IBM

Program Directory

For CBPDO Installation and ServerPac Reference

z/OS

V2.2.0

Program Number 5650-ZOS

CBPDO Level SMC1510

Service Level 1502

Document Date: September 2015

GI11-9848-01

> **Note**
>
> Before using this information and the product it supports, be sure to read the general information under "Notices" on page 385.

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How to send your comments to IBM®

Exclusive elements of z/OS V2.2.0 (Service Level 1502)

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

IBM or any other organizations will only use the personal information that you supply to contact you about the issues that you submit.

For each of the topics below please indicate your satisfaction level by circling your choice from the rating scale. If a statement does not apply, please circle N.

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┌─ RATING SCALE ──────────────────────────────────────────────────────┐
│    very                                very          not             │
│  satisfied  <====================>  dissatisfied  applicable         │
│      1          2        3        4        5            N             │
└──────────────────────────────────────────────────────────────────────┘
```

	Satisfaction					
Ease of product installation	1	2	3	4	5	N
Contents of program directory	1	2	3	4	5	N
Installation Verification Programs	1	2	3	4	5	N
Time to install the product	1	2	3	4	5	N
Readability and organization of program directory tasks	1	2	3	4	5	N
Necessity of all installation tasks	1	2	3	4	5	N
Accuracy of the definition of the installation tasks	1	2	3	4	5	N
Technical level of the installation tasks	1	2	3	4	5	N
Ease of getting the system into production after installation	1	2	3	4	5	N

What order media was this product received?

___ CBPDO
___ ServerPac
___ Systempac
___ Other

Is this the first time your organization has installed this product?

___ Yes
___ No

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Were the people who did the installation experienced with the installation of z/OS products?

___   Yes

___   No

If yes, how many years? ___

If you have any comments to make about your ratings above, or any other aspect of the product installation, please list them below:

      _____

      _____

      _____

      _____

      _____

Thank you for your participation.

To send us comments, visit the Contact z/OS Web page at

`http://www.ibm.com/systems/z/os/zos/webqs.html`

Include the following information:

- Your name and e-mail address
- The publication title and order number
- The topic and page number related to your comment
- The text of your comment.

1.0 What is in this Program Directory?

This Program Directory addresses the installation of z/OS Version 2 Release 2, which is also referred to as z/OS V2.2.0. See *z/OS Planning for Installation,* for planning information on z/OS V2.2.0. See *z/OS V2R2 Migration,* for information on migration to z/OS V2.2.0.

This Program Directory is intended for the system programmer who is responsible for installing the z/OS Version 2 Release 2 elements using the CBPDO delivery option. If you are installing z/OS V2.2.0 with ServerPac, use the book *ServerPac: Installing Your Order*, which is shipped with your ServerPac to install z/OS. That book might refer to specific sections of this Program Directory for information that applies to the ServerPac installation path.

Attention z/OS V2.2.0 Users

Please review the z/OS Licensed Product Specification, which is available for download from the following locations:

- IBM Publication worldwide site:

  http://www-05.ibm.com/e-business/linkweb/publications/servlet/pbi.wss

- z/OS Internet Library:

  http://www-03.ibm.com/systems/z/os/zos/bkserv/

- IBM Knowledge Center:

  http://www-01.ibm.com/support/knowledgecenter

The CBPDO installation of z/OS Version 2 Release 2 should occur in separate stages, called **waves**. Each wave consists of multiple SMP/E steps that are documented later in this Program Directory. **All waves must be completed entirely.**

1. Wave 0 installs the FMIDs required for the driving system including HLASM, SMP/E and the Program Management Binder. This wave is documented in 7.0, "Installation instructions for Wave 0 FMIDs" on page 49.

2. Wave 1 installs the core set of FMIDs in z/OS. This wave is documented in 8.0, "Installation instructions for Wave 1 and Wave 2 FMIDs" on page 69.

3. Wave 2 installs the SDSF, JES2 and JES3 elements. This wave is documented in 8.0, "Installation instructions for Wave 1 and Wave 2 FMIDs" on page 69.

Note: Wave 2 can also be combined with Wave 1. Wave 2, however, cannot occur before Wave 1.

In OS/390® Release 3, the *Program Directory* expanded on the "wave" concept and further documented the installation of *all* elements into **ripples**. These ripples take into consideration element dependencies and natural installation separation points. The ripples give an overall installation scenario that includes every element in order to expedite the CBPDO installation path.

1.1 z/OS V2.2.0 FMIDs documented in this Program Directory

Installation instructions for all z/OS elements are included in this Program Directory. No other program directories are required.

The z/OS V2.2.0 FMIDs can be found in 6.5.3, "Elements in each Wave, Ripple, and FMIDSET" on page 35. Some elements documented in this Program Directory are also available as separately-orderable products. Information for these separately-orderable products, such as target and distribution libraries, is integrated in this Program Directory. Therefore, the separate program directories are not necessary.

1.1.1 z/OS V2.2.0 Summary Table of Elements and Features

Figure 1 lists all elements and features in z/OS V2.2.0, describes some of their characteristics, and identifies which ones have various installation-related jobs. The table uses the following headings.

Element or Feature
> Name and FMID of the z/OS Version 2 Release 2 base element or optional feature. If language FMIDs are listed with an element or feature in Figure 1, those FMIDs are included in unpriced language features that are orderable with z/OS.

Level Latest OS/390 or z/OS level in which the element or feature changed (added to OS/390 or z/OS or updated). For non-exclusive elements and features, the equivalent level of the stand-alone product is listed in parenthesis.

Type One of the following values for each element or feature:

- Base, for base elements
- Priced Feature, for priced optional features
- No Charge Feature, for unpriced optional features

Excl Indicates if the element or feature is exclusive (available **only** within z/OS, not also as a separately-orderable product). **Y** for Yes; **N** for No.

Dynam Indicates if the element or feature supports dynamic enablement (**Y** or **N**).

Ripple Logical set of elements that are installed within a wave.

Alloc Indicates if the element or feature has a sample allocate job (**Y** or **N**). Allocations for dependent elements are done by the base FMID, unless otherwise noted.

DDDEF Indicates if the element or feature has a sample job to define DDDEF entries (**Y** or **N**).

Post-I Indicates if the element or feature has any post-installation jobs (**Y** or **N**). Note that customization tasks are **not** considered post-installation jobs in this table.

IVP Indicates if the element or feature has any installation verification procedure (IVP) jobs (**Y** or **N**).

Note: Some elements listed in Figure 1 provide sample jobs to create the file system directories. For more information about these sample jobs and elements, see Figure 20 on page 55, Figure 29 on page 89, and 8.3.4, "Set up File System Directories for Wave 2" on page 119.

			E X C L	D y n a m	Ripple	A l l o c	D D D E F	P o s t - I	I V P
Element or Feature FMIDs	**Level**	**Type**							
Alternate Library for REXX HWJ9143 JWJ9144 (Japanese)	z/OS V1.9.0	Base	N	N	Wave 1D	Y	Y	Y	N
Base Control Program (BCP) HBB77A0 JBB77AC (Simplified Chinese) JBB77AJ (Japanese)	z/OS V2.2.0	Base	Y	Y	Wave 1A Wave 1AL	Y	Y	Y	Y
HUN77A0 (BCP - Support for Unicode) JUN77AJ (Support for Unicode Japanese)	z/OS V2.2.0	Base	Y	N	Wave 1A Wave 1AL	Y	Y	N	N
HPM77A0 (Program Management Binder)	z/OS V2.2.0				Wave 0	Y	Y	N	N
HPV77A0 (BCP - Capacity Provisioning)	z/OS V2.2.0		N	N	Wave 1E	N	Y	N	N
IOCP HIO1104	OS/390 R1 (MVS/ESA V3)		N	N	Wave 1B	N	N	N	N
BDT HBD6602	OS/390 R2	Base	Y	N	Wave 1F	Y	Y	N	N
Note: You cannot activate any BDT functions until one or both of the optional BDT features (BDT File-to-File or BDT SNA NJE) is installed and enabled.									
BDT File-to-File JBD6201	OS/390 R2	Priced Feature	Y	Y	Wave 1F	N	N	N	N
BDT SNA NJE JBD6202	OS/390 R2	Priced Feature	Y	Y	Wave 1F	N	N	N	N

Figure 1 (Page 1 of 9). z/OS Base Elements and Optional Features

Element or Feature FMIDs	Level	Type	EXCL	Dynam	Ripple	Alloc	DDDEF	Post-I	IVP

BookManager READ
  HBKM300
  JBKM310 (English)
  JBKM311 (Dutch)
  JBKM312 (French)
  JBKM313 (German)
  JBKM314 (Spanish)
  JBKM315 (Italian)
  JBKM316 (Brazilian Portuguese)
  JBKM317 (Canadian French)
  JBKM318 (Danish)
	OS/390 R1 (V1.3.0)	Base	N	N	Wave 1C	Y	Y	Y	Y

Common Information Model (CIM) HPG77A0	z/OS V2.2.0	Base	Y	N	Wave 1E	Y	Y	Y	Y
Communications Server IP Services HIP6220 (Base)	z/OS V2.2.0	Base	Y	Y	Wave 1A	Y	Y	Y	Y
JIP622X (XWindows X11R4)					Wave 1A	N	N	N	N
Communications Server SNA Services HVT6220					Wave 1A	N	N	N	N

Note:

1. IP is the current name for the Communications Server component that supports secure TCP/IP networking. In support of dynamic enablement, the old name TCP/IP is still being used in parmlib member IFAPRDxx.

Element or Feature FMIDs	Level	Type	EXCL	Dynam	Ripple	Alloc	DDDEF	Post-I	IVP
Communications Server Security Level 3 JIP622K	z/OS V2.2.0	No Charge Feature	Y	N	Wave 1AL	N	N	N	N

Element or Feature FMIDs	Level	Type	EXCL	Dynam	Ripple	Alloc	DDDEF	Post-I	IVP
Figure 1 (Page 3 of 9). z/OS Base Elements and Optional Features									
Cryptographic Services Open Cryptographic Services Facility (OCSF) Base HCRY740	z/OS V1.9.0	Base	Y	N	Wave 1D	Y	Y	N	N
Integrated Cryptographic Service Facility (ICSF) HCR77B0	z/OS V2.2.0				Wave 1A	Y	Y	N	N
Cryptographic Services PKI Services HKY77A0	z/OS V2.2.0				Wave 1D	Y	Y	Y	N
System SSL HCPT420 JCPT42J (System SSL Japanese)	z/OS V2.2.0				Wave 1A Wave 1AL	Y	Y	N	N
DFSMSdfp HDZ2220 (Base) JDZ222K (Japanese)	z/OS V2.2.0	Base	Y	N	Wave 1B	Y Y	Y Y	N N	Y N
DFSMSdss see DFSMSdfp	z/OS V2.2.0	Priced Feature	Y	Y	Wave 1B	N	N	Y	N
DFSMStvs see DFSMSdfp	z/OS V2.2.0	Priced Feature	Y	Y	Wave 1B	N	N	Y	N
DFSMShsm see DFSMSdfp	z/OS V2.2.0	Priced Feature	Y	Y	Wave 1B	N	N	N	Y
DFSMSrmm see DFSMSdfp	z/OS V2.2.0	Priced Feature	Y	Y	Wave 1B	N	N	N	Y
DFSORT HSM1M00 (Resident, Non-resident, Locale)	z/OS V2.2.0	Priced Feature	Y	Y	Wave 1F	Y	Y	N	Y
Note: DFSORT panels are no longer provided.									

Element or Feature FMIDs	Level	Type	EXCL	Dynam	Ripple	Alloc	DDDEF	Post-I	IVP
Distributed File Service H0H2410 J0H241J (Japanese) HZFS420 (z/OS File System) JZFS42J (z/OS File System Japanese)	z/OS V2.1.0 z/OS V2.2.0	Base	Y	N	Wave 1G	Y	Y	N	N
EREP EER3500	z/OS V1.7.0 (V3R5)	Base	N	N	Wave 1C	N	N	N	N
ESCON Director Support HSWF100	OS/390 R1 (MVS/ESA V5)	Base	Y	N	Wave 1C	N	N	N	N
FFST™ HFST101	OS/390 R2 (V1.2.0)	Base	Y	N	Wave 1C	N	N	Y	Y
GDDM HGD3200 JGD3219 (English) JGD3220 (Brazilian Portuguese) JGD3221 (Simplified Chinese) JGD3222 (Danish) JGD3223 (French) JGD3224 (German) JGD3225 (Korean) JGD3226 (Italian) JGD3227 (Japanese) JGD3228 (Norwegian) JGD3229 (Canadian French) JGD3230 (Spanish) JGD3231 (Traditional Chinese) JGD3232 (Swedish)	OS/390 R2 (V3R2)	Base	N	N	Wave 1C	Y	Y	N	Y
GDDM-PGF HGD3201	OS/390 R2 (V2R1.3)	Priced Feature	N	Y	Wave 1C	N	N	N	Y
GDDM-REXX See GDDM	OS/390 R2 (V3R2)	Priced Feature	N	Y	Wave 1C	N	N	N	Y
HCD HCS77A0 (Base, English) JCS77AJ (Japanese)	z/OS V2.2.0	Base	Y	N	Wave 1B	Y	Y	N	Y
HCM HCM1F10	z/OS V2.2.0	Priced Feature	Y	Y	Wave 1F	Y	Y	N	N

Figure 1 (Page 4 of 9). z/OS Base Elements and Optional Features

Element or Feature FMIDs	Level	Type	EXCL	Dynam	Ripple	Alloc	DDDEF	Post-I	IVP
Figure 1 (Page 5 of 9). z/OS Base Elements and Optional Features									
HLASM HMQ4160	z/OS V1.10.0 (HLASM V1.6)	Base	N	N	Wave 0	Y	Y	N	Y
HLASM Toolkit JMQ416A	z/OS V1.10.0 (HLASM V1.6)	Priced Feature	N	Y	Wave 1F	Y	Y	N	Y
IBM HTTP Server - Powered by Apache HHAP90P	z/OS V2.2.0	Base	Y	N	Wave 1G	Y	Y	N	N
Note: IBM HTTP Server (IHS) - Powered by Apache (FMID HHAP90P) is a new element introduced in z/OS V2.2.0. The level incorporated in z/OS is based on Apache HTTP Server 2.4. This exclusive element is replacing the IBM HTTP Server which was based on Domino Go Web server (FMIDS HIMW530, JIMW53B, and JIMW531) shipped in previous releases.									
IBM Knowledge Center for z/OS HKCZ100	z/OS V2.2.0	Base	Y	N	Wave 1F	Y	Y	Y	N
IBM TDS HRSL420 (IBM Tivoli Directory Server for z/OS Base) JRSL42J (IBM Tivoli Directory Server for z/OS JPN)	z/OS V2.2.0	Base	Y	N	Wave 1A Wave 1AL	Y	Y	N	N
IBM z/OS Management Facility HSMA220 (z/OSMF Core Functions) HSMA221 (z/OSMF ISPF) HSMA222 (z/OSMF Resource Monitoring) HSMA223 (z/OSMF WLM) HSMA224 (z/OSMF Software Management) HSMA225 (z/OSMF Incident Log) HSMA226 (z/OSMF Capacity Provisioning) HSMA227 (z/OSMF Workflow) HSMA228 (z/OSMF Plug-in A) HSMA229 (z/OSMF Plug-in B) HSMA22A (z/OSMF Configuration Assistant) HSMA22B (z/OSMF Plug-in C)	z/OS V2.2.0	Base	Y	N	Wave 1G	Y	Y	Y	N

Figure 1 (Page 6 of 9). z/OS Base Elements and Optional Features

Element or Feature FMIDs	Level	Type	EXCL	Dynam	Ripple	Alloc	DDDEF	Post-I	IVP

ICKDSF
  EDU1H01
  FDU1H07
  FDU1H08 (English panels)
  FDU1H09 (Japanese panels)
	z990 Compati-bility Support (V1R17)	Base	N	N	Wave 1C	Y	Y	N	Y

Infoprint Server
  HMOS705 (IP PrintWay basic mode)
  JMOS7J5 (Japanese)
	z/OS V1.2.0	Priced Feature	Y	Y	Wave 1G	Y	Y	N	N

HNET7A0 (NetSpool) JNET7AJ (Japanese)	z/OS V2.2.0								
HOPI7A0 (Print Interface) JOPI7AJ (Japanese)	z/OS V2.2.0								
Integrated Security Services Enterprise Identity Mapping HIT7750	z/OS V1.10.0	Base	Y	N	Wave 1D	Y	Y	N	N

Network Authentication Service
  HSWK420
  JSWK42J (Japanese)
	z/OS V2.2.0				Wave 1A
					Wave 1AL
						Y	Y	N	N

Open Cryptographic Enhanced Plug-ins HRO7740	z/OS V1.9.0				Wave 1D	N	N	N	N

ISPF
  HIF7P02
  JIF7P11 (Swiss German)
 	
  JIF7P14 (Japanese)
 	
  JIF7P15 (German)
 	
  JIF7P16 (Upper Case English)
	z/OS V2.2.0	Base	Y	N	Wave 1A
					Wave 1AL
						Y	Y	N	Y

JES2
  HJE77A0
  JJE77AJ (Japanese)
	z/OS V2.2.0	Base	Y	N	Wave 2	Y	Y	Y	N

Element or Feature FMIDs	Level	Type	EXCL	Dynam	Ripple	Alloc	DDDEF	Post-I	IVP
Figure 1 (Page 7 of 9). z/OS Base Elements and Optional Features									
JES3 HJS77A0	z/OS V2.2.0	Priced Feature	Y	Y	Wave 2	Y	Y	Y	N
Language Environment HLE77A0 JLE77AJ (Japanese)	z/OS V2.2.0	Base	Y	N	Wave 1A Wave 1AL	Y	Y	N	Y
Library Server HBKQ400	z/OS V2.1.0	Base	Y	N	Wave 1G	Y	Y	N	Y
Metal C Runtime Library HSD7780	z/OS V1.13.0	Base	Y	N	Wave 1A	Y	Y	N	N
MICR/OCR EMI2220	OS/390 R1 (MVS/XA)	Base	Y	N	Wave 1C	N	N	N	N
Network File System HDZ222N (NFS) JDZ222J (NFS Japanese)	z/OS V2.2.0	Base	Y	N	Wave 1G	Y	Y	N	Y
OpenSSH for z/OS HOS2220	z/OS V2.2.0	Base	Y	N	Wave 1C	N	Y	N	N
OSA/SF H0GI400	z990 Compatibility Support	Base	Y	N	Wave 1F	Y	Y	N	N
RMF HRM77A0 JRM77AJ (Japanese)	z/OS V2.2.0	Priced Feature	Y	Y	Wave 1E	Y	Y	N	Y
Runtime Library Extensions HTV77A0 JTV77AJ (Japanese)	z/OS V2.2.0	Base	Y	N	Wave 1E	Y	Y	N	Y
SDSF HQX77A0 JQX77AJ (Japanese)	z/OS V2.2.0	Priced Feature	Y	Y	Wave 2	Y	Y	Y	N
Note: Starting in z/OS V2.2.0, the SDSF JES2 Support is removed.									
Security Server (RACF) HRF77A0 JRF77AJ (Japanese)	z/OS V2.2.0	Priced feature	Y	Y	Wave 1D	Y	Y	Y	N

Element or Feature FMIDs	Level	Type	E X C L	D y n a m	Ripple	A l l o c	D D E F	P o s t - I	I V P
SMP/E HMP1J00 JMP1J11 (Japanese) HBCND0B (Planning & Migration Assistant) JBCND1B (Japanese) HBCNC00 (Software Information Base)	z/OS V1.13.0 (V3R6) z/OS V1.2.0 OS/390 R7	Base	N	N	Wave 0 Wave 1F	Y N	Y N	N N	N N
TIOC ETI1106	OS/390 R1 (MVS V5)	Base	Y	N	Wave 1A	N	N	N	N
TSO/E HTE77A0 JTE77AC (Simplified Chinese) JTE77AE (Information Center Facility and English) JTE77AG (German) JTE77AJ (Japanese)	z/OS V2.2.0	Base	Y	N	Wave 1C	Y	Y	Y	N
XL C/C++ HLB77A0 (XL C/C++ Base) JLB77AJ (XL C/C++ Japanese) H24P111 (Host Performance Analyzer) J24P112 (Japanese)	z/OS V2.2.0 OS/390 R4	Priced Feature Priced Feature	Y Y	Y Y	Wave 1E Wave 1E	Y Y	Y Y	N N	Y Y
z/OS Font Collection HFNT110 HFNT11J (Chinese, Japanese, Korean)	z/OS V2.1.0	Base	Y	N	Wave 1G	Y	Y	N	N

Figure 1 (Page 8 of 9). z/OS Base Elements and Optional Features

Element or Feature FMIDs	Level	Type	E X C L	D y n a m	Ripple	A l l o c	D D D E F	P o s t - I	I V P
Figure 1 (Page 9 of 9). z/OS Base Elements and Optional Features									
z/OS Security Level 3		No Charge Feature			Wave 1D				
OCSF Security Level 3 JCRY741	z/OS V1.9.0		Y	N		N	N	Y	N
System SSL Security Level 3 JCPT421	z/OS V2.2.0		Y	N		N	N	N	N
Network Authentication Service Security Level 3 JSWK421	z/OS V2.2.0		Y	N		N	N	N	N
IBM TDS Security Level 3 JRSL421	z/OS V2.2.0		Y	N		N	N	N	N
z/OS UNIX System Services HOT77A0 (Application Services) JOT77AC (Simplified Chinese) JOT77AJ (Japanese)	z/OS V2.2.0	Base	Y	N	Wave 1B	Y	Y	N	N
zEnterprise data Compression (zEDC)	z/OS V2.1.0	priced feature	Y	Y	Wave 1B	N	N	N	N
3270 PC File Transfer Program HFX1112	OS/390 R2 (V1R1.1)	Base	N	N	Wave 1C	N	N	Y	N

1.2 How to use this Program Directory

This Program Directory contains information about the material and procedures associated with the installation of the z/OS V2.2.0 elements and optional features (see Figure 1 on page 2). You should keep this document for future reference. Before taking any action, you should read the sections that apply to the elements and features you want to install. This Program Directory contains the following sections:

- 2.0, "Program Materials" on page 13 identifies the basic and optional program materials and documentation for z/OS V2.2.0.
- 3.0, "Program support" on page 15 describes the IBM support available for z/OS V2.2.0.
- 4.0, "Program and service level information" on page 21 lists the APARs (program level) and PTFs (service level) incorporated into z/OS V2.2.0.
- 5.0, "Installation requirements and considerations" on page 27 identifies the resources and considerations for installing and using z/OS V2.2.0.

- 6.0, "Preparing the installation path" on page 31 provides detailed information for planning and preparing installation paths.
- 7.0, "Installation instructions for Wave 0 FMIDs" on page 49 provides detailed installation instructions for Wave 0 FMIDs, which must be available on the driving system for the subsequent installation of Wave 1 and Wave 2 elements. It also refers to publications that describe how to activate the functions of z/OS V2.2.0.
- 8.0, "Installation instructions for Wave 1 and Wave 2 FMIDs" on page 69 provides detailed installation instructions for all Wave 1 FMIDs and Wave 2 FMIDs. It also refers to publications that describe how to activate the functions of z/OS V2.2.0.
- Appendix A, "Component IDs for Elements in z/OS V2.2.0" on page 297 lists the component IDs of the z/OS V2.2.0.
- Appendix B, "APARs Incorporated into Elements of z/OS V2.2.0" on page 309 lists the integrated APARs for the z/OS V2.2.0 elements.
- Appendix C, "DASD Storage Requirements Tables" on page 331 describes the space requirements for the z/OS Version 2 Release 2 data sets.
- Appendix D, "Do global zone cleanup for deleted FMIDs" on page 383 describes how to do Global Zone Cleanup for Deleted FMIDs.

See *z/OS V2R2 Migration* for information on what libraries and paths are changed for a particular z/OS release, or library names before z/OS Version 2 Release 2 or in z/OS Version 2 Release 2.

Before installing z/OS V2.2.0, read 3.2, "Preventive Service Planning (PSP)" on page 15. This section tells you how to find any updates to the information and procedures in this Program Directory.

If you are installing z/OS V2.2.0 with ServerPac, use *ServerPac: Installing Your Order*, which was shipped with your ServerPac to install z/OS Version 2 Release 2. That book might refer to specific sections of this Program Directory for information that applies to the ServerPac installation path.

If you are installing z/OS V2.2.0 using the MVS™ Custom-Built Product Delivery Offering (CBPDO) (5751-CS3), you will receive a PDF file of the Program Directory from either an internet delivery or from a DVD shipped with physical media delivery. A hard copy version is not provided. However, you can print a copy of the Program Directory, either by downloading the PDF file from the internet or by unloading it from the DVD.

2.0 Program Materials

An IBM program is identified by a program number and a feature number. The program number for z/OS V2.2.0 is 5650-ZOS.

The program announcement material describes the features supported by z/OS V2.2.0. If you have not already received a copy, ask your IBM marketing representative for this information.

The following sections identify:

- The basic program materials available with this program.
- Publications useful during installation.

2.1 Basic Machine-Readable Material

Basic Machine-Readable Materials are materials that are supplied under the base license and feature number, and are required for the use of the product.

You will receive all z/OS Version 2 Release 2 FMIDs (whether ordered or not) except for the following:

- FMIDs for languages not ordered.
- FMIDs for export regulated features not ordered.
- FMIDs for no charge features.

See the *MVS CBPDO Memo to Users Extension* for a full list of FMIDs and for detailed information on tape volumes and file format.

2.2 Optional Machine-Readable Material

No optional machine-readable materials are provided for z/OS V2.2.0.

2.3 Program publications

For the titles of all the publications associated with z/OS V2.2.0, see *z/OS V2R2 Information Roadmap*.

2.4 Program source materials

No program viewable program listings (View Program Listings) are provided for z/OS V2.2.0

2.5 Publications useful during installation

For element-specific installation manuals, refer to *z/OS V2R2 Information Roadmap*. To order copies of the publications referred to in this program directory, contact your IBM representative or visit the IBM Knowledge Center on the Internet at:

`http://www.ibm.com/support/knowledgecenter`

3.0 Program support

This section describes the IBM support available for z/OS V2.2.0.

3.1 Program services

Contact your IBM marketing and sales representatives for specific information about available program services.

3.2 Preventive Service Planning (PSP)

Before installing z/OS V2.2.0, make sure that you have reviewed the current Preventive Service Planning (PSP) information. Review the PSP Bucket for general information, installation documentation, and the cross product Dependencies sections. For the recommended service section, instead of reviewing the PSP Bucket, it is recommended you use the IBM.ProductInstall-RequiredService fix category in SMP/E to ensure you have all the recommended service installed. Use the FIXCAT(IBM.ProductInstall-RequiredService) operand on the APPLY CHECK command. See Figure 25, SMP/E APPLY CHECK (All Wave 0 FMIDs and Service for z/OS Version 2 Release 2) for a sample APPLY command.

If you obtained z/OS V2.2.0 as part of a CBPDO, HOLDDATA is included on the CBPDO. If the CBPDO for z/OS V2.2.0 is more than two weeks old when you install it, you need to obtain the current PSP (PSP Bucket).

To obtain the current PSP information, enhanced HOLDDATA, and other information related to z/OS software support, go to the following URL:

`http://www14.software.ibm.com/webapp/set2/psearch/search?domain=psp`

The elements in Figure 2 are included in the **ZOSV2R2** UPGRADE. The entries in Figure 3 on page 18 are in alphabetic order based on the Element column. For descriptions of the FMIDs in the table, see 1.1.1, "z/OS V2.2.0 Summary Table of Elements and Features" on page 2.

Figure 2 (Page 1 of 4). PSP Bucket Information for z/OS Version 2 Release 2 Elements in ZOSV2R2 UPGRADE		
Element	**ZOSV2R2 PSP Subset**	**FMIDs Included**
General information	ZOSGEN	General information

Figure 2 (Page 2 of 4). PSP Bucket Information for z/OS Version 2 Release 2 Elements in ZOSV2R2 UPGRADE		
Element	**ZOSV2R2 PSP Subset**	**FMIDs Included**
BCP	BCP	HBB77A0 JBB77AJ JBB77AC HIO1104
BCP - Capacity Provisioning	CAPPROV	HPV77A0
BCP Program Management Binder	PMBINDER	HPM77A0
BCP - Support for Unicode Base BCP - Support for Unicode JPN	UNICODE	HUN77A0 JUN77AJ
Bulk Data Transfer (BDT)	BDT	HBD6602 JBD6201 JBD6202
CIM	CIM	HPG77A0
Communications Server IP	CSIP	HIP6220 JIP622K JIP622X
Communications Server for z/OS SNA Services	CSSNA	HVT6220
Cryptographic Services Open Cryptographic Services Facility Base	OCSF	HCRY740
Cryptographic Services Integrated Cryptographic Service Facility	ICSF77B0	HCR77B0
Cryptographic Services PKI Services	PKISERV	HKY77A0
Cryptographic Services System SSL	SSL	HCPT420 JCPT42J
DFSMS	DFSMS	HDZ2220 JDZ222K
DFSORT	DFSORT	HSM1M00
Distributed File Service (includes DFS/SMB and z/OS File System (zFS))	DFSSMB (includes zFS)	H0H2410 J0H241J HZFS420 JZFS42J
ESCON Director	ESCONDIR	HSWF100
HCD	HCD	HCS77A0 JCS77AJ
HCM	HCM	HCM1F10
IBM HTTP Server - Powered by Apache	ZOSIHSA	HHAP90P
IBM Knowledge Center for z/OS	KC4Z	HKCZ100

Figure 2 (Page 3 of 4). PSP Bucket Information for z/OS Version 2 Release 2 Elements in ZOSV2R2 UPGRADE		
Element	**ZOSV2R2 PSP Subset**	**FMIDs Included**
IBM TDS	LDAP	HRSL420 JRSL42J
IBM z/OS Management Facility	ZOSMF	HSMA220 HSMA221 HSMA222 HSMA223 HSMA224 HSMA225 HSMA226 HSMA227 HSMA228 HSMA229 HSMA22A HSMA22B
Infoprint Server	INFOPRINT	HMOS705 JMOS7J5 HOPI7A0 JOPI7AJ HNET7A0 JNET7AJ
Integrated Security Services Enterprise Identity Mapping	EIM	HIT7750
Integrated Security Services Network Authentication Service	NAPS	HSWK420 JSWK42J
Integrated Security Services OCEP	OCEP	HRO7740
ISPF	ISPF	HIF7P02 JIF7P11 JIF7P14 JIF7P15 JIF7P16
JES2	JES2	HJE77A0 JJE77AJ
JES3	JES3	HJS77A0
Language Environment	LANGENV	HLE77A0 JLE77AJ
Library Server	BKSRV400	HBKQ400
Metal C Runtime Library	METALC	HSD7780
MICR/OCR	MICROCR	EMI2220
Network File System	NFS	HDZ222N JDZ222J

Figure 2 (Page 4 of 4). PSP Bucket Information for z/OS Version 2 Release 2 Elements in ZOSV2R2 UPGRADE		
Element	**ZOSV2R2 PSP Subset**	**FMIDs Included**
OpenSSH for z/OS	ZOSOSSH	HOS2220
OSA/SF	OSA	H0GI400
RMF	RMF	HRM77A0 JRM77AJ
Runtime Library Extensions	ZOSCCPP	HTV77A0 JTV77AJ
SDSF	SDSF	HQX77A0 JQX77AJ
Security Server RACF	RACF®	HRF77A0 JRF77AJ
TSO/E	TSOE	HTE77A0 JTE77AE JTE77AJ JTE77AG JTE77AC
XL C/C++	ZOSCCPP	HLB77A0 JLB77AJ
z/OS Font Collection	ZOSFONTS	HFNT110 HFNT11J
z/OS Security Level 3	OCSF SSL NAPS LDAP	JCRY741 JCPT421 JSWK421 JRSL421
z/OS UNIX System Services	UNIXSS	HOT77A0 JOT77AJ JOT77AC
3270 PC File Transfer Program	3270PC	HFX1112

3.3 Additional PSP information

Figure 3 lists the PSP UPGRADEs and associated FMIDs that are NOT included in the z/OS V2.2.0 UPGRADE. These subsets are usually the associated FMIDs. To determine the subset name(s), see the respective UPGRADEs.

Figure 3 (Page 1 of 2). PSP Bucket Information Described Outside of z/OS V2.2.0 UPGRADE		
Element	**PSP UPGRADE**	**Associated FMIDs**
Alternate Library for REXX	REXXCOMPR140	HWJ9143 JWJ9144
BookManager READ	BKMGR130	HBKM300 JBKM310 JBKM311 JBKM312 JBKM313 JBKM314 JBKM315 JBKM316 JBKM317 JBKM318
C/C++ Host Performance Analyzer (The FMIDs are the subset names.)	HOSTPA	H24P111 J24P112
Device Support Facility (ICKDSF)	ICKDSF017	EDU1H01 FDU1H07 FDU1H08 FDU1H09
EREP	EREP350	EER3500
FFST	FFST120	HFST101
GDDM	GDDM320	HGD3200 JGD3219 JGD3220 JGD3221 JGD3222 JGD3223 JGD3224 JGD3225 JGD3226 JGD3227 JGD3228 JGD3229 JGD3230 JGD3231 JGD3232
GDDM-PGF	GDDM320	HGD3201
HLASM	HLASM160	HMQ4160
HLASM Toolkit	HLASM160	JMQ416A

Figure 3 (Page 2 of 2). PSP Bucket Information Described Outside of z/OS V2.2.0 UPGRADE		
Element	**PSP UPGRADE**	**Associated FMIDs**
SMP/E	SMPE360	HMP1J00 JMP1J11 HBCND0B JBCND1B HBCNC00
TIOC	TIOC106	ETI1106

3.4 Statement of support procedures

Report any difficulties you have using this program to the IBM Support Center. If an APAR is required, the Support Center will provide the address to which any accompanying documentation can be sent. The component IDs (COMP IDs) of z/OS Version 2 Release 2 are listed in Appendix A, "Component IDs for Elements in z/OS V2.2.0" on page 297.

4.0 Program and service level information

This section identifies the program and service levels of z/OS Version 2 Release 2. The **program level** refers to the APAR fixes incorporated into the products. The **service level** refers to the PTFs incorporated.

The recommended CBPDO installation procedure will APPLY all service that has been through the z/OS Version 2 Release 2 integration test (SOURCEID ZOSV2R2 for z/OS V2.2.0) for which a report has been produced (these reports come out quarterly), all HIPERs and all PTFs that fix PE PTFs. On a release boundary, the z/OS Version 2 Release 2 integration test system's service level is brought up to the designated PUT level of the ServerPac for that release. RSU (Recommended Service Upgrade) service is applied on top of the PUT service (again to the designated ServerPac levels). Finally, corrective service is applied as needed to the integration test system. The ZOSV2Rn SOURCEID identifies all this service.

Note that the service level of each FMID that is listed in this Program Directory only shows service that has been integrated into the FMID, not what has been integrated into ServerPac nor what would be installed with CBPDO. The service level that has been integration tested is documented in the quarterly *z/OS Parallel Sysplex Test Report*.

4.1 Program level information

APAR fixes against the root products (last previous level prior to being included in z/OS Version 2 Release 2) or prior levels of z/OS V2.2.0 elements that have been incorporated into this release are listed in Appendix B, "APARs Incorporated into Elements of z/OS V2.2.0" on page 309.

4.2 Service level information

Figure 4 lists the service level of each FMID. The SMC*yyww* and PUT*yymm* levels identify the APAR service cutoff levels which have been incorporated into the FMIDs.

- SMC*yyww* identifies the service level in terms of CBPDO cycles, where *yy* is the year and *ww* is the CBPDO week. For example, 0842 is the forty-second CBPDO week in 2008.
- PUT*yymm* identifies the monthly service level in terms of ESO cycles (formerly PUTs), where *yy* is the year and *mm* is the ending month of the ESO cycle. For example, 0809 is service through September 2008.

If the z/OS Version 2 Release 2 elements are installed with the instructions and samples provided in this Program Directory, they will include service that has been integration tested as well as the HIPERs and PE fixes up to the time z/OS Version 2 Release 2 was ordered. Therefore, the service level of the FMIDs after you have installed z/OS V2.2.0 will be higher than what is listed and will depend on when it was ordered.

Figure 4 (Page 1 of 5). FMIDs and Service Levels

Element / Feature	FMIDs and Service Levels
Alternate Library for REXX	• HWJ9143 (SMC0330 / PUT0306) • JWJ9144 (SMC0330 / PUT0306)
BCP	• HBB77A0 (SMC1508 / PUT1502) • JBB77AC (SMC1508 / PUT1502) • JBB77AJ (SMC1508 / PUT1502) • HUN77A0 (SMC1509 / PUT1502) • JUN77AJ (SMC1509 / PUT1502) • HPV77A0 (SMC1509 / PUT1502) • HPM77A0 (SMC1509 / PUT1502) • HIO1104 (SMC9020 / PUT9002)
BDT	• HBD6602 (SMC9615 / PUT9603) • JBD6201 (SMC9615 / PUT9603) • JBD6202 (SMC9615 / PUT9603)
BookManager READ	• HBKM300 (SMC9642 / PUT9610) • JBKM310 (SMC9537 / PUT9509) • JBKM311 (SMC9537 / PUT9509) • JBKM312 (SMC9642 / PUT9610) • JBKM313 (SMC9537 / PUT9509) • JBKM314 (SMC9537 / PUT9509) • JBKM315 (SMC9537 / PUT9509) • JBKM316 (SMC9642 / PUT9610) • JBKM317 (SMC9537 / PUT9509) • JBKM318 (SMC9537 / PUT9509)
Common Information Model (CIM)	• HPG77A0 (SMC1514 / PUT1503)

Communications Server	• IP
	  – HIP6220 (SMC1509 / PUT1503)
	  – JIP622X (SMC1509 / PUT1503)
	  – JIP622K (SMC1509 / PUT1503)
	• SNA
	  – HVT6220 (SMC1509 / PUT1503)

Cryptographic Services	• Cryptographic Services ICSF
	  – HCR77B0 (SMC1449 / PUT1412)
	• Open Cryptographic Services Facility
	  – HCRY740 (SMC0711 / PUT0703)
	• Cryptographic Services PKI Services
	  – HKY77A0 (SMC1510 / PUT1502)
	• System SSL
	  – HCPT420 (SMC1512 / PUT1502)
	  – JCPT42J (SMC1512 / PUT1502)

DFSMS	• HDZ2220 (SMC1508 / PUT1502) • JDZ222K (SMC1508 / PUT1502)
DFSORT	• HSM1M00 (SMC1508 / PUT1502)

Figure 4 (Page 2 of 5). FMIDs and Service Levels

Element / Feature	FMIDs and Service Levels

Distributed File Service	• Distributed File Service
	  – H0H2410 (SMC1311 / PUT1302)
	  – J0H241J (SMC1311 / PUT1302)
	• z/OS File System
	  – HZFS420 (SMC1512 / PUT1502)
	  – JZFS42J (SMC1512 / PUT1502)

EREP	• EER3500 (SMC0504 / PUT0501)
ESCON Director Support	• HSWF100
FFST	• HFST101
GDDM	• HGD3200 (SMC9606 / PUT9601) • JGD3219 (SMC9606 / PUT9601) • JGD3220 (SMC9606 / PUT9601) • JGD3221 (SMC9606 / PUT9601) • JGD3222 (SMC9606 / PUT9601) • JGD3223 (SMC9606 / PUT9601) • JGD3224 (SMC9606 / PUT9601) • JGD3225 (SMC9606 / PUT9601) • JGD3226 (SMC9606 / PUT9601) • JGD3227 (SMC9606 / PUT9601) • JGD3228 (SMC9606 / PUT9601) • JGD3229 (SMC9606 / PUT9601) • JGD3230 (SMC9606 / PUT9601) • JGD3231 (SMC9606 / PUT9601) • JGD3232 (SMC9606 / PUT9601)
GDDM PGF	• HGD3201 (SMC9606 / PUT9601)
HCD	• HCS77A0 (SMC1510 / PUT1503) • JCS77AJ (SMC1510 / PUT1503)
HCM	• HCM1F10 (SMC1510 / PUT1503)
HLASM	• HMQ4160 (SMC0814 / PUT0803)
HLASM Toolkit	• JMQ416A (SMC0814 / PUT0803)
IBM HTTP Server - Powered by Apache	• HHAP90P (SMC1512 / PUT1502)
IBM Knowledge Center for z/OS	• HKCZ100 (initial release)
IBM TDS	• HRSL420 (SMC1512 / PUT1502) • JRSL42J (SMC1512 / PUT1502)

Figure 4 (Page 3 of 5). FMIDs and Service Levels

Element / Feature	FMIDs and Service Levels
IBM z/OS Management Facility	• HSMA220 (SMC1509 / PUT1502) • HSMA221 (SMC1509 / PUT1502) • HSMA222 (SMC1509 / PUT1502) • HSMA223 (SMC1509 / PUT1502) • HSMA224 (SMC1509 / PUT1502) • HSMA225 (SMC1509 / PUT1502) • HSMA226 (SMC1509 / PUT1502) • HSMA227 (SMC1509 / PUT1502) • HSMA228 (initial release) • HSMA229 (initial release) • HSMA22A (SMC1509 / PUT1502) • HSMA22B (initial release)
ICKDSF	• EDU1H01 (ICKDSF) (SMC0241 / PUT0209) • FDU1H07 (ISMF Base) (SMC0241 / PUT0209) • FDU1H08 (ISMF Eng) (SMC0241 / PUT0209) • FDU1H09 (ISMF Jpn) (SMC0241 / PUT0209)

Infoprint Server	• IP PrintWay basic mode
	  – HMOS705 (SMC0117 / PUT0104)
	  – JMOS7J5 (SMC0117 / PUT0104)
	• NetSpool
	  – HNET7A0 (SMC1509 / PUT1502)
	  – JNET7AJ (SMC1509 / PUT1502)
	• Print Interface
	  – HOPI7A0 (SMC1509 / PUT1502)
	  – JOPI7AJ (SMC1509 / PUT1502)

Integrated Security Services	• Enterprise Identity Mapping
	  – HIT7750 (SMC0811 / PUT0802)
	• Network Authentication Service
	  – HSWK420 (SMC1512 / PUT1502)
	  – JSWK42J (SMC1512 / PUT1502)
	• Open Cryptographic Enhanced Plug-ins
	  – HRO7740 (SMC0710 / PUT0702)

ISPF	• HIF7P02 (SMC1508 / PUT1502) • JIF7P11 (SMC1508 / PUT1502) • JIF7P14 (SMC1508 / PUT1502) • JIF7P15 (SMC1508 / PUT1502) • JIF7P16 (SMC1508 / PUT1502)
JES2	• HJE77A0 (SMC1507 / PUT1501) • JJE77AJ (SMC1507 / PUT1501)
JES3	• HJS77A0 (SMC1507 / PUT1501)
Language Environment	• HLE77A0 (SMC1507 / PUT1501) • JLE77AJ (SMC1507 / PUT1501)
Library Server	• HBKQ400 (SMC1311 / PUT1302)

Figure 4 (Page 4 of 5). FMIDs and Service Levels

Element / Feature	FMIDs and Service Levels
Metal C Runtime Library	• HSD7780 (SMC1108 / PUT1102)
MICR/OCR 2.2.0	• EMI2220
Network File System	• HDZ222N (SMC1508 / PUT1502) • JDZ222J (SMC1508 / PUT1502)
OpenSSH for z/OS	• HOS2220 (SMC1510 / PUT1503)
OSA Support Facility	• H0GI400 (SMC0305 / PUT0301)
RMF	• HRM77A0 (SMC1508 / PUT1502) • JRM77AJ (SMC1508 / PUT1502)
Runtime Library Extensions	• HTV77A0 (SMC1508 / PUT1503) • JTV77AJ (SMC1508 / PUT1503)
SDSF	• HQX77A0 (SMC1509 / PUT1502) • JQX77AJ (SMC1509 / PUT1502)

Security Server	• RACF
	  – HRF77A0 (SMC1508 / PUT1502)
	  – JRF77AJ (SMC1508 / PUT1502)

SMP/E	• HMP1J00 (SMC1111 / PUT1103) • JMP1J11 (SMC1111 / PUT1103) • HBCND0B (SMC0117 / PUT0104) • HBCNC00 (initial release) • JBCND1B (SMC0117 / PUT0104)
TIOC	• ETI1106
TSO/E	• HTE77A0 (SMC1508 / PUT1502) • JTE77AC (SMC1508 / PUT1502) • JTE77AE (SMC1508 / PUT1502) • JTE77AG (SMC1508 / PUT1502) • JTE77AJ (SMC1508 / PUT1502)
XL C/C++	• HLB77A0 (SMC1508 / PUT1503) • JLB77AJ (SMC1508 / PUT1503) • H24P111 • J24P112
z/OS Font Collection	• HFNT110 • HFNT11J

z/OS Security Level 3	• IBM TDS Security Level 3
	  – JRSL421 (SMC1512 / PUT1502)
	• OCSF Security Level 3
	  – JCRY741 (SMC0714 / PUT0703)
	• Network Authentication Service Security Level 3
	  – JSWK421 (SMC1512 / PUT1502)
	• System SSL Security Level 3
	  – JCPT421 (SMC1512 / PUT1502)

Figure 4 (Page 5 of 5). FMIDs and Service Levels

Element / Feature	FMIDs and Service Levels

z/OS UNIX System Services	• Application Services
	  – HOT77A0 (SMC1508 / PUT1501)
	  – JOT77AJ (SMC1508 / PUT1501)
	  – JOT77AC (SMC1508 / PUT1501)

3270 PC File Transfer Program	• HFX1112

The SMP/E installation logic for elements in z/OS V2.2.0 is contained in the SMPMCS file on the installation tape. These files are loaded to the SMPPTS data set when an SMP/E RECEIVE is done for z/OS V2.2.0. You may browse or print the installation logic files using TSO/E, ISPF, or IEBGENER (or IEBPTPCH).

See the *MVS CBPDO Memo to Users Extension* for detailed information on the service level of the unintegrated service provided on the tape. If you received this product as part of a CBPDO, PTFs not incorporated into this release are provided on the tape.

5.0 Installation requirements and considerations

The following section describes the DASD storage requirements considerations. For information about driving system and target system requirements, see *z/OS Planning for Installation*.

5.1 Driving System Requirements

For details on the driving system requirements of z/OS V2.2.0, see *z/OS Planning for Installation*.

5.2 Target System Requirements

For details on the target system requirements of z/OS V2.2.0, see *z/OS Planning for Installation*.

5.3 FMIDs Deleted

Installing z/OS V2.2.0 will result in the deletion of other FMIDs. To see what FMIDs will be deleted, examine the ++ VER statement in the product's SMPMCS.

The SMP/E Modification Control Statements (SMPMCS) for z/OS V2.2.0 are contained in the SMPMCS file on the installation tape. The SMPMCS for each FMID in the product will be loaded to the SMPPTS data set, with a member name matching the FMID, when the FMID is SMP/E RECEIVEd. You may browse or print these members using TSO/E, ISPF, or IEBGENER (or IEBPTPCH).

5.3.1 SMP/E JCLIN

The JCLIN for z/OS V2.2.0 is contained in the RELFILEs on the installation tape. These files will be loaded to disk by SMP/E when the product is SMP/E RECEIVEd. You may browse or print these files using TSO/E, ISPF, or IEBGENER (or IEBPTPCH).

To find out which RELFILE contains the JCLIN, consult the SMPMCS logic.

5.4 DASD Storage Requirements

z/OS V2.2.0 libraries can reside on all supported DASD types.

The space requirements shown in Appendix C, "DASD Storage Requirements Tables" on page 331 are for:

- All z/OS Version 2 Release 2 base elements
- All optional features that can coexist
- All corresponding national language FMIDs

Data sets for national language FMIDs not ordered may be empty or require less space than documented. These data sets are identified by "N" in the notes column of the data set size tables. z/OS V2.2.0 installation requires a 3390 device with at least 50,085 tracks (3,339 cylinders) defined. To help assure sufficient space for later service installation, IBM recommends a minimum volume size of at least 65,535 tracks (4,369 cylinders).

5.4.1 Total DASD Storage Requirements

The total space required for all the target data sets listed in Figure 85 on page 338, when allocated at the recommended block sizes, is:

- 11682 cylinders on a 3390 device

The total space required for all the distribution data sets listed in Figure 86 on page 358, when allocated at the recommended block sizes, is:

- 16708 cylinders on a 3390 device

As of z/OS V1.7.0, the ROOT file system may be type HFS or zFS. The total space required on a 3390 device for the ROOT HFS file system and the ROOT zFS file system is listed below.

The space required for the root file system shown below does not include the space required for the z/OS Font Collection.

HFS   5120 cylinders primary and 500 cylinders secondary
zFS   5132 cylinders primary and 500 cylinders secondary

As of z/OS V2.1.0, z/OS Font Collection is a new element that installs into the file system. The total space required for the root file system shown above does not include the space required to install element z/OS Font Collection. When z/OS Font Collection FMIDs HFNT110 and HFNT11J are installed, the approximate amount of space required in the file system is 2048 cylinders on a 3390 DASD.

Due to the amount of space required in the file system when installing the z/OS Font Collection element, it is recommended that a separate file system be allocated, mounted, and used for the installation of the element. Sample jobs FNTHFSAL and FNTZFSAL are provided by the element to allocate and mount a separate file system, either HFS or zFS.

If you plan to install z/OS Font Collection in a separate file system, rather than the root file system, run the sample job FNTHFSAL or FNTZFSAL to allocate a separate file system and mount it before installing z/OS Font Collection.

There are four new elements, IBM HTTP Server - Powered by Apache, IBM Knowledge Center for z/OS, IBM z/OS Management Facility and OpenSSH for z/OS added to z/OS V2.2.0. These elements are installed into the root file system.

- IBM HTTP Server - Powered by Apache is installed under /usr/lpp/ihsa_zos directory.

- IBM Knowledge Center for z/OS is installed under /usr/lpp/kc4z directory.

- IBM z/OS Management Facility is installed under /usr/lpp/zosmf directory.

- OpenSSH for z/OS is installed under /usr/lib/ssh directory.

As of z/OS V1.7.0, the /etc file system may be HFS or zFS. The total space required for the file system (HFS or zFS) mounted at the /etc directory is approximately:

- 50 cylinders primary; 10 cylinders secondary on a 3390 device

For the CIM element, a separate file system is created and mounted at mountpoint /var/wbem.

The total space required on a 3390 device for each type is listed below.

zFS   165 cylinders primary; 16 cylinders secondary

See *z/OS Common Information Model User's Guide*, for more information about creating and mounting a file system at /var/wbem.

For Predictive Failure analysis, a separate file system is created and mounted at mountpoint the /var/pfa. The total space required on a 3390 device is listed below.

zFS   300 cylinders primary; 50 cylinders secondary
HFS   300 cylinders primary; 50 cylinders secondary

See z/OS Problem Management for more information about creating and mounting a file system at /var/pfa

Note: The HFS or zFS sizes listed in this section are applicable to z/OS V2.2.0 only (that is, the FMIDs documented in this Program Directory). If you plan to install additional products into the ROOT file system of z/OS V2.2.0, you will need to add their space requirements of HFS or zFS into the above sizes.

The total space required for all the SMP/E data sets listed in Figure 80 on page 332 is:

- 64 cylinders on a 3390 device

The total space required for all the SMPTLIB data sets is:

- 17165 cylinders on a 3390 device

SMPTLIB Considerations

** The size of the SMPTLIB data set reflects the total space requirements for all FMIDs (changed and unchanged elements) for z/OS V2.2.0.

6.0 Preparing the installation path

The following steps are required to prepare your system for the installation of the z/OS V2.2.0 CBPDO. Detailed instructions for each step are provided in the indicated sections.

Figure 5. Checklist for Preparing the Installation Path		
Check Box	**Section, Step Description**	**Your Notes**
☐	6.2, "Step 1: Separating File System Data Sets for z/OS V2.2.0"	
☐	6.3, "Step 2: Cloning File System Data Sets" on page 32	
☐	6.4, "Step 3: Back Up Your clone system" on page 33	
☐	6.5, "Step 4: Decide which FMIDs to install" on page 33	
☐	6.6, "Step 5: Review Library Restructure/Renaming Notes" on page 43	
☐	6.7, "Step 6: Review general installation notes" on page 44	

6.1 Overview for the clone of your system

The following sections describe the procedures that need to be completed to create a clone of your system. Before you clone your system, make sure your file system data sets are separated. Use these steps to separate the file system data sets and clone your system.

6.2 Step 1: Separating File System Data Sets for z/OS V2.2.0

It is required that your file system contains separate file system data sets for /etc, /var, /tmp and /dev directories on the system from which you are migrating. If the file system is contained within one data set, separate file system data sets must be created and the contents moved to the new file system data sets. If this is not done, the BPXISMKD job will fail with a return code of 12.

The BPXISMKD job converts the /var, /tmp, and /dev directories into symbolic links which allows the root file system to be shared in a sysplex environment. These changes (creating separate file system data sets and running the BPXISMKD job), must be done whether you plan to share the root file system in a sysplex or not. For more information on sharing the root file system in a sysplex or how the root file system works in a non-sysplex environment, refer to *z/OS UNIX System Services Planning*.

As of z/OS V1.7.0, the root file system along with the file systems mounted at directories /etc, /var, /tmp and /dev might be HFS or zFS file systems.

6.3 Step 2: Cloning File System Data Sets

Make a **clone**, which is a separate IPLable copy, of your running system. The clone must include copies of all system libraries that SMP/E updates, including the file system data sets, copies of the SMP/E CSI data sets that describe the system libraries, and your PARMLIB and PROCLIB data sets.

Note: The order in which the waves and ripples are executed in the following pages assume a cloned system is being used. If a cloned system is not being used, the order of the ripples in Wave 1 will have to be changed. See 6.5.2, "Installation ripple exceptions" on page 35 for more details.

The clone becomes your target system. The system on which the installation jobs are processed is your driving system. All of the changes made to the system during your installation will be made against the clone system, not the driving system. Refer to *z/OS Planning for Installation* for instructions on how to clone a system.

Note: Ensure the following tasks are completed before proceeding:

- The entire set of file system data sets are cloned. See 5.4.1, "Total DASD Storage Requirements" on page 28 for the new size of the root file system in this release.
- The DDDEF entries in the cloned SMP/E CSI have been updated to reference the proper file system paths for the cloned file system for your target system installation.

6.3.1 Using High Level Assembler, Program Management Binder, and SMP/E for Subsequent z/OS V2.2.0 Installs

You must use the current release level of High Level Assembler, Program Management Binder, and SMP/E which are shipped with z/OS V2.2.0 to install z/OS V2.2.0 Wave 1 and Wave 2 elements. Therefore, you must first install SMP/E, the Program Management Binder, and High Level Assembler as part of Wave 0.

SMP/E resides in the target system's MIGLIB library. High Level Assembler resides in the target system's SASMMOD1 library. Program Management Binder resides in the target system's MIGLIB library as well as other libraries. The Program Management Binder does still require SCEERUN for execution. If SCEERUN is not in your LINKLST or LPALST on the driving system, you must add the appropriate STEPLIB DD statement to any JCL and procedures (for example, SMP/E proc).

Note: Be sure the target system's MIGLIB and SASMMOD1 libraries are APF-authorized. For information on authorizing the libraries, see *z/OS MVS Programming: Authorized Assembler Services Reference ALE-DYN*.

If you choose not to STEPLIB to the target system's MIGLIB or SASMMOD1, you must:

- Install the current level of High Level Assembler, the Program Management Binder and SMP/E which are shipped in z/OS V2.2.0 on your target system.
- Make two clones of that target system. One is to be used as your new driving system. The other is to be used as your target system.

6.4 Step 3: Back Up Your clone system

After testing your clone system to ensure that it IPLs, back up your clone system to tape or DASD. **Make sure you have a backup of your clone system.**

Also consider making a backup:

- After the APPLY step succeeds in each wave.
- After the ACCEPT step succeeds in each wave.
- After a successful IPL.
- At later stages in converting your system (after completing significant parts of the work and before starting new parts of the work).

6.5 Step 4: Decide which FMIDs to install

The elements of z/OS Version 2 Release 2 are integrated into a single package with compatible service levels. Therefore, IBM expects that customers will migrate all elements of z/OS Version 2 Release 2 at the same time. As of z/OS V2.1.0, the staging of lower releases of JES2, JES3, and SDSF is no longer supported.

Note that you must install, with few exceptions, the entire z/OS product. For more details on the exceptions, see *z/OS Planning for Installation*, section "Choosing the z/OS base and optional features".

The elements that need to be installed depend on the elements that are already installed on the target system. If an element currently exists on the target system and it has not changed between the version on the target system and this new release, it is not necessary to install the element. If it is not on the target system or it has changed, the element must be installed.

The CBPDO installation of z/OS Version 2 Release 2 should occur in separate stages, which are called **waves**. There are three waves, each one consisting of multiple SMP/E steps that are documented in this Program Directory.

- Wave 0, during which elements that must be available on the driving system for the subsequent installation of Wave 1 and Wave 2 elements are installed.
- Wave 1, during which the core set of z/OS elements such as BCP, Language Environment, Communications Server IP Services and SNA Services, DFSMS, z/OS UNIX System Services, ISPF, and TSO/E are installed. Some of these core set elements are required to install other FMIDs.
- Wave 2, during which the JES2, JES3, and SDSF elements are installed.

z/OS adapts the wave installation concept, and breaks down the installation of all z/OS elements into ripples. Ripples take into consideration of natural installation separation points, such as element requisites and dependencies for SMP/E CALLLIBs. Some ripples are a subset of a wave and some are an entire wave. In this z/OS release, the waves and their corresponding ripples are:

- Wave 0 (entire ripple)
- Wave 1

- – Wave 1A
- – Wave 1AL
- – Wave 1B
- – Wave 1C
- – Wave 1D
- – Wave 1E
- – Wave 1F
- – Wave 1G
- Wave 2 (entire ripple)

The ripples give an overall installation scenario that includes every element in order to expedite the CBPDO installation path. Therefore, **the ripples must be processed in the order specified, with all FMIDs in a ripple installed.**

Refer to 6.5.3, "Elements in each Wave, Ripple, and FMIDSET" on page 35 to find out which elements are contained in each ripple and the last release in which an element was changed.

Note: Wave 2 is independent of Wave 1. Wave 2 can be combined with Wave 1; however, Wave 2 cannot occur before Wave 1.

6.5.1 Understanding SMP/E zone requirements

IBM recommends that you install all of z/OS Version 2 Release 2 (all base elements and all optional features) into one SMP/E target zone and one SMP/E distribution zone with the following exceptions:

- Language Environment must not be installed into a target or distribution zone that contains the stand-alone products VS COBOL II or OS/VS COBOL. Language Environment contains element names that are used in VS COBOL II and OS/VS COBOL. Attempting to install into the same SMP/E zone renders both Language Environment and the COBOL products unusable.

  However, you can install Language Environment into the same target and distribution zones as any of the following products:
  - – IBM C/370™ Library Version 2
  - – OS PL/I Library Version 1
  - – OS PL/I Library Version 2
  - – VS FORTRAN

  Do not attempt to install Language Environment into the same data sets as any of the following products. Language Environment contains parts and aliases. Attempting to install into the same data sets renders both Language Environment and these products unusable.
  - – IBM C/370 Library Version 1
  - – IBM C/370 Library Version 2
  - – OS PL/I Library Version 1
  - – OS PL/I Library Version 2
  - – OS/VS COBOL
  - – VS COBOL II
  - – VS FORTRAN

Stand-alone products that install into z/OS Version 2 Release 2 load modules (or install into libraries that can not be concatenated, such as SYS1.NUCLEUS) should also be kept in the same zones as z/OS.

IBM requires that you install all the elements into the same target zone.

6.5.2 Installation ripple exceptions

Before you install Wave 0, Wave 1, and Wave 2 elements, you must ensure that the "cloned" file system data sets are available on your driving system. Because some of the Wave 0 elements, such as SMP/E and Program Management Binder, and some of the Wave 1 elements contain SMP/E VER DELETE statements for the prior levels that include FMIDs which are installed in the file system, installation of these elements attempts to access the root file system to DELETE the prior FMIDs if they were installed. Because FMIDs that are installed in the cloned file system will be deleted by SMP/E ++VER DELETE processing during Wave 0, Wave 1 and Wave 2 installation, you must ensure that the cloned file system is available (the z/OS UNIX kernel active in full function mode and the file systems mounted) for SMP/E processing during Wave 0, Wave 1, and Wave 2. There are no additional requirements for Wave 2; see *z/OS Planning for Installation* for details.

6.5.2.1 Installing into empty SMP/E zones

As of z/OS V1.3.0, it is no longer possible to install into empty or partially empty SMP/E zones. That is, you are required to install z/OS V2.2.0 CBPDO into zones which contain the full release of z/OS from which you are migrating. This requirement is due to the sharing of load modules between waves, the need to have SMP/E find those load modules in Wave 0, and the dependencies on the driving system requirements which determine the wave order.

6.5.3 Elements in each Wave, Ripple, and FMIDSET

You must install the latest level of SMP/E, HLASM, and Program Management Binder in Wave 0 before you install all the other waves and ripples. This way, you can make sure that the latest level of SMP/E, HLASM, and Program Management Binder is used during the installation of the remaining waves and ripples.

Figure 6 on page 36 through Figure 15 on page 42 contain the elements to be installed during each wave and ripple of the z/OS Version 2 Release 2 installation. You should create an FMIDSET for each ripple containing the elements listed in the corresponding table.

You will receive sample JCL in the data set member RIMLIB(FMIDSET) that creates FMIDSETs for the installation of z/OS V2.2.0. FMIDSET(WAVE0, WAVE1A, WAVE1AL, WAVE1B,...WAVE2) are set up for all elements for the specific ripple.

For the FMIDSETs (WAVE0, WAVE1A, WAVE1AL, WAVE1B,...WAVE2) created in Step 1 of the sample FMIDSET job, edit the ripple FMIDSETs to remove any FMIDs you may already have on your system.

By default, language features and Communications Server Security Level 3 and z/OS Security Level 3 (both of which are optional unpriced features), are commented-out in Step 1. Therefore, if you ordered a

language, Communications Server Security Level 3, or z/OS Security Level 3, you must uncomment their respective entries from Step 1 of the sample FMIDSET job.

For the FMIDSETs created in Step 2 of the sample FMIDSET job, you will also need to uncomment any languages you have ordered. This ensures that any service for the languages is installed. Similarly, if you ordered the z/OS Security Level 3 or Communications Server Security Level 3 features, you also must uncomment those entries to install service for those features.

FMIDSET(ZV22W1A, ZV22W1AL, ZV22W1B,...ZV22W2) are set up to include all elements (new, changed, and unchanged). These FMIDSETs will be used for applying and accepting service as documented later in this program directory. Edit these FMIDSETs to uncomment the languages you ordered and comment out the FMIDs for features that you did not order. Successful execution of the FMIDSET sample job will produce a condition code of zero.

To determine which elements you need to install, refer to Figure 6 through Figure 15 on page 42 and check the **Level** column for the release in which an element was last changed.

- If the column begins with OS/390, that element changed in an OS/390 release.
- If the column begins with OS/390 but also has a version, release and modification in parentheses, that element changed in an OS/390 release but is non-exclusive. The level of the equivalent stand-alone product is in parenthesis. If you already have these FMIDs installed, you do **not** need to reinstall them; they should be removed from the FMIDSETs WAVE0, WAVE1A, through WAVE2 in the FMIDSET job.
- If the column begins with z/OS, that element changed in a z/OS release.
- If the column does NOT begin with OS/390 or z/OS, that element has not changed in OS/390 (all OS/390 releases have the same level) or z/OS, and it is the same level as the equivalent stand-alone product. The level of the equivalent stand-alone product is in the Level column. If you already have these FMIDs installed, you do NOT need to reinstall them (they should be removed from the FMIDSETs WAVE0, WAVE1A, through WAVE2 in the FMIDSET job).

The FMIDs listed in the Figure 6 through Figure 15 on page 42 are for the elements documented in this program directory. To present a full z/OS Version 2 Release 2 view of the ripples, every element is listed.

6.5.3.1 Elements in Wave 0

As Figure 6 shows, FMIDSET Wave 0 contains the z/OS V2.2.0 elements that must be installed on the target system so they can be used for subsequent installations of Wave 1 and Wave 2 elements. This includes SMP/E, HLASM, and Program Management Binder.

Figure 6 (Page 1 of 2). Elements in FMIDSET Wave 0		
Element	**FMID(s)**	**Level**
SMP/E	HMP1J00 JMP1J11 (Japanese)	z/OS V1.13.0 (V3R6)
HLASM	HMQ4160	z/OS V1.10.0 (V1.6)

Figure 6 (Page 2 of 2). Elements in FMIDSET Wave 0		
Element	**FMID(s)**	**Level**
Program Management Binder	HPM77A0	z/OS V2.2.0

6.5.3.2 Elements in Wave 1A

FMIDSET Wave 1A contains the elements that use SMP/E CALLLIB: BCP, Support for Unicode, Communications Server IP Services, Communications Server for z/OS SNA Services, Cryptographic Services ICSF, Cryptographic Services System SSL, IBM Tivoli® Directory Server for z/OS, Integrated Security Services Network Authentication Service, ISPF, Language Environment, Metal C Runtime Library, and TIOC.

Figure 7. Elements in FMIDSET Wave 1A		
Element	**FMID(s)**	**Level**
BCP	HBB77A0 HUN77A0 (Support for Unicode)	z/OS V2.2.0
Communications Server IP Services	HIP6220 JIP622X (XWindows X11R4)	z/OS V2.2.0
Communications Server for z/OS SNA Services	HVT6220	z/OS V2.2.0
Cryptographic Services	HCR77B0 (ICSF) HCPT420 (System SSL)	z/OS V2.2.0
IBM Tivoli Directory Server (IBM TDS)	HRSL420	z/OS V2.2.0
Integrated Security Services	HSWK420 (Network Authentication Service Base)	z/OS V2.2.0
ISPF	HIF7P02	z/OS V2.2.0
Language Environment	HLE77A0	z/OS V2.2.0
Metal C Runtime Library	HSD7780	z/OS V1.13.0
TIOC	ETI1106	MVS 3.8 Base

6.5.3.3 Elements in Wave 1AL

Figure 8 lists the elements that are installed as part of Wave 1AL. FMIDSET WAVE1AL includes the language FMIDs for Wave 1A elements, along with the Communications Server Security Level 3 FMID.

Figure 8. Elements in FMIDSET Wave 1AL		
Element	**FMID(s)**	**Level**
BCP	JBB77AC (Simplified Chinese) JBB77AJ (Japanese) JUN77AJ (Unicode Japanese)	z/OS V2.2.0
Communications Server	JIP622K (Security Level 3)	z/OS V2.2.0
Note: FMID JIP622K is export restricted.		
Cryptographic Services	JCPT42J (System SSL Japanese)	z/OS V2.2.0
IBM Tivoli Directory Server (IBM TDS)	JRSL42J (Japanese)	z/OS V2.2.0
Integrated Security Services	JSWK42J (Japanese)	z/OS V2.2.0
ISPF	JIF7P11 (Swiss German) JIF7P14 (Japanese) JIF7P15 (German) JIF7P16 (Upper Case English)	z/OS V2.2.0
Language Environment	JLE77AJ (Japanese)	z/OS V2.2.0

6.5.3.4 Elements in Wave 1B

FMIDSET Wave 1B, summarized in Figure 9, includes FMIDs of DFSMS, HCD, IOCP, and z/OS UNIX System Services.

Figure 9. Elements in FMIDSET Wave 1B		
Element	**FMID(s)**	**Level**
BCP	HIO1104 (IOCP)	MVS V3
DFSMS	HDZ2220 JDZ222K (Japanese)	z/OS V2.2.0
HCD	HCS77A0 (Base and English) JCS77AJ (Japanese)	z/OS V2.2.0
z/OS UNIX System Services	HOT77A0 (Application Services) JOT77AC (Chinese) JOT77AJ (Japanese)	z/OS V2.2.0

6.5.3.5 Elements in Wave 1C

Figure 10 summarizes FMIDSET Wave 1C, which contains the following elements: BookManager READ, EREP, ESCON Director, FFST, GDDM, GDDM-PGF, ICKDSF, MICR/OCR, OpenSSH for z/OS, 3270 PC File Transfer Program, and TSO/E.

Figure 10 (Page 1 of 2). Elements in FMIDSET Wave 1C		
Element	**FMID(s)**	**Level**
BookManager READ	HBKM300 JBKM310 (English) JBKM311 (Dutch) JBKM312 (French) JBKM313 (German) JBKM314 (Spanish) JBKM315 (Italian) JBKM316 (Brazilian Portuguese) JBKM317 (Canadian French) JBKM318 (Danish)	OS/390 R1 (V1R3)
EREP	EER3500	V3R5
ESCON Director	HSWF100	MVS/ESA V5
FFST	HFST101	OS/390 R2 (V1R2)
GDDM	HGD3200 JGD3219 (English) JGD3220 (Brazilian Portuguese) JGD3221 (Simplified Chinese) JGD3222 (Danish) JGD3223 (French) JGD3224 (German) JGD3225 (Korean) JGD3226 (Italian) JGD3227 (Japanese) JGD3228 (Norwegian) JGD3229 (Canadian French) JGD3230 (Spanish) JGD3231 (Taiwan Chinese) JGD3232 (Swedish)	OS/390 R2 (V3R2)
GDDM-PGF	HGD3201	OS/390 R2 (V2R1.3)
ICKDSF (V1R17)	EDU1H01 FDU1H07 (ISMF Base) FDU1H08 (ISMF English Panels) FDU1H09 (ISMF Japanese Panels)	z990 Compatibility Support
MICR/OCR	EMI2220	MVS/XA level
OpenSSH for z/OS	HOS2220	z/OS V2.2.0

Figure 10 (Page 2 of 2). Elements in FMIDSET Wave 1C		
Element	**FMID(s)**	**Level**
TSO/E	HTE77A0 JTE77AC (Simplified Chinese) JTE77AE (Information Center Facility and English) JTE77AG (German) JTE77AJ (Japanese)	z/OS V2.2.0
Note: The English feature of TSO/E is required if you install a language feature.		
3270 PC File Transfer Program	HFX1112	OS/390 R2 (V1R1.1)

6.5.3.6 Elements in Wave 1D

Figure 11 summarizes FMIDSET Wave 1D, which contains the following elements: Alternate Library for REXX, Cryptographic Services, Integrated Security Services, Security Server (RACF), and z/OS Security Level 3.

Figure 11. Elements in FMIDSET Wave 1D		
Element	**FMID(s)**	**Level**
Alternate Library for REXX	HWJ9143 JWJ9144 (Japanese)	z/OS V1.9.0
Cryptographic Services	HCRY740 (Open Cryptographic Services Facility Base) HKY77A0 (PKI Services)	z/OS V1.9.0 z/OS V2.2.0
Integrated Security Services	HRO7740 (Open Cryptographic Enhanced Plug–ins) HIT7750 (Enterprise Identity Mapping)	z/OS V1.9.0 z/OS V1.10.0
Security Server (RACF)	HRF77A0 JRF77AJ (Japanese)	z/OS V2.2.0
z/OS Security Level 3	JCRY741 (OCSF Security Level 3) JCPT421 (System SSL Security Level 3) JSWK421 (Network Authentication Service Security Level 3) JRSL421 (IBM TDS Security Level 3)	z/OS V1.9.0 z/OS V2.2.0 z/OS V2.2.0 z/OS V2.2.0
Note: FMIDs JCRY741, JCPT421, JSWK421, and JRSL421 are export restricted.		

6.5.3.7 Elements in Wave 1E

As Figure 12 shows, FMIDSET Wave 1E contains BCP - Capacity Provisioning, Common Information Model (CIM), RMF, Runtime Library Extensions, and XL C/C++.

Figure 12 (Page 1 of 2). Elements in FMIDSET Wave 1E		
Element	**FMID(s)**	**Level**
BCP - Capacity Provisioning	HPV77A0	z/OS V2.2.0

Figure 12 (Page 2 of 2). Elements in FMIDSET Wave 1E		
Element	FMID(s)	Level
Common Information Model (CIM)	HPG77A0	z/OS V2.2.0
RMF	HRM77A0 JRM77AJ (Japanese)	z/OS V2.2.0
Runtime Library Extensions	HTV77A0 JTV77AJ (Japanese)	z/OS V2.2.0
XL C/C++	H24P111 (Host Performance Analyzer) J24P112 (Japanese Messages)	OS/390 2.4
	HLB77A0 (XL C/C++ Base) JLB77AJ (XL C/C++ Japanese)	z/OS V2.2.0

6.5.3.8 Elements in Wave 1F

FMIDSET Wave 1F contains BDT, DFSORT, HCM, HLASM Toolkit, IBM Knowledge Center for z/OS, OSA/SF, and SMP/E Planning and Migration Assistant. Figure 13 summarizes the contents of this wave.

Figure 13. Elements in FMIDSET Wave 1F		
Element	FMID(s)	Level
BDT	HBD6602 JBD6201 (File to File) JBD6202 (SNA NJE)	OS/390 R2
DFSORT	HSM1M00	z/OS V2.2.0
HCM	HCM1F10	z/OS V2.2.0
HLASM Toolkit	JMQ416A	z/OS V1.10.0 (V1.6)
IBM Knowledge Center for z/OS	HKCZ100	z/OS V2.2.0
OSA/SF	H0GI400	z990 Compatibility Support
SMP/E	HBCND0B (Planning and Migration Assistant) JBCND1B (Japanese)	z/OS V1.2.0
	HBCNC00 (Software Information Base)	OS/390 R7

6.5.3.9 Elements in Wave 1G

As Figure 14 shows, Distributed File Service which includes z/OS File System, IBM HTTP Server - Powered by Apache, Infoprint Server, Library Server, Network File System, z/OS Font Collection, and z/OS Management Facility.

Figure 14. Elements in FMIDSET Wave 1G		
Element	**FMID(s)**	**Level**
Distributed File Service	H0H2410 J0H241J (Japanese)	z/OS V2.1.0
z/OS File System	HZFS420 JZFS42J (Japanese)	z/OS V2.2.0
Note: You must install the entire Distribution File Service element (the FMIDs specified in this figure, NLS FMIDs are optional) in the same installation step (ripple). Failure to do so might result in the "NOT SEL" messages in the SMP/E output from the z/OS File System installation; this can result in improper installation of the z/OS File System element.		
IBM HTTP Server - Powered by Apache	HHAP90P	z/OS V2.2.0
IBM z/OS Management Facility	HSMA220 (z/OSMF Core Functions) HSMA221 (z/OSMF ISPF) HSMA222 (z/OSMF Resource Monitoring) HSMA223 (z/OSMF WLM) HSMA224 (z/OSMF Software Management) HSMA225 (z/OSMF Incident Log) HSMA226 (z/OSMF Capacity Provisioning) HSMA227 (z/OSMF Workflow) HSMA228 (z/OSMF Plug-in A) HSMA229 (z/OSMF Plug-in B) HSMA22A (z/OSMF Configuration Assistant) HSMA22B (z/OSMF Plug-in C)	z/OS V2.2.0
Infoprint Server	HOPI7A0 (Print Interface Base) JOPI7AJ (Japanese) HNET7A0 (NetSpool Base) JNET7AJ (Japanese) HMOS705 (IP PrintWay Base) JMOS7J5 (Japanese)	z/OS V2.2.0 z/OS V1.2.0
Library Server	HBKQ400	z/OS V2.1.0
Network File System	HDZ222N JDZ222J (Japanese)	z/OS V2.2.0
z/OS Font Collection	HFNT110 HFNT11J (Chinese, Japanese, Korean)	z/OS V2.1.0

6.5.3.10 Elements in Wave 2

Wave 2 contains the JES2, JES3 and SDSF elements, which are listed in Figure 15.

Figure 15. Elements in FMIDSET Wave 2		
Element	**FMID(s)**	**Level**
JES2	HJE77A0 JJE77AJ (Japanese)	z/OS V2.2.0
JES3	HJS77A0	z/OS V2.2.0
SDSF	HQX77A0 JQX77AJ (Japanese)	z/OS V2.2.0

Note:

1. To assemble SDSF, JES2 is required.

2. If you are installing z/OS V2.2.0 on a z/OS V1.13.0 or higher target system, be sure to install the SDSF element and the JES2 element in the same SMP/E installation step because z/OS V2.2.0 SDSF only assembles with z/OS V2.2.0 JES2.

3. Starting from z/OS V1.10.0, the SDSF element can be used with either the JES2 or JES3 element. For releases earlier than z/OS V1.10.0, the SDSF element can only be used with the JES2 element.

6.6 Step 5: Review Library Restructure/Renaming Notes

Some elements have restructured the libraries in previous releases. You should determine if these restructures will affect your environment. Refer to *z/OS V2R2 Migration* for a list of all the deleted data sets and paths, and new data sets and paths. Refer to this book for information on what libraries and paths are changed for a particular z/OS release.

If you are installing an element, and at least one of the following is true:

* The middle-level qualifier of the data sets has been removed.
* You wish to change the high-level qualifier of an existing library.
* The RECFM of a data set has changed.

IBM recommends that you do the following:

1. Perform the dummy function delete of the element.

2. Delete the old libraries.

3. Allocate new libraries using the sample jobs provided.

4. Update the DDDEFs using the sample jobs provided.

5. Follow the rest of the instructions in the appropriate installation chapters.

6.7 Step 6: Review general installation notes

This section describes the general information and messages that you receive during APPLY CHECK, APPLY, ACCEPT CHECK, and ACCEPT processing of the z/OS Version 2 Release 2 elements.

For the DDDEF sample jobs being provided, if the DDDEFs have never been defined, you can use either the REP or ADD parameter. The REP parameter replaces the CSI entry if it exists or adds it if it does not exist. If, however, the DDDEFs have already been defined and need to be replaced, you must use the REP parameter. If you use the ADD parameter to attempt to replace an existing entry, the job will fail.

If the target and distribution data sets that correspond to the DDDEFs will be cataloged, the UNIT and VOLUME parameters can be deleted from the DDDEF sample jobs.

To receive the full benefit of the SMP/E Causer SYSMOD Summary Report, the following should **not** be bypassed on the APPLY and ACCEPT CHECK: ID, IFREQ, PRE, and REQ. This is because the SMP/E root cause analysis only identifies the cause of **ERRORS** and not **WARNINGS**.

Enhanced HOLDDATA introduced ERROR HOLDs against FMIDs for HIPER APARS. Prior to installing, you should ensure you have the latest Enhanced HOLDDATA, which is available at the following URL:

`http://www-947.ibm.com/systems/support/z/zos/`

The FMID(s) should be installed regardless of the status of unresolved HIPERs; however, the software should not be deployed until the unresolved HIPERs have been analyzed to determine applicability.

There are two methods to complete an FMID installation where ++HOLDs for HIPERs exist for the FMID(s) being installed:

1. To ensure that all critical service is installed with the FMID(s), add the SOURCEIDs of PRP, and HIPER to the APPLY command. There maybe PE or HIPER APARs that do not have resolving PTFs available yet. You need to analyze the symptom flags to determine if you want to BYPASS the specific ERROR HOLDs and continue the FMID installation.

   This method requires more initial research, but will provide resolution for all HIPERs that have fixes available and are not in a PE chain. There may still be unresolved PEs or HIPERs which will require the use of BYPASS.

2. To install the FMID(s) as it would have been installed prior to Enhanced HOLDDATA, you can add a BYPASS(HOLDCLASS(HIPER)) operand to the APPLY command. This will allow the FMID to be installed even though there are HIPER ERROR HOLDs against it. Note that not all ERROR HOLDs were bypassed; only the HIPER ERROR HOLDs. After the FMID(s) are installed, the SMP/E REPORT ERRSYSMODS command should be run to identify any missing HIPER maintenance.

   The sample APPLY jobs shown throughout this program directory include BYPASS(HOLDCLASS(HIPER)) on the APPLY command to bypass the HIPER ERROR HOLDs.

   This method is the quicker of the two, but requires subsequent review of the REPORT ERRSYSMODS to investigate any HIPERs.

If you bypass any HOLDs during the installation of the FMID(s) because fixing PTFs were not yet available you can use the APAR Status Tracking (AST) function of ServiceLink or the APAR Tracking function of ResourceLink to be notified when the fixing PTF is available.

GROUPEXTEND indicates that all requisite SYSMODs are to be applied and accepted. The requisite SYSMODs may be applicable to other functions. In the SMP/E examples throughout this program directory, GROUPEXTEND will not include APARs or USERMODs. If you want it to, then remove the keywords NOAPARS and NOUSERMODS.

During an APPLY/ACCEPT CHECK and APPLY/ACCEPT, SMP/E Element Status can appear as APPLIED/ACCEPTED or NOT SEL in the 'Element Summary Report'.

- When Element Status indicates APPLIED/ACCEPTED with NOT SEL, the NOT SEL status can be ignored.
- Any Element Status showing ONLY a NOT SEL should be investigated.

- **Notes on APPLY CHECK and APPLY processing**

  If USERMODs are regressed, you will see the following message, which is acceptable:

  ```
  GIM44502W CHANGES FOR THE FOLLOWING USERMODS WILL BE LOST
  BECAUSE THE ASSOCIATED FUNCTION SYSMOD HAS BEEN DELETED
  ```

  Depending on what your USERMOD does during APPLY CHECK processing, you may want to SMP/E RESTORE your USERMODs before installing the function sysmod and then APPLY them afterwards, or perform an SMP/E APPLY concurrently with the function sysmod.

  If the optional dummy function delete was not performed, normal SMP/E APPLY processing of the z/OS V2.2.0 FMIDs will delete the previous releases. However, the total installation time will be decreased if you run the optional dummy delete job. If you do not run the dummy delete job, then several load modules will be link-edited multiple times. The first link-edit will remove the previous release and can produce the following program binder messages, which can be ignored:

  ```
  IEW2230S  IEW2454W  IEW2470E  IEW2471E  IEW2480W  IEW2612E
  IEW2648E  IEW2650I  IEW2677S
  ```

  For those elements using SMP/E CALLLIBs, warning messages are issued when the load modules are link-edited. For example, the following warning messages are acceptable:

  ```
  IEW2454W SYMBOL xxxxxxxx UNRESOLVED. NO AUTOCALL(NCAL) SPECIFIED.


