a`	**Do not** use your own PPF name in place of P696234K for this ERASE command.

5. Update build status table

Command	Explanation
`vmfbld ppf P696234K {HLASM|HLASMSFS} (status`	VMFBLD updates the build status table. Use `HLASM` if HLASM Toolkit Feature is installed on minidisk. Use `HLASMSFS` if HLASM Toolkit Feature is installed in SFS.
`1`	When you receive the **VMFBLD2185R** prompt, enter a 1 to continue.

Options:

status Identifies build requirements.

6. Review the build message log

Command	Explanation
`vmfview build`	Command to review the build status messages and see which objects need to be built.

Step 7: Rebuild serviced parts (objects)

1. Rebuild serviced parts

Command	Explanation
`vmfbld ppf P696234K {HLASM|HLASMSFS} (serviced`	Command to rebuild serviced parts. Use `HLASM` if HLASM Toolkit Feature is installed on minidisk. Use `HLASMSFS` if HLASM Toolkit Feature is installed in SFS.

Options:

serviced

Identifies build requirements and builds those objects flagged as **serviced** in the service-level build status table.

2. Review build message log

Command	Explanation
`vmfview build`	Command to review the build message log ($VMFBLD $MSGLOG). Correct any problems before going on. For information about specific error messages, refer to *z/VM: Other Components Messages and Codes*.

Step 8: Verify the service

After you have applied all the files on the service tape, run the installation verification EXEC to ensure that the product functions properly.

Command	Explanation
`T5696234`	Assembles then disassembles the sample program ASMTSAMP. It then invokes the Interactive Debug Facility to run the ASMTSAMP program.

Step 9: Place the service into production

1. Move service into production.

   a. Log on to MAINT if you plan to put HLASM Toolkit Feature general-use code on the 'Y' disk (MAINT's 19E disk). Alternatively log on using the user ID of the owner of the disk which contains the production level of the HLASM Toolkit Feature code.

   b. Link to HLASM Toolkit Feature code and access MAINT's Y disk.

   Choose which access is required depending on whether you have used a minidisk or SFS.

   For minidisk access:

Command	Explanation
`link P696234K 29e 29e rr` `access 29e e`	Access HLASM Toolkit Feature code on a minidisk.
`access 19e f`	Access CMS's Y disk.

   For SFS access:

Command	Explanation
`access vmsys:P696234K.HLASMTL.TESTPROD e`	
	Access HLASM Toolkit Feature code in an SFS directory.
`access 19e f`	Access CMS's Y disk.

   c. Move HLASM Toolkit Feature to the Y disk.

All of the HLASM Toolkit Feature modules should be placed onto the Y disk using the VMFCOPY command.

The ASMSMAC MACLIB should be copied, if you made this maclib containing structured macros available to users.

Command	Explanation
`vmfcopy * MODULE e = = f2 (prodid P696234K%HLASM olddate replace`	
	Copy Toolkit modules to the CMS Y disk.
`vmfcopy * MACLIB e = = f2 (prodid P696234K%HLASM olddate replace`	

Options:

olddate
> Uses the date and time on each input file as the date and time of the last update of each corresponding output file.

replace
> Causes the output file to replace an existing file with the same file identifier.

If you do not want to use the Y disk for general use code, log on as the owner of the disk where you will put the production level of the HLASM Toolkit Feature code.

The VMFCOPY command updates the VMSES PARTCAT file on the 19E disk.

If you want to move the Enhanced SuperC (SuperC) then you should also copy the SuperC parts to the Y disk. The parts you should copy are listed in the section on Enhanced SuperC in "Step 5: Put HLASM Toolkit Feature into production" on page 41.

If you want to move the cross reference facility (ASMXREF) then you should also copy the ASMXREF parts the Y disk. The parts you should copy are listed in "Step 5: Put HLASM Toolkit Feature into production" on page 41.

 d. Update the shared Y-stat on the saved Y disk file directory.

   1) Define named saved system

      Creates a named saved system for CMS.

Command	Explanation
`vmfsetup zvm cms`	On z/VM, allows access to the SAMPNSS EXEC which resides on MAINT's 193 disk.
`sampnss cms`	Create named saved system for CMS.

   2) Resave the CMS system

Command	Explanation
`ipl 190 clear parm savesys cms`	Resave CMS saved system to reflect the change to the Y-STAT (the saved Y disk file directory).

Step 10: Service on Program Understanding Tool

Service which has an impact on the Program Understanding Tool will be indicated in the cover letter supplied with the service. Once service has been applied then the Program Understanding Tool should be updated on the workstation. Refer to Appendix E, "Maintaining Program Understanding Tool on Windows," on page 97 for information about how to do this.

Removing HLASM Toolkit Feature

You use the VMFINS DELETE command to remove HLASM Toolkit Feature from your system. For information about removing product code and resources from your z/VM system, see the section about the VMFINS DELETE command in *z/VM: VMSES/E Introduction and Reference*.

Reporting a problem with HLASM Toolkit Feature

To assist with reporting any difficulties, refer to the diagnostic process as shown in the *HLASM Installation and Customization Guide*.

Report any difficulties with this product to your IBM Support Center. If an APAR is required, the Support Center will provide the address to which any needed documentation can be sent.

Table 26 identifies the component ID (COMP ID) for HLASM Toolkit Feature for z/VM.

Table 26. Component IDs

COMP ID	Component Name	REL
569623401	VM HLA TOOLKIT FEATURE	36A

Obtaining service information

Preventive Service Planning (PSP) information is continually updated as fixes are made available for problems. Check with your IBM Support Center or use IBMLink® (ServiceLink) to see whether there is additional PSP information you need. To obtain this information, specify the following UPGRADE and SUBSET values: HLASM160 and HLASMVM36A.

Part 3. On z/VSE: planning for, installing, and maintaining High level Assembler Toolkit Feature

Chapter 7. Planning for installing HLASM Toolkit Feature on z/VSE

This section contains the following planning information to help you properly install HLASM Toolkit Feature on z/VSE:
- Worksheet
- What you receive with HLASM Toolkit Feature
- Choosing required and optional software
- Verifying that you have enough DASD storage
- Deciding where to install
- Program Support
- Program and Service Level Information

Worksheet: Planning for installing HLASM Toolkit Feature on z/VSE

Before you begin the installation you should:

1. Determine which of the following you are installing HLASM Toolkit Feature from:

   A V2 Format tape (with one or more products besides HLASM Toolkit Feature)

   A tape with just HLASM Toolkit Feature on it

   See "What you receive with HLASM Toolkit Feature" on page 60.

2. Determine the product parts to be installed:

   COMPID *569623401*

   Feature number *5882*

   Tape label *unlabeled*

   See "Basic material" on page 60.

3. Verify that required software (and optional software, if appropriate) is at the level needed. See "What you need to install HLASM Toolkit Feature" on page 61.

4. Verify that adequate storage is available. See "DASD and other storage required" on page 61.

5. Determine how you are going to install HLASM Toolkit Feature:

   Using Interactive Interface.

   Using a batch installation job.

   See "Planning where to install HLASM Toolkit Feature" on page 62.

6. Determine which of the following you want to install in:

   Default library and sublibrary

   A different library and sublibrary

   If using a different library and sublibrary, verify that space is sufficient. See "Planning where to install HLASM Toolkit Feature" on page 62.

7. Check on latest service updates needed. See "Program support" on page 62.

8. Plan to install Program Understanding Tool onto a workstation. See Appendix C, "Planning for installing Program Understanding Tool on Windows," on page 91.

What you receive with HLASM Toolkit Feature

You receive the following when you order HLASM Toolkit Feature:

COMPIDs	Feature Number	System Name
569623401	5882	z/VSE

Distribution media

HLASM Toolkit Feature is distributed on the following:
- 3480 tape cartridge

The cartridge contains all the programs and data needed for installation.

Basic material

Table 27 describes the program cartridge. Table 28 describes the file content of the program cartridge. z/VSE uses the Maintain System History Program (MSHP) to install this product.

Table 27. Basic material: program cartridge

Medium	Feature Number	Physical Volume	External Label Identification	VOLSER
3480 cart.	5882	1	HLASM TLKT VSE R6	unlabeled

Table 28. Program cartridge: file content

File	Description
1	Header file containing HLASM Toolkit Feature copyright statement
2	Backup file ID "HLASM.TLKT.1.6.0" followed by a MSHP System History File
3	HLASM Toolkit Feature library file containing the production sublibrary
4	Tape mark
5	End of backup record
6	Tape mark

Optional material

There are no optional machine-readable materials for HLASM Toolkit Feature.

Cumulative service tape

You might receive an additional tape containing cumulative service with your order. The PTFs on this tape have not yet been incorporated into this release.

Program publications and softcopy

This section identifies the basic and optional publications for High Level Assembler.
- *HLASM Licensed Program Specifications* GC26-4944
- *HLASM Installation and Customization Guide* SC26-3494
- *HLASM Language Reference* SC26-4940
- *HLASM Programmer's Guide* SC26-4941
- *HLASM General Information* GC26-4943

For a list of books for related products, see "Bibliography" on page 101.

Program source materials

There are no source materials available for HLASM Toolkit Feature.

What you need to install HLASM Toolkit Feature

The following sections identify the system requirements for installing HLASM Toolkit Feature.

Required and optional software

This section describes the environment required to install and use HLASM Toolkit Feature.

HLASM Toolkit Feature runs on z/VSE with the required licensed programs listed in Table 29. **You should install all licensed programs with the minimum release listed or with any subsequent release**.