  IEW2480W EXTERNAL SYMBOL xxxxxxxx OF TYPE LD WAS ALREADY DEFINED
  AS A SYMBOL OF TYPE LD IN SECTION csectname.


  IEW2482W THE ORIGINAL DEFINITION WAS IN A MODULE IDENTIFIED BY
  DDNAME SMPnnnnn. THE DUPLICATE DEFINITION IS IN SECTION xxxxxxx
  IN A MODULE IDENTIFIED BY DDNAME SMPnnnnn.


  IEW2609W 5104 SECTION xxxxxxxx USABILITY ATTRIBUTE OF
  NON-REUSABLE CONFLICTS WITH REQUESTED USABILITY OF REENTRANT.
  ```

During APPLY CHECK and APPLY processing, the following message may be issued if BYPASS was specified (*aaaaaaa* is the sysmod ID). This message, and the resulting return code of 4, is acceptable.

```
GIM42001W THE FOLLOWING CONDITIONS FOR SYSMOD aaaaaaa
WERE NOT SATISFIED, BUT WERE IGNORED BECAUSE THE BYPASS
OPERAND WAS SPECIFIED. PROCESSING CONTINUES.
```

Note: You must investigate and resolve any "requisites" or "holds" that were not satisfied before continuing with the install.

During APPLY CHECK and APPLY processing for some elements, such as BCP, message GIM69138W will appear in the SMP/E output when a load module does not exist in a library and the install logic of an FMID contains a ++DELETE statement for a load module:

```
GIM69138W LMOD xxxxxxx WAS NOT DELETED FROM LIBRARY yyyyyy BY
SYSMOD sssssss BECAUSE xxxxxxx DOES NOT EXIST IN LIBRARY yyyyyy.
```

In the preceding message, *xxxxxxx* is the load module name, *yyyyyy* is the library name, and *sssssss* is the SYSMOD name.

- **Notes on ACCEPT CHECK and ACCEPT processing**

IBM recommends that you set the ACCJCLIN indicator in the DLIB zone. This causes all inline JCLIN to be saved in the distribution zone at ACCEPT time. For more information about the ACCJCLIN indicator, see the description of inline JCLIN in the ACCEPT command in *SMP/E for z/OS Commands*.

Any requisite service identified by the ACCEPT CHECK should be RECEIVEd and APPLYed before the next step.

During SMP/E ACCEPT processing, load modules are installed into the distribution libraries. During the link-edits into these distribution libraries, message IEW0461 or IEW2454W may be issued several times. These messages are acceptable because the distribution libraries are not executable and the unresolved external references will not affect the executable system libraries.

During ACCEPT CHECK and ACCEPT processing, the following message may be issued if BYPASS was specified (*aaaaaaa* is the sysmod ID). This message, and the resulting return code of 4, is acceptable.

```
GIM42001W THE FOLLOWING CONDITIONS FOR SYSMOD aaaaaaa
WERE NOT SATISFIED, BUT WERE IGNORED BECAUSE THE BYPASS
OPERAND WAS SPECIFIED. PROCESSING CONTINUES.
```

Note: You must investigate and resolve any "requisites" or "holds" that were not satisfied before continuing with the install.
- REPORT CALLLIBs is not required to be run after the installation is finished. Because the CALLable services are upwardly compatible, there is no need to re-link.
- The sample jobs are shown using REGION=0M. A region value equal to 0K or 0M gives the job all the storage available below and above 16 megabytes. Be aware that this can affect the performance of other jobs running in the system. If you do not choose to run with a region size of 0M, refer to *SMP/E for z/OS Reference* for more information on how to determine region sizes.
- TIME=NOLIMIT is specified on the samples because the jobs take a long time to execute.

6.7.1 SMP/E CALLLIBs processing

z/OS V2.2.0 uses the CALLLIBS function that is provided in SMP/E to resolve external references during installation. Before z/OS V2.2.0 is installed, ensure that DDDEFs exist for the following libraries:

- CEE.SCEEBND2
- CEE.SCEECPP
- CEE.SCEELIB
- CEE.SCEELKED
- CEE.SCEELKEX
- CEE.SCEEOBJ
- CEE.SCEESPC
- CICS.SDFHLOAD
- CSF.SCSFMOD1
- EUVF.SEUVFLIB
- SYS1.CSSLIB
- SYS1.SFOMOBJ
- TCPIP.SEZACMTX

7.0 Installation instructions for Wave 0 FMIDs

This chapter describes how to install the Wave 0 elements in z/OS V2.2.0.

- For instructions on installing all of the FMIDs in Wave 1, including the FMIDs that are installed into the file system, and instructions about installing JES2, JES3, and SDSF in Wave 2, see 8.0, "Installation instructions for Wave 1 and Wave 2 FMIDs" on page 69.

z/OS is installed using the SMP/E RECEIVE, APPLY, and ACCEPT commands. For details on SMP/E, refer to the appropriate SMP/E books.

Note: This chapter uses sample JCL to illustrate installation steps. You can also use the SMP/E dialogs instead of JCL.

The following steps are required to install the Wave 0 FMIDs. Instructions for each step are provided on the indicated pages.

Figure 16. Checklist for Wave 0 Installation			
Check Box	**Activity**	**Section, Step Description**	**Your Notes**
☐	RECEIVE	7.1, "Step 1: RECEIVE the Wave 0 elements" on page 50	
☐	Prepare	7.2, "Step 2: Prepare to install Wave 0" on page 52	
☐	Run Optional Delete Jobs	7.2.1, "Run optional delete jobs for Wave 0 elements" on page 52	
☐	Allocate Libraries	7.2.2, "Allocate Target and Distribution Libraries for Wave 0 elements" on page 54	
☐	HFS or zFS Directories	7.2.3, "Create File System Directories for Wave 0" on page 55	
☐	Define DDDEFs	7.2.4, "Define DDDEFs for Wave 0 elements" on page 55	
☐	APPLYs	7.3, "Step 3: APPLY Wave 0" on page 56	
		7.3.1, "Create a cross-zone set" on page 56	
		7.3.2.1, "Do an SMP/E APPLY CHECK for Wave 0 FMIDs and service" on page 59	
		7.3.2.2, "Do an SMP/E APPLY for Wave 0 FMIDs and service" on page 60	
☐	Customize Wave 0	7.4, "Step 4: Wave 0 customization" on page 62	

7.1 Step 1: RECEIVE the Wave 0 elements

You must use the current level of SMP/E, which is included with z/OS V2.2.0 to install z/OS V2.2.0 Wave 1 and Wave 2 elements. Therefore, you must receive the Wave 0 FMIDs by only using the SELECT and FORFMID operands to limit SMP/E processing at this time. After you install the Wave 0 FMIDs, you can use SMP/E to update the Global zone to improve RECEIVE processing (see note 5 on page 66) and receive the FMIDs and service for the rest of z/OS elements (see 8.1.5, "RECEIVE the rest of the CBPDO" on page 81). See *SMP/E for z/OS Commands* for more information about the changes to SMP/E RECEIVE processing.

7.1.1 RECEIVE Wave 0 FMIDs and service

Select which z/OS Version 2 Release 2 Wave 0 FMIDs to RECEIVE by removing the FMIDs that have previously been RECEIVEd or that have not been ordered from the sample RECEIVE job shown in Figure 17 on page 51.

```
┌─ Required Updates ──────────────────────────────────────────────────────────┐
│                                                                              │
│   1. Update the *job parameters*.                                            │
│                                                                              │
│   2. Replace the CSI name on the SMPCSI DD statement with your CSI name.     │
│                                                                              │
│   3. Replace *vvvvvv* on the SMPPTFIN and SMPHOLD DD statement with the correct VOLSER. │
│                                                                              │
└──────────────────────────────────────────────────────────────────────────────┘
```

```
//RECWAVE0 JOB <job parameters>
//STEP1    EXEC PGM=GIMSMP,REGION=0M,TIME=NOLIMIT
//SMPCSI   DD DSN=zosv2r2.global.csi,DISP=SHR
//SMPPTFIN DD DSN=SMPMCS,
//            UNIT=(TAPE,,DEFER),
//            VOL=SER=vvvvvv,
//            LABEL=(5,SL),
//            DISP=(SHR,KEEP)
//SMPHOLD  DD DSN=HOLDDATA,
//            UNIT=(TAPE,,DEFER),
//            VOL=SER=vvvvvv,
//            LABEL=(3,SL),
//            DISP=(SHR,KEEP)
//SMPCNTL DD *
  SET BOUNDARY(GLOBAL).
  RECEIVE SELECT (
             HMP1J00,  /* see NOTE 1 below */
             JMP1J11,  /* see NOTE 2 below */
             HMQ4160, /* see NOTE 1 below */
             HPM77A0
             )
          SYSMODS
          HOLDDATA
          FORFMID (
             HMP1J00,
             JMP1J11,   /* see NOTE 2 below */
             HMQ4160,
             HPM77A0
             ).

  /*
```

Figure 17. SMP/E RECEIVE (All Wave 0 FMIDs and Service for z/OS)

Notes:

1. If High Level Assembler (HLASM), or SMP/E has been previously installed, remove FMID HMQ4160, or HMP1J00 from the SELECT parameter.

2. If the Japanese feature is not ordered, remove FMID JMP1J11 from the SELECT and FORFMID parameters.

Successful receive processing returns a condition code of 0.

7.2 Step 2: Prepare to install Wave 0

This step describes the preparation work required before doing the APPLY of Wave 0.

Required Planning Tasks Check List

__ Before installing Wave 0, complete the planning tasks for choosing the software installation method - using CBPDO, preparing the driving system for CBPDO, and preparing the target system which are described in *z/OS Planning for Installation*.

__ Clone your system, as described in 6.1, "Overview for the clone of your system" on page 31.

__ Check the PSP buckets, as described in 3.2, "Preventive Service Planning (PSP)" on page 15.

__ Ensure that your system meets the requirements for hardware, software, and coexistence considerations described in *z/OS Planning for Installation*.

__ Install the required driving system software listed in *z/OS Planning for Installation* for Wave 0. If you do not have a system that meets these requirements, do one of the following:

  - Consider using a ServerPac.
  - Consider using a SystemPac.
  - Upgrade your existing system.
  - Obtain a Customized Offerings Driver (5751-COD).

To install Wave 0, you must install from a user ID that has a UID of 0 or has read access to the BPX.SUPERUSER resource in the RACF FACILITY class. This user ID must have read access to FACILITY class resources `BPX.FILEATTR.APF`, `BPX.FILEATTR.PROGCTL`, and `BPX.FILEATTR.SHARELIB`. Alternatively, you could use a generic profile for these resources, such as `BPX.FILEATTR.*`.

7.2.1 Run optional delete jobs for Wave 0 elements

Before installing Wave 0 elements, you may consider dummy function deleting prior levels of elements to decrease installation runtime. You can create a dummy function delete job by using the sample job shown in Figure 18 on page 53 to delete the elements. To run this job, you must make the following updates to the sample:

1. Update the *job parameters*.

2. Change `zosv2r2.global.csi` name to your CSI name on the SMPCSI DD statement.

3. Change *#fmid1* to the prior level of the element's base FMID.

4. Change *#fmid2* to the prior level of the element's feature FMID. If there is no feature FMID for the element, then remove *#fmid2*. If there is more than one feature FMID, then you will have to add the additional FMIDs to this list.

5. Change *#tzone* to your TARGET ZONE name.

6. Change *#dzone* to your DLIB ZONE name.

```
//DDELETE JOB <job parameters>
//STEP1 EXEC PGM=GIMSMP,REGION=0M,TIME=NOLIMIT
//SMPCSI DD DISP=SHR,DSN=zosv2r2.global.csi
//SMPHOLD DD DUMMY
//SMPCNTL DD *
 SET BDY(GLOBAL) OPTIONS(ZOSOPT).
 RECEIVE S(DM0FMID).
/*
//SMPPTFIN DD *
++FUNCTION (DM0FMID) REWORK(2015030).
++VER(Z038)
   DELETE(#fmid1,#fmid2).
/*
//STEP2 EXEC PGM=GIMSMP,REGION=0M,TIME=NOLIMIT,COND=(4,LT)
//SMPCSI DD DISP=SHR,DSN=zosv2r2.global.csi
//SMPCNTL DD *
  SET BDY(#tzone) OPTIONS(ZOSOPT).
  APPLY S(DM0FMID) REDO.
/*
//STEP3 EXEC PGM=GIMSMP,REGION=0M,TIME=NOLIMIT,COND=(4,LT)
//SMPCSI DD DISP=SHR,DSN=zosv2r2.global.csi
//SMPCNTL DD *
  SET BDY(#dzone) OPTIONS(ZOSOPT).
  ACCEPT S(DM0FMID) REDO.
/*
//STEP4 EXEC PGM=GIMSMP,REGION=0M,TIME=NOLIMIT,COND=(4,LT)
//SMPCSI DD DISP=SHR,DSN=zosv2r2.global.csi
//SMPCNTL DD *
  SET BDY(#tzone) .
  UCLIN .
   DEL SYSMOD(#fmid1) .
   DEL SYSMOD(#fmid2) .
   DEL SYSMOD(DM0FMID) .
  ENDUCL  .
  SET BDY(#dzone) .
  UCLIN .
   DEL SYSMOD(#fmid1) .
   DEL SYSMOD(#fmid2) .
   DEL SYSMOD(DM0FMID) .
  ENDUCL  .
  SET BDY(GLOBAL).
  REJECT HOLDDATA NOFMID       /* Reject SYSMODs, HOLDDATA  */
       DELETEFMID              /* for the deleted functions.*/
       (DM0FMID #fmid1 #fmid2).
```

Figure 18. Sample Dummy Delete Job

7.2.2 Allocate Target and Distribution Libraries for Wave 0 elements

Since it is expected that you are installing on a clone of your system, as stated in 6.1, "Overview for the clone of your system" on page 31, many data sets should already exist. Verify that your target and distribution libraries contain enough space, as described in Appendix C, "DASD Storage Requirements Tables" on page 331. Sample jobs to allocate the target and distribution libraries for some elements have been provided. See Appendix C, "DASD Storage Requirements Tables" on page 331 for information on new libraries introduced in this release.

Copy the sample jobs to a work data set and customize them if you need to perform these tasks.

The samples specify the storage requirements using average block lengths. BLKSIZE=0 indicates that system-determined block sizes are being used. For example, the sizes might look like this:

```
SPACE=(8800,(135,27,6)),
DCB=(RECFM=FB,LRECL=80,BLKSIZE=0).
```

Do not confuse the SPACE=8800 (average block length) parameter with the BLKSIZE=0 (block size) parameter. If you would like to change the block size to something other than the system-determined block size, you can change the BLKSIZE parameter. Do not change the SPACE parameter. You can either use the storage allocations that are provided, or convert them to cylinder or track allocations.

If these elements have already been installed, the JCL for the jobs needs to be modified to remove or comment out the DD statements for the pre-existing libraries, or the job will fail. For more information on modifying JCL, see *z/OS MVS JCL Reference*.

Run these jobs after the elements have been RECEIVEd.

After the jobs are submitted, you should get a condition code of 0. Check the allocation/deallocation messages to be certain the data sets were allocated and cataloged properly.

Figure 19 lists the locations of the sample jobs. Be sure to read the note following the table before running the sample jobs. The following fields are represented in this table:

Job Name   Indicates the name of the job that is to be run.
Job Type   Indicates the type of job that is to be run.
Description   Contains the element name for which the job is to be run.
RELFILE   Identifies the location of the sample job.

Figure 19 (Page 1 of 2). Wave 0 Allocate Sample Installation Jobs

Job Name	Job Type	Description	RELFILE
ASMWALOC	ALLOCATE	HLASM	'prefix.HMQ4160.F1'
GIMALLC	ALLOCATE	SMP/E	'prefix.HMP1J00.F1'

Figure 19 (Page 2 of 2). Wave 0 Allocate Sample Installation Jobs

Job Name	Job Type	Description	RELFILE
IEWISALC	ALLOCATE	Program Management Binder	'prefix.HPM77A0.F1'

Note: 'prefix' is the high-level qualifier specified as the DSPREFIX value in the SMPTLIB DDDEF or the OPTIONS entry of the global zone.

7.2.3 Create File System Directories for Wave 0

You need to create the file system directories for Wave 0 elements before installing the Wave 0 FMIDs, if the directories do not exist. These directories are created by running the sample jobs listed in Figure 20. It is assumed that you have cloned the entire set of file system data sets, as described in 6.3, "Step 2: Cloning File System Data Sets" on page 32, and that the clone is your target system. The cloned file system data sets for the target system must be mounted to the driving system before running the sample job listed below.

The following fields are represented in this table:

Job Name   Indicates the name of the job that is to be run.
Job Type   Indicates the type of job that is to be run.
Description Contains the element name for which the job is to be run.
RELFILE   Identifies the location of the sample job.

Figure 20. Wave 0 Define Directories Sample Installation Jobs

Job Name	Job Type	Description	RELFILE
GIMISMKD	MKDIR	SMP/E	'prefix.HMP1J00.F1'

Note:

1. The 'prefix' is the high-level qualifier value specified as the DSPREFIX value in the SMPTLIB DDDEF or the OPTIONS entry of the global zone.

2. Be careful when modifying the samples because path names are case sensitive.

3. After the above job is run, the expected return code is 0.

7.2.4 Define DDDEFs for Wave 0 elements

Verify that your target and distribution libraries have the corresponding DDDEF entries in the SMP/E CSI as listed in Figure 85 on page 338 and Figure 86 on page 358 for z/OS V2.2.0. Sample jobs to define DDDEF entries for wave 0 elements have been provided.

If the DDDEF entries for the Wave 0 elements do not exist in the SMP/E CSI, copy the sample jobs to a work data set and customize them. DDDEFs must be defined in the target and distribution zones. For instructions on customizing the sample jobs see the comments in the sample jobs.

Run the jobs after the elements have been RECEIVEd.

If any of the DDDEF entries already exist, you will get a non-zero condition code. Check the output to see what caused the non-zero condition code.

Figure 21 lists the locations of the sample jobs. Be sure to read the notes following the table before running the sample jobs. The following fields are represented in this table:

Job Name   Contains the name of the sample job to be run.

Job Type   Indicates the type of job that is to be run.

Description   Contains the element name for which the job is to be run.

RELFILE   Identifies the location of the sample job.

Figure 21. Wave 0 DDDEF Sample Installation Jobs

Job Name	Job Type	Description	RELFILE
ASMWDDEF	DDDEF	HLASM	'prefix.HMQ4160.F1'
GIMDDDEF	DDDEF	SMP/E	'prefix.HMP1J00.F1'
IEWISDDD	DDDEF	Program Management Binder	'prefix.HPM77A0.F1'

Note: 'prefix' is the high-level qualifier value specified as the DSPREFIX value in the SMPTLIB DDDEF or the OPTIONS entry of the global zone.

7.3 Step 3: APPLY Wave 0

This section describes step 3 of wave 0.

7.3.1 Create a cross-zone set

There are different methods that can be used for cross-zone processing. A zone group can be defined and added to the install jobs or the XZGROUP operand can be used. XZGROUP(value) contains a list of ZONESETs or zones that are used to establish the zone group. Each value in the list must be a valid ZONESET or zone name. XZGROUP(value) would be added to the install jobs instead of adding the XZREQCHK operand to one or more ZONESETs.

In OS/390 Release 3, SMP/E introduced the operand, XZREQ, which provides a method for a user to more easily install cross-zone requisites. SMP/E identifies the cross-zone requisites needed in the set-to zone by reading CIFREQ data in the secondary zones of the zone group in effect for the current APPLY/ACCEPT commands. Any CIFREQ data that is for FMIDs installed or being installed in the set-to zone that are not yet in the set-to zone causes the required SYSMODs to become candidates for installation. If the FORFMID operand is also used, the FMID specified on the CIFREQ must match one of the FMIDs specified on the FORFMID operand for the SYSMOD to become a candidate.

By adding the XZREQ operand, the CIFREQ SYSMODs are installed automatically into the set-to zone. However, XZREQ does not install the CIFREQs in the other cross-dependent zones. An APPLY XZREQ needs to be performed against the other zones to synchronize service.

Note: If SYSMODs being installed into the set-to zone have requirements against the other cross-zones, that service must be APPLY'd to those zones before installation can be completed into the set-to zone.

For more information on this operand, refer to *SMP/E for z/OS Commands*. See Figure 22 on page 58 for an example of how to set up the ZONEINDEX, ZONESET, and XZREQCHK for use during the APPLY/ACCEPT; see Figure 32 on page 103 for an example of the APPLY using the XZREQ operand.

Required Updates

1. Update the *job parameters*.

2. Replace the CSI name on the SMPCSI DD statement with your CSI name.

3. Update cross dependency zones and CSI names.

Successful processing returns a condition code of 0.

```
//ZINDEX   JOB (job parameters)
//SMPE     EXEC PGM=GIMSMP
//SYSPRINT DD SYSOUT=*
//SMPCSI   DD DSN=zosv2r2.global.csi,DISP=SHR
//SMPCNTL  DD *
  SET BDY(GLOBAL) .
    UCLIN .
      ADD GLOBALZONE ZONEINDEX(
        (jes2tgt,jes2.target.csi,TARGET)
        (jes3tgt,jes3.target.csi,TARGET)
        (pptgt,pgmprod.target.csi,TARGET)
        (db2tgt,db2.target.csi,TARGET)
        (imstgt,ims.target.csi,TARGET)
        (cicstgt,cics.target.csi, TARGET)
        (jes2dlb,jes2.dlib.csi,DLIB)
        (jes3dlb,jes3.dlib.csi,DLIB)
        (ppdlib,pgmprod.dlib.csi,DLIB)
        (cicsdlb,cics.dlib.csi,DLIB)
        (db2dlib,db2.dlib.csi,DLIB)
        (imsdlib,ims.dlib.csi,DLIB)) .
      ADD ZONESET(XZONE)
        ZONE(jes2tgt,
             jes3tgt,
             pptgt,
             cicstgt,
             db2tgt,
             imstgt,
             jes2dlb,
             jes3dlb,
             ppdlib,
             cicsdlb,
             db2dlib,
             imsdlib)
       XZREQCHK(YES) .
    ENDUCL.
 /*
```

Figure 22. Sample Job to Add XZREQCHK(YES) to a ZONESET Entry

7.3.2 Select which z/OS Version 2 Release 2 Wave 0 FMIDs to install

Select which z/OS Version 2 Release 2 Wave 0 FMIDs to install by removing the FMIDs that have been previously installed or that have not been ordered from the sample APPLY CHECK job shown in Figure 23 on page 59.

7.3.2.1 Do an SMP/E APPLY CHECK for Wave 0 FMIDs and service

Run an APPLY CHECK to identify any requisite service and additional holds (for example, HOLDSYS(DOC)) that may need to be resolved before APPLY processing. Resolve any holds and RECEIVE any requisite service identified by the APPLY CHECK before proceeding to the next step.

See Figure 23 on page 59 for a sample APPLY CHECK of all FMIDs and service for Wave 0.

```
//CHECK JOB <job parameters>
//STEP1 EXEC PGM=GIMSMP,REGION=0M,TIME=NOLIMIT
//SMPCSI DD DSN=zosv2r2.global.csi,DISP=SHR
//SMPCNTL DD *
  SET BOUNDARY(targetzone) .
  APPLY CHECK XZREQ
   FORFMID(HMP1J00,
           JMP1J11,              /* see Note 2 below */
           HMQ4160,
           HPM77A0)
   SELECT(HMP1J00,                /* see Note 1 below */
          JMP1J11,               /* see Note 2 below */
          HMQ4160,               /* see Note 1 below */
          HPM77A0)
   GROUPEXTEND(NOAPARS,NOUSERMODS)
   SOURCEID(ZOSV2R2,RSU*)
   FIXCAT(IBM.ProductInstall-RequiredService)
   BYPASS(HOLDSYSTEM,
   HOLDUSER,HOLDCLASS(UCLREL,ERREL,HIPER)) .
 /*
```

Figure 23. SMP/E APPLY CHECK (All Wave 0 FMIDs and Service for z/OS Version 2 Release 2)

Notes:

1. If High Level Assembler (HLASM) or SMP/E has been previously installed, remove FMID HMQ4160, or HMP1J00 from the SELECT parameter. If SMP/E FMIDs HMP1J00 and JMP1J11 were previously installed, remove the FMIDs from the SELECT parameter.

2. If the Japanese feature is not ordered, remove FMID JMP1J11 from the SELECT and FORFMID parameters.

3. HLASM Toolkit is included in Wave 1 elements in this program directory. If you plan to use HLASM Toolkit before you do the APPLY for Wave 1 FMIDs, install FMID JMQ416A during Wave 0 by adding FMID JMQ416A to the FORFMID and SELECT operands in the APPLY CHECK job for Wave 0 FMIDs. To install FMID JMQ416A during Wave 0, you must also run the SMP/E RECEIVE command against FMID JMQ416A before running the APPLY CHECK job for Wave 0 FMIDs.

> **Required Updates**
>
> 1. Update the *job parameters*.
>
> 2. Replace the CSI name on the SMPCSI DD statement with your CSI name.
>
> 3. Update *targetzone* to your target zone name.
>
> 4. The XZREQ operand only needs to be specified when cross-zone processing is required. If this operand is specified when there is no zone group set up, the following messages will be received, which are acceptable:
>
>    ```
>    GIM50810W THE XZREQ OPERAND WAS SPECIFIED ON THE APPLY
>    COMMAND BUT SINCE NO ZONES WERE APPLICABLE FOR CROSS-ZONE
>    REQUISITE CHECKING, THE XZREQ OPERAND WILL BE IGNORED.
>
>    GIM20501I APPLY PROCESSING IS COMPLETE. THE HIGHEST RETURN
>    CODE WAS 04.
>    ```

Note that if you BYPASS(HOLDCLASS(HIPER)), you should run the SMP/E REPORT ERRSYSMODS command to identify missing HIPER HOLDs before putting your system into production.

If you do not BYPASS(HOLDCLASS(HIPER)), the FMIDs may not be installed if any of the HIPER maintenance is unavailable.

Any messages other than those stated in 6.7, "Step 6: Review general installation notes" on page 44, and in the following section, need to be investigated.

Successful APPLY CHECK processing returns a condition code of 0 or 4.

7.3.2.1.1 Messages expected during Binder APPLY CHECK: During the APPLY CHECK of the Binder, the following messages may be received and are acceptable if they are the only reasons for the condition code 4.

```
GIM61903W LMOD xxxxxxxx WAS NOT DELETED BY SYSMOD
HPM77A0 BECAUSE IT IS NOT IN THE target ZONE.
```

In the message text, *xxxxxxxx* will be one of the following LMODs:

```
AKJLKL01  AMBLIST  HEWLD  HEWLKED  IEWBFDAT  IEWBIND
IEWBLINK  IEWBXEP  IEWTPORT
```

7.3.2.2 Do an SMP/E APPLY for Wave 0 FMIDs and service

Be certain that all the exception conditions have been satisfied before adding a BYPASS(HOLDSYSTEM) during the SMP/E APPLY step. See Figure 24 on page 61 for a sample APPLY of all FMIDs and service for Wave 0.

```
//APPLY JOB <job parameters>
//STEP1 EXEC PGM=GIMSMP,REGION=0M,TIME=NOLIMIT
//SMPCSI DD DSN=zosv2r2.global.csi,DISP=SHR
//SMPCNTL DD *
  SET BOUNDARY(targetzone).
  APPLY XZREQ
   FORFMID(HMP1J00,
           JMP1J11,              /* see NOTE 2 below */
           HMQ4160,
           HPM77A0)
    SELECT(HMP1J00,              /* see NOTE 1 below */
           JMP1J11,          /* see NOTE 2 below */
           HMQ4160,              /* see NOTE 1 below */
           HPM77A0)
   GROUPEXTEND(NOAPARS,NOUSERMODS)
   SOURCEID(ZOSV2R2,RSU*)
   FIXCAT(IBM.ProductInstall-RequiredService)
   BYPASS(HOLDSYSTEM,
   HOLDUSER,HOLDCLASS(UCLREL,ERREL,HIPER)) .
 /*
```

Figure 24. SMP/E APPLY (All Wave 0 FMIDs and Service for z/OS Version 2 Release 2)

Required Updates

1. Update the *job parameters*.

2. Replace the CSI name on the SMPCSI DD statement with your CSI name.

3. Update *targetzone* to your target zone name.

4. The XZREQ operand only needs to be specified when cross-zone processing is required. If this operand is specified when there is no zone group set up, the following messages will be received, which are acceptable:

   ```
   GIM50810W THE XZREQ OPERAND WAS SPECIFIED ON THE APPLY
   COMMAND BUT SINCE NO ZONES WERE APPLICABLE FOR CROSS-ZONE
   REQUISITE CHECKING, THE XZREQ OPERAND WILL BE IGNORED.

   GIM20501I APPLY PROCESSING IS COMPLETE. THE HIGHEST RETURN
   CODE WAS 04.
   ```

Note that if you BYPASS(HOLDCLASS(HIPER)), you should run the SMP/E REPORT ERRSYSMODS command to identify missing HIPER HOLDs before putting your system into production.

If you do not BYPASS(HOLDCLASS(HIPER)), the FMIDs may not be installed if any of the HIPER maintenance is unavailable.

Notes:

1. If High Level Assembler (HLASM), or SMP/E has been previously installed, remove FMID HMQ4160, or HMP1J00 from the SELECT parameter.

2. If the Japanese feature is not ordered, remove FMID JMP1J11 from the SELECT and FORFMID parameters.

3. HLASM Toolkit is included in Wave 1 elements in this program directory. If you plan to use HLASM Toolkit before you do the APPLY for Wave 1 FMIDs and you have included FMID JMQ416A in the APPLY CHECK job for Wave 0 FMIDs, you must add FMID JMQ416A to the FORFMID and SELECT operands in the APPLY job for Wave 0 FMIDs.

Any messages other than those stated in 6.7, "Step 6: Review general installation notes" on page 44, and in the following section, need to be investigated.

Successful APPLY processing returns a condition code of 0 or 4.

After the APPLY of Wave 0, proceed with the customization of Wave 0.

7.3.2.2.1 Additional messages expected during Wave 0 APPLY

This section describes additional messages you may receive during the Wave 0 APPLY.

7.3.2.2.1.1 Messages expected during Binder APPLY: During the APPLY of the Binder, the following messages may be received and are acceptable if they are the only reasons for the condition code 4.

```
GIM61903W LMOD xxxxxxxx WAS NOT DELETED BY SYSMOD
HPM77A0 BECAUSE IT IS NOT IN THE target ZONE.
```

In the message text, *xxxxxxxx* will be one of the following LMODs. If these are the only cause of the condition code 4, it is acceptable.

```
AKJLKL01  AMBLIST  HEWLD    HEWLKED  IEWBFDAT  IEWBIND
IEWBLINK  IEWBXEP  IEWTPORT
```

7.4 Step 4: Wave 0 customization

This step describes the actions to be performed for customizing the Wave 0 elements.

7.4.1 High Level Assembler

Refer to *HLASM Installation and Customization Guide* for more information and instructions on High Level Assembler customization.

You can customize any of the following items for High Level Assembler:

*   Customize user exits.
*   Change default OPTIONs and DDNAMEs.

- Place High Level Assembler into Link Pack Area.
- Create Alias to help Assembler H migration.

7.4.2 SMP/E customization

The following sections describe the steps needed to customize the installation of SMP/E.

7.4.2.1 Update SMP/E Entries

The SYSLIB concatenation for APPLY processing for the rest of z/OS Version 2 Release 2 should begin with your SMPMTS, MACLIB, and MODGEN data sets. If you have other products installed, you can include other data sets later in the SYSLIB concatenation. Refer to the following list for the complete SYSLIB concatenation in the target zone for z/OS V2.2.0.

Target zone SYSLIB concatenation

- SMPMTS
- MACLIB
- MODGEN
- SISTMAC1 (for Communications Server for z/OS SNA Services)
- SEPWMAC1 (for FFST)
- SICEUSER (for DFSORT)
- SISFMAC (for SDSF)
- SASMMAC1 (for High Level Assembler)
- SASMSAM1 (for High Level Assembler)
- SCEEMAC (for Language Environment)
- SEZACMAC (for Communications Server IP Services)

You will need to add the JES libraries to your concatenation.

- For JES2 systems at the z/OS level, you should add SHASMAC.

- For JES3 systems at the z/OS level, you should add SIATMAC.

Distribution zone SYSLIB concatenation

The SYSLIB concatenation for ACCEPT processing must begin with your AMACLIB and AMODGEN data sets. If you have other products installed, you can include other data sets later in the SYSLIB concatenation. See the following list for the complete SYSLIB concatenation in the distribution zone for z/OS V2.2.0.

1. AMACLIB
2. AMODGEN
3. AISTMAC1 (for Communications Server for z/OS SNA Services)
4. AEPWSRC1 (for FFST)
5. AICEUSER (for DFSORT)
6. AISFMAC (for SDSF)
7. AASMMAC1 (for High Level Assembler)
8. ACEESRC1 (for Language Environment)

9. AIGZSRC1 (for Language Environment)
10. AAFHSRC1 (for Language Environment)
11. AEDCSRC6 (for Language Environment)
12. AEZAMAC1 (for Communications Server IP Services)
13. AEZAMAC2 (for Communications Server IP Services)
14. AEZAMAC3 (for Communications Server IP Services)
15. ATSOMAC

You will need to add the JES libraries to your concatenation.

- For JES2 systems at the z/OS level, you should add AHASMAC.
- For JES3 systems at the z/OS level, you should add AIATMAC.

OPTIONS and UTILITY entries

The OPTIONS and UTILITY entries in your global zone must be set correctly. Choose among the following:

- Define new entries as shown in Figure 25 on page 65.
- Update existing entries.
- Use an existing entry with the same values shown.

The following entries must be defined to SMP/E. The following values are not the default values, so ensure that they are being used. For the other utility entries, the defaults are acceptable. Verify that defaults are being used by the utilities that are not listed.

- A UTILITY entry for binder.

  Make sure that the program HEWLH096 (or another entry name that invokes the binder) is specified with appropriate parameters and has a maximum acceptable condition code of 04. HEWLH096 points to the Program Management Binder.

  Notes:

  1. The utility entry **must** point to the binder, HEWLH096.
  2. The maximum acceptable link edit return code is 4 for z/OS V2.2.0.
  3. Do not make the RC=4 unless all products in the zone have a maximum return code of 4.

- An OPTIONS entry that identifies the UTILITY entries to be used.

  Make sure that you include ASM and LKED subentries.

Figure 25 on page 65 shows a sample job adding the OPTIONS entry named ZOSOPT. ZOSOPT replaces OS390OPT, MVSXAOPT and ESAOPT, which were described in prior OS/390 and MVS releases. You should verify that this change is made in any RECOVERY, CLEANUP, or GENERAL OPTIONS entries. You can use either this job or the SMP/E administration dialog.

All sample SMP/E jobs shown in this program directory or supplied in relfiles on the tapes assume that all data sets required for SMP/E processing are defined in DDDEFs in the appropriate zones. Refer to *SMP/E for z/OS Commands* for information on which data sets are required for each SMP/E command

and how to define them in DDDEFs. Sample jobs are supplied to define DDDEFs for many of the target
and distribution data sets for this product.

```
//OPTIONS JOB <job parameters>
//STEP1   EXEC PGM=GIMSMP
//STEPLIB DD DSN=SYS1.MIGLIB,DISP=SHR,
//         UNIT=SYSALLDA,VOL=SER=v2r2vol1
//         DD DSN=ASM.SASMMOD1,DISP=SHR,
//         UNIT=SYSALLDA,VOL=SER=v2r2vol1
//SMPCSI DD DSN=zosv2r2.global.csi,DISP=SHR
//SMPCNTL DD *
  SET BOUNDARY(GLOBAL) .
  UCLIN .
  ADD UTILITY(HEWLH096)
      NAME(HEWLH096)
      PARM(LET,NCAL,XREF)                    /* see note 1 */
      PRINT(SYSPRINT)                        /* see note 2 */
      RC(4) .
  ADD UTILITY(ASMA90)
      NAME(ASMA90)
      PARM(GOFF,LIST(133),DECK,NOOBJECT,OPTABLE(UNI))
                                             /* See note 10   */
      PRINT(ASMPRINT)                        /* See note 11   */
      RC(0).                                 /* See note 3     */
  ADD UTILITY(COPY)
     NAME(IEBCOPY)
     PARM(WORK=2M)                           /* see note 12 */
     PRINT(SYSPRINT)
     RC(0).
  ADD OPTIONS(ZOSOPT)                        /* see note 4 */
     ASM(ASMA90)
     LKED(HEWLH096)
     COPY(COPY)                              /* see note 13 */
     DSSPACE(6200,1500,2600)
     RECZGRP(                                /* see note 5 */
        jes2dlb,
        jes3dlb,
        ppdlib,
        cicsdlb,
        db2dlib,
        imsdlib)
     MSGFILTER(YES)                          /* see note 6 */
     MSGWIDTH(80)                            /* see note 7 */
     RETRYDDN(ALL)   .                       /* see notes 8 and 9 */
  ENDUCL .
/*
```

Figure 25. Updating Entries in the Global Zone

Successful return code of this job is 0. If any of the above utilities or options already exist, then you will receive a return code of 4 which is acceptable.

Required Updates

1. Update the *job parameters*.

2. Update the v2r2vol1 with the volume serial number for the MIGLIB and SASMMOD1 libraries that are the targets of the Wave 0 installation. This will allow you to access the z/OS V2.2.0 level of the Wave 0 elements using the STEPLIB DD statements.

3. Replace the CSI name on the SMPCSI DD statement with your CSI name.

Notes:

1. IBM recommends LET,NCAL,XREF parameters for the Binder, although these are not default values. When you use the binder, use the defaults and do not specify the SIZE parameter.

   When the Program Management Binder stores a program object (PO) in a PDSE, the lowest program management (PM) format that will support the request is used by default. Earlier levels of the binder and program loader do not support new PM formats.

   The COMPAT option should be specified if you need to ensure that a program object can be loaded and executed on a specific lower level of the operating system or if you wish to explicitly request functionality that is available only in a later program object version than the default. The COMPAT option is specified as COMPAT=MIN (the default), or COMPAT=CURRENT or COMPAT=*xxx*, where *xxx* is the PM level corresponding to the lowest level system on which the program object can be loaded or the latest PO level. For information on valid values for the Compat option, see *z/OS MVS Program Management: User's Guide and Reference* and *z/OS MVS Program Management: Advanced Facilities*.

2. To exploit the multitasking capability of SMP/E, ensure the ddname that is to contain output from the link edit utility is defined in a DDDEF entry which points to a SYSOUT class. SMP/E's default ddname for utility output is SYSPRINT, but it can be changed using the PRINT subentry of the LKED UTILITY entry.

3. A return code of 0 is expected for all assemblies of z/OS V2.2.0 when the default parameters are used. If you modify the parameters, you may affect the maximum return code you receive for assemblies.

4. Do not specify PEMAX, but allow SMP/E to use its default value.

5. The improved RECEIVE processing of SMP/E prevents SMP/E from receiving a PTF if that PTF has already been accepted and purged from the global zone and SMPPTS data set. To do this, you need to tell SMP/E what zones to check when determining if a PTF has already been accepted.

   During RECEIVE processing, with all of the distribution zones specified in the RECEIVE Zone Group subentry, SMP/E will check each of the zones specified first before receiving a PTF. If that PTF is accepted in any of the specified zones, the PTF will not be received again. The zones may be specified in two ways:

- The RECEIVE Zone Group (RECZGRP) and RECEIVE Exclude Zone Group (RECEXZGRP) subentries in an OPTIONS entry

- Using the ZONEGROUP operand on the RECEIVE command.

The OPTIONS subentries allow you to set a policy and specify the list of zones once. This list is then used for all future RECEIVE processing whenever the OPTIONS entry is active.

6. MSGFILTER(YES) indicates the SMP/E messages written to SMPOUT should be filtered during APPLY, ACCEPT, and RESTORE processing. When SMP/E filters the messages, most non-critical informational messages are not written to SMPOUT. The result is less output to read through if you have to investigate an SMP/E operation. MSGFILTER(NO) is the default.

7. MSGWIDTH(80) will format SMP/E messages to an 80 character width. MSGWIDTH(120) is the default and will format the messages to a 120 character width.

8. You may specify RETRYDDN(ALL) to compress out-of-space libraries and to retry processing after an x37 abend. If you use this option, ensure that the DDDEFs for the target and distribution data sets that will be used for the installation of the product are not pointing to production data sets.

9. SMP/E compacts the SYSMOD (PTF) data within the SMPPTS data set to reduce its size. COMPACT(YES) is the default. If you do not want compaction, add COMPACT(NO) to the OPTIONS entry.

10. The ASMA90 DECK and NOOBJECT options must always be specified. For JES2 modules in FMID HJE77A0 to assemble correctly, options GOFF and LIST(133) are required.

11. Because the ASMA90 option LIST(133) is specified, you must complete either one of the following steps:

- Specify a unique output file for the assembler using the print operand "PRINT(ASMPRINT))" and create a DDDEF in your target and DLIB zones for ASMPRINT specifying SYSOUT; for example

  ```
  ADD DDDEF(ASMPRINT) SYSOUT(*).
  ```

- Or, add the following JCL DD card to the APPLY jobs:

  ```
  //SYSPRINT DD SYSOUT=*,LRECL=133,RECFM=FBA
  ```

12. In the global zone options, the utility entry for IEBCOPY must have the parameter WORK=2M specified. If the parameter is not specified, the SMP/E RECEIVE step will fail for some z/OS V2.2.0 FMIDs.

13. COPY(COPY) indicates that SMP/E will use the utility IEBCOPY.

For more information on SMP/E customization, see *SMP/E for z/OS Reference*.

8.0 Installation instructions for Wave 1 and Wave 2 FMIDs

This chapter describes how to install the Wave 1 and Wave 2 elements in z/OS V2.2.0, including the elements which are installed into the file system.

In z/OS V2.2.0, the CBPDO driving system requirements are as follows:

- For the Wave 1 and Wave 2 elements installation, the driving system must be z/OS V1.13.0 or later, with z/OS UNIX active in full function mode.

- For the Wave 1 and Wave 2 elements installation, the BCP Program Management Binder, SMP/E, and the High Level Assembler from Wave 0 must be available on the driving system.

- For the Wave 1 and Wave 2 elements installation, a Java Runtime Environment using IBM 31-bit SDK for z/OS Java Technology Edition V6.0 or higher (5655-R31), or IBM 64-bit SDK for z/OS Java Technology Edition V6.0 or higher (5655-R32) must be available on the driving system.

- If you plan to install z/OS V2.2.0 into zFS file systems, make sure that zFS is configured and active on the driving system.

This release of z/OS V2.2.0 is installed using the SMP/E RECEIVE, APPLY, and ACCEPT commands. For details on SMP/E, refer to the appropriate SMP/E books.

Notes:

1. To complete the tasks in Wave 1, the following is required:

   a. UID(0) or READ access to the BPX.SUPERUSER resource in the FACILITY class

   b. READ access to the BPX.FILEATTR.APF, BPX.FILEATTR.PROGCTL, and BPX.FILEATTR.SHARELIB resources in the FACILITY class (for example by giving READ access to the BPX.FILEATTR.* generic profile in the FACILITY class).

   c. The following user ID and group IDs need to be defined in your security database:

   Group IDs: uucpg, TTY

   User IDs: uucp

2. This chapter uses sample JCL to illustrate installation steps. You can copy these examples or use the SMP/E dialogs to generate the JCL and SMP/E control statements needed to complete the installation.

Figure 26 lists the required steps to install the Wave 1 and Wave 2 FMIDs. Instructions for each step are provided on the indicated sections.

Check Box	Activity	Section, Step Description	Your Notes
Figure 26 (Page 1 of 5). Checklist for Wave 1 and Wave 2 Installation			
□	Prepare	8.1, "Step 1: Prepare to install Wave 1" on page 73	

Check Box	Activity	Section, Step Description	Your Notes
Figure 26 (Page 2 of 5). Checklist for Wave 1 and Wave 2 Installation			
		8.1.1, "Set up User and Group IDs Required for Installation" on page 74	
		8.1.3, "Driving system with an active root file system" on page 78	
		8.1.4, "Rename user-defined security label beginning with 'SYS' if it exists" on page 80	
☐	Receive the rest of the CBPDO	8.1.5, "RECEIVE the rest of the CBPDO" on page 81	
☐	Run Required and Optional Delete Jobs	8.1.6, "Run required and optional Delete Jobs" on page 81	
☐	Allocate Libraries	8.1.7, "Allocate target and distribution libraries for Wave 1 elements" on page 84	
☐	Create file system directories	8.1.8, "Create file system directories for Wave 1" on page 89	
☐	Define DDDEFs	8.1.9, "Define DDDEFs for Wave 1 Elements" on page 92	
☐		8.1.10.1, "Migration actions" on page 97	
☐	APPLY	8.2, "Step 2: APPLY Wave 1" on page 97	
☐	FMIDs to Install	8.2.1, "Select which z/OS Wave 1 FMIDs to install" on page 98	
☐	Apply Check Wave 1	8.2.2, "Do an SMP/E APPLY CHECK for Wave 1 FMIDs and service" on page 98	
☐	Apply Wave 1	8.2.2.9, "Do an SMP/E APPLY for Wave 1 FMIDs and Service" on page 102	
☐	Prepare	8.3.1, " Prepare to install Wave 2" on page 116	
☐	Run the Optional Delete Jobs	8.3.2, "Run the Optional Delete Jobs for Wave 2" on page 117	
☐	Allocate Libraries	8.3.3, "Allocate Target and Distribution Libraries for Wave 2 Elements" on page 119	
☐	Set up File System Directories	8.3.4, "Set up File System Directories for Wave 2" on page 119	
☐	Define DDDEFs	8.3.5, "Define DDDEFs for Wave 2 Elements" on page 120	

Check Box	Activity	Section, Step Description	Your Notes
Figure 26 (Page 3 of 5). Checklist for Wave 1 and Wave 2 Installation			
☐	Set High Level Assembler Options	8.3.6, "Set High Level Assembler Option for SDSF" on page 121	
☐		8.3.7, "Set High Level Assembler Option for JES2" on page 121	
☐	Apply Check Wave 2	8.3.8.1, "Do an SMP/E APPLY CHECK for Wave 2" on page 121	
☐	Apply Wave 2	8.3.8.2, "Do an SMP/E APPLY for Wave 2" on page 123	
☐	Post-APPLY	8.4, "Step 4: Do Post-APPLY work for Wave 1 and Wave 2" on page 126	
	CNLDEFCL CNLCOMP	8.4.1.1, "Compile MMS Data Sets" on page 127	
	EZAIMSCZ	8.4.1.2, "Run Post-APPLY for Communications Server IP Services" on page 127	
	EOXUNLD	8.4.3.1, "Copy online books and dictionaries" on page 128	
	EOXPLINK	8.4.3.2, "Run Post-APPLY Link-Edit for BookManager READ" on page 129	
	EPW12011	8.4.3.4, "Run Post-APPLY Link-Edit for FFST" on page 130	
	ICQPOST1 ICQPOST2	8.4.3.5, "Run Post-APPLY for TSO/E Information Center Facility (when appropriate)" on page 130	
	IKYCVSAM	8.4.4.1, "Run Cryptographic Services PKI Services job" on page 131	
	CLNCRSZ	8.4.9.1, "Run SMP/E REPORT CROSSZONE (Target Zone)" on page 132	
☐	Customize	8.5, "Step 5: Customize Wave 1 and Wave 2" on page 132	
	DFSMSdss Actions	8.5.1.2, "Complete DFSMSdss actions" on page 132	
	IPL Text	8.5.1.3, "Write new IPL TEXT" on page 133	
	IODF	8.5.1.4, "Create and update your IODF" on page 133	
	PARMLIB	8.5.2, "PARMLIB member considerations" on page 134	

Check Box	Activity	Section, Step Description	Your Notes
		Figure 26 (Page 4 of 5). Checklist for Wave 1 and Wave 2 Installation	
	PROCLIB	8.5.3, "PROCLIB member considerations" on page 151	
	ISPF Setup	8.5.4, "z/OS Version 2 Release 2 ISPF setup considerations" on page 156	
	Element Customize	8.5.5, "Element customization" on page 165	
		8.5.5.1, "RACF security considerations" on page 165	
		8.5.5.2, "z/OS UNIX System Services customization considerations" on page 166	
		8.5.5.3, "Customization considerations for Wave 1A" on page 167	
		8.5.5.4, "Customization considerations for Wave 1B" on page 170	
		8.5.5.5, "Customization considerations for Wave 1C" on page 178	
		8.5.5.6, "Customization considerations for Wave 1D" on page 184	
		8.5.5.7, "Customization considerations for Wave 1E" on page 186	
		8.5.5.8, "Customization considerations for Wave 1F" on page 188	
		8.5.5.9, "Customization considerations for Wave 1G" on page 192	
		8.5.5.10, " Customization for Wave 2" on page 225	
□	Verify Installation	8.6, "Step 6: Verify installation of Wave 0, Wave 1 and Wave 2" on page 226	
	IPL	8.6.1, "IPL the z/OS system" on page 226	
	IVPs	8.6.2, "Verify installation of z/OS Version 2 Release 2 Wave 0, Wave 1 and Wave 2 FMIDs" on page 229	
		8.6.2.1, "IVP jobs for Wave 0" on page 232	
		8.6.3, "IVP jobs for Wave 1A" on page 236	
		8.6.4, "IVP jobs for Wave 1B" on page 236	
		8.6.5, "IVP jobs for Wave 1C" on page 258	
		8.6.6, "IVP jobs for Wave 1D" on page 268	
		8.6.7, "IVP jobs for Wave 1E" on page 268	

Check Box	Activity	Section, Step Description	Your Notes
		8.6.8, "IVP jobs for Wave 1F" on page 271	
		8.6.9, "IVP jobs for Wave 1G" on page 276	
		8.6.10.1, "Run the installation verification procedure for SDSF" on page 279	
□	ACCEPT	8.7, "Step 7: ACCEPT Wave 0, Wave 1 and Wave 2" on page 280	
		8.7.2, "Do an SMP/E ACCEPT CHECK for Wave 0 and Wave 1 FMIDs and Service" on page 281	
		8.7.3, "Do an SMP/E ACCEPT for Wave 0 and Wave 1 FMIDs and service" on page 285	
□	CLEAN UP	8.8, "Step 8: Clean up after Wave 1 and Wave 2" on page 295	

Figure 26 (Page 5 of 5). Checklist for Wave 1 and Wave 2 Installation

8.1 Step 1: Prepare to install Wave 1

This step describes the preparation work required before doing the APPLY. All examples follow the recommended installation sequence of installing the first wave ripples, comprised of the z/OS Version 2 Release 2 FMIDs that are installed into the file system, as well as the z/OS Version 2 Release 2 FMIDs that are not installed into the file system. Service for all other FMIDs that were installed will be upgraded in the same APPLY step using SOURCEID names.

__ Before installing z/OS Version 2 Release 2 Wave 1 FMIDs, complete the following planning
tasks for choosing the software installation method; these are described in *z/OS Planning for Installation*:

- Using CBPDO
- Preparing the driving system for CBPDO
- Preparing the target system

__ Clone your system, as described in 6.1, "Overview for the clone of your system" on page 31.

__ Check the PSP buckets, as described in 3.2, "Preventive Service Planning (PSP)" on page 15.

__ To install Wave 1, the OMVS address space **must be active in full function mode** on the
driving system. For driving system first wave requirements, see *z/OS Planning for Installation*.

__ To install Wave 1, you must install from a user ID that has a UID of 0 or has read access to
the BPX.SUPERUSER resource in the RACF FACILITY class. This user ID must have a home
directory of ('/'), a program name of ('/bin/sh'), and needs read access to FACILITY class
resources BPX.FILEATTR.APF, BPX.FILEATTR.PROGCTL, and BPX.FILEATTR.SHARELIB
(or BPX.FILEATTR.* if you choose to use a generic profile for these resources).

In addition, the installation of this product requires that certain user and group IDs be defined
in your security database. They are Group IDs: TTY and UUCPG and user ID: UUCP. For
details, see 8.1.1, "Set up User and Group IDs Required for Installation" on page 74 and the
following:

- *z/OS UNIX System Services Planning*
- *z/OS Security Server RACF Security Administrator's Guide*
- *z/OS Security Server RACF Command Language Reference*

__ Ensure that your system meets the requirements for hardware, software, and coexistence
considerations described in *z/OS Planning for Installation*.

__ Install the required driving system software listed in *z/OS Planning for Installation*. If you do
not have a system that meets these requirements, do one of the following:

- Consider using a ServerPac.
- Upgrade your existing system.
- Obtain a Customized Offerings Driver (5751-COD).

└──┘

8.1.1 Set up User and Group IDs Required for Installation

To install Wave 1, you must install from a user ID that equals 0 or has read access to the
BPX.SUPERUSER resource in the RACF facility class. This user ID must have a home directory of ('/'), a
program name of ('"/bin/sh"'), and needs read access to facility class resources BPX.FILEATTR.APF,
BPX.FILEATTR.SHARELIB, and BPX.FILEATTR.PROGCTL (or BPX.FILEATTR.* if you choose to use a
generic name for these resources).

In addition, the installation of this product also requires that certain user ID and group IDs be defined in your security database. They are:

Group IDs: UUCPG, TTY

User IDs: UUCP

Note that these user and group IDs were first introduced as part of product customization in OS/390 release 4. **As of z/OS V1.4.0, they are required for the installation of the product.**

We highly recommend that you define them as uppercase IDs for ease of use and manageability.

On most UNIX systems, you use lowercase IDs. With z/OS UNIX, typically, you use uppercase user IDs and group names in your security database. However, if these names conflict with your current naming conventions in your security database at your installation, you can use lowercase, mixed case or alternate names by creating and activating a User ID alias table. This table will associate alias names with uppercase z/OS user ID and group names. Use of this table does degrade performance slightly. The more names that you define, the greater the performance degradation. Hence, installations are encouraged to continue using uppercase-only user IDs and group names in their security databases.

The GID and UID values assigned to these IDs cannot be used by any other ID. They must be unique.

Assigning the same GID to multiple groups is not recommended. If you assign the same GID to multiple groups, control at an individual group level is lost, because the GID is used in z/OS UNIX security checks. RACF groups that have the same GID assignment are treated as a single group during the z/OS UNIX security checks, thus allowing the sharing of resources between groups possibly unintentionally.

Likewise, assigning the same UID to multiple user IDs is also not recommended. The sharing of UIDs allows each user access to all of the resources associated with the other users of that shared UID. The shared access includes not only z/OS UNIX resources such as files, but also includes the possibility that one user could access z/OS resources of the other user that are normally considered to be outside the scope of z/OS UNIX.

The required user ID and group names must then be duplicated in all of your security databases including the same UID and GID values in the OMVS segment.

This will ease the transporting of file system data sets from test systems to production systems. For example, the group name 'TTY' on System 1 **must** have the same GID value on System 2 and System 3.

The following sections describe how to define these IDs to RACF. (If you are using an equivalent security product, refer to that product's documentation.) All the RACF commands are issued by a TSO/E user ID with RACF SPECIAL authority. Three procedures are described:

- If you use uppercase group and user IDs
- If you use mixed-case group and user IDs
- If you have problems using names UUCP, UUCPG and TTY

If you use uppercase group and user IDs:

RACF users can use the sample BPXISEC1 in SAMPLIB or the following commands.

1. Define the TTY group, where 2 is an example of a unique group ID on your system.

   ```
   ADDGROUP TTY OMVS(GID(2))
   ```

   Do not connect users to this group. This is the same group that is specified on the TTYGROUP statement in the BPXPRMxx PARMLIB member on your target system.

2. Define the UUCPG group, where 8765 is an example of a unique group ID on your system.

   ```
   ADDGROUP UUCPG OMVS(GID(8765))
   ```

3. Define the UUCP user ID, where 123456 is an example of a unique account number and 396 is an example of a unique z/OS UNIX UID; do not use UID(0).

   ```
   ADDUSER UUCP DFLTGRP(UUCPG) PASSWORD(xxxxxxx)
   TSO(ACCTNUM(123456) PROC(TSOPROC) SIZE(5000)) OMVS(UID(396)
   HOME('/usr/spool/UUCPpublic') PROGRAM('/bin/sh'))
   ```

Again, note that your security database images MUST be synchronized. This means that the user ID and group names need to have the same unique UID and GID values on all of your driving, test, and production system images.

If synchronizing your databases is not possible for these entries at this time, you will need to continue to run the FOMISCHO job against each of your systems after the installation of this product. However, this is not the recommended method and should be avoided.

If you use mixed-case group and user IDs:

If you need to use mixed-case or lowercase group and user names on your system and the groups (UUCPG, TTY) and user (UUCP) do not conflict with existing names, you can follow the steps for uppercase IDs listed previously.

It is not necessary to add the lowercase or mixed-case names to your alias table, mapping them to uppercase. Using the alias table impacts performance and increases systems management and complexity. When lowercase or mixed-case names are not found in the alias table, or there is no table active, they are folded to uppercase.

If you have problems using names UUCP, UUCPG and TTY:

If names such as UUCP, UUCPG, and TTY are not allowed on your system (or if they conflict with existing names), the following are the RACF commands to define the group and user IDs:

1. To define a group ID instead of 'TTY' group, issue the following command, where 2 is an example of a unique group ID on your system, and XXTTY is replaced by a 1-to 8-character group ID of your choice.

   ```
   ADDGROUP XXTTY OMVS(GID(2))
   ```

Do not connect users to this group. This would be the same group name to be specified in the TTYGROUP statement in the BPXPRMxx PARMLIB member on your target system.

2. To define a group, instead of 'UUCPG' group, issue the following, where `8765` is an example of a unique group ID on your system, and `XXUUCPG` is replaced by a 1-to 8-character group name of your choice.

```
ADDGROUP XXUUCPG OMVS(GID(8765))
```

3. To define a UUCP user ID, issue the following, where `396` is an example of a unique z/OS UNIX UID (do not use an UID of 0) and `XXUUCP` is replaced by a user ID of your choice.

```
ADDUSER XXUUCP DFLTGRP(XXUUCPG) PASSWORD(xxxxxxx)
TSO(ACCTNUM(123456) PROC(TSOPROC) SIZE(5000)) OMVS(UID(396)
HOME'/usr/spool/UUCPpublic')PROGRAM('/bin/sh'))
```

This is a normal user ID that owns all the UUCP files and directories. You should use this user ID when editing configuration files or performing other administrative tasks.

4. Set up a User ID alias table.

Note that using the alias table causes poorer performance and increases systems management costs and complexity.

If you do not have a user ID alias table defined, you will need to create one. This must be done first on your driving system and then on any system image using this product. The recommended pathname of the user ID alias table is /etc/tablename. This fits in with the IBM strategy to place all customized data in the /etc directory. This table is specified by the USERIDALIASTABLE keyword in the BPXPRMxx PARMLIB member.

The user ID name alias table must be protected from update by non-privileged users; therefore, only users with superuser authority should be given update access to it. All users should be given read access to the file.

Your user ID alias table will need to contain your MVS chosen names and the associated required names.

In the User ID alias table, your chosen MVS user ID and group names must be located in columns 1-8 and the associated aliases must be located on the same line in columns 10-17.

- groups
     XXTTY   TTY
     XXUUCPG UUCPG
- user IDs
     XXUUCP   UUCP

5. Activate the user ID alias table.

If you are already using the user ID alias table, new database queries will yield the new alias if the user ID performing the query has read/execute access to the userid/group name alias table. The table is checked every 15 minutes and refreshed if it has been changed. If a change needs to be activated sooner, you can use the SETOMVS or SET OMVS command.

If you are not already using the user ID alias table, you can use the SET OMVS operator command to activate it now (/etc/tablename is the name of your user ID alias table).

```
SET OMVS USERIDALIASTABLE=/etc/tablename
```

You can also use the SETOMVS operator command. See *z/OS MVS System Commands* for a complete description of the SET OMVS and SETOMVS commands.

6. Update your BPXPRMxx PARMLIB member specifying the USERIDALIASTABLE to make this change permanent for your next IPL.

7. Perform these tasks on all of your driving, test, and production system images.

Again, note that these required user ID and group names should be synchronized in all of your security databases including the same UID and GID values in the OMVS segment. This will certainly ease the transporting of file system data sets from test systems to production systems.

If synchronizing your databases is not possible for these entries at this time, you will need to continue to run the FOMISCHO job against each of your systems after the installation of this product. However, this is not the recommended method and should be avoided.

For more details, see the following:

- *z/OS UNIX System Services Planning*.
- *z/OS MVS System Commands*.
- *z/OS Security Server RACF Security Administrator's Guide*.
- *z/OS Security Server RACF Command Language Reference*.

8.1.2 Root file system size changes in z/OS V2.2.0

Refer to 5.4.1, "Total DASD Storage Requirements" on page 28 for the total space required for the root file system. You can also refer to the sample job BPXISHFS provided in prefix.HBB77A0.F6 for the allocation of the root file system. Refer to the sample job BPXISZFS provided in prefix.HBB77A0.F6 for the allocation of the root zFS if you plan to use a root zFS.

If you plan to install z/OS Font Collection element in a separate file system, refer to the sample jobs FNTHFSAL and FNTZFSAL provided in FMID HFNT110 for the space requirements. If you plan to install z/OS Font Collection in the root file system, you must increase the space specified for the root file system in the BPXISZFS or BPXISHFS job to allow for the installation of z/OS Font Collection in the root file system.

8.1.3 Driving system with an active root file system

TO INSTALL WAVE 1, YOU MUST HAVE OMVS ACTIVE IN FULL FUNCTION MODE on your driving system (have a root file system) and complete the following activities:

1. Update the target system's BPXPRMxx PARMLIB member with the following statements:

```
ROOT   FILESYSTEM('root_FS_data_set')
       TYPE(xxx)  MODE(RDWR)

MOUNT  FILESYSTEM('etc_FS_data_set')
       MOUNTPOINT('/etc')
       TYPE(xxx)  MODE(RDWR)
```

Update 'root_FS_data_set' and 'etc_FS_data_set' with the names of your root file system and /etc file system into which you will install z/OS V2.2.0. If you plan to install z/OS V2.2.0 in a root zFS data set and zFS data set mounted at the /etc directory, specify TYPE(ZFS) on the root and mount statements shown above.

The z/OS Font Collection element may be installed in the root file system or installed in a separate file system mounted at the appropriate mountpoint. If you plan to install the z/OS Font Collection, you may decide to allocate a separate file system for z/OS Font Collection due to the amount of space required in the file system. If you plan to install z/OS Font Collection in a separate file system, ensure that the BPXPRMxx PARMLIB member is updated to add a mount statement for the file system in which z/OS Font Collection is being installed.

As of z/OS V2.2.0, there are 4 new elements added to the product. They are IBM HTTP Server - Powered by Apache, IBM Knowledge Center for z/OS, OpenSSH for z/OS, and IBM z/OS Management Facility. These elements are installed into the root file system.

If you plan to install z/OS V2.2.0 into HFS file systems, specify TYPE(HFS) on the root and mount statements shown above.

2. Ensure that your target root file system data set has been increased prior to installing Wave 1 elements. Refer to 5.4.1, "Total DASD Storage Requirements" on page 28 for the total space required for the root file system.

   If you plan to install the z/OS Font Collection element in a separate file system, not the root file system, ensure that the separate file system has been allocated and mounted at the appropriate mountpoint on the driving system before installing z/OS Font Collection in Wave 1G.

3. If you have /etc and /var as symbolic links, run BPXISETD to convert the /etc and /var symbolic links to directories (see 8.6.1.2, "BPXISETS and BPXISETD" on page 227). Ensure your target system's /etc file system data set is mounted to the driving system. You may choose to have /var mounted on your driving system.

4. Install and customize the z/OS V2.2.0 Wave 1 and Wave 2 elements.

5. Run BPXISETS to convert the /etc and /var directories to a symbolic link (see 8.6.1.2, "BPXISETS and BPXISETD" on page 227).

6. IPL the target system using the BPXPRMxx parmlib tailored in step 1. z/OS UNIX will come up automatically with the Wave 1 root file system and /etc file system. If you install z/OS V2.2.0 into zFS file systems, ensure you have activated zFS on the target system before you IPL with the zFS file systems. For information on zFS considerations, see *z/OS Distributed File Service zFS Administration*.

7. Run the Wave 1 and Wave 2 IVPs.

8.1.4 Rename user-defined security label beginning with 'SYS' if it exists

Do not have any user-defined security labels that begin with 'SYS'. If you do, you must first rename it and then update every profile that uses this security label to specify the new user defined security label name.

Note: SYSHIGH, SYSLOW, SYSNONE, and SYSMULTI are special RACF-generated security labels that are not to be renamed.

8.1.4.1 Distributed File Service installation considerations

The Distributed File Service is a base element of z/OS which provides different types of file or print services:

1. SMB File/Print Serving Support

   The SMB file/print serving support provides distributed file/print service for Windows workstations. More information about SMB support can be found in *z/OS Distributed File Service SMB Administration*.

2. z/OS File System (zFS) Support

   zFS is a z/OS UNIX file system that can be used in addition to HFS and other file system types. zFS file systems can be mounted for local access by z/OS UNIX applications or from Windows workstations using the SMB file serving support. More information about zFS support can be found in *z/OS Distributed File Service zFS Administration*.

The Distributed File Service requires a z/OS UNIX environment. Client and server communications require a Transmission Control Protocol/Internet Protocol (TCP/IP) such as Communications Server IP Services. A security facility, such as RACF, is also required.

If you plan to use the SMB password encryption support and want to exploit the hardware encryption capability available through the Integrated Cryptographic Service Facility (ICSF) with the Cryptographic Coprocessor Feature, be sure to follow the instructions in 8.5.5.6.1, "Cryptographic Services OCSF customization considerations" on page 185.

If you plan to use the SMB print serving capabilities for shared printers, you must also install and configure Infoprint Server or an equivalent product. Infoprint Server supplies DLL resident routines used by the DFS server to route SMB print requests to JES queues for subsequent processing by InfoPrint Server. See 8.5.5.9.3, "Infoprint Server Customization Considerations" on page 221 for more information on Infoprint Server.

8.1.5 RECEIVE the rest of the CBPDO

RECEIVE FMIDs and service for other z/OS Version 2 Release 2 elements (excluding the Wave 0 elements since they have already been received). To do this, run the RCVPDO job and specify EXCLUDE(HMP1J00, JMP1J11, HMQ4160, HPM77A0). For more information, refer to *MVS CBPDO Memo to User Extension* included with the CBPDO.

The CBPDO contains all non-integrated PTFs for every z/OS Version 2 Release 2 FMID. (Cumulative service is included in CBPDO orders, so there is no separate cumulative service tape.) As a result, maintenance may be delivered that is already APPLYed and ACCEPTed. If you did not add the ZOSOPT option, as shown in Figure 25 on page 65, a mass RECEIVE will re-RECEIVE this service and will require a large SMPPTS data set. You must actually USE the option in order to avoid re-RECEIVING the service. In addition, the OS/390 R5 or later level of SMP/E will compact the data within the SMPPTS during RECEIVE processing, thus saving space.

8.1.6 Run required and optional Delete Jobs

> #### Special Notes for All Delete Jobs
>
> **IBM requires running the delete jobs according to the ripple order, not deleting all changing elements at once.** For example, if you are installing Wave 1A, delete only the Wave 1A elements and continue with the APPLY of these elements. Once the Wave 1A installation is complete continue with the installation of the Wave 1B elements. For the ripple order, see 6.5.3, "Elements in each Wave, Ripple, and FMIDSET" on page 35. **Failure to follow these install procedures will result in APPLY errors in Waves 1A and 1B (BCP and DFSMS elements).**
>
> **Note:** The following sections describing the delete jobs are in alphabetical order, **NOT** ripple order.

If elements are withdrawn and there are no superseding functions, normal SMP/E APPLY/ACCEPT processing will not delete the obsolete elements. In this case, you must run a delete job to remove them. A sample job, CLNOS390, is provided in FMID HBB77A0 to delete the withdrawn elements from z/OS; see 8.1.6.1, "Run the required Delete Job to remove obsolete elements" on page 82 for more information.

Normal SMP/E APPLY/ACCEPT processing of SMP/E base functions, such as BCP, deletes the previous releases (if the optional "dummy" function delete was not performed). However, there are times when running the optional delete job is recommended. Run the optional delete job in order to:

- Decrease the installation running time for some elements.
- Decrease the amount of storage required by SMP/E for APPLY and ACCEPT processing. If your install fails for storage reasons, and you have not run the optional delete job for the elements in the wave or ripples, you should run the optional delete job to reduce SMP/E's storage requirements.
- Delete the prior levels of an element if the current FMID does not delete them during the installation.
- Simplify the installation if the new FMID requires a library restructure. Refer to *z/OS V2R2 Migration, GA32-0889* for further information on library restructuring.

8.1.6.1 Run the required Delete Job to remove obsolete elements

Sample JCL and instructions are provided in member CLNOS390 of SMPTLIB, 'prefix.HBB77A0.F6' to remove the withdrawn elements that are not part of z/OS Version 2 Release 2.

Note: Elements have been withdrawn in z/OS V2.1.0. As such, you must run the sample job CLNOS390 to remove the obsolete elements if you are migrating from a z/OS release prior to z/OS V2.1.0. See *z/OS V2R2 Migration* for the obsolete libraries, DDDEFs and paths.

Figure 27. Withdrawn Elements from z/OS

Element Name	Withdrawn In
DCE Base Services	z/OS Release 13
Integrated Security Services DCE	z/OS Release 13
z/OS UNIX System Services Connection Manager	z/OS Release 13
z/OS UNIX System Services Process Manager	z/OS Release 13
z/OS UNIX System Services Integrated Call Level Interface (ICLI)	z/OS Version 2 Release 1
BookManager/BUILD & NLS	z/OS Version 2 Release 2

As of z/OS V2.2.0, BookManager/Build is withdrawn and it will be deleted by the CLNOS390 job.

To run the job, perform the following functions:

- Copy the sample job from member CLNOS390 of the SMPTLIB, 'prefix.HBB77A0.F6'. The SMPTLIB is created during RECEIVE processing. Its high-level qualifier (prefix) is the value specified as the DSPREFIX in the SMPTLIB DDDEF or the OPTIONS entry of the global zone.
- Run the sample job after modifying it to meet your system's requirements.
- During the RECEIVE of DELZOSn, you will receive the message `GIM39701W SYSMOD DELZOSn HAS NO ELEMENTS.`, where DELZOSn is the dummy function delete sysmods. This is acceptable.

After completing the dummy function delete and installing z/OS V2.2.0, you must do the following:

- Remove the unused DDDEFs by running a UCLIN job.
- Run a cleanup job to remove the unused data sets.
- Remove obsolete paths from the file system.

See *z/OS V2R2 Migration* for more information on the obsolete data sets and the paths.

8.1.6.2 Run the optional Delete Job for BCP before Wave 1A

Sample JCL that can be used to delete BCP functions is provided in member CLNDELFN of the SMPTLIB, 'prefix.HBB77A0.F6'. This sample JCL contains a dummy function, DM1FMID, that can be used to delete functions replaced by the z/OS V2.2.0 level of BCP. This will delete prior levels of the BCP (including National Language features), as well as the z/OS UNIX Kernel. During SMP/E processing, the functions deleted by DM1FMID (and all dependent functions) are removed from the target and distribution zones.

The sample job does not include previous versions of all exclusive z/OS Version 2 Release 2 elements. Previous versions of exclusive z/OS elements are deleted when their z/OS levels are applied.

To run the job:

1. Copy the delete job from member CLNDELFN of the SMPTLIB, 'prefix.HBB77A0.F6'. The SMPTLIB is created during RECEIVE processing. Its high-level qualifier (prefix) is the value specified as the DSPREFIX in the SMPTLIB DDDEF or the OPTIONS entry of the global zone.

2. Run the sample job after modifying it to meet your system's requirements. The REDO option is specified in the sample job in case you have run a version of this job to delete a prior level of BCP.

3. During the RECEIVE of DM1FMID, you will receive the message "GIM39701W SYSMOD DM1FMID HAS NO ELEMENTS." This is acceptable.

4. During the APPLY of DM1FMID, you will receive these messages from SMP/E and the binder:

   GIM23903 GIM50601 IEW2400I IEW2648E IEW2677S IEW2230S
   IEW2454W IEW2470E IEW2650I

These messages are expected when applying this dummy function, which leaves modules in a non-executable condition. These messages can be ignored because APPLYing the BCP function will rebuild the modules properly.

Successful processing of DM1FMID returns a condition code of 4.

8.1.6.3 Run the optional Delete Job for DFSMS after Wave 1A but before Wave 1B

Sample JCL that can be used to delete DFSMS functions is provided in member DFPCLNUP of the SMPTLIB, 'prefix.HDZ2220.F1'. This sample JCL contains a dummy function, DEL4SMS, that can be used to delete functions replaced by the current level of DFSMS. This will delete prior levels of the DFSMS (including National Language features). During SMP/E processing, the functions deleted by DEL4SMS (and all dependent functions) are removed from the target and distribution zones. Note that if you plan to run the sample job to delete DFSMS, ensure that the job is run after Wave 1A. Otherwise, errors will occur during Wave 1A APPLY processing because BCP and DFSMS elements share some load modules.

To run the job:

1. Copy the delete job from member DFPCLNUP of the SMPTLIB, 'prefix.HDZ2220.F1'. The SMPTLIB is created during RECEIVE processing. Its high-level qualifier (prefix) is the value specified as the DSPREFIX in the SMPTLIB DDDEF or the OPTIONS entry of the global zone.

2. Run the sample job after modifying it to meet your system's requirements.

3. During the RECEIVE of DEL4SMS, you will receive the message `GIM39701W SYSMOD DEL4SMS HAS NO ELEMENTS`. This is acceptable.

Successful processing of DEL4SMS returns a condition code of 4.

8.1.6.4 Run the optional Delete Job for other elements

Before installing FMIDs associated with a ripple you might consider dummy function deleting prior levels of elements to decrease installation runtime. You can create a dummy function delete job that is modeled after Figure 18 on page 53 to delete other elements. For example, if you are renaming any libraries without changing the DDDEF name, you should perform the optional delete job.

8.1.7 Allocate target and distribution libraries for Wave 1 elements

Since it is expected that you are installing on a clone of your system, as stated in 6.1, "Overview for the clone of your system" on page 31, many data sets should already exist. Verify your target and distribution libraries contain enough space as described in Appendix C, "DASD Storage Requirements Tables" on page 331. If needed, sample jobs to allocate the target and distribution libraries for some elements have been provided.

You can access the sample installation jobs by performing an SMP/E RECEIVE and then copying the jobs from the relfiles to a work data set for editing and submission. See Figure 28 on page 85 Wave 1 Allocate Sample Installation Jobs to find the appropriate relfile data sets.

Copy the sample jobs to a work data set and customize them.

The samples specify the storage requirements using average block lengths. BLKSIZE=0 indicates that system-determined block sizes are being used. For example, the sizes might look like this:

```
SPACE=(8800,(135,27,6)),
DCB=(RECFM=FB,LRECL=80,BLKSIZE=0).
```

Do not confuse the SPACE=8800 (average block length) parameter with the BLKSIZE=0 (block size) parameter. If you would like to change the block size to something other than the system-determined block size, you can change the BLKSIZE parameter. Do not change the SPACE parameter. You can use the storage allocations as they are, or convert them to cylinder or track allocations.

If these elements have been installed previously, the JCL for the jobs needs to be modified to remove or comment out the DD statements for the pre-existing libraries, or the job will fail. See Appendix C, "DASD Storage Requirements Tables" on page 331 for information on new libraries introduced in this release.

For specific instructions to customize, see the comments in the sample jobs. See *z/OS MVS JCL Reference* for more information on modifying JCL.

Run these jobs after the elements have been RECEIVEd.

After the jobs are submitted, you should get a condition code of 0. Check the allocation/deallocation messages to be certain the data sets were allocated and cataloged properly.

Figure 28 on page 85 lists the locations of the sample jobs. Be sure to read all of the notes following the table before running the sample jobs. The notes shown in the table are applicable to the elements shown

in the rows above each note to clarify it. The table is in alphabetical order based on the **Description** column. The following fields are represented in this table:

Job Name   It contains the name of the sample job to be run.
Job Type   This field indicates the type of job that is to be run.
Description It contains the element name for which the job is to be run.
RELFILE   This field identifies the location of the sample job.

Figure 28 (Page 1 of 3). Wave 1 Allocate Sample Installation Jobs			
Job Name	**Job Type**	**Description**	**RELFILE**
EAGKALC	ALLOCATE	Alternate Library for REXX	'prefix.HWJ9143.F1'
BPXISALC	ALLOCATE	BCP (Selected BCP component libraries only)	'prefix.HBB77A0.F6'
Note: See note 4 on page 88.			
CUNJUALC	ALLOCATE	BCP Base-Support for Unicode	'prefix.HUN77A0.F1'
Note: See note 11 on page 88.			
BDTJALC	ALLOCATE	BDT	'prefix.HBD6602.F1'
EOYALLC2 EPHALOC1	ALLOCATE	BookManager READ (via PTF UQ99324)	'prefix.HBKM300.F4'
Note: See note 5 on page 88.			
CTVJALL	ALLOCATE	C/C++ Host Performance Analyzer	'prefix.H24P111.F1'
CFZALLOC	ALLOCATE	Common Information Model (CIM)	'prefix.HPG77A0.F1'
EZACSALC	ALLOCATE	Communications Server	'prefix.HIP6220.F1'
CSFALLOC	ALLOCATE	Cryptographic Services ICSF	'prefix.HCR77B0.F1'
Note: See note 6 on page 88.			
CDSISALC	ALLOCATE	Cryptographic Services OCSF	'prefix.HCRY740.F1'
IKYALLOC	ALLOCATE	Cryptographic Services PKI Services	'prefix.HKY77A0.F1'
GSKISALC	ALLOCATE	Cryptographic Services System SSL	'prefix.HCPT420.F1'
DFPALLOC	ALLOCATE	DFSMS	'prefix.HDZ2220.F1'
DGTALLOC	ALLOCATE	DFSMS Japanese	'prefix.JDZ222K.F2'
Note: See note 8 on page 88.			
ICEALLOC	ALLOCATE	DFSORT	'prefix.HSM1M00.F1'

Figure 28 (Page 2 of 3). Wave 1 Allocate Sample Installation Jobs

Job Name	Job Type	Description	RELFILE
IOEISALC	ALLOCATE	Distributed File Service	'prefix.H0H2410.F1'
EPW12003	ALLOCATE	FFST	'prefix.HFST101.F4'
IEFGDDMA	ALLOCATE	GDDM (includes GDDM-PGF)	'prefix.HBB77A0.F6'
CBDSALLC	ALLOCATE	HCD	'prefix.HCS77A0.F2'
EEQHCALC	ALLOCATE	HCM	'prefix.HCM1F10.F1'
ASMWTALC	ALLOCATE	HLASM Toolkit	'prefix.JMQ416A.F1'
HAPALLO3	ALLOCATE	IBM HTTP Server - Powered by Apache	'prefix.HHAP90P.F1'
Note: See note 14 on page 89.			
HKC00ALC	ALLOCATE	IBM Knowledge Center for z/OS	'prefix.HKCZ100.F2'
Note: See note 14 on page 89.			
GLDISALC	ALLOCATE	IBM Tivoli Directory Server for z/OS Base	'prefix.HRSL420.F1'
IZUISALC	ALLOCATE	IBM z/OS Management Facility	'prefix.HSMA220.F2'
Note: See note 14 on page 89.			
ICKALLOC	ALLOCATE	ICKDSF	'prefix.EDU1H01.F3'
Note: See note 10 on page 88.			
ICKALLKG	ALLOCATE	ICKDSF Japanese	'prefix.FDU1H09.F2'
AOPALLOC	ALLOCATE	Infoprint Server	'prefix.HOPI7A0.F1'
ITYALLOC	ALLOCATE	Integrated Security Services Enterprise Identity Mapping	'prefix.HIT7750.F3'
EUVFSALC	ALLOCATE	Integrated Security Services Network Authentication Service	'prefix.HSWK420.F1'
ISPALLOC	ALLOCATE	ISPF Base, Client Server, SCLM & English	'prefix.HIF7P02.F1'
ISPALDEU	ALLOCATE	ISPF German	'prefix.JIF7P15.F1'
ISPALJPN	ALLOCATE	ISPF Japanese	'prefix.JIF7P14.F1'
ISPALDES	ALLOCATE	ISPF Swiss German	'prefix.JIF7P11.F1'
ISPALENP	ALLOCATE	ISPF Upper Case English	'prefix.JIF7P16.F1'
CEEISALC	ALLOCATE	Language Environment	'prefix.HLE77A0.F1'
EPH00ALC	ALLOCATE	Library Server	'prefix.HBKQ400.F1'

Figure 28 (Page 3 of 3). Wave 1 Allocate Sample Installation Jobs			
Job Name	**Job Type**	**Description**	**RELFILE**
CCRALLOC	ALLOCATE	Metal C Runtime Library	'prefix.HSD7780.F4'
GFSALLOC	ALLOCATE	Network File System	'prefix.HDZ222N.F1'
IOAALLOC	ALLOCATE	OSA Support Facility	'prefix.H0GI400.F1'
Note: See note 7 on page 88.			
ERB00ALC	ALLOCATE	RMF (Base and Japanese)	'prefix.HRM77A0.F3'
CLB3JALL	ALLOCATE	Runtime Library Extensions	'prefix.HTV77A0.F1'
IRRALLOC	ALLOCATE	Security Server RACF	'prefix.HRF77A0.F1'
IKJBALL	ALLOCATE	TSO/E	'prefix.HTE77A0.F2'
CCNJALOC	ALLOCATE	XL C/C++	'prefix.HLB77A0.F1'
Note: See note 13 on page 88.			
FNTALLOC	ALLOCATE	z/OS Font Collection	'prefix.HFNT110.F1'

Notes:

1. The 'prefix' is the high-level qualifier specified as the DSPREFIX value in the SMPTLIB DDDEF or the OPTIONS entry of the global zone.

2. For all elements shown in Figure 28 on page 85, if you specify a volume for any data set in the allocate job, you must also specify the same volume in the corresponding DDDEF entry in the DDDEF job (see Figure 30 on page 93).

3. The following Wave 1 elements are documented in this Program Directory but do not supply sample allocate jobs:

   Most BCP components and BCP Japanese feature
   Communications Server for z/OS SNA Services
   Communications Server Security Level 3
   Communications Server X11R4 XWindows
   EREP
   ESCON Director Support
   HCD Japanese
   IBM Tivoli Directory Server for z/OS Japanese
   Integrated Security Services OCEP
   IOCP
   MICR/OCR
   OpenSSH for z/OS
   TIOC
   z/OS File System
   z/OS File System Japanese
   z/OS Security Level 3
   3270 PC File Transfer Program

4. For BCP, if BCP Japanese and/or Simplified Chinese FMIDs are ordered, ensure that TSO/E Japanese and/or Simplified Chinese libraries are allocated by running IKJBALL and that BCP National Language features installed into the shared libraries with TSO/E National Language features.

5. For BookManager READ, most of the data sets required for installation are allocated by EOYALLC2.

   Change "=SYS1" to the appropriate high-level qualifier ("SYS1" is the default) on the exec steps if you choose not to use the default. If you change the high-level qualifier, be sure to include the equal sign ("=") at the beginning of the high level qualifier. If you choose to use a middle level qualifier, you should change "=SYS1" to "=SYS1.MLQ", where MLQ is the appropriate middle-level qualifier.

   For BookManager READ, PTF UQ99324 creates both EPHALOC1, an allocate job which defines the datasets, and EPHDDDF, a DDDEF job which defines DDDEFs, to support the DBCS Print Utility.

6. The Cryptographic Services ICSF libraries contain parts and aliases which provide for successful link edit of Cryptographic Services ICSF load modules for customers who do not have CICS® installed. Since these libraries contain aliases provided by CICS, customers who install both Cryptographic Services ICSF and CICS should install the products into separate target and distribution data sets.

7. OSA/SF ships parts and aliases which provide for successful link edit of the element load modules for customers who do not have NetView® and/or TCP/IP installed. Since the OSA/SF data sets contain aliases provided by NetView and/or TCP/IP, customers who install OSA/SF and NetView and/or TCP/IP should ensure the data sets from OSA/SF do not consolidate with NetView and/or TCP/IP data sets.

8. Special Note for DFSMS Japanese

   DFSMS Japanese and ICKDSF Japanese both share library DGTPKLB. If you ordered both of these, be sure to execute ICKALLKG before attempting to install DFSMS Japanese. Appendix C, "DASD Storage Requirements Tables" on page 331 describes the space requirements for DGTPKLB.

9. The following element languages do not supply sample allocate jobs. Their allocation statements are in the base FMID jobs, and need to be uncommented to become active.

   • Distributed File Service Japanese
   • Infoprint Server Japanese
   • TSO/E German, Japanese, and Simplified Chinese

10. Sample job, ICKALLOC, incorrectly allocates sys1.linklib and sys1.samplib. These data sets already exist.

11. As of z/OS V2.1.0, the sizes of the SCUNTBL and ACUNTBL libraries required for installing the Unicode element have significantly increased since the previous z/OS release. Before installing the Unicode element, review the amount of space required for the SCUNTBL and ACUNTBL data sets in Appendix C, "DASD Storage Requirements Tables". Run the sample job CUNJUALC to re-allocate the SCUNTBL and ACUNTBL data sets before installing Unicode if necessary; the job has been updated to increase the sizes of the SCUNTBL and ACUNTBL data sets as of z/OS V2.1.0.

12. As of z/OS V2.1.0, the Library Server element introduced new libraries AEPHPLIB and AEPHTAB. You must run sample job EPH00ALC to allocate the new libraries before installing Library Server.

13. As of z/OS V2.2.0, the XL C/C++ element added new target data sets SCCNM10, SCCNM11, SCCNN10, SCCNN11; and dlib data sets ACCNSR2, ACCNSR3, ACCNSR4, ACCNSR5 which were

introduced in XL C/C++ 2.1.1 Web deliverable (availiable in February 2015). You must run sample job CCNJALOC to allocate the new libraries before installing XL C/C++.

14. As of z/OS V2.2.0, there are four new elements added in the release: IBM HTTP Server - Powered by Apache, IBM Knowledge Center for z/OS, IBM z/OS Management Facility and OpenSSH for z/OS. You must run these elements' sample jobs HAPALLO3, HKC00ALC, IZUISALC documented in Figure 28 on page 85 to allocate the new libraries before installing these elements. OpenSSH for z/OS does not require a new library because it installs into existing z/OS libraries and file system path.

8.1.8 Create file system directories for Wave 1

At this time, you need to create the file system directories that are required to install the Wave 1 elements if the directories do not already exist in the target file system. For the files that install into the file system, the target libraries are directories. These directories are created by running the sample jobs listed in Figure 29. For new directories introduced in the current release, see C.6, "File System for z/OS V2.2.0" on page 377. These jobs may also create or delete symbolic links in some cases. Ensure that you run the BPXISMKD job before running the rest of the sample jobs. It is important that you refer to 6.2, "Step 1: Separating File System Data Sets for z/OS V2.2.0" on page 31 prior to running the BPXISMKD job.

Note: It is assumed that you have cloned the entire set of file system data sets as described in 6.3, "Step 2: Cloning File System Data Sets" on page 32 and that the clone is your target system. Before running the mkdir jobs, ensure the cloned file system data sets mounted on the /tmp and /dev directories are unmounted. After unmounting, verify these directories are empty. Also, ensure that the clone of /etc is mounted, so that necessary /etc changes can be made by the mkdir jobs. If /etc and /var are symbolic links, run BPXISETD to convert them back to a directory to mount them (see 8.6.1.2, "BPXISETS and BPXISETD" on page 227).

The table is in alphabetical order based on the **Description** column. The following fields are represented in this table:

Job Name   It contains the name of the sample job to be run.
Job Type   This field indicates the type of job that is to be run.
Description   It contains the element name for which the job is to be run.
RELFILE   This field identifies the location of the sample job.

Job Name	Job Type	Description	RELFILE
BPXISMKD	MKDIR	BCP	'prefix.HBB77A0.F6'
CPOISMKD	MKDIR	BCP - Capacity Provisioning	'prefix.HPV77A0.F1'
CFZISMKD	MKDIR	Common Information Model (CIM)	'prefix.HPG77A0.F1'
EZAISMKD	MKDIR	Communications Server IP	'prefix.HIP6220.F1'
CSFISMKD	MKDIR	Cryptographic Services ICSF	'prefix.HCR77B0.F1'
CDSISMKD	MKDIR	Cryptographic Services OCSF	'prefix.HCRY740.F1'

Figure 29 (Page 1 of 2). Wave 1 Define Directories Sample Installation Jobs

Figure 29 (Page 2 of 2). Wave 1 Define Directories Sample Installation Jobs

Job Name	Job Type	Description	RELFILE
IKYISMKD	MKDIR	Cryptographic Services PKI Services	'prefix.HKY77A0.F1'
GSKISMKD	MKDIR	Cryptographic Services System SSL	'prefix.HCPT420.F1'
DFPISMKD	MKDIR	DFSMS HFS	'prefix.HDZ2220.F1'
IOEISMKD	MKDIR	Distributed File Service	'prefix.H0H2410.F1'
CBDISMKD	MKDIR	HCD	'prefix.HCS77A0.F2'
HAPISMK3	MKDIR	IBM HTTP Server - Powered by Apache	'prefix.HHAP90P.F1'
Note: See note 8 on page 92.			
HKCISMKD	MKDIR	IBM Knowledge Center for z/OS	'prefix.HKCZ100.F2'
Note: See note 8 on page 92.			
GLDISMKD	MKDIR	IBM Tivoli Directory Server for z/OS Base	'prefix.HRSL420.F1'
IZUISMKD	MKDIR	IBM z/OS Management Facility	'prefix.HSMA220.F2'
Note: See note 8 on page 92.			
AOPISMKD	MKDIR	Infoprint Server	'prefix.HOPI7A0.F1'
ITYISMKD	MKDIR	Integrated Security Services Enterprise Identity Mapping	'prefix.HIT7750.F3'
EUVFSMKD	MKDIR	Integrated Security Services Network Authentication Service	'prefix.HSWK420.F1'
ISPISMKD	MKDIR	ISPF	'prefix.HIF7P02.F1'
CEEISMKD	MKDIR	Language Environment	'prefix.HLE77A0.F1'
EPHISMKD	MKDIR	Library Server	'prefix.HBKQ400.F1'
GFSISMKD	MKDIR	Network File System	'prefix.HDZ222N.F1'
FOTISMKD	MKDIR	OpenSSH for z/OS	'prefix.HOS2220.F1'
Note: See note 8 on page 92.			
ERBISMKD	MKDIR	RMF™	'prefix.HRM77A0.F3'
CLBISMKD	MKDIR	Runtime Library Extensions	'prefix.HTV77A0.F1
CCNISMKD	MKDIR	XL C/C++	'prefix.HLB77A0.F1'
FNTISMKD	MKDIR	z/OS Font Collection	'prefix.HFNT110.F1'

Notes:

1. The 'prefix' is the high-level qualifier value specified as the DSPREFIX value in the SMPTLIB DDDEF or the OPTIONS entry of the global zone.

2. Be careful when modifying the samples because path names are case sensitive.

3. After the jobs are submitted, you will get a return code of 0. Check the held output to ensure the directories and symbolic links were created properly.

   Return values, such as RC, RETVAL, ERRNO, and ERRNOJR, are documented in *z/OS UNIX System Services Messages and Codes*.

   If any of the jobs end with RC=0 but get the following message, it is acceptable. These messages are produced while deleting symlinks known to be obsolete, usually during migration from a previous release.

   ```
   Deleted obsolete symlink {symlinkname}
                            {sympath1}
   ```

   If any of the jobs end with RC=0 or RC=4 but get any of the following messages, it is acceptable. These messages are produced while deleting symlinks known to be obsolete, usually during migration from a previous release.

   ```
   Unlink not performed {symlinkname}
   Symlink exists, but does not name the obsolete path.
   existing link:   {sympath1}
   obsolete link:   {sympath2}

   Unlink not performed.
   Linkname {symlinkname} exists,
           but does not have the obsolete path
   existing path: {sympath1}
   obsolete path: {sympath2}

   Verified that the following symlinks
   do not point to paths known to be obsolete.
   No action take.
   Linkname {symlinkname}
   existing path: {sympath1}
   obsolete path: {sympath2}
   ```

   If you recognize the existing path as one that was modified manually, then the symlink should be deleted manually before attempting to SMP/E APPLY the product. ("Modified Manually" refers to actions outside the documented install process; it does not refer to normal configuration/customization tasks.)

   If you do not recognize the existing pathname, then it is probably already correct; the message can be ignored. Closer examination of the symlink is only necessary if the APPLY fails with the following message:

```
LINK-EDIT PROCESSING FOR SYSMOD {} FAILED
IEW2820E DF30 EXISTING SYMBOLIC LINK
  { symlinkname }
DOES NOT MATCH SYMPATH.
```

If any of the jobs end with RC=12, due to the following message, this indicates a symlink an element expected was not created.

```
The symlink defined by {pathname}
already exists, but names a different file.
```

This can be caused by:

- modification of the symlink by the customer, or
- replacement of the symlink by a file or directory by the customer.

    Check for documented migration actions, and clean up any customer modified symlinks before resubmitting the job. If the symlink or file is for customer modified data, verify the accuracy of the modified symlink against the shipped one. Often the shipped symlink points to a default file in a read-only usr/lpp/ directory, while the customer modified one will not.

4. z/OS File System and z/OS File System Japanese use directories created by Distributed File System (DFS), and does not supply a MKDIR job.

5. Integrated Security Services OCEP (HRO7740), which is setup by Cryptographic Services OCSF, does not supply a MKDIR job.

6. Dependent FMIDs that are installed into the file system and not listed in Figure 29 on page 89 use directories created by their base FMIDs.

7. If you plan to install z/OS Font Collection in a separate file system, allocate and mount the file system to the driving system before running the sample job FNTISMKD to define the directories. Sample job FNTZFSAL is provided to allocate a zFS and sample job FNTHFSAL is provided to allocate an HFS for z/OS Font Collection. The jobs reside in 'prefix.HFNT110.F1' after SMP/E RECEIVE processing is complete. Refer to the sample jobs for information on allocating and mounting a file system for z/OS Font Collection.

8. As of z/OS V2.2.0, there are four new elements, IBM HTTP Server - Powered by Apache, IBM Knowledge Center for z/OS, IBM z/OS Management Facility and OpenSSH for z/OS that are installed into the file system. You must run their sample MKDIR jobs, HAPISMK3, HKCISMKD, IZUISMKD and FOTISMKD before installing these elements.

8.1.9 Define DDDEFs for Wave 1 Elements

Verify your target and distribution libraries have the DDDEF entries listed in Figure 85 on page 338 and Figure 86 on page 358 for z/OS V2.2.0. Sample jobs to define DDDEF entries for most elements have been provided.

Some of the elements in Wave 1 share DDDEFs. See the notes following Figure 30 on page 93 for information about elements that share DDDEFs.

Copy the sample jobs to a work data set and customize them. DDDEFs must be defined in the target and distribution zones. For specific instructions to customize, see the comments in the sample jobs.

Run the jobs after the elements have been RECEIVEd.

If any of the DDDEF entries already exist, you will get a non-zero condition code. Check the output to see what caused the non-zero condition code.

Figure 30 lists the locations of the sample jobs. Be sure to read all the notes following the table before running the sample jobs.

In the sample allocate jobs, you may notice only one variable for the distribution volume. If you want to add more variables, you may do so.

Figure 30 lists entries in alphabetical order, based on the **Description** column. The following fields are represented.

Job Name   It contains the name of the sample job to be run.
Job Type   This field indicates the type of job that is to be run.
Description   It contains the element name for which the job is to be run.
RELFILE   This field contains the location of the sample job.

Job Name	Job Type	Description	RELFILE

Figure 30 (Page 1 of 3). Wave 1 DDDEF Sample Installation Jobs

Job Name	Job Type	Description	RELFILE
EAGKDDEF	DDDEF	Alternate Library for REXX	'prefix.HWJ9143.F1'
BPXISDDD	DDDEF	BCP (Selected BCP component libraries only)	'prefix.HBB77A0.F6'
Note: See note 6 on page 96.			
CUNJUDDF	DDDEF	BCP Base-Support for Unicode	'prefix.HUN77A0.F1'
CPODDDEF	DDDEF	BCP - Capacity Provisioning	'prefix.HPV77A0.F1'
BDTJDDEF	DDDEF	BDT	'prefix.HBD6602.F1'
EOXDDDEF EPHDDDF	DDDEF	BookManager READ (via PTF UQ99324)	'prefix.HBKM300.F4'
CTVJDDF	DDDEF	C/C++ Host Performance Analyzer	'prefix.H24P111.F1'
CFZDDDEF	DDDEF	Common Information Model (CIM)	'prefix.HPG77A0.F1'
EZACSDDF	DDDEF	Communications Server	'prefix.HIP6220.F1'
CSFDDDEF	DDDEF	Cryptographic Services ICSF	'prefix.HCR77B0.F1'
Note: See note 7 on page 96.			

Figure 30 (Page 2 of 3). Wave 1 DDDEF Sample Installation Jobs			
Job Name	**Job Type**	**Description**	**RELFILE**
IKYDDDEF	DDDEF	Cryptographic Services PKI Services	'prefix.HKY77A0.F1'
CDSISDDD	DDDEF	Cryptographic Services OCSF	'prefix.HCRY740.F1'
GSKISDDD	DDDEF	Cryptographic Services System SSL	'prefix.HCPT420.F1'
DFPDDDEF	DDDEF	DFSMS	'prefix.HDZ2220.F1'
DGTDDDEF	DDDEF	DFSMS Japanese	'prefix.JDZ222K.F2'
Note: See note 8 on page 96.			
ICEDDDEF	DDDEF	DFSORT	'prefix.HSM1M00.F1'
IOEISDDD	DDDEF	Distributed File Service	'prefix.H0H2410.F1'
EPW12004	DDDEF	FFST	'prefix.HFST101.F4'
IEFGDDMD	DDDEF	GDDM (includes GDDM-PGF)	'prefix.HBB77A0.F6'
CBDSDDDF	DDDEF	HCD	'prefix.HCS77A0.F2'
EEQHCDDF	DDDEF	HCM	'prefix.HCM1F10.F1'
ASMWTDDF	DDDEF	HLASM Toolkit	'prefix.JMQ416A.F1'
HAPDDDE3	DDDEF	IBM HTTP Server - Powered by Apache	'prefix.HHAP90P.F1'
Note: See note 12 on page 96.			
HKC00DDF	DDDEF	IBM Knowledge Center for z/OS	'prefix.HKCZ100.F2'
Note: See note 12 on page 96.			
GLDISDDD	DDDEF	IBM Tivoli Directory Server for z/OS Base	'prefix.HRSL420.F1'
IZUISDDD	DDDEF	IBM z/OS Management Facility	'prefix.HSMA220.F2'
Note: See note 12 on page 96.			
ICKDDDEF	DDDEF	ICKDSF	'prefix.EDU1H01.F3'
ICKDDDKG	DDDEF	ICKDSF Japanese	'prefix.FDU1H09.F2'
AOPDDDEF	DDDEF	Infoprint Server	'prefix.HOPI7A0.F1'
Note: See note 13 on page 97.			
ITYDDDEF	DDDEF	Integrated Security Services Enterprise Identity Mapping	'prefix.HIT7750.F3'
EUVFSDDD	DDDEF	Integrated Security Services Network Authentication Service	'prefix.HSWK420.F1'
ISPDDDEF	DDDEF	ISPF Base	'prefix.HIF7P02.F1'

Figure 30 (Page 3 of 3). Wave 1 DDDEF Sample Installation Jobs			
Job Name	**Job Type**	**Description**	**RELFILE**
ISPDDDEU	DDDEF	ISPF German	'prefix.JIF7P15.F1'
ISPDDJPN	DDDEF	ISPF Japanese	'prefix.JIF7P14.F1'
ISPDDDES	DDDEF	ISPF Swiss German	'prefix.JIF7P11.F1'
ISPDDENP	DDDEF	ISPF Upper Case English	'prefix.JIF7P16.F1'
CEEISDDD	DDDEF	Language Environment	'prefix.HLE77A0.F1'
EPH00DDF	DDDEF	Library Server	'prefix.HBKQ400.F1'
CCRDDDEF	DDDEF	Metal C Runtime Library	'prefix.HSD7780.F4'
GFSDDDEF	DDDEF	Network File System	'prefix.HDZ222N.F1'
FOTISDDF	DDDEF	OpenSSH for z/OS	'prefix.HOS2220.F1'
Note: See note 12 on page 96.			
IOADDDEF	DDDEF	OSA Support Facility	'prefix.H0GI400.F1'
ERB00DDF	DDDEF	RMF (Base and Japanese)	'prefix.HRM77A0.F3'
CLB3JDDF	DDDEF	Runtime Library Extensions	'prefix.HTV77A0.F1'
IRRDDDEF	DDDEF	Security Server RACF	'prefix.HRF77A0.F1'
IKJBDDD	DDDEF	TSO/E	'prefix.HTE77A0.F2'
CCNJDDDF	DDDEF	XL C/C++	'prefix.HLB77A0.F1'
Note: See note 11 on page 96.			
FNTDDDEF	DDDEF	z/OS Font Collection	'prefix.HFNT110.F1'

Notes:

1. The 'prefix' is the high-level qualifier value specified as the DSPREFIX value in the SMPTLIB DDDEF or the OPTIONS entry of the global zone.

2. Be careful when creating DDDEFs or modifying the samples because path names are case-sensitive.

3. For all elements in the above table, if you specify a volume for any data set in the DDDEF job, you must also specify the same volume in the corresponding allocate entry in the allocate job (see Figure 28 on page 85).

4. The following Wave 1 elements that are documented in this program directory do not supply sample DDDEF jobs:

   Most BCP components and BCP Japanese feature
   Communications Server for z/OS SNA Services
   Communications Server Security Level 3
   Communications Server X-Windows X11R4
   EREP
   ESCON Director Support

HCD Japanese
IOCP
MICR/OCR
TIOC
z/OS File System
z/OS Security Level 3 OCSF Security Level 3
z/OS Security Level 3 System SSL Security Level 3
3270 PC File Transfer Program

5. The following elements do not supply sample DDDEF jobs. Their DDDEFs are in the base FMID jobs and need to be uncommented to become active.

   - Distributed File Service Japanese
   - TSO/E Japanese
   - TSO/E German
   - TSO/E Simplified Chinese

6. If BCP Japanese and/or Simplified Chinese FMIDs are ordered, ensure that the DDDEFs of TSO/E Japanese and/or Simplified Chinese libraries are defined by running IKJBDDD since the BCP National Language features are installed into the shared libraries with TSO/E National Languages.

7. The Cryptographic Services ICSF libraries contain parts and aliases that provide for successful link edit of Cryptographic Services ICSF load modules for customers who do not have CICS installed. Since these libraries contain aliases provided by CICS, customers who install both Cryptographic Services ICSF and CICS should install the products into separate target and distribution data sets.

8. Special Note for DFSMS Japanese.

   If DFSMS Japanese and ICKDSF Japanese are ordered, ensure that the DDDEFs of ICKDSF Japanese are defined by running ICKDDDKG so that the DFSMS Japanese feature can install into the shared libraries of ICKDSF Japanese.

9. The installation of OSA/SF (FMID H0GI400) PTFs requires DDDEF CNMLINK to be defined in the target zone. The DDDEF for CNMLINK must point to an empty data set when Tivoli NetView for z/OS is not installed. Absence of DDDEF CNMLINK in the target zone will result in failures when installing OSA/SF PTFs.

10. The Library Server element introduced new DDDEFs as of z/OS V2.1.0. You must run sample job EPH00DDF to create the new DDDEFs before installing Library Server.

11. As of z/OS V2.2.0, the XL C/C++ element added new target data sets SCCNM10, SCCNM11, SCCNN10, SCCNN11; and dlib data sets ACCNSR2, ACCNSR3, ACCNSR4, ACCNSR5 which were introduced in XL C/C++ 2.1.1 Web deliverable (available in February 2015). You must run sample job CCNJDDDF to create the new DDDEFs before installing XL C/C++.

12. As of z/OS V2.2.0, there are four new elements added in the release: IBM HTTP Server - Powered by Apache, IBM Knowledge Center for z/OS, IBM z/OS Management Facility and OpenSSH for z/OS. You must run these elements' sample jobs - HAPDDDE3, HKC00DDF, IZUISDDD, and FOTISDDF as documented in Figure 30 on page   93 to create the new DDDEFs before installing these elements.

13. As of z/OS V2.2.0, the Infoprint Server element added a new file system DDDEF path SAOPICEN. You must run sample job AOPDDDEF to create the new path in your CSI before installing Infoprint Server.

8.1.10 Pre-APPLY Actions

Before running APPLY of Wave 1, ensure that you have completed the required delete jobs documented in 8.1.6, "Run required and optional Delete Jobs" on page 81.

8.1.10.1 Migration actions

See *z/OS Migration* for more information about the required migration actions.

• Commands copied from CMDLIB to LPALIB

    SMP/E will be unable to maintain and apply product and service updates to commands which you copy from CMDLIB to LPALIB, unless you first identify the residency change to SMP/E. Therefore, IBM does not recommend that you copy commands from CMDLIB to LPALIB. If your installation feels it is necessary to place commands into LPALIB to achieve better runtime performance and you have previously copied the commands from CMDLIB to LPALIB, you must do one of the following:
    – Delete the old copies from LPALIB.
    – Replace with the new version of the commands.

    Because it is necessary to manually update LPALIB if you have copied your commands from CMDLIB to LPALIB, you may instead want to MLPA the commands, or add SYS1.CMDLIB to the LPA list rather than physically copying commands to LPALIB. If you choose to add CMDLIB to the LPA list, you must also add it to the APF list.
• Modified Modules and User Exits

    Installation of z/OS V2.2.0 elements may replace modified modules or User Exits that you may have changed during prior installations of the elements. To ensure that you do not lose these modified modules or User Exits, you may wish to save a copy of them prior to doing the APPLY.

See *z/OS Migration* for information about the required migration actions.

8.2 Step 2: APPLY Wave 1

The current level of SMP/E, the BCP Program Management Binder, and the High Level Assembler, which are shipped with z/OS V2.2.0, must be installed first onto the target system. After these elements have been installed in Wave 0, be sure that the appropriate STEPLIB DD statements have been added to your install procedures. This is necessary because the level of SMP/E, BCP Program Management Binder, and the High Level Assembler, which are shipped with z/OS V2.2.0, will be used to install the elements in Wave 1. See 6.3.1, "Using High Level Assembler, Program Management Binder, and SMP/E for Subsequent z/OS V2.2.0 Installs" on page 32 for more information. If SMP/E dialogs will be used, the SMP/E libraries need to be concatenated when establishing the ISPF environment. See 8.5.4, "z/OS Version 2 Release 2 ISPF setup considerations" on page 156 to identify the appropriate DD statements and the SMP/E libraries that need to be concatenated.

8.2.1 Select which z/OS Wave 1 FMIDs to install

Select which z/OS Wave 1 FMIDs to install by choosing the appropriate FMIDSETs that were defined in 6.5.3, "Elements in each Wave, Ripple, and FMIDSET" on page 35. The sample SMP/E job in this chapter shows the FMIDSETs being installed one at a time. Each job will be repeated for each ripple by changing WAVE1n to WAVE1A, WAVE1AL, WAVE1B, WAVE1C, and so forth. If desired, multiple ripples can be combined, but they must be run in order.

8.2.2 Do an SMP/E APPLY CHECK for Wave 1 FMIDs and service

Before you proceed with the APPLY CHECK for Wave 1, you must complete all data set allocations, DDDEFs, and file system directories for all the Wave 1 elements. This step is necessary because some elements share data sets, file system paths, and DDDEFs.

Run an APPLY CHECK to identify any requisite service and additional holds (for example, HOLDSYS(DOC,EC)) that may need to be resolved before APPLY processing. Resolve any holds and RECEIVE any requisite service identified by the APPLY CHECK before the next step.

Figure 31 shows a sample APPLY CHECK for the functions specified in the SELECT operand, plus received PTFs that are applicable only to the FMIDs listed in the FORFMID.

```
//CHECK JOB <job parameters>
//STEP1 EXEC PGM=GIMSMP,REGION=0M,TIME=NOLIMIT
//STEPLIB DD DSN=SYS1.MIGLIB,DISP=SHR,
//        UNIT=SYSALLDA,VOL=SER=v2r2vol1
//       DD DSN=ASM.SASMMOD1,DISP=SHR,
//        UNIT=SYSALLDA,VOL=SER=v2r2vol1
//SMPCSI DD DSN=zosv2r2.global.csi,DISP=SHR
//SMPCNTL DD *
  SET BOUNDARY(targetzone)
      OPTIONS(ZOSOPT) .
  APPLY CHECK  XZREQ
      FORFMID(ZV22W1n)
      SELECT(WAVE1n)
      GROUPEXTEND(NOAPARS,NOUSERMODS)
      SOURCEID(ZOSV2R2,RSU*)
      FIXCAT(IBM.ProductInstall-RequiredService)
      BYPASS(HOLDSYSTEM,HOLDUSER,
            HOLDCLASS(UCLREL,ERREL,HIPER)) .
 /*
```

Figure 31. SMP/E APPLY CHECK (All FMIDs and Service for z/OS Wave 1)

Note: ZOSOPT is now the option name for z/OS.

> **Required Updates**
>
> 1. Update the *job parameters*.
>
> 2. Update the v2r2vol1 with the volume serial number for the MIGLIB and SASMMOD1 libraries that are the targets of the Wave 0 installation. This will allow you to access the z/OS V2.2.0 level of the Wave 0 elements using the STEPLIB DD statements.
>
> 3. Replace the CSI name on the SMPCSI DD statement with your CSI name.
>
> 4. Update targetzone to your target zone name.
>
> 5. Update WAVE1n so that n is A, AL, B, C, D, E, F, or G.
>
> 6. Update ZV22W1n so that n is A, AL, B, C, D, E, F, or G. This FMIDSET includes FMIDs for all elements within the specific ripple.
>
> 7. The XZREQ operand only needs to be specified when cross-zone processing is required.

Notes:

1. Adding the FMIDSET(ZV22W1n) in the FORFMID operand ensures the PTF service for all FMIDs (new, changed, and unchanged) will get applied at the same time as the ripple for the new FMIDs is installed.

2. The Program Management Binder requires SCEERUN for execution. If SCEERUN is not in your LINKLST or LPALST, you must add the appropriate STEPLIB DD statement to any JCL and procedures (for example, SMP/E proc) which invoke the binder for successful processing, such as conversion of LONGNAMEs to SHORTNAMEs.

Investigate any messages other than those in 6.7, "Step 6: Review general installation notes" on page 44 or those listed in the following sections.

Note: The XZREQ operand only needs to be specified when cross-zone processing is required. If this operand is specified when there is no zone group set up, the following messages will be received, which are acceptable:

```
GIM50810W THE XZREQ OPERAND WAS SPECIFIED ON THE APPLY
COMMAND BUT SINCE NO ZONES WERE APPLICABLE FOR CROSS-ZONE
REQUISITE CHECKING, THE XZREQ OPERAND WILL BE IGNORED.

GIM20501I APPLY PROCESSING IS COMPLETE. THE HIGHEST RETURN
CODE WAS 04.
```

8.2.2.1 Additional messages expected during Wave 1A APPLY CHECK

Successful APPLY CHECK processing of Wave 1A returns a condition code of 4.

8.2.2.1.1 *Messages expected during BCP APPLY CHECK*

The following messages may be seen and are acceptable during BCP APPLY CHECK processing. Successful APPLY CHECK processing returns a condition code of 4. Because of these messages, and

the resulting condition code, SMP/E produces one of the following messages for every load module that was link-edited in the same utility invocation:

- GIM61903W LMOD *xxxxxxxx* WAS NOT DELETED BY SYSMOD HBB77A0 BECAUSE IT IS NOT IN THE target ZONE, where *xxxxxxx* will be one of the load modules:

  ```
  AMDPRFMT  ATBINPVT  IEAIPL04  IEANUC11  IEFITJT  IEFW21SD
  IWMO2CMD
  ```

- GIM23913W LINK-EDIT PROCESSING FOR SYSMOD HBB77A0 WAS SUCCESSFUL FOR MODULE *xxxxxxxx* IN LMOD *xxxxxxxx* IN THE *xxxxxxxx* LIBRARY. THE RETURN CODE WAS 04. DATE *yy.ddd* -- TIME *hh:mm:ss* -- SEQUENCE NUMBER *nnnnnn* -- SYSPRINT FILE *xxxxxxxx*.
- GIM23903W LINK-EDIT PROCESSING FOR SYSMOD HBB77A0 WAS SUCCESSFUL FOR MODULE *xxxxxxxx* IN LMOD *xxxxxxxx* IN THE *xxxxxxxx* LIBRARY. THE RETURN CODE WAS 04. DATE *yy.ddd* -- TIME *hh:mm:ss* -- SEQUENCE NUMBER *nnnnnn*.

8.2.2.1.2 Messages expected during Communications Server IP Services APPLY CHECK

During the APPLY CHECK of Communications Server IP Services, the following messages are received and are acceptable. Successful APPLY CHECK processing returns a condition code of 4.

```
GIM61903W LMOD xxxxxxxx WAS NOT DELETED BY SYSMOD HIP6220
BECAUSE IT IS NOT IN THE target ZONE.
```

In the message, *xxxxxxx* will be one of the following modules:

```
EZAADMLR  EZAFTSRV  EZAPPRT   EZAPPSST  GXDEMO1   GXDEMO2
GXDEMO3   GXDEMO4   GXDEMO4A  GXDEMO5   GXDEMO6
```

8.2.2.2 Additional messages expected during Wave 1AL APPLY CHECK

Successful APPLY CHECK processing of Wave 1AL returns a condition code of 0 or 4.

8.2.2.3 Additional messages expected during Wave 1B APPLY CHECK

Successful APPLY CHECK processing of Wave 1B returns a condition code of 4.

8.2.2.3.1 Messages expected during DFSMS APPLY CHECK

During the APPLY CHECK of DFSMS, the following message is received and is acceptable.

```
GIM61903W LMOD xxxxxxxx WAS NOT DELETED BY SYSMOD HDZ2220
BECAUSE IT IS NOT IN THE target ZONE
```

In the message text, *xxxxxxxx* is one of the following modules:

```
ARCZCUC  ARCZDLC  ARCZPUT  EDGCXTRC  EMODVOL1  OMODVOL1
```

Successful APPLY CHECK processing returns a condition code of 4.

8.2.2.4 Additional messages expected during Wave 1C APPLY CHECK

Successful APPLY CHECK processing of Wave 1C returns a condition code of 4.

8.2.2.4.1 Messages expected during EREP APPLY CHECK

You may receive the following messages:

```
GIM61903W ALIAS IFCC9221 WAS NOT DELETED BY SYSMOD EER3500
BECAUSE IT IS NOT IN THE target ZONE.


GIM61903W LMOD IFCILG04 WAS NOT DELETED BY SYSMOD EER3500
BECAUSE IT IS NOT IN THE target ZONE.
```

8.2.2.4.2 Messages expected during TSO/E APPLY CHECK

You might receive the following message, which is acceptable. In the message, *xxxxxxxx* will be one of the following load modules for SYSMOD HTE77A0:

```
IGC0006A  IKJEFT02  IKJEFT09  IKJEGDRP  IRXAPPC  TEST


GIM61903W LMOD xxxxxxxx WAS NOT DELETED BY SYSMOD HTE77A0
BECAUSE IT IS NOT IN THE target ZONE.
```

You might receive the following message, which is acceptable. In the message, *xxxxxxx* is the following aliases for SYSMOD HTE77A0:

```
GENTRANS IKJEFLIA IKJEGCAL IKJEGDEL IKJEGDRP IKJEGFRE
IKJEGGET IKJEGLOD IKJEGRUN TSOENV
```

```
GIM61903W ALIAS xxxxxxx WAS NOT DELETED BY SYSMOD
HTE77A0 BECAUSE IT IS NOT IN THE target ZONE.
```

Successful APPLY CHECK processing returns a condition code of 4.

8.2.2.5 Additional messages expected during Wave 1D APPLY CHECK

Successful APPLY CHECK processing of Wave 1D returns a condition code of 0. However, if any of the warning messages shown in 6.7, "Step 6: Review general installation notes" on page 44 are received in the SMP/E output, then a return code of 4 is expected and is acceptable.

8.2.2.6 Additional messages expected during Wave 1E APPLY CHECK

Successful APPLY CHECK processing of Wave 1E returns a condition code of 0.

8.2.2.7 Additional messages expected during Wave 1F APPLY CHECK

Successful APPLY CHECK processing returns a condition code of 0.

8.2.2.8 Additional messages expected during Wave 1G APPLY CHECK

Successful APPLY CHECK processing of Wave 1G returns a condition code of 0 or 4.

8.2.2.8.1 Messages expected during Distributed File Service Apply Check

During the APPLY CHECK of Distributed File Service, you may receive the following message, where *yyyyyy* is either H0H2410 or HZFS420 and *xxxxxxx* is one of the following modules:

For H0H2410 IOECMINI, IOEGLUE
For HZFS420 IOEZM004, IOEZM006, IOEZM007

```
GIM61903W LMOD xxxxxxxx WAS NOT DELETED BY SYSMOD yyyyyy
BECAUSE IT IS NOT IN THE target ZONE
```

These messages are acceptable if they are the only cause of the return code 4.

8.2.2.8.2 Messages expected during Network File System Apply Check

During the APPLY CHECK of Network File System, the following message might be received. This is acceptable if it is the only cause of the return code 4.

```
GIM61903W LMOD yyyyyyyy WAS NOT DELETED BY SYSMOD HDZ222N
BECAUSE yyyyyyyy IS NOT IN THE target ZONE
```

In the message text, *yyyyyyyy* will be one of the following modules and *target* is the name of the target zone.

```
GFSAMAIN  GFSCMAIN  GFSATCPL  GFSATPNL  GFSATPRL  GFSAXOUT
GFSAXPRT  GFSAXSRB  GFSAXTIN  GFSAHFST  GFSALEGT  GFSAXEPL
```

8.2.2.9 Do an SMP/E APPLY for Wave 1 FMIDs and Service

If you have bypassed a HOLDsystem for MSGSKEL, see 8.4.1.1, "Compile MMS Data Sets" on page 127, for information about how to compile the MVS Message Service skeleton files after a successful APPLY. Be certain that all the exception conditions have been satisfied before adding other conditions to the BYPASS(HOLDSYSTEM(MSGSKEL)) during the SMP/E APPLY step.:   Figure 32 on page 103 shows a sample APPLY for the functions specified in the SELECT operand, plus received PTFs that are applicable only to the FMIDs listed in the FORFMID.

```
//APPLY JOB <job parameters>
//STEP1 EXEC PGM=GIMSMP,REGION=0M,TIME=NOLIMIT
//STEPLIB DD DSN=SYS1.MIGLIB,DISP=SHR,
//         UNIT=SYSALLDA,VOL=SER=v2r2vol1
//         DD DSN=ASM.SASMMOD1,DISP=SHR,
//          UNIT=SYSALLDA,VOL=SER=v2r2vol1
//SMPCSI DD DSN=zosv2r2.global.csi,DISP=SHR
//SMPCNTL DD *
  SET BOUNDARY(targetzone)
      OPTIONS(ZOSOPT) .
  APPLY  XZREQ
      FORFMID(ZV22W1n)
      SELECT(WAVE1n)
      GROUPEXTEND(NOAPARS,NOUSERMODS)
      SOURCEID(ZOSV2R2,RSU*)
      FIXCAT(IBM.ProductInstall-RequiredService)
      BYPASS(HOLDSYSTEM,HOLDUSER,
            HOLDCLASS(UCLREL,ERREL,HIPER))
      COMPRESS(ALL) .
 /*
```

Figure 32. SMP/E APPLY (All FMIDs and Service for z/OS Version 2 Release 2 Wave 1)

Note: ZOSOPT is now the option name for z/OS.

Required Updates

1. Update the *job parameters*, as needed.

2. Update the v2r2vol1 with the volume serial number for the MIGLIB and the SASMMOD1 libraries which were the targets of the Wave 0 installation. This will allow you to access the z/OS V2.2.0 level of the Wave 0 elements using the STEPLIB DD statements.

3. Replace the CSI name on the SMPCSI DD statement with your CSI name.

4. Update *targetzone* to your target zone name.

5. Update WAVE1*n* so that *n* is A, AL, B, C, D, E, F, or G.

6. Update ZV22W1n so that n is A, AL, B, C, D, E, F, or G. This FMIDSET includes FMIDs for all elements within the specific ripple.

7. The XZREQ operand only needs to be specified when cross-zone processing is required.

Notes:

1. Adding the FMIDSET(ZV22W1n) in the FORFMID operand ensures the PTF service for all FMIDs (new, changed, and unchanged) will get applied at the same time as the ripple for the new FMIDs is installed.

Note that if you BYPASS(HOLDCLASS(HIPER)), you should run the SMP/E REPORT ERRSYSMODS command to identify missing HIPER HOLDs before putting your system into production.

If you do not BYPASS(HOLDCLASS(HIPER)), the FMIDs may not be installed if any of the HIPER maintenance is unavailable.

Any messages other than in 6.7, "Step 6: Review general installation notes" on page 44, or those listed in the following sections need to be investigated.

Note: The XZREQ operand only needs to be specified when cross-zone processing is required. If this operand is specified when there is no zone group set up, the following messages will be received, which are acceptable:

```
GIM50810W THE XZREQ OPERAND WAS SPECIFIED ON THE APPLY
COMMAND BUT SINCE NO ZONES WERE APPLICABLE FOR CROSS-ZONE
REQUISITE CHECKING, THE XZREQ OPERAND WILL BE IGNORED.

GIM20501I APPLY PROCESSING IS COMPLETE. THE HIGHEST RETURN
CODE WAS 04.
```

8.2.2.10 Additional messages expected during Wave 1A APPLY

Scenario: During a CBPDO installation of z/OS V2.2.0, if the bind of IEANUC01 fails with the following message produced, the SMP/E APPLY might fail for HBB77A0, HDZ2220, HIP6220, and HFST101.

```
IEW2353E SECTION section CONTAINS INVALID DATA.
ERROR CODE IS 250013
```

Cause: The z/OS V2.2.0 level of the Program Management Binder was not used for APPLY. The reason could either be the MIGLIB library of z/OS V2.2.0 was not STEPLIBed to in the SMP/E APPLY step, or be the MIGLIB library was not APF authorized.

Resolution: Add STEPLIB for the MIGLIB library in which the z/OS V2.2.0 level of the Program Management Binder is installed to the SMP/E APPLY job, as shown in Figure 32 on page 103. Ensure that the MIGLIB library is APF-authorized; then, rerun the SMP/E APPLY job.

8.2.2.10.1 Messages expected during BCP APPLY

In addition to the general messages listed in 6.7, "Step 6: Review general installation notes" on page 44, the following messages might be received during the APPLY of BCP. Message GIM23913W will be received in the SMP/E output for each load module in the NUCLEUS library. These messages are acceptable if they are the only reasons for the condition code 4.

- GIM61903W LMOD *xxxxxxxx* WAS NOT DELETED BY SYSMOD HBB77A0 BECAUSE IT IS NOT IN THE target ZONE, where *xxxxxxx* is any of the following modules:

  AMDPRFMT ATBINPVT IEAIPL04 IEANUC11 IEFITJT IEFW21SD IWMO2CMD

- GIM23913W LINK-EDIT PROCESSING FOR SYSMOD HBB77A0 WAS SUCCESSFUL FOR MODULE *mmmmmmm* IN LMOD nnnnnnnn IN THE NUCLEUS LIBRARY. THE RETURN CODE WAS 04. DATE *yy.ddd* -- TIME *hh:mm:ss* -- SEQUENCE NUMBER *nnnnnn* -- SYSPRINT FILE *xxxxxxxx*.
- GIM23903W LINK-EDIT PROCESSING FOR SYSMOD HBB77A0 WAS SUCCESSFUL FOR MODULE *xxxxxxxx* IN LMOD *xxxxxxxx* IN THE *xxxxxxxx* LIBRARY. THE RETURN CODE WAS 04. DATE *yy.ddd* -- TIME *hh:mm:ss* -- SEQUENCE NUMBER *nnnnnn*.

8.2.2.10.2 *Messages expected during Communications Server IP Services APPLY*

During the APPLY of Communications Server IP Services, the following messages are received:

- GIM62701W THE ++DELETE MCS FOR LMOD ENTRY EZAIMSLN IN SYSMOD HIP6220 WAS NOT PROCESSED BECAUSE THE SYSLIB VALUE DOES NOT MATCH THE EXISTING SYSLIB VALUE
- GIM61903W LMOD xxxxxxxx WAS NOT DELETED BY SYSMOD HIP6220 BECAUSE IT IS NOT IN THE target ZONE, where *xxxxxxx* will be one of the following modules:

  EZAADMLR   EZAFTSRV   EZAPPRT   EZAPPSST   GXDEMO1   GXDEMO2
  GXDEMO3   GXDEMO4   GXDEMO4A   GXDEMO5   GXDEMO6

During the APPLY of HIP6220, the following messages are expected:

IEW2646W 4B07 ESD RMODE(24) CONFLICTS WITH USER-SPECIFIED
RMODE(ANY) FOR *xxxxxxxx*.

IEW2651W 511C ESD AMODE 24 CONFLICTS WITH USER-SPECIFIED AMODE
31 FOR ENTRY POINT *xxxxxxxx*.

IEW2646W 4A07 ESD RMODE(24) CONFLICTS WITH
USER-SPECIFIED RMODE(ANY) FOR SECTION *xxxxxxxx*.

For message IEW2646W, *xxxxxxxx* is the CSECT name. For message IEW2651W, *xxxxxxxx* is the entry point name.

The APPLY step will complete with a condition code of 0004. Program Binder message IEW2454 will be received for the load modules listed in the following data sets:

  TCPIP.SEZACMTX

  EZAAA002 EZAAD02E EZAAE008 EZABB00Q EZACA00Z
  EZAADHTN EZAAD028 EZAAE01D EZABB00R EZACA001
  EZAAD0BU EZAAD04A EZAAE01H EZABB00T EZACA015
  EZAAD0B5 EZAAD04C EZAAE016 EZABB00U EZACA016
  EZAAD00Y EZAAD04D EZAAE02A EZABB00X EZACA019
  EZAAD00Z EZAAD04E EZAAE029 EZABB00Z EZAFTPMM
  EZAAD0PR EZAAD04F EZAAE03Q EZABB001 EZAFTPMT
  EZAAD0PS EZAAD04K EZAAE03V EZABB002 EZAMSGLC

```
EZAAD0PT EZAAD04L EZAAE04A EZABB005 EZAMSGP
EZAAD0PV EZAAD04M EZAAE046 EZABB006 EZAMSGW
EZAAD0PW EZAAD04V EZAAE047 EZABB011 EZAXTI
EZAAD0P0 EZAAD065 EZAAE05I EZABB012 EZBCRSTK
EZAAD0P1 EZAAE00C EZAAE050 EZABB04C EZBIEFTM
EZAAD0P2 EZAAE00D EZAAE060 EZABB04D EZBIEGTM
EZAAD0P3 EZAAE00G EZAAE061 EZABB04J EZBMSGMI
EZAAD0XE EZAAE00K EZABBWLD EZACA00K EZBPAINT
EZAAD0XH EZAAE00L EZABB00A EZACA00L EZBPAREV
EZAAD0YW EZAAE00R EZABB00B EZACA00M EZBTTSRT
EZAAD00V EZAAE00S EZABB00C EZACA00Q EZBWTOCR
EZAAD00W EZAAE00T EZABB00F EZACA00R EZBWTODM
EZAAD00X EZAAE00U EZABB00H EZACA00S
EZAAD00Z EZAAE006 EZABB00L EZACA00U
EZAAD01L EZAAE007 EZABB00O EZACA00W
```

TCPIP.SEZADPIL

```
EZAAD00X  EZAAD0W3  EZAAD064
```

TCPIP.SEZARPCL

```
EZAAD0BL  EZAAD0EB  EZAAD00A  EZAAD00J  EZAAD00K  EZAAD00L
EZAAD00M  EZAAD00N  EZAAD00O  EZAAD009  EZAAD0PH  EZAAD0PI
EZAAD0PJ  EZAAD0PY  EZAAD0QA  EZAAD0QB  EZAAD0QD  EZAAD0QE
EZAAD0QF  EZAAD0QG  EZAAD0QH  EZAAD0QI  EZAAD0QJ  EZAAD0Q5
EZAAD0Q6  EZAAD0Q7  EZAAD0Q8  EZAAD0Q9  EZAAD0ZO  EZAAD013
EZAAD04I  EZAAD04J  EZAAD07Z  EZAAD080
```

TCPIP.SEZALIBN

```
EZAAD0TM  EZAAD0U5  EZAAD0UH  EZAAD0VB  EZAAD0VP  EZAAD0TN
EZAAD0U9  EZAAD0V8  EZAAD0VF  EZAAD0VQ  EZAAD0U1  EZAAD0UA
EZAAD0V9  EZAAD0VH  EZAAD0VS  EZAAD0U4  EZAAD0UG  EZAAD0VA
EZAAD0VJ
```

TCPIP.SEZALOAD

```
EZAESITE  EZAIMSLN  EZAMSGS   EZAPSMPL  EZATSITE  EZAVXLAT
```

TCPIP.SEZATCP

```
EZACIC07
```

Because of these messages, and the resulting condition code, SMP/E produces one of the following messages for every load module that was link-edited in the same utility invocation:

```
GIM23903W LINK-EDIT PROCESSING FOR SYSMOD HIP6220 WAS SUCCESSFUL
FOR MODULE xxxxxxxx IN LMOD xxxxxxxx IN THE xxxxxxx LIBRARY. THE
RETURN CODE WAS 04. DATE yy.ddd - TIME hh:mm:ss -
SEQUENCE NUMBER nnnnnn."

GIM23913W LINK-EDIT PROCESSING FOR SYSMOD HIP6220 WAS SUCCESSFUL
FOR MODULE xxxxxxxx IN LMOD xxxxxxxx IN THE xxxxxxxx LIBRARY.  THE
```

```
RETURN CODE WAS 04.  DATE yy.ddd -- TIME hh:mm:ss --
SEQUENCE NUMBER nnnnnn -- SYSPRINT FILE xxxxxxxx.
```

The following MAC and MOD entries in the Communications Server IP Services FMID are superseded by the same part entries in feature FMIDs. Therefore, these MAC and MOD entries might be flagged as "NOT SEL" during the APPLY.

    MAC EZACDIRB
    MAC EZAODIRB
    MOD EZACXADE
    MOD EZACXAEN
    MOD EZACX3DE
    MOD EZACX3EN
    MOD EZACX3FR
    MOD EZACX3HD
    MOD EZACX3HE
    MOD EZACX3IK
    MOD EZAPX3CC
    MOD EZBISXGM
    MOD EZBISXES

8.2.2.10.3 *Messages expected during Communications Server XWindows X11R4 Feature APPLY*

Because the Language Environment routines are not linked during the link-edit of Communications Server X11R4 XWindows, Program Binder message IEW2454 will be received for each load module in the following data sets:

- *TCPIP*.SEZAOLDX
- *TCPIP*.SEZAXAWL
- *TCPIP*.SEZAXMLB
- *TCPIP*.SEZAXTLB
- *TCPIP*.SEZAX11L

Because of these messages, and the resulting condition code, SMP/E produces one of the following messages for every load module that was link-edited in the same utility invocation. If these are the only cause of the condition code 4, it is acceptable.

```
GIM23903W LINK-EDIT PROCESSING FOR SYSMOD JIP622X WAS SUCCESSFUL
FOR MODULE xxxxxxxx IN LMOD xxxxxxxx IN THE xxxxxx LIBRARY.  THE
RETURN CODE WAS 04. DATE yy.ddd - TIME hh:mm:ss
SEQUENCE NUMBER nnnnnn.

GIM23913W LINK-EDIT PROCESSING FOR SYSMOD JIP622X WAS SUCCESSFUL
FOR MODULE xxxxxxxx IN LMOD xxxxxxxx IN THE xxxxxxxx LIBRARY.  THE
RETURN CODE WAS 04.  DATE yy.ddd -- TIME hh:mm:ss --
SEQUENCE NUMBER nnnnnn --."
```

During the APPLY of JIP622X you may receive the following message:

```
IEW2609W SECTION section name USABILITY ATTRIBUTE OF
usability-option CONFLICTS WITH REQUESTED USABILITY
OF usability-option.
```

8.2.2.10.4 Messages expected during Communications Server SNA Services APPLY

During the installation of SNA Services, you may receive message GIM23903W or GIM23913W for the
load modules for HVT6220 that are installed into the following libraries: LPALIB, LINKLIB, MIGLIB,
SISTCLIB, VTAMLIB.

```
GIM23903W LINK-EDIT PROCESSING FOR SYSMOD sysmod WAS SUCCESSFUL FOR
MODULE modname IN LMOD loadmod IN THE library LIBRARY. THE RETURN
CODE WAS 04. DATE yy.ddd - TIME hh:mm:ss - SEQUENCE
NUMBER seqno.

GIM23913I LINK-EDIT PROCESSING FOR SYSMOD sysmod WAS SUCCESSFUL FOR
MODULE modname IN LMOD loadmod IN THE library LIBRARY. THE RETURN
CODE WAS 04. DATE yy.ddd TIME hh:mm:ss SEQUENCE
NUMBER seqno SYSPRINT FILE sysprint.
```

8.2.2.10.4.1 Warning messages: During the installation of Communications Server for z/OS SNA
Services, you may receive the following message during the apply:

```
IEW2609W SECTION section name USABILITY ATTRIBUTE OF
         usability-option CONFLICTS WITH REQUESTED
         USABILITY OF usability-option

IEW2646W ESD RMODE(24) CONFLICTS WITH USER-SPECIFIED
         RMODE(ANY) FOR SECTION ISTxxxxx.

IEW2651W ESD AMODE 24 CONFLICTS WITH USER-SPECIFIED
         AMODE 31 FOR ENTRY POINT ISTxxxxx.

IEW2660W RESULTANT AMODE(24) AND USER-SPECIFIED
         RMODE(ANY) ARE INCOMPATIBLE FOR ISTxxxxx.
         AMODE HAS BEEN CHANGED TO (31).
```

These messages can be ignored. If they are the only cause of the condition code 4, it is acceptable.

8.2.2.10.5 Messages expected during ISPF APPLY

During the installation of ISPF, you might receive one of the following messages. For LMOD IGC0009C,
the modules can be ISPSC93, ISPSC93Q, and ISPSC93X. For LMOD IGC0009D, the module can be
ISPSC94. If these are the only cause of the condition code 4, it is acceptable.

```
GIM23903W LINK-EDIT PROCESSING FOR SYSMOD xxxxxxx WAS SUCCESSFUL
FOR MODULE xxxxxxxx IN LMOD xxxxxxxx IN THE xxxxxx LIBRARY.  THE
RETURN CODE WAS 04. DATE yy.ddd - TIME hh:mm:ss
SEQUENCE NUMBER nnnnnn.

GIM23913W LINK-EDIT PROCESSING FOR SYSMOD xxxxxxx WAS SUCCESSFUL
FOR MODULE xxxxxxxx IN LMOD xxxxxxxx IN THE xxxxxxxx LIBRARY.  THE
RETURN CODE WAS 04.  DATE yy.ddd -- TIME hh:mm:ss --
SEQUENCE NUMBER xxxxxx --.
```

8.2.2.10.6 *Messages expected during Metal C Runtime Library APPLY*

Messages from Metal C have the following format, where *xxxxxxxx* is one of the following symbols.

```
IEW2454W 9203 SYMBOL xxxxxxxx UNRESOLVED. NO AUTOCALL (NCAL) SPECIFIED.

@@INTNAN  @@NANINT  @@PHLOAT  @@PHLOUT  ABS
ATOL      b_ecvt_i  b_fcvt_i  b_fecvt   b_ffcvt
b_fgcvt   b_fgecvt  b_gcvt_i  b_gecvt   b_lecvt
b_lfcvt   b_lgcvt   b_lgecvt  bintlg10  deci754
frstg31   frstg64   ISALPHA   ISUPPER   ISXDIGIT
i754nanp  i754pnan  i754type  STRTOLL   STRTOULL
```

During the APPLY of Metal C Runtime Library, the following messages are expected:

```
GIM23913W  LINK-EDIT PROCESSING FOR SYSMOD HSD7780 WAS SUCCESSFUL
FOR MODULE modname IN LMOD loadmod IN THE SCCR6BND LIBRARY. THE
RETURN CODE WAS 04. DATE yy.ddd - TIME hh:mm:ss - SEQUENCE NUMBER
seqno - SYSPRINT FILE sysprint.

GIM23913W  LINK-EDIT PROCESSING FOR SYSMOD HSD7780 WAS SUCCESSFUL
FOR MODULE modname IN LMOD loadmod IN THE SCCR3BND LIBRARY. THE
RETURN CODE WAS 04. DATE yy.ddd - TIME hh:mm:ss - SEQUENCE NUMBER
seqno - SYSPRINT FILE.
```

8.2.2.11 Additional messages expected during Wave 1AL APPLY

Successful APPLY processing of Wave 1AL returns a condition code of 0 or 4. If the XZREQ operand was specified on the APPLY command but there were no applicable zones, message GIM50810W will be issued during APPLY processing and a condition code of 4 is expected.

8.2.2.12 Additional messages expected during Wave 1B APPLY

Successful APPLY processing of Wave 1B returns a condition code of 4.

8.2.2.12.1 *Messages expected during DFSMS APPLY*

During the APPLY of DFSMS you may receive the following messages.

```
GIM61903W LMOD yyyyyyyy WAS NOT DELETED BY SYSMOD HDZ2220
BECAUSE yyyyyyyy IS NOT IN THE xxxx ZONE
```

In the message text, *yyyyyyyy* will be one of the following modules and *xxxx* is the name of the target zone.

```
ARCZCUC   ARCZDLC   ARCZPUT   EDGCXTRC   EMODVOL1   OMODVOL1
```

You may also receive the following messages:

```
GIM63201I    ALIAS DWW1RPCP WAS DELETED FROM THE LPALIB
             LIBRARY BY SYSMOD HDZ2220.

GIM63201I    ALIAS DWW1RARR WAS DELETED FROM THE LPALIB
             LIBRARY BY SYSMOD HDZ2220.

GIM63201I    ALIAS IDABLARR WAS DELETED FROM THE LPALIB
             LIBRARY BY SYSMOD HDZ2220.

GIM63201I    ALIAS IDABLVBB WAS DELETED FROM THE LPALIB
             LIBRARY BY SYSMOD HDZ2220.

GIM63201I    LMOD IDA019BL WAS DELETED FROM THE LPALIB
             LIBRARY BY SYSMOD HDZ2220.

GIM23903W LINK-EDIT PROCESSING FOR SYSMOD HDZ2220 WAS SUCCESSFUL FOR
MODULE xxxxxxxx IN LMOD xxxxxxxx IN THE xxxxxxxx LIBRARY.
THE RETURN CODE WAS 04.  DATE yy.ddd -- TIME hh:mm:ss--
SEQUENCE NUMBER nnnnnn.

GIM23913W LINK-EDIT PROCESSING FOR SYSMOD xxxxxxx
WAS SUCCESSFUL FOR MODULE xxxxxxxx  IN LMOD xxxxxxxx
IN THE xxxxxxxx  LIBRARY. THE RETURN CODE WAS 04.
DATE yy.ddd - TIME hh:mm:ss-
SEQUENCE NUMBER xxxxxx-
```

SMP/E produces one of the preceding messages for every load module that was link-edited in the same utility invocation.

The following unresolved external references may be encountered during the apply of DFSMS.

Messages from the Binder have the following format:

```
IEW2454W 9203 SYMBOL xxxxxxxx UNRESOLVED. NO AUTOCALL (NCAL) SPECIFIED.
```

In the message, *xxxxxxxx* will be one of the following items:

```
DFAIDTAB   EMODVOL1   HASPXSUB   ICYMMVTC   IDACAT13   IDAOCEA1
IDAOCEA2   IDAVBPJ2   IDAVJOPN   IDA0192G   IDA0192P   IDA121A6
IDA121CV   IDDWIMRG   IECPCNVT   IECPRLTV   IEC0SCR1   IEFAB4DC
IFGDEBVR   IFG0EX0A   IFG0RR0B   IFG0RR0G   IFG0RR0H   IFG0SIOA
IFG019EV   IFG019RC   IFG0190P   IFG0191X   IFG0192A   IFG0192F
IFG0192I   IFG0192Y   IFG0193C   IFG0193G   IFG0194A   IFG0194F
IFG0194J   IFG0194K   IFG0195A   IFG0195B   IFG0195T   IFG0196V
IFG0198N   IFG0199B   IFG020EV   IFG0200N   IFG0200P   IFG0200S
```

```
IFG0200T   IFG0200U   IFG0200V   IFG0200W   IFG0201A   IFG0202E
IFG0202L   IFG0204A   IFG0204J   IFG0209B   IFG0230P   IFG0231P
IFG0231T   IFG0232Z   IFG0234J   IFG0239B   IFG055ZZ   IFG0550P
IFG0550Y   IFG0551L   IFG0552B   IFG0552P   IFG0552X   IFG0553B
IFG0553F   IFG0554A   IFG0554J   IFG0554K   IFG0554L   IFG0554P
IFG0554T   IFG0555J   IFG0555T   IFG0556B   IFG0557A   IFG0559B
IFG0559C   IGC0101I   IGC01020   IGC018     IGC117     IGC121
IGGDAP01   IGGDYXCS   IGGPRE00   IGGQJOPN   IGGVRF00   IGG019EK
IGG019JD   IGG019SI   IGG0190A   IGG0191A   IGG0191C   IGG0191G
IGG0191L   IGG0191Q   IGG0191R   IGG01911   IGG0193A   IGG0193B
IGG0193M   IGG0193Y   IGG01930   IGG01935   IGG01946   IGG0196M
IGG0196R   IGG0196S   IGG0197A   IGG0197C   IGG0197L   IGG0197N
IGG0197V   IGG0198B   IGG0199F   IGG020FC   IGG020T1   IGG020T2
IGG0200P   IGG0201A   IGG0201D   IGG0201P   IGG0201W   IGG0201Z
IGG0202A   IGG0202D   IGG0202I   IGG02028   IGG02029   IGG0203A
IGG0203B   IGG0203M   IGG0203Y   IGG0203Z   IGG02030   IGG02035
IGG02046   IGG0206M   IGG0213Z   IGG029DM   IGG032DB   IGG0325A
IGG0325H   IGG0325Z   IGG055V1   IGG0550P   IGG0553A   IGG0553F
IGG0553J   IGWFARC0   IGWFPFMT   IGWFPGBK   IGWFPGCB   IGWFPMSG
IGWFPSTR   IGWFTRFE   IGWFTROC   IHJ019SI   ISTOCMDC   NSLCTRLO
NSLEHDRI   NSLEHDRO   NSLETRLI   NSLETRLO   NSLOHDRI   NSLOHDRO
OMODVOL1   READPSWD   SECLOADA
```

The following messages may be ignored if the Binder was used to APPLY DFSMS. If these are the only cause of the condition code 4, it is acceptable.

- IEW2651W 511C ESD AMODE 24 CONFLICTS WITH USER-SPECIFIED AMODE 31 FOR ENTRY POINT *xxxxxxxx*, where *xxxxxxxx* is one of the following items:

  ```
  ABA        ADRRELVL  ARCABAMA  CBRICONN  CBROPDDT  CBROPMLT
  CBRTRFMT   IGX00024
  ```

- IEW2651W 511C ESD AMODE 31 CONFLICTS WITH USER-SPECIFIED AMODE 24 FOR ENTRY POINT *xxxxxxxx*, where *xxxxxxxx* are:

  ```
  ARCFAIL   ARCFAIL2   ARCGIVER
  ```

- IEW2646W 4B07 ESD RMODE(24) CONFLICTS WITH USER-SPECIFIED RMODE (ANY) FOR SECTION *xxxxxxxx*, where *xxxxxxxx* is one of the following:

  ```
  $PRIV000010  ARCASTAI  ARCAZMGS  ARCAZMGT  ARCAZMSG  ARCCBS
  ARCCBSLB     ARCCOPYX  ARCCOP78  ARCCPCDT  ARCCPYPT  ARCCSTAI
  ARCDECDH     ARCDSTAI  ARCDTOBJ  ARCDTSRC  ARCENCDH  ARCESD
  ARCESDLB     ARCESTAE  ARCESTAI  ARCETOBJ  ARCETSRC  ARCFAILL
  ARCFAILM     ARCGCPU   ARCGSTAI  ARCLANIT  ARCLANLB  ARCMINST
  ARCMSG       ARCMSGLB  ARCMSTAI  ARCNC     ARCPCABK  ARCPCADS
  ARCPCADV     ARCPCARV  ARCPCAUD  ARCPCAUT  ARCPCBEG  ARCPCCOM
  ARCPCDEF     ARCPCDIS  ARCPCDLV  ARCPCEBV  ARCPCEMD  ARCPCEND
  ARCPCFC      ARCPCFVL  ARCPCHLD  ARCPCLMC  ARCPCMIG  ARCPCOIF
  ARCPCON      ARCPCPAT  ARCPCRCY  ARCPCRES  ARCPCRPT  ARCPCRST
  ARCPCRTN     ARCPCSET  ARCPCSTP  ARCPCSTR  ARCPCSWI  ARCPDA
  ARCPPL       ARCPPL1   ARCPPL2   ARCSELTV  ARCTCMIG  ARCTCRES
  ```

```
ARCTVPRM    ARCTVSV   ARCXSTAI  ARCYSCAN  ARCYSTAI  ARCZPVLD
CBRHCLDL    CBRHCLLU  CBRHCLMK  CBRHTBSV  CBRKHLI   CBROPDDT
CBROPMLT    CBRTRDEF  CBRTRFMT  CBRTRRCD  CBRTRSSM  DSNHLI
IGDACTPT    IGDACTTT  IGX00024  OAMUTPCL  OSREQPCL  XSDTABLE
```

- IEW2635I 4B34 THREE BYTE ADCON IN SECTION ARCRPDS AT OFFSET *nnnnnnnn* IN CLASS B_TEXT WITH RMODE=ANY CANNOT BE RELOCATED.
- IEW2635I 4B34 THREE BYTE ADCON IN SECTION EDGMVSM AT OFFSET *nnnnnnnn* IN CLASS B_TEXT WITH RMODE=ANY CANNOT BE RELOCATED.
- IEW2635I 4B34 THREE BYTE ADCON IN SECTION GDEMCBOP AT OFFSET *nnnnnnnn* IN CLASS B_TEXT WITH RMODE=ANY CANNOT BE RELOCATED.
- IEW2635I 4B34 THREE BYTE ADCON IN SECTION GSLEXT30 AT OFFSET *nnnnnnnn* IN CLASS B_TEXT WITH RMODE=ANY CANNOT BE RELOCATED.
- IEW2400I 5D10 A REQUEST TO DELETE CSECT OR SYMBOL IFGDEBCK WAS RECEIVED, AND THE CSECT OR SYMBOL WAS NOT FOUND

8.2.2.13 Additional messages expected during Wave 1C APPLY

Successful APPLY processing of Wave 1C returns a condition code of 4.

8.2.2.13.1 Messages expected during EREP APPLY

You may receive the following messages.