Table 29. Required programs

Required Licensed Program	Minimum Version Supported
z/VSE	Version 3 Release 1
HIGH LEVEL ASSEMBLER for z/OS & z/VM & z/VSE	Version 1 Release 6

Note: The IDF component of HLASM Toolkit Feature requires REXX/VSE to be initialized and activated. For more information about initializing REXX/VSE, refer to the *REXX/VSE Reference* book for your z/VSE system.

DASD and other storage required

The DASD storage requirements of HLASM Toolkit Feature must be added to the storage required by other programs having data in the same library. An estimate of required space is the data set's current allocation plus the storage required by HLASM Toolkit Feature.

The library must have free the number of library blocks shown in Table 30. A library block equals 1 kilobyte. For example, 10 library blocks equal 10,240 bytes. These values allow for subsequent service and functional enhancements. A LIBR RESTORE function with the SCAN option will provide an exact amount.

Table 30 also allows for space for service application.

Table 30. Library requirements

Product Tapefile-id	LIBR BLKS	3380 CYL	3390 CYL	FBA BLKS
HLASM.TLKT.1.6.0	18000	39	37	36000

If you plan to install this product in a separate MSHP history file, refer to Table 31 for MSHP DASD space requirements.

Table 31. MSHP requirements

File	3380 CYL	3390 CYL	FBA BLKS
IJSYSHF	1	1	900

Planning where to install HLASM Toolkit Feature

The HLASM Toolkit Feature default library is PRD2; the default sublibrary is PROD. All HLASM Toolkit Feature installation jobs assume you are using the sublibrary PRD2.PROD. To install HLASM Toolkit Feature in a different library and sublibrary, you must change some names in the installation jobs.

You might have selected PRD2 as a library because other products that work with HLASM Toolkit Feature use PRD2 as a default library. If you plan to install HLASM Toolkit Feature to an existing PRD2.PROD sublibrary, make sure there is enough free space to accommodate the additional library blocks.

To check the space, list the directory information of the PRD2 library, using the LISTDIR command of the LIBR program. Make sure there are sufficient library blocks in the free space.

You can use the Interactive Interface to install HLASM Toolkit Feature or the documented sample batch job.

All the sample batch jobs shown in this manual are supplied as .Z books in the installed library. They are also supplied as .I books for addition to ICCF library 62. If the product is installed using the Interactive Interface then these ICCF members are added to ICCF library 62 by the install process. These have the same name except, the fourth character is an **I**, for example there is ASMTVTOC.Z and its ICCF equivalent is ASMIVTOC.I.

Program support

This section describes the IBM support available for HLASM Toolkit Feature.

Program services

Contact your IBM representative for specific information about available program services.

Preventive Service Planning

Before installing HLASM Toolkit Feature, you should review the current Preventive Service Planning (PSP) information.

PSP Buckets are identified by UPGRADEs, which specify product levels, and SUBSETs, which specify the CLCs for a product level. The UPGRADE and SUBSET values for HLASM Toolkit Feature for z/VSE are:

Table 32. PSP upgrade and subset ID

UPGRADE	SUBSET	Description
HLASM160	HLASMVSE6IM	HLASM Toolkit VSE

Statement of support procedures

Report any difficulties you have using this program to your IBM Support Center. If an APAR is required, the Support Center will provide the address to which any needed documentation can be sent.

Table 11 on page 9 identifies the component ID (COMPID) for HLASM Toolkit Feature for z/VSE.

Table 33. Component IDs

CLC	COMPID	Component Name	RETAIN Release
6IM	569623401	VSE HLA TOOLKIT FEATURE	6IM

Program and service level information

This section identifies the program and any relevant service levels of HLASM Toolkit Feature. The program level refers to the APAR fixes incorporated into the program. The service level refers to the PTFs integrated. Information about the cumulative service tape is also provided.

Program level information

A list of APAR fixes against previous releases of HLASM Toolkit Feature that have been incorporated into this release is shown in Appendix A, "HLASM Toolkit Feature Service," on page 87.

Service level information

No PTFs against this release of HLASM Toolkit Feature have been incorporated into the product tape.

Cumulative service tape

A cumulative service tape, containing PTFs not incorporated into this release, might be included with this program. Installation instructions for cumulative service tapes can be found in the SMP/E publications.

If you received this product as part of a CBPDO or a ProductPac®, PTFs not incorporated into this release are provided on the tape, and a separate cumulative service tape will not be provided.

Publications useful during installation

The publications listed in Table 34 may be useful during the installation of High Level Assembler for z/VSE.

Table 34. z/VSE publications

Publication Title	Form Number
z/VSE: Guide to System Functions	SC33-8312
z/VSE: Administration	SC34-2627
z/VSE: Installation	SC34-2631
z/VSE: Planning	SC34-2635
z/VSE: System Control Statements	SC34-2637
z/VSE: Messages and Codes	SC34-2632 SC34-2633 SC34-2634

Chapter 8. Installing HLASM Toolkit Feature on z/VSE

This chapter describes the installation method and the step-by-step procedures you use to install and activate the functions of HLASM Toolkit Feature.

Overview of installation

You install this release of HLASM Toolkit Feature by using the Maintain System History Program (MSHP).

Checklist for installing HLASM Toolkit Feature

Table 35 lists the steps and associated jobs for installing HLASM Toolkit Feature. The remaining sections in this chapter describe each step. You can use Table 35 as a checklist.

Table 35. Summary of steps for installing HLASM Toolkit Feature

Step	Description	Installation Job	Page
__ 1	Allocate space for the library. (Omit if using the default.)	ASMTDEF	"Step 1: Allocate space for the library (omit if using the default)" on page 68

Table 35. Summary of steps for installing HLASM Toolkit Feature (continued)

Step	Description	Installation Job	Page
__ 2	Install HLASM Toolkit Feature.		"Step 2: Install HLASM Toolkit Feature" on page 69
	Method 1. Install HLASM Toolkit Feature using the Interactive Interface with HLASM Toolkit Feature on an Optional Products (V2 Format) tape.		"Method 1: Install HLASM Toolkit Feature using the interactive interface with V2 Format tape" on page 69
	Method 2. Install HLASM Toolkit Feature using the Interactive Interface with HLASM Toolkit Feature as the only product on the (V1 Format) tape.		"Method 2: Install HLASM Toolkit Feature using the interactive interface with V1 Format tape" on page 71
	Method 3. Install HLASM Toolkit Feature using a batch job.	ASMTINST	"Method 3: Install HLASM Toolkit Feature using a batch job" on page 72

Table 35. Summary of steps for installing HLASM Toolkit Feature (continued)

Step	Description	Installation Job	Page
__ 3	Load HLASM Toolkit Feature into the SVA	ASMTSVA2	"Step 3: Load HLASM Toolkit Feature into shared virtual area (SVA)" on page 74
__ 4	Verify the installation of HLASM Toolkit Feature.	ASMTIVPS	"Step 4: Verify the installation of HLASM Toolkit Feature" on page 75
__ 5	Configure VTAM	ASMTAPPL	"Step 5: Configure VTAM" on page 76
__ 6	Download Program Understanding Tool to workstation.		"Step 6: Download Program Understanding Tool" on page 76
__ 7	Create Cross-Reference Facility Files	ASMXJC2S	"Step 7: Create cross-reference facility files" on page 76

Step 1: Allocate space for the library (omit if using the default)

By default, HLASM Toolkit Feature is installed into the PRD2.PROD sublibrary for z/VSE. If you decide to install HLASM Toolkit Feature into a sublibrary other than PRD2.PROD then proceed with this step.

Decide where to allocate space for the HLASM Toolkit Feature sublibrary. Identify, on the disk volume (or volumes) to be used for the library, suitable areas of free space. To do this, list the volume table of contents (VTOC) of the disk or disks to be used.

Choose one of the following jobs to list the VTOC:

1. Use the LVTOC utility program. The sample job shown in Figure 3 shows the JCL needed to list the VTOC for the volume with serial number SYSWK1.

```
// JOB ASMTVTOC    LIST VOLUME TABLE OF CONTENTS
// ASSGN SYS004,DISK,TEMP,VOL=SYSWK1,SHR
// ASSGN SYS005,SYSLST
// EXEC LVTOC
/*
/&
```

Figure 3. Job to list the contents of a DASD volume

2. Use the DITTO utility program

   As an alternative to using the system utility LVTOC, DITTO's Display VTOC (DVT) may be used. Figure 4 shows a sample job.

```
// JOB ASMTDITT    LIST VOLUME TABLE OF CONTENTS
// UPSI 1
// ASSGN SYS001,cuu
// EXEC DITTO,SIZE=512K
$$DITTO DVT INPUT=SYS001,SORTBY=EXTENT
$$DITTO EOJ
/*
/&
```

Figure 4. Job to list the contents of a DASD volume

Use the disk space selected for HLASM Toolkit Feature in the LIBR installation job to allocate the z/VSE Librarian library in the sample job shown in Figure 5 on page 69.

```
// JOB ASMTDEF
*  CREATE A LIBRARY FOR THE High Level Assembler Toolkit Feature
// OPTION LOG
*  Label for the HLASM Toolkit Feature
*  Library                                                        1
// DLBL HLASMT,'HLASM.TOOLKIT.LIBRARY',99/365,SD
// EXTENT SYS002,SYSWK1,,,rtrk,ntrk
// ASSGN SYS002,DISK,VOL=SYSWK1,SHR
* -----------------------------------------
*  Define the High Level Assembler Toolkit Feature Library        2
* -----------------------------------------
// EXEC LIBR
 DELETE LIB=HLASMT
 DEFINE LIB=HLASMT
/*
/&
```

Figure 5. Job to allocate the HLASM Toolkit Feature library space

In area **1** change the *filename* (HLASMT in the example) and *file-id*
(HLASM.TOOLKIT.LIBRARY in the example) of HLASM Toolkit Feature to suit the
requirements of your site. Points to consider are:

- The variable *ntrk* indicates the number of tracks or blocks required. See Table 30
  on page 61 for the number of tracks or blocks for your DASD type.
- The variable *rtrk* represents the start position of the extent.