```
GIM61903W ALIAS IFCC9221 WAS NOT DELETED BY SYSMOD EER3500
BECAUSE IT IS NOT IN THE target ZONE.


GIM61903W LMOD IFCILG04 WAS NOT DELETED BY SYSMOD EER3500
BECAUSE IT IS NOT IN THE target ZONE.
```

8.2.2.13.2 Messages expected during TSO/E APPLY

During the installation of TSO/E, you will receive the following messages which are acceptable if they are the only cause of condition code 4.

- GIM61903W LMOD *xxxxxxxx* WAS NOT DELETED BY SYSMOD HTE77A0 BECAUSE IT IS NOT IN THE target ZONE, where *xxxxxxx* will be one of the following modules

  ```
  IGC0006A  IKJEFT02  IKJEFT09  IKJEGDRP  IRXAPPC  TEST
  ```

- GIM61903W ALIAS *xxxxxxxx* WAS NOT DELETED BY SYSMOD HTE77A0 BECAUSE *xxxxxxxx* IS NOT IN THE target ZONE, where *xxxxxxx* will be one of the following ALIASs:

  ```
  GENTRANS  IKJEFLIA  IKJEGDRP  IKJEGRUN  IKJEGCAL  IKJEGLOD
  IKJEGGET  IKJEGFRE  IKJEGDEL  TSOENV
  ```

- IEW2454W SYMBOL *xxxxxxxx* UNRESOLVED. NO AUTOCALL (NCAL) SPECIFIED., where *xxxxxxxx* is a symbol associated with one of the following load modules:

  ```
  ADFMDOLD  ADFMDFLT  ADFMDF01  IKJEFLA  CHSFVMPC  IGC0009C
  IGC0009D
  ```

Because of these messages, and the resulting condition code, SMP/E produces one of the following messages for every load module that was link-edited in the same utility invocation:

```
GIM23903W LINK-EDIT PROCESSING FOR SYSMOD xxxxxxx WAS SUCCESSFUL
FOR MODULE xxxxxxxx IN LMOD xxxxxxxx IN THE xxxxxx LIBRARY.
THE RETURN CODE WAS 04. DATE yy.ddd - TIME hh:mm:ss
SEQUENCE NUMBER nnnnnn.

GIM23913W LINK-EDIT PROCESSING FOR SYSMOD xxxxxxx WAS SUCCESSFUL
FOR MODULE xxxxxxxx IN LMOD xxxxxxxx IN THE xxxxxxxx LIBRARY.  THE
RETURN CODE WAS 04.  DATE yy.ddd -- TIME hh:mm:ss --
SEQUENCE NUMBER xxxxxx --.
```

8.2.2.14 Additional messages expected during Wave 1D APPLY

Successful APPLY processing of Wave 1D returns a condition code of 0 or 4. However, if you have any USERMODs installed, then you may see the following acceptable message:

```
GIM44502W CHANGES FOR THE FOLLOWING USERMODS WILL BE LOST BECAUSE
THE ASSOCIATED FUNCTION SYSMOD HAS BEEN DELETED.
```

8.2.2.14.1 Messages expected during Cryptographic Services APPLY

During the APPLY of Cryptographic Services the following messages may be received and are acceptable if they are the only cause of the return code 4.

- GIM23903W LINK-EDIT PROCESSING FOR SYSMOD HCRY740 WAS SUCCESSFUL FOR MODULE xxxxxxxx IN LMOD xxxxxxxx IN THE xxxxxxx LIBRARY. THE RETURN CODE WAS 04. DATE yy.ddd - TIME hh:mm:ss - SEQUENCE NUMBER nnnnnn.
- GIM23913W LINK-EDIT PROCESSING FOR SYSMOD HCRY740 WAS SUCCESSFUL for MODULE xxxxxxxx IN LMOD yyyyyyyy IN THE xxxxxxxx LIBRARY. THE RETURN CODE WAS 04. DATE yy.ddd -- TIME hh:mm:ss -- SEQUENCE NUMBER nnnnnn --., where yyyyyyyy will be one of the following load modules:

  CDSNM001 CDSNM009 CDSNM010 CDSNM012 CDSNM013 CDSNM036
  CDSNM037 CDSNM038

- IEW2480W A711 EXTERNAL SYMBOL RANDOM OF TYPE LD WAS ALREADY DEFINED AS A SYMBOL OF TYPE LD IN SECTION RANDOM.
- IEW2482W A712 THE ORIGINAL DEFINITION WAS IN A MODULE IDENTIFIED BY DDNAME SMPLTS. THE DUPLICATE DEFINITION IS IN SECTION @@RANDM IN A MODULE IDENTIFIED BY DDNAME SMPxxxxx.

8.2.2.14.2 Messages expected during z/OS Security Level 3 APPLY

During the APPLY of z/OS Security Level 3, the following messages may be received and are acceptable if they are the only cause of the return code 4.

- GIM23903W LINK-EDIT PROCESSING FOR SYSMOD JCRY741 WAS SUCCESSFUL FOR MODULE xxxxxxxx IN LMOD xxxxxxxx IN THE xxxxxxx LIBRARY. THE RETURN CODE WAS 04. DATE yy.ddd - TIME hh:mm:ss - SEQUENCE NUMBER nnnnnn.

- GIM23913W LINK-EDIT PROCESSING FOR SYSMOD JCRY741 WAS SUCCESSFUL FOR MODULE xxxxxxxx IN LMOD *yyyyyyyy* IN THE xxxxxxxx LIBRARY. THE RETURN CODE WAS 04. DATE *yy.ddd* -- TIME *hh:mm:ss* -- SEQUENCE NUMBER nnnnnn --., where *yyyyyyyy* will be one of the following load modules

  CDSNM036   CDSNM037

- GIM61903W LMOD xxxxxxxx WAS NOT DELETED BY SYSMOD *xxxxxxx* BECAUSE IT IS NOT IN THE target ZONE, where *xxxxxxx* will be one of the following modules:

  CDSNM036   CDSNM037

8.2.2.15 Additional messages expected during Wave 1E APPLY: Successful APPLY processing of Wave 1E returns a condition code of 0 or 4. If the XZREQ operand was specified on the APPLY command but there were no applicable zones, message GIM50810W will issued during APPLY processing and a condition code of 4 is expected.

8.2.2.16 Additional messages expected during Wave 1F APPLY

Successful APPLY processing of Wave 1F returns a condition code of 4.

8.2.2.16.1 Messages expected during Bulk Data Transfer (BDT) APPLY

During the installation of Bulk Data Transfer (BDT), the following message is received for load modules BDTUX10, BDTUX19, and UX08KYWD:

- During the link-edit, one of the following messages is produced:

  IEW2454W SYMBOL *xxxxxxxx* UNRESOLVED. NO AUTOCALL (NCAL)
  SPECIFIED.

- Because of these messages, and the resulting condition code, SMP/E produces one of the following messages for every load module that was link-edited in the same utility invocation:

  GIM23903W LINK-EDIT PROCESSING FOR SYSMOD xxxxxxx WAS SUCCESSFUL
  FOR MODULE xxxxxxxx IN LMOD xxxxxxxx IN THE xxxxxx LIBRARY.
  THE RETURN CODE WAS 04. DATE *yy.ddd* - TIME *hh:mm:ss*
  SEQUENCE NUMBER nnnnnn.

  GIM23913W LINK-EDIT PROCESSING FOR SYSMOD xxxxxxx WAS SUCCESSFUL
  FOR MODULE xxxxxxxx IN LMOD xxxxxxxx IN THE xxxxxxxx LIBRARY.
  THE RETURN CODE WAS 04. DATE *yy.ddd* -- TIME *hh:mm:ss* --
  SEQUENCE NUMBER xxxxxx --.

If these are the only cause of the condition code 4, it is acceptable.

8.2.2.16.2 Messages expected during DFSORT APPLY

The following message can be ignored; any other messages should be investigated. The Binder produces this message during steps that store modules into target libraries:

IEW2635I 4B34 THREE BYTE ADCON IN SECTION ICEXPUB0 AT OFFSET
xxxxxxxx IN CLASS B_TEXT WITH RMODE=ANY CANNOT BE RELOCATED.

8.2.2.16.3 Messages expected during HLASM Toolkit APPLY

During the installation of HLASM Toolkit, you might receive the following messages; they are acceptable if they are the only cause of the condition code 4:

```
GIM23903W LINK-EDIT PROCESSING FOR SYSMOD JMQ416A WAS
SUCCESSFUL FOR MODULE xxxxxxxx IN LMOD xxxxxxx IN THE
SASMMOD2 LIBRARY.
THE RETURN CODE WAS 04. DATE yy.ddd - TIME hh:mm:ss
SEQUENCE NUMBER nnnnnn.

GIM23913W LINK-EDIT PROCESSING FOR SYSMOD JMQ416A WAS
SUCCESSFUL FOR MODULE xxxxxxxx IN LMOD xxxxxxxx IN THE
SASMMOD2 LIBRARY.
THE RETURN CODE WAS 04.  DATE yy.ddd -- TIME hh:mm:ss --
SEQUENCE NUMBER xxxxxx --.

IEW2609W 5104 SECTION xxxxxxx USABILITY ATTRIBUTE OF REUSABLE
CONFLICTS WITH REQUESTED USABILITY OF REFRESHABLE.
```

8.2.2.16.4 Messages expected during IBM Knowledge Center for z/OS APPLY

The APPLY for IBM Knowledge Center for z/OS completes with an overall return code of 0.

8.2.2.17 Additional messages expected during Wave 1G APPLY

Successful APPLY processing of Wave 1G returns a condition code of 0 or 4. A return code of 4 is expected if any of the messages documented in the following sections are received during the APPLY.

8.2.2.17.1 Messages expected during Distributed File Service APPLY

During the APPLY for Distributed File Service, the following messages might be received; they are acceptable if they are the only reasons for the condition code 4. In the message, *yyyyyy* is H0H2410 or HZFS420 and *xxxxxxxx* is one of the following modules:

For H0H2410   IOECMINI, IOEGLUE
For HZFS420   IOEZM004, IOEZM006, IOEZM007

```
GIM61903W LMOD xxxxxxxx WAS NOT DELETED BY SYSMOD yyyyyy
BECAUSE IT IS NOT IN THE target ZONE
```

8.2.2.17.2 Messages expected during Library Server APPLY

The APPLY for Library Server completes with an overall return code of 0.

8.2.2.17.3 Messages expected during Network File System APPLY

During the APPLY of Network File System, the following messages might be received. This is acceptable if it is the only cause of the return code 4.

```
GIM61903W LMOD yyyyyyyy WAS NOT DELETED BY SYSMOD HDZ222N
BECAUSE yyyyyyyy IS NOT IN THE xxxx ZONE
```

In the message text, *yyyyyyyy* will be one of the following modules and *xxxx* is the name of the target zone.

```
GFSAMAIN  GFSCMAIN  GFSATCPL  GFSATPNL  GFSATPRL  GFSAXOUT
GFSAXPRT  GFSAXSRB  GFSAXTIN  GFSAHFST  GFSALEGT  GFSAXEPL
```

8.3 Step 3: Install Wave 2 Elements

Starting with z/OS V2.1, the staged migration path with old levels of JES2, JES3, and SDSF is no longer supported, therefore, you cannot use earlier levels of JES2, JES3, or SDSF with current level of z/OS. You must install the level of JES2, JES3 and SDSF shipped in the current z/OS release before performing the IPL of the z/OS system.

Starting from z/OS V1.10.0, SDSF can be used with JES2, JES3, or both JES2 and JES3.

- If you plan to use SDSF and JES2, install FMIDs HQX77A0, HJE77A0, JQX77AJ and JJE77AJ (if ordered).

- If you plan to use SDSF and JES3, install FMIDs HQX77A0, HJS77A0 and JQX77AJ (if ordered).

- If you plan to use SDSF with both JES2 and JES3, install FMIDs HQX77A0, HJE77A0, HJS77A0, JQX77AJ and JJE77AJ (if ordered).

You can install JES2, JES3, and SDSF by using the SMP/E RECEIVE, APPLY, and ACCEPT commands. For details about SMP/E, see the appropriate SMP/E books.

Note: This section uses sample JCL to illustrate installation steps. You can use the SMP/E dialogs instead of JCL.

8.3.1 Prepare to install Wave 2

This step describes the preparation work required before doing the APPLY. All examples follow the recommended installation sequence.

Reminders before You Begin

Use the following list to be sure you have completed the required planning tasks:

__ If you are installing JES2 or JES3 in a sysplex, ensure you understand the sysplex software and hardware requirements before installing JES2 or JES3. See *z/OS Planning for Installation*, for more information.

__ If you are installing JES2 in a MAS configuration or a network environment, ensure you understand the coexistence considerations prior to installing JES2. See *z/OS Migration* for additional information.

__ If you are installing JES3 in a network environment, ensure that you understand the coexistence considerations before installing JES3.

__ Check the PSP bucket, as described in 3.2, "Preventive Service Planning (PSP)" on page 15.

__ Ensure your system meets the requirements for hardware, software, and coexistence considerations described in *z/OS Planning for Installation*.

__ See the description of fallback considerations in *z/OS Planning for Installation*.

__ Ensure that the installation has identified all the user modifications that must be reworked, as is required by the new release of JES3. See *z/OS Migration*, for more information.

__ Before you install SDSF in z/OS V2.2.0, ensure that the SYSLIB concatenation in the target zone has been updated to include the SDSF target library SISFMAC and the SYSLIB concatenation in the DLIB zone has been updated to include library AISFMAC. If the SYSLIB concatenation does not include these two libraries, the installation of SDSF will fail. See 7.4.2.1, "Update SMP/E Entries" on page 63 for information on target zone SYSLIB concatenation and distribution zone SYSLIB concatenation.

__ Before you install JES3, ensure that the requisite FMIDs HTE77A0 and HDZ2220 have been installed as described in the previous chapters.

8.3.2 Run the Optional Delete Jobs for Wave 2

When you install the z/OS V2.2.0 Wave 2 elements, JES2, JES3, and SDSF, sample jobs are provided by each of these elements to delete the previous releases of these elements. Running the sample delete jobs for the Wave 2 elements is optional.

8.3.2.1 Run the Optional Delete Job for JES2: A sample job, HASIDLFN, is provided to delete JES2 releases replaced by the z/OS V2.2.0 level of JES2. Member HASIDLFN can be found in 'prefix.HJE77A0.F1' (where the 'prefix' is the qualifier specified as the DSPREFIX in the SMP/E Options or the SMPTLIB DDDEF) after SMP/E RECEIVE processing is complete. Copy sample job HASIDLFN, update as required, and run the job. Running the sample delete job is optional. Normal SMP/E APPLY/ACCEPT processing of JES2 (FMID HJE77A0) deletes the previous releases of JES2 (if the optional "dummy" function delete was not performed).

Sample job HASIDLFN will RECEIVE, APPLY, and ACCEPT a function named DM1JES2. During SMP/E processing, the functions deleted by DM1JES2 (and all dependent functions) are removed from the target and distribution zones. After the APPLY and ACCEPT of function DM1JES2 has completed, the previous levels of the JES2 libraries will be empty. The sample job also contains commented steps UCLIN and REJECT. If these steps are uncommented, the job will clean up the CSI zone entries for DM1JES2 along with the entries for the deleted JES2 releases and any associated product HOLDDATA.

During RECEIVE processing of function DM1JES2, a condition code of 4 is expected along with the following message:

```
GIM39701W  SYSMOD DM1JES2 HAS NO ELEMENTS.
```

During APPLY processing of function DM1JES2, a return code of 4 is expected, along with the following messages if USERMOD ASMJES2 had been installed previously (*xxxxxxx* will be multiple module names)

```
GIM44502W  CHANGES FOR THE FOLLOWING USERMODS WILL BE LOST BECAUSE
           THE ASSOCIATED FUNCTION SYSMOD HAS BEEN DELETED.

GIM44601I  USERMOD ASMJES2 IN MOD xxxxxxx
```

8.3.2.2 Run the Optional Delete Job for JES3:
A sample job, IATJDLFN, is provided to delete JES3 releases replaced by the z/OS V2.2.0 level of JES3. Member IATJDLFN can be found in 'prefix.HJS77A0.F1' (where the 'prefix' is the qualifier specified as the DSPREFIX in the SMP/E Options or the SMPTLIB DDDEF) after SMP/E RECEIVE processing is complete. Copy sample job IATJDLFN, update it as required, and run the job. Running the sample delete job is optional. Normal SMP/E APPLY/ACCEPT processing of JES3 (FMID HJS77A0) deletes the previous releases of JES3 (if the optional "dummy" function delete was not performed).

Sample job IATJDLFN will RECEIVE, APPLY, and ACCEPT a function named DM1JES3. During SMP/E processing, the functions deleted by DM1JES3 (and all dependent functions) are removed from the target and distribution zones. After the APPLY and ACCEPT of function DM1JES3 has completed, the JES3 libraries will be empty. The sample job also contains commented steps UCLIN and REJECT. If these steps are uncommented, the job will clean up the CSI zone entries for DM1JES3 along with the entries for the deleted JES3 releases and any associated product HOLDDATA.

During RECEIVE processing of function DM1JES3, a condition code of 4 is expected along with the following message:

```
GIM39701W SYSMOD DM1JES3 HAS NO ELEMENTS.
```

During APPLY processing of function DM1JES3, a return code of 4 is expected, along with the following messages if USERMOD ASMJES3 had been installed previously (*xxxxxxx* will be multiple module names):

```
GIM44502W CHANGES FOR THE FOLLOWING USERMODS WILL BE LOST BECAUSE
           THE ASSOCIATED FUNCTION SYSMOD HAS BEEN DELETED.

GIM44601I USERMOD ASMJES3 IN MOD xxxxxxx
```

8.3.2.3 Run the Optional Delete Job for SDSF: Before you install SDSF, you might consider dummy function deleting the prior level of SDSF to decrease installation runtime. You can create a dummy function delete job modeled after HASIDLFN to delete SDSF.

8.3.3 Allocate Target and Distribution Libraries for Wave 2 Elements

Figure 33 contains the sample jobs used to allocate and catalog the target and distribution libraries for JES2, JES3, and SDSF. To use a sample job, copy the job and customize it as required for your installation. The table contains the following fields.

Job Name   Name of the sample job to be run.
Job Type   Type of job that is to be run.
Description   Element name for which the job is to be run.
RELFILE   Identifies the location of the sample job.

Note: If you are installing on a clone of the system, many of these data sets should already exist.

Figure 33. Wave 2 Allocate Sample Installation Jobs

Job Name	Job Type	Description	RELFILE
HASIALC	ALLOCATE	JES2	'prefix.HJE77A0.F1'
IATJALC	ALLOCATE	JES3	'prefix.HJS77A0.F1'
ISFISALC	ALLOCATE	SDSF	'prefix.HQX77A0.F2'

Note:

- The 'prefix' is the qualifier specified as the DSPREFIX in the SMP/E Options or the SMPTLIB DDDEF.
- If you specify a volume for any data set in the allocate job, you must also specify the same volume in the corresponding DDDEF entry in the DDDEF job (see Figure 35 on page 120).

The sample job specifies the storage requirements in blocks. You can use the storage allocations as they are, or convert them to cylinder or track allocations. Refer to Appendix C, "DASD Storage Requirements Tables" on page 331 for the appropriate DASD storage requirements.

After the sample allocate jobs are run, verify the condition code is 0 and check the allocation messages to ensure all libraries were successfully allocated.

8.3.4 Set up File System Directories for Wave 2

You must create the required directories in the root file system for the target system before installing SDSF, if the directories required for installation of SDSF do not exist. You can create the directories by running the sample jobs listed in Figure 34. The following fields are represented.

Job Name   Name of the job that is to be run.
Job Type   Type of job that is to be run.
Description   Element name for which the job is to be run.
RELFILE   Identifies the location of the sample job.

Figure 34. Wave 2 Define Directories Sample Installation Jobs

Job Name	Job Type	Description	RELFILE
ISFISMKD	MKDIR	SDSF	'prefix.HQX77A0.F2'

Notes:

1. The 'prefix' is the high-level qualifier value specified as the DSPREFIX value in the SMPTLIB DDDEF or the OPTIONS entry of the global zone.

2. After the above job is run, the expected return code is 0.

8.3.5 Define DDDEFs for Wave 2 Elements

Figure 35 contains the sample jobs used to create the target and distribution DDDEFs unique to JES2, SDSF, and JES3. To use a sample job, copy the job and customize it as required for your installation. You only need to run these jobs if any of the DDDEF entries do not exist. The following fields are represented.

Job Name   Name of the sample job to be run.
Job Type   Type of job that is to be run.
Description   Element name for which the job is to be run.
RELFILE   Location of the sample job.

Figure 35. Wave 2 DDDEF Sample Installation Jobs

Job Name	Job Type	Description	RELFILE
HASIDDEF	DDDEF	JES2	'prefix.HJE77A0.F1'
IATJDDEF	DDDEF	JES3	'prefix.HJS77A0.F1'
ISFISDDD	DDDEF	SDSF	'prefix.HQX77A0.F2'

Notes:

1. The 'prefix' is the qualifier specified as the DSPREFIX in the SMP/E Options or the SMPTLIB DDDEF.

2. For the elements in the above table, if you specify a volume for any dataset in the DDDEF job, you must also specify the same volume in the corresponding allocate entry in the allocate job (see Figure 33 on page 119).

If you are installing Wave 2 elements in target and distribution zones that contained a previously installed release, you must replace the existing DDDEF entries for the JES2, JES3, and SDSF libraries of previous releases with the DDDEF entries for the libraries of current release.

If you use sample job HASIDDEF, IATJDDEF, or ISFISDDD to replace the existing DDDEF entries, you must change the ADD to REP in the sample job before running the job.

A condition code of 0 is expected if the DDDEF entries are successfully added to the SMP/E CSI when the sample jobs are run.

8.3.6 Set High Level Assembler Option for SDSF

For SDSF to assemble correctly, the High Level Assembler option must be set to OPTABLE(UNI); OPTABLE(ESA) will not work.

8.3.7 Set High Level Assembler Option for JES2

For JES2 to assemble correctly, set the SMP/E Global Utility ASMA90 options in the GLOBAL zone in the SMP/E CSI that is used for the installation of the z/OS release as follows:

- GOFF
- LIST(133)
- DECK
- NOOBJECT

In addition, you must do one of the following actions:

- Specify a unique output file using the print operand - for example, PRINT(ASMPRINT) - and create a DDDEF in the target and DLIB zones for ASMPRINT, specifying SYSOUT
- Add the following JCL DD card to the APPLY jobs:

```
//SYSPRINT DD SYSOUT=*,LRECL=133,RECFM=FBA
```

8.3.8 APPLY Wave 2

The following sections describe the steps needed to APPLY Wave 2.

8.3.8.1 Do an SMP/E APPLY CHECK for Wave 2: Run an APPLY CHECK to identify any requisite service, and additional holds (for example, HOLDSYS(DOC)), that may need to be resolved before APPLY processing. Resolve any holds and receive any requisite service identified by the APPLY CHECK before the next step.

Figure 36 on page 122 shows a sample APPLY CHECK for the functions specified in the SELECT operand, plus received PTFs that are applicable only to the FMIDs listed in the FORFMID.

```
//CHECK JOB <job parameters>
//STEP1 EXEC PGM=GIMSMP,REGION=0M,TIME=NOLIMIT
//STEPLIB DD DSN=SYS1.MIGLIB,DISP=SHR,
//         UNIT=SYSALLDA,VOL=SER=v2r2vol1
//       DD DSN=ASM.SASMMOD1,DISP=SHR,
//         UNIT=SYSALLDA,VOL=SER=v2r2vol1
//SMPCSI DD DSN=zosv2r2.global.csi,DISP=SHR
//SMPCNTL DD *
  SET BOUNDARY(targetzone)
      OPTIONS(ZOSOPT) .
  APPLY CHECK  XZREQ
       FORFMID(HJE77A0,HQX77A0,HJS77A0
               JJE77AJ,JQX77AJ)  /* If not ordered, remove */
       SELECT(HJE77A0,HQX77A0,HJS77A0
               JJE77AJ,JQX77AJ)  /* If not ordered, remove */
  SOURCEID(ZOSV2R2,RSU*)
  FIXCAT(IBM.ProductInstall-RequiredService)
  GROUPEXTEND(NOAPARS,NOUSERMODS)
  BYPASS(HOLDSYSTEM,HOLDUSER,
  HOLDCLASS(ERREL,UCLREL,HIPER)) .
/*
```

Figure 36. SMP/E APPLY CHECK for Wave 2 (all FMIDs and All Service)

Note: ZOSOPT is now the option name for z/OS.

Required Updates

1. Update the job parameters.
2. Either remove the STEPLIB (if you are using the Wave 1 target system to install Wave 2) or update the v2r2vol1 with the volume serial number for the MIGLIB and the SASMMOD1 libraries which were the targets of the Wave 0 install. This will allow you to access the z/OS V2.2.0 level of the Wave 0 elements using the STEPLIB DD statements.
3. Replace the CSI name on the SMPCSI DD statement with your CSI name.
4. Update targetzone to your target zone name.
5. The XZREQ operand only needs to be specified when cross-zone processing is required.
6. If you plan to use JES2 and SDSF only, just remove the JES3 FMID HJS77A0 from the FORFMID and SELECT operands in the sample job above before running the job.

Note that if you BYPASS(HOLDCLASS(HIPER)), you should run the SMP/E REPORT ERRSYSMODS command to identify missing HIPER HOLDs before putting your system into production.

If you do not BYPASS(HOLDCLASS(HIPER)), the FMIDs may not be installed if any of the HIPER maintenance is unavailable.

Any messages other than those listed in 6.7, "Step 6: Review general installation notes" on page 44 or listed below should be investigated.

Notes:

1. The XZREQ operand only needs to be specified when cross-zone processing is required. If this operand is specified when there is no zone group set up, the following messages will be received, which are acceptable:

```
GIM50810W THE XZREQ OPERAND WAS SPECIFIED ON
THE APPLY COMMAND BUT SINCE NO ZONES WERE APPLICABLE
FOR CROSS-ZONE REQUISITE CHECKING,
THE XZREQ OPERAND WILL BE IGNORED.

GIM20501I APPLY PROCESSING IS COMPLETE.
THE HIGHEST RETURN CODE WAS 04.
```

Successful APPLY CHECK processing of JES2 and SDSF returns a condition code of 0. If JES3 is included in the APPLY CHECK, then successful APPLY CHECK processing returns a condition code of 4.

8.3.8.1.1 Messages expected during APPLY CHECK Processing for JES3: During the installation of the JES3 component you can expect to receive the following messages:

```
GIM61903W LMOD IATUX86 WAS NOT DELETED BY
SYSMOD HJS77A0 BECAUSE IT IS NOT IN THE target ZONE.

GIM61903W LMOD IATIMDL WAS NOT DELETED BY
SYSMOD HJS77A0 BECAUSE IT IS NOT IN THE target ZONE.
```

These messages are acceptable. Any messages other than the messages listed above or the messages identified in 6.7, "Step 6: Review general installation notes" on page 44 must be investigated.

A condition code of 4 is expected during APPLY CHECK processing for JES3.

8.3.8.2 Do an SMP/E APPLY for Wave 2: **Do not specify ASSEM on the APPLY command for JES2 or JES3.** The specification of ASSEM on the APPLY command can cause serviceability problems.

Be certain that all exception conditions have been satisfied before adding a BYPASS(HOLDSYSTEM) during the SMP/E APPLY step.

Figure 37 on page 124 shows a sample APPLY for the functions specified in the SELECT operand, plus received PTFs that are applicable only to the FMIDs listed in the FORFMID.

```
//APPLY JOB <job parameters>
//STEP1 EXEC PGM=GIMSMP,REGION=0M,TIME=NOLIMIT
//STEPLIB DD DSN=SYS1.MIGLIB,DISP=SHR,
//         UNIT=SYSALLDA,VOL=SER=v2r2vol1
//         DD DSN=ASM.SASMMOD1,DISP=SHR,
//          UNIT=SYSALLDA,VOL=SER=v2r2vol1
//SMPCSI DD DSN=zosv2r2.global.csi,DISP=SHR
//SMPCNTL DD *
  SET BOUNDARY(targetzone)
      OPTIONS(ZOSOPT) .
  APPLY  XZREQ
        FORFMID(HJE77A0,HQX77A0,HJS77A0
                JJE77AJ,JQX77AJ)  /* If not ordered, remove */
        SELECT(HJE77A0,HQX77A0,HJS77A0
                JJE77AJ,JQX77AJ)   /* If not ordered, remove */
  SOURCEID(ZOSV2R2,RSU*)
  FIXCAT(IBM.ProductInstall-RequiredService)
  BYPASS(HOLDSYSTEM,HOLDUSER,
  HOLDCLASS(ERREL,UCLREL,HIPER))
  GROUPEXTEND(NOAPARS,NOUSERMODS)
  COMPRESS(ALL) .
/*
```

Figure 37. SMP/E APPLY for Wave 2 (FMIDs and All Service)

Note: ZOSOPT is now the option name for z/OS.

Required Updates

1. Update the job parameters.

2. Either remove the STEPLIB (if you are using the Wave 1 target system to install Wave 2) or update the v2r2vol1 with the volume serial number for the MIGLIB and the SASMMOD1 libraries which were the targets of the Wave 0 install. This will allow you to access the z/OS V2.2.0 level of the Wave 0 elements using the STEPLIB DD statements.

3. Replace the CSI name on the SMPCSI DD statement with your CSI name.

4. Update targetzone to your target zone name.

5. The XZREQ operand only needs to be specified when cross-zone processing is required.

6. If you plan to use JES2 and SDSF only, just remove the JES3 FMID HJS77A0 from the FORFMID and SELECT operands in the sample job above before running the job.

Note that if you BYPASS(HOLDCLASS(HIPER)), you should run the SMP/E REPORT ERRSYSMODS command to identify missing HIPER HOLDs before putting your system into production.

If you do not BYPASS(HOLDCLASS(HIPER)), the FMIDs may not be installed if any of the HIPER maintenance is unavailable.

Any messages other than those listed in 6.7, "Step 6: Review general installation notes" on page 44 or those listed below should be investigated.

Notes:

1. The XZREQ operand only needs to be specified when cross-zone processing is required. If this operand is specified when there is no zone group set up, the following messages will be received, which are acceptable:

```
GIM50810W THE XZREQ OPERAND WAS SPECIFIED ON
THE APPLY COMMAND BUT SINCE NO ZONES WERE APPLICABLE
FOR CROSS-ZONE REQUISITE CHECKING,
THE XZREQ OPERAND WILL BE IGNORED.

GIM20501I APPLY PROCESSING IS COMPLETE.
THE HIGHEST RETURN CODE WAS 04.
```

Successful APPLY processing of JES2 and SDSF returns a condition code of 0. If JES3 is included in the APPLY processing, then successful APPLY processing returns a condition code of 4.

8.3.8.2.1 Messages expected during APPLY Processing for JES3

During the installation of the JES3 component you can expect to receive the following messages:

```
GIM61903W  LMOD IATUX86 WAS NOT DELETED BY
SYSMOD HJS77A0 BECAUSE IT IS NOT IN THE target ZONE.

GIM61903W  LMOD IATIMDL WAS NOT DELETED
BY SYSMOD HJS77A0 BECAUSE IT IS NOT IN THE target ZONE.

GIM23903W LINK-EDIT PROCESSING FOR
SYSMOD xxxxxxx WAS SUCCESSFUL
FOR MODULE xxxxxxxx IN LMOD xxxxxxxx
IN THE xxxxxx LIBRARY. THE RETURN CODE WAS 04.
```

Note: This message might be GIM23903I, depending on the SMP/E service level you have on your driving system.

You might receive either message GIM23903W or the following GIM23913W message for load modules IATNUCF and IATNUCI:

```
GIM23913W LINK-EDIT PROCESSING FOR
SYSMOD HJS77A0 WAS SUCCESSFUL
FOR MODULE xxxxxxxx IN LMOD xxxxxxxx IN THE SIATLIB LIBRARY.
THE RETURN CODE WAS 04.
DATE yy.ddd - TIME hh:mm:ss -
SEQUENCE NUMBER nnnnnn - SYSPRINT FILE nnnnnnnn.
```

These messages are acceptable. Because of the following IEW2454W messages, and the resulting condition code, SMP/E will produce message GIM23903W for every load module that was link-edited in the same utility invocation.

During the installation of the JES3 component you might receive IEW2454W messages (unresolved external references) during the link-edit of load module IATNUCF. The references are:

```
DSDDDR DSIFCT IATCNINX LJMFFCT SMFBUFAB SMFBUFBL
TAPDDR  VARYLFCT
```

You might also receive an IEW0461 or IEW2454W message during the link-edit of load module IATNUCI with an unresolved external reference for IATINIT. These messages are acceptable.

8.4 Step 4: Do Post-APPLY work for Wave 1 and Wave 2

Once you have successfully SMP/E APPLY'd all the Wave 1 elements and Wave 2 elements, you must perform the Post-APPLY activities. Post-APPLY work for Wave 1 and Wave 2 must be run from your **driving** system unless otherwise specified.

Post-APPLY jobs include:

- Wave 1A:
  - Compile MMS data sets
  - Run Post-Apply for Communications Server IP Services
- Wave 1B:
  - There are no Post-APPLY steps for Wave 1B FMIDs.
- Wave 1C:
  - Copy online books and dictionaries
  - Run Post-APPLY link-edit for BookManager READ
  - Update font library with BookManager READ fonts
  - Run Post-APPLY link-edit for FFST
  - Run TSO/E Information Center Facility Post-APPLY ICQPOST1 and ICQPOST2 (when appropriate)
- Wave 1D:

  Cryptographic Services PKI Services:
  - Run sample job to allocate VSAM datasets for runtime use.
  - Run sample REXX exec to define RACF user IDs and profiles.
- General:
  - Run sample job, CLNCRSZ, an SMP/E REPORT CROSSZONE

Note: IBM has verified that every product that is now part of z/OS and that supplies CALLLIB'd libraries is upwardly compatible. Therefore, a REPORT CALLLIBS is not required.

8.4.1 Wave 1A Post-Installation jobs

8.4.1.1 Compile MMS Data Sets

After installing BCP, if you choose to use the MVS Message Service (MMS) the message files must be compiled into runtime message files. If you will be installing additional elements (such as TSO/E or JES2) into the message files, it is only necessary to compile these message files once. After the installation of the additional products or elements, compilation can begin.

For the MVS message service (MMS) to handle translated messages, your installation must use the MVS message compiler to format and install message files that contain English message skeletons and translated language message skeletons. The following summarizes the steps for providing translated messages:

- Verify the message files are correctly installed on your system.
- Allocate space for each runtime message file. Edit and run the job in member CNLDEFCL to allocate runtime message files. CNLDEFCL is supplied in your SAMPLIB library on the target system after APPLY processing has completed.
- Use the MVS message compiler to format the installation message file into a runtime message file. Edit and run the job in member CNLCOMP to compile and load the runtime message files. CNLCOMP is supplied in your SAMPLIB library on the target system after APPLY processing has completed.
- Create installation exit routines, if needed.
- Create or update the SYS1.PARMLIB members to initialize values for MMS:
  CNLLSTxx define the available languages for message translation. A sample CNLLSTXX is provided in the SYS1.SAMPLIB library.
  CNLcccxx define the date and time formats.
  CONSOLxx specify the CNLLSTxx member in effect for the system.
- Activate MMS.

See the description of how to activate MMS, creating installation exits, and how to handle translated messages in *z/OS MVS Planning: Operations*.

8.4.1.2 Run Post-APPLY for Communications Server IP Services

The following sections describe the post-apply steps for Communications Server IP Services.

8.4.1.2.1 Perform SMP/E LINK for IMS™ module

The Communications Server IP Services IMS sockets interface requires an IMS load module during link-edit. The APPLY for LMOD EZAIMSLN will receive a return code of 0004. After the APPLY, these modules are not executable. At this point, you are required to run a postlink job to make the Communications Server IP Services IMS module be fully resolved. This is accomplished by executing EZAIMSCZ, supplied in *TCPIP*.SEZAINST. The EZAIMSCZ job invokes the LINK function supplied with SMP/E.

EZAIMSCZ performs a cross-zone link-edit. Communications Server IP Services should not be installed into the same SMP/E zone as IMS. SMP/E tracks this cross-zone link and if subsequent IMS maintenance is applied, SMP/E can automatically maintain the affected Communications Server IP Services load modules. For the automatic maintenance to occur, the IMS global zone must contain

zoneindex subentries to the z/OS target and distribution zones and must have an options entry for ZOSOPT. The z/OS TARGETZONE XZLINK entry must be set to AUTOMATIC (it defaults to DEFERRED). See the *SMP/E Reference* for more information on XZLINK.

Before you submit EZAIMSCZ, your z/OS global zone containing Communications Server IP Services must contain zoneindex subentries for the target and distribution zones containing the IMS libraries. The index entries may be added using SMP/E interactive dialogs or by using JCL and SMP/E statements.

EZAIMSCZ may end with a condition code of 0004 caused by SMP/E warning message:

```
GIM69064W MODULE aaaaaa WILL BE LINK-EDITED
BUT ITS SERVICE LEVEL OR FMID IN THE DISTRIBUTION ZONE IS
DIFFERENT FROM THAT IN THE TARGET ZONE.
```

There are two possible solutions:

1. Investigate and solve the problem indicated by GIM69064.
2. Ignore the return code of 0004.

Complete the following steps:

- Create a ZONEINDEX in the z/OS global zone for the IMS target and distribution zones.
- Create a ZONEINDEX in the IMS global zone for the z/OS target and distribution zones.
- Submit the job and ensure you have a return code of 00.

8.4.2 Wave 1B Post-Installation jobs

There are no post-installation jobs for Wave 1B elements.

8.4.3 Wave 1C Post-Installation jobs

The following sections describe post-installation jobs for Wave 1C elements.

8.4.3.1 Copy online books and dictionaries

BookManager READ online books and dictionaries are shipped as partitioned data sets but must be copied to sequential data sets before they can be used. Edit and run the jobs in EOXUNLD (for BookManager READ) to copy these partitioned data sets to sequential data sets. This member is supplied in your SEOYSAMP library on the target system after APPLY processing has completed.

If you receive updates to the online books and dictionaries data sets, you must run these jobs again.

Notes:

1. If you are installing more than one language feature, run this job for the first language you are installing, then rerun this job for the other languages after changing ENU to the correct language abbreviation throughout the job.

   The list of National Languages and the respective abbreviations for BookManager READ (EOXUNLD) is:

```
                    PTB  Brazilian Portuguese
                    FRC  Canadian French
                    DAN  Danish
                    NLD  Netherlands Dutch
                    FRA  French
                    DEU  German
                    ITA  Italian
                    ESP  Spanish
```

2. The datasets required for copying online books are created when the EOYALLC2 job is run.

8.4.3.2 Run Post-APPLY Link-Edit for BookManager READ

If BookManager READ was installed during APPLY processing for Wave 1C elements, you must run a link-edit job for BookManager®.

Edit and run job EOXPLINK (for READ). This job resides in members of the SEOYSAMP library on the target system after successful APPLY processing. They link modules placed in BookManager's target libraries with the other modules needed to make them executable.

The Post-APPLY link-edit step may need to be run any time maintenance is performed to CALLLIBed libraries. However, it should not be required unless a PTF for one of these elements requires all application programs to relink-edit with the updated routines.

Notes:

1. Please note that GDDM is required and the EOXPLINK job should not be modified by removing the GDDM references.

2. The message IEW2646W may be generated indicating there is a mismatch between the RMODE values. This is not a problem and the message can be ignored.

3. In the EOXPLINK job, you may need to change AISPMOD1 to SISPLOAD in the SYSLIB DD statement. This will be necessary if you have dummy deleted the old level of ISPF before APPLYing the new level, and are running EOXPLINK before ACCEPTing the new level of ISPF. In this scenario, EOXPLINK would fail since the ISPF distribution libraries would be empty.

8.4.3.3 Update font library with BookManager READ Fonts

BookManager READ requires the Gothic BookManager Semilight font to print using the GML Starter Set option. This font is provided with BookManager READ in your SEOXFONT target library. Figure 38 on page 130 contains sample JCL that can be used to copy the Gothic BookManager Semilight font from your SEOXFONT target library to your FONTLIBB library.

Note: The C0BKGL15 member to be copied is an alias for the EOXF015 member; therefore, all members listed should be copied at the same time to preserve the alias relationship.

```
//FONTCOPY JOB <job parameter>      /*update the job parameter*/
//STEP1    EXEC PGM=IEBCOPY
//SYSPRINT DD SYSOUT=*
//SEOXFONT DD DSN=EOY.SEOXFONT,DISP=SHR
//FONTLIBB DD DSN=SYS1.FONTLIBB,DISP=SHR
//SYSIN    DD *
  COPY INDD=SEOXFONT,OUTDD=FONTLIBB
  SELECT MEMBER=(C0BKGL15,EOXF015)
/*
```

Figure 38. Sample JCL to Copy Gothic BookManager Semilight Fonts

Note: The following only applies if you have the PSF product. BookManager READ provides the Gothic BookManager Semilight font **only** in the 240-pel resolution. If you want to print using the GML Starter Set option on a 300-pel printer, you must use the font conversion utility APSRCF30 to convert the Gothic BookManager Semilight font to 300-pel resolution. See *PSF for z/OS: Customization* for information on using the APSRCF30 utility.

8.4.3.4 Run Post-APPLY Link-Edit for FFST

The Post-APPLY link-edit step might need to be run when maintenance is performed on FFST. Follow the specific instructions in the maintenance being installed. IEW2646W and IEW2651W messages may be generated indicating that there is a mismatch between the RMODE and AMODE values. This is not a problem and these messages can be ignored.

8.4.3.5 Run Post-APPLY for TSO/E Information Center Facility (when appropriate)

To use the Information Center function of TSO/E, you must allocate the data sets listed in Figure 39 if they are not present on your system. The attributes for these data sets must conform to the attributes of your ISPF/PDF table libraries. The minimum space allocation for each data set is 221 blocks. You may want to allocate more space to allow room for future expansion.

The tables distributed with the Information Center Facility are copied to the data sets in Figure 39 by the ICQPOST1 and ICQPOST2 jobs. These jobs are supplied in your SAMPLIB library on the target system after APPLY processing has completed.

Figure 39 (Page 1 of 2). Information Center Facility Data Sets

Data Set	Description
ICQ.ICQABTAB	Course abstracts
ICQ.ICQGCTAB	User requests
ICQ.ICQAATAB	Names
ICQ.ICQANTAB	News
ICQ.ICQTLIB	User enrollment tables
ICQ.ICQAPTAB	Printer support

Figure 39 (Page 2 of 2). Information Center Facility Data Sets

Data Set	Description
ICQ.ICQAMTAB	Administrator Application Manager tables
ICQ.ICQCMTAB	User Application Manager tables

Note: New Information Center Facility installations can execute ICQPOST1 and ICQPOST2 to distribute Information Center Facility parts to the appropriate execution libraries. If you are a previous user of the Information Center Facility, and you want to preserve customized data, do not execute the ICQPOST1 and ICQPOST2 jobs. These jobs replace tables that contain current Information Center Facility data for your installation.

8.4.4 Wave 1D Post-Installation jobs

The following section describes post-installation jobs for Wave 1D of the installation process.

8.4.4.1 Run Cryptographic Services PKI Services job

Run IKYCVSAM, the sample job to allocate VSAM data sets for runtime use. Sample job IKYCVSAM can be found in the SAMPLIB library after APPLY processing has completed.

8.4.5 Wave 1E Post-Installation jobs

There are no post-installation jobs for Wave 1E elements.

8.4.6 Wave 1F Post-Installation jobs

There are no post-installation jobs for Wave 1F elements.

8.4.7 Wave 1G Post-Installation jobs

There are no post-installation jobs for Wave 1G elements.

8.4.8 Wave 2 Post-Installation jobs

There are no post-installation jobs for Wave 2 elements.

8.4.9 Wave 1 and Wave 2 general Post-Installation jobs

The following sections describe post-installation jobs for Wave 1 and Wave 2.

8.4.9.1 Run SMP/E REPORT CROSSZONE (Target Zone)

If you did not use automatic cross-zone IFREQ checking when installing z/OS V2.2.0 Wave 1, you may run sample job CLNCRSZ, and see *SMP/E for z/OS Commands*, for information on the SMP/E REPORT CROSSZONE command. For instructions on how to set up cross-zone processing, see 7.3.1, "Create a cross-zone set" on page 56.

8.5 Step 5: Customize Wave 1 and Wave 2

Once you have successfully SMP/E APPLY'd the Wave 1 and Wave 2 elements and performed the Post-APPLY work, you must customize these elements. Customization for Wave 1 and Wave 2 may be run from your **driving** system unless otherwise specified.

It is important that you have read the migration requirements documented in *z/OS V2R2 Migration*.

8.5.1 Required setup

The following sections describe steps that are required to set up the system.

8.5.1.1 Reassemble stand-alone dump

When you install z/OS V2.2.0, you must reassemble the stand-alone dump program. For information on stand-alone dump, see *z/OS MVS Diagnosis: Tools and Service Aids*.

8.5.1.2 Complete DFSMSdss actions

If you are enabling DFSMSdss, ensure that the following tasks are completed.

If you intend to use the DFSMSdss stand-alone services, use the DFSMSdss BUILDSA function to build the IPLable stand-alone services core image. Perform this step after DFSMSdss is installed and accepted by SMP/E. Stand-alone services supports the following tape subsystems:

- 3494 Enterprise Automated Tape Library
- 3495 Enterprise Automated Tape Library
- 3590 Enterprise Tape Subsystem

Restriction: Stand-alone services does not allow you to create the core image on an SMS-managed volume.

Perform the following Migration Actions:

1. Prepare for stand-alone services by creating an IPLable core image with the BUILDSA command. You can specify the device (card reader,tape drive, or DASD volume) from which stand-alone services are IPLed. You also can specify the operator console to be used for stand-alone services.

2. Use RACF or another security product to protect the SYS1.ADR.SAIPLD.Vvolser data set and for the stand-alone services modules.

3. Make a backup copy of your system that can be restored by this function.

For the procedure, see the chapter in *z/OS DFSMSdss Storage Administration*, entitled "Managing Availability with DFSMSdss", specifically the section, "Backing up Volumes". For details, see *z/OS DFSMSdfp Storage Administration*.

8.5.1.3 Write new IPL TEXT

You must run IPLTEXT to write a new copy of the IPL text before IPLing your newly built z/OS system.

```
//IPLTEXT  JOB <job parameters>
//*MESSAGE PLEASE AUTHORIZE IPLTEXT UPDATE FOR volser(JES2 user)
//*OPERATOR PLEASE AUTHORIZE IPLTEXT UPDATE FOR volser(JES3 user)
//STP1    EXEC PGM=ICKDSF,REGION=0M
//SYSPRINT DD SYSOUT=*
//IVOL DD VOL=SER=volser,UNIT=SYSALLDA,DISP=SHR
//SAMPLIB DD DSN=SYS1.SAMPLIB(IPLRECS),DISP=SHR,UNIT=SYSALLDA,
//          VOL=SER=vvvvvv
//        DD DSN=SYS1.SAMPLIB(IEAIPL00),DISP=SHR,UNIT=SYSALLDA,
//          VOL=SER=vvvvvv
//SYSIN DD *
 REFORMAT DDNAME(IVOL) VERIFY(volser) IPLDD(SAMPLIB,OBJ) -
 BOOTSTRAP
 /*
```

Figure 40. Sample JCL for Writing the IPL Text

Required Updates

1. Update the *job parameters*.

2. Replace *vvvvvv* to your volume.

3. Replace *volser* to your IPL volume.

8.5.1.4 Create and update your IODF

IODFs created on prior z/OS releases can be used to IPL z/OS V2.2.0. For more information on IODF compatibility and how to create an IODF, see *z/OS HCD User's Guide*. If you are migrating to HCD, have OEM processor definitions in your current IODF, and have not received instruction from your OEM vendor, you should contact your IBM account team for additional information from the HCD development group. This, however, only applies to OEM processors that have been defined in the IODF using a non-IBM processor type/model.

8.5.2 PARMLIB member considerations

After z/OS V2.2.0 is installed, you must tailor the system to meet your installation's needs. You will need to review, modify, and create entries in SYS1.PARMLIB, SYS1.PROCLIB, and SYS*n*.IPLPARM. Some functions of z/OS Version 2 Release 2, such as APPC/MVS, require that you copy (and possibly modify) members from SYS1.SAMPLIB for use in other libraries.

z/OS provides the capability to concatenate up to ten additional data sets to SYS1.PARMLIB at IPL, creating a "logical PARMLIB." A logical PARMLIB is a concatenation of parameter libraries that can be accessed through a set of system services. The concatenation is defined in the LOAD*xx* PARMLIB member at system initialization but can be changed later with a SET command. Programs that use these services can access PARMLIB members without being aware of which data sets actually comprise the concatenation. You can use separate PARMLIB data sets to isolate IBM-supplied and SMP/E-supported members from locally customized members. For information on PARMLIB concatenation, see *z/OS MVS Initialization and Tuning Reference*.

SMP/E installation places a number of members in the PARMLIB pointed to by the PARMLIB DDDEF in your target zone, or the PARMLIB DD statement in your SMP/E procedure. This PARMLIB data set is a copy of your production PARMLIB, as described in 6.1, "Overview for the clone of your system" on page 31. Before IPLing your production system, you must do one of the following:

1. Concatenate the PARMLIB pointed to by the SMP/E DDDEF.

2. Copy the members that SMP/E installed into your production PARMLIB concatenation.

3. Update your existing members to reflect any needed changes.

The following is a complete list of PARMLIB members that were shipped with the exclusive element FMIDs when this program directory was written. It is possible that a PTF could add or change a PARMLIB member, so you should also check the Element Summary Report in your SMP/E APPLY output for any new elements with a type of ++PARM to ensure that this list is complete when you perform your installation.

For a list of all samples used in PARMLIB and shipped in SYS1.SAMPLIB, refer to Figure 42 on page 135.

8.5.2.1 What is new for z/OS V2.2.0: For a summary of PARMLIB changes in this release, see *z/OS MVS Initialization and Tuning Reference*.

8.5.2.2 z/OS Version 2 Release 2 PARMLIB members: Figure 41 shows the SMP/E supported PARMLIB members that are installed directly into SYS1.PARMLIB.

Figure 41 (Page 1 of 2). PARMLIB Members Installed Directly in SYS1.PARMLIB

ADYSET00	ADYSET01	ADYSET02	ANTMIN00	ANTXIN00	ASAIPCSP
ASBIPCSP	ATBIPCSP	AUTORRM	AUTORRP	AUTOR00	BDTIPCSP

Figure 41 (Page 2 of 2). PARMLIB Members Installed Directly in SYS1.PARMLIB

BHIIPCSP	BLSCECT	BLSCECTX	BPXIPCSP	CEAPRM00	CEEIPCSP
CLOCK00	CNLENU00	CNLJPN00	COFDLF00	COFIPCSP	COFVLF00
COUPLE00	CSFIPCSP	CTIAXR00	CTIBPX00	CTIBPX01	CTICBR00
CTICEA00	CTICSF00	CTIDMD00	CTIDMP00	CTIEZBTN	CTIEZB00
CTIGRS00	CTIHWI00	CTIHZS00	CTIIDS00	CTIIEFAL	CTIIKE00
CTIITT00	CTIJES01	CTIJES02	CTIJES03	CTIJES04	CTILOG00
CTINFC00	CTINFS00	CTINSS00	CTINTA00	CTIOPS00	CTIORA00
CTIRES00	CTIRSMSP	CTIRSM01	CTISMS00	CTIXCF00	CTIXES00
DIAG00	DIAG01	DIAG02	ERBRMF00	ERBRMF01	ERBRMF02
ERBRMF03	ERBRMF04	EZAIPCSP	GPMSRV00	GRSCNF00	GRSRNL00
GTFPARM	GTZPRM00	GXLIPCSP	HZSPRM00	IARIPCSP	IAXIPCSP
IAZIPCSP	ICHIPCSP	IDAVDT00	IEAABD00	IEACMD00	IEADMP00
IEADMR00	IEAIPCSP	IEAOPT00	IEAPAK00	IEASLP00	IEAVIPCS
IEFIPCSA	IEFIPCSI	IEFIPCST	IEFSSN00	IGWIPCSP	IPCSPR00
ISGIPCSP	IVTPRM00	IXCIPCSP	IXGIPCSP	IXLIPCSP	IXZIPCSP

Attention

If you do not make necessary changes to SYS1.PARMLIB, SYS1.PROCLIB, and SYS*n*.IPLPARM, the system might not initialize or run successfully. For example:

- If you do not create a LOAD*xx* PARMLIB member, your system will not IPL.
- If the copies of BLSCECT and all the other IPCS PARMLIB members used on your production system are not current, IPCS might fail when you attempt to use it.

When you migrate to z/OS V2.2.0, you must complete certain actions before loading the initial program for the z/OS V2.2.0 target system. For a complete description of all changes needed for a migration, see *z/OS V2R2 Migration*.

For information on PARMLIB members, see *z/OS MVS Initialization and Tuning Reference*.

Figure 42 describes the PARMLIB updates that are recommended for z/OS V2.2.0. For additional information on PARMLIB considerations, see the individual elements' customization books and *z/OS MVS Initialization and Tuning Guide*. The PARMLIB members shown are for example only. Be sure to change the high-level qualifier of the data sets to match your installation.

Figure 42 (Page 1 of 11). PARMLIB Updates		
PARMLIB Member	**TEXT**	**Element Name**
APPCPM*xx*	See SAMPLIB members APPCPMRX and APPCPMXX.	BCP
ASCHPM*xx*	See SAMPLIB members ASCHPMRX and ASCHPMXX.	BCP
AXR00	See SAMPLIB member AXR00.	BCP
BPXPRM*xx*	FILESYSTYPE TYPE(HFS) ENTRYPOINT(GFUAINIT)	BCP (see note)
Notes:		
1. The FILESYSTYPE statement allows you to mount an HFS, which is needed in Wave 1. 2. If you plan to use a root zFS file system, you may specify TYPE(ZFS) on the FILESYSTYPE statement.		
COFVLF*xx*	CLASS NAME(CSVLLA) EMAJ(LLA)	BCP
	CLASS NAME(IRRGTS) EMAJ(GTS) CLASS NAME(IRRGMAP) EMAJ(GMAP) CLASS NAME(IRRSMAP) EMAJ(SMAP) CLASS NAME(IRRUMAP) EMAJ(UMAP) CLASS NAME(IRRACEE) EMAJ(ACEE)	RACF (see note)
Note: The RACF sample is provided in member RACPARM of SAMPLIB.		
COMMND*xx*	COM='S EPWFFST.FFST, SUB=MSTR'	FFST
	COM='S EZAZSSI,P=nodename'	Communications Server IP Services
	COM='S RMF.RMF,,,MEMBER(00)'	RMF
	COM='S SDSF'	SDSF (see note)
	COM='S ICEOPT,ICEPRM=xx' COM='S ICEOPT,ICEPRM=(x1,...,xn)'	DFSORT (see note)
Notes:		
• Start procedure FFSTPROC contains DD statements for SYSPRINT and SYSABEND that contain SYSOUT=A. SYSOUT is only allowed if the procedure is started by JES. If you still want FFST to be started by the master scheduler, change the DD statements for SYSPRINT and SYSABEND so that they contain typical data set information. • Use the 'S SDSF' command to start the SDSF server whenever the system is IPLed. The SDSF server must be active on each system that has SDSF users. • You can use the 'S ICEOPT,ICEPRM=xx' command to activate an ICEPRMxx member that contains changes to the installation defaults of DFSORT. You can use the 'S ICEOPT,ICEPRM=(x1,...,xn)' command to activate multiple ICEPRMxx members that contain changes to the installation defaults of DFSORT. See *z/OS DFSORT Installation and Customization* for details.		

PARMLIB Member	TEXT	Element Name
Figure 42 (Page 2 of 11). PARMLIB Updates		
CTI*xxxxx*	Default PARMLIB members provided: CTIAXR00, CTIBPX00, CTIBPX01, CTICEA00, CTIDMP00 CTIGRS00, CTIHWI00, CTIHZS00, CTIIEFAL, CTIITT00 CTIJES01, CTIJES02, CTIJES03, CTIJES04, CTILOG00 CTIOPS00, CTIRSMSP, CTIRSM01, CTIXCF00, CTIXES00	BCP
	Default PARMLIB member provided: CTICBR00 CTISMS00	DFSMS
	Default PARMLIB members provided: CTIDMD00, CTIEZBTN, CTIEZB00, CTIIDS00, CTIIKE00, CTINSS00, CTINTA00, CTIORA00, CTIRES00	Communications Server IP Services
	Default PARMLIB members provided: CTINFC00 (for NFS Client), CTINFS00 (for NFS Server)	NFS
	Default PARMLIB members provided: CTICSF00	Cryptographic Services ICSF
EPHWP*xx*	EPH	Library Server
Note: See 8.5.5.9.2, "Library Server customization considerations" on page 194 for more information about EPHWPxx.		
ERBRMF*xx*	Default PARMLIB members provided: ERBRMF00, ERBRMF01, ERBRMF02, ERBRMF03, ERBRMF04	RMF
GPMSRV*xx*	Default PARMLIB member GPMSRV00 provided for RMF Distributed Data Server.	RMF
GTZPRM00	Recommended PARMLIB member GTZPRM00 provided for IBM Generic Tracker for z/OS	BCP
HZSPRM00	Default PARMLIB member HZSPRM00 provided for IBM Health Checker for z/OS	BCP

Figure 42 (Page 3 of 11). PARMLIB Updates		
PARMLIB Member	**TEXT**	**Element Name**
*xxx*IPCSP	Default PARMLIB members: ASAIPCSP, ASBIPCSP, ATBIPCSP, BHIIPCSP, BPXIPCSP, COFIPCSP, GXLIPCSP, IARIPCSP, IAXIPCSP, IAZIPCSP, IEAIPCSP, ISGIPCSP, IXCIPCSP, IXGIPCSP, IXLIPCSP, IXZIPCSP	BCP
	Default PARMLIB member: BDTIPCSP	BDT
	Default PARMLIB member: EZAIPCSP	Communications Server IP Services
	Default PARMLIB member: IGWIPCSP	DFSMS
	Default PARMLIB member: CSFIPCSP	Cryptographic Services ICSF
	Default PARMLIB member: HASLIPCS	JES2
	Default PARMLIB members: IATIPCSI, IATIPCSP	JES3
	Default PARMLIB member: CEEIPCSP	Language Environment
	Default PARMLIB member: ICHIPCSP	RACF
	Copy member from SISFJCL: ISFIPCSP	SDSF
IEASYS*xx*	Update suffixes as required to specify updated PARMLIB members OMVS=xx. OMVS=xx specifies BPXPRMxx parmlib member.	z/OS UNIX System Services
Note: The OMVS parameter specifies the PARMLIB member or members to use to locate the PARMLIB statements to configure the z/OS UNIX System Services kernel.		
IECIOSxx	`MIH TIME=mm:ss,DEV=(dddd-dddd)`	Communications Server IP Services
Note: Update IECIOSxx with the ranges of addresses used on the Communication devices. For a description of the appropriate advice with respect to MIH, see *z/OS V2R2.0 Communications Server: IP Configuration Reference*.		

PARMLIB Member	TEXT	Element Name

IEFSSN*xx*	`SUBSYS SUBNAME(JES2)`
	` PRIMARY(YES) START(YES)`
	`SUBSYS SUBNAME(IRLM)`
	`SUBSYS SUBNAME(JRLM)`
		BCP
		(see note 1)

	`SUBSYS SUBNAME(BDT)`	BDT

	`SUBSYS SUBNAME(SMS)`
	`INITRTN(IGDSSIIN)`
	`INITPARM('ID=xx,PROMPT=DISPLAY')`
	`SUBSYS SUBNAME(OAM1)`
	`INITRTN(CBRINIT)`
		DFSMS
		(see note 4)

	`SUBSYS SUBNAME(FFST)`	FFST
	`SUBSYS SUBNAME(ISPF)` `   INITRTN(ISPDTSSI)`	ISPF (see note 3)

	`SUBSYS SUBNAME(RACF)`
	`   INITRTN(IRRSSI00)`
	`   INITPARM('%,X')`
		RACF
		(see note 2)

	`SUBSYS SUBNAME(TNF)`
	`SUBSYS SUBNAME(VMCF)`
	`   or`
	`TNF`
	`VMCF`
		Communications Server IP Services
		(see note 5)

Figure 42 (Page 4 of 11). PARMLIB Updates

Notes:

1. The BCP member is provided in member IEFSSN00 of PARMLIB.
2. An additional RACF sample is provided in member RACPARM of SAMPLIB.
3. The ISPF member is required only if using ISPF GUI TSO Linemode Support. See *z/OS V2R2 ISPF Planning and Customizing* for more information.
4. where xx refers to your IGDSMSxx member of PARMLIB. See *z/OS MVS Initialization and Tuning Guide* for more information about IEFSSNxx.
5. VMCF and TNF are restartable beginning with TCP/IP 3.2 and with this enhancement, display and easy modification of the VMCF and TNF subsystems are possible. See *z/OS V2R2.0 Communications Server: IP Configuration Guide* for more information and command syntax associated with the restartable VMCF and TNF enhancements.

Figure 42 (Page 5 of 11). PARMLIB Updates		
PARMLIB Member	**TEXT**	**Element Name**
IFAPRD*xx*	To define the enablement policy for base elements and features. For details, see 8.5.2.3, "IFAPRDxx considerations" on page 146.	BDT SNA NJE BDT File-to-File XL C/C++ DFSMSdss DFSMShsm DFSMSrmm DFSMStvs DFSORT GDDM-PGF (*) GDDM-REXX HCM HLASM Toolkit (*) Infoprint Server Communications Server IP Services Communications Server IP Services CICS Sockets Communications Server IP Services IMS Sockets JES3 SDSF RMF Security Server RACF zEnterprise Data Compression (zEDC)
Notes:		
• (*) indicates the element may register as a z/OS Version 2 Release 2 feature or as a stand-alone product. • Communications Server IP Services is the element name for TCP/IP, but the name entry for TCP/IP remains unchanged in the IFAPRDxx member. • IFAPRD00 is built by CBPDO RIMLIB job ZOSREG.		
IGDSMS*xx*	`SMS ACDS(sys1.xxx.ACDS)` `    COMMDS(sys1.xxx.COMMDS)`	DFSMS (see note below)
Note: `sys1.xxx.ACDS` is the name of your Active Control Dataset and `sys1.xxx.COMMDS` is the name of your Communications data set. See *z/OS MVS Initialization and Tuning Guide* for more information about IGDSMSxx.		

Figure 42 (Page 6 of 11). PARMLIB Updates		
PARMLIB Member	**TEXT**	**Element Name**
| IKJTSO*xx* | ```
AUTHCMD NAMES(
 BINDDATA BDATA
 EXPORT   EXP
 IMPORT   IMP
 LISTD    LISTDS
 LISTDATA LDATA
 PRINT
 REPRO
 RMM
 SETCACHE SETC
 SHCDS
 VERIFY   VFY
``` | DFSMS |
| | ```
 AD       ADDSD
 AG       ADDGROUP
 AU       ADDUSER
 ALG      ALTGROUP
 ALD      ALTDSD
 ALU      ALTUSER
 BLKUPD
 CO       CONNECT
 DD       DELDSD
 DG       DELGROUP
 DU       DELUSER
 IRRDPI00
 LD       LISTDSD
 LG       LISTGRP
 LU       LISTUSER
 RACDCERT
 RACLINK
 RACMAP
 RACPRIV
 RALT     RALTER
 RDEF     RDEFINE
 RDEL     RDELETE
 RE       REMOVE
 RL       RLIST
 RVARY
 PASSWORD PW
 PHRASE
 PE       PERMIT
 SETR     SETROPTS
 SR       SEARCH
``` | RACF |

Figure 42 (Page 7 of 11). PARMLIB Updates

PARMLIB Member	TEXT	Element Name
IKJTSO*xx* (continued)	LPQ LPR LPRM MODDVIPA MVPXDISP PING RSH TRACERTE	Communications Server IP Services
	ADYOPCMD CONSPROF LISTB LISTBC IKJPRMLB PARMLIB RACONVRT RECEIVE SE SEND SYNC TESTAUTH TESTA TRANSMIT XMIT)	TSO/E
	AUTHPGM NAMES(	
	AOPCMND	Infoprint Server
	CSFDAUTH CSFDPKDS	Cryptographic Services ICSF
	EDGAUD EDGBKUP EDGHSKP EDGRPTD EDGUPDT EDGUTIL	DFSMS RMM
	GIMSMP	SMP/E
	ICHDSM00 IRRDPI00 IRRUT100 IRRUT200 IRRUT400 IRRXUTI2	RACF
	IOEAGFMT IOEAGSLV IOEDFSXP IOEFSUTL IOEZADM)	Distributed File Service (see note below)

Figure 42 (Page 8 of 11). PARMLIB Updates		
PARMLIB Member	**TEXT**	**Element Name**
IKJTSO*xx* (continued)	`AUTHTSF NAMES(`	
	`  CSFDAUTH` `  CSFDPKDS`	Cryptographic Services ICSF

	`  EDGAUD`
	`  EDGBKUP`
	`  EDGHSKP`
	`  EDGRPTD`
	`  EDGUPDT`
	`  EDGUTIL`
		DFSMS RMM

	`  GIMSMP`	SMP/E
	`  ICQASLI0` `  IKJEFF76)`	TSO/E
Note: The following updates specifically apply to the support listed below:		
DFS/SMB IOEDFSXP **zFS** IOEAGSLV, IOEAGFMT, IOEFSUTL, IOEZADM		
Note: For more information on using IKJTSO*xx*, see *z/OS MVS Initialization and Tuning Reference*. See *z/OS MVS Initialization and Tuning Guide* for information on specifying HELP data sets in IKJTSO*xx*. The commands in the IKJTSO*xx* PARMLIB member should be modified as required for your installation. The entries shown in this table for the IKJTSO*xx* PARMLIB member are the recommended values at the time this program directory was written. For the latest information, refer to the sample IKJTSO00 member in SYS1.SAMPLIB after the product is installed.		

IRROPT*xx*	`ALLOCATE FILE(SYSUT1)`
	`  DATASET`
	`   ('SYS1.SAMPLIB(IRRDPSDS)')`
	`IRRDPI00 UPDATE`
	`FREE   FILE(SYSUT1)`
		RACF

ISFPRM*xx*	Copy members ISFPRM00, ISFPRM01 from SISFJCL.	SDSF
Note: By default, SDSF reads the ISFPRMxx members from SYS1.PARMLIB and any data set concatenated to PARMLIB. ISFPRM00 is the default unless overridden on the start command or changed in the JCL. You can use a different partitioned data set by adding it to the server JCL using ddname SDSFPARM.		
IVTPRM00	Default PARMLIB member IVTPRM00 is provided. For details, see *z/OS V2R2.0 Communications Server: New Function Summary*.	Communications Server for z/OS SNA Services

Figure 42 (Page 9 of 11). PARMLIB Updates		
PARMLIB Member	**TEXT**	**Element Name**
LNKLST*xx* or PROG*xx*	SYS1.CMDLIB	BCP, DFSMS, TSO/E
	SYS1.SBDTLINK	BDT
	EOY.SEOYLOAD	BookManager READ
	CBC.SCCNCMP	XL C/C++ without Debug Tool
	CBC.SCLBDLL CBC.SCLBDLL2	Runtime Library Extensions
	SYS1.SICELINK	DFSORT
	SYS1.SEPWMOD2	FFST
	SYS1.SEPWMOD3	FFST
	GDDM.SADMMOD	GDDM
	ASM.SASMMOD1	HLASM
	TCPIP.SEZALOAD	Communications Server IP Services
	ISP.SISPLOAD	ISPF
	SYS1.SHASLNKE SYS1.SHASMIG	JES2
	SYS1.SIATLIB SYS1.SIATLINK SYS1.SIATMIG	JES3
	CEE.SCEERUN CEE.SCEERUN2	Language Environment
	SYS1.SIOALMOD	OSA/SF
LNKLST*xx* or PROG *xx* (continued)	REXX.SEAGALT	Alternate Library for REXX
	SYS1.SERBLINK	RMF
	ISF.SISFLINK	SDSF
	SYS1.DFQLLIB	ISMF
	SYS1.DGTLLIB	ISMF
	SYS1.SGIMLMD0	SMP/E

Notes:

- If the LNKAUTH parameter in the IEASYS*xx* member of SYS1.PARMLIB does not specify LNKLST, you must add these data sets to the APF table to make them APF-authorized. See *z/OS MVS Initialization and Tuning Guide* for more information.
- See 8.5.2.5, "LNKLSTxx considerations" on page 149.

PARMLIB Member	TEXT	Element Name
LOADxx	For detailed information, see *z/OS MVS Initialization and Tuning Reference*.	BCP

Figure 42 (Page 10 of 11). PARMLIB Updates

Note: Parmlib symbolic preprocessor can be used to set up and validate the new LOADxx PARMLIB member.

PARMLIB Member	TEXT	Element Name
LPALSTxx	EOY.SEOYLPA	BookManager READ
	SYS1.SBDTLPA	BDT
	SYS1.SICELPA SYS1.SORTLPA (see note 3)	DFSORT
	TCPIP.SEZALPA	Communications Server IP Services
	ISP.SISPLPA	ISPF
	SYS1.SIATLPA	JES3
	CEE.SCEELPA (see note 1)	Language Environment
	SYS1.SERBLPA	RMF
	ISF.SISFLPA (see note 2) ISF.SISFLOAD	SDSF
	SYS1.SDWWDLPA	DFSMS

Notes:

1. CEE.SCEELPA should be added to LPALSTxx only if CEE.SCEERUN is added to LNKLSTxx. See 8.5.2.5.1, "Making the Run-time library available" on page 149.
2. To execute SDSF from the link pack area (LPA) for improved performance, add ISF.SISFLOAD in your LPALSTxx member in SYS1.PARMLIB
3. To make DFSORT programs available on the system:
   - To make DFSORT resident, load the modules from SORTLPA into the link pack area (LPA) or dynamic LPA, and add SICELINK to the link list.
   - To make DFSORT nonresident, add SICELINK and SORTLPA (in this order) to the link list, or use a JOBLIB or STEPLIB for SICELINK and SORTLPA (in this order).

   If you want to make DFSORT SVC accessible at IPL, put SICELPA into the LPA or modified link pack area (MLPA).

Figure 42 (Page 11 of 11). PARMLIB Updates		
PARMLIB Member	**TEXT**	**Element Name**
PROG*xx* or IEAAPF*xx*	All LNKLST*xx* (or PROG*xx*) libraries. See item 3 on page 151 in 8.5.2.6, "PROGxx and IEAAPFxx considerations" on page 151.	All
	All STEPLIB or ISPLLIB libraries. See Figure 45 on page 156 for the appropriate data sets.	All
	SYS1.SBDTLIB SYS1.SBDTLINK	BDT
	CSF.SCSFMOD0	Cryptographic Services ICSF
	SYS1.SEPWMOD1	FFST
	TCPIP.SEZATCP TCPIP.SEZALNK2 TCPIP.SEZADSIL	Communications Server IP Services
	SYS1.SIEALNKE	All
	SYS1.SERBLINK	RMF
	SYS1.VTAMLIB SYS1.SISTCLIB	Communications Server for z/OS SNA Services
	SYS1.NFSLIBE	Network File System
	SYS1.SISFLINK	SDSF
Note: See 8.5.2.6, "PROGxx and IEAAPFxx considerations" on page 151.		
SCHED*xx*	The default program properties table, IEFSDPPT, shipped by z/OS V2.2.0 BCP includes entries for all z/OS elements. Therefore, the SCHED*xx* entries that were previously required by elements are no longer required. See *z/OS MVS Initialization and Tuning Reference* for more details of the specific entries that are defaulted to.	

8.5.2.3 IFAPRDxx considerations:

With z/OS, products can use registration services to determine if they are enabled to run on a particular system. This requires the product be defined appropriately in the enablement policy for the system using the IFAPRD*xx* PARMLIB member.

Customers must ensure the policy in IFAPRD*xx* enables only that which they are licensed. Use of (and enablement of) z/OS features is subject to the z/OS license terms and conditions and must be done with the knowledge of your asset manager according to the terms and conditions for z/OS. See the Usage Restriction section of the *z/OS V2R2 Licensed Program Specifications* for additional license terms and conditions.

When you order an IBM product that packages priced optional features with the base product (such as z/OS), IBM supplies a tailored IFAPRD00 PARMLIB member that enables the product and any optional features ordered with the product. Thus, any feature ordered with the product is enabled during

installation when you copy the contents of the tailored IFAPRD00 member to an active IFAPRD*xx* member and issue SET command or IPL. If you do not order a feature, it is shipped disabled but you can enable it later. *z/OS MVS Product Management* contains information on how to enable a z/OS feature and how to discontinue use of a feature.

Therefore, you must ensure IFAPRD*xx* is set up properly. CBPDO provides a job, ZOSREG, in the RIMLIB data set to place a tailored IFAPRD00 member into your SYS1.PARMLIB. If you ordered any optional features that use the register service, the STATE statement is set as ENABLED for you to use the product; otherwise the STATE is set as DISABLED. This job must be run before IPL, or the SET command be used if it has been run after the IPL, or some elements and features will not work. Furthermore, if you added any other products to your IFAPRD00 PARMLIB member and they are still applicable, you will need to make those changes to the member built by ZOSREG or use multiple IFAPRD*xx* members.

See *z/OS Planning for Installation* for additional information on enabling z/OS features.

IBM supplies you with a tailored IFAPRD00 parmlib member that has been customized for your order. You should use this IFAPRD00 parmlib member if you have determined from the above information that it is required for your environment.

8.5.2.4 BPXPRMxx updates: z/OS provides the capability to dynamically add Physical File Systems to a UNIX System Services configuration. SETOMVS RESET=(yy) is a console command designed to be used with a subset of BPXPRMxx parmlib statements. FILESYSTYPE, SUBFILESYSTYPE, NETWORK, and system limits (such as MAXPROCSYS, etc.) can be changed dynamically by issuing SETOMVS RESET=(xx). An updated or new parmlib member, BPXPRMyy, can be concatenated with other parmlib members at initial IPL or through the SET OMVS=(xx,yy,...) command.

You must copy the sample BPXPRMxx member from SYS1.SAMPLIB to your PARMLIB, renaming it to fit your environment (BPXPRMxx). Then, create or update another PARMLIB member, BPXPRMyy, with the following information for elements z/OS UNIX System Services Application Services, Communications Server IP Services, Distributed File Service, and Network File System. The BPXPRMyy member can then be added dynamically by issuing the SETOMVS RESET=(yy) command. Also, you will need to update your IEASYSxx PARMLIB member to contain the OMVS=(yy,xx,...) parameter for future IPLs. For more information, see *z/OS UNIX System Services Planning* and *z/OS MVS Initialization and Tuning Guide*.

```
MAXTHREADTASKS(500)
MAXTHREADS(500)
MAXPROCUSER(100)
FILESYSTYPE TYPE(UDS) ENTRYPOINT(BPXTUINT)
FILESYSTYPE TYPE(INET) ENTRYPOINT(EZBPFINI)
  STEPLIBLIST('etc/steplist')                  /* See Note 2 */
FILESYSTYPE TYPE(ZFS) ENTRYPOINT(IOEFSCM)
ASNAME(ZFS)                                    /* See Note 4 */
   NETWORK DOMAINNAME(AF_UNIX)
          DOMAINNUMBER(1)
          MAXSOCKETS(2000)
          TYPE(UDS)
```

```
   NETWORK DOMAINNAME(AF_INET)
         DOMAINNUMBER(2)
         MAXSOCKETS(64000)
         TYPE(INET)
   IPCSEMNSEMS(50)
   IPCSHMMPAGES(2048)
FILESYSTYPE TYPE(NFS) ENTRYPOINT(GFSCINIT)
   PARM(' ')
   ASNAME(GFSCPROC)
   ASNAME(GFSCPROC)
```

Notes:

1. The values listed in the previous figure are the minimum values needed to load the initial program.

2. `STEPLIBLIST('etc/steplib')` will need to be added under `FILESYSTYPE(INET) ENTRYPOINT(EZBPFINI)`.

3. For installation parameters, see *z/OS Network File System Guide and Reference*.

4. This entry is required to run ZFS in its own address space. The ASNAME keyword can be left off to run ZFS in the OMVS address space. For more information, see *z/OS Distributed File Service zFS Administration*.

5. See *z/OS UNIX System Services Planning* for information about how to specify the appropriate MAXFILEPROC value in the BPXPRMxx PARMLIB member.

If you have more than one AF_NET transport providers on an MVS image, you must use the common INET, CINET. CINET is defined in BPXPRMxx to identify the use of the Common INET physical file system. For example, in the preceding created PARMLIB member, BPXPRMyy will need to be updated instead with the following information:

```
FILESYSTYPE TYPE (CINET) ENTRYPOINT(BPXTCINT)
   NETWORK DOMAINNAME(AF_INET)
      DOMAINNUMBER(2)
      MAXSOCKETS(64000)
      TYPE(CINET)
      INADDRANYPORT(4000)                              /* SEE NOTE */
      INADDRANYCOUNT(2000)                             /* SEE NOTE */
   SUBFILESYSTYPE NAME(tcpjob1)
                  TYPE(CINET)
                  ENTRYPOINT(EZBPFINI)
   SUBFILESYSTYPE NAME(tcpjob2)
                  TYPE(CINET)
                  ENTRYPOINT(EZBPFINI)
   SUBFILESYSTYPE NAME(tcpjob3)
                  TYPE(CINET)
                  ENTRYPOINT(EZBPFINI)
   SUBFILESYSTYPE NAME(STC1)
                  TYPE(CINET)
                  ENTRYPOINT(EZBPFINI)
```

Note: The INADDRANYPORT assignment is coordinated with similar PORT assignments in the PROFILE.TCPIP data set. For customizing the Communications Server IP Services file system statements, see *z/OS UNIX System Services Planning* and *z/OS MVS Initialization and Tuning Guide*.

8.5.2.5 LNKLSTxx considerations

1. In addition to the data sets you specify in LNKLSTxx or on LNKLST statements in PROGxx, the system automatically places these data sets at the beginning of the link list (unless overridden by a SYSLIB statement in PROGxx):

   - SYS1.LINKLIB
   - SYS1.MIGLIB
   - SYS1.CSSLIB
   - SYS1.SIEALNKE
   - SYS1.SIEAMIGE

   Note: As of z/OS V1.8.0, data sets SYS1.SIEALNKE and SYS1.SIEAMIGE MUST be cataloged to ensure that these data sets are located during IPL.

2. If you plan to run the SDSF server and ISF.SISFLOAD is not defined in the LNKLST or LPA, you must also add ISF.SISFLINK to your LNKLST*xx* member of SYS1.PARMLIB or to a LNKLST statement in a PROGxx member.

3. TCPIP.SEZALNK2 is optional but not recommended. The member in SEZALNK2 is reserved for the NCS administrator and is not copied to your existing LINKLIB data sets. The NCS administrator must have a separate TSO logon procedure, with SEZALNK2 added to the STEPLIB concatenation. SEZALNK2 must be RACF-protected so that unauthorized users are denied access. You must also APF authorize the SEZALNK2 library.

4. To make DFSORT programs available on the system, use either of the following procedures:

   - To make DFSORT resident, load the modules from SORTLPA into the link pack area (LPA) or dynamic LPA, and add SICELINK to the link list.
   - To make DFSORT nonresident, add SICELINK and SORTLPA (in this order) to the link list, or use a JOBLIB or STEPLIB for SICELINK and SORTLPA (in this order).

8.5.2.5.1 *Making the Run-time library available*

Many elements, features and functions of z/OS Version 2 Release 2 require the run-time libraries provided by Language Environment, SCEERUN and SCEERUN2, to be made available in the program search order. The best way to do that is by adding the SCEERUN and SCEERUN2 data sets in LNKLST. Below lists the z/OS Version 2 Release 2 elements, features and functions in Wave 1 that require Language Environment. The list was generated by analyzing which elements use the SMP/E CALLLIBS function to include Language Environment stubs and reviewing Post-APPLY link edit jobs supplied by elements.

Wave 1 elements that require Language Environment

- BookManager READ
- BCP
- BCP - Capacity Provisioning

- XL C/C++
- C/C++ Host Performance Analyzer
- Communications Server IP Services
- Communications Server for z/OS SNA Services
- Cryptographic Services
- Cryptographic Services ICSF
- DFSMS (Character Data Representation Architecture, CDRA)
- DFSORT Locale Processing
- Distributed File Service
- HCD
- IBM HTTP Server Base
- Infoprint Server
- IBM TDS
- ISPF
- Library Server
- Network File System
- OSA/SF
- RMF
- Security Server (RACF)
- SMP/E Planning and Migration Assistant
- z/OS Security Level 3 System SSL Security Level 3
- z/OS UNIX System Services

8.5.2.5.1.1 z/OS Elements and Features Using STEPLIB for Language Environment

The following sections list the z/OS elements and features that use STEPLIB for Language Environment.

Distributed File Service

1. Add SCEERUN to the startup procedures DFS and DFSKERN; shipped samples are in 'hlq.SIOEPROC.'

2. Add SCEERUN data set to your TSO logon proc by concatenating it to ISPLLIB DD statement and/or concatenate it to STEPLIB (the TSOLIB function of TSO/E could be used).

3. Add the "export STEPLIB=hlq.SCEERUN" in the /etc/profile file.

Infoprint Server

1. Add SCEERUN and SCLBDLL to the startup procedure for NetSpool and IP PrintWay Basic Mode, and any JCL that invokes AOPBATCH, including the AOPPRINT procedure in SYS1.PROCLIB. If you add SCEERUN and SCLBDLL to the STEPLIB in the ANFWPROC procedure for IP PrintWay Basic Mode, then SCEERUN and SCLBDLL must be marked as APF-authorized.

2. Add SCEERUN and SCLBDLL data sets to your TSO logon proc, by concatenating them to ISPLLIB DD statement and/or concatenating them to STEPLIB (the TSOLIB function of TSO/E could be used).

3. Add the SCEERUN and SCLBDLL data sets to the STEPLIBLIST facility of the BPXPRMxx PARMLIB member. If you add SCEERUN and SCLBDLL to the STEPLIBLIST facility of the BPXPRMxx PARMLIB member, then SCEERUN and SCLBDLL must be marked as APF-authorized.

4. Add `export STEPLIB=hlq.SCEERUN:hlq.SCLBDLL` to the `/etc/rc` file.

5. Remove the following statements from the `/etc/profile` file:

```
if [-z "$STEPLIB"] && tty -s;
then
  export STEPLIB=none
  exec sh -L
  fi
```

6. Replace with `export STEPLIB=hlq.SCEERUN:hlq.SCLBDLL` in the `/etc/profile` file.

Network File System

Add SCEERUN to the startup procedures; shipped samples are

- GFSAPROC (server)
- GFSCPROC (client)

8.5.2.6 PROGxx and IEAAPFxx considerations

1. See *z/OS MVS Initialization and Tuning Guide* for information about using the PROGxx and IEAAPFxx PARMLIB members.

2. If the default for the LNKAUTH system parameter is taken (LNKAUTH=LNKLST) or is specified in IEASYS*xx*, or by the operator, libraries in the LNKLST concatenation are authorized when accessed as part of the LNKLST concatenation. However, if they are accessed outside the LNKLST concatenation (for example, through a STEPLIB) they will not be APF authorized unless they are specified in PROG*xx* or IEAAPF*xx*. Therefore, you must include any LNKLST libraries that are to be accessed outside the LNKLST in PROG*xx* or IEAAPF*xx*.

3. Except for concatenations opened during system initialization, an unauthorized library concatenated to any authorized libraries will cause the system to consider all the concatenated libraries to be **unauthorized**. Therefore, if one library in a concatenation must be APF authorized, you must include all libraries in that concatenation in PROG*xx*.

8.5.3 PROCLIB member considerations

This section describes the PROCLIB customization that must be performed for the Wave 1 and Wave 2 elements. PROCLIB customization consists of three steps:

1. Ensure the default PROCLIB members have been copied to your default PROCLIB to pick up the new and changed members.

2. Update individual sample members provided and ensure they are accessible to the system, as shown in Figure 43 on page 152.

3. Ensure entire libraries are accessible to the system, as shown in Figure 44 on page 155.

The following figure, shown in ripple order, describes the PROCLIB updates that are required for z/OS V2.2.0. Note that PARMLIB concatenation function has been incorporated into some sample procedures.

IBM recommends you base your customized procedures on the IBM-supplied samples. For additional information on PROCLIB considerations, see the customization books for the particular element.

8.5.3.1 Copying default PROCLIB members: After the PROCLIB updates are complete, the members listed in Figure 43 must be made accessible to the system by copying them to a procedure library that is in your JES procedure library concatenation.

PROCLIB Member	Action to Take	Element Name
Figure 43 (Page 1 of 4). PROCLIB Member Updates		
For BCP element		
APPC ASCH ASCHINT AVM AXRNN AXRPSTRT BCDPROC BLSJIPCS BLSJPRMI BPXAS BPXOINIT CEA DEALLOC DLF DUMPSRV GTF GTZ HIS HVEMCA HWISTART HZR HZSPROC IEESYSAS IEEVMPCR INIT IXGLOGRS LLA OMVS RDR RDR3200 RDR400 RMTGEN VLF XWTR	Ensure these procedures are correctly customized for your environment. They are provided in your PROCLIB data set.	BCP
For DFSMS element		

Figure 43 (Page 2 of 4). PROCLIB Member Updates		
PROCLIB Member	**Action to Take**	**Element Name**
CDRAINIT CVAFTR DEVMAN DFM DFMX0001 DFM00 GDEAPDEF GDEAPPC GDEASCH GDELOGMD GDEPRTLU GDETPDEF IDAVDT IFGEDI IFGOCETR LINKS LOGROUTE	Ensure these procedures are correctly customized for your environment. They are provided in your PROCLIB data set.	DFSMS
For HCD element		
CBDJCMPR CBDJIMPT CBDJIOCP CBDJRPTS CBDJXMIT CBDQAJSK CBDQDISP	Ensure these procedures are correctly customized for your environment. They are provided in your PROCLIB data set.	HCD
For Others		
BDT$V2SP BDT$V2TP	Copy these procedures and update for your environment. BDT$V2SP is the started procedure for BDT. BDT$V2TP is the started procedure for the BDT transaction queuing integrity (TQI) address space. Both of these procedures are provided in your SBDTSAMP library.	BDT
CFZCIM	Procedure is provided in your PROCLIB data set. Update for your environment.	Common Information Model (CIM)
EOYINDEX	Change these procedures for your environment. Sample members are provided in your SEOYPROC library.	BookManager READ
EZAZSSI	A sample member is provided in your SEZAINST library.	Communications Server IP Services
ICEOPT	The procedure is provided in your PROCLIB data set.	DFSORT

Figure 43 (Page 3 of 4). PROCLIB Member Updates		
PROCLIB Member	**Action to Take**	**Element Name**
IOEP0001 IOEP0003 IOEP0004	These are SIOEPROC library members. The aliases DFS, DFSKERN, and ZFS are provided to refer to IOEP0001, IEOP0003, and IOEP0004, respectively. DFS is the sample procedure for running the DFS server. DFSKERN is the sample procedure for running the DFS server DFSKERN process in a separate address space. ZFS is the sample procedure for running ZFS. Ensure these aliases are maintained and reflect local updates to these sample procedures.	Distributed File Service
EPWFFST	Copy this procedure and update for your environment. Sample member is provided in your SEPWSRC2 library.	FFST
ASMAC ASMACL ASMACLG ASMACG	Change these procedures for your environment. Sample members are provided in your SASMSAM1 library. If the previous release of High Level Assembler has been used, users might have become accustomed to using the old procedure names of HLASMC, HLASMCG, HLASMCLG and HLASMCL. To make the transition from the previous release, in your SASMSAM1 library, these old procedure names appear as aliases for the sample supplied procedures.	High Level Assembler
ANFWPROC AOPDEMON AOPPRINT AOPSTART AOPSTAR2 AOPSTAT AOPSTOP AOPSTOP2 APIJPJCL	Procedures are provided in your PROCLIB data set. Update your environment, as described in *z/OS Infoprint Server Customization*.	Infoprint Server
DSSRV	DSSRV is an alias in the SGLDSAMP library.	IBM TDS Server
IZUANG1 IZUFPROC IZUSVR1	Procedures are provided in your PROCLIB data set.	IBM z/OS Management Facility (z/OSMF)
GFSAPROC GFSCPROC	Update for your environment. These members are provided in your NFSSAMP library. GFSAPROC is a sample MVSNFS procedure, GFSCPROC is a sample MVSNFSC procedure.	Network File System
IOAOSASF	Copy this procedure and update for your environment. Sample member is provided in your SIOASAMP library.	OSA/SF
RACF	This supplied procedure may be updated. See member RACPROC in SAMPLIB.	RACF

Figure 43 (Page 4 of 4). PROCLIB Member Updates		
PROCLIB Member	**Action to Take**	**Element Name**
RMF RMFCSC RMFGAT RMFM3B GPMSERVE GPM4CIM	These supplied procedures may be updated, if you would like. See the comments provided in this member of your PROCLIB data set.	RMF
SDSF	Copy member ISFSRJCL from your SISFJCL data set to PROCLIB and call it SDSF to define the SDSF server. The SDSF server is only needed if you intend to define initialization statements or exploit the sysplex support in place of the ISFPARMS macros. If you do not plan to run the SDSF server, copying this PROCLIB member is not required.	SDSF

8.5.3.2 Ensuring that entire libraries are accessible:
The following procedure libraries, which are shown in ripple order, must either be copied to SYS1.PROCLIB or be added to a PROCLIB concatenation accessible to JES. Customization considerations for these data sets are detailed after this figure.

Figure 44. PROCLIB Concatenation		
DDNAME	**Element**	**Note**
SEOYPROC	BookManager READ	
SIOEPROC	Distributed File Service	Contains aliases DFS, DFSKERN, ZFS, and DFSCM (see Figure 43 on page 152); ensure these aliases are maintained. Note that with the removal of DCE support in z/OS V1R13, DFSCM has limited function but is still required.
SGLDSAMP	IBM Tivoli Directory Server for z/OS	This data set contains various LDAP procedures and sample jobs.
SCEEPROC	Language Environment	
SCCNPRC	XL C/C++	

8.5.3.3 Customize procedures for XL C/C++:
You may customize the procedures provided by C/C++. For more information, see *z/OS XL C/C++ User's Guide*.

8.5.3.4 Customize Language Environment procedures:
You may customize the procedures provided by Language Environment. For more information, see *z/OS Language Environment Customization*.

8.5.4 z/OS Version 2 Release 2 ISPF setup considerations

Figure 45 on page 156 shows the data sets that must be concatenated to ISPF DDNAMEs in the logon procedure to use z/OS V2.2.0 functions. See Figure 46 on page 161 for Logon Proc using language libraries.

Figure 45 (Page 1 of 5). Logon PROC Updates		
DDNAME	**DDDEF**	**ELEMENT**
ISPILIB	SISPSAMP	ISPF
Note: ISPILIB is used for image support (bitmaps) for ISPF C/S.		
ISPLLIB	DFQLLIB DGTLLIB	DFSMS
	SCBDHENU	HCD
	SGIMLMD0	SMP/E
Note: • To avoid needing SYS1.NUCLEUS in your ISPLLIB, use the parameter UIM_LIBNAME in the HCD profile to point to the data set containing the UIMs and UDTs. If the keyword is omitted, SYS1.NUCLEUS is assumed. If UIM_LIBNAME=* is specified, HCD assumes the UIM data sets are part of the ISPLLIB or STEPLIB DDNAME. • Data sets in the LNKLST*xx* or the LPALST*xx* should not be included in the ISPLLIB or STEPLIB DDNAME.		

Figure 45 (Page 2 of 5). Logon PROC Updates		
DDNAME	**DDDEF**	**ELEMENT**
ISPMLIB	SBLSMSG0 SBPXMENU	BCP
	SBDTMSG	BDT
	SEOYBENU SEOYMENU	BookManager READ
	SEPHMSG1	BookManager READ (for DBCS Print Utility only)
	DGTMLIB DFQMLIB SEDGMENU	DFSMS
	SADMMSG	GDDM
	SCBDMENU	HCD
	SEZAMENU	Communications Server IP Services
	SCSFMSG0	Cryptographic Services ICSF
	SAOPMENU	Infoprint Server
	SISPMENU	ISPF
	SIATMSG0	JES3
	SERBMENU	RMF
	SISFMLIB	SDSF
	HRFMSG	Security Server (RACF)
	SGIMMENU	SMP/E
	ICQMLIB	TSO/E

DDNAME	DDDEF	ELEMENT
ISPPLIB	SBLSPNL0 SBPXPENU	BCP BCP (z/OS UNIX)
	SBDTPNL0	BDT
	SEOYPENU	BookManager READ
	SEPHPNL1	BookManager Read (for DBCS Print Utility only)
	DFQPLIB DGTPLIB SEDGPENU	DFSMS
	SEPWPENU	FFST
	SADMPNL	GDDM
	SCBDPENU	HCD
	SEZAPENU	Communications Server IP Services
	SCSFPNL0	Cryptographic Services ICSF
	SAOPPENU	Infoprint Server
	SISPPENU	ISPF
	SHASPNL0	JES2
	SIATPNL0	JES3
	SERBPENU	RMF
	SISFPLIB	SDSF
	HRFPANL	Security Server (RACF)
	SGIMPENU	SMP/E
	ICQPLIB	TSO/E
ISPSLIB	SBLSKEL0	BCP
	DGTSLIB	DFSMS
	SCSFSKL0	Cryptographic Services ICSF
	SISPSLIB	ISPF
	SISPSENU	ISPF
	SISFSLIB	SDSF
	HRFSKEL	Security Server (RACF)
	SGIMSENU	SMP/E
	ICQSLIB	TSO/E

Figure 45 (Page 3 of 5). Logon PROC Updates

Figure 45 (Page 4 of 5). Logon PROC Updates		
DDNAME	**DDDEF**	**ELEMENT**
ISPTLIB	SBLSTBL0 SBPXTENU	BCP BCP (z/OS UNIX)
	SEOYTENU	BookManager READ
	SEPHTBL1	BookManager Read (for DBCS Print Utility only)
	DGTTLIB	DFSMS
	SCBDTENU	HCD
	SCSFTLIB	Cryptographic Services ICSF
	SEZAPENU	Communications Server IP Services
	SISPTENU	ISPF
	SIATTBL0	JES3
	SERBT SERBTENU	RMF
	SISFTLIB	SDSF
	SGIMTENU SMPTABL	SMP/E
	ICQTLIB	TSO/E
Note: SMPTABL is required for SMP/E in the ISPF concatenation, but does not have a DDDEF. For more information on how to allocate the SMPTABL, see 8.5.4.1, "SMP/E customization considerations for ISPF" on page 165.		
SYSEXEC	SBPXEXEC	BCP (z/OS UNIX)
	SEOYCLIB	BookManager READ
	SEZAEXEC	Communications Server
	SEDGEXE1	DFSMS
	SIOEEXEC	Distributed File Service
	SEPWSRC1	FFST
	SAOPEXEC	Infoprint Server
	SISPEXEC	ISPF
	SISFEXEC	SDSF
	SGLDEXEC	IBM TDS Server
Notes:		
1. Ensure all libraries in the SYSEXEC concatenation have the same record format.		
2. The libraries in SYSEXEC could be put in the SYSPROC DD instead.		

DDNAME	DDDEF	ELEMENT
Figure 45 (Page 5 of 5). Logon PROC Updates		
SYSHELP	HELP	BCP, DFSMS, z/OS UNIX System Services, RACF, RMF, TSO/E Communications Server IP
	SBDTHELP	BDT
	SISPHELP	ISPF
	SISFHELP	SDSF
	HELPENP	TSO/E
SYSPROC	SBLSCLI0	BCP
	SBDTCLI0	BDT
	SEOYCLIB	BookManager READ
	SCCNUTL	XL C/C++
	DGTCLIB	DFSMS
	SEPWCENU	FFST
	SCBDCLST	HCD
	SCSFCLI0	Integrated Cryptographic Service Facility
	SISPCLIB	ISPF
	SERBCLS	RMF
	HRFCLST	Security Server (RACF)
	SGIMCLS0	SMP/E

Notes:

1. Ensure all libraries in the SYSPROC concatenation have the same record format.

2. EOY2GDF, EOY2PSEG, and EOYPARM members of SEOYCLIB should be customized for the customer site.

3. Data Sets SCCNUTL contain only REXX EXECs.

STEPLIB or LNKLST*xx*	SBDTLIB	BDT
	SEPWMOD4	FFST
	SCBDHENU	HCD

Note: If the following libraries are removed from LNKLST*xx*, add them to the STEPLIB concatenation and authorize every library in the concatenation using PROG*xx* or IEAAPF*xx*.

- SISPLOAD
- SISFLOAD
- SCEERUN
- SCLBDLL
- SCLBDLL2
- SCCNCMP

Notes:

1. Each BookManager READ user requires access to the product libraries and a recommended region size of 4 megabytes. If you use large books or use many books, you may require a larger region size.

2. BookManager READ does not support LIBDEFs because certain functions may be lost if LIBDEFs are used.

The logon PROC updates for the Language libraries are listed below. Add appropriate Language libraries to your logon PROC. Unless the English library is specified as required in the table, you can remove the English library after you add the Language libraries.

Figure 46 (Page 1 of 5). Logon PROC Updates for Language libraries		
DDNAME	**DDDEF**	**ELEMENT**
ISPMLIB	SBPXMCHS SBPXMJPN	BCP Simplified Chinese BCP Japanese
	SEOYBDAN SEOYMDAN	BookManager READ Danish
	SEOYBDEU SEOYMDEU	BookManager READ German
	SEOYBESP SEOYMESP	BookManager READ Spanish
	SEOYBFRA SEOYMFRA	BookManager READ French
	SEOYBFRC SEOYMFRC	BookManager READ Canadian French
	SEOYBITA SEOYMITA	BookManager READ Italian
	SEOYBNLD SEOYMNLD	BookManager READ Netherlands Dutch
	SEOYBPTB SEOYMPTB	BookManager READ Brazilian Portuguese

Figure 46 (Page 2 of 5). Logon PROC Updates for Language libraries		
DDNAME	**DDDEF**	**ELEMENT**
ISPMLIB (Continued)	DFQMKLB DGTMKLB SEDGMJPN	DFSMS Japanese
	SCBDMJPN	HCD Japanese
	SAOPMJPN	Infoprint Server Japanese
	SISPMENP SISPMDES SISPMDEU SISPMJPN	ISPF Upper Case English ISPF Swiss German ISPF German ISPF Japanese
	SCEEMSGP	Language Environment Upper Case English
	SERBMJPN	RMF Japanese
	SICHMJPN	Security Server (RACF) Japanese
	SGIMMJPN	SMP/E Japanese
	ICQPMLIB ICQGMLIB ICQKMLIB	TSO/E Simplified Chinese TSO/E German TSO/E Japanese

DDNAME	DDDEF	ELEMENT
Figure 46 (Page 3 of 5). Logon PROC Updates for Language libraries		
ISPPLIB	SBPXPCHS SBPXPJPN	BCP Simplified Chinese BCP Japanese
	SEOYPDAN	BookManager READ Danish
	SEOYPDEU	BookManager READ German
	SEOYPESP	BookManager READ Spanish
	SEOYPFRA	BookManager READ French
	SEOYPFRC	BookManager READ Canadian French
	SEOYPITA	BookManager READ Italian
	SEOYPNLD	BookManager READ Netherlands Dutch
	SEOYPPTB	BookManager READ Brazilian Portuguese
	DFQPKLB DGTPKLB SEDGPJPN	DFSMS Japanese
	SCBDPJPN	HCD Japanese
	SAOPPJPN	Infoprint Server Japanese
	SISPPENP SISPPDES SISPPDEU SISPPJPN	ISPF Upper Case English ISPF Swiss German ISPF German ISPF Japanese
	SERBPJPN	RMF Japanese
	SICHPJPN	Security Server (RACF) Japanese
	SGIMPJPN	SMP/E Japanese
	ICQPPLIB ICQGPLIB ICQKPLIB	TSO/E Simplified Chinese TSO/E German TSO/E Japanese
ISPSLIB	DGTSKLB	DFSMS Japanese
	SISPSENP SISPSDES SISPSDEU SISPSJPN	ISPF Upper Case English ISPF Swiss German ISPF German ISPF Japanese

DDNAME	DDDEF	ELEMENT
		Figure 46 (Page 4 of 5). Logon PROC Updates for Language libraries
ISPTLIB	SBPXTCHS SBPXTJPN	BCP Simplified Chinese BCP Japanese
	SEOYTDAN	BookManager READ Danish
	SEOYTDEU	BookManager READ German
	SEOYTESP	BookManager READ Spanish
	SEOYTFRA	BookManager READ French
	SEOYTFRC	BookManager READ Canadian French
	SEOYTITA	BookManager READ Italian
	SEOYTNLD	BookManager READ Netherlands Dutch
	SEOYTPTB	BookManager READ Brazilian Portuguese
	SCBDTJPN	HCD Japanese
	SISPTENP SISPTDES SISPTDEU SISPTJPN	ISPF Upper Case English ISPF Swiss German ISPF German ISPF Japanese
	SERBTJPN	RMF Japanese
	SGIMTJPN SGIMTENU	SMP/E Japanese SMP/E English
	ICQPTABL ICQGTABL ICQKTABL	TSO/E Simplified Chinese TSO/E German TSO/E Japanese
Note: Both the Japanese and English SMP/E libraries are required in the ISPTLIB concatenation.		
SYSEXEC	ICQGCLIB ICQKCLIB ICQPCLIB	TSO/E German TSO/E Japanese TSO/E Simplified Chinese

DDNAME	DDDEF	ELEMENT
SYSHELP	PHELP	BCP (z/OS UNIX), TSO/E, z/OS UNIX System Services Simplified Chinese
	KHELP	BCP (z/OS UNIX), TSO/E, z/OS UNIX System Services Japanese
	HLPKLB	DFSMS Japanese
	GHELP	TSO/E German

Figure 46 (Page 5 of 5). Logon PROC Updates for Language libraries

8.5.4.1 SMP/E customization considerations for ISPF

Use the ISPCTL1 and ISPCTL2 files to generate JCL for submitted SMP/E jobs. The SMP/E job submit facility lets you browse and edit this JCL. You can omit these files from your logon procedure and let ISPF automatically allocate them as needed. To save the input JCL generated by the dialogs, allocate a permanent sequential data set to ISPCTL1 (LRECL=80, RECFM=FB) before you enter the SMP/E dialogs or just use EDIT CREATE.

Allocate a single, installation-wide table data set to the ISPTLIB and SMPTABL DD statements. SMP/E uses this table data set to save process status information for the SYSMOD management dialogs. The data set must be a partitioned data set (LRECL=80, RECFM=FB). Because the data set is also in the concatenation of ISPTLIB, make the block size compatible with the block size of the corresponding ISPF data sets.

8.5.4.2 Update ISPF Command Table ISPTCM (if Required): For more information and instructions about updating ISPTCM, see *z/OS V2R2 ISPF Planning and Customizing*.

8.5.5 Element customization

After the elements are installed, you should examine (and if necessary, change) any installation exits and modifications to meet your installation's needs.

8.5.5.1 RACF security considerations

To perform the customization procedures for several of the z/OS V2.2.0 Wave 1 elements, you must have certain security permissions available. You may set up the security for all of the Wave 1 elements at this time. The following list shows elements that require RACF security and the location of more information.

- Cryptographic Services OCSF (see 8.5.5.6.1, "Cryptographic Services OCSF customization considerations" on page 185)
- DFSMS (see *z/OS DFSMS Storage Administration Reference*)

- FFST (see 8.5.5.5.4, "FFST customization considerations" on page 183)
- HCD (see *z/OS HCD User's Guide*)
- HCM (see *z/OS and z/VM HCM User's Guide*)
- Communications Server IP Services (see 4 on page 174)
- Cryptographic Services ICSF (see *z/OS Cryptographic Services ICSF Administrator's Guide* and *z/OS Cryptographic Services ICSF System Programmer's Guide*)
- OSA/SF (see 8.5.5.8.5, "OSA/SF customization considerations" on page 192)
- RMF (see 8.5.5.7.3, "RMF customization considerations" on page 187)
- Security Server (see 8.5.5.6.3, "Security Server (RACF) customization considerations" on page 185)
- IBM Tivoli Directory Server for z/OS (see 8.5.5.3.4, "IBM Tivoli Directory Server for z/OS customization considerations" on page 168)
- TSO/E (see *z/OS TSO/E Customization*)
- z/OS UNIX System Services (see 8.5.5.2, "z/OS UNIX System Services customization considerations")
- z/OS UNIX System Services Application Services (see 8.5.5.4.3, "z/OS UNIX System Services Application Services customization" on page 178)
- IBM Knowledge Center for z/OS (see 8.5.5.8.4, "IBM Knowledge Center for z/OS customization considerations" on page 192)
- Library Server (see 8.5.5.9.2.7, "Setting security authorizations" on page 216)
- Distributed File Service (see 8.5.5.9.1, "Distributed File Service customization considerations" on page 192)
- Infoprint Server (see 8.5.5.9.3.4, "Establish security for Infoprint Server" on page 223)
- Network File System (see *z/OS Network File System Guide and Reference*)
- IBM z/OS Management Facility (see *IBM z/OS Management Facility Configuration Guide*)

Note: The SDSF element, which is installed in Wave 2, requires certain security permissions to be defined when SDSF is used in a JES3 environment.

8.5.5.2 z/OS UNIX System Services customization considerations

Note: This section must be completed before the Communications Server IP Services customization section can be performed.

A SAMPLIB member is provided with z/OS UNIX System Services Kernel, BPXISEC1, which is a sample TSO CLIST that provides all the RACF commands needed for the security setup of z/OS UNIX System Services. This CLIST is being provided as a central location for these commands and should be used by customers in conjunction with *z/OS UNIX System Services Planning* to reference detailed information. You may also need to refer to:

- *z/OS Security Server RACF Security Administrator's Guide*
- *z/OS Security Server RACF System Programmer's Guide*
- *z/OS Security Server RACF Command Language Reference*

This CLIST is structured into separate sections, each with a set of block comments, describing the RACF function that will be setup and what needs to be changed by the customer. **Ensure you execute this CLIST from a RACF special user ID!**

8.5.5.3 Customization considerations for Wave 1A

The following sections contain additional customization considerations for Wave 1A.

8.5.5.3.1 Integrated Security Services Network Authentication Service customization considerations

The following customization actions should be done at this time:

- Catalog all of the EUVF.SEUVF*xxx*, where *xxx* is LIB (Library) and EXC (REXX execs for the TSO logon procedure).
- Copy the SKRBKDC started task proc in EUVF.SEUVFSAM to SYS1.PROCLIB
- Copy the SKRBWTR started task proc in EUVF.SEUVFSAM to SYS1.PROCLIB or to a proclib in the IEFPDSI DD name in your MSTJCLxx member in your PARMLIB concatenation.
- Customize the SKRBWTR procedure according to your system installation needs.
- Copy the appropriate CTIKDCxx member from EUVF.SEUVFSAM to your installation's PARMLIB member and customize as necessary to support the component's tracing that you may need to perform.

Detailed steps to get the program into operational status are defined in *z/OS Integrated Security Services Network Authentication Service Administration*.

8.5.5.3.2 Language Environment customization considerations

Refer to *z/OS Language Environment Customization* for more information and instructions on Language Environment customization. You can customize any of the following items for Language Environment:

- Default run-time options
- User exits:
    - Assembler user exit
    - High-level language user exit
    - Abnormal termination exit
- CLISTs
- Place Language Environment modules in the link pack area
- COBOL COBPACKs
- Fortran LIBPACKs
- Make Language Environment available under CICS (optional)
    - Add CICS PPT entries
    - Add DCT entries
    - Add Language Environment-CICS data sets to CICS startup job stream
- Language-specific features:
    - OS/VS COBOL Compatibility Library
    - COBOL parameter list exit
    - COBOL reusable environment
    - C/C++ Base locale time information
    - Improving performance on IMS/DC
    - Fortran unit attribute table
    - VS Fortran compatibility unit attribute table

- VS Fortran compatibility run-time options
- VS Fortran compatibility error option table

8.5.5.3.3 Cryptographic Services ICSF customization considerations

Refer to *z/OS Cryptographic Services ICSF Administrator's Guide* and *z/OS Cryptographic Services ICSF System Programmer's Guide* for more information on Cryptographic Services ICSF customization.

8.5.5.3.4 IBM Tivoli Directory Server for z/OS customization considerations

Refer to the *z/OS IBM Tivoli Directory Server Administration and Use for z/OS*.

8.5.5.3.5 IBM Generic Tracker for z/OS customization considerations

Note that this list of available samples is not meant to be a list of required customization steps when installing the current release. Instead this list is meant to be a simple inventory of potential tools available to execute typical tracking facility tasks or to learn more about the tracking facility functions.

GTZCNIDJ creates GTZPRM*xx* parmlib members from existing CNIDTR*xx* parmlib members.
GTZPRNTJ prints data and associated information currently stored in the tracking facility.
GTZSMFJ Sample JCL for formatting SMF records of record type 117 in text form.
GTZSHCK a sample local health check in METAL C to report tracked events
GTZSHCKJ builds the GTZSHCK sample health check
GTZSHCKX a sample REXX health check to report tracked events

Refer to the samples' prologue and *z/OS MVS Diagnosis: Tools and Service Aids* for more information and instructions about IBM Generic Tracker customization.

8.5.5.3.6 IBM Health Checker for z/OS customization considerations

Note that only HZSALLCP in the list below is recommended to be used to complete your IBM Health Checker for z/OS setup. The remaining list is meant to be a simple inventory of potential tools to execute typical tasks or to learn more about the IBM Health Checker for z/OS functions. All these items can be found in SYS1.SAMPLIB.

HZSALLCP allocates the persistent data dataset. This sample must be updated so HZSPROC and this sample reflect the same dataset.
HZSPRINT prints the current, or logstream copies of message buffers
HZSMSGNJ generates a health check's message table and associated message files
HZSSADCK a sample HZSADDCHECK dynamic exit routine
HZSSCHKP a sample local health check with use of persistent data services HZSPREAD and HZSPWRIT
HZSSCHKR a sample local health check with use of check message service HZSFMSG
HZSSMSGT a sample message definition file as input to message table generating tool HZSMSGNJ
HZSSRCHC a sample remote health check with use of check parameter parsing service HZSCPARS
HZSSRCHK a sample remote health check with use of check message service HZSFMSG and format MGBFORMAT=1
HZSSSYMD a sample symbol definition file to be used as additional input to message table generating tool HZSMSGNJ

HZSSXCHK a sample REXX health check with use of a REXXIN dataset
HZSSXCHN a sample REXX health check with use of check message service HZSLFMSG and
REQUEST=DIRECTMSG

Refer to *IBM Health Checker for z/OS User's Guide* for more information and instructions about IBM
Health Checker customization.

8.5.5.3.7 ISPF customization considerations

Refer to *z/OS V2R2 ISPF Planning and Customizing* for more detailed information on customizing ISPF.

8.5.5.3.7.1 ISPF C/S with TSO linemode in a GUI window

See *z/OS V2R2 ISPF Planning and Customizing* for information on customizing ISPF C/S to display TSO
linemode output in a GUI window.

8.5.5.3.7.2 z/OS Version 2 Release 2 Sample panels

Sample ISPF panels are provided to enable panels for most z/OS Version 2 Release 2 elements. These
panels reside in the SISPPENU data set after APPLY processing. Two sample panels are supplied:

ISR@390S This sample panel is distributed with options used by system programmers and
administrators. It includes options for:

- GDDM Print Queue Manager
- HCD I/O configuration
- APPC Administration Dialog
- Work Load Manager
- FFST dump formatting
- Infoprint Server
- RMF
- SMP/E
- TCP/IP NPF

ISR@390U This sample menu panel includes the options used by most ISPF users. It includes options
for:

- BookManager/Read Online Documentation
- BookManager/Read Bookshelf Index Creation
- DFSMSrmm/ISMF
- DFSMSdfp/ISMF
- BDT File-to-File Feature
- IPCS for dump reading
- z/OS Unix Browse Files
- z/OS Unix Edit Files
- z/OS Unix Shell
- Security Server
- TSO/E Information Center Facility
- SDSF

Options for these elements have not been included in the samples:

- Communications Server for z/OS SNA Services IPCS Trace

  The panels for this element require extensive setup. Refer to "Installing the VTAM® Dump Analysis Enhancements and the VIT Analysis Tool" in *z/OS V2R2.0 Communications Server: New Function Summary* for information about enabling these panels.

ISPF customization for RACF panels

If your installation uses the TSO/E session manager, and you want it to capture the output of RACF panels, specify PANEL(ICHP00SM) instead of PANEL(ICHP00), in ISR@390U. For example, change:

```
12,'PANEL(ICHP00) SCRNAME(SECURITY)'
```

to

```
12,'PANEL(ICHP00SM) SCRNAME(SECURITY)'
```

8.5.5.3.7.3 Using the z/OS Version 2 Release 2 Sample panels

Starting from z/OS V1.9.0 ISPF, the sample panel ISR@390 was no longer included in the product. The ISR@PRIM panel now includes these two options:

12 z/OS System z/OS system programmer applications
13 z/OS User   z/OS user applications

Thus ISR@PRIM is now the same as ISR@390 that was in previous releases. Therefore, no customization is needed to replace the Primary Option menu with ISR@390. The sample USERMOD, OS39001, documented for previous releases, is no longer required and should not be used.

8.5.5.4 Customization considerations for Wave 1B

The following sections contain additional customization considerations for Wave 1B.

8.5.5.4.1 Communications Server IP Services customization considerations

Perform the following steps to complete the installation and initial customization of the Communications Server IP Services address space and key servers. At the completion of these steps, the Communications Server will have been set up for a basic configuration with no network attachments. **Additional customization will be required** to link the host to the network, bring up additional services, and optimize the use of initially configured services.

By choosing appropriate data set names and procedure names, these configuration steps can be done without interfering with any existing IP configuration. However, some customers may choose to simply review these steps and instead do IP configuration according to procedures they already have in place.

Refer to *z/OS V2R2.0 Communications Server: New Function Summary* and *z/OS V2R2.0 Communications Server: IP Configuration Guide* for more detailed customization instructions.

Before running the verification procedure you must have a fully functional z/OS UNIX environment and a fully functional security environment, either RACF or some other security program.

The following steps must be run from a TSO user ID with an OMVS segment defined. The user ID must be uid=0 or permitted to access the 'BPX.SUPERUSER' resource in the FACILITY class. The user ID must also be able to create and write to the required TSO datasets and hierarchical file system files and to perform RACF definitions. Steps in the EZARACFI job provide guidance for creating the entries that are required to complete the Communications Server IP IVP.

The PROCLIB used to contain the IVP procedures (*IVP_proclib_dsn*) must be in the PROCLIB concatenation. Before executing the steps, the following values must be known:

- ***target_lib_hlq***: high level qualifier of the TCP/IP target libraries (SEZAxxxx data sets). This will have been selected when the HLQ variable was chosen for the EZACSALC job run earlier in the Program Directory steps.
- ***dyn_alc_hlq***: high level qualifier of dynamically allocated TCP/IP data sets. Default is TCPIP, but we recommend use of TCPIVP.
- ***Default_RACF_group***: RACF group to which TCPIP and server procedures will be permitted. Default is OMVSGRP, which is the value used by the z/OS UNIX IVP. If you change the RACF Group for the z/OS UNIX IVP, it will need to be changed here as well. This group must be defined before the instructions below are executed.
- ***TCPIP_PROFILE_name***: data set name for the TCPIP.PROFILE. Defaults to TCPIP.PROFILE.TCPIP, but we recommend use of 'TCPIVP.TCPPARMS(PROFILE)'. For the purpose of these installation verification procedures, this must be an MVS data set, not an HFS file.
- ***TCPIP_DATA_name***: data set name for the TCPIP.DATA data set. Defaults to TCPIP.TCPIP.DATA, but we recommend use of 'TCPIVP.TCPPARMS(TCPDATA)'. For the purpose of these installation verification procedures, this must be in an MVS data set, not an HFS file.
- ***TCPIP_procname***: procedure name chosen for the TCP/IP address space; defaults to TCPIP.
- ***SYSLOGD_procname***: procedure name for syslog daemon; defaults to SYSLOGD
- ***FTPD_procname***: procedure name for FTP daemon; defaults to FTPD.
- ***IVP_proclib_dsn***: data set name of the IVP-specific procedure library.
- ***IVP_jcllib_dsn***: data set name for batch jobs used for installation and verification.
- ***IVP_configuration_dsn***: name of partitioned dataset to be used to contain configuration files for executing the IVP. We recommend use of 'TCPIVP.TCPPARMS'
- ***hostname***: The name of the system as it will be known in the TCP network.

Note: To avoid accidently overlaying an existing system environment, a default is not used. The preceding environment settings are meant to be discarded and not used in a live network.

When executing the following steps, you must use the same value for each of the *highlighted variables* (for example, *dyn_alc_hlq*) for each step where that variable is required.

Also verify:

- the Communications Server IP Services datasets have been added to the appropriate LNKLSTxx and LPALSTxx members of PARMLIB.
- BPXPRMxx parmlib member in use by z/OS UNIX has been updated for Communications Server IP Services.
  - Check there is a FILESYSTYPE statement specifying entry point EZBPFINI, as shown in the following example.

```
FILESYSTYPE TYPE(INET) ENTRYPOINT(EZBPFINI)
NETWORK DOMAINNAME(AF_INET)
DOMAINNUMBER(2)
MAXSOCKETS(60000)
```

  – If any changes are required, the new OMVS parameters may be updated by using the SETOMVS RESET=(yy) command or by re-IPLing.

Customization steps

1. Allocate required data sets

   • Customize the EZAGETIN job
     – This job allocates required TCPIP datasets, such as translation tables, HOSTS.LOCAL, ETC.SERVICES, etc
     – Copy the sample job to a JCL data set of your choice: *target_lib_hlq*.SEZAINST(EZAGETIN) to *IVP_jcllib_dsn*(EZAGETIN)
     – Fill in any required parameters on the //JOB statement
     – Set the DSPREFIX variable on the //PROC statement to *dyn_alc_hlq* or accept the default of TCPIP.
     – Set the TGTPRFX variable to *target_lib_hlq* or accept the default of TCPIP.
     – Set variables on the //PROC statement for the DASD volume serial and type where the datasets will be allocated
   • Run the EZAGETIN job.
     – Expected results: The job should complete with all steps receiving a condition code 0.
   • Update the *dyn_alc_hlq*HOSTS.LOCAL file
     – Copy an existing HOST entry, change the IP address to the loopback address and fill in the appropriate *hostname* value; for example:

       ```
       HOST : 127.0.0.1   :hostname ::::
       ```

     – Comment out the additional sample HOST, NET, and GATEWAY statements.
   • Run makesite to create the hlq.HOSTS.ADDRINFO and hlq.HOSTS.SITEINFO datasets
     – From TSO, issue the following command:

       ```
       makesite hlq=dyn_alc_hlq
       ```

     – Expected results:
       - The following messages should be seen at the TSO session:

         ```
         EZA0547I Writing out dyn_alc_hlq.HOSTS.SITEINFO ...
         EZA0548I Writing out dyn_alc_hlq.HOSTS.ADDRINFO ...
         ```

       - Messages EZA0550I through EZA0566I will also be generated showing statistics from the input data set read and the output data sets created.

2. Allocate the partitioned dataset for IVP configuration

   • If not already allocated, *IVP_configuration_dsn* must be allocated now. To do so, copy the allocation job: *target_lib_hlq*.SEZAINST(ALOCPARM) to *IVP_jcllib_dsn*(ALOCPARM).
   • Fill in any required parameters on the //JOB statement.

- Change the //ALLOCT EXEC statement to set the DSN variable to *IVP_configuration_dsn*, or accept the default of 'TCPIVP.TCPPARMS'.
- Change the //ALLOCT EXEC statement to set the DSP variable to the appropriate final disposition of the dataset, or accept the default of 'CATLG'.
- Change the //ALLOCT EXEC statement to set the TVOL1 variable to the volume serial of the volume on which you wish to allocate the data set.
- Submit the ALOCPARM job.
  - Expected results: The job should complete with a condition code 0.

3. <u>Customize the TCP/IP address space</u>

- Customize the procedure for starting the TCP/IP address space:
  - Copy the sample start procedure from the SEZAINST library to the appropriate proclib: *target_lib_hlq*.SEZAINST(TCPIPROC) to *IVP_proclib_dsn(TCPIP_procname)*
  - Make changes necessary to fit your environment
    - If desired, change the default jobname to the chosen procedure name on the //PROC statement: TCPIP to *TCPIP_procname*

      Note: If the system is configured for common INET (CINET is specified in the BPXPRMxx member of SYS1.PARMLIB), the name chosen for the TCP/IP start procedure must match the one used for the SUBFILESYSTYPE NAME value. For this IVP, however, common INET will not be used. See *z/OS UNIX System Services Planning* for details.
    - Set up the //PROFILE DD card to point to the data set to be used to contain the TCPIP.PROFILE.
      - Either uncomment one of the provided statements (to use either TCPIP.PROFILE.TCPIP or TCPIVP.TCPPARMS(PROFILE) as the value of *TCPIP_PROFILE_name*) **-or-**
      - Copy one of the provided //PROFILE DD statements, uncomment it, and set DSN equal to *TCPIP_PROFILE_name*
    - If desired, change the default TCPIP.DATA name to the selected *TCPIP_DATA_name*
      - Set up the //SYSTCPD DD card to point to data set to be used to contain the TCPIP.DATA
        - Either uncomment one of the provided statements (to use either TCPIP.SEZAINST(TCPDATA) or the recommended value of TCPIVP.TCPPARMS(TCPDATA) as the value of *TCPIP_DATA_name*) **-or-**
        - Copy one of the provided //SYSTCPD DD statements, uncomment it, and set DSN equal to *TCPIP_DATA_name*
      - Comment out the PARM= card of the //EXEC statement. Uncomment the SET statement on the line above the EXEC statement and specify the appropriate dsname for the TCPIP.DATA data set. Uncomment the two lines for the PARM, following the EXEC statement, that specifies the setting for the RESOLVER_CONFIG environment variable.

        ```
        //* SET PARM1=TCPIVP.TCPPARMS(TCPDATA) ...
        //* PARM=('&PARMS',
        //* 'ENVAR("RESOLVER_CONFIG=//''&PARM1''")')
        ```

- If not using 'TCPIVP.TCPPARMS(TCPDATA)' for *TCPIP_DATA_name*, change the ENVAR setting on the //EXEC statement to use *TCPIP_DATA_name*.
- Customize the TCPIP profile data set
  - Copy the sample TCPIP profile dataset from the SEZAINST library to the selected location: *target_lib_hlq*.SEZAINST(SAMPPROF) to *TCPIP_PROFILE_name*

    Note: If *TCPIP_PROFILE_name* is not an existing data set, it will need to be allocated.
  - If not using the default value for *FTPD_procname*, change the PORT statement that specifies FTPD1 to the chosen *FTPD_procname*1 (be sure to add the 1 at the end).
- Customize the TCPIP.DATA data set
  - Copy the sample TCPIP.DATA dataset from the SEZAINST library to the selected location: *target_lib_hlq*.SEZAINST(TCPDATA) to *TCPIP_DATA_name*.

    Note: If *TCPIP_DATA_name* is not an existing data set, it will need to be allocated.
  - Set TCPIPJOBNAME to the value of *TCPIP_procname*.
  - Set HOSTNAME statement to the *hostname* of the system as it will be known in the TCP network.
  - Set DOMAINORIGIN statement to the domain for this host or comment out the statement.
  - Set DATASETPREFIX to the value of *dyn_alc_hlq*.

4. Do required RACF definitions

- Customize the EZARACFI job
  - This job will perform the RACF definitions and define OMVS segments required for the TCP/IP address and servers.
  - Copy the sample job to a JCL data set of your choice: *target_lib_hlq*.SEZAINST(EZARACFI) to *IVP_jcllib_dsn*(EZARACFI).
  - Fill in any required parameters on the //JOB statement.
  - If not using the default value for *Default_RACF_group*, change the DFLTGRP(OMVSGRP) definitions on the ADDUSER statements for the DAEMONS step to use the selected value for *Default_RACF_group*. (Note, it is assumed this group has already been created.).
  - If desired, comment out ADDUSER and RDEFINE statements for any servers for which you do not want to do RACF definitions at this time. Note, however, the step will be terminated by the first comment statement, so move any comments to the end of the //SYSTSIN input.
  - For this IVP, RACF definitions are required for the TCPIP, SYSLOGD, and FTPD started procedures.
  - If not using the default value for *TCPIP_procname*, change 'TCPIP' on the ADDUSER and RDEFINE statements to the selected value for *TCPIP_procname*.
  - If not using the default value for *SYSLOGD_procname*, change 'SYSLOGD' on the ADDUSER and RDEFINE statements to the selected value for *SYSLOGD_procname*.
  - If not using the default value for *FTPD_procname*, change 'FTPD' on the ADDUSER and RDEFINE statements to the selected value for *FTPD_procname*.

    Note: For the purposes of the IVP, the preceding RACF definitions are the only ones used. You may, however, wish to uncomment additional RACF definitions for other applications that are not part of the IVP in the EZARACF sample.
  - Additional steps are required when running with BPX.DAEMON set up (If you are not running with BPX.DAEMON, skip to Step 4 on page 175.)

- If you have a BPX.DAEMON environment, you must ensure all load modules loaded into an address space come from controlled libraries. If a module is loaded from a noncontrolled library, the address space loses its authorization. This means you must define all the libraries from where modules may be loaded as program controlled. See *z/OS UNIX System Services Planning* for more information on the BPX.DAEMON resource in the FACILITY class. The following steps, found in EZARACF, can be used for including z/OS IP in an existing BPX.DAEMON environment.
- Permit servers to the BPX.DAEMON resource.(EZARACF)
  - Uncomment the //BPXDAEMN EXEC statement and the //SYSTSPRT DD and //SYSTSIN DD cards associated with it.
  - Uncomment (remove the //*) RACF statements to permit (PE) the TCP/IP address space and the FTP daemon to a resource in the FACILITY class.
  - If not using the default value for *TCPIP_procname* change 'TCPIP' on the PE statement to the selected value for *TCPIP_procname*.
  - If not using the default value for *FTPD_procname* change 'FTPD' on the PE statement to the selected value for *FTPD_procname*.
- Enable program control for runtime library modules
  - Uncomment the //PADS EXEC statement and the //SYSTSPRT and //SYSTSIN DD cards associated with it.
  - Uncomment (remove the //*) RALT statements for 'SYS1.LINKLIB', 'cee.SCEERUN', and 'tcpip.SEZALOAD'.
  - Change the high level qualifier for the C run-time library from 'cee' to the appropriate high level qualifier.
  - Change the 'volser' value on the RALT statement to the volume serial for the C run-time library.
  - Change the high level qualifier for the TCP/IP load libraries from 'tcpip' to *target_lib_hlq*.
  - Change the 'volser' value on the RALT statement for the TCP/IP load library to the volume serial for the TCP/IP load library.
  - Uncomment the SETROPTS statement and move it to immediately after the last uncommented RALT statement.
- Run the EZARACFI job
  - Expected results: The job completes with condition code 0 and no error messages.
    - Note, if the users are already defined to RACF, error messages for 'invalid user ID' are generated. Successful ADDUSER definitions produce only the TSO 'READY' prompt in the output.
    - The condition code returned is the condition code for the last RACF command issued, so read the job output to verify the RACF definitions were done.

5. Customize SYSLOGD

- Copy the sample start procedure from the SEZAINST library to the appropriate PROCLIB: *target_lib_hlq*.SEZAINST(SYSLOGD) to *IVP_proclib_dsn(SYSLOGD_procname)*.
- If desired, change the default jobname to the chosen procedure name on the //PROC statement: SYSLOGD to *SYSLOGD_procname*.
- Comment out the //CONFHFS EXEC statement and uncomment the //CONFPDS EXEC statement.

- On the //CONFPDS EXEC statement, either accept the default location for the configuration file or change TCPIVP.TCPPARMS(SYSLOG) to *IVP_configuration_dsn*(SYSLOG).
- Copy the sample configuration file to the IVP-specific configuration files: /usr/lpp/tcpip/samples/syslog.conf to *IVP_configuration_dsn*(SYSLOG).

  From TSO, this can be done with an OGET command (note that the command should be issued on one line):

  ```
  oget '/usr/lpp/tcpip/samples/syslog.conf'
  'IVP_configuration_dsn (SYSLOG)'
  ```

6. Customize FTP

   - Set up the FTPD proc
     - Copy the sample start procedure from the SEZAINST library to the appropriate proclib: *target_lib_hlq*.SEZAINST(FTPD) to *IVP_proclib_dsn(FTPD_procname)*.
     - If desired, change the default jobname to the chosen procedure name on the //PROC statement: FTPD to *FTPD_procname*.
     - Comment out the first PARM= card on the //EXEC statement. Uncomment the SET statement and both lines of the second PARM= on the //EXEC statement. Change PARM1= on the // SET statement to point to the appropriate TCPIP.DATA data set.
   - Uncomment the //SYSFTPD DD statement which specifies TCPIVP.TCPPARMS(FTPSDATA).
     - On the //SYSFTPD DD statement, either accept the default location for the server FTP.DATA file or change TCPIVP.TCPPARMS(FTPSDATA) to *IVP_configuration_dsn*(FTPSDATA).
   - Uncomment the //SYSTCPD DD statement which specifies TCPIVP.TCPPARMS(TCPDATA).
   - On the //SYSTCPD DD statement, either accept the default location for the TCPIP.DATA set or change TCPIVP.TCPPARMS (TCPDATA) to *TCPIP_DATA_name*.

7. Set up the server and client FTP.DATA files

   - Copy the sample server FTP.DATA file to the appropriate server FTP.DATA file: *target_lib_hlq*.SEZAINST(FTPSDATA) to *IVP_configuration_dsn*(FTPSDATA)
   - Copy the sample client FTP.DATA file to the appropriate client FTP.DATA file: *target_lib_hlq*.SEZAINST(FTCDATA) to *IVP_configuration_dsn*(FTCDATA)

- **Note**: See *z/OS V2R2.0 Communications Server: SNA Resource Definition Reference* and *z/OS V2R2.0 Communications Server: SNA Network Implementation Guide* for detailed information on setting up and verifying VTAM configuration.
- Ensure the *IVP_Default_LUs* are defined to VTAM. Sample definitions are provided in *target_lib_hlq*.SEZAINST(IVPLU).
  - The *IVP_Default_LUs* must be defined in a dataset that is in the concatenation of datasets specified on the VTAMLST DD statement in the procedure used to start VTAM.
  - If changes were made to the VTAMLST concatenation, stop and restart VTAM.
- Refresh LLA

  If LLA is running and has not been refreshed since the Communications Server code was installed, refresh LLA before proceeding with the IVP.

8.5.5.4.1.1 CICS sockets interface customization considerations

Refer to the *z/OS V2R2.0 Communications Server: IP CICS Sockets Guide* for the customization required to use the CICS Sockets Interface.

8.5.5.4.1.2 IMS sockets interface customization considerations

Refer to the *z/OS V2R1.0 Communications Server: IP IMS Sockets Guide* for the customization required to use the IMS Sockets Interface.

8.5.5.4.1.3 Network Print Facility customization considerations

Refer to the *z/OS V2R2.0 Communications Server: IP Configuration Reference*.

8.5.5.4.1.4 Communications Server Security Level 3 customization considerations

Refer to the *z/OS V2R2.0 Communications Server: IP Configuration Reference*.

8.5.5.4.2 DFSMS customization considerations

For information on activating Object Access Method, see *z/OS DFSMS OAM Planning, Installation, and Storage Administration Guide for Tape Libraries* or *z/OS DFSMS OAM Planning, Installation, and Storage Administration Guide for Object Support*.

For information on activating DFSMShsm, see *z/OS DFSMShsm Implementation and Customization Guide*.

For information on activating DFSMSrmm, see *z/OS DFSMSrmm Implementation and Customization Guide*.

8.5.5.4.2.1 Make ISMF available to the TSO user

To make ISMF available to the TSO users, refer to *z/OS DFSMS Using the Interactive Storage Management Facility*. For cataloging information, see *z/OS DFSMS Managing Catalogs*.

8.5.5.4.2.2 3800/3900 Printing Subsystem

If you are installing an IBM 3800 or 3900 Printing Subsystem for the first time, you must install library character sets, graphic character modification modules, and character arrangement tables in SYS1.IMAGELIB. A job to accomplish this task is contained in member LCSBLD1 of SYS1.SAMPLIB after DFSMS has been installed. If you have run LCSBLD1 previously, you do not need to rerun it after installing DFSMS.

8.5.5.4.2.3 Starter set information

The Starter Set is a pre-defined Source Control Data Set (SCDS) containing information that defines a specific storage management policy.

This is provided as a sample SCDS to allow new SMS installations to start SMS before having to go through defining the construct definitions, and writing the Automatic Class Selection (ACS) routines.

The sample SCDS named SCDS.PRIMARY.LINEAR is packaged in the target library SYS1.IGDVBS1 as member DFPSSCDS.

SYS1.SAMPLIB will contain the following members:

DFPSSDCR source ACS routine for DATACLAS

DFPSSMCR source ACS routine for MGMTCLAS

DFPSSSCR source ACS routine for STORCLAS

DFPSSSGR source ACS routine for STORGRP

DFPSSIMP JCL to IMPORT SCDS

> **Note:** After the SMP/E APPLY is performed for DFSMS, run job DFPSSIMP available in SYS1.SAMPLIB to IMPORT 'SCDS.PRIMARY.LINEAR' from target library SYS1.IGDVBS1.

For more information about the Starter Set, refer to the *z/OS DFSMSdfp Storage Administration*. This manual contains a detailed description of the sample SCDS.

8.5.5.4.2.4 Activate CDRA

If your installation will use the Character Data Representation Architecture (CDRA) and numeric conversion routines provided in this release of z/OS, you must activate the function by tailoring and running SYS1.SAMPLIB(CDRAINIT).

Language Environment is required for Distributed FileManager (DFM/MVS) to do CDRA conversions. If your installation's link list does not refer to the Language Environment runtime library, SCEERUN, you must add the appropriate STEPLIB DD statement to DFM startup procedure SYS1.PROCLIB(DFM). You must also make the same change to SYS1.SAMPLIB(GDETPDEF) and rerun it.

8.5.5.4.3 z/OS UNIX System Services Application Services customization

For details on getting the shell and utilities in operational status, see *z/OS UNIX System Services Planning*.

8.5.5.5 Customization considerations for Wave 1C

The following sections contain additional customization considerations for Wave 1c.

8.5.5.5.1 BookManager READ customization considerations

Refer to *IBM BookManager READ/MVS: Installation Planning and Customization* for more information on BookManager READ customization.

This section describes the customization to BookManager READ that is required before users can read and print online books, including:

- Updating installation defaults in EOXVOPTS
- Allocating BookManager READ data sets for users
- Customizing the Index Utility
- Setting bookshelf defaults.

8.5.5.5.1.1 Customize defaults in EOXVOPTS

Before you can use BookManager READ, you must customize the EOXVOPTS member of the SEOYCLIB target library to set defaults for your installation. The options shown here are the options that **must** be defined for z/OS Version 2 Release 2. *IBM BookManager READ/MVS: Installation Planning and Customization* contains detailed information on all the parameters in EOXVOPTS. Refer to the BookManager READ PSP Bucket for additional information on EOXVOPTS.

Note: If you have changed any of the default data set names when you installed z/OS Version 2 Release 2, or if you want to use a default language other than US English, then you should review all the parameters in EOXVOPTS for further customization that might be required for your installation.

BookManager READ provides support for three categories of printers:

    38PP - 3800 Model 3, 6, or 8
    3820 - 3820 Page Printer
    4250 - 4250 ElectroCompositor

If you want to print BookManager READ BOOKs on AFP printers, you should modify the BookManager READ options to specify logical device **AFPA**, or one of the other logical devices shown in Figure 47 on page 180. z/OS Font Collection provides fonts to support printing with device type AFPA. By customizing BookManager READ to use the AFPA device type, you can achieve printer independence, and print softcopy books on any AFP laser printer including 300-pel printers and AFP outline printers.

You may set the defaults for all three categories of devices to use the AFPA device type, as described below. If you have already customized BookManager READ to print on 3800, 3820, 4250 or other devices, you may continue to use the device types and font libraries as defined on your existing system.

Category 38PP: Choose one of the following:

If you are using a 3800 printer

> **QFNT38PP**   Specifiy the name of your font library for unbounded box fonts, if different from the default of SYS1.FONTLIB.
>
> > **Note:** You must use your existing fonts to print on a 3800 printer, as no unbounded box fonts are provided with z/OS Version 2 Release 2.
>
> **QDEV38PP**   Specify a valid **38PP**xxxx type for 3800 printers, as listed in *Document Control Facility: SCRIPT/VS Language Reference*, SH35-0070, if different from the default of 38PPN.

If you are not using a 3800 printer This option supports AFP page printers

> **QFNT38PP**   Specify the name of a bounded box font library. To use the fonts provided with z/OS Font Collection, specify SYS1.FONTLIBB if you will be using 240-pel printers, or SYS1.FONT300 if you will be using 300-pel printers.
>
> > **Note:** If you have a mix of 240- and 300-pel printers, then we suggest specifying the 300-pel font library here and/or in QFNT4250, and the 240-pel font library in QFNT3820.

QDEV38PP   Override this option to specify **AFPA**, or one of the other options listed in Figure 47 on page 180.

Category 3820

QNFT3820   To use the 240-pel fonts provided with z/OS Font Collection, specify the name of the 240-pel font library, which is normally SYS1.FONTLIBB.

QDEV3820   To use the fonts provided with z/OS Font Collection, override this option to specify **AFPA**, or one of the other options listed in Figure 47. To use your existing fonts, specify **3820***xxxx*.

Category 4250

QNFT4250   Override this name to show the name of the font library for the fonts you installed. To use the fonts provided with the z/OS Font Collection, specify SYS1.FONTLIBB if you will be using 240-pel printers, SYS1.FONT300 if you will be using 300-pel printers, or SYS1.SFNTILIB if you will be using AFP outline printers.

> **Note:** If you have a mix of 240- and 300-pel printers, we suggest specifying the 300-pel font library here and/or in QFNT38PP, and the 240-pel font library in QFNT3820.

QDEV4250   Override this option to specify **AFPA**, or one of the other options listed in Figure 47.

Other options in EOXVOPTS

QBMPROF   Specify the name of the BookMaster® profile data set. Ensure PTF UQ04721 is installed. Change the name of the profile data set to EDF.R40.EDFMAC(EDFOS390), which has been customized for OS/390 and can be used with z/OS. If you already have the fonts installed that come with the full BookMaster licensed product, you can use EDFPRF40 as your profile.

QBMSMAC   Specify the name of the BookMaster system macro library. Change this name to EDF.R40.EDFMAC1 for BookManager books on AFP printers.

QSSPROF   Specify the name of the DCF Starter Set GML profile data set. Change this name to SCRIPT.R40.MACLIB(DSMPROF4) for BookManager books on AFP printers.

QSSSMAC   Specify the name of the DCF Starter Set GML system macro library. Change this name to SCRIPT.R40.MACLIB for BookManager on AFP printers.

QGDDMSYM   Specify the name of the GDDM symbol library, if different from the supplied default.

QGDDMSAM   Specify the name of the GDDM library containing OS2LINK and PCLK PC files, if different from the supplied default.

QGDDMDEF   Specify the name of the GDDM ADMDEFS (definitions) data set.

Figure 47. Devices for AFP Printers						
Logical Device Type	Page Size		Margins			Line Length
	Width	Length	Bind	Top	Bottom	
AFPA AFPA90 AFPA180 AFPA270 AFPL AFPA4 AFPB4 AFPB5 AFPE	8.5i 11i 8.5i 11i 8.5i 210mm 257mm 182mm 184.2mm	11i 8.5i 11i 8.5i 14i 297mm 364mm 257mm 266.7mm	1i	.5i	.5i	6i
Note: The DCF physical device type can be any 240 dpi or 300 dpi AFP printer compatible with the 3820 at the data stream level.						

8.5.5.5.1.2 Customize EOXMNALC for data set allocation

The EOXMNALC REXX EXEC is provided with BookManager READ to create BookManager user data sets. Allocations for temporary user data sets, such as the following, can be modified by updating the EOXMNALC member of the SEOYCLIB target library.

- Bookshelves
- Notes
- The COPY/PRINT function
- Bookmarks
- The list of bookshelves
- A PSEG picture
- A GDF picture

The size of the copy or print data set is specified in this EXEC. The default size of the print data set is 10 tracks. If this data set is too small, you may be unable to print large books. You may increase the allocation of the print data set by modifying the EOXMNALC EXEC.

8.5.5.5.1.3 Customize the Index utility

The Index Utility creates a bookshelf and associates a synonym dictionary with each bookshelf search index to be used for synonym searching. To customize the Index Utility, you must perform the following steps:

- Update the EOYINDEX proc (see 8.5.3, "PROCLIB member considerations" on page 151)
- Update the EOYPARM member in SEOYCLIB.

8.5.5.5.1.4 Set bookshelf defaults

You must complete the customization of BookManager READ by setting the default bookshelf for users. Complete this step by performing the tasks in 8.6.5.1, "Run the BookManager READ Installation Verification Procedure" on page 259.

8.5.5.5.1.5 Set up ISPF preprocessed panels

You might want to use the ISPF ISPPREP facility to build preprocessed versions of the ISPF panels. This step is optional, but may improve BookManager performance, depending on your system environment. An example would be to convert the entire partitioned SEOYPENU data set and unconditionally write the preprocessed panels to your PREP.SEOYPENU partitioned data set. Both data sets should be cataloged. The command for this example would look like this:

```
SELECT PGM(ISPPREP) PARM(INPAN('EOY.SEOYPENU(*)'),
      OUTPAN('EOY.PREP.SEOYPENU( )'), REPLACE) NEWAPPL
```

The partitioned data set containing the preprocessed panels must be concatenated into the ISPPLIB search string for the ISPF start-up CLIST. Do not replace the SEOYPENU data set with the partitioned data set created by the preprocessing procedure. For more information on using ISPPREP, see *z/OS V2R2 ISPF Dialog Developer's Guide and Reference*.

There are 9 panels in the SEOYPENU data set which will not undergo preprocessing:

```
EOYML000   EOXPNEF   EOXXN   EOXXQ1   EOXXQ3   EOXX82
EOXX83     EOXX92    EOXX93
```

You will have to copy these 9 panels into the preprocessed panel library, or concatenate the SEOYPENU data set behind your PREP.SEOYPENU library in your ISPPLIB concatenation list.

8.5.5.5.2 EREP customization considerations

The JCL job used to run EREP should include an EXEC PGM=IFCEREP1 statement. Refer to *EREP User's Guide* for more information. For more information on creating, maintaining, and refreshing the SYS1.LOGREC data set or the Logrec Log Stream, see *z/OS MVS Diagnosis: Tools and Service Aids*.

8.5.5.5.3 ESCON Director Support customization considerations: The following sections describe customization considerations for ESCON Director Support.

8.5.5.5.3.1 ESCON Director Support security

Installation of ESCON Director Support enables nonauthorized programs to issue I/O to online switches using the EXCP access method, if the switch control unit/device has been defined to z/OS Version 2 Release 2. To control access to a switch from a host processor, any combination of the following can be used:

- Keep the device offline to z/OS Version 2 Release 2 to prevent nonauthorized programs from allocating the device. OFFLINE=YES is the IOCP default. (ESCON Director Support itself does not require a switch to be online to z/OS Version 2 Release 2 in order to retrieve device information.)
- Add a z/OS Version 2 Release 2 system authorization facility (SAF) exit to monitor and control allocation to switches. z/OS Version 2 Release 2 allocation will call SAF whenever a user or program allocates a switch.
- Monitor and control allocation to switches using RACF. RACF provides a resource class, DEVICES, to control allocation to unit record, teleprocessing, and graphics devices.

8.5.5.5.4 FFST customization considerations

See the *FFST/MVS FFST/VM Operations Guide* for more information on how to get the program into operational status by coding macros.

- Considerations when invoking FFST in a NetView environment:

    Make sure NetView tasks CNMCALRT and BNJDSERV are active for Alerts to appear on the NPDA alert screen. See the help for NCCF LIST and NCCF START for more information. If your installation uses NetView filters to prevent certain data from being collected or displayed, ensure that a filter is not blocking CPU information. You may automate the setting of the CPU hardware monitor filter during NetView initialization by updating CNMSTYLE as follows:
    - Locate "PDFILTER" and in that section add the following statement to allow FFST to pass CPU Generic Alerts to NetView, where *x* represents a unique suffix.

        ```
        NPDA.PDFILTER.x = NPDA SRFILTER AREC PASS TREF CPU
        ```

    See *NetView Administration Reference* for more information about this statement.
- Considerations when invoking FFST with RACF:

    If you use RACF or another security program to protect any of the FFST data sets, verify the application programmer has the necessary access for the following data sets:
    - FFST message log to review the messages that are issued when a probe statement is executed
    - FFST CLIST library to invoke the translators and to format the diagnostic output
    - FFST panel library to invoke the help screens for the translators and the dump formatter
    - Data sets allocated for the outputs produced by FFST
    - In addition, you need to associate the RACF SYSSTC1 user ID with the FFST started task using the RACF STARTED class or using an entry in the RACF started procedures table, ICHRIN03. See *z/OS Security Server RACF System Programmer's Guide* for additional information.

8.5.5.5.5 GDDM and GDDM-PGF customization considerations

Refer to *GDDM System Customization and Administration* for more information on GDDM customization. Customization includes tuning the operating-system-related values and defining input and output devices to GDDM. These activities include:

- Activating language features
- Updating GDDM defaults
- Defining GDDM to TSO
- Defining GDDM to CICS
- Defining GDDM to IMS
- Making GDDM-OS/2 available
- Making GDDM-PCLK available
- Making GDDM-REXX available
- Reblocking any existing objects

8.5.5.5.6 ICKDSF customization considerations

ICKDSF provides a sample job for creating the stand-alone tape. Edit and submit SYS1.SAMPLIB(ICKSAT) to copy the ICKDSF Stand-Alone program to an unlabeled tape. Consult the

instructions in the sample job for more information. Successful creation of a stand-alone tape returns a condition code of 0. Refer to the *Device Support Facilities User's Guide* for additional information on loading the stand-alone tape.

8.5.5.5.7 *TSO/E customization considerations*

Refer to *z/OS TSO/E Customization* for more information on TSO/E customization.

8.5.5.5.8 *3270 PC File Transfer Program customization considerations*

The following sections describe various customization considerations for 3270 PC File Transfer Program.

8.5.5.5.8.1 *Modify translate tables for 3270 PC File Transfer Program*

The translate tables included in this program, which convert between ASCII and EBCDIC codes, might not be suitable for your installation. These tables may be modified by patching the IND$FILE module.

The translate character that is most likely to cause problems is the EBCDIC character X'3F' that translates to an ASCII X'1A'. This later character is treated as an end-of-file (EOF) in many personal computer programs, especially editors.

The entry points to the IND$FILE module are:

EBCDASCI   EBCDIC to ASCII translate table
ASCIEBCD   ASCII to EBCDIC translate table

Refer to the binder listing for the proper offsets for these entry points. It is advised that the USERMOD SMP/E format be used to modify the translation tables.

The example below shows how to change the EBCDIC character "3F" to translate to "5B" instead of "1A":

```
1. Find the offset of the EBCDIC-to-
   ASCII translation table (EBCDASCI)              020F40
2. Add the character value "3F" to that address     +   3F
                                                   ------
3. This is the verify address                     = 020F7F