The Librarian job step in area **2** includes a DELETE statement before the DEFINE
statement so the job can be rerun. The following informational messages are issued
when the job runs for the first time. The job continues to allocate the library.

The messages are:

```
L101I  LIBRARY HLASMT DOES NOT EXIST
L027I  ABNORMAL END DURING DELETE COMMAND
       PROCESSING
L113I  RETURN CODE OF DELETE IS 8
```

Step 2: Install HLASM Toolkit Feature

You can install HLASM Toolkit Feature using either the Interactive Interface of
z/VSE or a batch installation job.

Method 1: Install HLASM Toolkit Feature using the interactive interface with V2 Format tape

Carry out the following tasks:

1. Mount the HLASM Toolkit Feature tape on an available tape drive.
2. Library Labels

   If the product is not being installed in the default library, then the library to
   contain HLASM Toolkit Feature must have its DLBL and EXTENT in the label
   information area.
3. Log on to the Interactive Interface

   To install HLASM Toolkit Feature using the Interactive Interface, log on to the
   z/VSE Interactive Interface as the system administrator. For more information
   about the functions of the Interactive Interface, refer to *z/VSE: Administration*.

In the following menus, enter the highlighted items that appear after the ===> symbol.

4. Mount the HLASM Toolkit Feature tape on an available tape drive.

5. In the **z/VSE FUNCTION SELECTION** menu, select: ===> *1* (Installation)

6. In the **INSTALLATION** menu:

   You have received HLASM Toolkit Feature as a V2 Format tape, which contains one or more optional products, therefore select: ===> *1* (Install Programs - V2 Format)

7. In the **INSTALL PROGRAMS - V2 FORMAT** menu, select: ===> *1* (Prepare for Installation)

8. In the **PREPARE FOR INSTALLATION** menu, select: ===> *cuu* (the address of the tape drive where you mounted the distribution tape.)

   (If you are using a virtual tape, enter *1* for Virtual Tape, otherwise enter *2*.)

9. In the **JOB DISPOSITION** menu:

   Make any changes required and press Enter to submit the job.

10. Respond to console messages

    When the job starts it asks if the tape is ready. After the tape is scanned it asks if further tapes are to be read. Refer to Figure 6 for examples of the console messages.

```
01 BG 000 IESI0091I PLEASE MOUNT TAPE LABELLED "VSE OPTIONAL TAPE NUMBER
02*BG 000 IESI0092A MOUNT ON TAPE DRIVE 580 . WHEN READY, REPLY "END/ENTER"
03*BG-000
04 0
05*BG 000 IESI0090A ARE THERE ANY MORE OPTIONAL PROGRAM TAPES? YES/NO
06*BG-000
10 0 no
11 BG 000 EOJ INSPRE     MAX.RETURN CODE=0000
```

Figure 6. Console messages

The output listing from this job gives a list of the optional programs on the distribution tape with program identifiers and recommended library sizes. The tapefile identifier for HLASM Toolkit Feature is HLASM.TLKT.1.6.0.

The program identifiers of the optional programs on the distribution tape are also automatically entered on the **INSTALL ADDITIONAL PROGRAM(S) FROM TAPE** menu.

11. Return to the **z/VSE FUNCTION SELECTION** menu, and enter: ===> *1* (Installation)

12. In the **INSTALLATION** menu, select: ===> *1* (Install Programs - V2 Format)

13. In the **INSTALL PROGRAMS - V2 FORMAT** menu, select: ===> *2* (Install Program(s) from Tape)

14. In the **INSTALL ADDITIONAL PROGRAM(S) FROM TAPE** menu:

    Enter **1** (install) in the OPT field against the tapefile identifier *HLASM.TLKT.1.6.0* (HLASM Toolkit Feature) and **2** (skip installation) against any other optional products you do not intend to install at this time.

    If you did not use the default library PRD2.PROD, enter the name of your library and sublibrary on this screen. The DLBL and EXTENT information for this library should already be in the label information area.

    Press PF5 to generate the installation job.

15. Retain products list

Decide if you want to keep the product list previously generated from LIBR utility scan of the product tape.

16. In the **INSTALL ADDITIONAL PROGRAM(S) FROM TAPE** menu, enter:

    ===> *cuu*

    (the address of the tape drive where you mounted the HLASM Toolkit Feature tape.)

    (If you are using a virtual tape, enter *1* for Virtual Tape, otherwise enter *2*.)

17. In the **JOB DISPOSITION** menu:

    Make any changes required and press ENTER to submit the job to install HLASM Toolkit Feature.

18. Respond to console messages

    Confirm prompt when asking for tape to install product.

Condition code and messages

If you do not receive a condition code of 0:

1. Check the list output for error conditions.
2. See *z/VSE: Messages and Codes* for corrective action.
3. Correct the error.
4. Rerun the job.
5. Recheck the condition code.

Method 2: Install HLASM Toolkit Feature using the interactive interface with V1 Format tape

Carry out the following tasks:

1. Log on to the Interactive Interface

   To install HLASM Toolkit Feature using the Interactive Interface, log on to the z/VSE Interactive Interface as the system administrator. For more information about the functions of the Interactive Interface, refer to *z/VSE: Administration*.

   In the following menus enter the highlighted items that appear after the ===> symbol.

2. Mount the HLASM Toolkit Feature tape on an available tape drive.

3. In the **z/VSE FUNCTION SELECTION** menu, select: ===> *1* (Installation)

4. In the **INSTALLATION** menu:

   You received HLASM Toolkit Feature as a V1 Format tape, which contains HLASM Toolkit Feature, therefore select: ===> *2* (Install Programs - V1 Format)

5. In the **INSTALL PROGRAMS - V1 FORMAT** menu select: ===> *HLASM.TLKT.1.6.0* (Tapefile-id)

   If you did not use the default library PRD2.PROD, enter the name of your library and sublibrary on this screen. The DLBL and EXTENT information for this library should already be in the label information area.

   Press PF5 to generate the installation job.

6. In the **INSTALL ADDITIONAL PROGRAM(S) FROM TAPE** menu, enter: ===> *cuu* (the address of the tape drive where you mounted the HLASM Toolkit Feature tape.)

   (If you are using a virtual tape, enter *1* for Virtual Tape, otherwise enter *2*.)

7. In the **JOB DISPOSITION** menu:

   Make any changes required and press Enter to submit the job to install HLASM Toolkit Feature.

8. Respond to console messages

   Confirm prompt when asking for tape to install product.

Condition code and messages

If you do not receive a condition code of 0:

1. Check the list output for error conditions.
2. See *z/VSE: Messages and Codes* for corrective action.
3. Correct the error.
4. Rerun the job.
5. Recheck the condition code.

Method 3: Install HLASM Toolkit Feature using a batch job

The batch installation job stream for installing HLASM Toolkit Feature uses the MSHP system history file that already exists as part of the z/VSE system. This system history file might already be defined in the system standard labels; if not, make sure that DLBL and EXTENT statements, with the necessary information for the system history file, are included in the job stream.

Depending on how you request the HLASM Toolkit Feature product you might receive different installation tapes. One could contain only the HLASM Toolkit Feature product (V1 Format tape), the other might be a V2 Format tape containing one or more optional program products. The job shown in Figure 7 on page 73 handles both types of tape (V2 Format and V1 Format).

Create and tailor the following job stream, mount the distribution tape, and run the installation job.

Figure 7 on page 73 provides the JCL required to install HLASM Toolkit Feature. Tailor this JCL to suit the requirements at your site.

As many as five modifications might be required to tailor the JCL. The keys in Figure 7 on page 73 are explained individually and refer to the sections that accompany the JCL description.

```
// JOB ASMTINST
*  INSTALL THE High Level Assembler Toolkit Feature LIBRARY
// OPTION LOG
*  Label for High Level Assembler Toolkit Feature Library     1
*  Assign  install tape as SYS006                             2
// ASSGN SYS006,cuu
// MTC REW,SYS006
* ----------------------------------------
*  This step installs High Level Assembler Toolkit Feature
*  from the distribution tape
*  using the VSE system history file                          3
* ----------------------------------------
// EXEC MSHP,SIZE=900K,PARM='PIDSTACKED'
 INSTALL PROD FROMTAPE ID='HLASM.TLKT.1.6.0' -
     PROD INTO=PRD2.PROD
/*
* ----------------------------------------
*  List the High Level Assembler Toolkit Feature Library      4
* ----------------------------------------
// EXEC LIBR
 LISTDIR SUBLIB=PRD2.PROD  -
     OUTPUT=NORMAL -
     UNIT=SYSLST
/*
* -------------------------------------------
*  Retrace the High Level Assembler Toolkit Feature product   5
* -------------------------------------------
// EXEC MSHP,SIZE=900K
RETRACE COMPONENT IDENTIFIER=5696-234-01
/*
// MTC RUN,SYS006
/*
/&
```

Figure 7. Job to install HLASM Toolkit Feature

1. Specify the Label Information

   In area **1**, if you are installing HLASM Toolkit Feature into a sublibrary other than the default then insert DLBL, EXTENT, and ASSGN information as specified in Figure 5 on page 69. The library name must match the name used in the allocation job in Figure 5 on page 69.

   There is no DLBL statement for the system history file. Typically it has a permanent system standard label for this, with IJSYSHF as the file name. (IJSYSHF is the default file name that MSHP looks for in a label statement.)

2. Assign the Distribution Tape

   Assign the distribution tape in area **2** to logical unit SYS006. Replace *cuu* with the address of the tape drive on which the distribution tape is mounted. Alternatively you may use the generic tape assignment:

   `// ASSGN SYS006,TAPE`

3. Install HLASM Toolkit Feature

   Area **3** of the job calls MSHP to install HLASM Toolkit Feature into the sublibrary identified on the INTO operand of the INSTALL statement. If you are installing HLASM Toolkit Feature into a sublibrary other than the default, then change the name of the sublibrary on the INTO operand of the INSTALL statement to reflect this sublibrary. For more information about the install options, see "Maintain System History Program (MSHP)" in *z/VSE: System Control Statements*.

4. List the Directory Entries

The step in area **4** of the job lists the directory entries of the sublibrary where HLASM Toolkit Feature was installed. Remove this step if a directory list is not required. If you have installed HLASM Toolkit Feature into a sublibrary other than the default, then the name of the sublibrary must be changed to reflect the value you specified in area **3**.

Entries for HLASM Toolkit Feature have a three character prefix of ASM to distinguish them from other products; there are three exceptions to this rule:

- `HD2346IM.Z`
- `$SVAASMT.PHASE`
- `$SVAASMT.OBJ`

5. Retrace the HLASM Toolkit Feature product in the system history file.

   The final step in area **5** of the job prints the component records from the system history file for HLASM Toolkit Feature. Remove this step if a retrace listing is not required.

   If this job has to be run again, remember first to restore the system history file, which should have been backed up before running this install job, and second to run the library allocation step again, if applicable.

Step 3: Load HLASM Toolkit Feature into shared virtual area (SVA)

The IDF component of HLASM Toolkit Feature makes extensive use of vendor exits. Therefore some HLASM Toolkit Feature phases must be loaded into the SVA. These phases are:

    ASMPCKEX
    ASMPGLEX
    ASMSVCEX
    ASMIDFRX

To load these phases into the SVA, do the following:

1. Modify the SVA statement of the VSE IPL ASI (Automated System Initialization) procedure to allow space for the phases:
   - Increase the SDL parameter by the number of new phases being added to the SVA.
   - Increase the PSIZE parameter by the amount of storage required to contain the new phases being added to the 24-bit and 31-bit SVA.

2. Modify the z/VSE background (BG) ASI procedure to automatically load the required phases into the SVA:
   - Modify the ALLOC statements for the partitions to ensure that the remaining storage is large enough to contain the phases.
   - Modify the LIBDEF PHASE SEARCH job control statement preceding the SET SDL statement to include the name of the sublibrary containing the HLASM Toolkit Feature phases.
   - The supplied SVA loadlist member, $SVAASMT, contains all the required HLASM Toolkit Feature phases that must reside in the SVA, as listed above. After the SET SDL statement, add the statement:

     `LIST=$SVAASMT`

   These phases have been built with the option SVAPFIX. When the phases are loaded into the SVA, they will go into PFIXed storage. This has a real storage requirement of at least 3K bytes.

   A sample batch job, ASMTSVA2, is supplied, which will load the phases in $SVAASMT into the SVA. This job must be run in the BG partition.

For more information about PFIXed storage and loading phases into the SVA, see *z/VSE: System Control Statements.* and *z/VSE: Guide to System Functions.*

3. Shut down and Re-IPL your z/VSE system.

In addition to loading phases into the SVA, to use vendor exits the application must be authorized. The users must be authorized (for example, via DTSECTAB) to access the phase $IJBVEND and the product exit routines. These routines are:

    ASMPCKEX
    ASMPGLEX
    ASMSVCEX

For information about authorization using DTSECTAB, see *z/VSE: Administration.*

Step 4: Verify the installation of HLASM Toolkit Feature

The installation verification job will test if the product has been installed successfully. It will assemble a small assembler program, producing SYSADATA output. It will linkedit the program and process the SYSADATA output using the language extraction program.

```
// JOB ASMTIVPS
*
* This will job will test if the HLASM Toolkit Feature
* has been installed successfully.
*
// LIBDEF *,SEARCH=(PRD2.PROD,yourlib.sublib)                       1
// DLBL SYSADAT,'SYSADATA',0,VSAM,                                X
              CAT=VSESPUC,RECSIZE=8192,                           X
              DISP=(,KEEP),RECORDS=(500,500)
// LIBDEF PHASE,CATALOG=yourlib.sublib                             2
// OPTION NODECK,CATAL
   PHASE ASMBR14,*
// EXEC ASMA90,SIZE=ASMA90,PARM='ADATA'
ASMBR14 CSECT
     XR     15,15               Zero return code
     BR     14                  Exit program
     END
/*
// EXEC ASMLKEDT                                                   3
/*
// EXEC ASMLANGX,PARM='ASMBR14'                                    4
/*
/&
```

Figure 8. Job to test successful installation

The x characters are in column 72.

1. In area **1** and area **2** , change `yourlib.sublib` to the library and sublibrary where the phase will be cataloged.
2. In area **3** , the program is linkedited.
3. In area **4** , language extraction is performed.

Run the installation verification job

Figure 8 shows the job `ASMTIVPS.Z` provided in the installed sublibrary. If you installed HLASM Toolkit Feature in a sublibrary other than the default, modify the IBM-supplied JCL that runs the verification job.

Run the job listed in Figure 8 on page 75 to verify the success of your installation.

A return code of 0 for the job indicates that the verification job completed successfully, and that the product is installed and functions correctly.

Step 5: Configure VTAM

This step is required if you plan to use the Interactive Debug Facility of HLASM Toolkit Feature to debug your batch programs interactively. A sample VTAM definition member, ASMTAPPL.B, is supplied in the install library to help you do this. If you installed using the Interactive Interface, this member is also supplied as ASMIAPPL in ICCF library 62.

1. Either :
   - Copy the ASMTAPPL.B member to the source sublibrary containing your VTAM definition members.
2. or
   - Copy the HLASM Toolkit Feature minor node definitions (APPL statements) from ASMTAPPL.B into one of your existing application major node definitions.

     Note: The ASMTAPPL.B defines 20 application minor node names, ASMTL001 to ASMTL020. You can define up to 999 HLASM Toolkit Feature minor node names; the first five characters must be ASMTL and the last three characters must be consecutive 3-digit numbers, starting at 001.
3. Add the source sublibrary member name (ASMTAPPL, or the name of the updated member) to your VTAM start options configuration file, ATCCONxx.
4. Restart VTAM to activate the HLASM Toolkit Feature definitions.

   Until you restart VTAM, you can activate the HLASM Toolkit Feature definitions by entering the following command from your VTAM console:

   ```
   VARY NET,ACT,ID=member-name,SCOPE=ALL
   ```

   where member-name is the source sublibrary *member name* (for example, ASMTAPPL).

Step 6: Download Program Understanding Tool

Instructions to download the Program Understanding Tool are contained in Appendix D, "Installing Program Understanding Tool on Windows," on page 93.

Step 7: Create cross-reference facility files

The Cross-Reference Facility requires two VSAM managed SAM files to be built at install time. The JCL for this task is in the ASMXJC2S.Z member.

This JCL will copy the contents from two librarian members (using '* $$ SLI') into two VSAM managed SAM files. The user may, at a later date, update these librarian members and then rerun this JCL. When being rerun change DISP=(NEW,KEEP) to DISP=(OLD,KEEP) on the DLBL statements.

Before running this job, you will need to make the following changes:
1. Change LDEST parameters on the '* $$ JOB' statement, to suit the requirements of your site.
2. Change the LIBDEF statement if you have installed HLASM Toolkit Feature into another library.

3. Change the SLI statements if this library is not in the source LIBDEF search chain for the VSE/POWER™ partition. Do this by adding the 'S=library.sublibrary' parameter to each SLI statement.
4. If necessary, change the IJSYSUC value on each DLBL statement to point to the required VSAM User Catalog.

Chapter 9. Maintaining HLASM Toolkit Feature on z/VSE

This chapter describes how to re-install or remove HLASM Toolkit Feature and how to apply service updates to HLASM Toolkit Feature. To use the maintenance procedures, you must have already installed HLASM Toolkit Feature and any required products.

In addition, this chapter describes how to remove HLASM Toolkit Feature.

Re-installing HLASM Toolkit Feature

You do not need to perform all the planning and installation procedures to re-install HLASM Toolkit Feature. For example, you do not need to reconsider your storage needs if HLASM Toolkit Feature replaces existing HLASM Toolkit Feature data sets.

You do not need to remove HLASM Toolkit Feature from your system before re-installing HLASM Toolkit Feature, unless you intend to re-install the product in a different sublibrary from the previous installation. In this case you must remove HLASM Toolkit Feature from the system history file before you can re-install it.

To re-install HLASM Toolkit Feature, you follow the same steps as for installing HLASM Toolkit Feature. See Chapter 8, "Installing HLASM Toolkit Feature on z/VSE," on page 65.

Applying service updates

You might need to apply maintenance or service updates to HLASM Toolkit Feature periodically. This section details these procedures.

What you receive

If you report a problem with HLASM Toolkit Feature to your IBM Support Center, you will receive a tape containing one or more APARs or PTFs to solve your problem.