++USERMOD(*******) .              (******* = ALPHABETIC NAME)
++VER(Z038)   FMID(HFX1102) .
++ZAP(EBCDASCI) .
  NAME EBCDASCI
VER 020F7F 1A
REP 020F7F 5B
  IDRDATA *******
```

If you change the EBCDASCI table to translate X'3F' to some other character, you should also change the ASCIEBCD table to translate that ASCII character back to X'3F'.

8.5.5.6 Customization considerations for Wave 1D: The following sections describe customization considerations and tasks for Wave 1D.

8.5.5.6.1 Cryptographic Services OCSF customization considerations

Your order will only contain the fmids appropriate for your country code. Applying these fmids will activate the correct security level. Detailed steps to get OCSF into operational status are defined in *z/OS Open Cryptographic Services Facility Application Programming*. This book describes:

- Installation of service providers
- Setup of RACF FACILITY class needed to run applications using OCSF
- IVP procedures

8.5.5.6.2 Alternate Library for REXX customization considerations

The following sections describe various considerations for customizing Alternate Library for REXX.

8.5.5.6.2.1 Activating Alternate Library for REXX

Alternate Library for REXX is fully operational when the SMP/E installation and the customization activities described below are complete. If you do not APF-Authorize the load module library, REXX.SEAGALT, you will get an abend condition when the Alternate Library for REXX routines are requested by an APF-Authorized routine.

8.5.5.6.3 Security Server (RACF) customization considerations

Refer to *z/OS Security Server RACF System Programmer's Guide* for information on z/OS Security Server RACF customization and refer to *z/OS V2R2 Migration* for migration actions.

8.5.5.6.3.1 Prepare the RACF database

Before you load the initial program with the new RACF active, complete either of the following actions:

- Allocate, format, and catalog a RACF database on the target system (IRRMIN00 with PARM=NEW).
- Upgrade the existing RACF database templates to the current level of the RACF templates that are shipped with z/OS V2.2.0 (IRRMIN00 with PARM=UPDATE).

    If your templates are already at the level required by this release, you do not need to update the templates. Message IRR8025 may be issued and no further action is required.

You can create or upgrade a RACF database by running the IRRMIN00 utility, as described in *z/OS Security Server RACF System Programmer's Guide*. Sample jobs are provided in SYS1.SAMPLIB member RACJCL.

It is recommended that a backup database is created that RACF will maintain as a duplicate of the primary. Those migrating from a prior level of RACF should not update both the primary and backup database templates at the same time.

8.5.5.6.3.2 Automate Dynamic Parse initialization

Note: Because all RACF installations must activate dynamic parse after each IPL, it is **strongly** recommended that you automate dynamic parse initialization.

The IRRDPI00 command builds a "dynamic" table for parsing segment-related keywords. Dynamic parse is used to add, list, alter, or delete DFP, TSO, or any other nonbase segment information with the RACF commands.

There are two methods to automate dynamic parse initialization. The first involves updating the RACF parameter library to automatically invoke the IRRDPI00 UPDATE command at every IPL. This method requires the RACF subsystem address space to be active. Example of the first method (IRROPTxx) is shown in Figure 42 on page 135. The second method involves PARMLIB and PROCLIB updates to START IRRDPTAB at every IPL. These methods are described in *z/OS Security Server RACF System Programmer's Guide*.

8.5.5.6.3.3 Additional considerations before IPLing your system

The following is a list of considerations to consider before IPLing your system. For information on these topics, see *z/OS Security Server RACF System Programmer's Guide*.

- Define RACF coupling facility structures.
- Create or update the database range table.
- Create or update the database name table or alter the master JCL. Note that if this step is not done, the system prompts the operator during IPL. The operator can then reply with the RACF database name.
- Update the RACF class descriptor table and the RACF router table.
- Identify the RACF address space as an MVS subsystem.
- Create or update the started procedures table or use the STARTED CLASS.
- Create exit routines and a naming convention table.

You might also want to consider activating the REXX RACVAR function, which is described in *z/OS Security Server RACF Macros and Interfaces*.

8.5.5.6.3.4 Other system considerations for initial installation

If you plan to make the change listed below, be sure to do so before you define your users, groups, and resources to RACF:

- Add TSO profiles to the UADS data set for any new TSO users by using the ADD subcommand of TSO/E ACCOUNT. See *z/OS TSO/E Administration*.

  Note: RACF provides your installation with the option of placing TSO user logon information in the TSO segment of the RACF user profile.

8.5.5.7 Customization considerations for Wave 1E: The following sections describe
considerations for customizing elements that are part of Wave 1E.

8.5.5.7.1 Runtime Library Extensions customization considerations

The following sections describe considerations for customizing Runtime Library Extensions.

8.5.5.7.1.1 Customization of the Runtime Library Extensions for CICS

To ensure that CICS can communicate with the Runtime Library Extensions, you must add a Runtime Library Extensions entry to the CICS System Definition (CSD). To do so, update the CICS System Definition (CSD) file using the program definitions in member CLB3YCSD in the Runtime Library Extensions data set SCLBJCL. This member contains the necessary input to the CICS System Definition (CSD) file utility program to define Runtime Library Extensions routines in the PPT. The group name for the Runtime Library Extensions routines is **CLB**.

Note: If you intend to use the Runtime Library Extensions under CICS, add the SCLBDLL data set to the DFHRPL DD concatenation in your CICS startup job stream and ensure that Language Environment is available under CICS (see 8.5.5.3.2, "Language Environment customization considerations" on page 167 for more information).

8.5.5.7.2 CIM customization considerations

The customization for element CIM has to be done after IPL of your target system. For detailed information on how to customize CIM for z/OS, refer to *z/OS Common Information Model User's Guide*.

8.5.5.7.3 RMF customization considerations

If you are a new RMF customer, skip the first two steps. These steps are optional for existing RMF customers.

1. Redefine the user reports for RMF, using the ERBRMFU utility.

2. Reinstall your user exits, ensuring that they run in 31-bit mode.

3. Customize the RMF Monitor III CLISTs.

   If the RMF CLISTs and default naming conventions are not acceptable, you can modify the RMF CLIST ERBRMF3X, which invokes RMF, displaying the primary menu. This CLIST can be found in your RMF SERBCLS system library. Follow the instructions in the commented text to customize the CLIST to your local environment.

4. Refer to *z/OS RMF User's Guide*, for a description of all customization steps that are required for new RMF customers as well as for installations that are migrating from a previous release.

8.5.5.7.4 XL C/C++ Compiler customization considerations

The following topics describe areas you may consider for tailoring for the XL C/C++ compiler.

8.5.5.7.4.1 Tailor the TSO environment: If you want to use TSO or compile a program with the XL C/C++ Compiler, refer to Figure 45 on page 156 for information on the data sets, which must be concatenated. Modify the TSO/E logon PROC by concatenating the listed data sets to the corresponding DDNAMEs.

8.5.5.7.4.2 Tailor REXX EXECs

For information on tailoring REXX EXECs, refer to the *z/OS XL C/C++ User's Guide*.

8.5.5.7.4.3 Customized default options for XL C/C++ Compiler

For information about customizing default options for the XL C/C++ compiler, see *z/OS XL C/C++ User's Guide*.

8.5.5.7.4.4 Customization of the Performance Analyzer for CICS

To ensure that CICS/ESA can communicate with the Performance Analyzer, you must add Performance Analyzer entries to the CICS processing program table (PPT). To do so, update the CICS system definition (CSD) file using the program definitions in member CTVSCSD in the Performance Analyzer data set SCTVJCL. PTF UQ35263 must be installed to obtain the member. This member contains the necessary input to the CICS System Definition (CSD) file utility program to define the Performance Analyzer routines in the PPT. The group name for the Performance Analyzer routines is EQA.

Note: If you intend to use the Performance Analyzer under CICS, add the SCTVMOD data set to the DFHRPL DD concatenation in your CICS startup job stream and ensure that Language Environment is available under CICS (refer to 8.5.5.3.2, "Language Environment customization considerations" on page 167 for more information).

8.5.5.8 Customization considerations for Wave 1F: The following sections describe customizations considerations for Wave 1F.

8.5.5.8.1 BDT customization considerations

Perform the following steps to activate BDT; these steps are described in more detail in *z/OS BDT Installation*. All samples are in the SBDTSAMP library.

- If a JES3 environment:
    - Add CONSOLE and SYSID statements to the JES3 initialization stream.
    - If installing SNA/NJE, add or modify the NJERMT statement in the JES3 INISH stream.
- Update SYS1.VTAMLST (see sample BDT$VTAM) to define a Communications Server for z/OS SNA Services application to support BDT.
- Allocate BDT and TQI data sets (see sample BDT$ALOC).
- Run the BDTTQBCH utility program (see sample BDT$TQFM) to format the:
    - TQI checkpointing and bitmap data sets
    - Message data set for each processor.
- Create the BDT initialization stream:
    - See sample BDT$FTF for a JES2 or JES3 file-to-file only installation.
    - See sample BDT$NJE for a JES3 SNA NJE only installation.
    - See sample BDT$MIX for a JES3 file-to-file and SNA NJE installation.
- Create user exits, as described in *z/OS BDT Installation*. Assemble and link-edit the BDT user exits into the proper load libraries. If you are a migrating customer, you must reassemble all user exit routines.

8.5.5.8.2 DFSORT customization considerations

Refer to *z/OS DFSORT Installation and Customization* for more information and instructions on DFSORT customization.

8.5.5.8.2.1 Change DFSORT installation options

Starting from z/OS V1.10.0, you can change DFSORT installation options by creating and using ICEPRMxx members in concatenated PARMLIB. This method simplifies the management of DFSORT installation options, particularly in multisystem environments.

You can activate the ICEPRMxx members that you want to use by issuing an appropriate START ICEOPT command from the console, or by including a START ICEOPT command in an appropriate COMMNDxx member in PARMLIB. Before you activate your ICEPRMxx members by using a COMMNDxx member, it is recommended that you test the ICEPRMxx members by activating them from the console. ICEOPT issues messages to the console to indicate the status of your changes to the installation defaults, and errors that it detects. Be sure to review these console messages and the return code from ICEOPT.

It is recommended that you use ICEPRMxx members to change DFSORT installation options because they are easier to use and more flexible than the old method using the ICEMAC macro and SMP/E USERMODs. However, the old method is still supported.

In a multisystem environment, you can only activate ICEPRMxx parmlib members that contain DFSORT installation options in z/OS V1.10.0 or later. For z/OS V1.10.0 or later, the installation options in the activated ICEPRMxx members are merged with the ICEMAC installation options at run time.

Give the user ID that is assigned to the ICEOPT started task READ access to the ICEPRMxx PARMLIB members. For example,

```
ADDSD 'SYS1.PARMLIB' UACC(NONE)
PERMIT 'SYS1.PARMLIB' CLASS(DATASET) ID(userid) ACCESS(READ)
```

See *z/OS DFSORT Installation and Customization* for information about ICEPRMxx members, the START ICEOPT command, ICEOPT messages and return codes, and the syntax for options that you can specify using the ICEPRMxx members.

Note: You can control who can issue the START ICEOPT command by using MVS Console Security. See *MVS Planning: Operations* for information about controlling who can issue the START ICEOPT command.

8.5.5.8.2.2 Change DFSORT SVC name

Sample jobs ICESVREC and ICESVAPP set the name of the SVC that DFSORT uses. You can change the default SVC name by either specifying an alternate routing code or assigning a user SVC number. With slight modification, you can use ICESVREC and ICESVAPP sample jobs in SICESAMP to create this SVC.

- To specify SVC 109 with the alternate routing code:
  - Install an SMP/E USERMOD that creates a copy of IGX00017 named IGX00038; then load it into LPA or MLPA.
  - In the sample job ICESVREC, change the name ICESVC to IGX00038.
  - Modify the DFSORT default installation options to specify SVC=(,ALT). You can perform this modification any time after you apply the DFSORT element by using the ICEPRMxx PARMLIB

member (recommended), or by using the ICEMAC macro and an SMP/E USERMOD. See the "Changing the Installation Defaults" topic in *z/OS DFSORT Installation and Customization*.

- To assign a user SVC number:
  - Select an available type-3 SVC number nnn in the range 200-255.
  - Install an SMP/E USERMOD to create a copy of IGX00017 with a different name. For example, you could name the copy ICESVC.
  - Create or modify an IEASVCxx member of parmlib to add the SVC. If you used the name ICESVC for the copy of IGX00017, and chose 255 as the SVC number, the entry would look like this:

    ```
    SVCPARM 255,REPLACE,TYPE(3),EPNAME(ICESVC)
    ```

  - Then load a copy of IGX00017 into LPA or MLPA.
  - Modify the DFSORT default installation options to specify SVC=nnn, where nnn is the SVC number that you selected. You can perform this modification any time after you apply the DFSORT element by using the ICEPRMxx PARMLIB member (recommended), or by using the ICEMAC macro and an SMP/E USERMOD. See the "Changing the DFSORT Installation Defaults" topic in *z/OS DFSORT Installation and Customization*.
- Load the initial program.

Note: DFSORT can be tested without making the SVC available as long as you do not write DFSORT SMF records (type 16 records).

Without the SVC available, DFSORT performance with input, output, or work data sets on cached DASD devices (for example, IBM 3990 Model 3) may be degraded. Always use the SVC if you will be running benchmarks.

The DFSORT SVC is available after it is loaded in LPA. You can load the SVC in LPA by using one of the following methods:

- Add the SVC load module to MLPA by specifying it in the IEALPAxx PARMLIB member that is used for IPL.
- On a supported release of z/OS, add the SICELPA library to the LPA list in the LPALSTxx PARMLIB member that is used for a cold start (CLPA) IPL.

For more information about loading modules in LPA, see *z/OS MVS Initialization and Tuning Guide*, *z/OS MVS Initialization and Tuning Reference*, and *z/OS MVS System Commands*.

8.5.5.8.2.3 Replacing IEBGENER with ICEGENER (optional)

You can achieve more efficient processing for jobs set up to use the IEBGENER system utility by using the ICEGENER facility of DFSORT. Qualifying IEBGENER jobs are processed by the equivalent (though not identical), but more efficient, DFSORT copy function. If, for any reason, the DFSORT copy function cannot be used (for example, when IEBGENER control statements are specified), control is automatically transferred to the IEBGENER system utility. DFSORT transfers control to IEBGENER using the name for IEBGENER from the environment installation module (ICEAM2 or ICEAM4) or time-of-day installation module (ICETD1-4) used for the run. The ICEGENER facility can be used either for selected IEBGENER jobs or automatically for all IEBGENER jobs.

You can invoke ICEGENER in one of the following ways:

- For selective use, substitute the name ICEGENER (or the alias SORTGENR) for the name IEBGENER in any jobs you choose.
- To make ICEGENER the system's default "IEBGENER", install an SMP/E USERMOD to create an alias of "IEBGENER" for ICEGENER. With slight modification, you can use the ICEGAREC and ICEGAAPP sample jobs in SICESAMP to create this alias. Then place the ICEGENER load module ahead of IEBGENER in the system's search order for programs. For example, you can place the ICEGENER load module with its new alias in LPA. All jobs and programs that call IEBGENER will then execute ICEGENER instead. If ICEGENER needs to call IEBGENER, it will do so automatically. For information about placing modules in LPA and Dynamic LPA, and about placing libraries ahead of the LINKLIB library in the link list, see *z/OS MVS Initialization and Tuning Reference*.

For notes and restrictions pertaining to the use of ICEGENER, see *z/OS DFSORT Installation and Customization*.

8.5.5.8.2.4 Make DFSORT programs available

After you install DFSORT, make its programs available on the system. To activate the ICEPRMxx members using the START ICEOPT started task command of DFSORT, ensure that the ICEOPT PROC of DFSORT is in PROCLIB. See the "System Planning Considerations" chapter in *z/OS DFSORT Installation and Customization* for information about using the START ICEOPT command.

To run DFSORT resident, complete the following actions:

- Load the modules from SORTLPA into LPA or Dynamic LPA.
- Add SICELINK to the link list.

To run DFSORT nonresident, perform either of these actions:

- Add SICELINK and SORTLPA (in this order) to the link list.
- Use a JOBLIB or STEPLIB for SICELINK and SORTLPA (in this order).

If you plan to record DFSORT SMF type-16 records or use IBM cached DASD devices, the DFSORT SVC must be accessible:

- Load the DFSORT SVC from SICELPA into LPA or MLPA.
- IPL to make the SVC available.

Notes:

1. For information about adding modules to LPA, Dynamic LPA, and the link list, and for information about assigning user SVC numbers, see *z/OS MVS Initialization and Tuning Guide* and *z/OS MVS Initialization and Tuning Reference*.

2. You can combine SORTLIB with SICELINK. If you combine these libraries, you will only need to supply a SORTLIB DD statement for tape work data set sort or Conventional merge applications that use dynamic linkedit of user exits. You will have to specify SORTLIB=SYSTEM as an installation default by using an ICEPRMxx member of PARMLIB (recommended), or by using the ICEMAC macro and an SMP/E USERMOD. See the "Changing the Installation Defaults" topic in *z/OS DFSORT Installation and Customization*.

8.5.5.8.2.5 Invoking DFSORT from a REXX CLIST

DFSORT can be invoked from a REXX CLIST. If DFSORT is available in the program search order, you can invoke DFSORT with:

```
ADDRESS LINKMVS ICEMAN
```

If DFSORT is not available in program search order, you can invoke DFSORT with:

```
"CALL 'SYS1.SICELINK(SORT)'"
```

SYS1.SICELINK is the name of your SICELINK library used for installation.

8.5.5.8.3 HCM customization considerations

For information about setting up TCP/IP communication between HCM on the workstations and HCD on the z/OS host or for information about downloading the workstation code, see *z/OS and z/VM HCM User's Guide*.

8.5.5.8.4 IBM Knowledge Center for z/OS customization considerations

For information on configuring, customizing and setting up RACF security for IBM Knowledge Center for z/OS, refer to *IBM Knowledge Center for z/OS Configuration and User Guide*.

8.5.5.8.5 OSA/SF customization considerations

See the *z196, System z10, System z9 and Eserver zSeries* book for information on how to:

- Set up OSA/SF
  - Create started procedure
  - CreateStartup Profile
  - Create Configuration and Master Index file
  - What to do after OSA/SF is started
- Download and Install the OSA/SF GUI
- Start the OSA/SF GUI
- Customize OSAs Using the GUI or REXX EXECs

Note: When placing the OSA/SF SIOALMOD library in LNKLST it must be after the TCPIP SEZALOAD library.

8.5.5.9 Customization considerations for Wave 1G

8.5.5.9.1 Distributed File Service customization considerations

Before proceeding with the customization activities specific to the Distributed File Service, review 8.1.4.1, "Distributed File Service installation considerations" on page 80 to insure that the other elements used by DFS or SMB processing are installed and set-up.

Detailed steps to get the program into operational status are defined in *Distributed File Service SMB Administration*.

8.5.5.9.1.1 Customize the JCL procedures

Refer to Figure 43 on page 152 for more information on the distribution library DDNAME=SIOEPROC containing the JCL procedures for the Distributed File Service.

8.5.5.9.1.2 RACF updates for DFS/SMB/zFS

To use DFS/SMB and zFS, you must create RACF definitions. For detailed information about the required group, user, and started tasks, refer to one of the appropriate books:

* *z/OS Distributed File Service zFS Administration*
* *z/OS Distributed File Service SMB Administration*

If you wish to exploit hardware encryption capabilities for SMB password encryption, the OCSF Base component of the Cryptographic Service element must be operational. See 8.1.4.1, "Distributed File Service installation considerations" on page 80 for more information on hardware encryption relative to SMB support. To use OCSF, you must permit the user ID defined previously for the DFS/SMB server daemon (usually the user ID DFS) to use the OCSF services. See to 8.5.5.6.1, "Cryptographic Services OCSF customization considerations" on page 185 and *z/OS Open Cryptographic Services Facility Application Programming* for more information.

If ICSF is active, you need to PERMIT the DFS user ID READ access to the profiles in the CSFSERV general resource class. See 8.5.5.3.3, "Cryptographic Services ICSF customization considerations" on page 168 for references to the appropriate ICSF documentation that describes the CSFSERV resource class.

For details on RACF, see the following:

* *z/OS UNIX System Services Planning*
* *z/OS Security Server RACF Security Administrator's Guide*
* *z/OS Security Server RACF Command Language Reference*

8.5.5.9.1.3 Running the dfs_cpfiles program

The dfs_cpfiles program creates new file system /etc envar, ioepdcf, and CacheInfo files that are needed to customize the SMB File/Print server support. The dfs_cpfiles program does not delete or replace any files that exist. The dfs_cpfiles program should be run now if SMB support will be used.

To invoke the `dfs_cpfile` program:

1. Log in as **root** on the local machine. In z/OS DFS, this means as a user with **UID = 0**.

2. While in the z/OS UNIX shell environment, invoke the z/OS Default Configuration Files Creation program by entering the following:

   `$ /usr/lpp/dfs/global/scripts/dfs_cpfiles`

   See *z/OS Distributed File Service SMB Administration* for more information about the dfs_cpfiles program.

8.5.5.9.1.4 Additional DFS/SMB considerations

- Authorized Libraries:

  The DFS Server runs as an APF-authorized server when it is used as an SMB File/Print server. You
  must always insure that any DLLs or other libraries used by the DFS server are APF-authorized. Use
  the exattr +a command to APF-authorize a library.
- SMB Print Serving:

  If you plan to use the SMB print serving capability, you must complete the installation and
  customization described in 8.5.5.9.3, "Infoprint Server Customization Considerations" on page 221.
  Be sure that the Infoprint Server DLLs that reside in /usr/lpp/Printsrv/lib are APF-authorized.
- SMB Password Encryption

  To use SMB password encryption, you must specify the following statement in the
  /etc/dfs/home/dfskern/envar file created by the dfs_cpfiles program:

  ```
  _IOE_SMB_CLEAR_PW=ALLOWED|NOTALLOWED
  ```

  If you do have the hardware encryption capabilities of the Cryptographic Coprocessor Feature or do
  not wish to use hardware encryption for SMB password encryption, you can specify
  _IOE_SMB_OCSF=OFF in the /etc/dfs/home/dfskern/envar file.

  If you will exploit hardware encryption capabilities provided by the Cryptographic Coprocessor Feature,
  you must use OCSF. Refer to 8.5.5.9.1.2, "RACF updates for DFS/SMB/zFS" on page 193 for
  information on how to permit the DFS/SMB server daemon to use OCSF services. Also, use of OCSF
  requires that the OCSF DLLs that reside in /usr/lib be APF-authorized.

8.5.5.9.1.5 Installation verification and configuration considerations

After installation verification, you will be instructed to perform configuration activities to define the files to
be exported by the DFS server for access by SMB clients. Refer to 8.6.9.1, "Run the Distributed File
Service Installation Verification Procedures" on page 276 for more information.

8.5.5.9.2 Library Server customization considerations

Before you can use Library Server, you must set certain defaults for your site. You do this by configuring
both the Library Server and the IBM HTTP Server. When finished, you can run a simple test from a
browser to verify Library Server is working. After you are up and running, you must be sure to set and
maintain the proper security authorizations to Library Server objects.

SPECIAL NOTE: For z/OS V2.2.0, it is necessary to migrate any previous IBM HTTP Server configuration
for Library Server to work with IBM HTTP Server - Powered by Apache. Please refer to 8.5.5.9.2.4,
"Customize HTTP Server" on page   211 for more information.

Notes:

1. **Extended shelf support** (optional): In addition to regular BookManager bookshelves, which can only contain BookManager books, Library Server can support extended shelves, which can contain BookManager books and/or Adobe PDF files. Before enabling Extended Shelf Support, and any other PDF-related functions, XML Toolkit 1.10 (5655-J51) FMID HXML1A0 must be installed and configured. Enabling Extended Shelf Support in Library Server without first making XML Toolkit 1.10 available will result in a message indicating that XML Toolkit is not detected.

   It is possible to have multiple versions of XML Toolkit installed on z/OS; any one of them could be configured as the system default. As such, you must ensure that **version 1.10** is installed and is the version that is available to Library Server. Making XML Toolkit available includes the possible use of a STEPLIB (for SIXMLOD1), as described in the *XML Toolkit User's Guide*. That STEPLIB may be added to the IBM HTTP Server started task. However, it is only necessary if Library Server is unable to load XML Toolkit 1.10 from an HFS (or zFS) directory, or by using the system load module search order (see *z/OS MVS Initialization and Tuning Guide*). Library Server determines the HFS (or zFS) search order for loading XML Toolkit 1.10 according to the following calculation:

   a. If the EPHXERCESCROOT keyword in the `bookmgr.80` configuration file specifies an existing HFS (or zFS) directory that has a `lib/` subdirectory, that directory is used.

      For example, the following directory, which is specified in Library Server's `bookmgr.80` file, can be used if directory `/usr/lpp/ixm/IBM/xml4c-5_7/lib` exists:

      `EPHXERCESCROOT=/usr/lpp/ixm/IBM/xml4c-5_7`

      See 8.5.5.9.2.3, "Advanced customization parameters" on page 206 for details about EPHXERCESCROOT.

   b. If the EPHXERCESCROOT keyword in the `bookmgr.80` configuration file specifies a **non-existent** HFS (or zFS) path, or if it specfies an existing directory that does **not** have a `lib/` subdirectory, any `xml4c` path specified within the LIBPATH environment variable is used.

      For example, the following directory, which is specified in the IBM HTTP Server - Powered by Apache's `envvars` file, could be used:

      `LIBPATH=.:/usr/lpp/ixm/IBM/xml4c-5_7/lib:`*`other-directories`*

   c. If the EPHXERCESCROOT keyword is not specified in the `bookmgr.80` configuration file (or if it specifies an empty value), any `xml4c` library directory that is specified within the LIBPATH environment variable is used (see 1b).

      However, if no `xml4c` library directory is specified within LIBPATH, the directory specified by the XERCESCROOT environment variable is used. For example, the following directory, which is specified in the IBM HTTP Server - Powered by Apache's `envvars` file could be used:

      `XERCESCROOT=/usr/lpp/ixm/IBM/xml4c-5_7`

   d. If none of the EPHXERCESCROOT, LIBPATH, or XERCESCROOT values described in items 1a, 1b, or 1c are specified, then the following default XML Toolkit 1.10 root directory value is used:

      `/usr/lpp/ixm/IBM/xml4c-5_7`

If XML Toolkit can not be loaded from the HFS (or zFS) path as determined by any of the preceding steps, loading from the system load module search order or the SIXMLOD1 load library specified using STEPLIB in the started task for the IBM HTTP Server is attempted. If XML Toolkit 1.10 can not be loaded by any of these means, an end user error message is issued whenever a function that requires XML access runs.

Also, see the XKS_Validator.README file in the `../cgi-bin/` directory for information on how to manually create your own extended shelves, if you choose not to create them interactively with Library Server.

2. **Shelf indexing support** (optional): The new Shelf Indexing support for Library Server requires Extended Shelf Support to be enabled (see Note 1 on page 195). The Shelf Indexer tool can be run through the Library Server Administration User interface or by a command line interface. For information on how to run the command line version of the Shelf Indexer tool, see the ShelfIndexer.README file in the `../cgi-bin/` directory.

3. **InfoCenter support** (optional): InfoCenter support for Library Server requires Shelf Indexing Support to be enabled (see Note 2). A Java Runtime Environment using IBM 31-bit SDK for z/OS, Java Technology Edition, V7.1.0 (5655-W43) must be configured using the PATH and LIBPATH environment variables, or using the Library Server advanced customization parameter of EPHJAVA_HOME in the `bookmgr.80` configuration file. See section "Managing Your Library Server" in *Library Server: Getting Started* for details. It also requires configuring the Java Bridge Java Server included with Library Server.

Although the Java Bridge Java Server is usually started automatically by Library Server, there are times when it needs to be manually started (for example, when HJVA600 is not at a minimum of service release SR8). To do so, make a copy of the startjbjs.sh script (shipped in the `../cgi-bin/` directory), and launch your copy of the script after having customized the values indicated within (HTTP_PORT_NUMBER, JBJS_PORT_NUMBER, LOG_FILE, PID_FILE and exported SERVER_HOST).

It is important to note that since Library Server does not support 64-bit Java, the JBJS_COMMAND variable set in startjbjs.sh must launch a 31-bit version of Java, either as a result of the applicable HTTP Server environment settings, or by customizing the JBJS_COMMAND value to use a fully qualified path to the java command.

To ensure that the JVM for the Java Bridge Java Server has enough memory to initialize, it is recommended that a 1200MB region size be made available to the Library Server process in z/OS UNIX. To do so, specify MAXASSIZE=1258291200 in the BPXPRMxx system PARMLIB. Or, for an individual user ID, use the RACF ALTUSER command to specify ASSIZEMAX=1258291200 as the limit.

This 1200MB region size is based on specifying a maximum memory heap size of 1000MB (-Xmx1000m) on EPHJB_INDEX_JVM_ARGUMENTS, as recommended in 8.5.5.9.2.3, "Advanced customization parameters" on page 206. Any increase or reduction to that -Xmx specification will result in a corresponding increase or reduction to the 1200MB region size requirement.

It is important to note that the z/OS system default region size of 200MB in OMVS is generally insufficient for Library Server, and using that system default, or other insufficient region size, may cause initialization of the Java Bridge Java Server JVM to fail. If this happens, a connection error

occurs and diagnostic instructions are written to the ephjbcgi log file (see the description of the EPHJBCGI_LOG_FILE" parameter, in 8.5.5.9.2.3, "Advanced customization parameters" on page 206).

Note that before any changes that are edited into the `bookmgr.80` file can become fully-effective, any Java Bridge Java Server process that is running must be killed and then restarted, either automatically or manually, as described above.

4. **Java-applet-based Administration Interface** (optional): This new administrative interface for Library Server requires that the "Display Java-based administrative interface" option be enabled. A Java Runtime Environment using IBM 31-bit SDK for z/OS, Java Technology Edition, V7.1.0 (5655-W43) must be configured using the PATH and LIBPATH environment variables, or using the Library Server advanced customization parameter of EPHJAVA_HOME in the bookmgr.80 configuration file. See section "Managing Your Library Server" in *Library Server: Getting Started* for details. It also requires configuring the Java Bridge Java Server included with Library Server.

Although the Library Server usually starts the Java Bridge Java Server automatically, there are times (for example, when HJVA600 is not at a minimum of service release SR8) when it needs to be manually started. To do so, make a copy of the startjbjs.sh script (shipped in the `../cgi-bin/ directory`), and launch your copy of the script after having customized the values indicated within (HTTP_PORT_NUMBER, JBJS_PORT_NUMBER, LOG_FILE, PID_FILE and exported SERVER_HOST).

It is important to note that since Library Server does not support 64-bit Java, the JBJS_COMMAND variable set in startjbjs.sh must launch a 31-bit version of Java, either as a result of the applicable HTTP Server environment settings, or by customizing the JBJS_COMMAND value to use a fully qualified path to the java command.

To ensure that the JVM for the Java Bridge Java Server has enough memory to initialize, it is recommended that a 1200MB region size be made available to the Library Server process in OMVS. To do so, specify MAXASSIZE=1258291200 in the BPXPRMxx system PARMLIB. Or, for an individual user ID, use the RACF ALTUSER command to specify ASSIZEMAX=1258291200 as the limit.

This 1200MB region size is based on specifying a maximum memory heap size of 1000MB (-Xmx1000m) on EPHJB_INDEX_JVM_ARGUMENTS, as recommended in 8.5.5.9.2.3, "Advanced customization parameters" on page 206. Any increase or reduction to that -Xmx specification will result in a corresponding increase or reduction to the 1200MB region size requirement.

It is important to note that the z/OS system default region size of 200MB in OMVS is generally insufficient for Library Server, and using that system default, or other insufficient region size, may cause initialization of the Java Bridge Java Server JVM to fail. If this happens, a connection error occurs and diagnostic instructions are written to the ephjbcgi log file (see the EPHJBCGI_LOG_FILE parameter, as described in 8.5.5.9.2.3, "Advanced customization parameters" on page 206).

Note that before any changes that are edited into the `bookmgr.80` file can become fully effective, any Java Bridge Java Server process that is running must be killed and then restarted, either automatically or manually, as described above.

5. **Personal bookcase support** (optional): The Personal Bookcase feature introduced with Library Server 3.4 includes an optional email password reminder function for the Personal Bookcase owners. To enable this function, the new MAILAGENT configuration keyword and value must be added to the `bookmgr.80` file, as described in "Configuring without migration considerations" on page 203. Support for the Personal Bookcase feature itself is enabled by default and will operate without the password reminder function, if MAILAGENT is not configured. Personal Bookcase support might be disabled by using the Library Server Administrator User interface or by adding the new PERSONALBC keyword to the booksrv.80 file as described below in "Migration Considerations".

6. **Shared HFS limitation.** Refer to INFO APAR II14061 for details.

8.5.5.9.2.1 Library Server catalog for z/OS

The Library Server Catalog, a set of HFS files, contains additional information about books, PDF files, and InfoCenters, which is used to improve Library Server performance. The catalog information is collected by the Rebuild Catalog function, which can be run from the Library Server Administration page or in batch mode. See the *Library Server: Getting Started* softcopy book for an explanation of the Administration page. **It is necessary to rebuild the catalog after the installation and configuration of Library Server.** Subsequently, whenever there is a change to the books, shelves, PDF files, or InfoCenters known to Library Server, REBUILD CATALOG MUST BE RUN. For any changes to the directories (or their contents) on the Administration page, including adding, changing or removing directories, REBUILD CATALOG MUST BE RUN. If you choose to catalog books stored in MVS datasets, then for any changes to the QLSHELF= parameter (see page 205) including adding, changing, or removing bookshelf list datasets, the bookshelves they refer to, or the books referred to by the bookshelves, REBUILD CATALOG MUST BE RUN. Though you may choose NOT to catalog books in MVS datasets, the books in file system directories (especially those shipped with Library Server) MUST be cataloged. This can be done using the /H parameter of the batch catalog facility. See sample members EPHCATJC and EPHCATSC in the SEPHSAMP dataset for an explanation of Library Server batch catalog facility. See *Library Server: Getting Started* for information regarding the benefit of cataloging books in MVS datasets.

HFS and zFS directories: When job EPHISMKD was run as part of the Library Server installation, the directories were created in the root file system for the target system. All references to subdirectories in the following sections of this document assume the Library Server file system paths were created by running the EPHISMKD job. If you change any of the path names for the directories created by the EPHISMKD job for your site, use those pathnames as your reference. Do not use DBCS characters, blanks, tabs or control characters in file system pathnames or file names that will be used with Library Server.

8.5.5.9.2.2 Configuring Library Server

IBM suggests the use of `/etc/booksrv/` as the directory for the Library Server configuration files. The Library Server configuration files are shipped as `bookmgr.conf` and `booksrv.conf` in the `../cgi.bin/` directory. All of the following examples refer to configuration files in the `/etc/booksrv/` directory and with a file extension of 80, which refers to the default port number 80. You may use the appropriate directory and port for your installation as provided through our customization parameters. An explanation of each configuration parameter is provided in detail in "Configuring without migration considerations" on page 203.

An environment variable, EPHConfigPath, can be set to the name of the directory which will contain the Library Server configuration files. For example, setting `EPHConfigPath = /etc/booksrv/configs` (do not end path with a slash), will cause Library Server to first search `/etc/booksrv/configs/` for the configuration files. Setting an environment variable can be done in various ways. One way is to include the environment variable in the **/bin/envvars** file that is used by the HTTP Server. The search order for the configuration files is:

1. Directory specified by EPHConfigPath environment variable
2. Directory `/etc/booksrv/`
3. Directory `/etc/`
4. Current working directory (typically `/cgi-bin/`)

Note: Library Server cannot run without valid configuration files.

Configuring with migration considerations

For z/OS V2.2.0, even if it is not necessary to migrate your Library Server to V4.0, it is still necessary to migrate your previous IBM HTTP Server configuration to work with IBM HTTP Server - Powered by Apache. Please refer to 8.5.5.9.2.4, "Customize HTTP Server" on page 211 for more information.

The following changes were made to the sample Library Server configuration files from V3.1 to V3.2:

- ICPATH=

  Added to `booksrv.80` for InfoCenter support only. This is a semicolon-delimited list of directories, each of which is the parent directory of a given configured InfoCenter. Each entry in this list has a corresponding entry in the ICIDS= and INFOCENTERS= lists.

  Starting with Library Server V4.0, the value of each entry in ICPATH= is the fully-qualified name of the "root" plugin directory (or jar file) for a given configured InfoCenter. The "root" plugin is a child of the InfoCenter parent directory, and is typically distinguishable as the plugin which contains the "plugin_customization.ini" file for the InfoCenter. Please see "Migration actions" on page 200 for more information.

- ICIDS=

  Added to `booksrv.80` for InfoCenter support only. This is a semicolon-delimited list of InfoCenter IDs, each of which applies to its corresponding entry in the ICPATH= and INFOCENTERS= list.

- INFOCENTERS= Added to `booksrv.80` for InfoCenter support only. This is a semicolon-delimited list of InfoCenter descriptive titles, each of which applies to its corresponding entry in the ICPATH= and ICID= lists.

- VIRTUALPORT=

  Added to `bookmgr.80` (see page 203 for details).

- EPHJB_SERVER_PORT=, EPHJAVA_HOME=, EPHJB_MAX_CONN_ATTEMPTS=, EPHJB_DELAY_BEFORE_RECONNECT=, EPHJB_LISTENER_COUNT=, EPHJB_CONNECTION_TYPE=, EPHJB_JVM_ARGUMENTS=, and EPHJB_INDEX_JVM_ARGUMENTS=

  Added to `bookmgr.80` for InfoCenter support only; for more information, see 8.5.5.9.2.3, "Advanced customization parameters" on page 206.

The following changes were made to the sample Library Server configuration files from V3.2 to V3.3. For more information, refer to 8.5.5.9.2.3, "Advanced customization parameters" on page 206.

- NEWADMIN=

  Added to `booksrv.80`
- ADMIN_APPLET_SERVER_PORT=

  Added to `bookmgr.80`
- EPHJBCGI_LOG_FILE=

  Added to `bookmgr.80` (see page 206)
- IC_MAX_TOPICS_PER_BOOII=

  Added to `bookmgr.80` (see page 206)

The following changes were made to sample Library Server configuration files from V3.3 to V3.4:

- PERSONALBC=

  Added to `booksrv.80` as the indicator of whether or not the optional Personal Bookcase function is enabled. To disable Personal Book Case support (see page 202)
- MAILAGENT=

  Added to `bookmgr.80` as the means to enable the optional email password reminder function when the Personal Bookcase function is enabled (see page 204)
- EPHJB_SERVER_RESULT_FILE=

  Added to `bookmgr.80` (see 8.5.5.9.2.3, "Advanced customization parameters" on page 206).
- EPHXERCESCROOT=

  Added to `bookmgr.80` as a way to ensure that Library Server attempts to load XML Toolkit 1.10 from the correct HFS (or zFS) path, if applicable (see 8.5.5.9.2.3, "Advanced customization parameters" on page 206).

No changes were made to the sample Library Server configuration files from V3.4 to V4.0, however the meanning of the value for each entry associated with the ICPATH= keyword in `booksrv.80` has changed as follows:

- Starting with Library Server V4.0, the value of each entry in ICPATH= is the fully-qualified name of the "root" plugin directory (or jar file) for a given configured InfoCenter. The "root" plugin is a child of the InfoCenter parent directory, and is typically distinguishable as the plugin which contains the "plugin_customization.ini" file for the InfoCenter. Please see "Migration actions" for more information.

Migration actions

- A simple approach to migration is to use your current (customized) configuration files, `bookmgr.80` and `booksrv.80`, or your equivalent. Make the following changes to your current configuration files, if necessary:
  - Remove the line FOOTER= from `bookmgr.80`.
  - Add a line FRAMESDIR= to `bookmgr.80` (see 8.5.5.9.2.3, "Advanced customization parameters" on page 206 for details for FRAMESDIR=).

- Add a line FRAMES=0 to `booksrv.80`.
- Add a line FOOTER= to `booksrv.80` (the FOOTER=value should be set to the same value as it was in your `bookmgr.80` file).

  Note: Library Server will use the FOOTER= value from `bookmgr.80` if FOOTER= is not found in `booksrv.80`.. When Save Settings on the Administration panel is selected, the FOOTER= parameter will be copied from `bookmgr.80` to `booksrv.80`.
- Add a line LIBCENTERDIR= to `bookmgr.80` (see 8.5.5.9.2.3, "Advanced customization parameters" on page 206 for details for LIBCENTERDIR=).
- Add a line VIRTUALPORT= to `bookmgr.80` (see page 204 for details).
- Add the following lines to `bookmgr.80` (see "Updating bookmgr.80" on page 203 and 8.5.5.9.2.3, "Advanced customization parameters" on page 206 for details).

```
EPHJB_SERVER_PORT=
EPHJAVA_HOME=
EPHJB_MAX_CONN_ATTEMPTS=
EPHJB_DELAY_BEFORE_RECONNECT=
EPHJB_LISTENER_COUNT=
EPHJB_CONNECTION_TYPE=
EPHJB_JVM_ARGUMENTS=
EPHJB_INDEX_JVM_ARGUMENTS=
```

  These parameters are ONLY needed for InfoCenter support.
- Add a line NEWADMIN=1 to `booksrv.80` to use the new Java-based administrative interface of Library Server. If you do not want use the new administrative interface, specify NEWADMIN=0 instead.

  Note that starting in V3.4, when NEWADMIN=1, before launching the Java-applet-based administrative interface, Library Server will first check for the existence and compatability of Java running at both the server and the client. The version of Java running on the client must be the same or greater than the version running on the server. It does this check by passing the Java version running at the client on the URL for the link to the Administration function on the Library Page. If Library Server determines that the Java versions are incompatible, or if the Administration URL does not contain the client Java version, the original (non-Java-applet-based) administrative interface is launched.

  Because of the Java compatability checking, for any direct external Administration links (for example, bookmarks) that do not contain the client version of Java, forcing the launch of the Java-applet-based adminstrative interface can be accomplished either using the following URL:

  `http://your.hostname/bookmgr-cgi/ephjbcgi/adminApplet`

  or by configuring the following redirect in your HTTP Server:

  ```
  Redirect permanent /bookmgr-cgi/EPHBOOKS/ADMINISTRATION
  http://your.hostname/bookmgr-cgi/ephjbcgi.exe/adminApplet
  ```
- If you use the new Java-based administrative interface, add a line ADMIN_APPLET_SERVER_PORT= to `bookmgr.80`. See 8.5.5.9.2.3, "Advanced customization parameters" on page 206 for details.

- If you use the new Java-based administrative interface or InfoCenter support is needed, add a line EPHJBCGI_LOG_FILE= to `bookmgr.80`. See 8.5.5.9.2.3, "Advanced customization parameters" on page 206 for details.
- If using InfoCenter support, and it is necessary to save a copy of the most recently generated HTML on the server, add an EPHJB_SERVER_RESULT_FILE= line to `bookmgr.80`. See 8.5.5.9.2.3, "Advanced customization parameters" on page 206 for details.
- If InfoCenter support is needed, add a line IC_MAX_TOPICS_PER_BOOII= to `bookmgr.80`. See 8.5.5.9.2.3, "Advanced customization parameters" on page 206 for details.
- If you want to disable Personal Bookcase support (new feature for V3.4), either use the Library Server Administrator interface or include a line PERSONALBC=0 in the booksrv.80 file. If you want to enable the Personal Bookcase email reminder function, configure the MAILAGENT= line in `bookmgr.80`, as described in "Configuring without migration considerations" on page 203.
- Add the EPHXERCESCROOT= line to `bookmgr.80` and specify the value for the XML Toolkit 1.10 HFS (or zFS) root path (see 8.5.5.9.2.3, "Advanced customization parameters" on page 206) for details). This parameter applies only to extended shelf, InfoCenter, and shelf indexing support.
- The migration actions primarily involve modifying and/or copying your existing (customized) configuration files, note files, Library Center files and configured InfoCenters. Using your existing files, rather than creating new ones, preserves your configuration settings and notes, and lets you avoid having to redo administrative tasks. Therefore, as you prepare to migrate, do not delete or alter your existing configuration files or any files in the notes directory, unless you do not intend to use them with the new level of Library Server.
  - Note Files - Migrating the notes in the notes directory will make them available to the Library Server. If you do not migrate them, they will not appear in the books for which they were entered. To migrate book notes, copy all the files from your existing notes directory to the new one. The default directory for saving book notes is `/usr/lpp/booksrv/public/bookmgr/notes/`. You can override this default by specifying a directory on the NOTEDIR parameter of the `bookmgr.80` configuration file.
  - Library Center Files - Migrating the files in the libraryserver directory will make them available to the Library Server. If you do not migrate them, the related Library Centers will not appear when selecting Browse Library Centers on the Library Server Library Page. To migrate the Library Centers, copy all of the files from your existing libraryserver directory to the new one. The default directory for Library Centers is `/usr/lpp/booksrv/public/bookmgr/libraryserver/`. You can override this default by specifying a directory on the LIBCENTERDIR parameter of the `bookmgr.80` configuration file.
  - InfoCenters - Follow these steps:
    1. Migrate your current customized `booksrv.80` as described previously.
    2. Using the Library Server Administrative Interface for managing InfoCenters, delete any existing InfoCenter configuration entries.
    3. Using the Library Server Administrative Interface for managing InfoCenters, add back (i.e. create new) any previously deleted InfoCenter configuration entries, using for each location field the value as described under ICPATH= in "Configuring with migration considerations" on page 199 (i.e. the fully-qualified "root" plugin directory name, or jar file name, for each given InfoCenter).

4. Using the Library Server Administrative Interface for managing InfoCenters, for each reconfigured InfoCenter, use "Prepare InfoCenter Plugins" to prepare its plugins for subsequent creation of the InfoCenter search index

5. If it is desired to configure the z/OS MF Infocenter that is packaged with Library Server, use the Library Server Administrative Interface for managing InfoCenters to configure it, using as its ID, Title and Location, the ICIDS=, INFOCENTERS= and ICPATH= keyword values, respectively, from the installed /usr/lpp/booksrv/cgi-bin/booksrv.conf file (since its plugins are already prepared prior to packaging, it is not necessary to re-index the Prepare InfoCenter Plugins).

6. Using the Library Server Administrative Interface for managing InfoCenters, for each reconfigured InfoCenter, use "Receive InfoCenter Plugins" to copy/catalog all the prepared InfoCenter plugin objects (for example, TOC files and plugin card files) into the Library.

7. Using the Library Server Administrative Interface for managing InfoCenters, for each reconfigured InfoCenter, use "Create InfoCenter Search Index" to create the search index which enables searching across all the plugins for the InfoCenter.

- Customers who migrate from earlier versions of BookServer to Library Server and have directories `/usr/lpp/booksrv/bkshelf/`, and `/usr/lpp/booksrv/bkcase/` specified on the Administration Page should remove them. The bkshelf and bkcase samples are not shipped with Library Server for z/OS. Customers are free to copy these directories from an earlier version to Library Server for z/OS, if desired.
- Directory `/usr/lpp/booksrv/books/` continues to be shipped with Library Server for z/OS. The directory `/usr/lpp/booksrv/books/` will be automatically included in rebuild catalog processing and the books therein will be cataloged. The directory `/usr/lpp/booksrv/books/` will no longer need to be specified under book collections on the Administration Page.

Configuring without migration considerations

To configure Library Server, you must customize parameters in Library Server configuration files located in `/etc/booksrv/`. First copy `../cgi-bin/bookmgr.conf` to `/etc/booksrv/bookmgr.80`. Only change the contents of `/etc/booksrv/bookmgr.80`. Do not change the contents of `../cgi-bin/bookmgr.conf`. The mode setting on this file should be 644.

Note: 80 is the default port setting for IBM HTTP Server. IBM HTTP Server configuration allows for port numbers other than 80 to be specified. Contact your IBM HTTP Server administrator (Webmaster) or systems programmer for the correct port number to use. Specify the correct port number as the file extension, instead of 80, when copying `../cgi-bin/bookmgr.conf` to `/etc/booksrv/bookmgr.80`.

Updating bookmgr.80

Update the following statements in `/etc/booksrv/bookmgr.80` Do not use DBCS characters, blanks, tabs or control characters in any of the following parameters.

- EPHXERCESCROOT= (optional)

  This parameter points to the root directory of XML Toolkit 1.10, as installed in the HFS (or zFS) filesystem. It is used to ensure that Library Server loads XML Toolkit 1.10 from the correct path. This is especially important if XML Toolkit 1.10 is not the installed system default, or when the

XERCESCROOT or LIBPATH environment variables specified in your `bin/envvars` file need to point to a different version of XML Toolkit, as needed by another application. (Note 1 on page 195 describes the relationship between the EPHXERCESCROOT configuration keyword, and the XERCESCROOT and LIBPATH environment variables.)

If the SIXMLOD1 load library is installed and STEPLIBed in the IBM HTTP Server started task, an HFS (or zFS) XML Toolkit path need not be specified by the EPHXERCESCROOT keyword (nor by the XERCESCROOT and LIBPATH environment variables) for Library Server.

- HOSTNAME=*your.hostname* (optional)

Replace *your.hostname* with the fully qualified domain name or IP address of your server machine.

You may also specify HOSTNAME=SERVER_NAME or HOSTNAME=(blank), in which case the SERVER_NAME environment variable is used. Another option is to specify HOSTNAME=$HTTP_HOST. In this case, the HTTP_HOST environment variable is used. The value of HTTP_HOST is the name of the server where Library Server is running as it is known to the browser at the client workstation. HTTP_HOST should be used when Network Configuration is such that Library Server is known by more than one name. One example is when a firewall is used to separate the internet from your organization's intranet.

- VIRTUALPORT= (optional)

This parameter specifies the port number used for the URLs on the Library Server pages, when the number used by the User's web browser is different from the value of the SERVER_PORT environment variable. SERVER_PORT will not contain the number used by the User's web browser when the network configuration is similar to the one where HOSTNAME requires a value. A proxy or firewall may remap the port number as well as the HOSTNAME from the internet to the intranet. VIRTUALPORT supports networks that are configured to use one, and only one, alias for the port number.

- CLIB=EPH.EPHCLIB (optional, but required for vector graphics)

Replace CLIB=EPH.EPHCLIB with the SEPHCLIB dataset name for your system.

- MAILAGENT= (optional, but required for email notification)

MAILAGENT must be configured to enable the email reminder function of the Personal Bookcase feature. MAILAGENT can be configured to specify an email address, the value "sendmail", or the node and job of the SMTP as would be configured to customize the SMTPNOTE exec shipped by Communication Server for z/OS.

When the SMTP function of Communication Server for z/OS is configured and used, MAILAGENT should specify the SMTP node and job. For example, in the following statement, `SMTPJOB` should be concatenated to `SMTPNODE` with a period (`.`).

`MAILAGENT=SMTPNODE.SMTPJOB,`

The TSO transmit command will be used to send the password reminder message using the SMTP server.

When the UNIX sendmail command is enabled and preferred, configure MAILAGENT to specify "sendmail", as shown:

`MAILAGENT=sendmail`

When neither SMTP nor sendmail is available, the password reminder function can be enabled by configuring an email address, as shown:

`MAILAGENT=`*somebody@us.ibm.com.*

In this case, the person monitoring the specified email address would manually recover the password and reply to the email that was sent to request password recovery.

For more information on retrieving and recovering the passwords and the Personal Bookcase feature, see *Library Server: Getting Started*.

- EPHXERCESCROOT= (optional)

Add the value for the XML Toolkit 1.10 HFS (or zFS) root path (see 8.5.5.9.2.3, "Advanced customization parameters" on page 206). This parameter applies only to extended shelf, InfoCenter, and shelf indexing support.

- EPHJB_SERVER_PORT= (optional)

The Java Bridge Java Server component, which implements the InfoCenter-related and Admin Applet-related functions of Library Server, communicates with the C++ executable through a local TCP/IP connection. The specified port is the port on which the Java Bridge Java Server listens for requests.

Never use any value that might be used in URLs. Never use the same value as VIRTUALPORT.

The default TCP/IP port number which the Java Bridge Java Server listens on is 15195. This number must not be used by any other applications. In particular, it must not be the same port as used by any webserver or the port number specified by VIRTUALPORT. Additional authority is required when the value is below 1024.

- GDDMGDF=EPH.ADMGDF (optional, but required for vector graphics)

EPH.ADMGDF is the default high level qualifier (HLQ) used to create temporary ADMGDF data sets. Replace with the HLQ for your site. A global security definition must be set to write access for this HLQ. This is not a fully qualified dataset name.

- QLSHELF=EOY.BKLSHELF (optional, but required to access BookManager READ/MVS data sets)

EOY.BKLSHELF is the default BookManager READ/MVS Bookshelf List dataset name. The BookManager READ/MVS Bookshelf List datasets contain the dataset names and descriptions of BookManager READ/MVS bookshelves used by your site.

Replace the default with the name or names for your site. The BookManager READ/MVS Bookshelf List data set names can be found in the EOXVOPTS member used in BookManager READ/MVS under the QLSHELF parameter.

Separate each data set name with a semicolon (;). Do not surround data set names with single quotes. They are considered fully qualified dataset names.
Do this: EOY.BKLSHELF;NEXT.BKLSHELF
Don't do this: EOY.BKLSHELF;`'NEXT.BKLSHELF'`

- GDDMSYM=GDDM.SADMSYM

GDDM.SADMSYM is the default GDDM 3.2 symbol set data set name. Replace with the data set name for your site.

- GDDMMOD=GDDM.SADMMOD

GDDM.SADMMOD is the default GDDM 3.2 load library data set name. Replace with the data set name for your site.

8.5.5.9.2.3 Advanced customization parameters

The `bookmgr.80` parameters described below are optional and considered advanced features, unless Library Server is installed into a READONLY HFS. Advanced Customization is required to run in a READONLY HFS in order to specify writable directories for the non-writable default directories. It is suggested that you first install the product as-is. After you have this installation working and become familiar with the configuration you can modify these parameters to suit your needs. The publication *Library Server: Getting Started* contains the step-by-step procedures to activate the functions of Library Server.

Whenever you specify a directory in one of the following parameters, you must specify the full path to the directory (note that directory path names are case-sensitive).

Note: Do not use DBCS characters, blanks, tabs or control characters in any of the following parameters.

- ADMIN_APPLET_SERVER_PORT= (optional)

  This parameter specifies the TCP/IP port on which the RMI processing thread listens for requests from Administrative Applet. Never use the same value as that of the EPHJB_SERVER_PORT or VIRTUALPORT parameter. If no value is specified, the default 14042 is used.

- EPHJBCGI_LOG_FILE= (optional)

  This parameter specifies the fully qualified HFS file name to which the ephjbcgi C++ executable logs messages. If no value is specified, the default stderr is used.

- EPHJB_SERVER_RESULT_FILE= (optional)

  This parameter specifies the fully qualified HFS (or zFS) file name to which the Java-based InfoCenter support code writes a copy of the HTML it has generated to be served to the browser client. If no value is specified, this file is not written.

- IC_MAX_TOPICS_PER_BOOII= (optional)

  This parameter specifies the maximum allowable InfoCenter topics per InfoCenter Plugin Index file, which is created by the Prepare InfoCenter Plugins function. The value for this parameter is 0 (which means unlimited) in the sample `bookmgr.80`. This parameter can be used to tune the indexing speed and search performance for InfoCenters.

- EPHJAVA_HOME= (optional)

  This parameter is a fully qualified path to JRE when you run Java Bridge Java Server. If it is not found, the PATH environment variable is used.

- EPHJB_MAX_CONN_ATTEMPTS= (optional)

  This parameter specifies the number of times `ephjbcgi.exe` tries to connect to Java Bridge Java Server. If no value is specified, the default is 3.

- EPHJB_DELAY_BEFORE_RECONNECT= (optional)

  This parameter specifies the time in ms that `ephjbcgi.exe` waits before trying to reconnect. If no value is specified, the default is 5 ms.

- EPHJB_LISTENER_COUNT= (optional)

This parameter specifies the number of clients that can wait to connect to Java Bridge Java Server. If no value is specified, the default is 15.

- EPHJB_CONNECTION_TYPE= (optional)

This parameter specifies transport mechanism between `ephjbcgi.exe` and Java Bridge Java Server. If no value is specified, the default is TCPIP. Only TCPIP is supported currently.

- EPHJB_JVM_ARGUMENTS= (optional, but recommended)

This parameter specifies the extra arguments to be passed to the JVM of the Java Bridge Java Server. Arguments are case sensitive and multiple arguments must be separated with blanks. The Java Bridge Java Server must be tuned for transactional performance. It is suggested that you use the following specification:

```
EPHJB_JVM_ARGUMENTS=-Xms4m -Xmx200m
```

- EPHJB_INDEX_JVM_ARGUMENTS= (optional, but recommended)

This parameter specifies the extra arguments to be passed to the JVM that is used for preparing and indexing InfoCenter plugins. Separate multiple arguments with blanks. Arguments are case sensitive. The indexing JVM must be tuned for long-run performance. However, the Generational/Concurrent garbage collection policy must be used because indexing creates large numbers of short-lived objects. It is suggested that you use the following specification:

```
EPHJB_INDEX_JVM_ARGUMENTS=-Xms200m -Xmx1000m -Xmso512k -Xss512k
-Xgcpolicy:gencon
```

- LOGDIR=

This parameter controls the location of the following types of files.

Log Type	File Name
BOOK access log	bookmgr.log
Diagnostic output log	bookmgr.dbg
Site customized Library page header	library.htm
Site customized header	bmheader.htm
Site customized footer	bmfooter.htm
Java Bridge Java Server Log	jbjs.log
Advanced Linguistic Search PDF indexing log	logwrt.dbg
Indexing debug log for each InfoCenter plugin preparation and indexing job that is submitted from the Library Server Administration interface	index_job*PPP*.log (*PPP* is the process ID of an indexing job)

If used, all the files must reside in the same directory, which is specified with the LOGDIR= parameter. If you have not specified a directory for LOGDIR=, the default directory is the ../cgi-bin/ subdirectory. To specify your own directory, enter the fully qualified path name of a directory. The directory must already exist. Do not end the path name with a forward slash (for example, use `LOGDIR=/bookserver` not `LOGDIR=/bookserver/`). The initial mode setting for the directory should be 755.

To use a customized Library page header, copy the appropriate `../cgi-bin/library.samp` file to the directory specified on the LOGDIR= parameter (or the default directory), renaming it to library.htm. If you do not want to use a customized Library page header, then you must not place a library.htm into the LOGDIR= directory (or the default directory).

Note: Use of a Library page header may have a slight performance impact.

A customized header can be displayed at the top of most pages. To use a customized header, copy file `../cgi-bin/custhead.htm` to the directory specified on the LOGDIR= parameter (or the default directory), renaming `custhead.htm` to `bmheader.htm`. Customize `bmheader.htm` as desired. Directions for implementing a customized header are contained in `../cgi-bin/custhead.htm`. If you do not want to use a customized header, then you must not place a `bmheader.htm` into the LOGDIR= directory (or the default directory).

Note: Use of a customized header may have a slight performance impact.

A customized footer can be displayed at the bottom of all pages. To use a customized footer, copy file `../cgi-bin/custfoot.htm` to the directory specified on the LOGDIR= parameter (or the default directory), renaming `custfoot.htm` to `bmfooter.htm`. Customize `bmfooter.htm` as desired.

Directions for implementing a customized footer are contained in `../cgi-bin/custfoot.htm`. If you do not want to use a customized footer, then you must not place a bmfooter.htm into the LOGDIR= directory (or the default directory).

Note: Use of a customized footer may have a slight performance impact.
- NOTEDIR=

This parameter specifies the directory to store notes about BOOKs. These notes are created by Library Server users (see *Library Server: Getting Started*). Therefore, the notes directory must have read, write, and search (execute) access for users. The initial mode setting for this directory should be 755. If no directory is specified, the default is the `../public/bookmgr/notes/` subdirectory. To specify your own directory, enter the fully qualified path name of a directory. The last subdirectory in the path name must be "notes." The directory must already exist. Do not end the path name with a forward slash (for example, `NOTEDIR=/u/yourdir/notes` not `NOTEDIR=/u/yourdir/notes/`).
- PICDIR=

This parameter specifies the directory to use for building and storing pictures from BookManager BOOKs. If no value is specified, the default is the `../public/bookmgr/pictures/` subdirectory. When a Library Server client requests display of a picture from a BOOK, Library Server reformats or extracts the picture into a web-ready image file, which is placed in this directory, so the client can access it. Once displayed, the pictures may be left in the directory, to speed future retrieval. The directory may be cleared from the Library Server Administration page, which is documented in the *Library Server: Getting Started*. The specified directory must be readable, writable, and searchable by Library Server users. Therefore, the initial mode setting for the directory should be 755. To specify your own directory, enter the fully qualified path name of a directory. The directory must already exist. Do not end the path name with a forward slash (for example, `PICDIR=/bookserver/pictures` not `PICDIR=/bookserver/pictures/`).

Note: If you specify this parameter, you must also provide a Alias Directive, as shown in Figure 50 on page 213. If you change the URL template within the Alias Directive, then you must also specify the PICURL= parameter described below.

- PICURL=

By default, graphics within a book are referred to by a URL prefixed with /bookmgr/pictures. To locate and serve the graphics, the HTTP Server uses the Alias directive for /bookmgr/*. To use a URL prefix for graphics other than /bookmgr/pictures/, specify PICURL. PICURL specifies a relative URL used by the web browser. Do not end the URL address name with a forward slash (for example, use PICURL=*yoururl*/pictures not PICURL=*yoururl*/pictures/).

Note: If you specify this parameter you must add a Alias directive in the `conf/httpd.conf` configuration file for the HTTP Server, as shown in the following example. This parameter may be used in conjunction with the PICDIR directory setting.

```
Alias /yoururl/pictures  "/bookserver/pictures"
```

- CATALOG=

This parameter identifies the directory to build the catalog of documents in. If no value is specified, the default is the `../cgi-bin/catalog/` subdirectory. The catalog does not contain the document text, it contains brief identifying information about the document. The catalog is used to find documents, when a client does a search for a document name, document number, or title. The catalog can be rebuilt from the Administration page, as documented in *Library Server: Getting Started*. In addition, if an uncataloged BOOK is selected by a client on the collection display for the directory containing the book, then the BOOK is automatically added to the catalog. The catalog directory must be readable, writable, and searchable by Library Server users. Therefore, the initial mode setting for the directory should be 755. To specify your own directory, enter the fully qualified path name of a directory. The directory must already exist. Do not end the path name with a forward slash (for example, `CATALOG=/yourdir/catalog` not `CATALOG=/yourdir/catalog/`).

- LANGUAGE=

This is the language in which the Library Server user interface is displayed. The default language is English (ENU). To specify another language, change ENU to one of the languages in Figure 48. In addition, the code pages specified in the IBM HTTP Server configuration file (httpd.conf) may need to be changed. Refer to Figure 48 for the correct settings.

To make the help text and the *Library Server: Getting Started* BOOK and PDF file available for the language selected, locate the BOOK and PDF files in the ../books/ directory with the suffix that matches the 3-character language code; then, change the suffix to ".boo" and ".pdf" for the BOOK and PDF files, respectively. For example, for DAN (Danish), locate "ephnz100.dan" and copy it to "ephnz100.boo" and locate "ephnz100.pdan" and copy it to "ephnz100.pdf." After changing the suffix of the file, the Library Server catalog should be rebuilt to catalog these files.

LANGUAGE=	CharsetSourceEnc	CharsetDefault	Book File Name	PDF File Name
Figure 48. Language and Code Page Specification				
Brazilian Portuguese				
PTB	IBM-1047	ISO8859-1	ephuz100.ptb	ephuz100.pptb

Figure 48. Language and Code Page Specification				
LANGUAGE=	**CharsetSourceEnc**	**CharsetDefault**	**Book File Name**	**PDF File Name**
Danish				
DAN	IBM-1047	ISO8859-1	ephnz100.dan	ephnz100.pdan
English				
ENU	IBM-1047	ISO8859-1	eph3z100.boo	eph3z100.pdf
French				
FRA	IBM-1047	ISO8859-1	ephqz100.fra	ephqz100.pfra
German				
DEU	IBM-1047	ISO8859-1	ephoz100.deu	ephoz100.pdeu
Italian				
ITA	IBM-1047	ISO8859-1	ephrz100.ita	ephrz100.pita
Japanese				
JPN	IBM-939	IBM-932C	ephyz100.jpn	ephyz100.pjpn
Korean				
KOR	IBM-933	IBM-949	ephzz100.kor	ephzz100.pkor
Netherlands Dutch				
NLD	IBM-1047	ISO8859-1	ephsz100.nld	ephsz100.pnld
Norwegian				
NOR	IBM-1047	ISO8859-1	ephtz100.nor	ephtz100.pnor
Simplified Chinese				
CHS	IBM-935	IBM-1381	ephwz100.chs	ephwz100.pchs
Spanish				
ESP	IBM-1047	ISO8859-1	ephpz100.esp	ephpz100.pesp
Swedish				
SVE	IBM-1047	ISO8859-1	ephvz100.sve	ephvz100.psve
Traditional Chinese				
CHT	IBM-937	IBM-950	ephxz100.cht	ephxz100.pcht

- FRAMESDIR=

  This parameter specifies the directory to use for building and caching frames related files from BookManager BOOKs. If no value is specified, the default is the ../public/bookmgr/frames/ subdirectory. When a Library Server client requests display of a page from a BOOK, the frames table of contents data is cached in this directory, so that the client can access it. The HTML is placed in this directory, so that the client can access it. The specified directory must be readable, writable, and searchable by Library Server users. Therefore, the initial mode setting for the directory should be 755.

To specify your own directory, enter the fully qualified path name of a directory. The directory must already exist. Do not end the path name with a forward slash, for example, `FRAMESDIR=/var/booksrv/frames NOT FRAMESDIR=/var/booksrv/frames/`. If you specify FRAMESDIR, you must provide the appropriate Alias directive in the IBM HTTP Server configuration file as shown in Figure 50 on page 213.

- LIBCENTERDIR=

This directory specifies the directory that will contain configured Library Centers. If no value is specified, the default is `../public/bookmgr/libraryserver`. The specified directory must be readable and searchable by Library Server users and must be writable by the Library Server Administrator. Therefore, the initial mode setting for the directory should be 755. To specify your own directory, enter the fully qualified pathname of the directory. The directory must exist. Do not end the pathname with a forward slash. For example, specify `LIBCENTERDIR=/var/booksrv/libraryserver` instead of `LIBCENTERDIR=/var/booksrv/libraryserver/`. If you specify LIBCENTERDIR, you must provide the appropriate Alias directive in the HTTP Server configuration file, as described in Figure 51 on page 213.

Copying BOOKSRV.CONF: The booksrv.conf file is located in the `../cgi-bin/.` subdirectory. You must copy `../cgi-bin/booksrv.conf` to `/etc/booksrv/booksrv.80`. The mode setting on this file should be 666. This file will be updated by the Administration form.

Note: The `../cgi-bin/booksrv.conf` file contains the necessary configuration data (i.e. the applicable ICPATH=, ICIDS= and INFOCENTERS= values) for a copy of the z/OS MF InfoCenter that is packaged with Library Server. Since the plugins for this InfoCenter are already prepared it is not necessary for the administrator to use the "Prepare InfoCenter Plugins" function for the z/OS MF InfoCenter, prior to using the "Receive InfoCenter Plugins" and the "Create InfoCenter Search Index" administrative functions for managing InfoCenters.

Note: 80 is the default port setting for IBM HTTP Server. IBM HTTP Server configuration allows for port numbers other than 80 to be specified. Contact your IBM HTTP Server for z/OS administrator or systems programmer for the correct port number to use. Specify the correct port number as the file extension when copying `../cgi-bin/booksrv.conf` to `/etc/booksrv/booksrv.80`.

8.5.5.9.2.4 Customize HTTP Server

Starting with z/OS V2.2.0 the IBM HTTP Server - Powered by Apache is Apache-based. As a result, the HTTP Server configuration information described in this section, particularly the configuration file directives, is significantly different than had been described for the Domino-based HTTP Server, prior to z/OS V2.2.0.

The following is a summary of HTTP Server configuration changes that need to be considered for Library Server when migrating from IHS powered by Domino to IHS powered by Apache in z/OS V2.2.0:

1. The envvars file of environment variable settings moves from conf/httpd.envvars to bin/envvars.

2. For each environment variable set in bin/envvars a PassEnv directive is needed in conf/httpd.conf.

3. All Pass directives need to become Alias directives in conf/httpd.conf.

4. All Exec directives need to become ScriptAlias directives in conf/httpd.conf.

5. Multiple port support is configured in a single conf/httpd.conf using the <VirtualHost *:8080> directive.

6. A "Listen port#" directive needs to be specified for each port (default and VirtualHost) configured in conf/httpd.conf.

7. A <LocationMatch> directive is needed in conf/httpd.conf to prevent EBCDIC to ASCII translation when downloading CSS files.

8. If configuring an SSL port in conf/httpd.conf, the "LoadModule ibm_ssl_module modules/mod_ibm_ssl.so" directive must be enabled.

9. A self-identifying ServerName directive such as "ServerName MYMVS.ibm.com:80" should be specified in conf/httpd.conf .

10. Other directives such as ErrorLog, CustomLog and ServerAdmin should be configured as needed in conf/httpd.conf.

The new directives above should be added to the conf/httpd.conf that was installed with IHS powered by Apache, and should be based on the corresponding directives, if applicable, from your conf/httpd.conf previously used with IHS powered by Domino. Examples for many of these are provided in the HTTP Server customization information below. Please refer to *z/OS V2R2.0 HTTP Server - Powered by Apache User's Guide* for more information.

You must configure your HTTP server so it knows which requests to accept from a browser, how to respond (either by running a CGI script or by sending a document), and where to find requested resources.

The `AddType` directives describing the file extensions of ".bin" and ".jar" must be defined (or defaulted) as having binary encoding. The file extension of ".txt" must be defined (or defaulted) as having text encoding.

The HTTP Server must have the proper `CharsetSourceEnc` and `CharsetDefault` for the language set, as described in 8.5.5.9.2.3, "Advanced customization parameters" on page 206. Refer to Figure 48 on page 209 for the correct configurations. By default, content on the server in "`CharsetSourceEnc`" codepage `IBM-1047` is converted to "`CharsetDefault`" codepage `ISO8859-1` when the content is delivered to the client. For DBCS content, this default behavior must be overriden using the DBCS `CharsetSourceEnc` and `CharsetDefault` values specified in Figure 48 on page 209. This can be accomplished by adding a Location directive, such as the one in the example depicted below for Japanese, to your conf/httpd.conf file:

```
<Location /books>
CharsetSourceEnc IBM-939
CharsetDefault   IBM-932C
</Location>
```

If you do not configure the code page specifications correctly, the Create New InfoCenter function in the Library Server Admin Applet will consistently fail with the `Invalid ID` edit error when it attempts to save changes.

If you have a large number of documents and/or directories containing them, you may need to increase the value of `the Timeout directive` in the HTTP Server configuration file.

All customers must add the `ScriptAlias and Alias` directives shown in Figure 49 on page 213 to the HTTP server configuration file `httpd.conf`. For more information about this file, see the *z/OS V2R2.0 HTTP Server - Powered by Apache User's Guide* which includes information that explains how to plan for, install, configure and use the IBM HTTP Server - Powered by Apache.

Library Server sample member `EPHHTTPD` of the SEPHSAMP dataset contains examples of these `ScriptAlias and Alias` directives.

Figure 49. Directives to Add to HTTP Server Configuration File

Directive	URL Template	HFS Directory (created in job EPHISMKD)
ScriptAlias	"/bookmgr-cgi/bookmgr.cmd"	"/usr/lpp/booksrv/cgi-bin/EPHBOOKS"
ScriptAlias	"/bookmgr-cgi/bookmgr.exe"	"/usr/lpp/booksrv/cgi-bin/EPHBOOKS"
ScriptAlias	"/bookmgr-cgi"	"/usr/lpp/booksrv/cgi-bin"
Alias	"/bookmgr"	"/usr/lpp/booksrv/public/bookmgr"
Alias	"/libraryserver"	"/usr/lpp/booksrv/public/bookmgr/libraryserver"

Note:

- The `ScriptAlias` and `Alias` directives show the default locations for the CGI script and documents. If you change the default paths, be sure to change the directives accordingly. The first two `ScriptAlias` directives maintain compatibility with BookServer V2.1 and BookServer V2.2 URLs and bookmarks.

If you are specifying a PICDIR= parameter (as described in 8.5.5.9.2.3, "Advanced customization parameters" on page 206), you must provide the appropriate Alias directive. This Alias directive must precede the "/bookmgr" Alias directive shown in Figure 49. The sample Alias directive shown in Figure 50 would be used if your PICDIR= specifies `/var/booksrv/pictures`.

Figure 50. Sample Directive for Specifying PICDIR Paramater

Directive	URL Template	HFS Directory
Alias	"/bookmgr/pictures"	"/var/booksrv/pictures"

Note: You may change the URL template for this `Alias` directive if you also specify the new URL template in the PICURL= parameter on page 209

If you are specifying a FRAMESDIR= parameter (as described in 8.5.5.9.2.3, "Advanced customization parameters" on page 206), you must also provide the appropriate Alias directive. This Alias directive must precede the "bookmgr" Alias directive shown in Figure 50. The sample Alias directive shown in Figure 51 would be used if your FRAMESDIR= specifies `/var/booksrv/frames`.

Figure 51. Sample Directive for Specifying FRAMESDIR Paramater

Directive	URL Template	HFS Directory
Alias	"/bookmgr/frames"	"/var/booksrv/frames"

If you are specifying LIBCENTERDIR= parameter (as described in 8.5.5.9.2.3, "Advanced customization parameters" on page 206), you must also provide the appropriate Alias directive. This Alias directive must replace the "/libraryserver" Alias directive shown in Figure 49. The sample Alias directive shown in Figure 52 on page 214 would be used if your LIBCENTERDIR= specifies /var/booksrv/libcenter.

Figure 52. Sample Directive for Specifying LIBCENTERDIR Parameter		
Directive	**URL Template**	**HFS Directory**
Alias	"/libcenter"	"/var/booksrv/libcenter"

To make the `ScriptAlias` and `Alias` directive changes take effect, restart the HTTP Server.

These directives operate as follows:

- The `ScriptAlias` directives are used to specify templates for requests to which the server will respond by running a CGI script.

  For example, using the ScriptAlias directives listed in Figure 49 on page 213, if your server receives the request /bookmgr-cgi/EPHBOOKS/library, it will locate the CGI script EPHBOOKS in `/usr/lpp/booksrv/cgi-bin/` and run it with `library` passed as an input parameter.
- The `Alias` directives are used to specify templates for requests to which the server will respond by sending a document.

  The `Alias` directive listed inFigure 49 on page 213 would cause the server to respond to any request beginning /bookmgr/ by sending a document from `/usr/lpp/booksrv/public/bookmgr/`. Anything following /bookmgr/ would also be used to identify the document. For example, your server would respond to the request /bookmgr/library.gif with the document in file `/usr/lpp/booksrv/public/bookmgr/library.gif.`

Following the Script and ScriptAlias directives specified in conf/httpd.conf, a PassEnv directive should be provided to ensure that the environment variables exported via bin/envvars get passed to Library Server. For example, if JAVA_HOME, XERCESCROOT, LIBPATH, PATH, EPHDEBUG, _CEE_RUNOPTS and _CEE_DMPTARG are exported in bin/envvars, the following directives should be specified in conf/httpd.conf:

```
PassEnv JAVA_HOME
PassEnv XERCESCROOT
PassEnv LIBPATH
PassEnv PATH
PassEnv EPHDEBUG
PassEnv _CEE_RUNOPTS
PassEnv _CEE_DMPTARG
```

Library Server uses CSS stylesheet files that it installs in USS in ASCII format. In order to prevent an EBCDIC to ASCII translation of of these CSS files when downloaded to the workstation browser client, the following directive must be added to conf/httpd.conf:

```
<LocationMatch \.css$>
CharsetSourceEnc UTF-8
CHARsetDEfault UTF-8
</LocationMatch>
```

8.5.5.9.2.5 Updating Library Server directories

Whenever you create, change, or delete directories that house Library Server books, bookshelves, or bookcases, you must update the Library Server Administration page to reflect the changes.

1. Go to the Administrative Web page at the following URL (replace *your.hostname* with the domain name or IP address of your server).

   `http://`*your.hostname*`/bookmgr-cgi/EPHBOOKS/administration`

   Depending on the value that you specify for the NEWADMIN keyword in the `booksrv.80` configuration file, you get either the new Java-applet-based administrative interface (NEWADMIN=1) or the old non-Java-applet-based administrative interface (NEWADMIN=0).

   To use the new Java-applet-based administrative interface, refer to the explanation of the NEWADMIN= configuration keyword in 8.5.5.9.2.2, "Configuring Library Server" on page 198.

2. Enter your administration password. The initial password is BOOKMGR (uppercase). You must change this to a different password.

3. Update the directory path names that are displayed in the list boxes to reflect the actual changes that you made.

4. If you use the non-Java-applet-based administrative interface, click **Save Settings** to save the changes to the `booksrv.80` file. If you use the Java-applet-based administrative interface, the changes are saved automatically to the `booksrv.80` file.

5. Run Rebuild Catalog.

8.5.5.9.2.6 BookRead

BookRead, an API provided with Library Server, is required for z/OS UNIX System Services "man command" to function.

BookRead requires the use of the members installed in the SEPHTAB dataset. If the SEPHTAB dataset is other than EPH.SEPHTAB, BookRead must be given the appropriate HLQ or fully qualified dataset name. Originally, the EPHWP00 member of SYS1.PARMLIB was used to specify the HLQ or fully qualified dataset name. A sample of EPHWP00 is provided in the SEPHSAMP dataset. Although EPHWP00 continues to be supported, IBM recommends use of an alternative method to provide BookRead with the name for the SEPHTAB dataset. An environment variable, EPHBookReadConfig, should now be used to specify a directory name for the file, `bookread.conf`. The file `bookread.conf` must contain either the HLQ of the SEPHTAB dataset or DSN=(the fully qualified dataset name). BookRead will search for the name of the SEPHTAB dataset in the following order:

- If the environment variable EPHBookReadConfig exists, and the `bookread.conf` file in the directory specified in the variable exists, the HLQ or the fully qualified dataset name will be used.

- If EPHBookReadConfig or `bookread.conf` do not exist in the directory specified in EPHBookReadConfig, BookRead will check for file `/etc/booksrv/bookread.conf.` The HLQ or fully qualified dataset name in /etc/booksrv/bookread.conf will be used.
- If `bookread.conf` is not found as explained above, BookRead will check for SYS1.PARMLIB(EPHWP00). If found, the HLQ or fully qualified dataset name in EPHWP00 will be used.
- If none of the above methods provides an HLQ or fully qualified dataset name for the SEPHTAB dataset, EPH.SEPHTAB will be used.

Note: BookRead must have access to the members of the SEPHTAB dataset to function.

8.5.5.9.2.7 Setting security authorizations **Warning:** Any Library Server recommendations or examples of access bit (mode) settings (for example, 644 for files and 755 for directories) contained in this Program Directory or the sample jobs are to be used only as initial test settings. The objective of these initial settings is to allow full access to all functions of Library Server for the IVP process and initial testing. They are not intended as recommendations for production or pilot program security and these may introduce security exposures. The remainder of this section explains access requirements.

The installation's security staff must review all security before allowing the product to leave the initial test phase. Library Server does not recommend specific security settings, except as described above. Library Server support does not provide evaluations of site security arrangements.

The following information should be used by the installation's security staff to assist in their security review:

- Library Server provides a simple password mechanism to protect the Administration pages. These pages may be displayed without the password. The password is stored in `/etc/booksrv/booksrv.80`.
- Other than the Library Server Administration password mentioned above, security for Library Server should be implemented using the IBM HTTP Server security and authorization features in combination with your security product (for example, RACF). Refer to *z/OS V2R2.0 HTTP Server - Powered by Apache User's Guide* for information about security and authorization facilities provided by the IBM HTTP Server - Powered by Apache.
- Library Server itself does not employ the concept of "user ID"; however, the IBM HTTP Server - Powered by Apache may do so. If so configured, the HTTP Server prompts the end user for a username and password the first time the server is accessed from a given browser instance. A valid system logon user ID and password for the target system is needed to satisfy this authentication request. Additionally, depending on the Library Server function being attempted, a similar authentication request from the Java server may also need to be satisfied by the end user using system logon credentials.
- By default, all Library Server-supplied HFS files are contained within the Library Server directory structure. While the Library Server product may be installed in any directory desired, the names of the subdirectories under the primary Library Server directory must not be changed, except as provided for by the parameters of `/etc/booksrv/bookmgr.80` (see 8.5.5.9.2.3, "Advanced customization parameters" on page 206 for more information).
- Except for the dataset named in the CLIB= parameter of `/etc/bookmgr.80` (see below), Library Server does not require access to any of the distributed 'EPH.**' MVS datasets for normal operation.

BookRead, and therefore the z/OS UNIX System Services **man** command, requires access to the EPH.SEPHTAB dataset. All other datasets are used only for installation and maintenance activities.

- Directories used to store data created by the running Library Server need read, write, and execute access.

  For a directory, the execute access bit actually controls searching the directory, not executing its contents; the execute bit of a file controls whether the file can be executed or not. Files used to store data created by the running Library Server need read and write access.

- Unlike most of the traditional Library Server functions to which the above security information applies, the Java-Applet-based administration functions, InfoCenter-related administration functions, and InfoCenter-related end user functions run on the persistent Java Bridge Java Server. Thus, to perform these functions, the user ID under which the Java Bridge Java Server runs (not the end user's user ID) requires adequate authority. Because the Java Bridge Java Server does all its processing under the user ID that originally started it, each end user has the same authority to perform these functions. You can restrict access to the aforementioned administrative functions by authenticating access to the following Library Server Administration pages (replace *your.hostname* with the domain name or IP address of your server).