You might also receive a list of APARs or PTFs, that should have been applied to your system before applying the current service. These APARs or PTFs might relate to HLASM Toolkit Feature or any other licensed product you have installed, including z/VSE.

You apply service to HLASM Toolkit Feature using either the z/VSE Interactive Interface or a batch job.

The following checklist provides a summary of steps you should use to apply service to HLASM Toolkit Feature.

Checklist for applying service

Table 36 on page 80 lists the steps for installing corrective service on HLASM Toolkit Feature.

Table 36. Summary of steps for installing service on HLASM Toolkit Feature

Step	Description	MSHP Command or Job name	Page
__ 1	Ensure prerequisite APARs or PTFs are applied.	RETRACE	"Step 1: Check prerequisite APARs or PTFs"
__ 2	Backup existing system		"Step 2: Backup existing system" on page 81
__ 3	Apply service	INSTALL	"Step 3: Apply service" on page 81
__ 4	Run the installation verification program	ASMTIVPS	"Step 4: Run the installation verification program (IVP)" on page 82
__ 5	Service on Program Understanding Tool		"Step 5: Service on Program Understanding Tool" on page 82

Step 1: Check prerequisite APARs or PTFs

Prerequisite APARs or PTFs need to be applied to your system before you can apply the current maintenance. These APARs or PTFs might apply to HLASM Toolkit Feature or any licensed program you have installed at your site.

Your IBM Support Center has given you a list of any relevant prerequisite APARs or PTFs. Probably most have been applied to your system. You can verify this by

retracing the APARs and PTFs in your system history file. The job shown in Figure 9 shows how to retrace APARs and PTFs in the system history file. This job is supplied as ASMTRETR.Z

Use this listing to check that you have already applied any pre-requisite APARs or PTFs. If you have not, arrange for your IBM Support Center to send them to you and apply them before applying other service.

```
// JOB ASMTRETR Retrace APARs and PTFs
// EXEC MSHP,SIZE=700K
RETRACE APARS
RETRACE PTFS
/*
/&
```

Figure 9. Job to retrace APARs and PTFs

Step 2: Backup existing system

Make a backup copy of your current HLASM Toolkit Feature library and the system history file. For information about backing up libraries and the system history file, see *z/VSE: System Control Statements*.

Step 3: Apply service

You can apply service to HLASM Toolkit Feature from the provided service tape using either the Interactive Interface or a batch job.

Method 1: Apply service using the interactive interface

To apply service to HLASM Toolkit Feature using the Interactive Interface, log on to the z/VSE Interactive Interface as the system administrator. For more information about the functions of the Interactive Interface, refer to *z/VSE: Administration*.

Mount the service tape on an available tape drive.

In the following menus specify the highlighted items that appear after the ===> symbol.

1. **z/VSE FUNCTION SELECTION** menu: ===> *1* (Installation)
2. **INSTALLATION** menu: ===> *4* (IBM Service)
3. **IBM SERVICE** menu: ===> *2* (PTF Handling)
4. **PTF HANDLING** menu:
   - If you want to print the documentation about the supplied PTFs before applying the service, select: ===> *1* (Print Service Document)

     PRINT SERVICE DOCUMENTS menu: ===> *1* (Service medium (tape)) ===> *cuu* (the address of the tape drive where you mounted the service tape.)

     Enter *1* or *2* to select the type of document you want to print.
   - If you want to apply the service directly, select: ===> *3* (Apply PTFs)

     APPLY PTF menu: ===> *1* (Service medium (tape)) ===> *cuu* (the address of the tape drive where you mounted the service tape). Press Enter. ===> *SERVICE UNIT NAME* (allocate a unique name for the service unit) Press Enter.
5. **JOB DISPOSITION** menu:

Make any changes required and press Enter to submit the job and apply the service.

6. Respond to console messages:

   Confirm prompt when asking for service tape.

Method 2: Apply service using a batch job

The batch job to apply service to HLASM Toolkit Feature uses the MSHP system history file where HLASM Toolkit Feature was installed.

A sample job to apply service using MSHP is shown in Figure 10. This job is supplied as ASMTAPP.Z. For more information about MSHP see *z/VSE: System Control Statements*.

```
// JOB ASMTAPP Apply Service
// ASSGN SYS006,cuu          1
// EXEC MSHP,SIZE=700K
INSTALL SERVICE FROMTAPE     2
/*
/&
```

Figure 10. Job to install service

In area **1**, change *cuu* to the address of the tape drive where you have mounted the service tape.

Area **2** shows the MSHP statement to install service from a tape. The information in the system history file directs MSHP to apply the service to the sublibrary in which HLASM Toolkit Feature is installed. You do not need to supply this information.

Step 4: Run the installation verification program (IVP)

After you have applied all the files on the service tape, run the installation verification program ASMTIVPS to ensure that HLASM Toolkit Feature functions properly. Refer to "Step 3: Load HLASM Toolkit Feature into shared virtual area (SVA)" on page 74.

Step 5: Service on Program Understanding Tool

Service which has an impact on the Program Understanding Tool will be indicated in the cover letter supplied with the service. Once service has been applied then the Program Understanding Tool should be updated on the workstation. Refer to Appendix E, "Maintaining Program Understanding Tool on Windows," on page 97 for information about how to do this.

Removing HLASM Toolkit Feature

You do not have to remove HLASM Toolkit Feature from your system before installing a new version or release.

If you do have to remove HLASM Toolkit Feature for any reason, you must delete all the HLASM Toolkit Feature entries from your sublibrary and remove HLASM Toolkit Feature from the system history file.

A sample job, ASMTDELV.Z, is supplied to help you do this. This job will:

- delete all HLASM Toolkit Feature members from the sublibrary where it is installed
- remove HLASM Toolkit Feature from System History File
- update DTRIHIST.Z in the System Library to remove HLASM Toolkit Feature from the list of installed products

Consult the instructions in the job for more information.

To report a problem with HLASM Toolkit Feature

To assist with reporting any difficulties refer to the diagnostic process as shown in *HLASM Installation and Customization Guide*.

Report any difficulties you have using this product to your IBM Support Center. If an APAR is required, the Support Center will provide the address to which any needed documentation can be sent.

Table 37 identifies the component ID (COMP ID) for HLASM Toolkit Feature for z/VSE.

Table 37. Component IDs

COMP ID	Component Name	REL
569623401	VSE HLA TOOLKIT FEATURE	6IM

Obtaining service information

Preventive Service Planning (PSP) information is continually updated as fixes are made available for problems. Check with your IBM Support Center or use either Information/Access or SoftwareXcel Extended to see whether there is additional PSP information that you need. To obtain this information, specify the following UPGRADE and SUBSET values: HLASM160 and HLASMVSE6IM.

Part 4. Appendixes

Appendix A. HLASM Toolkit Feature Service

The following service for HLASM Toolkit Feature Release 5 has been applied to Release 6:

Table 38. Service history

APAR	z/OS PTF	VM PTF	VSE PTF
PQ90771	UK04487	UK04488	UK04489
PQ91484	UQ93277	UQ93278	UQ93279
PQ94993	UQ93277		
PQ96247	UK00566	UK00568	UK00570
PQ98212	UK02378		
PK01063	UK02493	UK02495	UK02497
PK01283	UK06158	UK06164	UK06191
PK05664	UK09195	UK09197	UK09199
PK06190	UK07105	UK07107	UK07109
PK06707	UK13411	UK13413	UK13415
PK07940	UK08693		UK08695
PK08886	UK08826	UK08827	UK08828
PK09261	UK09653	UK09655	UK09657
PK10316	UK09926	UK09928	UK09930
PK10355	UK06158	UK06164	UK06191
PK12514	UK07773	UK07775	UK07777
PK12866	UK09432	UK09434	UK09436
PK13983	UK10285	UK10321	UK10339
PK15286	UK09726	UK09727	
PK15984	UK09861	UK09863	UK09865
PK17443	UK14471	UK14494	UK14501
PK19580	UK14262	UK14264	UK14266
PK20237		UK15391	
PK21002	UK13705	UK13707	UK13709
PK25270	UK15040	UK15041	UK15042
PK26240	UK15918	UK15920	UK15922
PK26914	UK16732	UK16734	UK16736
PK28745	UK22550	UK22552	UK22554
PK29714	UK17801	UK17802	UK17803
PK30620	UK18883	UK18885	UK18887
PK30719	UK23198	UK23199	UK23200
PK31375	UK20570	UK20572	UK20574
PK31469	UK18370	UK18372	UK18374
PK39957	UK26346	UK26347	UK26348

Table 38. Service history (continued)

APAR	z/OS PTF	VM PTF	VSE PTF
PK40271	UK25670	UK25671	UK25672
PK40813	UK30719	UK30720	UK30721
PK41381	UK24329	UK24331	UK24333
PK42140	UK25273	UK25274	UK25275
PK42414	UK25976	UK26024	UK26038
PK43326	UK24451	UK24452	UK24453
PK43386	UK27503	UK27504	UK27505
PK45696	UK28814	UK28815	UK28816
PK46123	UK26778	UK26779	UK26780
PK47176	UK27004	UK27005	UK27006
PK50735	UK31331	UK31340	UK31384
PK56760	UK34422	UK34423	UK34424

Appendix B. Create Product Parameter File (PPF) override (z/VM)

This section provides information to help you create a product parameter file (PPF) override. The example used in this section shows how to change the shared file system (SFS) file pool where HLASM Toolkit Feature files reside.

Note: Do **not** modify the product supplied P696234K $PPF or P696234K PPF files to change the file pool name or any other installation parameters. If the P696234K $PPF file is serviced, the existing $PPF file will be replaced, and any changes to that file will be lost; by creating your own $PPF override, your updates will be preserved.

The following process describes changing the default file pool name, VMSYS, to MYPOOL1:

1. Create a new $PPF override file, or edit the override file created via the 'Make Override Panel' function.

Command	Explanation
`xedit` *overname* `$PPF` *fm*`2`	*overname* is the PPF override file name (such as "myHLASM") that you want to use.
	fm is an appropriate file mode. If you create this file yourself, specify a file mode of A.

   If you modify an existing override file, specify a file mode of A or D, based on where the file currently resides (A being the file mode of a R/W 191 minidisk, or equivalent; D, that of the MAINT 51D minidisk).

2. Create (or modify as required) the Variable Declarations (:DCL.) section for the HLASMSFS override area, so that it resembles this :DCL. section. This override is used for the installation of HLASM Toolkit Feature.

   ```
   :OVERLST. HLASMSFS
   *
   * ================================================================= *
   * Override Section for Initial Installation (Using SFS Directories)  *
   * ================================================================= *
   :HLASMSFS. HLASMSFS P696234K
   :DCL. REPLACE
   &191    DIR MYPOOL1:P696234K.
   &SAMPZ   DIR MYPOOL1:P696234K.HLASMTL.LOCAL
   &DELTZ   DIR MYPOOL1:P696234K.HLASMTL.DELTA
   &APPLX   DIR MYPOOL1:P696234K.HLASMTL.APPLYALT
   &APPLZ   DIR MYPOOL1:P696234K.HLASMTL.APPLYPROD
   &BLD0Z   DIR MYPOOL1:P696234K.HLASMTL.TBUILD
   &BAS1Z   DIR MYPOOL1:P696234K.HLASMTL.OBJECT
   &HLAID1  USER  P696234K
   :EDCL.
   :END.
   *
   ```

   (This override replaces the :DCL. section of the HLASMSFS override area of the P696234K $PPF file.)

3. If your $PPF override file was created on the A disk, copy it to file mode D—the Software Inventory minidisk (MAINT 51D). Then erase it from file mode A.

Command	Explanation
`copyfile` *overname* `$PPF` *fm* `= = d (olddate`	Move PPF file to software inventory disk.
`erase` *overname* `$PPF` *fm*	Erase redundant file on *fm* disk.

Options:

OLDDATE
> Use the date and time on the input file as the date and time of last update of the output file.

4. Compile your changes to create the usable *overname* PPF file.

Command	Explanation
`vmfppf` *overname* `HLASMSFS`	*overname* is the file name of your $PPF override file.

Now that the *overname* PPF file has been created, you should specify *overname* instead of P696234K as the PPF name for those VMSES/E commands that require a PPF name.

Appendix C. Planning for installing Program Understanding Tool on Windows

This section contains the following planning information to help you properly install Program Understanding Tool on Windows:
- Worksheet
- Verify workstation requirements
- Verify required workstation software
- Host connectivity

Worksheet: Planning for installing Program Understanding Tool on Windows

Before you begin the installation, you should:

1. Verify workstation requirements. Refer to "Verify workstation requirements."
2. Verify that required software is at the level needed. Refer to "Verify workstation software."
3. Verify connection to Host. Refer to "Verify host connectivity."

Verify workstation requirements

The following hardware requirements must be satisfied to use Program Understanding Tool:

- Intel 80486-based 75Mhz processor or faster
- 16 megabytes (16 MB) of memory (RAM) or more
- 20 megabytes (20 MB) of available hard disk space
- A communications package that can download host files
- An SVGA display configured to display at least 256 colors

Verify workstation software

The following software requirements must be satisfied to use Program Understanding Tool:

- Windows XP or above.
- Windows Vista.
- A program capable of downloading binary files from a host system running z/OS, z/VM, or z/VSE, for example, Personal Communications for Windows.

Verify host connectivity

To install Program Understanding Tool, files are downloaded from the host.

Useful publications

For information about Program Understanding Tool, refer to *HLASM Toolkit Feature User's Guide*.

Program Understanding Tool also contains extensive online help, which is accessible once the tool is running.

Appendix D. Installing Program Understanding Tool on Windows

This section contains the following instructions to install Program Understanding Tool on Windows:
- Worksheet
- Prepare for installation
- Download the product
- Start the install
- Verify successful installation

Worksheet: Installing Program Understanding Tool on Windows

Before you begin the installation, you should:

1. Prepare for Installation. Refer to "Step 1: Prepare for installation."

2. Download the Product. Refer to "Step 2: Download the product files" on page 94.

3. Start the Install. Refer to "Step 3: Start the install" on page 96.

4. Verify successful Installation. Refer to "Step 4: Verify successful installation" on page 96.

Step 1: Prepare for installation

Download product files. These files are the compressed files which make up the product. They are binary files.

Preparing from z/OS

1. Select a 3270 Emulation session and logon onto TSO.

2. Ensure the session is left with a TSO READY prompt.

Preparing from z/VM

1. Select a 3270 Emulation session.

2. Logon onto user P696234K.

3. Establish the correct minidisk order.

   The VMFSETUP command accesses all the required disks or SFS directories to establish the needed CMS file modes.

   Issue the following command:

   `VMFSETUP P696234K {HLASM|HLASMSFS}`

   P696234K is the PPF that is shipped with Program Understanding Tool. If you have your own PPF override, substitute your PPF name for P696234K.

   Use HLASM if the Program Understanding Tool is installed on a minidisk. Use HLASMSFS if Program Understanding Tool is installed in SFS.

4. The download process using the RECEIVE command is prone to interruption by messages being sent to the z/VM userid being used to download the files. To minimize this impact, issue the following commands:

QUERY SET
>> to display the status of many SET command functions. Please note the values for MSG, IMSG, and SMSG.

SET MSG OFF
>> indicates whether messages sent from other users by means of the CP MESSAGE command are to be displayed. ON specifies that messages are displayed. OFF specifies that messages are not displayed.

SET IMSG OFF
>> indicates whether informational messages associated with certain CP commands are to be displayed. ON specifies that informational responses are displayed. OFF specifies that the responses are not displayed.

SET SMSG OFF
>> specifies whether a virtual machine is receiving special messages. OFF indicates the virtual machine cannot receive special messages. ON indicates the virtual machine can receive special messages.

5. Ensure the session is left with a blank CMS screen

Preparing from z/VSE

1. Sign on to the z/VSE host and switch to file transfer mode by doing one of the following:

   - Escape to CICS® (PF6/PF9) if you are allowed to do so.
   - If you are an administrator, select fast path 3-8-6.
   - If you are a programmer, select fast path 5-9-6.

   Workstations should be in DFT mode with the Extended Data Stream (EXTDS) feature for each device associated with a host session. This is done in the CICS® terminal control table (TCT). If you are unsure what mode your session is in, use the CICS/VSE® transaction INWQ to determine the mode of your 3270 session.

Step 2: Download the product files

The syntax of the following RECEIVE commands will work with Communications Manager/2 or Personal Communications/3270.

Downloading from z/OS

1. Create a temporary directory where you will be downloading the compressed files used to install the product.

2. Download the following members from the HLASM Toolkit target library as **binary** files:

   ```
   '<HLQ>SASMPUT2(ASMWREAD)'
   '<HLQ>SASMPUT2(ASMPUTW)'
   ```

   where <HLQ> is the high level qualifier (HLQ) for the partitioned data set which holds the member in binary form.

   Download member ASMWREAD as READ.ME and download member ASMPUTW as ASMPUTW.EXE.

Downloading from z/VM

1. Create a temporary directory where you will be downloading the compressed files used to install the product.

2. Download the following CMS files from the HLASM Toolkit production disk (P696234K.29e) as **binary** files:

```
ASMWREAD BASEPF11
ASMPUTW  BASEPF11
```

Download file ASMWREAD BASEPF11 as READ.ME and download file ASMPUTW BASEPF11 as file ASMPUTW.EXE.

Downloading from z/VSE

1. Create a temporary directory where you will be downloading the product files used to install the product.
2. Download the following .W books from the HLASM Toolkit library as **binary** files:

```
ASMWREAD.W
ASMPUTW.W
```

Download member ASMWREAD.W as READ.ME and download member ASMPUTW.W as ASMPUTW.EXE.

To do this:

a. Open a Command Prompt session.

b. Change to the temporary directory.

Enter:

```
CD \<P>
```

where <P> is the temporary directory.

c. Receive the READ.ME file by entering:

```
RECEIVE <P>READ.ME <S>:ASMWREAD W
   (FILE=LIB L=<LIB> S=<SUBLIB> BINARY
```

Receive the ASMPUTW.EXE file by entering:

```
RECEIVE <P>ASMPUTW.EXE  <S>:ASMPUTW  W
   (FILE=LIB L=<LIB> S=<SUBLIB> BINARY
```

where

<P>   is the path name where you want to receive the product files. When you enter the directory, add a trailing back slash (\).

<S>   is the emulator session which you want to use to download the Installation file.

<LIB>   is the name of the library where Program Understanding Tool is installed.

<SUBLIB>
    is the name of the sublibrary where Program Understanding Tool is installed.

Example:

To receive the product files from host session *A* to the path *C:\TEMP* from *PRD2.PROD*, enter:

```
RECEIVE C:\TEMP\READ.ME  A:ASMWREAD W
   (FILE=LIB L=PRD2 S=PROD BINARY
RECEIVE C:\TEMP\ASMPUTW.EXE  A:ASMPUTW W
   (FILE=LIB L=PRD2 S=PROD BINARY
```

Step 3: Start the install

In the temporary directory where you downloaded the two Program Understanding Tool files, select the file ASMPUT.EXE to extract the rest of the Program Understanding Tool files into the same directory.