  ```
  http://your.hostname/bookmgr-cgi/ephjbcgi.exe/adminapplet
  http://your.hostname/bookmgr/adminapplet.jar
  ```

Access requirements by file, for general use of Library Server:

- All use of Library Server requires:
  - Read, execute access to the `../cgi-bin/` directory and its contents
  - Read access to files `/etc/booksrv/bookmgr.80` and `/etc/booksrv/booksrv.80`
- Only read access is ever required to `/etc/booksrv/bookmgr.80` during normal operation of Library Server.

  This file cannot be updated using the Administration panel; it may only be changed by logging onto an MVS user ID and editing it.
- To use the Administration panel to change settings or to change the administration password, Library Server requires:
  - Read, write access to file `/etc/booksrv/booksrv.80`.
- To use Java-based Administrative interface, Library Server requires:
  - Read and execute access to a Java 1.7.1.
- To access InfoCenter-related functions for administrative or display purposes, Library Server requires:
  - Read and execute access to a Java 1.7.1.

In addition to the above, specific functions of Library Server require additional access as follows:

- To use the Administration panel to process documents, shelves, cases, indexes, InfoCenter plugins, catalog, etc., Library Server requires:
  - Read, write, execute access to the following directories:

```
.../shelves/ ¹
.../plugins/ ¹
.../cases/ ¹
.../books/ ¹
.../cgi-bin/catalog/ ²
.../cgi-bin/catalog/books/ ²
.../cgi-bin/catalog/cases/ ²
.../cgi-bin/catalog/docnums/ ²
.../cgi-bin/catalog/shelves/ ²
```

  – Read, write access to the contents of the above directories
  – Read and write access to file `/etc/booksrv/booksrv.80`
  – Indexing PDF files requires write access to the PDF file itself.
  – Read, write, execute access to the InfoCenter directories specified on the Manage InfoCenters page, as documented in *Library Server: Getting Started*, and all subdirectories, including the authority to create new files and subdirectories.

    Note: Only the user ID under which the Java Bridge Java Server is running needs this access.
  – Read access to the files within the InfoCenter directories and their subdirectories.

    Note: Only the user ID under which the Java Bridge Java Server is running needs this access.
- For searching, displaying and navigating BookManager Books, Library Server requires:
  – Read, write access to the `../cgi-bin/bookmgr.log` ² file, if Log Book Access Requests has been selected on the Administration panel.
  – Read, write, execute access to the following directories: ²

```
.../cgi-bin/catalog/
.../cgi-bin/catalog/books/
.../cgi-bin/catalog/cases/
.../cgi-bin/catalog/docnums/
.../cgi-bin/catalog/shelves/
```

    Cataloging a book or PDF file involves creating or updating one new file in each directory. Library Server automatically catalogs a book when an uncataloged BOOK is requested from the collection page.
  – Read, write access to all files within the following directories (unless all book files were previously cataloged): ²

```
.../cgi-bin/catalog/
.../cgi-bin/catalog/books/
.../cgi-bin/catalog/cases/
.../cgi-bin/catalog/docnums/
.../cgi-bin/catalog/shelves/
```

  – Read, execute access to all Library Server directories. ¹
  – Read access to all other files within the Library Server directory structure. ¹
  – Read, execute access to the InfoCenter directories that are specified on the Manage InfoCenters page and all subdirectories.

    Note: Only the user ID under which the Java Bridge Java Server is running needs this access.
  – Read access to the files within the InfoCenter directories and their subdirectories.

Note: Only the user ID under which the Java Bridge Java Server is running needs this access.

- If some book or PDF files are stored in MVS datasets instead of in HFS, read access is required to those MVS datasets containing the Books, PDF files, shelves, indexes, and bookshelf lists (bookshelf list datasets must be identified with the QLSHELF= parameter in the `/etc/booksrv/bookmgr.80` file.)
- If the books contain graphics **or you have migrated book datasets that you want Library Server to automatically recall**, the following additional access is required:
  - Read, write, execute access to the `../public/bookmgr/pictures/` [2] directory.

    This directory is used for work files required to extract or convert graphics embedded in BOOKs into a format understandable by Web browsers, and for caching previously-converted graphics.
  - Read, write access to all files in `../public/bookmgr/pictures/`. [2]
  - Read, execute access to the MVS dataset named in the CLIB= parameter of `/etc/bookmgr.80`. [2]
  - Write access to the HLQ specified on the GDDMGDF parameter of `/etc/bookmgr.80`. [2]
- If a Library Center is displayed, the following additional access is required.
  - Read, execute access to the `../public/bookmgr/libraryserver/` [2] directory and its sub-directories.
- To create a Library Center, the following access is required.
  - Read, write, execute to the `../public/bookmgr/libraryserver/` [2] directory and it's sub-directories.
- If the option to present frames-based EUI for books is selected on the Administration panel:
  - Read, write, execute access to the `../public/bookmgr/frames/` [2] directory.

    This directory holds the workfiles required to render frames-based HTML for books in the Web browser.
  - Read, write access to all files in `../public/bookmgr/frames/` [2]
- To add (normally available to all users) notes, or delete (requires Administration password) notes, the following is required:
  - Read, write, execute access to `../public/bookmgr/notes/` [2]
  - Read, write access to all files within `../public/bookmgr/notes/` [2], in addition to the access required for searching and displaying books (see previous item)

Selecting Generate Diagnostic Output on the administration panel (see *Library Server for z/OS*) will write certain Library Server information to the various log files under the directories specified by LOGDIR= (2) (for example, `../cgi-bin/bookmgr.dbg` and `../cgi-bin/jbjs.log`). Some of this information, such as the administration password, might compromise the security of Library Server.

---

[1] The default directories for books, bookshelves, plugins and bookcases are `../books/`, `../shelves/`, `../plugins/`, and `../cases/`. Additional directories may be specified on the Administration panel. All additional directories, and their contents, require the same access as the default directories and contents. Refer to the *Library Server: Getting Started* softcopy book for more information about organizing your Library Server library.

[2] This directory path may be changed, using parameters in the `/etc/booksrv/bookmgr.80` file.

Notes:

1. Setting an EPHDEBUG=ON environment variable in the IBM HTTP Server - Powered by Apache's `envvars` file causes logging of certain Library Server information to the `bookmgr.dbg` file; it also logs pre-configuration processing information to `stderr` (usually the cgi-error log file of the IBM HTTP Server). With EPHDEBUG=ON, this behavior occurs regardless of whether the Generate Diagnostic Output option was selected on the administration panel.

2. If you are using any vendor security products, such as ACF2 or Top Secret, contact Vendor Products or visit the web site for information about Vendor product compatibility with z/OS.

   `http://www-03.ibm.com/systems/z/os/zos/software/index.html`

8.5.5.9.2.8 Additional site customization

You can set other site options by using the Library Server Administration form at the following URL; replace *your.hostname* with the domain name or IP address of your server.

`http://your.hostname/bookmgr-cgi/EPHBOOKS/administration`

To use the new JAVA-applet-based administrative interface, see the explanation of the NEWADMIN= configuration keyword in 8.5.5.9.2.2, "Configuring Library Server" on page 198.

Note: If you have selected 'Produce running IBM footer' on the Administration form, you have the option to change the ibm.com link found in the footer. To change it to point to your own Page (bmrouter.htm), copy the appropriate `../public/bookmgr/custrout.htm` file to the `/usr/lpp/booksrv/public/bookmgr/` directory as file `bmrouter.htm`. The mode setting on this file should be 644. Edit the file `bmrouter.htm`, as desired.

The backdrop used on the toolbar for the Library Server document navigation navigpages (in both framed and unframed format) contains the IBM logo. If it is desired not to display the IBM logo on these pages, the `../public/bookmgr/tooldrop.gif` file should be saved and replaced with another backdrop image file which is also called `../public/bookmgr/tooldrop.gif`. If a simple, empty backdrop is sufficient, copy `../public/bookmgr/odot.gif` to `../public/bookmgr/tooldrop.gif`.

8.5.5.9.2.9 Performance guidelines

The following is a list of general guidelines for improving performance of z/OS UNIX and Library Server. Your MVS system programmer should implement these recommendations.

- Update PARMLIB to give the IBM HTTP Server server a higher service priority. For more information, see *z/OS V2R2.0 HTTP Server - Powered by Apache User's Guide*.
- If you are using a data set migration product, ensure that ONLY books and PDF files are migrated. Never migrate bookshelf datasets or bookshelf list datasets.
- Refer to *z/OS V2R2.0 HTTP Server - Powered by Apache User's Guide* for more information about performance. Check the settings for ServerPriority, MaxActiveThreads, and MinActiveThreads.
- If enabling Extended Shelf Support and Shelf Indexer Support, see the notes in 8.5.5.9.2, "Library Server customization considerations" on page 194. See XML Toolkit documentation for performance information.

- It is strongly recommended that the filesystem (HFS or zFS) containing an InfoCenter not be shared when you prepare and index the plugins for that InfoCenter.
- Avoid setting the HEAPCHK ON Language Environment run-time option using the the CEE_RUNOPTS environment variable, especially when indexing InfoCenters.
- Although PDF files in Variable Blocked MVS datasets present performance issues in Library Server, copying them to Fixed Blocked MVS datasets to improve performance is discouraged because resultant padding may corrupt the PDF. If possible, it is recommended that PDF files intended for use in the Library Server library be stored as HFS or zFS files, instead of as MVS datasets.
- Do not enable/create the `Library` Page header (`library.htm`) unless it is really needed. Refer to 8.5.5.9.2.3, "Advanced customization parameters" on page 206.
- Do not enable the header (`bmheader.htm`) or footer (`bmfooter.htm`) unless it is really needed. Refer to 8.5.5.9.2.3, "Advanced customization parameters" on page 206.
- Because the preparation and indexing of InfoCenter plugins is highly resource intensive, do not start more than one such job at a time.
- Specify adequate storage limits for the indexing and Java Bridge JVMs, as described in 8.5.5.9.2.3, "Advanced customization parameters" on page 206 and in Note 3 on page 196 and Note 4 on page 197.
- Avoid setting the RPTOPT ON Language Environment run-time option using the CEE_RUNOPTS environment variable (for example, in `bin/envvars`). Doing so would typically write a report to the IBM HTTP Server logs for every Library Server transaction.
- Ensure that Language Environment CEE dumps are targeted to a writable directory by specifying an appropriate dump target. This can be accomplished by setting the _CEE_DMPTARG environment variable (for example, by specifying _CEE_DMPTARG=/tmp in `bin/envvars`).

8.5.5.9.3 Infoprint Server Customization Considerations

Detailed steps to get the program into operational status are defined in *z/OS Infoprint Server Customization*.

8.5.5.9.3.1 Initialize NetSpool Message Log Data Set

If you are using NetSpool, you may continue to use your existing message log data set, or you may record messages in the common message log. If you are customizing NetSpool for the first time, use of the common message log is recommended. If you want to also use the optional NetSpool message log data set, SYS1.SAMPLIB member APIMIJCL can be used to allocate and initialize the NetSpool message log data set. Refer to *z/OS Infoprint Server Customization* for information on using the common message log.

8.5.5.9.3.2 Initialize IP PrintWay basic mode Operational Data Sets

This step is required **only** for IP PrintWay basic mode. If you are using (or migrating to) IP PrintWay extended mode, you do not need these data sets.

For IP PrintWay basic mode, the transmission queue and message log data sets must be allocated and primed. The following jobs are provided in SYS1.SAMPLIB to perform this function:

ANFDEAL   Allocates IP PrintWay transmission queue data set
ANFQINIT   Initializes IP PrintWay transmission queue data set
ANFMIJCL   Allocates and initializes IP PrintWay message log data set

If you used IP PrintWay in a previous z/OS release, you may use your existing transmission queue and message log data sets.

8.5.5.9.3.3 Customize the UNIX environment for Infoprint Server

The customization steps described in this section are sufficient for a default configuration. Only the lpd and printer inventory daemons are started in the default configuration. If you want to use any of the following functions, additional customization is required:

* Infoprint Central
* Infoprint Server subsystem
* IP PrintWay Extended Mode
* IPP Server
* NetSpool
* Transform manager

Refer to *z/OS Infoprint Server Customization* for additional customization for these functions.

1. Create the configuration files for the Infoprint Server daemons:

   A sample job is provided in SYS1.SAMPLIB(AOPCPETC) to copy the sample configuration files from /usr/lpp/Printsrv/samples to /etc/Printsrv. Review the comments in the job to determine which configuration files are required for your installation, and then run the job to create the configuration files.

   The defaults provided in the sample aopd.conf file will start the printer inventory manager and the LPD. If you want to modify any of the defaults, refer to *z/OS Infoprint Server Customization*. If you are migrating from a previous level of Infoprint Server, and/or you are using NetSpool or IP PrintWay Extended Mode, you must update the aopd.conf file to start the appropriate daemons.

   Note: Infoprint Server will default to search for its configuration file in `/etc/Printsrv/aopd.conf`. If you change the name or directory for this file, see *z/OS Infoprint Server Customization* for information on how to configure your environment.

2. Modify `/etc/profile` to update the following environment variables:

   * PATH

     Add `/usr/lpp/Printsrv/bin` to the PATH environment variable.

     Note: The `/usr/lpp/Printsrv/bin` directory must occur **before** `/bin` in the PATH environment variable so the InfoPrint Server (Print Interface and IP PrintWay extended mode) version of the lp, lpstat, and cancel commands will be invoked.
   * LIBPATH

     Add `/usr/lpp/Printsrv/lib` to the LIBPATH environment variable.
   * MANPATH

     Add `/usr/lpp/Printsrv/man/%L` to the MANPATH environment variable.

     Note: The `/usr/lpp/Printsrv/man/%L` directory must occur **before** `/usr/man/%L` in the MANPATH environment variable so the InfoPrint Server (Print Interface and IP PrintWay extended mode) version of the lp, lpstat, and cancel man pages will be displayed.

- NLSPATH

    Add `/usr/lpp/Printsrv/%L/%N` to the NLSPATH environment variable.

    Infoprint Server may optionally use additional environment variables to set defaults for operation. Refer to *z/OS Infoprint Server Customization* for detailed information on the usage of these parameters.

3. Review the aopstart EXEC for possible updates. For security reasons, Infoprint Server daemons use some variables only if they are set in the aopstart EXEC. Daemons do not use the same variables set in the `/etc/profile` file. For information about how to set variables in the aopstart EXEC, refer to *z/OS Infoprint Server Customization*.

8.5.5.9.3.4 Establish security for Infoprint Server

1. Define or update RACF profiles for Infoprint Server security.

   A sample CLIST is provided in SYS1.SAMPLIB(AOPRACF) that can be used to define the security environment for Infoprint Server. This CLIST must be modified before it is run. All commands are commented out by default. The CLIST can be used to perform the following functions:

   - Define two RACF groups for print administrators and operators. The default names for these groups are:

     AOPADMIN RACF group for administrators who maintain the Printer Inventory.

     AOPOPER RACF group for operators who will control starting and stopping the Infoprint Server daemons.

     Note: You may use one RACF group for both AOPADMIN and AOPOPER if your installation's security policy does not require a distinction between operators and administrators. For more information on security considerations for Infoprint Server, refer to *z/OS Infoprint Server Customization*.
   - Create a RACF profile in the PRINTSRV class named AOP.ADMINISTRATOR to control who has access to the Printer Inventory. You must name this profile AOP.ADMINISTRATOR. Alternatively, you can use your existing AOPADMIN profile in the FACILITY class. You can also create an optional profile named AOP.CONFIGURATION in the PRINTSRV class. Refer to *z/OS Infoprint Server Customization*, for information about why it is desirable to use the PRINTSRV class profile rather than the previously-defined FACILITY class profile.
   - Define the AOPSTART and AOPSTOP procedures in the STARTED class and define a user ID to be associated with these started procedures.

2. Customize permissions:

   Run the aopsetup shell script to define permissions, specifying the names of the operator group and administrator group you defined in the previous step. To run the aopsetup shell script, you must run it from a user ID that has UID=0 or has read access to the BPX.SUPERUSER facility class.

   Note: The aopsetup shell script requires access to the directory defined as base-directory in the aopd.conf configuration file. The default for base-directory is /var/Printsrv. Therefore, you must have access to the /var/Printsrv directory before you can run aopsetup. If you have your target system's /var file system mounted to your driving system, you may run aopsetup from your driving system. If

you do not have access to the target system's /var from your driving system, you must run aopsetup from the target system. If you want to run aopsetup from the driving system, refer to the comments in the aopsetup shell script for information on the proper syntax to invoke the script.

To run the aopsetup shell script using the default names listed in the previous step, enter:

`/usr/lpp/Printsrv/bin/aopsetup AOPOPER AOPADMIN`

You can run aopsetup from an rlogin shell, from an OMVS session, or using BPXBATCH.

8.5.5.9.3.5 Make updates to the Communications Server IP Profile

Print Interface requires the use of TCP port 515 in a default configuration. Ensure dataset hlq.PROFILE.TCPIP does not reserve port 515 for another application. You may need to ensure the ports listed below are not reserved, if you want to use these functions of Infoprint Server:

IPP server   port 631

See *z/OS V2R2.0 Communications Server: IP Configuration Reference* for more information.

8.5.5.9.3.6 Customize IP PrintWay and NetSpool

If you are using the IP PrintWay or NetSpool components of Infoprint Server, additional customization is required.

- For NetSpool, logical printers must be defined to VTAM with APPL definition statements.
- For IP PrintWay Basic Mode, the functional subsystem must be defined to JES.
- For IP PrintWay Extended Mode, job selection criteria must be defined in the printer inventory.

Refer to *z/OS Infoprint Server Customization* for instructions on customizing IP PrintWay and NetSpool. If you are migrating from previous levels of Infoprint Server, see *z/OS V2R2 Migration* for migration considerations.

8.5.5.9.3.7 Customize HTTP Server for Infoprint Central

If you want to use the print management functions provided by Infoprint Central for the web, you must customize the IBM HTTP Server - Powered by Apache, and update the `conf/httpd.conf` and `bin/envvars` files to include configuration information for Infoprint Server. See *z/OS Infoprint Server Customization* for instructions on customizing the HTTP Server for use with Infoprint Server.

8.5.5.9.3.8 Customize Distributed File Service for SMB printing

If you want to use the SMB file/print server to send print data to InfoPrint Server (Print Interface and IP PrintWay extended mode), make the following modifications to /etc/dfs/home/dfskern/envar:

- LIBPATH

  Add /usr/lpp/Printsrv/lib to the LIBPATH environment variable.

8.5.5.9.3.9 Download client code to workstation

The Infoprint Port Monitor allows Windows users to print to any z/OS printer defined in the Printer Inventory, using standard print-submission methods from Windows applications that support printing. The

Infoprint Port Monitor is located in a subdirectory of the `/usr/lpp/Printsrv/win/` directory, depending on locale. It is downloaded to the workstation using FTP. The directory locations for each NLV are shown below:

English   `/usr/lpp/Printsrv/win/En_US/`
Japanese   `/usr/lpp/Printsrv/win/Ja_JP/`

Refer to *z/OS Infoprint Server User's Guide* for instructions to download the client code to the workstation.

8.5.5.9.4 Network File System customization considerations

Detailed steps to get the program into operational status are defined in *z/OS Network File System Guide and Reference*. Omitting these steps will prevent successful operation of the program.

8.5.5.9.5 Configuring IBM z/OS Management Facility

To activate IBM z/OS Management Facility, you must configure the element after installing it as described in this program directory. For information about configuring IBM z/OS Management Facility, see IBM z/OS Management Facility Configuration.

8.5.5.10 Customization for Wave 2: Once you have successfuly SMP/E APPLY'd JES2, JES3 and SDSF, you must customize the elements.

8.5.5.10.1 SDSF Customization considerations:

Note: When running SDSF in a JES3 environment, you must define SDSF security by using SAF to create the profiles and to activate the classes that are used by SDSF. See *z/OS SDSF Operation and Customization* for details.

SDSF can be run from the link list, link pack area, a steplib, or TSOLIB command. To run SDSF from a steplib, add the SISFLOAD data set as a steplib to your TSO logon procedure and as a steplib to the server JCL. Note that because the SISFLOAD data set must be authorized, any libraries concatenated to your steplib must also be authorized. If you plan to run the SDSF server, you must also add the SISFLINK data set to your LNKLSTxx member of SYS1.PARMLIB.

8.5.5.10.2 JES2 Initialization considerations: You will need to update the following PARMLIB and PROCLIB members prior to IPL of the new JES2 system:

- LNKLST*xx* to include libraries SHASLNKE and SHASMIG
- Logon procedures used for IPCS setup to include the JES2 libraries SHASMIG, SHASPARM, and SHASPNL0
- PROG*xx* to APF-authorize libraries SHASLNKE and SHASMIG
- JES2 cataloged procedures to include the library SHASLNKE, if the procedures contain a STEPLIB and the library names have been changed.

For details on how to create or update the initialization deck, see z/OS JES2 Initilaization and Tuning Reference.

8.5.5.10.3 JES3 Initialization considerations: You will need to update the following PARMLIB and PROCLIB members prior to IPLing the JES3 system:

- LNKLST*xx* to include JES3 libraries SIATLIB, SIATLINK, and SIATMIG (if STEPLIBs are not used in the JES3 cataloged procedures or you are using the JES3 DLOG facility).
- LPALST*xx* to include JES3 library SIATLPA
- PROGxx to APF-authorize libraries SIATLIB, SIATLINK, SIATMIG, and SIATLPA.
- JES3 cataloged procedures to include the libraries SIATLIB, SIATLINK, and SIATMIG if the procedures contain a STEPLIB and the library names have been changed.
- Logon procedures used for IPCS setup to include JES3 libraries SIATCLI0, SIATMSG0, SIATPNL0, and SIATTBL0.
- IFAPRD00 to include JES3. Ensure the correct program number is specified.

JES3 enforces the system name (specified in member IEASYM*xx* or IEASYS*xx* in PARMLIB) for the current system matches a name specified on the NAME parameter of a MAINPROC statement in your JES3 initialization deck.

For details on how to create or update the intialization deck, see z/OS JES3 Initilaization and Tuning Reference.

8.6 Step 6: Verify installation of Wave 0, Wave 1 and Wave 2

After you have successfully completed the following steps, you should verify the installation of the Wave 0, Wave 1 and Wave 2 elements:

- SMP/E APPLYed the Wave 0, Wave 1 and Wave 2 elements,
- Performed the Post-APPLY work, and
- Finished the minimal customization documented in 8.5, "Step 5: Customize Wave 1 and Wave 2" on page 132,

The Wave 0, Wave 1 and Wave 2 installation verification procedures (IVPs) should be run from your **target** system, unless specifically noted.

8.6.1 IPL the z/OS system

> **Attention**
>
> Do not IPL the new release in a production environment until you have tested the new release with a simulated production load that includes all applications and all non-IBM products, which ensures service level agreements can be met.
>
> Do not IPL in a shared resource environment unless you have installed service for any applicable toleration and coexistence PTFs on lower z/OS releases that will coexist with z/OS V2.2.0. To identify the required coexistence PTFs that must be installed on lower z/OS releases, receive the latest HOLDDATA and run the SMP/E MISSINGFIX command with a fix category (FIXCAT) of "IBM.Coexistence.z/OS.V2R2." See *z/OS Migration* for information about identifying service required for coexistence.
>
> Do not IPL the z/OS V2.2.0 system with a root file system used with previous z/OS releases. Invoking programs contained in previous file systems, may result in unpredictable behavior.
>
> Starting with z/OS V2.1, you cannot use earlier levels of JES2, JES3, or SDSF. Do not IPL the z/OS V2.2.0 system with older levels of JES2 or JES3 used with previous z/OS releases.

8.6.1.1 File system execution: When a z/OS system is loaded with the initial program, the root file system must be mounted in read-only mode during execution. After the Wave 1 elements were installed during SMP/E APPLY processing, customization of some elements requires updates to the target system /etc and /var file systems. These updates must have been completed at this point.

8.6.1.2 BPXISETS and BPXISETD: Before IPLing, you will need to convert the /etc and /var directories to symbolic links. First unmount the HFS or zFS data sets on the /etc and /var directories. Use the BPXISETS REXX exec found in SAMPLIB to convert the /etc and /var directories to symbolic links. To submit the REXX exec in the background, you can use the BPXISJCL provided in SAMPLIB.

If, for any reason, you require the /etc or /var symbolic links to be removed and the /etc or /var directories recreated, use the BPXISETD REXX exec from SAMPLIB. Again, the BPXISJCL job can be used to submit this in the background.

Ensure the separate HFS or zFS data sets for your target /tmp and /dev directories are created in preparation to IPL your z/OS V2.2.0 system. The BPXPRMxx member should contain the following mount statements:

```
       ROOT    FILESYSTEM('root_FS_data_set')
               TYPE(xxx)   MODE(RDWR)

       MOUNT   FILESYSTEM('etc_FS_data_set')
               MOUNTPOINT('/etc')
               TYPE(xxx)   MODE(RDWR)

       MOUNT   FILESYSTEM('var_FS_data_set')
               MOUNTPOINT('/var')
               TYPE(xxx)   MODE(RDWR)

       MOUNT   FILESYSTEM('tmp_FS_data_set')
               MOUNTPOINT('/tmp')
               TYPE(xxx)   MODE(RDWR)

       MOUNT   FILESYSTEM('dev_FS_data_set')
               MOUNTPOINT('/dev')
               TYPE(xxx)   MODE(RDWR)
```

Figure 53. Mount statements required in BPXPRMxx

Notes:

1. 'root_FS_data_set' and 'etc_FS_data_set' are the file systems in which z/OS V2.2.0 was just installed.

2. 'var_FS_data_set' is the file system that you created in 6.2, "Step 1: Separating File System Data Sets for z/OS V2.2.0" on page 31.

3. 'tmp_FS_data_set' and 'dev_FS_data_set' are the file systems that you just created.

4. On the ROOT and MOUNT statements shown in Figure 53, change TYPE(xxx) to the appropriate TYPE, such as TYPE(HFS) or TYPE(ZFS), that is applicable to your installation.

If IBM z/OS Management Facility element is installed in a separate file system, ensure that the BPXPRMxx PARMLIB member is updated to add a mount statement for the file system used for the installation of the IBM z/OS Management Facility element to ensure the file system will be mounted during IPL of the z/OS V2.2 target system.

To IPL the system, ensure you use the target SYSRES from the Wave 1 installation. In addition, the z/OS V2.2.0 HFS or zFS data sets, in which you installed Wave 0, Wave 1 and Wave 2 elements, should be used as the root file system and the file system mounted on /etc directory when IPLing the system.

Be sure that you have synchronized your security databases; see 8.1.1, "Set up User and Group IDs Required for Installation" on page 74.

If you needed to define a user ID alias table for your security setup be sure to add the USERIDALIASTABLE keyword in your BPXPRMxx parmlib member specifying your table location. See *z/OS UNIX System Services Planning* for details.

IEA299I may be received during system initialization. This message is issued only if a conditional resource initialization module (RIM) is not found. Processing continues because z/OS Version 2 Release 2 is not dependent on the function of the indicated RIM. However, subsystems, program products, or applications might require conditional RIMs. Check the installation procedures for any subsystem that fails for mention of the indicated RIM. Any RIMs shipped by these products must reside in the SYS1.NUCLEUS library.

The following messages might be issued one or more times, depending on which products you have installed and which I/O device types are defined to your system during IPL:

```
IEA093I MODULE IEANUC01 CONTAINS UNRESOLVED WEAK EXTERNAL REFERENCE <name>.
```

References to modules with any of the following names can be ignored:

```
AOMATTN   AOMATTNT  CBRATTN   IARYGGTS  IECTATEN  IECTCATN
IECTCQSC  IEDQATTN  IFFIOM    IRDVATT1  ISTZFMAA  ISTZFMAB
IXCIOATX
```

```
IEA093I MODULE IGGDDT01 CONTAINS UNRESOLVED WEAK EXTERNAL REFERENCE <name>.
```

All such messages for unresolved external references in IGGDDT01 can be ignored. For more information, see APAR II03282.

```
IEA093I  MODULE IGC116 CONTAINS UNRESOLVED WEAK EXTERNAL REFERENCE IGX03007.
```

8.6.2 Verify installation of z/OS Version 2 Release 2 Wave 0, Wave 1 and Wave 2 FMIDs

To verify that the z/OS Version 2 Release 2 elements are installed, you should make at least the following **minimal checks:**

- Initialize the system.
- Initialize JES.
- Submit a job and check its output. (You can run the BCP installation verification job provided in member IVPJOBS in your SAMPLIB data set.)
- If CICS or IMS is installed, initialize a region and sign on to a terminal.

For **more complete checks**, you can perform the following tasks:

- Run critical production jobs.
- Run a mixture of jobs, for example:
  - Jobs that produce large amounts of SYSOUT
  - Jobs that submit other jobs to the internal reader
  - Jobs with many SYSOUT data sets
  - Jobs with many DD statements
  - Jobs that perform dynamic allocations
- Test NJE lines.
- Test RJE/RJP lines.
- Send output to JES- and PSF-controlled printers.

- Issue TSO/E LOGON, TRANSMIT, RECEIVE, SUBMIT, STATUS, CANCEL, and LOGOFF commands.
- Ensure all exit routines and local modifications perform correctly.
- Communicate with all networks without IP.
- Test critical functions in applications.
- Check for completeness of accounting records.
- Test all non-IBM product functions.
- Ensure that performance goals stated in service level agreements can be met.

To verify JES3 is installed, you should make at least the following minimal checks:

Attention

- For JES3, if you are in a global/local complex, each system must be a member of the same sysplex.
- Do not IPL the new release in a production environment until you have tested the new release with a simulated production load that includes all applications and all non-IBM products, and ensures service level agreements can be met.

Minimal check:
- Initialize the system.
- Initialize JES.

  Note: For JES3, you should see at least the following message:

  `*IAT3100 JES3 v.r.m SYSTEM COLDSTART ON yy.ddd`

- Submit a job.
- Check the job's output.

More complete checks:
- Perform all the JES3 restarts (for example, COLD, HOT, HOT with ANALYSIS, WARM, WARM with REPLACE). All restarts should be performed with various jobs in different stages of execution (for example, OUTSERV, C/I, MAIN).
- Bring up a JES3 global/local environment. Verify all systems connect properly. Submit jobs to all processors and verify the jobs run successfully.
- In the global/local environment, perform a DSI to switch global processors. Verify both processors connect properly. Once the DSI is complete, submit jobs to run on each processor. Verify the jobs run to completion.
- Perform a DSI again to switch the global back to the original processor.
- Bring up a C/I FSS address space if you plan to use one in production. Verify jobs run successfully through the C/I FSS.
- Run a mixture of jobs, for example:
  - Jobs that produce large amounts of SYSOUT
  - Jobs that submit other jobs to the internal reader
  - Jobs with many SYSOUT data sets
  - Jobs with many DD statements
  - Jobs that perform dynamic allocations

- Jobs that use or create dynamic output descriptors
- DJC net jobs
- Test miscellaneous JES3 functions:
  - Inquiry and Modify commands
  - Dump Core utility
  - Display DSP
- Test NJE lines.
- Test RJE/RJP lines.
- Send output to JES- and PSF-controlled printers.
- Issue TSO/E LOGON, TRANSMIT, RECEIVE, SUBMIT, STATUS, CANCEL, and LOGOFF commands.
- Ensure all exit routines and local modifications perform correctly.
- Run all production jobs.
- Communicate with all networks.
- Test critical functions in applications.
- Check for completeness of accounting records.
- Test all non-IBM product functions.
- Ensure performance goals stated in service level agreements can be met.

Figure 54 (Page 1 of 2). Checklist for the IVPs		
Check Box	**Section, Step Description**	**Your Notes**
	8.6.2.1, "IVP jobs for Wave 0" on page 232	
☐	8.6.2.1.1, "Run the High Level Assembler Installation Verification Procedure" on page 233	
☐	8.6.2.2, "Run the BCP and ISPF Installation Verification Procedure" on page 233	
	8.6.3, "IVP jobs for Wave 1A" on page 236	
☐	8.6.3.1, "Run the Language Environment Installation Verification Procedure" on page 236	
	8.6.4, "IVP jobs for Wave 1B" on page 236	
☐	8.6.4.2, "Run the DFSMS Installation Verification Procedure" on page 239	
☐	8.6.4.7, "Run the z/OS UNIX System Services Setup Verification Procedures" on page 258	
	8.6.5, "IVP jobs for Wave 1C" on page 258	
☐	8.6.5.1, "Run the BookManager READ Installation Verification Procedure" on page 259	
☐	8.6.5.2, "Run the FFST Installation Verification Program" on page 260	
☐	8.6.5.3, "Run the GDDM Installation Verification Procedures" on page 261	

Figure 54 (Page 2 of 2). Checklist for the IVPs		
Check Box	**Section, Step Description**	**Your Notes**
☐	8.6.5.4, "Run the ICKDSF Installation Verification Procedure" on page 267	
	8.6.6, "IVP jobs for Wave 1D" on page 268	
☐	8.6.4.1, "Run the Communications Server IP Services Installation Verification Procedures" on page 236	
☐	8.6.8.2, "Run the High Level Assembler Toolkit Installation Verification Program" on page 275	
	8.6.7, "IVP jobs for Wave 1E" on page 268	
☐	8.6.7.1, "Run the Runtime Library Extensions Installation Verification Procedures" on page 268	
☐	8.6.7.4, "Run the XL C/C++ Installation Verification Procedures" on page 269	
☐	8.6.7.3, "Run the RMF Installation Verification Procedure" on page 269	
☐	8.6.6.1, "Run the Security Server (RACF) Installation Verification Procedures" on page 268	
	8.6.8, "IVP jobs for Wave 1F" on page 271	
☐	8.6.8.1, "Run the DFSORT Installation Verification Procedures" on page 271	
☐	8.6.10.1, "Run the installation verification procedure for SDSF" on page 279	
	8.6.9, "IVP jobs for Wave 1G" on page 276	
☐	8.6.9.1, "Run the Distributed File Service Installation Verification Procedures" on page 276	
☐	8.6.9.2, "Run the Library Server Installation Verification Procedures" on page 277	
☐	8.6.9.3, "Run the Infoprint Server Installation Verification Procedures" on page 277	
☐	8.6.9.4, "Run the Network File System Installation Verification Procedures" on page 278	

8.6.2.1 IVP jobs for Wave 0

The following sections describe IVP jobs for Wave 0.

8.6.2.1.1 Run the High Level Assembler Installation Verification Procedure

1. Assemble the Verification Program

   HLASM provides a sample job, ASMWIVP, found in the SASMSAM1 library. This job is provided to
   verify the element has installed correctly. This job assembles the source statements in member
   ASMASAMP found in the SASMSAM1 library.

2. Run the Verification Program (optional)

   The program being assembled is not intended to be run; however, if it is run, it sets a return code of
   zero and returns to the caller.

8.6.2.2 Run the BCP and ISPF Installation Verification Procedure

Because the BCP and ISPF are used to verify some of the installation verification procedures in Wave 1A,
the BCP and ISPF should be verified now rather than in 8.6.8, "IVP jobs for Wave 1F" on page 271.

To verify the BCP was installed properly, you should run IVPJOBS found in your SAMPLIB library. Refer
to the comments in the job for instructions, expected condition codes, and expected output.

Note: The command statement labeled "LISTACTV" issues a Console Management "DISPLAY ACTIVE,
LIST" COMMAND. It will also generate a WTO which should be responded to immediately. The system
will not accept any new work until the operator has replied to the IEFC166D message.**:**   The system will
not process any more work until this system prompt is responded to.

8.6.2.2.1 ISPF

Log on to TSO using a LOGON procedure that includes the z/OS V2.2.0 ISPF data sets. The data sets
are allocated to the appropriate DDs, as are documented in Figure 45 on page 156.

Enter `ISPSTART` *nlslang* at the TSO/E READY prompt (where *nlslang* is the language you are using). The
IBM-supplied default is ENGLISH. The ISPF Primary Option Menu is displayed with the ISPF logo in a
pop-up window. The logo contains a copyright date, as shown in Figure 55.

```
    Licensed Materials - Property of IBM
    5650-ZOS Copyright IBM Corp. 1980, 2015.
    US Government Users Restricted Rights -
    Use, duplication or disclosure restricted
    by GSA ADP Schedule Contract with IBM Corp.
```

Figure 55. ISPF Copyright Logo

Enter the command `PANELID` on the Option line. The panel ID ISP@MSTR should appear in the upper left
corner of the screen.

Enter `X` on the Option line to return to TSO/E READY.

Enter `ISPF` *nlslang* or `PDF` *nlslang* at the TSO/E READY prompt (where *nlslang* is the language you are
using). The IBM-supplied default is ENGLISH.

The ISPF Primary Option Menu is displayed with the ISPF logo in a pop-up window. The logo contains a copyright date, as shown in Figure 55.

Execute the steps listed in Figure 56 to verify the basic ISPF functions have been properly installed. After entering the command `PANELID`, the panel name appears in the upper left corner of the screen.

Figure 56. Installation Verification Functions		
In command line of panel...	**Enter**	**Panel displayed**
ISPF Primary Option	PANELID	ISR@PRIM
ISR@PRIM	0	ISPISMMN
ISPISMMN	=1	ISRBRO01
ISRBRO01	=2	ISREDM01
ISREDM01	=3.1	ISRUDA1
ISRUDA1	=3.2	ISRUDA2/ISRUDA2S*
Note: *ISRUDA2S if SMS is active.		
ISRUDA2/ISRUDA2S	=3.3	ISRUMC1
ISRUMC1	=3.4	ISRUDLP
ISRUDLP	=3.12	ISRSSNEW
ISRSSNEW	=3.13	ISRSEPRI
ISRSEPRI	=3.14	ISRSFSPR
ISRSFSPR	=4.1	ISRFP01
ISRFP01	=5.1	ISRJP01
ISRJP01	=6	ISRTSO
ISRTSO	=7	ISPYXD1
ISPYXD1	=X;9	ISRDIIS
ISRDIIS	=11	ISRWORK
ISRWORK	=10	FLMDMN

8.6.2.2.2 ISPF SCLM

This procedure allocates, assembles, and link-edits a test ISPF SCLM project and then uses this project to save and build an assembler source module. To execute this procedure, you need the following information:

- **A high-level qualifier to be used to define the temporary project definition.**

  This forms the prefix for the data sets allocated by this procedure. You can use your user ID as the high-level qualifier (*hlq*). Seven data sets will be allocated:
  - *hlq*.PROJDEFS.ACCTDB
  - *hlq*.PROJDEFS.BLDLIST

- *hlq*.PROJDEFS.INFO
  - *hlq*.PROJDEFS.LOAD
  - *hlq*.PROJDEFS.OBJ
  - *hlq*.PROJDEFS.SOURCE
  - *hlq*.PROJDEFS.SYSPRINT

These data sets must not previously exist. A minimum of nine 3390 DASD tracks are required for the allocation. At the end of the procedure you are given the option to delete these data sets.
- **The name of the SCLM macro library.**

  The SMP/E DDDEF for SISPMACS points to this data set.
- **A volume serial for a VSAM data set.**

  The volume used for the allocation of the *hlq*.PROJDEFS.ACCTDB data set.
- **The location of the High Level Assembler module ASMA90.**

  This location will be either in normal MVS search sequence (STEPLIB, LINKLST, LPA, etc.) or the High Level Assembler data set name (SASMMOD1).

After you have obtained the required information, follow these steps to perform the installation verification:

1. From the ISPF Primary Option Panel, select Option 10, SCLM.

2. From the SCLM panel, select Option 6, TSO or SCLM Commands.

3. Enter the command: `FLMIVP`

4. Answer the prompts with the information gathered during preparation.

5. At this point, the procedure will:

   - Allocate the necessary data sets. (If the data set allocation fails, diagnose the problem, take corrective action, and then rerun the FLMIVP procedure.)
   - Create, assemble, and link-edit the SCLM project definition
   - Test the installation by executing SAVE and BUILD commands
   - Indicate if the installation test passed or failed. If the test failed, the messages reported to the screen and the contents of the *hlq*.PROJDEFS.SYSPRINT and *hlq*.PROJDEFS.BLDLIST data sets can be used to determine the cause of the failure. If you cannot determine the cause of the failure, contact the IBM Support Center.
   - Prompt you to determine if the data sets should be deleted or retained.

   If errors occur during the SCLM installation verification procedure, use the FLMIVPC EXEC to delete the data sets allocated by FLMIVP.

8.6.3 IVP jobs for Wave 1A

There are currently no installation verification procedures for the following elements in Wave 1A:

- Communications Server for z/OS SNA Services
- TIOC
- Cryptographic Services ICSF
- System SSL

8.6.3.1 Run the Language Environment Installation Verification Procedure: To verify that Language Environment is installed properly, run CEEWIVP in your SCEESAMP library. If the z/OS XL C/C++ compiler uses 64-bit virtual memory, ensure that MEMLIMIT > 0. The actual value of MEMLIMIT might vary with each customer. See the comments in the job for instructions, expected condition codes, and expected output.

Note: As of z/OS V1R8, the IPA Link step of the z/OS XL C/C++ compiler uses 64-bit virtual memory, which requires sufficient storage above the 2 GB bar (2 GB address line). For information about using MEMLIMIT to ensure that sufficient storage above the 2 GB bar is available for the IPA Link step, see 8.6.7.4, "Run the XL C/C++ Installation Verification Procedures" on page 269.

8.6.4 IVP jobs for Wave 1B

8.6.4.1 Run the Communications Server IP Services Installation Verification Procedures

Before beginning the installation verification procedures for Communications Server IP Services, SNA(VTAM) must be started in order for Communications Server IP Services to initialize successfully. To start VTAM from the MVS operator console, issue the following command:

```
S VTAM_procname,,,(LIST=start_list_id)
```

Expected results: The following messages will be displayed on the MVS operator console:

```
IST020I VTAM INITIALIZATION COMPLETE FOR CSV2R2
IST1349I COMPONENT ID IS 5695-11701-220
```

Before beginning the installation verification procedures for Communications Server IP Services, verify you have all the required values as listed beginning on page 171.

1. Set up TSO user's TCPIP.DATA

   On the TSO user ID from which the IVP will be executed, the SYSTCPD DD card of the TSO logon procedure must point to the data set specified by *TCPIP_DATA_name*. Either change the TSO logon procedure (and log off and on again), or do the following steps to override the SYSTCPD definition for the rest of the TSO logon session:

   - In TSO ready mode or from TSO option 6, drop the existing definition by entering the following command:

     ```
     FREE FI(SYSTCPD)
     ```

   - Establish the new SYSTCPD definition with this command:

     ```
     ALLOC FI(SYSTCPD) DS('TCPIP_DATA_name')
     ```

2. Start the SYSLOG daemon

   - From the MVS operator console, issue:

     ```
     S SYSLOGD_procname
     ```

   - Expected results:

```
        FSUM1248 SYSLOGD_procname INITIALIZATION COMPLETE
```

3. Start TCP/IP

   - From the MVS operator console, issue

     S *TCPIP_procname*

   - Expected results:

     The following messages will be displayed on the MVS operator console:

     EZZ4202I Z/OS UNIX - TCP/IP CONNECTION ESTABLISHED FOR *TCPIP_procname*

     EZB6473I TCP/IP STACK FUNCTIONS INITIALIZATION COMPLETE

     EZAIN11I ALL TCPIP SERVICES FOR PROC tcpproc_name ARE AVAILABLE.

4. Start the FTP daemon

   - From the MVS operator console, issue

     S *FTPD_procname*

   - Expected results:
     – The *FTPD_procname* task will end after forking another task. The forked task (for example, FTPD1), will remain running.
     – The following message will be displayed on the MVS operator console:

       EZY2702I SERVER-FTP: INITIALIZATION COMPLETED AT nn:nn:nn ON mm/dd/yy

5. Test the following commands from TSO:

   - Issue:

     ping loopback

   - Expected results:

     CS VyRx: Pinging host LOOPBACK (127.0.0.1).
     Ping #1 response took *n.nnn* seconds.

   - Issue

     netstat home

   - Expected results:

     MVS TCP/IP NETSTAT CS VyRx   TCPIP NAME:
     TCPIP_procname hh:mm:ss

     Home address list:

     Address   Link   Flg

     -------   ----   ---

     127.0.0.1   LOOPBACK   P

Note: If you are using the sample profile without any changes, then you will not see the 'P' under the Flg header.

6. Set up environment variables required in the z/OS UNIX Shell

   - Set the following environment variables in the z/OS UNIX Shell for the user ID on which the IVP will be executed. From the z/OS UNIX shell, issue the following commands:

   ```
   export X_SITE="//'dyn_alc_hlq.HOSTS.SITEINFO'"
   export X_ADDR="//'dyn_alc_hlq.HOSTS.ADDRINFO'"
   export RESOLVER_CONFIG="//'TCPIP_DATA_name'"
   ```

7. Test commands from the z/OS UNIX shell

   - The following steps may require superuser authority to execute.
   - Ensure you have write access to your local directory. Then, in the z/OS UNIX shell, copy the verification shell script to your local directory. For example:

   ```
   cp /usr/lpp/tcpip/samples/ivp.scp /your_target_directory/ivp.scp
   ```

   - Run the shell script, directing output to a file.

   ```
   ivp.scp > ivp.out
   ```

   - The following tests are done by the shell script. The script will display the expected results and the actual results.

   ```
   oping loopback
   onetstat -h
   ```

   - Review the ivp.out file, ensuring the actual results match the expected results.

8. Test the following commands from the MVS operator console

   - Issue the following DISPLAY command:

   ```
   display tcpip,TCPIP_procname,netstat,home
   ```

   - Expected results:

   ```
   EZZ2500I NETSTAT CS VxRy TCPIP_procname

   HOME ADDRESS LIST:

   ADDRESS         LINK            FLG

   127.0.0.1       LOOPBACK        P

   1 OF 1 RECORDS DISPLAYED
   ```

9. Run the IVPFTP batch job to verify that FTP has been correctly set up

   - This job will get a sample file, FTPTESTP, from the *target_lib_hlq*.SEZAINST partitioned dataset and store it into the /tmp directory. It will then get the file from the /tmp directory hfs and store it in the *IVP_configuration_dsn* partitioned data set as FTPTESTG.

- Copy IVP test job to your chosen JCL dataset: `target_lib_hlq`.SEZAINST(IVPFTP) to `IVP_jcllib_dsn`(IVPFTP)
- Fill in any required parameters on the //JOB statement.
- Change the //SYSFTPD DD card to set the DSN variable to `IVP_configuration_dsn`(FTCDATA), or accept the default of `'TCPIVP.TCPPARMS(FTCDATA)'` for the FTP client FTP.DATA file.
- Change the //SYSTCPD DD card to set the DSN variable to `TCPIP_DATA_name`, or accept the default of `'TCPIVP.TCPPARMS(TCPDATA)'`.
- Change the input values for *'userid password'* to match the TSO user ID and password to be used for the FTP client. For example:

  `USER1 USER1PW`

- Change the PUT statement to specify the appropriate SEZAINST dataset for sample dataset to be moved: 'tcpip' to *target_lib_hlq*.
- Change the GET statement to specify the appropriate location for the retrieved dataset: 'TCPIVP.TCPPARMS' to *IVP_configuration_dsn* (or accept the default of 'TCPIVP.TCPPARMS')
- Submit batch IVPFTP

  Expected results:
    – The job should complete with condition code zero.
    – The /tmp directory should contain a file called ftptestp.
    – The *IVP_configuration_dsn* should contain member FTPTESTG.
    – Both the new file and the new partitioned dataset member should contain the one line:

      `The File Transfer Protocol is working!!!`

8.6.4.2 Run the DFSMS Installation Verification Procedure: To test the successful installation of DFSMS, run the following IVPs found in SAMPLIB:

`DFPS1IVP  DFPS2IVP  DFPS3IVP  DFPX1IVP  DFPX2IVP  DFPX3IVP`

Note: The members with the prefix 'DFPS' use SMS managed volumes and datasets. The members with the prefix 'DFPX' use non-SMS managed volumes and datasets.

8.6.4.2.1 *DFSMSdfp OAM Installation Verification Procedure:* It is recommended that you run the OAM Installation Verification Program (CBRSAMIV) at initial installation and at migration. CBRSAMIV verifies that OAM object support is successfully installed and operational. It ensures that the proper environment exists for applications to utilize the OSREQ Macro Application Programming Interface (API).

For detailed information about how to run the IVP program (CBRSAMIV) and invoke the OSREQ API, refer to *z/OS DFSMS OAM Planning, Installation, and Storage Administration Guide for Object Support*.

8.6.4.3 DFSMSrmm Installation Verification Procedures

```
┌─ DFSMSrmm Samples Provided in SAMPLIB ─────────────────────────────────────┐
│                                                                            │
│   • EDGIVPPM Sample Parmlib for Use in the IVP                             │
│   • EDGIVP1 IVP Job 1 to Initialize Tape Volumes                           │
│   • EDGIVP2 IVP Job 2 to Use Tape Volumes                                  │
│                                                                            │
└────────────────────────────────────────────────────────────────────────────┘
```

This topic helps you prepare for and run the DFSMSrmm installation verification procedures (IVP). You can use the IVP to ensure that the DFSMSrmm functional component has been successfully installed by SMP/E and can be activated on your system. The IVP does not test all the functions in DFSMSrmm but validates that the key interfaces are in place.

8.6.4.3.1   *Preparing to run the IVP:*   Before you run the IVP, you need to activate some of DFSMSrmm's functions. This topic lists and describes the steps you should perform to set up DFSMSrmm for the IVP. Chapter 2. Implementing DFSMSrmm in *z/OS DFSMSrmm Implementation and Customization Guide* contains all the steps needed to install DFSMSrmm.

If this is first time you are setting up DFSMSrmm, follow all the steps described in this topic. If your system has previously been set up for use with DFSMSrmm, you might not need to perform all the steps listed here. Evaluate your installation setup to determine which steps you can omit.

 1. Install DFSMSrmm with SMP/E.

    Ensure that DFSMS including DFSMSrmm is SMP/E applied.

    Once you have used SMP/E to install DFSMSrmm, IPL your system without performing any implementation tasks and have DFSMSrmm take no part in removable media management. The ability to run without DFSMSrmm is especially helpful if you are running another tape management product in production.

 2. Update SYS1.PARMLIB members.

    For detailed instructions, see "Step 5: Updating SYS1.PARMLIB Members" in *z/OS DFSMSrmm Implementation and Customization Guide*. At a minimum, you should update IEFSSN*xx*. Also update IFAPRD*xx* member in SYS1.PARMLIB to enable DFSMSrmm".

 3. Update the procedure library.

    Refer to "Step 8: Updating the Procedure Library" in *z/OS DFSMSrmm Implementation and Customization Guide* for detailed instructions. Use member EDGDFRMM of SYS1.SAMPLIB as a sample DFSMSrmm procedure.

 4. Assign DFSMSrmm a RACF user ID.

    Perform this step if you want to use a specific RACF user ID for DFSMSrmm during the IVP. When running on a system with RACF installed, assign DFSMSrmm a RACF user ID by adding a profile in the STARTED class as described in "Step 9: Assigning DFSMSrmm a RACF User ID" in *z/OS DFSMSrmm Implementation and Customization Guide*. You can use the DFSMSrmm procedure name that you created in Step 3 as the RACF user ID but any installation-selected RACF user ID is acceptable. As data sets are created for use by the DFSMSrmm procedure, add the RACF user ID to the access list for the data sets. "Table 6. Data Sets Requiring Access by the DFSMSrmm RACF

User ID" in *z/OS DFSMSrmm Implementation and Customization Guide* lists the data sets that the DFSMSrmm procedure should be able to access.

If you are using an equivalent security product, review the RACF-related information to determine the changes that might be required to run DFSMSrmm with that product.

5. Define parmlib member EDGRMM*xx*.

   Refer to "Step 10: Defining Parmlib Member EDGRMMxx" in *z/OS DFSMSrmm Implementation and Customization Guide* for detailed instructions. Use member EDGIVPPM of SYS1.SAMPLIB as a sample parmlib member.

6. Specify DFSMSrmm options.

   Refer to *z/OS DFSMSrmm Implementation and Customization Guide* for information on tailoring the DFSMSrmm sample parmlib member EDGIVPPM to specify DFSMSrmm options for the IVP.

   During the IVP, DFSMSrmm runs in record-only mode. DFSMSrmm records information about tape volumes, but does no validation. You can tailor EDGIVPPM to specify that DFSMSrmm run in warning mode or protect mode if you want DFSMSrmm to validate volumes.

   If you are running the IVP on a system with no other tape management system you can select any mode: record-only, warning or protect. If there is a possibility of accidental use of the wrong tape volumes, we suggest that you run in protect mode. However, if you run the IVP on a system where others are using tape including the use of scratch tapes, be aware that DFSMSrmm rejects all scratch tapes not defined to it while running in protect mode. See "Defining System Options: OPTION" in *z/OS DFSMSrmm Implementation and Customization Guide* for information about DFSMSrmm modes of operation.

7. Create the DFSMSrmm control data set.

   Refer to *z/OS DFSMSrmm Implementation and Customization Guide* for detailed instructions. You can use the sample JCL in member EDGJMFAL in SYS1.SAMPLIB to allocate a control data set. Ensure that the control data set name is the same as that specified in the parmlib member EDGRMMxx that you created. Initialize the control data set by running the EDGUTIL utility. You can use the sample JCL in member EDGJUTIL in SYS1.SAMPLIB. Set the rack and bin count fields to 0.

8. Create the journal.

   Refer to *z/OS DFSMSrmm Implementation and Customization Guide* for detailed instructions. You can use sample JCL in member EDGJNLAL in SYS1.SAMPLIB to allocate a journal data set.

9. Make the DFSMSrmm ISPF Dialog available to users.

   Refer to *z/OS DFSMSrmm Implementation and Customization Guide* for detailed instructions.

10. Restart z/OS with DFSMSrmm implemented.

    You are ready to start the system with DFSMSrmm implemented. Refer to *z/OS DFSMSrmm Implementation and Customization Guide* for information on conditions that determine if you need to IPL the system to restart z/OS with DFSMSrmm implemented. Perform this step so that the changes you made to IEFSSNxx and other parmlib members when you performed Step 2 take effect.

11. Start DFSMSrmm.

Refer to "Step 19: Starting DFSMSrmm" for detailed instructions. When you start DFSMSrmm, if it issues message EDG0103D, reply 'RETRY'. If you do not reply 'RETRY', DFSMSrmm will not record any tape usage activity.

DFSMSrmm is activated and you are ready to run the IVP.

8.6.4.3.2 *Running the IVP:* To run the IVP, perform these steps:

1. You need three tape volumes that do not have any data on them, and a single tape unit online to your system. Ask your tape librarian to externally label these volumes EDG000, EDG001, and EDG002 for your testing.

   Ensure that the tape volumes you use are suitable for use with DFSMSrmm during the IVP. For example, if you have an existing tape management system, check that the volumes are either not managed by it or are designated for use with DFSMSrmm for testing.

2. Ensure that TSO help information has been correctly installed by entering this command from a TSO terminal:

   `HELP RMM`

   DFSMSrmm lists help information for the RMM TSO subcommand, including a list of subcommands, function, syntax, and operands.

3. Add some shelf locations to DFSMSrmm by entering this RMM TSO command from a TSO terminal:

   `RMM ADDRACK RMM000 COUNT(10)`

4. Add some volumes to DFSMSrmm by using the DFSMSrmm ISPF dialog. Enter this command from a TSO terminal:

   `%RMMISPF`

   DFSMSrmm displays the DFSMSrmm ISPF dialog primary option menu as shown in Figure 57 on page 243.

```
   Panel  Help
 -----------------------------------------------------------------
 EDG@PRIM           REMOVABLE MEDIA MANAGER (DFSMSrmm) - z/OS V2R2
 Option ===>

 0  OPTIONS       - Specify dialog options and defaults
 1  USER          - General user facilities
 2  LIBRARIAN     - Librarian functions
 3  ADMINISTRATOR - Administrator functions
 4  SUPPORT       - System support facilities
 5  COMMANDS      - Full DFSMSrmm structured dialog
 6  LOCAL         - Installation defined dialog
 X  EXIT          - Exit DFSMSrmm Dialog

 Enter selected option or END command.  For more info., enter HELP
 or PF1.




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```

Figure 57. DFSMSrmm Primary Option Menu

Enter VOLUME on the option line to display the DFSMSrmm Volume Menu, as shown in Figure 57.
DFSMSrmm displays a panel, as shown in Figure 58 on page 244.

```
 Panel  Help
--------------------------------------------------------------
EDGPT000                    DFSMSrmm Volume Menu
Option ===>

0  OPTIONS   - Specify dialog options and defaults
1  DISPLAY   - Display volume information
2  ADD       - Add a new volume
3  CHANGE    - Change volume information
4  RELEASE   - Delete or release a volume
5  SEARCH    - Search for volumes
6  REQUEST   - Request a volume
7  ADDSCR    - Add one or more SCRATCH volumes
8  CONFIRM   - Confirm librarian or operator actions
9  STACKED   - Add one or more stacked volumes


Enter selected option or END command.  For more info., enter HELP
or PF1.



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```

Figure 58. DFSMSrmm Volume Menu

Select option 7, ADDSCR, and press ENTER. DFSMSrmm displays the DFSMSrmm Add Scratch
Volumes panel shown in Figure 59 on page 245. Complete the details as shown in the panel and
press ENTER:

```
  Panel  Help
 ------------------------------------------------------------------
 EDGPT230          DFSMSrmm Add Scratch Volumes   3 Volumes added
 Command ===>


 Volume . . . . . . . EDG000     Pool  . . . . . . .
                             or
 Volume type  . . . . PHYSICAL   Rack  . . . . . . . RMM000
 Media name . . . . . 3480
 Vendor . . . . . . .            Media information .
 Storage group  . . .            Location name . . . SHELF

 Count  . . . . . . . 3          ( Default is 1 )

 Description  . . . .
 Account number . . .
 Assigned date  . . . 2007/340  YYYY/DDD      MVS use . . . . YES
 Assigned time  . . . 02:14:38                VM use  . . . . NO
 Create date  . . . . 2007/340                IRMM use  . . . .
 Create time  . . . . 02:14:38

 Media type . . . . . CST
 Label  . . . . . . . SL    ( AL, NL or SL )
   Current version        Label version number( for example 3 )
   Required version       Label version number( for example 4 )
 Density  . . . . . . 3480 ( 1600, 3480, 6250 or * )
 Initialize . . . . . YES  ( Default is YES )

 Press ENTER to ADD one or more SCRATCH volumes, or END command
 to CANCEL.
```

Figure 59. DFSMSrmm Add Scratch Volumes Panel

DFSMSrmm displays the message 3 volumes added in the right hand corner of the screen.

Exit the DFSMSrmm ISPF dialog by entering **=X** on the command line.

5. Initialize tape volumes by editing and submitting the JCL in member EDGIVP1 in SYS1.SAMPLIB. Mount the three tape volumes requested by this job in the sequence EDG002, EDG001, and EDG000.

   Ensure that the job completes with a return code of zero and the expected messages in EDGIVP1 are in the job output.

6. Write data to tape volumes by editing and submitting the JCL in member EDGIVP2 in SYS1.SAMPLIB. Mount the three tape volumes requested by this job in the sequence EDG000, EDG001, and EDG002. Use the three volumes initialized in Step 5.

Ensure that all steps of the job complete with a return code of zero. Message IEC502E is issued when the job finishes with the second volume, EDG001. Check that the message in the SYSLOG contains the text RACK=RMM001 on the right hand side as follows:

```
IEC502E RK ddd,EDG001,SL,jjjjjjjj,WRITE22 - RACK=RMM001
```

7. To display data set information that is recorded by DFSMSrmm, enter these RMM TSO subcommands:

```
RMM LISTDATASET 'RMMIVP.TEST1' VOLUME(EDG000) SEQ(1)
RMM LISTDATASET 'RMMIVP.TEST2' VOLUME(EDG000) SEQ(2)
RMM LISTDATASET 'RMMIVP.TEST3' VOLUME(EDG001) SEQ(1)
RMM LISTDATASET 'RMMIVP.TEST4' VOLUME(EDG001) SEQ(2)
RMM LISTDATASET 'RMMIVP.TEST4' VOLUME(EDG002) SEQ(1)
```

DFSMSrmm displays data set information, as shown in Figure 60 on page 247.

```
Data set name = RMMIVP.TEST1
Volume       = EDG000          Physical file sequence number = 1
Owner        = TEST                      Data set sequence = 1
Create date   = 2015/089 Create time = 12:50:01 System ID = TEST
Expiration date        = 2015/094          Expir. time = 12:50:01
        set by        = OCE_DEF    Original expir.date =
LASTREF Extra Days    = 0           WHILECATALOG        = OFF
Block size           = 80          Block count         = 10
Data set size(KB)    = 1
Physical size(KB)    = 0           Compression         = 0.00
Percent of volume    = 0           Total block count   = 10
Logical Record Length = 80         Record Format       = FB
Date last written    = 2015/089    Date last read      = 2015/089
Job name             = EDGIVP2     Last job name       = EDGIVP2
Step name            = WRITE11     Last step name      = WRITE11
Program name         = IEBDG       Last program name   = IEBDG
DD name              = SEQOUT      Last DD name        = SEQOUT
Device number        = 0B50        Last Device number  = 0B50
Management class     =             VRS management value =
Storage group        =             VRS retention date  =
Storage class        =             VRS retained        = NO
Data class           =             Closed by Abend     = NO
                                   Deleted             = NO
VRSEL exclude        = NO          Catalog status      = YES
Primary VRS details:
      Name          =
      Job name      =              Type                =
      Subchain NAME =              Subchain start date =
Secondary VRS details:
      Value or class =
      Job name       =
      Subchain NAME =              Subchain start date =
Security Class   =         Description   =
BES key index    = 0


Last Change information:
Date            = 2015/089   Time = 12:50:01  System = 3090
User change date =           Time =           User ID = *OCE
```

Figure 60. Sample Data Set Information

To cleanup after running the IVP or to prepare to rerun the IVP, issue these commands to remove information from the DFSMSrmm control data set.

```
RMM DELETEVOLUME EDG000 FORCE
RMM DELETEVOLUME EDG001 FORCE
RMM DELETEVOLUME EDG002 FORCE
RMM DELETERACK RMM000 COUNT(10)
```

When you have completed running the IVP, you can return the three volumes to your tape library.

8.6.4.4 DFSMShsm Installation Verification Procedures: The DFSMShsm installation
verification procedure (IVP) is an optional procedure that verifies that the DFSMShsm product is correctly installed and can be started and stopped using a minimum of DASD resources.

When the System Modification Program/Extended (SMP/E) installs the DFSMShsm product modules onto an MVS system, it places the ARCIVPST member into SYS1.SAMPLIB. This ARCIVPST member is the job that you run for the IVP procedure.

Note: If you have not performed an initial program load for your MVS system with the CLPA (clear link pack area) option, do it before you run DFSMShsm.

8.6.4.4.1 *Setup requirements:* The following information is required to run the DFSMShsm IVP:

- The catalog, with its associated alias, which must be defined before attempting to run the IVP.
- The name of the IVP user ID.
- A high-level qualifier for the data sets that are required by the IVP.
- A volume serial number and unit type of a device containing one free cylinder for a temporary user catalog.
- A name for a temporary user catalog for the migration control data set (MCDS).
- The name of the system master catalog.
- The job control parameters for each job. (Usually this is defined as HSM.)
- The volume serial number and unit type of a device containing one free cylinder for a temporary MCDS.
- The version of JES (either JES2 or JES3) on the system.

   Note: In an SMS environment, no consideration is given to whether data sets allocated by the IVP are SMS or non-SMS managed.

8.6.4.4.2 *Steps for running the Installation Verification Procedure:* The following steps are used to prepare for and run the DFSMShsm installation verification procedure:

1. Edit the job ARCIVPST inserting the correct parameters in the job statement. See "HSMIVP" in *z/OS DFSMShsm Implementation and Customization Guide* for a listing of ARCIVPST.

   ARCIVPST is an IEBUPDTE job, HSMIVP, that creates the partitioned data set DFSMSHSM.IVP.CNTL. Be sure to change the job control statement before running this job. For an example listing of the HSMIVP job, refer to the samples provided in SYS1.SAMPLIB.

2. After the edit, run the job in ARCIVPST. The result of this job is a partitioned data set named DFSMSHSM.IVP.CNTL, containing the member HSMIVP1. The partitioned data set is allocated on one cylinder of SYSDA.

3. Edit member HSMIVP1 in the DFSMSHSM.IVP.CNTL data set. Globally change the HSMIVP1 parameters by substituting the values determined in 8.6.4.4.1, " Setup requirements." For a listing of HSMIVP1 parameters, see "HSMIVP1" in *z/OS DFSMShsm Implementation and Customization Guide*.

   This job allocates data sets on your system for the DFSMShsm IVP. For an example listing of the HSMIVP1 job, refer to the samples provided in SYS1.SAMPLIB. Note that you must ensure that you globally change the following values before submitting this job.

?UCATUNIT	Defines a unit type for the temporary user catalog.
?UCATVOL	Defines the volume serial number of the volume for the temporary user catalog.
?UCATNAM	Defines the name of the temporary user catalog for the MCDS.
?MCATNAM	Defines the name and password of the system master catalog.
?JOBPARM	Defines the job control parameters that are used for each job.
?HIQUAL	Defines the high-level qualifier for the data sets used by the IVP. Usually this is defined as HSM. This value must be between 1 and 7 characters; the first character must be alphabetic. This value must be different from the value that is specified for the high-level qualifier on the control data set. Ensure that this IVP parameter is unique so that it does not conflict with any other alias currently in use.
?CDSUNIT	Defines a unit type for the temporary MCDS.
?CDSVOL	Defines the volume serial number of the volume for the temporary MCDS.
?JESVER	Defines the version of JES on the system as either JES2 or JES3.

4. Run the HSMIVP1 job to create the following:

   - A user catalog
   - An MCDS VSAM data set
   - A startup procedure DFSMSHSM in SYS1.PROCLIB

     Note: If a startup procedure named DFSMSHSM already exists in the SYS1.PROCLIB data set, it will be overwritten.
   - Members ARCCMD00, HSMIVP2, and UCLINCHK in the partitioned data set DFSMSHSM.IVP.CNTL

     Rule: If the HSMIVP1 job is submitted while you are editing member HSMIVP1, you must exit the edit so that the HSMIVP1 job can update the partitioned data set DFSMSHSM.IVP.CNTL.

5. After job HSMIVP1 has completed, start DFSMShsm by typing the command **S DFSMSHSM** from the system console.

6. Review the console messages created as IVP output. Scan the console for messages ARC0001I and ARC0008I informing you that DFSMShsm has started and that initialization has completed. See Figure 61 on page 251 for an example of the console screen.

   Note that you can expect to see error messages that are issued because many data sets are not allocated until later in the DFSMShsm installation when the starter set jobs are run. For a description of the messages, use LookAt or see *MVS System Messages*.

7. Run job UCLINCHK.

   The job attempts actions which fail if DFSMShsm is correctly installed; You may receive the following messages

   ```
   ARC1001I HSMIVP.UCLINCHK  RECALL FAILED, RC=0002, REAS=0000
   ARC1102I DATA SET IS NOT MIGRATED/BACKED UP
   ```

You may also receive other error messages during the IDCAMS job, depending on your system environment:

```
ALLOCATE DA('HSMIVP.UCLINCHK')
IKJ56238I DATA SET HSMIVP.UCLINCHK NOT ALLOCATED, UNKNOWN ERROR DURING
RECALL
IGD04001I UNEXPECTED CATALOG LOCATE PROCESSING ERROR - RETURN CODE 38
REASON CODE 4
IDC3003I FUNCTION TERMINATED. CONDITION CODE IS 12
```

Note: A request to mount volume "MIGRAT" is an error condition that indicates that UCLIN has not run or has not run correctly.

Do not progress to the next step until the UCLINCHK job has run with the result described in Step 7.