In the same directory, now select SETUP.EXE to install Program Understanding Tool, providing appropriate answers to the questions. This will install Program Understanding Tool on your PC.

As installed, the Program Understanding Tool toolbar buttons do not work on Windows 2000 or XP systems, and above. To resolve this, right-click on the Program Understanding Tool icon, and select **Properties > Compatibility**. Select **Run this program in compatibility mode for:** and select Windows 95 from the menu. Select **Apply** and then **OK**. Now the toolbar buttons should work.

Read the READ.ME file using a text editor such as NOTEPAD, for other information you need about using Program Understanding Tool, and carry out the instructions contained in this file.

Step 4: Verify successful installation

To verify the successful installation of Program Understanding Tool, invoke Program Understanding Tool by using the START button, selecting PROGRAMS and clicking on HLASM Program Understanding Tool.

Program Understanding Tool is now installed and ready for use.

Appendix E. Maintaining Program Understanding Tool on Windows

This section contains instructions for maintaining, and for removing, Program Understanding Tool on Windows.

Maintaining Program Understanding Tool

Service for Program Understanding Tool will first be applied on the host, and then the new version of Program Understanding Tool downloaded to Windows.

To maintain this product:

1. Uninstall this product on the workstation. See "Uninstalling Program Understanding Tool from Windows."
2. Apply service on the host. The normal service stream via PTFs will be applied to the parts on the host.
3. Re-install this product on the workstation, as described in Appendix D, "Installing Program Understanding Tool on Windows," on page 93.

Uninstalling Program Understanding Tool from Windows

To remove Program Understanding Tool carry out the following tasks.

Tasks

1. Ensure you have a current backup of this product.
2. Save user files.

   You will need to copy any files that you have stored in the \DATA subdirectory to another directory, and then delete these files from the \DATA directory, before you can uninstall the product.
3. From the toolbar, select **Start**, **Settings**, **Control Panel**, **Add/Remove Programs**. From the list of software, select ASMPUT, and click **Add/Remove**, then click **Yes**.

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Glossary

This glossary defines terms and abbreviations that are used in this book. If you do not find the term you are looking for refer to the index, to the glossary of the appropriate high-level language (HLL) manual, or to the *IBM Dictionary of Computing*, New York: McGraw-Hill, 1994.

A

abend Abnormal end of application.

accept An SMP/E process that moves distributed code and programs to the distribution libraries.

activate
> To make a program available for use.

addressing mode (AMODE)
> An attribute that refers to the address length that a routine is prepared to handle upon entry. Addresses may be 24 or 31 bits long.

address space
> Domain of addresses that are accessible by an application.

AMODE
> Addressing mode.

APAR Authorized program analysis report.

authorized program analysis report (APAR)
> A request for correction of a problem caused by a defect in a current unaltered release of a program.

authorized program facility (APF)
> The authorized program facility (APF) is a facility that an installation manager uses to protect the system. In MVS, certain system functions, such as all or part of some SVCs, are sensitive; their use must be restricted to users who are authorized. An authorized program is one that executes in supervisor state, or with APF authorization.

auxiliary file
> In CMS, a file that contains a list of file types of update files to be applied to a particular source file.

B

base The core product, upon which features may be separately ordered and installed.

batch Pertaining to activity involving little or no user action. Contrast with *interactive*.

byte The basic unit of storage addressability, normally with a length of 8 bits.

C

cataloged procedure
> A set of control statements placed in a library and retrievable by name.

CBPDO
> Custom-Built Product Delivery Offering.

CE IBM customer engineer.

CLIST TSO command list.

CMS Conversational monitor system.

compiler options
> Keywords that can be specified to control certain aspects of compilation. Compiler options can control the nature of the load module generated by the compiler, the types of printed output to be produced, the efficient use of the compiler, and the destination of error messages.

component
> Software that is part of a functional unit.

> A set of modules that performs a major function within a system.

condition code
> A code that reflects the result of a previous input/output, arithmetic, or logical operation.

control block
> A storage area used by a computer program to hold control information.

control file
> In CMS, a file that contains records that identify the updates to be applied and the macrolibraries, if any, needed to assemble a particular source program.

control program (CP)
> A computer program designed to schedule and to supervise the execution of programs of a computer system.

control section (CSECT)
> The part of a program specified by the programmer to be a relocatable unit, all

elements of which are to be loaded into adjoining main storage locations.

control statement

In programming languages, a statement that is used to alter the continuous sequential execution of statements; a control statement can be a conditional statement, such as IF, or an imperative statement, such as STOP.

In JCL, a statement in a job that is used in identifying the job or describing its requirements to the operating system.

conversational monitor system (CMS)

A virtual machine operating system that provides general interactive time sharing, problem solving, and program development capabilities, and operates only under the control of the VM/370 control program.

corrective maintenance

Maintenance performed specifically to overcome existing problems.

CP command

In VM, a command by which a terminal user controls his or her virtual machine. The VM/370 control program commands are called CP commands.

CPPL Command processor parameter list.

CP privilege class

In VM, one or more classes assigned to a virtual machine user in the user's VM directory entry; each privilege class allows access to a logical subset of the CP commands.

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

CSECT

Control section.

cumulative service tape

A tape sent with a new function order, containing all current PTFs for that function.

Custom-Built Installation Process Offering (CBIPO)

A CBIPO is a tape that has been specially prepared with the products (at the appropriate release levels) requested by the customer. A CBIPO simplifies installing various products together.

Custom-Built Product Delivery Offering (CBPDO)

A CBPDO is a tape that has been specially prepared for installing a particular product and the related service requested by the customer. A CBPDO simplifies installing a product and the service for it.

D

data definition name (DDNAME)

The logical name of a file within an application. The DDNAME provides the means for the logical file to be connected to the physical file.

data set

On MVS, a named collection of related data records that is stored and retrieved by an assigned name. Equivalent to a CMS *file*.

data set name (dsname)

The data set name on the DD statement in the JCL or the dsname operand of the TSO ALLOC command.

DBCS Double-byte character set.

DDDEF

Dynamic data definition.

DDNAME

Data definition name.

default

A value that is used when no alternative is specified.

DD statement

In MVS, connects the logical name of a file and the physical name of the file.

DELTA disk

In VM, the virtual disk that contains program temporary fixes (PTFs) that have been installed but not merged.

distribution libraries

IBM-supplied partitioned data sets on tape containing one or more components that the user restores to disk for subsequent inclusion in a new system.

distribution medium

The medium on which software is distributed to the user; for example, 9-track magnetic tape, tape cartridge.

distribution zone

In SMP/E, a group of VSAM records that

describe the SYSMODs and elements in the distribution libraries.

DITTO utility
Data Interfile Transfer, Testing, and Operations utility.

double-byte character set (DBCS)
A collection of characters represented by a 2-byte code.

driving system
The system used to install the program. Contrast with target system.

dsname
Data set name.

dynamic data definition (DDDEF)
The process of defining a data set and allocating auxiliary storage space for it while, rather than before, a job step executes.

dynamic storage
Storage acquired as needed at run time. Contrast with *static storage*.

E

ECMODE
Extended control mode.

executable program
A program that has been link-edited and therefore can run in a processor.

The set of machine language instructions that constitute the output of the compilation of a source program.

Extended control mode (ECMODE)
A mode in which all features of a System/370 computing system, including dynamic address translation, are operational.

Extended Service Option (ESO)
A service option that gives a customer all the new fixes for problems in IBM licensed programs that operate under that customer's operating system.

F

feature
A part of an IBM product that may be ordered separately by a customer.

feature number
A four-digit code used by IBM to process hardware and software orders.

file
A named collection of related data records

that is stored and retrieved by an assigned name. Equivalent to an MVS *data set*.

FILEDEF
File definition statement.

file definition statement (FILEDEF)
In CMS, connects the logical name of a file and the physical name of a file.

fix
A correction of an error in a program, generally a temporary correction or bypass of defective code.

FMID
Function modification identifier.

function
A routine that is invoked by coding its name in an expression. The routine passes a result back to the invoker through the routine name.

function modification identifier (FMID)
The value used to distinguish separate parts of a product. A product tape or cartridge has at least one FMID.

I

IBM customer engineer (CE)
An IBM service representative who performs maintenance services for IBM hardware.

IBM program support representative (PSR)
An IBM service representative who performs maintenance services for IBM software at a centralized IBM location.

IBM service representative
An individual in IBM who performs maintenance services for IBM products or systems.

IBM Software Distribution (ISD)
The IBM department responsible for software distribution.

IBM Support Center
The IBM department responsible for software service.

IBM systems engineer (SE)
An IBM service representative who performs maintenance services for IBM software in the field.

initial program load (IPL)
The initialization procedure that causes an operating system to commence operation.

The process by which a configuration image is loaded into storage, as at the beginning of a work day or after a system malfunction or as a means to access updated parts of the system.

The process of loading system programs and preparing a system to run jobs.

inline Sequential execution of instructions, without branching to routines, subroutines, or other programs.

IPL Initial program load.

interactive
Pertaining to a program or system that alternately accepts input and responds. In an interactive system, a constant dialog exists between user and system. Contrast with *batch*.

Interactive Interface
A series of panels, allowing the user to use the facilities of the VSE/ESA operating. This interface runs within CICS/VSE.

ISD IBM Software Distribution.

J

JCL Job control language.

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 the JCLIN data to update the distribution zone when the SYSMOD is accepted.

JES Job Entry Subsystem

Job Entry Subsystem
A system facility for spooling, job queueing, and managing the scheduler work area.

job control language (JCL)
A sequence of commands used to identify a job to an operating system and to describe a job's requirements.

job step
You enter a program into the operating system as a job step. A job step consists of the job control statements that request and control execution of a program and request the resources needed to run the

program. A job step is identified by an EXEC statement. The job step can also contain data needed by the program. The operating system distinguishes job control statements from data by the contents of the record.

L

librarian
In VSE, the set of programs that maintains, services, and organizes the system and private libraries.

library
A collection of functions, subroutines, or other data.

link pack area (LPA)
In MVS, an area of main storage containing reenterable routines from system libraries. Their presence in main storage saves loading time when a reenterable routine is needed.

linkage editor
A program that resolves cross-references between separately assembled object modules and then assigns final addresses to create a single relocatable load module. The linkage editor then stores the load module in a program library in main storage.

link-edit
To create a loadable computer program by means of a linkage editor.

load module
An application or routine in a form suitable for execution. The application or routine has been compiled and link-edited; that is, address constants have been resolved.

logical saved segment
A portion of a physical saved segment that CMS can manipulate. Each logical saved segment can contain different types of program objects, such as modules, text files, execs, callable services libraries, language repositories, user-defined objects, or a single minidisk directory. A system segment identification file (SYSTEM SEGID) associates a logical saved segment to the physical saved segment in which it resides. See *physical saved segment* and *saved segment*.

LPA Link pack area.

M

maintain system history program (MSHP)
In VSE, a program used for automating and controlling various installation, tailoring, and service activities for a VSE system.

MCS Modification control statement

minidisk
In VM, all, or a logical subdivision of, a physical disk storage device that has its own address, consecutive storage space for data, and an index or description of stored data so that the data can be accessed. Synonymous with virtual disk.

module
A language construct that consists of procedures or data declarations and can interact with other such constructs.

MSHP
Maintain system history program.

MVS Multiple Virtual Storage operating system.

multicultural support
Translation requirements affecting parts of licensed programs; for example, translation of message text and conversion of symbols specific to countries.

N

Named Saved System
A copy of an operating system that a user has named and saved in a file. The user can load the operating system by its name, which is more efficient than loading it by device number.

nonexecutable components
Components of a product that cannot be run.

non reentrant
A program that cannot be shared by multiple users.

nonreenterable
See *non reentrant*.

NSS named saved system

O

object code
Output from a compiler or assembler which is itself executable machine code or

is suitable for processing to produce executable machine code.

object deck
Synonymous with *object module, text deck*.

object module
A portion of an object program suitable as input to a linkage editor. Synonymous with *text deck, object deck*.

online Pertaining to a user's ability to interact with a computer.

Pertaining to a user's access to a computer via a terminal.

operating system
Software that controls the running of programs; in addition, an operating system may provide services such as resource allocation, scheduling, input/output control, and data management.

P

parameter
Data items that are received by a routine.

partition
A fixed-size division of storage.

phase In VSE, the smallest complete unit of executable code that can be loaded into virtual storage.

physical saved segment
One or more pages of storage that have been named and retained on a CP-owned volume (DASD). When created, it can be loaded within a virtual machine's address space or outside a virtual machine's address space. Multiple users can load the same copy. A physical saved segment can contain one or more logical saved segments. A system segment identification file (SYSTEM SEGID) associates a physical saved segment to its logical saved segments. See *logical saved segment* and *saved segment*.

preventive maintenance
Maintenance performed specifically to prevent problems from occurring.

preventive service planning (PSP)
The online repository of program temporary fixes (PTFs) and other service information. This information could affect installation.

procedure

A named block of code that can be invoked, normally using a call.

procedure library (PROCLIB)

A program library in direct-access storage with job definitions. The reader/interpreter can be directed to read and interpret a particular job definition by an execute statement in the input stream.

PROCLIB

Procedure library.

program level

The modification, release, version, and fix level of a product.

program number

The seven-digit code (in the format *xxxx-xxx*) used by IBM to identify each program product.

program temporary fix (PTF)

A temporary solution or bypass of a problem diagnosed by IBM as resulting from a defect in a current unaltered release of the program.

PSP Preventive service planning.

PSR IBM program support representative.

PTF Program temporary fix.

Q

qualifier

A modifier that makes a name unique.

R

reentrant

The attribute of a routine or application that allows more than one user to share a single copy of a load module.

reenterable

See *reentrant*

relative file tape (RELFILE tape)

A standard label tape made up of two or more files. It contains a file of the MCSs for one or more function SYSMODs and one or more relative files containing unloaded source data sets and unloaded, link-edited object data sets at the distribution library level. A relative file tape is one way of packaging SYSMODs, and is typically used for function SYSMODs.

relative files (RELFILEs)

Files containing modification text and JCL input data associated with a SYSMOD.

RELFILEs

Relative files

RELFILE tape

Relative file tape

relocatable load module

On CMS, a combination of object modules having cross references resolved and prepared for loading into storage for execution.

residence mode (RMODE)

The attribute of a load module that specifies whether the module, when loaded, must reside below the 16MB virtual storage line or may reside anywhere in virtual storage.

resident modules

A module that remains in a particular area of storage.

return code

A code produced by a routine to indicate its success. It can be used to influence the execution of succeeding instructions.

RIM Related installation materials

RMODE

Residence mode.

run To cause a program, utility, or other machine function to be performed.

S

save area

Area of main storage in which contents of registers are saved.

SBCS Single-byte character set.

SE IBM systems engineer.

service level

The modification level, release, version, and fix level of a program. The service level incorporates PTFs if there are any.

saved segment

A segment of storage that has been saved and assigned a name. Saved segments can be physical saved segments that CP recognizes or logical saved segments that CMS recognizes. The segments can be loaded and shared among virtual machines, which helps use real storage

more efficiently, or a private, nonshared copy can be loaded into a virtual machine. See *logical saved segment* and *physical saved segment*.

shared segment
In VM, a feature of a saved system that allows one or more segments of reenterable code in real storage to be shared among many virtual machines.

shared storage
An area of storage that is the same for each virtual address space. Because it is the same space for all users, information stored there can be shared and does not have to be loaded in the user region.

shared virtual area (SVA)
In VSE, a high address area of virtual storage that contains a system directory list (SDL) of frequently used phases, resident programs that can be shared between partitions, and an area for system support.

severity code
A part of run-time messages that indicates the severity of the error condition (1, 2, 3, or 4).

single-byte character set (SBCS)
A collection of characters represented by a 1-byte code.

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.

softcopy
One or more files that can be electronically distributed, manipulated, and printed by a user.

software inventory disk
In VM, the disk where the system level inventory files reside.

source code
The input to a compiler or assembler, written in a source language.

source program
A set of instructions written in a

programming language that must be translated to machine language before the program can be run.

SREL System release identifier

statement
In programming languages, a language construct that represents a step in a sequence of actions or a set of declarations.

sublibrary
In VSE, a subdivision of a library.

SUBSET
The value that specifies the function modifier (FMID) for a product level. It further specifies an entry in RETAIN* for a product level.

subsystem
A secondary or subordinate system, or programming support, normally capable of operating independently of or asynchronously with a controlling system. Examples are CICS and IMS.

SVA Shared virtual area.

syntax The rules governing the structure of a programming language and the construction of a statement in a programming language.

SYSMOD
system modification.

SYSMOD ID
system modification identifier.

system abend
An abend caused by the operating system's inability to process a routine; can be caused by errors in the logic of the source routine.

T

target disk
In VM, the disk to which a program is installed.

target libraries
In SMP/E, a collection of data sets in which the various parts of an operating system are stored. These data sets are sometimes called system libraries.

target zone
In SMP/E, a collection of VSAM records describing the target system macros, modules, assemblies, load modules,

source modules, and libraries copied from DLIBs during system generation, and the system modifications (SYSMODs) applied to the target system.

text deck
Synonym for *object module, object deck*.

time sharing option/extended (TSO/E)
An option on the operating system; for System/370, the option provides interactive time sharing from remote terminals.

TSO/E Time sharing option/extended.

U

UCLIN
In SMP/E, the command used to initiate changes to SMP/E data sets. Actual changes are made by subsequent UCL statements.

UPGRADE
An alphanumeric identifier that specifies a product level.

user exit
A routine that takes control at a specific point in an application.

USERMOD
User modification.

user modification (USERMOD)
A change to product code that the customer initiates.

V

virtual machine (VM)
A functional simulation of a computer and its associated devices. Each virtual machine is controlled by a suitable operating system.

In VM, a functional equivalent of either a System/370 computing system or a System/370-Extended Architecture computing system.

VMFINS
An installation aid supplied as part of VMSES/E to make installation on VM consistent.

VM Serviceability Enhancements Staged/Extended (VMSES/E)
A program product for installing and maintaining products on VM.

VMSES/E
VM Serviceability Enhancements Staged/Extended.

VOLSER
Volume serial number.

volume
A certain portion of data, together with its data carrier, that can be handled conveniently as a unit.

A data carrier mounted and demounted as a unit; for example, a reel of magnetic tape, a disk pack.

volume label
An area on a standard label tape used to identify the tape volume and its owner. This area is the first 80 bytes and contains VOL 1 in the first four positions.

volume serial number (VOLSER)
A number in a volume label assigned when a volume is prepared for use in a system.

VSAM
Virtual storage access method. A high-performance mass storage access method. Three types of data organization are available: entry sequenced data sets (ESDS), key sequenced data sets (KSDS), and relative record data sets (RRDS).

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