```
 S DFSMSHSM
 $HASP100 DFSMSHSM ON STCINRDR
 IEF695I START DFSMSHSM WITH JOBNAME DFSMSHSM IS ASSIGNED TO USER
 IBMUSER, GROUP SYS1
 $HASP373 DFSMSHSM STARTED
 ARC0041I MEMBER ARCSTR00 USED IN DFSMSHSM.IVP.CNTL
 ARC0036E I/O DISABLED FOR DFSMSHSM PROBLEM 735
 ARC0036E (CONT.) DETERMINATION OUTPUT DATA SET,
 ARC0036E (CONT.) REAS= 1
 ARC0020I *****************************
 ARC0036E I/O DISABLED FOR DFSMSHSM PROBLEM 737
 ARC0036E (CONT.) DETERMINATION OUTPUT DATA SET,
 ARC0036E (CONT.) REAS= 2
 ARC0021I  DFSMSHSM LOGGING FUNCTION DISABLED
 ARC0020I *****************************
*ARC0035E DFSMSHSM JOURNAL IS PERMANENTLY DISABLED, 740
 ARC0035E (CONT.) REASON=8
*ARC0860E JOURNAL SPACE MONITORING DISABLED - RC=24. 741
 ARC0860E (CONT.) MIGRATION, BACKUP, FRBACKUP, DUMP,
 ARC0860E (CONT.) AND RECYCLE HELD.
 ARC0001I DFSMSHSM 2.2.0 STARTING HOST=1 IN 742
 ARC0001I (CONT.) HOSTMODE=MAIN
 IEC130I BAKCAT   DD STATEMENT MISSING
 ARC0945I OPEN OF DDNAME=BAKCAT FAILED, VSAM REASON 744
 ARC0945I (CONT.) CODE IS X'80'
*ARC0134I BACKUP CONTROL DATA SET NOT OPENED, BACKUP 745
 ARC0134I (CONT.) WILL NOT BE ENABLED
 IEC130I OFFCAT   DD STATEMENT MISSING
 ARC0945I OPEN OF DDNAME=OFFCAT FAILED, VSAM REASON 747
 ARC0945I (CONT.) CODE IS X'80'
 ARC0133I OFFLINE CONTROL DATA SET NOT OPENED, TAPE 748
 ARC0133I (CONT.) SUPPORT WILL NOT BE ACTIVE
 ARC6374E BCDS IS NOT DEFINED, AGGREGATE BACKUP AND 749
 ARC6374E (CONT.) RECOVERY FUNCTIONS ARE DISABLED
 ARC1700I DFSMSHSM COMMANDS ARE RACF PROTECTED
 ARC0041I MEMBER ARCCMD00 USED IN DFSMSHSM.IVP.CNTL
 ARC0100I SETSYS COMMAND COMPLETED
 ARC0101I QUERY SETSYS COMMAND STARTING ON HOST=1
 ARC0147I BUDENSITY=*, BUUNIT=3590-1, BU RECYCLE 754
 ARC0147I (CONT.) PERCENTAGE=020%, MOUNT WAIT TIME=015 MINUTE(S),
 ARC0147I (CONT.) TAPESPANSIZE(0500)
 ARC0419I SELECTVOLUME=SCRATCH, 755
 ARC0419I (CONT.) TAPEDELETION=SCRATCHTAPE, PARTIALTAPE=REUSE,
 ARC0419I (CONT.) DISASTERMODE=NO
 ARC0259I TAPEDATASETORDER=PRIORITY
```

Figure 61 (Part 1 of 5). Example of a z/OS V2.2.0 DFSMShsm Startup Screen (IVP)

```
ARC0408I INPUT TAPE ALLOCATION=NOWAIT, OUTPUT TAPE 757
ARC0408I (CONT.) ALLOCATION=NOWAIT, RECYCLE TAPE ALLOCATION=NOWAIT,
ARC0408I (CONT.) TAPEFORMAT=SINGLEFILE
ARC0417I TAPE INPUT PROMPT FOR BACKUPTAPES=YES
ARC0417I TAPE INPUT PROMPT FOR DUMPTAPES=YES
ARC0417I TAPE INPUT PROMPT FOR MIGRATIONTAPES=YES
ARC0442I TAPE OUTPUT PROMPT FOR TAPECOPY=NO, DUPLEX 761
ARC0442I (CONT.) BACKUP TAPES=NO, DUPLEX MIGRATION TAPES=NO
ARC0410I TAPEMIGRATION=NONE(ROUTETOTAPE(ANY)), 762
ARC0410I (CONT.) MIGDENSITY=*, MIGUNIT=3590-1, ML2 RECYCLE
ARC0410I (CONT.) PERCENTAGE=020%, TAPEMAXRECALLTASKS=01, ML2 PARTIALS
ARC0410I (CONT.) NOT ASSOCIATED GOAL=010, RECONNECT(NONE)
ARC0411I TAPESECURITY=PASSWORD, DEFERMOUNT
ARC0412I RECYCLEOUTPUT BACKUP=**NONE**, 764
ARC0412I (CONT.) MIGRATION=**NONE**, RECYCLETAKEAWAYRETRY=(NO,
ARC0412I (CONT.) MAXRETRYATTEMPTS=12, DELAY=0300)
ARC0840I MAXRECYCLETASKS=02, RECYCLE INPUT 765
ARC0840I (CONT.) DEALLOCATION FREQUENCY BACKUP=000 MIGRATION=000
ARC0149I MONITOR STARTUP NOSPACE NOVOLUME, MCDS(080), 766
ARC0149I (CONT.) BCDS(  0), OCDS(  0), JOURNAL(  0)
ARC0150I JOURNAL=NONE, LOG=NO, TRACE=NO, SMFID=NONE, 767
ARC0150I (CONT.) DEBUG=NO, EMERG=NO, JES=2, SYS1DUMP=YES, RACFIND=YES,
ARC0150I (CONT.) ERASEONSCRATCH=NO, PDA=ON, DSSXMMODE=(BACKUP=NO,
ARC0150I (CONT.) CDSBACKUP=NO, DUMP=NO, MIGRATION=NO, RECOVERY=NO)
ARC0151I DAYS=001, ML1DAYS=060, 768
ARC0151I (CONT.) PRIMARYSPMGMTSTART=(0000 NONE),
ARC0151I (CONT.) MAXMIGRATIONTASKS=0002, INTERVALMIGRATION=YES,
ARC0151I (CONT.) MIGRATIONCLEANUPDAYS(0010 0030 0003), SDSP=NONE,
ARC0151I (CONT.) MIGRATION PREFIX=IBMUSER, SCRATCH EXPIRED DATA
ARC0151I (CONT.) SETS=NO, SECONDARYSPMGMTSTART=(0000 NONE)
ARC0267I MIGRATIONSUBTASKS=NO, ADDITIONALMIGSUBTASKS=**
ARC0272I PRIMARY SPACE MGMT CYCLE LENGTH=00 DAYS, 770
ARC0272I (CONT.) CYCLE=*NONE*, TODAY IS DAY=0, CYCLE START
ARC0272I (CONT.) DATE=00/00/00
ARC0272I SECONDARY SPACE MGMT CYCLE LENGTH=00 DAYS, 771
ARC0272I (CONT.) CYCLE=*NONE*, TODAY IS DAY=0, CYCLE START
ARC0272I (CONT.) DATE=00/00/00, ML1OVERFLOW(DATASETSIZE=002000000K,
ARC0272I (CONT.) THRESHOLD=080)
ARC0139I MAXINTERVALTASKS=02, ONDEMANDMIGRATION=NO, 772
ARC0139I (CONT.) ODMNOTIFICATIONLIMIT=00100,
ARC0139I (CONT.) MAXSSMTASKS(TAPEMOVEMENT=01, CLEANUP=02)
ARC0374I ACCEPTPSCBUSERID=NO
ARC0152I MAXRECALLTASKS=15, 774
ARC0152I (CONT.) RECALL=ANYSTORAGEVOLUME(LIKE), MAXEXTENTS=00,
ARC0152I (CONT.) CONVERSION=NO, VOLCOUNT=*NONE*,
```

Figure 61 (Part 2 of 5). Example of a z/OS V2.2.0 DFSMShsm Startup Screen (IVP)

```
ARC0152I (CONT.) TAPERECALLLIMITS(TASK=00015, TAPE=00020)
ARC0153I SCRATCHFREQ=9999, SYSOUT(CLASS=A, COPIES=01, 775
ARC0153I (CONT.) SPECIAL FORMS=NONE), SWAP=YES, PERMISSION=NO,
ARC0153I (CONT.) EXITS=NONE, UNLOAD=NO, DATASETSERIALIZATION=DFHSM,
ARC0153I (CONT.) USECMS=NO
ARC0418I TAPEUTILIZATION PERCENT=0097, LIBRARYMIGRATION
ARC0418I TAPEUTILIZATION PERCENT=0097, LIBRARYBACKUP
ARC0418I TAPEUTILIZATION PERCENT=0097, UNIT=3480 778
ARC0418I (CONT.) CAPACITYMODE=**NONE**
ARC0418I TAPEUTILIZATION PERCENT=0097, UNIT=3480X 779
ARC0418I (CONT.) CAPACITYMODE=**NONE**
ARC0418I TAPEUTILIZATION PERCENT=0097, UNIT=3490 780
ARC0418I (CONT.) CAPACITYMODE=**NONE**
ARC0418I TAPEUTILIZATION PERCENT=0097, UNIT=3590-1 781
ARC0418I (CONT.) CAPACITYMODE=**NONE**
ARC0638I MAXDUMPTASKS=02, ADSTART=(0000 0000 0000), 782
ARC0638I (CONT.) DUMPIO=(1,4), VOLUMEDUMP=(STANDARD),
ARC0638I (CONT.) MAXDUMPRECOVERTASKS=01
ARC0274I BACKUP=NO, SPILL=NO, MAXDSRECOVERTASKS=02, 783
ARC0274I (CONT.) MAXDSTAPERECOVERTASKS=02
ARC0154I MAXBACKUPTASKS=02, ABSTART= (0000 0000 0000), 784
ARC0154I (CONT.) VERSIONS=002, FREQUENCY=000, SKIPABPRIMARY=NO, BACKUP
ARC0154I (CONT.) PREFIX=IBMUSER, INCREMENTALBACKUP=ORIGINAL,
ARC0154I (CONT.) PROFILEBACKUP=YES, INUSE=(RETRY=NO, DELAY=015,
ARC0154I (CONT.) SERIALIZATION=REQUIRED)
ARC0269I DS DASD BACKUP TASKS=02, DS TAPE BACKUP 785
ARC0269I (CONT.) TASKS=02, DEMOUNTDELAY=0060, MAXIDLETASKS=00, DS
ARC0269I (CONT.) BACKUP MAX DASD SIZE=000003000, DS BACKUP STD DASD
ARC0269I (CONT.) SIZE=000003000, SWITCHTAPES TIME=0000,
ARC0269I (CONT.) PARTIALTAPE=MARKFULL, GENVSAMCOMPNAMES=YES
ARC1823I MAXCOPYPOOL (FRBACKUP TASKS=0015, FRRECOV 786
ARC1823I (CONT.) TASKS=0015, DSS TASKS=0024),
ARC1823I (CONT.) FASTREPLICATION(DATASETRECOVERY=NONE
ARC1823I (CONT.) FCRELATION=EXTENT VOLUMEPAIRMESSAGES=NO
ARC1823I (CONT.) MESSAGEDATASET(NO HLQ=HSMMSG))
ARC0375I CDSVERSIONBACKUP, 787
ARC0375I (CONT.) MCDSBACKUPDSN=IBMUSER.MCDS.BACKUP,
ARC0375I (CONT.) BCDSBACKUPDSN=IBMUSER.BCDS.BACKUP,
ARC0375I (CONT.) OCDSBACKUPDSN=IBMUSER.OCDS.BACKUP,
ARC0375I (CONT.) JRNLBACKUPDSN=IBMUSER.JRNL.BACKUP
ARC0376I BACKUPCOPIES=0004, BACKUPDEVICECATEGORY=TAPE 788
ARC0376I (CONT.) UNITNAME=3590-1, DENSITY=*, RETPD=0007, NOPARALLEL,
ARC0376I (CONT.) LATESTFINALQUALIFIER=V0000000, DATAMOVER=HSM
ARC0203I CSALIMITS=YES, CSA CURRENTLY USED=0 BYTES, 789
ARC0203I (CONT.) MWE=0, MAXIMUM=0K BYTES, ACTIVE=0%, INACTIVE=0%
```

Figure 61 (Part 3 of 5). Example of a z/OS V2.2.0 DFSMShsm Startup Screen (IVP)

```
ARC0340I COMPACTION OPTIONS ARE: TAPEMIGRATION=NO, 790
ARC0340I (CONT.) DASDMIGRATION=NO, TAPEBACKUP=NO, DASDBACKUP=NO,
ARC0340I (CONT.) TAPEHARDWARECOMPACT=NO, ZCOMPRESS OPTIONS ARE:
ARC0340I (CONT.) TAPEMIGRATE=NO, DASDMIGRATE=NO, TAPEBACKUP=NO,
ARC0340I (CONT.) DASDBACKUP=NO
ARC0341I COMPACT PERCENT IS 40%
ARC0339I OPTIMUMDASDBLOCKING=YES, LOGGING LEVEL=FULL, 792
ARC0339I (CONT.) LOG TYPE=SYSOUT A
ARC6008I AGGREGATE BACKUP/RECOVERY PROCNAME = DFHSMABR
ARC6009I AGGREGATE BACKUP/RECOVERY MAXADDRESSSPACE = 01
ARC6366I AGGREGATE BACKUP/RECOVERY UNIT NAME = 3590-1
ARC6368I AGGREGATE BACKUP/RECOVERY ACTIVITY LOG 796
ARC6368I (CONT.) MESSAGE LEVEL IS FULL
ARC6371I AGGREGATE RECOVERY ML2 TAPE UNIT NAME = 3590-1
ARC6372I NUMBER OF ABARS I/O BUFFERS = 01
ARC6373I ABARS ACTIVITY LOG OUTPUT TYPE = SYSOUT(A)
ARC6033I AGGREGATE RECOVERY UNIT NAME = 3590-1
ARC6036I AGGREGATE BACKUP OPTIMIZE = 3
ARC6036I AGGREGATE RECOVERY TGTGDS = SOURCE
ARC6036I AGGREGATE RECOVERY ABARSVOLCOUNT = *NONE*
ARC6036I AGGREGATE RECOVERY PERCENTUTILIZED = 080
ARC6036I AGGREGATE BACKUP/RECOVERY ABARSDELETEACTIVITY 805
ARC6036I (CONT.) = NO
ARC6036I AGGREGATE BACKUP/RECOVERY ABARSTAPES = STACK
ARC6036I AGGREGATE BACKUP ABARSKIP = NOPPRC, NOXRC
ARC1500I PLEXNAME=ARCPLEX0,PROMOTE PRIMARYHOST=NO, 808
ARC1500I (CONT.) PROMOTE SSM=NO,COMMON RECALL QUEUE BASE NAME=*****,
ARC1500I (CONT.) COMMON RECALL QUEUE TAPEDATASETORDER=*****,COMMON
ARC1500I (CONT.) DUMP QUEUE BASE NAME=**** AND MSC=***
ARC0468I EXTENDEDTTOC=N
ARC0278I CLASSTRANSITIONS EVENTDRIVENMIGRATION=Y, 810
ARC0278I (CONT.) SERIALIZATIONEXIT=N
ARC0101I QUERY SETSYS COMMAND COMPLETED ON HOST=1
ARC0101I QUERY STARTUP COMMAND STARTING ON HOST=1
ARC0143I PARMLIB MEMBER=ARCCMD00, DFSMSHSM AUTHORIZED 813
ARC0143I (CONT.) USERID=IBMUSER, HOSTID=1, PRIMARY HOST=YES, LOGSW=NO,
ARC0143I (CONT.) STARTUP=YES, EMERGENCY=NO, CDSQ=YES, CDSR=NO, PDA=YES,
ARC0143I (CONT.)  RESTART=NOT SPECIFIED, CDSSHR=NOT SPECIFIED,
ARC0143I (CONT.) RNAMEDSN=NO, STARTUP PARMLIB MEMBER=ARCSTR0
ARC0249I CELLS=(200,100,100,50,20),HOSTMODE=MAIN
ARC0101I QUERY STARTUP COMMAND COMPLETED ON HOST=1
ARC0101I QUERY CSALIMITS COMMAND STARTING ON HOST=1
ARC0203I CSALIMITS=YES, CSA CURRENTLY USED=0 BYTES, 817
ARC0203I (CONT.) MWE=0, MAXIMUM=0K BYTES, ACTIVE=0%, INACTIVE=0%
ARC0101I QUERY CSALIMITS COMMAND COMPLETED ON HOST=1
```

Figure 61 (Part 4 of 5). Example of a z/OS V2.2.0 DFSMShsm Startup Screen (IVP)

```
ARC0038I RESOURCE MANAGER SUCCESSFULLY ADDED.  RETURN 819
ARC0038I (CONT.) CODE=00
ARC0008I DFSMSHSM INITIALIZATION SUCCESSFUL
```

Figure 61 (Part 5 of 5). Example of a z/OS V2.2.0 DFSMShsm Startup Screen (IVP)

8. Prevent extraneous error messages from occurring when you stop DFSMShsm by putting the system in debug mode.

   For example, if you specify `F   DFSMSHSM,SETSYS DEBUG`, then DFSMShsm operates in debug mode.

9. Stop DFSMShsm

   For example, if you specify `F   DFSMSHSM,STOP`, DFSMShsm stops with a message ARC0002I, which indicates DFSMShsm has stopped successfully. See Figure 62 for an example of the shutdown screen.

```
F DFSMSHSM,STOP
ARC0016I DFSMShsm SHUTDOWN HAS BEEN REQUESTED
ARC0002I DFSMShsm SHUTDOWN HAS COMPLETED
$HASP395 DFSMSHSM    ENDED
$HASP150 DFSMSHSM    OUTGRP=1.1.1 ON PRT1     2 (2) RECORDS
$HASP150 DFSMSHSM    OUTGRP=2.1.1 ON PRT1     7 (7) RECORDS
$HASP160 PRT1        INACTIVE - CLASS=AJ
$HASP250 DFSMSHSM    IS PURGED
```

Figure 62. Example of DFSMShsm Shutdown Screen

You can start the IVP again from the beginning at any time by returning to Step 5.

10. Run job HSMIVP2, which is a member of DFSMSHSM.IVP.CNTL, to remove the IVP temporary data sets from your system.

11. After running the IVP, you can delete member DFSMSHSM from the SYS1.PROCLIB data set and delete the DFSMSHSM.IVP.CNTL data set. They are no longer needed. The DFSMSHSM configuration and the parameters in the ARCCMD00 member created by the IVP are used to determine if the product is correctly installed and can be started and stopped. They are not intended for use in a fully functional DFSMShsm environment. Return to "How to Implement DFSMShsm" in *z/OS DFSMShsm Implementation and Customization Guide* for the next steps to take to implement DFSMShsm.

8.6.4.5 Run the DFSMS File System Installation Verification Procedure

To validate the DFSMS function that is installed in the file system, perform the following verification steps if DFSMS is installed in an HFS. Note that the confighfs script shown below is intended to be run with a mounted HFS file system; it is not intended to be run when a zFS file system is mounted.

1. Note that confighfs is located under the `/usr/lpp/dfsms/bin` directory

2. Invoke the following confighfs command under the z/OS UNIX shell after you have successfully applied the HDZ2220 FMID. (In this example, `-l` is the lowercase of the letter l.) Figure 63 on page 257 shows the expected output.

   ```
   confighfs -l /
   ```

```
IBM is a registered trademark of the IBM Corp.

# cd /usr/lpp/dfsms/bin
# confighfs -l /
HFS Limits
 Maximum virtual storage: _____748(MB)
 Minimum fixed storage:    _____0(MB)


Statistics for file system ZOS22.ROOT.HFS
( 03/31/15 4:04pm )
 File system size:_____44820    (pages)
                  _____175.078(MB)
 Used pages:        _____34851    (pages)
                  _____136.137(MB)
 Attribute pages: _____104    (pages)
                  _____0.406(MB)
 Cached pages:      _____680    (pages)
                  _____2.656(MB)
 Seq I/O reqs:      _____0
 Random I/O reqs: _____16
 Lookup hit:        _____136
 Lookup miss:       _____44
 1st page hit:      _____16
 1st page miss:     _____17
 Index new tops:  _____0
 Index splits:      _____0
 Index joins:       _____0
 Index read hit:  _____420
 Index read miss: _____16
 Index write hit: _____12
 Index write miss:_____0
 RFS flags          _____4F(HEX)
 RFS error flags: _____0(HEX)
 High format RFN: _____8843(HEX)
 Member count:      _____1237
 Sync interval:     _____60(seconds)
 APM count:         _____5
```

Figure 63. Expected results from DFSMS installation verification

The example in Figure 63 assumes the root HFS at / belongs to (is owned by) the target system. If the target system has been added to a shared HFS in a sysplex environment, then the sysplex root HFS may be owned by another system. If the owning system is at a lower level, then an error can occur: `ERRNO=134(86) REASON=11A204F6`. For the purposes of the IVP, this reason code can be ignored.

In addition, Figure 63 assumes that an HFS is mounted. Do not run confighfs when a zFS file system is mounted because it will result in an error message.

If z/OS V2.2 is installed in a zFS root file system, the following command may be invoked under the z/OS UNIX shell to validate the product is installed in the zFS and is an example (it must be modified as required for your environment)

```
zfsadm aggrinfo -long OMVS.ZFS.ZOS22.ROOT
```

In the example above, OMVS.ZFS.ZOS22.ROOT, is zFS name. The output will display information about the file system.

8.6.4.6 Run the HCD Installation Verification Procedure: To verify that HCD is installed, you should at least make the following minimal checks.

1. Issue the `'D IOS,CONFIG'` command and verify the resulting IOS506I message.

2. Invoke HCD. You will receive the primary task selection panel of HCD, Hardware Configuration. Verify that it says "z/OS V2.2 HCD" at the first line of the panel. Select "What's new in this release" from the primary task selection panel. Verify it says "What's New in This Release" at the heading of the panel. Finally, scroll forward. You will see:

   ```
   What's New in This Release
   ```

   This panel tells you what changes have been made in the present release. If you have not used HCD before, select Item 8, 'Getting Started with This Dialog' on the primary selection panel for "Overview of Changes".

   For information on HCD support for new processor types and the enhanced capabilities of new processor models, select 'Query supported hardware and installed UIMs' on the primary selection panel and then 'List supported processors.'

   For information on new functions and enhancements of the present HCD release, move your cursor to a highlighted topic, then press Enter. Pressing F12 on the panel describing the selected topic returns you to this panel to select another topic.

8.6.4.7 Run the z/OS UNIX System Services Setup Verification Procedures: Refer to the z/OS UNIX System Services setup verification procedure in *z/OS UNIX System Services Planning*.

8.6.5 IVP jobs for Wave 1C

There are currently no installation verification procedures for the following elements in Wave 1C:

- MICR/OCR
- TSO/E

8.6.5.1 Run the BookManager READ Installation Verification Procedure: To make the BookManager READ/MVS bookshelf available and to verify BookManager READ has been installed properly, perform the following steps. For more information on the panels described in this section, see *IBM BookManager READ/MVS: Displaying Online Books*.

1. Log on to a user ID and start ISPF.

2. Select the BookManager READ option from the ISPF panel you have previously customized in 8.5.5.3.7, "ISPF customization considerations" on page 169.

3. Press Enter.

   A warning panel is displayed that indicates a failure opening the data set because there are no bookshelves currently available.

4. Press Enter. If your function key definitions are not showing at the bottom of the screen, type FKA on the command line and press Enter.

5. Select BOOKS on the menu bar; the BOOKS pull-down is displayed.

6. Select PERFORM FILE FUNCTIONS in the BOOKS pull-down. The PERFORM FILE FUNCTIONS window is displayed.

7. Select ADD in the FUNCTION TO PERFORM field; the ADD BOOKSHELF window is displayed.

8. Type the BookManager READ bookshelf data set name in the DATA SET NAME field and press Enter. This data set was created when the online books were copied from the SMP/E target libraries to sequential data sets. See 8.4.3.1, "Copy online books and dictionaries" on page 128 for more information about copying online books. If you used the data set names specified in the supplied sample JCL, type the following for the bookshelf data set name. Be sure to type single quotation marks immediately before and after the name, as shown:

   `'EOY.ENU.BOOKMGRR.BKSHELF'`

   Note: This value is the fully-qualified default data set name, as specified in the sample unload job. The ENU qualifier specifies English. The BOOKSHELF LIST DATA SET TO BE MODIFIED window is displayed. The DATA SET NAME field contains the data set name of your personal bookshelf list.

9. Replace the bookshelf list data set name in the DATA SET NAME field with the fully-qualified data set name of your site's system bookshelf list. This data set name is specified in the EOXVOPTS option QLSHELF. QLSHELF specifies the data set names that contain the list of bookshelves available to all users. At least one data set name must be specified in the QLSHELF variable. The EOXVOPTS member shipped with BookManager READ specifies:

   `QLSHELF = "'EOY.BKLSHELF'"`

   Then press Enter. The BOOKSHELF LIST DATA SET TO BE MODIFIED window is removed and the bookshelf is added to the system bookshelf list.

10. Press PF5 to refresh the bookshelf list. The BookManager READ bookshelf is now in the list.

11. If you installed the BookManager READ bookshelf search index and books using the default data set names, go to 13 on page 260. Otherwise, modify the BookManager READ bookshelf displayed before using it by following these procedures:

a. Type a slash (/) over the underscore to the left of the bookshelf name.

b. Select BOOKS on the menu bar.

c. Select PERFORM FILE FUNCTIONS. The PERFORM FILE FUNCTIONS window is displayed.

d. Select EDIT in the FUNCTION TO PERFORM field. It is assumed that you used the default data set names, except for a different high-level qualifier. If you chose completely different data set names, see the chapter on "Performing File Functions" in *IBM BookManager READ/MVS: Displaying Online Books*, SC38-2034.

e. Select CHANGE HIGH-LEVEL QUALIFIERS in the EDIT BOOKSHELF window. The CHANGE HIGH-LEVEL QUALIFIERS window is displayed.

f. Type `EOY.ENU` in the FROM field. Type the new high-level qualifier(s) in the TO field.

   Note: The ENU qualifier specifies English.

g. Press Enter; a confirmation window is displayed.

h. Select YES to accept the change and return to the EDIT BOOKSHELF window.

12. Press F12 twice to return to the bookshelf list.

13. Move the cursor to the bookshelf listed and press Enter. The bookshelf is displayed with the list of books on it. The cursor is next to the first book (*IBM BookManager READ/MVS: Getting Started*).

14. Press Enter to display the book.

15. Move the cursor to the command line, and type the following command: `SEARCH online`

    Then, press Enter. The LIST ALL TOPICS WITH MATCHES window is displayed. The cursor is next to the first entry.

16. Press Enter to see the selected topic.

17. Select BOOKS on the menu bar.

18. Select EXIT BOOKMANAGER in the BOOKS pull-down. A confirmation window is displayed.

19. Select YES in the confirmation window to exit BookManager.

    The installation verification is complete.

8.6.5.2 Run the FFST Installation Verification Program: FFST provides a program for execution to verify you have installed FFST correctly. Perform the following steps to ensure successful installation of FFST.

1. Start FFST with the procedure (EPWFFST) provided.

2. Execute the IVP provided. This is found in your SEPWSRC2 data set, member EPW12012. This job issues several EPW90xxI messages. See *FFST/MVS FFST/VM Operations Guide*, for detailed explanations.

This completes the testing of FFST.

8.6.5.3 Run the GDDM Installation Verification Procedures: The installation verification procedures for OS/390 GDDM consist of:

- Testing GDDM/MVS Base.
- Testing GDDM-PGF
- Testing GDDM-REXX.
- Testing GDDM Under CICS (if applicable):
  - Testing GDDM-PGF Under CICS
  - Testing the Print Utility ADMOPUC Under CICS
- Testing GDDM Under IMS (if applicable):
  - Testing GDDM-PGF Under IMS
  - Testing the Print Utility ADMOPUI Under IMS

8.6.5.3.1 Testing GDDM/MVS Base

Before performing the installation verification procedures, ensure the default User Control key is set. The default User Control key is PA3. If your keyboard does not have a PA3 key, or the PA3 key is already used by another application, set the User Control key to another value. To do this, add the following nickname user default specification to the external defaults file, or external defaults module:

```
ADMMNICK FAM=1,PROCOPT=((CTLKEY,type,value))
```

where `type` defines the type of key selected for entering User Control (1=PF key, 4=PA key), and `value` defines the number of the PF or PA key to be used. The line must start with a space in column 1.

For more information about nicknames and supplying user-default specifications, see *GDDM System Customization and Administration*.

For more information about User Control, see the *GDDM User's Guide*.

This is how to test that GDDM/MVS has been installed successfully for use under TSO:

1. Allocate the GDDM symbol and map data sets on your TSO session by typing:

   ```
   ALLOC F(ADMSYMBL) DA('GDDM.SADMSYM') SHR REU
   ALLOC F(ADMGDF)   DA('GDDM.SADMGDF') SHR REU
   ```

   If you also intend to use this step to test the GDDM TSO Print Utility, you must allocate the Master Print Queue data set:

   ```
   ALLOC F(ADMPRNTQ) DA('your-master-print-queue') SHR REU
   ```

2. Run the GDDM installation verification program:

   ```
   CALL *(ADMUGC) 'FROM(ADMTEST)'
   ```

   A picture should be displayed that shows the words 'Welcome to GDDM Version 3.2'. This picture is the ADMTEST ADMGDF from the SADMGDF data set being displayed by the ADMUGC conversion utility.

   If the terminal does not support graphics, the following message will be displayed:

   ```
   ADM0275 W GRAPHICS CANNOT BE SHOWN. REASON CODE 3
   ```

3. Go into GDDM User Control by pressing the User Control key.

The User Control panel should now be superimposed on the bottom of the display, using the language specified by the NATLANG external default.

While you are in this panel, you can also test the GDDM print utility if you have already customized it. For information about the print utility, see *GDDM System Customization and Administration*. To create a file for testing the GDDM print utility using GDDM User Control:

   a. Press **PF4** for the User Control output panel.

   b. Type the terminal ID of the printer to which you want to send the output, as defined to Communications Server for z/OS SNA Services, or in your external defaults module.

   c. Press **PF4** to send the file to be printed. A highlighted message is displayed when the print has completed successfully.

  4. Press **PF3** until you are back in TSO.

This completes the test of the graphic and alphanumeric functions of GDDM/MVS.

8.6.5.3.2 Testing GDDM-PGF

If GDDM-PGF has been enabled (see 8.5.2.3, "IFAPRDxx considerations" on page 146), verify GDDM-PGF has been installed properly by performing the following steps:

  1. Use the commands suggested for a CLIST in Figure 64 on page 267 to call the Interactive Chart Utility (ICU).

When you start, the Home Panel of the ICU is displayed in the language specified in the NATLANG external default.

For information about using the ICU, you can access the built-in help facility by pressing the **PF1** key; you can also find more information in *GDDM-PGF Interactive Chart Utility*.

  2. This is what you do:

   a. Type 0 to move to the Chart by Example panel.

   b. Type 1 on the Chart by Example panel to get data headings and titles for your chart.

   c. Type any number from 1 through 7 on the Chart by Example - Data panel to get the sample data supplied with the ICU.

   d. Display the data by pressing **PF5**, the Display key.

   e. Return to the Home panel by pressing **PF12**.

   f. Exit the ICU by pressing **PF9** twice.

This completes the tests of the graphic and alphanumeric functions of GDDM-PGF.

8.6.5.3.3 Testing GDDM-REXX

If GDDM-REXX has been enabled (see 8.5.2.3, "IFAPRDxx considerations" on page 146), verify GDDM-REXX has been installed properly by performing the following steps:

  1. Allocate the GDDM map and symbol set data sets to your session by typing:

```
ALLOC F(ADMGDF) DA('GDDM.SADMGDF') SHR REU
ALLOC F(ADMSYMBL) DA('GDDM.SADMSYM') SHR REU
```

2. Type the command `EXEC 'GDDM.SADMSAM(ERXMODEL)'` from a terminal that can display graphics.

3. Press **ENTER**.

   A picture is displayed, with the large characters "GDDM-REXX" near the top of the screen.

4. Press **ENTER** again or press the PF3 key to return to TSO.

8.6.5.3.4 Testing GDDM under CICS

This section describes how to verify the installation of GDDM under the CICS subsystem.

To test GDDM under CICS, you must have allocated the required GDDM VSAM data sets, defined them to CICS, and included them in the CICS startup JCL. You must also have defined GDDM to CICS in your CICS tables or CSD.

8.6.5.3.4.1 Testing GDDM/MVS Base under CICS

Before performing the installation verification procedures, ensure the default User Control key is set. The default User Control key is PA3. If your keyboard does not have a PA3 key, or the PA3 key is already used by another application, set the User Control key to another value. To do this, add the following nickname user default specification to the external defaults file, or external defaults module:

`ADMMNICK FAM=1,PROCOPT=((CTLKEY,type,value))`

where `type` defines the type of key selected for entering User Control (1=PF.key, 4=PA key) and `value` defines the number of the PF or PA key to be used. The line must start with a space in column 1.

For more information about nicknames and supplying user-default specifications, see *GDDM System Customization and Administration*.

For more information about User Control, see the *GDDM User's Guide*.

This is how to test GDDM/MVS has been installed successfully for use under the CICS subsystem:

1. Type the transaction name for the GDDM/MVS installation verification program: ADMA.

2. Press **ENTER**

   A picture should be displayed that shows the words "Welcome to GDDM Version 3.2". This picture is the ADMTEST ADMGDF, which is stored in the ADMF data set.

3. Go into GDDM User Control by pressing the User Control key.

   The User Control panel should now be superimposed on the bottom of the display, using the language specified by the NATLANG external default.

   While you are in this panel, you can also test the GDDM print utility if you have already customized it. For information about the print utility, see *GDDM System Customization and Administration*. To create a print file for testing the GDDM print utility using GDDM User Control:

   a. Press **PF4** for the User Control output panel.

   b. Type the terminal ID of the printer to which you want to send the output, as defined in your TCT.

c. Press **PF4** to send the file to be printed.

   A highlighted message is displayed when the print has completed successfully.

4. Press **PF3** until you have left the transaction.

This completes the test of the graphic and alphanumeric functions of GDDM/MVS under CICS.

8.6.5.3.4.2 Testing GDDM-PGF under CICS

This is how to test GDDM-PGF has been installed successfully for use under the CICS subsystem:

1. Type the transaction name for the ICU: ADMC

2. Press **ENTER**.

   The Home Panel of the ICU is displayed in the language specified in the NATLANG external default. For information about using the ICU, you can access the built-in help facility by pressing the **PF1** key; you can also find more information in *GDDM-PGF Interactive Chart Utility*.

3. This is what you do:

   a. Type 0 to move to the Chart by Example panel.

   b. Type 1 on the Chart by Example panel to get data headings and titles for your chart.

   c. Type any number from 1 through 7 on the Chart by Example - Data panel to get the sample data supplied with the ICU.

   d. Display the data by pressing **PF5**, the Display key.

   e. Return to the Home panel by pressing **PF12**

   f. Exit the ICU by pressing **PF9** twice.

This tests the graphic and alphanumeric functions of GDDM-PGF under CICS.

8.6.5.3.4.3 Testing the Print Utility ADMOPUC under CICS

To test the GDDM print utility ADMOPUC, use the tests in 8.6.5.3.4.1, "Testing GDDM/MVS Base under CICS" on page 263.

For information about setting up the print utility and how to select particular printers, see *GDDM System Customization and Administration*.

8.6.5.3.5 Testing GDDM under IMS: This section describes how to verify the installation of GDDM under the IMS subsystem.

8.6.5.3.5.1 Testing GDDM/MVS Base under IMS

1. Type the transaction name for the Image Symbol Editor: ADM ISSE

2. Press **ENTER**.

   If you are not familiar with the Image Symbol Editor, there is a help facility you can view by pressing the **PF1** key. You can also find more information in *GDDM Using the Image Symbol Editor*.

When you start the transaction, the first panel of the Image Symbol Editor is displayed. It is called Step Selection.

This is what you do:

a. Type the symbol set name ADMDHII. (note the final period), and choose option 2, Edit Symbol Set.

b. Press **ENTER**.

The next panel, Symbol Selection, is displayed.

c. Press **PF6**.

A different set of characters should be displayed on the same panel. (If GDDM message ADM0824 or ADM0825 is displayed, and some of the characters are displayed as "?", this does not invalidate the test).

d. Move the cursor to a nonblank character in the set of characters (not one in reverse-video).

e. Press **ENTER**

The display should change to the Symbol Definition panel, and the pixel pattern of the chosen symbol should be displayed at the left of the screen. (If message ADM0824 or ADM0825 was displayed earlier, the symbol is the one that could not be displayed and not the "?" chosen).

f. Leave the cursor where it is, and type the command TEST ON

g. Press **ENTER**

If your device supports programmed symbols (PS), a small copy of the character should be displayed below and to the right of the pixel pattern. Otherwise, GDDM message ADM0861 is displayed, but this does not invalidate the test.

h. Exit the Image Symbol Editor by pressing **PF3** three times.

This tests both the graphic and alphanumeric functions of GDDM.

If your workstation is capable of showing graphics, but does not have PS support, you can test the graphic functions of GDDM/MVS by running one of the sample programs, described in the *GDDM Base Application Programming Reference*.

8.6.5.3.5.2 *Testing GDDM-PGF under IMS*

This is how to test GDDM-PGF has been installed successfully for IMS:

1. Type the transaction name for the ICU: ADM CHART

2. Press **ENTER**.

The Home Panel of the ICU is displayed in the language specified by the NATLANG external default. For information about using the ICU, you can access the built-in help facility by pressing the **PF1** key; you can also find more information in *GDDM-PGF Interactive Chart Utility*.

3. This is what you do:

a. Type 0 to move to the Chart by Example panel.

b. Type 1 on the Chart by Example panel to get data headings and titles for your chart.

c. Type any number from 1 through 7 on the Chart by Example - Data panel to get the sample data supplied with the ICU.

d. Display the data by pressing **PF5**, the Display key.

e. If you have a printer, create a print file so you can later test the GDDM print utility (see 8.6.5.3.5.3, "Testing the Print Utility ADMOPUI under IMS"):

   1) Press **PF4**, the Print key.

   2) Type the LTERM name of the printer.

   3) Press **ENTER**.

      The message `CHART SUCCESSFULLY OUTPUT` is displayed.

 f. Return to the Home panel by pressing **PF12**.

g. Exit the ICU by pressing **PF9** twice.

This completes the tests of the graphic and alphanumeric functions of GDDM-PGF under IMS.

8.6.5.3.5.3 *Testing the Print Utility ADMOPUI under IMS*

This is how to test the print utility ADMOPUI has been installed successfully for IMS. However, before you can start, you must have a GDDM file for it to print. If GDDM-PGF has been ENABLED, you can use the ICU to produce one; see 8.6.5.3.5.2, "Testing GDDM-PGF under IMS" on page 265.

If GDDM-PGF has not been installed, you can create a print file using the IMS version of the sample program ADMUSP1. The source for this program is called ADMUSP1I.

Find the program in the sample library SADMSAM, and compile and link-edit it as described in *GDDM Base Application Programming Guide*.

1. Give the LTERM name on the transaction invocation.

2. Assign the ADMPRINT transaction to a suitable class, and start it.

   After you have created a print file, the print utility prints it asynchronously.

```
Suggested name: CHART

/* INTERACTIVE CHART UTILITY */
 ALLOC F(ADMCDATA) DA(ADMCDATA) SHR REU
 ALLOC F(ADMCDEF)  DA(ADMCDEF)  SHR REU
 ALLOC F(ADMCFORM) DA(ADMCFORM) SHR REU
 ALLOC F(ADMGDF)   DA(ADMGDF)   SHR REU
 ALLOC F(ADMSYMBL) DA(ADMSYMBL 'GDDM.SADMSYM') SHR REU
 CALL *(ADMCHART)
 FREE F(ADMCDATA)
 FREE F(ADMCDEF)
 FREE F(ADMCFORM)
 FREE F(ADMGDF)
 FREE F(ADMSYMBL)
```

Figure 64. Suggested CLIST for using the ICU

The ADMSYMBL allocation must not have concatenated data sets if you want to save symbol sets. Concatenated partitioned data sets cannot be accessed read/write.

You are advised to make both the system and the user's own symbol sets available to users of the ICU. This gives the users a wide choice of type faces from the system sets, and special symbols from their own.

8.6.5.3.6 What to Do If Any of the Installation Tests Fail

If any of the tests fail, the first thing you may see is an error message displayed on your screen. On the other hand, you may find that graphics are not displayed on your screen.

If you receive an error message, look it up in *GDDM Messages*. If it is a GDDM-OS/2 Link message, you can also use the online help.

If graphics cannot be shown on one or more of the terminals when you test GDDM or the telecommunication network, see *GDDM Diagnosis*.

If you cannot quickly identify the cause of the error, you may find it useful to read *GDDM Diagnosis*, which contains detailed information about diagnosing problems with GDDM and its components. Information about detailed diagnosis and the procedure for reporting errors can be found in *GDDM Diagnosis*.

8.6.5.4 Run the ICKDSF Installation Verification Procedure: SYS1.SAMPLIB(ICKVER)
contains the ICKDSF Installation Verification Procedure. Copy ICKVER to a work data set. Edit and submit ICKVER to verify the installation of ICKDSF. The job may be executed against any **offline** device that is supported; it will not alter the volume in any way. Note that ICKDSF was placed in SYS1.LINKLIB by SMP/E. Note that ccuu specifies the address (in hexadecimal) of the device to be analyzed.

The following information messages will appear in the SYSPRINT data set due to the execution of the above job. The contents of these messages may vary slightly due to variations on your particular pack.

• VERIFY HEADER ON OUTPUT

```
ICKDSF - MVS/ESA DEVICE SUPPORT FACILITIES 17.0
ANALYZE UNIT(ccuu) NODRIVE SCAN CYLR(1,2)
ICK00700I DEVICE INFORMATION FOR ccuu IS CURRENTLY AS FOLLOWS:
PHYSICAL DEVICE = xxxx
STORAGE CONTROLLER = xxxx
STORAGE CONTROL DESCRIPTOR = xx
DEVICE DESCRIPTOR = xx
ADDITIONAL DEVICE INFORMATION = xxxxxxxx
TRKS/CYL = xx, # PRIMARY CYLS = xxxxx
ICK04000I DEVICE IS IN SIMPLEX STATE
ICK00091I ccuu NED= xxxx.xxx.xxx.xx.xxxxxxxxxxxx
ICK03091I EXISTING VOLUME SERIAL READ = xxxxxx
ICK01400I ccuu ANALYZE STARTED
ICK01408I ccuu DATA VERIFICATION TEST STARTED
ICK01405I ccuu ALL DATA 'MACHINE READABLE' WITHOUT ERRORS
ICK01406I ccuu ANALYZE ENDED
ICK00001I FUNCTION COMPLETED, HIGHEST CONDITION CODE WAS 0
hh:mm:ss dd/mm/yy
```

The *Device Support Facilities User's Guide and Reference Release 17* has more information about using ICKDSF.

8.6.6 IVP jobs for Wave 1D

There are currently no installation verification procedures for the following elements in Wave 1D:

- Cryptographic Services
  - OCSF
  - PKI Services

8.6.6.1 Run the Security Server (RACF) Installation Verification Procedures

If Security Server (RACF) has been enabled (see 8.5.2.3, "IFAPRDxx considerations" on page 146), verify it has been installed properly by IPLing z/OS V2.2.0. If you receive message ICH520I stating `z/OS SECURITY SERVER (RACF HRF77A0) IS ACTIVE`, RACF will have been installed and initialized successfully.

8.6.7 IVP jobs for Wave 1E

The following sections describe installation verification procedures for Wave 1E.

8.6.7.1 Run the Runtime Library Extensions Installation Verification Procedures

There is one IVP job you should run to ensure the Runtime Library Extensions was properly installed. The JCL can be found in your SCLBJCL library. Refer to the JCL for instructions and expected output.

Figure 65. IVP for Runtime Library Extensions

Job name	Job Description
CLB3JIV1	Verify the IO Streams Class Library and Complex Class Library installation

8.6.7.2 Run the Common Information Model (CIM) Installation Verification

Procedure: To verify Common Information Model (CIM) is installed, run sample job, CFZIVP. The IVP job CFZIVP can be found in library SAMPLIB. Before you run the CIM IVP job, ensure that you have created and mounted a file system at the /var/wbem directory. For information about creating and mounting a file system at the /var/wbem directory, see *z/OS Common Information Model User's Guide*.

8.6.7.3 Run the RMF Installation Verification Procedure: If RMF has been enabled (see 8.5.2.3, "IFAPRDxx considerations" on page 146), verify RMF has been installed properly by performing the following steps:

- Test the new element level by issuing the START command for RMF with PARMLIB member ERBRMF02 and reply with the desired options or GO.
- Modify RMF to start one or more Monitor II background sessions, using member ERBRMF03. This member tests all Monitor II reports.
- Modify RMF to start a Monitor III data gatherer session, using member ERBRMF04, and then start a data reporter session.
- Request several reports on the Monitor III report screen to verify these functions are working.

Monitor I and II and the Monitor III gatherer will run without further attention until the sessions are over or until the next IPL.

For more information on starting RMF and available options, see *z/OS RMF User's Guide*.

8.6.7.4 Run the XL C/C++ Installation Verification Procedures

If XL C/C++ has been enabled (see 8.5.2.3, "IFAPRDxx considerations" on page 146), verify the following C/C++ components have been installed properly:

- XL C/C++ Base Compiler
- C/C++ Host Performance Analyzer

Notes:

1. As of z/OS V1R8, the IPA Link step of the z/OS XL C/C++ compiler uses 64-bit virtual memory, which requires sufficient storage above the 2 GB bar (2 GB address line). You can set the MEMLIMIT system parameter to provide the required virtual storage above the 2 GB bar. Use the following checklist to ensure that sufficient storage above the 2 GB bar is available:

   - Increase the default size of the MEMLIMIT system parameter in the SMFPRMxx PARMLIB member to 3 GB.
   - Increase the MEMLIMIT value for z/OS UNIX System Services users through the RACF OMVS segment to 3 GB.
   - If you use the IEFUSI exit routine, ensure that the MEMLIMIT value is more than 3 GB.

For additional information about the MEMLIMIT system parameter, see *z/OS MVS Programming: Extended Addressability Guide*.

2. The CCNJIV1 and CCNJIV2 IVP jobs allocate one of the temporary data sets as a PDSE data set. You cannot allocate a PDSE data set to a VIO device type or to multiple volumes. Before you run these two IVP jobs, check the storage and data classes that allocate temporary data sets to verify if you can allocate temporary datasets as PDSE data sets. You can check the class by viewing the dataclas attributes in the panel that is displayed for option 4 of ISMF.

If you cannot allocate temporary data sets as PDSE data sets due to system configuration; for example, the device type is VIO or the volume count of SMS-managed data sets is greater than one, add the following code to the DFSMS DATACLAS routines:

```
FILTLIST CCPGM                /* IPALINK Note               */
 INCLUDE(CCN*)                /* Desc: Bypass CCN* Programs */
IF
   ((&DATACLAS = '') &&
   (&PGM EQ &CCPGM)) THEN     /* Bypass CCN* C/C++ Programs */
   DO                         /* Example: CCNDRVR           */
     SET &DATACLAS = ''       /* Bypass Dataclas            */
     WRITE 'DC IS BLANKED OUT' /* Write out a Message       */
     EXIT CODE(0)             /* Exit Routine               */
   END
```

8.6.7.4.1 Run the XL C/C++ Installation Verification Procedure

There are two IVP jobs you should run to ensure the C/C++ compilers were properly installed. The JCL can be found in your SCCNJCL library. Refer to the JCL for instructions and expected output.

Figure 66. IVPs for XL C/C++ Compilers

Job name	Job Description
CCNJIV1	Verify the XL C Compiler Installation
CCNJIV2	Verify the XL C++ Compiler Installation

8.6.7.4.2 Run the C/C++ Host Performance Anaylzer Installation Verification Procedure

There is one IVP job you should run to ensure the C/C++ Host Performance Analyzer is properly installed (see Figure 67). The JCL can be found in your SCTVJCL library. Refer to the JCL for instructions and expected output. Ensure the following service has been applied to the C/C++ Host Performance Analyzer:

UQ07576 UQ07577 UQ08624 UQ16061 UQ16062 UQ23233
UQ23234 UQ35263 UQ47678 UQ58554 UQ78078 UQ78229

Figure 67. IVPs for C/C++ Host Performance Analyzer

Job name	Job Description
PROFFUNC	Sample JCL For Function Level Trace

8.6.8 IVP jobs for Wave 1F

There are currently no installation verification procedures for the following elements in Wave 1F:

- BDT
- HCM
- OSA/SF
- IBM Knowledge Center for z/OS

Note: The ISPF installation verification procedures are described in 8.6.2.2, "Run the BCP and ISPF Installation Verification Procedure" on page 233.

8.6.8.1 Run the DFSORT Installation Verification Procedures: Once you have completed your configuration, you should review, modify, and run the following sample jobs to verify DFSORT is installed correctly.

- ICEJCLJ, to invoke DFSORT directly. Sorts and copies a data set.
- ICEINVJ, to invoke DFSORT from an assembler program. Sorts and copies a data set.
- ICETOOLJ, to invoke ICETOOL directly. Performs multiple operations which include listing your installation defaults, copying and sorting data sets, displaying statistics and printing reports.
- ICECSRTJ, if you use Locale Processing at your site, to verify data is sorted correctly using the Danish locale (LOCALE=DA_DK). To run this job, you must have the Language Environment element installed, and have the SCEERUN library available for the job to use.
- ICEGENJ, to invoke ICEGENER directly. Copies a data set.

8.6.8.1.1 ICEJCLJ and ICEINVJ verification

Verify the ICEJCLJ and ICEINVJ jobs each ran correctly by:

1. Checking the condition code for each step is 0.

2. Comparing the SORTOUT output of step PRTAFTER to Figure 68 on page 272, which shows what the first 20 records and last 10 records of the 360 output records look like.

```
*****000001****************************ABCDEFGHIJKLMNOP*****
*****000037****************************ABCDEFGHIJKLMNOP*****
*****000073****************************ABCDEFGHIJKLMNOP*****
*****000109****************************ABCDEFGHIJKLMNOP*****
*****000145****************************ABCDEFGHIJKLMNOP*****
*****000181****************************ABCDEFGHIJKLMNOP*****
*****000217****************************ABCDEFGHIJKLMNOP*****
*****000253****************************ABCDEFGHIJKLMNOP*****
*****000289****************************ABCDEFGHIJKLMNOP*****
*****000325****************************ABCDEFGHIJKLMNOP*****
*****000002****************************BCDEFGHIJKLMNOPQ*****
*****000038****************************BCDEFGHIJKLMNOPQ*****
*****000074****************************BCDEFGHIJKLMNOPQ*****
*****000110****************************BCDEFGHIJKLMNOPQ*****
*****000146****************************BCDEFGHIJKLMNOPQ*****
*****000182****************************BCDEFGHIJKLMNOPQ*****
*****000218****************************BCDEFGHIJKLMNOPQ*****
*****000254****************************BCDEFGHIJKLMNOPQ*****
*****000290****************************BCDEFGHIJKLMNOPQ*****
*****000326****************************BCDEFGHIJKLMNOPQ*****
.
.
.
*****000036****************************9ABCDEFGHIJKLMNO*****
*****000072****************************9ABCDEFGHIJKLMNO*****
*****000108****************************9ABCDEFGHIJKLMNO*****
*****000144****************************9ABCDEFGHIJKLMNO*****
*****000180****************************9ABCDEFGHIJKLMNO*****
*****000216****************************9ABCDEFGHIJKLMNO*****
*****000252****************************9ABCDEFGHIJKLMNO*****
*****000288****************************9ABCDEFGHIJKLMNO*****
*****000324****************************9ABCDEFGHIJKLMNO*****
*****000360****************************9ABCDEFGHIJKLMNO*****
```

Figure 68. Expected PRTAFTER SORTOUT Output from ICEJCLJ and ICEINVJ

8.6.8.1.2 ICETOOLJ verification: To verify that the ICETOOLJ job ran correctly, follow these steps:

1. Check that the condition code for each step is 0.

2. Check that "DFSORT V2R1" is shown in the heading of the DFLTS output of step TOOLRUN. See *z/OS DFSORT Installation and Customization* for an example of how the complete DFLTS output will look if you have not changed any DFSORT installation options. If you have changed DFSORT installation options, the output should reflect the options you selected. In either case, dates in your listing will differ from those in the example output.

3. Compare the DEPTSP output of step TOOLRUN to Figure 69 on page 273.

```
JOHN       BURT            IS IN DEPARTMENT J69
ANDY       GELLAI          IS IN DEPARTMENT J82
PAUL       LEE             IS IN DEPARTMENT J69
MIGUEL     MADRID          IS IN DEPARTMENT J69
JANICE     MEAD            IS IN DEPARTMENT J69
LEE        TOWNSEND        IS IN DEPARTMENT J82
WILLIAM    WARREN          IS IN DEPARTMENT J82
FRANK      YAEGER          IS IN DEPARTMENT J69
HOLLY      YAMAMOTO-SMITH IS IN DEPARTMENT J69
```

Figure 69. Expected TOOLRUN DEPTSP Output from ICETOOLJ

4. Compare the LIST1 output of step TOOLRUN to Figure 70. (Carriage control characters are shown in position 1; do not be concerned if you do not see them.)

```
1KEYS AND TOTALS        - 1 -

  KEY            PD_TOTAL   ZD_TOTAL
  ----------   ------------  --------
  ABCDXYZ123         1041       579
  BCDXYZ123A          -42       290
  CDXYZ123AB          142       314
  DXYZ123ABC          326       338
  XYZ123ABCD         -615       363
  YZ123ABCDX         -339       399
  Z123ABCDXY          -63       435
  123ABCDXYZ          213       471
  23ABCDXYZ1          489       507
  3ABCDXYZ12          765       543


  MINIMUM            -615       290
```

Figure 70. Expected TOOLRUN LIST1 Output from ICETOOLJ

5. Compare the DEPTOT output of step TOOLRUN to Figure 71. (Carriage control characters are shown in position 1; do not be concerned if you do not see them.)

```
1(45,3,CH)            VALUE COUNT
 J62                  000000000000001
 J69                  000000000000006
 J82                  000000000000003
 L92                  000000000000005
```

Figure 71. TOOLMSG output

Note: The TOOLMSG output of step TOOLRUN shows the result of each ICETOOL operation requested.

8.6.8.1.3 ICECSRTJ verification: Verify the ICECSRTJ job ran correctly by:

1. Checking the condition code for each step is 0.

2. Comparing the SORTOUT output of step CSORT to Figure 72 on page 274.

Notes:

1. The ICECSRTJ sample job can be found in the SICESAMP target library.

2. The SCEERUN library (the Language Environment run-time library) must be in the link list or concatenated to STEPLIB to run the ICECSRTJ sample job.

```
a
A
b
B
c
C
d
D
e
E
```

Figure 72. Expected CSORT SORTOUT Output from ICECSRTJ

8.6.8.1.4 ICEGENER verification: You can use the sample job ICEGENJ supplied with the licensed program to verify the installation of the ICEGENER facility. Before performing the verification, you should review the comments in the sample job.

Examine the results of each step in the verification job to ensure the data has been copied correctly and the SYSOUT output was produced by the appropriate program (DFSORT copy or the IEBGENER utility).

If message ICE054I appears, showing a nonzero number of records in and records out, DFSORT did perform a copy application. You should be able to recognize the difference between the output produced by IEBGENER and any output produced by DFSORT because there is a distinct difference in the style between the two types of output.

The following steps each exercise a function of copying. Each step copies from the generated data set to a printed output (JES spool) file. If you see the data printed, you know a copy function was performed.

1. The job step called GEN creates (using the IEBDG utility program) the data to be copied by the rest of the steps.

2. The GCOPY1 step copies and prints the data created by GEN. Because the EXEC statement specifies PGM=ICEGENER, the ICEGENER facility is used and it selects DFSORT copy to perform the copy application. If the application runs correctly, the DFSORT messages will indicate DFSORT copied 360 records.

3. The BCOPY1 step copies and prints the data in a different manner to verify the different invocation path works. Because the EXEC statement specifies IEBGENER, the method used to perform the copy application depends on how you have installed the ICEGENER facility:

- If you chose selective use of ICEGENER, the IEBGENER utility performs the copy application.
- If you chose automatic use of ICEGENER, the ICEGENER facility selects DFSORT copy to perform the copy application.

4. The GCOPY2 step also copies and prints the data. Because the EXEC statement specifies PGM=ICEGENER, the ICEGENER facility is used. Because the SYSIN data set contains IEBGENER control statements, ICEGENER selects the IEBGENER utility to perform the copy application.

The following result indicates that the ICEGENER facility was not installed correctly:

- You receive an ABEND 163 and message ICE163A. Ensure that you use GENER=IEBGENR, the default. If you have an alias of IEBGENR for the ICEGENER facility, remove it.

If you later decide to discontinue automatic use of ICEGENER, see *z/OS DFSORT Installation and Customization* for information on how to do that.

The DFSORT SVC is called to write SMF records and to process data sets on cached DASD devices. If the SVC is not properly installed, a DFSORT application might result in:

- A system abend (56D or Fnn) when writing an SMF type-16 record.
- Degraded performance when using data sets on cached DASD devices.

In either case, message ICE187I is issued if the SVC is installed at the wrong level. If you are using a cached DASD device, message ICE191I is issued as a warning that performance might be degraded. However, the run continues successfully if there are no other errors. You can specify a SORTDIAG DD statement to cause an additional message, ICE816I, to be issued. This message shows the abend code resulting from an attempted SVC call.

You can use the abend code in ICE816I or the abend code resulting from the attempt to write an SMF type-16 record to determine the reason DFSORT failed to call the SVC correctly.

8.6.8.2 Run the High Level Assembler Toolkit Installation Verification Program: A
sample job, ASMWTIVP from library SASMSAM2 is provided to verify the feature has installed correctly. Note that, in the following example, the high-level qualifier for library SASMSAM2 is the high-level qualifier for the sample target library, in which the High-Level Assembler Toolkit has been installed.

This job performs the following functions:

- Assembles test sample ASMTSAMP from library SASMSAM2.
- Link edits test sample ASMTSAMP from library SASMSAM2.
- Disassembles test module ASMTSAMP.
- Creates language extraction file.

ASMWTIVP uses TSO Batch to carry out its functions.

8.6.9 IVP jobs for Wave 1G

This section describes various installation verification procedures for Wave 1G.

8.6.9.1 Run the Distributed File Service Installation Verification Procedures

To ensure the installation of the Distributed File Service completed successfully, do the following:

1. Start the DFS started task:

   ```
   S DFS,PARM='-nodfs'
   ```

   View SYSLOG and look for the following message:

   ```
   IOEP01103I DFS kernel initialization complete.
   ```

   This indicates that the DFS server has started successfully. The server can be used as an SMB file/print server after additional configuration is performed (see below).

2. If the BPXPRMxx entry for zFS was made, determine if zFS is started. To do this, view SYSLOG and look for the following message:

   ```
   IOEZ00055I ZFS kernel: Initialization Complete.
   ```

   The following message in SYSLOG indicates a possible error:

   ```
   nn BPXF032D FILESYSTYPE ZFS Terminated. Reply 'R' when
      ready to restart. Reply 'I' to ignore.
   ```

The possible cause is the started task could not initialize; contact the IBM Support Center for help.

Note: If a problem is detected during the installation verification, please ensure that all of the installation steps for the Distributed File Service have been completed. It may be helpful to review the installation and post installation steps that are summarized in the publication referenced for the post installation customization work described below.

You must now perform additional configuration work to enable the SMB file/print support or the ZFS support.

To use the SMB File/Print support, see the Post Installation Processing section in *z/OS Distributed File Service SMB Administration*.

To use the zFS support, refer to *z/OS Distributed File Service zFS Administration* to define zFS aggregates and file systems.

8.6.9.2 Run the Library Server Installation Verification Procedures

Once you have completed your configuration, you should verify Library Server works from a browser. You can run a simple verification test by using the sample welcome page in `../public/index.html` .

1. Copy `../usr/lpp/booksrv/public/index.html` to the `/usr/lpp/booksrv/public/bookmgr/index.html` directory. The mode setting on this file should be 644.

2. From a web browser, open the URL `http://your.hostname/bookmgr/` (replacing *your.hostname* with the domain name or IP address of your server). The index.html welcome page should display. If not, check the AlwaysWelcome parameter in the ICS configuration file (httpd.conf) is set to On and index.html is listed as one of the default welcome file names.

3. From a web browser, open the URL `http://your.hostname/bookmgr-cgi/EPHBOOKS` (replace *your.hostname* with the domain name or IP address of your server). The Library Server library page should display.

8.6.9.3 Run the Infoprint Server Installation Verification Procedures

If Infoprint Server has been enabled (see Figure 42 on page 135), verify Infoprint Server has been installed properly by performing the steps described in this section. This installation verification procedure (IVP) assumes the customization described in 8.5.5.9.3, "Infoprint Server Customization Considerations" on page 221 has been completed, and the logon proc is set up as described in 8.5.4, "z/OS Version 2 Release 2 ISPF setup considerations" on page 156 so you have access to the Infoprint Server ISPF panels. The IVP described in this section verifies the Printer Inventory Manager and Print Interface components of Infoprint Server. No IVP is provided for the NetSpool or IP PrintWay components. You can perform a simple verification test by printing a file using the **lp** command.

1. Start the Printer Inventory Manager.

   Start the Printer Inventory Manager by entering one of these commands:

   - From the z/OS console, this MVS command:

     `START AOPSTART`

   - From within z/OS UNIX System Services:

     `aopstart`

   Note: Access to the RACF group AOPOPER is required to successfully use these commands.

2. Define one or more printers using the Infoprint Server ISPF panels.

   For detailed information on defining printers, refer to *z/OS Infoprint Server Operation and Administration*.

3. Ensure your PATH environment variable is correctly set with `/usr/lpp/Printsrv/bin` concatenated **ahead of** `/bin` before you attempt to enter the **lp** command.

4. Print a sample file to the printer you just defined. You can print the sample configuration file provided with InfoPrint Server (Print Interface and IP PrintWay extended mode) by entering one of these commands:

- Run a batch job specifying:

```
//STEP0001 EXEC AOPPRINT,PRINTER='printer_name'
//SYSIN DD PATH='/etc/Printsrv/aopd.conf',PATHOPTS=ORDONLY
```

- From within z/OS UNIX System Services:

```
lp -d printer_name /etc/Printsrv/aopd.conf
```

Note:

a. *printer_name* is the name of the printer that you defined in Step 2 on page 277.

b. The **lp** command will place the file on the JES spool. Either IP PrintWay or PSF must be configured, depending on the type of printer you defined, to send the file to the physical printer.

8.6.9.4 Run the Network File System Installation Verification Procedures

This installation verification procedure (IVP) assumes the customization described in the *z/OS Network File System Guide and Reference* has been completed. This includes the installation of the **mvslogin**, **mvslogout** (or **mvslogut**), and **showattr** commands on the clients which enable the client users to access the MVS system and to display system attributes. For the clients with PCNFSD support, the PCNFSD protocol enables the clients to access the MVS system without issuing the mvslogin and mvslogout commands. For details, refer to the same manual (section on "Installing the Client Enabling Commands" and appendix on "Using the PCNFSD Protocol").

In this step, you manually verify your system is installed correctly. Before you begin, perform the following sequence of steps:

1. Have the Network Controller (for example, IBM 3172 Controller) attached to your system.

2. Ensure the following have started correctly:
   - z/OS UNIX
   - Communications Server IP Services
   - PORTMAPPER, or RPCBIND if using IPv6
   - Network File System Server

For the server, the operator's console should display the following GFSA348I message:

```
GFSA348I z/OS NETWORK FILE SYSTEM SERVER
  (HDZ222N) STARTED.
```

For the client, the operator's console should display the following GFSC700I message:

```
GFSC700I z/OS NETWORK FILE SYSTEM CLIENT
  (HDZ222N) STARTED.
```

Use any of the Network File System clients to verify the operation of the server. This section contains an example of using the AIX® client to verify the server is operational. See *z/OS Network File System Guide and Reference* for information about the supported Network File System clients.

8.6.9.4.1 Network File System Client Command sequence examples

Figure 73 on page 279 illustrates the command sequences used by an AIX Network File System client and the expected confirmation of operation. In the example, the following parameters are used:

mvshost   Specifies the nickname of the remote host where the Network File System is running.

user01   Specifies the MVS login user ID. See *z/OS Security Server RACF Security Administrator's Guide* for information on how to define a RACF user ID for the Network File System client user in order to access the Network File System.

nfstest   Specifies the MVS data set's high-level qualifier or is an alias of a user catalog. Usually, MVS data sets are RACF protected, unless RACF is not used at your site at all. Also *nfstest* should be specified in the EXPORTS file before the Network File System Server is started. Refer to the *z/OS Network File System Guide and Reference* (section on "Allocating and Modifying the Exports Data Set" and appendix on "Sample Exports Data Set"), for information on how to update the EXPORTS file.

```
$ mkdir /mvsdir
$ su
Password:
# mount mvshost:nfstest /mvsdir
# <enter "control and D" to exit super user mode>
$ mvslogin mvshost user01
Password required
GFSA973A Enter MVS password:
GFSA955I user01 logged in ok.
$ cat > "/mvsdir/testfile"
This is a string of text entered.
<enter "control and D" keys to finish entering the data>
$ cat "/mvsdir/testfile"
This is a string of text entered.
$
```

Figure 73. Example of AIX client command sequence

8.6.10 IVP jobs for Wave 2

The SDSF element provides an IVP job that is described in the following section.

8.6.10.1 Run the installation verification procedure for SDSF: If SDSF has been enabled (see 8.5.2.3, "IFAPRDxx considerations" on page 146), verify SDSF has been installed properly. To do so, you might want to access SDSF once through ISPF and once through TSO.

- If you made changes to your TSO logon procedure, log off the system and then log on again to execute the modified procedure. If you made changes to your ISPF initialization CLIST, exit ISPF and then reaccess it.
- Access SDSF

1. **Accessing SDSF from ISPF:**

   If you used the ISPF sample panels to enable SDSF, select Option 13 from the ISPF Primary Options Menu, and Option 14 on the z/OS Applications panel. The SDSF Primary Option Menu should be displayed. You can display the panel name by entering PANELID on the COMMAND INPUT line. The panel name should be ISFPCU41.

   If you did not use the ISPF sample panels, select the SDSF option from the ISPF panel you added it to. The SDSF Primary Option Menu, ISFPCU41, should be displayed. If the panel is not displayed, has only options LOG, DA, O, and H, or is garbled, check the modifications to the ISPF panel that the SDSF option was added and correct the problems before continuing.

2. **Accessing SDSF from TSO:**

   From TSO, enter SDSF or ISF. The SDSF Primary Option Menu should be displayed.

8.6.11 Activate functions of JES2 and JES3

To activate specific functions of JES2, see the following books:

1. z/OS Planning for Installation
2. z/OS Introduction and Release Guide
3. z/OS JES2 Initialization and Tuning Guide
4. z/OS JES2 Initialization and Tuning Reference
5. z/OS JES2 Commands

To activate specific functions of JES3, see the following books:

1. z/OS Introduction and Release Guide
2. z/OS JES3 Initialization and Tuning Guide
3. z/OS JES3 Commands

8.7 Step 7: ACCEPT Wave 0, Wave 1 and Wave 2

The following sections contain detailed information about the ACCEPT process for Wave 0, Wave 1 and Wave 2.

8.7.1 Select which z/OS Version 2 Release 2 Wave 0 and Wave 1 FMIDs to install

Select which z/OS Version 2 Release 2 Wave 0 and Wave 1 FMIDs to ACCEPT by choosing the appropriate FMIDSETs that were defined in 6.5.3, "Elements in each Wave, Ripple, and FMIDSET" on page 35. The example shows the FMIDSETs being installed one at a time and must be repeated for each ripple by changing WAVE*n* to WAVE0, WAVE1A, WAVE1AL, WAVE1B, WAVE1C, and so forth. If desired, multiple ripples can be combined, but they must be run in order.

8.7.2 Do an SMP/E ACCEPT CHECK for Wave 0 and Wave 1 FMIDs and Service

Run an ACCEPT CHECK to identify any requisite service and additional holds (for example, HOLDSYS(DOC,EC)) that may need to be resolved before ACCEPT processing. Resolve any holds and RECEIVE and APPLY any requisite service identified by ACCEPT CHECK before the next step.

Figure 74 shows a sample of an ACCEPT CHECK for the functions specified in the SELECT operand, plus all the APPLY'd PTFs that are applicable only to FMIDs listed in the FMIDSET of the FORFMID.

```
//CHECK JOB <job parameters>
//STEP1 EXEC PGM=GIMSMP,REGION=0M,TIME=NOLIMIT
//STEPLIB DD DSN=SYS1.MIGLIB,DISP=SHR,
//          UNIT=SYSALLDA,VOL=SER=v2r2vol1
//         DD DSN=ASM.SASMMOD1,DISP=SHR,
//          UNIT=SYSALLDA,VOL=SER=v2r2vol1
//SMPCSI   DD DSN=zosv2r2.global.csi,DISP=SHR
//SMPCNTL DD *
  SET BOUNDARY(dlibzone)
      OPTIONS(ZOSOPT) .
  UPGRADE.
  ACCEPT CHECK XZREQ
         FORFMID(ZV22Wn)
         SELECT(WAVEn)
         GROUPEXTEND(NOAPARS,NOUSERMODS)
         SOURCEID(ZOSV2R2,RSU*)
         FIXCAT(IBM.ProductInstall-RequiredService)
         BYPASS(HOLDSYSTEM,
         HOLDUSER,HOLDCLASS(UCLREL,ERREL,HIPER)) .
 /*
```

Figure 74. SMP/E ACCEPT CHECK (All FMIDs and Service for z/OS Version 2 Release 2 Wave 0 and Wave 1)

Note: ZOSOPT is the option name for z/OS.

> **Required Updates**
>
> 1. Update the *job parameters*.
>
> 2. Update the v2r2vol1 with the volume serial number for the MIGLIB and SASMMOD1 libraries that are the targets of the Wave 0 installation. This will allow you to access the z/OS V2.2.0 level of the Wave 0 elements using the STEPLIB DD statements.
>
> 3. Replace the CSI name on the SMPCSI DD statement with your CSI name.
>
> 4. Update *dlibzone* to your dlib zone name.
>
> 5. Update WAVE*n* to change *n* to 0, 1A, 1AL, 1B, 1C, 1D, 1E, 1F or 1G. If you choose to perform the DUMMY DELETE option to remove the FMIDs of prior releases, you must ACCEPT Wave 1A and Wave 1C concurrently and then Wave 0 and Wave 1B concurrently because of the prereq requirements. Then continue with the ACCEPT of Wave 1AL, 1D, 1E, 1F, and 1G.
>
> 6. Update ZV22W*n* to change *n* to 0, 1A, 1AL, 1B, 1C, 1D, 1E, 1F or 1G. This FMIDSET includes FMIDs for all elements within the specific ripple.
>
> 7. The XZREQ operand only needs to be specified when cross-zone processing is required.

Note that if you BYPASS(HOLDCLASS(HIPER)), you should run the SMP/E REPORT ERRSYSMODS command to identify missing HIPER HOLDs before putting your system into production.

Any messages other than those listed in 6.7, "Step 6: Review general installation notes" on page 44 or those listed in the following sections need to be investigated.

Notes:

1. Adding the FMIDSET(ZV22W*n*) in the FORFMID operand ensures the PTF service for all FMIDs (new, changed, and unchanged) will get accepted at the same time as the ripple for the new FMIDs is installed.

2. The XZREQ operand only needs to be specified when cross-zone processing is required. If this operand is specified when there is no zone group set up, the following messages will be received and are acceptable:

```
GIM50810W THE XZREQ OPERAND WAS SPECIFIED ON THE ACCEPT
COMMAND BUT SINCE NO ZONES WERE APPLICABLE FOR CROSS-ZONE
REQUISITE CHECKING, THE XZREQ OPERAND WILL BE IGNORED.

GIM20501I ACCEPT PROCESSING IS COMPLETE. THE HIGHEST RETURN
CODE WAS 04.
```

3. While ACCEPTing this wave, there may be PTFs identified through ++ IF REQs which must also be ACCEPTed. It is possible that these PTFs, which must be installed, are for FMIDs which will be deleted in a subsequent ripple. In this case, you may have to add BYPASS(APPLYCHECK) in order to have the IF REQ'd PTFs ACCEPTed since the PTFs' FMIDs are no longer applicable in the target zone.

8.7.2.1 Additional messages expected during Wave 0 ACCEPT CHECK

Successful ACCEPT CHECK processing of Wave 0 returns a condition code of 0 or 4.

8.7.2.1.1 Messages expected during Binder ACCEPT CHECK: During the ACCEPT CHECK of the Binder, the following messages may be received; they are acceptable if they are the only reasons for the condition code 4.

```
GIM61903W LMOD xxxxxxxx WAS NOT DELETED BY SYSMOD
HPM77A0 BECAUSE IT IS NOT IN THE dlib ZONE
```

In the message text, *xxxxxxxx* will be one of the following LMODs. If these are the only cause of the condition code 4, it is acceptable.

```
AKJLKL01  ABLIST   HEWLD    HEWLKED  IEWBFDAT  IEWBIND
IEWBLINK  IEWBXEP  IEWTPORT
```

8.7.2.2 Additional messages expected during Wave 1A ACCEPT CHECK

Successful ACCEPT CHECK processing of Wave 1A returns a condition code of 4.

8.7.2.2.1 Messages expected during BCP ACCEPT CHECK

You might receive the following message, which is acceptable:

```
GIM61903W LMOD xxxxxxxx WAS NOT DELETED BY SYSMOD HBB77A0
BECAUSE xxxxxxxx IS NOT IN THE dlib ZONE
```

In the message text, *xxxxxxx* is one of the modules listed below:

```
AMDPRFMT  ATBINPVT  IEAIPL04  IEANUC11  IEFITJT
IEFW21SD  IWMO2CMD
```

Successful ACCEPT CHECK processing returns a condition code of 4.

8.7.2.2.2 Messages expected during Communications Server IP Services ACCEPT CHECK

During the ACCEPT CHECK of Communications Server IP Services, the following messages are received, which are acceptable:

```
GIM61903W LMOD xxxxxxxx WAS NOT DELETED BY SYSMOD HIP6220
BECAUSE xxxxxxxx IS NOT IN THE dlib ZONE
```

In the message text, *xxxxxxx* will be one of the following modules:

```
EZAADMLR  EZAFTSRV  EZAIMSLN  EZAPPRT   EZAPPSST  GXDEMO1
GXDEMO2   GXDEMO3   GXDEMO4   GXDEMO4A  GXDEMO5   GXDEMO6
```

8.7.2.3 Additional messages expected during Wave 1AL ACCEPT CHECK

Successful ACCEPT CHECK processing of Wave 1AL returns a condition code of 0 or 4.

8.7.2.4 Additional messages expected during Wave 1B ACCEPT CHECK

Successful ACCEPT CHECK processing of Wave 1B returns a condition code of 4.

8.7.2.4.1 Messages expected during DFSMS ACCEPT CHECK

The following messages may be received during DFSMS ACCEPT CHECK processing:

```
GIM61903W LMOD yyyyyyyy WAS NOT DELETED BY HDZ2220 BECAUSE
IT IS NOT IN THE dlib ZONE.
```

In the message, *yyyyyyyy* will be one of the following modules and dlib is the name of the distribution zone.

```
ARCZCUC  ARCZDLC  ARCZPUT  EDGCXTRC  EMODVOL1  IDA019BL
OMODVOL1
```

Successful ACCEPT CHECK processing returns a condition code of 4.

8.7.2.5 Additional messages expected during Wave 1C ACCEPT CHECK

Successful ACCEPT CHECK processing of Wave 1C returns a condition code of 0.

8.7.2.5.1 Message expected during EREP ACCEPT CHECK

You may expect to receive the following message.

```
GIM61903W LMOD IFCILG04 WAS NOT DELETED BY SYSMOD EER3500
BECAUSE IT IS NOT IN THE dlib ZONE
```

8.7.2.5.2 Messages expected during TSO/E ACCEPT CHECK

You might receive the following message, which is acceptable.

```
GIM61903W LMOD xxxxxxx WAS NOT DELETED BY SYSMOD HTE77A0
BECAUSE IT IS NOT IN THE dlib ZONE
```

In the message text, *xxxxxxx* is one of the following aliases for SYSMOD HTE77A0:

```
IGC0006A IKJEFT02 IKJEFT09 IKJEGDRP IRXAPPC TEST
```

Successful ACCEPT CHECK processing returns a condition code of 4.

8.7.2.6 Additional messages expected during Wave 1D ACCEPT CHECK

Successful ACCEPT CHECK processing of Wave 1D returns a condition code of 0 or 4.

8.7.2.7 Additional messages expected during Wave 1E ACCEPT CHECK

Successful ACCEPT CHECK processing of Wave 1E returns a condition code of 0 or 4.

8.7.2.8 Additional messages expected during Wave 1F ACCEPT CHECK

Successful ACCEPT CHECK processing of Wave 1F returns a condition code of 0.

8.7.2.9 Additional messages expected during Wave 1G ACCEPT CHECK

Successful ACCEPT CHECK processing of Wave 1G returns a condition code of 0 or 4. Successful ACCEPT CHECK processing of Wave 1G returns a condition code of 4 when the expected messages documented in the following section are issued.

8.7.2.9.1 Messages expected during Distributed File Service ACCEPT CHECK

During the ACCEPT CHECK of Distributed File Service, the following message might be received. This message is acceptable if it is the only cause of the return code 4.

```
GIM61903W LMOD xxxxxxxx WAS NOT DELETED BY SYSMOD yyyyyy
BECAUSE IT IS NOT IN THE dlib ZONE
```

In the message text, *yyyyyy* is either H0H2410 or HZFS420 and *xxxxxxxx* will be one of the following modules:

For H0H2410　　　IOECMINI, IOEGLUE
For HZFS420　　　IOEZM004, IOEZM006, IOEZM007

8.7.2.9.2 Messages expected during Network File System ACCEPT CHECK

During the ACCEPT CHECK of Network File System, the following messages might be received. This message is acceptable if it is the only cause of the return code 4.

```
GIM61903W LMOD yyyyyyyy WAS NOT DELETED BY SYSMOD HDZ222N
BECAUSE yyyyyyyy IS NOT IN THE xxxx ZONE
```

In the message text, *yyyyyyyy* will be one of the following modules and *xxxx* is the name of the distribution zone.

```
GFSAMAIN  GFSCMAIN  GFSATCPL  GFSATPNL  GFSATPRL  GFSAXOUT
GFSAXPRT  GFSAXSRB  GFSAXTIN  GFSAHFST  GFSALEGT  GFSAXEPL
```

8.7.3 Do an SMP/E ACCEPT for Wave 0 and Wave 1 FMIDs and service

Be certain all the exception conditions have been satisfied before adding a BYPASS(HOLDSYSTEM) during the SMP/E ACCEPT step.

Figure 75 on page 286 shows a sample of an ACCEPT for the functions specified in the SELECT operand, plus all the APPLY'd PTFs that are applicable only to FMIDs listed in the FMIDSET of the FORFMID.

```
//ACCEPT JOB <job parameters>
//STEP1 EXEC PGM=GIMSMP,REGION=0M,TIME=NOLIMIT
//STEPLIB DD DSN=SYS1.MIGLIB,DISP=SHR,
//         UNIT=SYSALLDA,VOL=SER=v2r2vol1
//       DD DSN=ASM.SASMMOD1,DISP=SHR,
//         UNIT=SYSALLDA,VOL=SER=v2r2vol1
//SMPCSI   DD DSN=zosv2r2.global.csi,DISP=SHR
//SMPCNTL DD *
  SET BOUNDARY(dlibzone)
      OPTIONS(ZOSOPT) .
  ACCEPT XZREQ
      FORFMID(ZV22Wn)
      SELECT(WAVEn)
      GROUPEXTEND(NOAPARS,NOUSERMODS)
      SOURCEID(ZOSV2R2,RSU*)
      FIXCAT(IBM.ProductInstall-RequiredService)
      BYPASS(HOLDSYSTEM,HOLDUSER,
      HOLDCLASS(UCLREL,ERREL,HIPER))
      COMPRESS(ALL) .
 /*
```

Figure 75. SMP/E ACCEPT (All FMIDs and Service for z/OS Version 2 Release 2 Wave 0 and wave 1)

Note: ZOSOPT is now the option name for z/OS.

Required Updates

1. Update the *job parameters*.

2. Update the v2r2vol1 with the volume serial number for the MIGLIB and SASMMOD1 libraries that are the targets of the Wave 0 installation. By doing so, you can access the z/OS V2.2.0 level of Wave 0 elements using the STEPLIB DD statements.

3. Replace the CSI name on the SMPCSI DD statement with your CSI name.

4. Update *dlibzone* to your dlib zone name.

5. Update WAVE*n* to change *n* to 0, 1A, 1AL, 1B, 1C, 1D, 1E, 1F, or 1G. If you choose to perform the DUMMY DELETE option to remove the FMIDs of prior releases, you must ACCEPT Wave 1A and Wave 1C concurrently and then Wave 0 and Wave 1B concurrently because of the prereq requirements. Then, continue with the ACCEPT of WAVE 1AL, 1D, 1E, 1F, and 1G.

6. Update ZV22W*n* to change *n* to 0, 1A, 1AL, 1B, 1C, 1D, 1E, 1F, or 1G. This FMIDSET includes FMIDs for all elements within the specific ripple.

7. The XZREQ operand only needs to be specified when cross-zone processing is required.

Note that if you BYPASS(HOLDCLASS(HIPER)), you should run the SMP/E REPORT ERRSYSMODS command to identify missing HIPER HOLDs before putting your system into production.

If you do not BYPASS(HOLDCLASS(HIPER)), the FMIDs may not be installed if any of the HIPER maintenance is unavailable.

Any messages other than in 6.7, "Step 6: Review general installation notes" on page 44 or those listed in the following sections need to be investigated.

Notes:

1. Adding the FMIDSET(ZV22Wn) in the FORFMID operand ensures that the PTF service for all FMIDs (new, changed, unchanged) will get accepted at the same time as the ripple for the new FMIDs is installed.

2. The XZREQ operand only needs to be specified when cross-zone processing is required. If this operand is specified when there is no zone group set up, the following messages will be received, which are acceptable:

```
GIM50810W THE XZREQ OPERAND WAS SPECIFIED ON THE ACCEPT
COMMAND BUT SINCE NO ZONES WERE APPLICABLE FOR CROSS-ZONE
REQUISITE CHECKING, THE XZREQ OPERAND WILL BE IGNORED.

GIM20501I ACCEPT PROCESSING IS COMPLETE. THE HIGHEST RETURN
CODE WAS 04.
```

8.7.3.1 Additional messages expected during Wave 0 ACCEPT

Successful ACCEPT processing returns a condition code of 0 or 4.

8.7.3.1.1 Messages expected During Binder ACCEPT

During the ACCEPT of the Binder, the following messages may be received and are acceptable if they are the only reasons for the condition code 4.

```
GIM61903W LMOD xxxxxxxx WAS NOT DELETED
BY SYSMOD HPM77A0 BECAUSE IT IS NOT IN THE dlib ZONE
```

In the message text, *xxxxxxxx* will be one of the following LMODs. If these are the only cause of the condition code 4, it is acceptable.

```
AKJLKL01  AMBLIST  HEWLD  HEWLKED  IEWBFDAT  IEWBIND
IEWBLINK  IEWBXEP  IEWTPORT
```

8.7.3.2 Additional messages expected during Wave 1A ACCEPT

Successful ACCEPT processing of Wave 1A returns a condition code of 4.

8.7.3.2.1 Messages expected during BCP ACCEPT

You might receive the following messages, which are acceptable.

```
GIM61903W LMOD xxxxxxxx WAS NOT DELETED BY SYSMOD HBB77A0
BECAUSE IT IS NOT IN THE dlib ZONE.
```

In the message, *xxxxxxx* is one of the following modules:

```
AMDPRFMT  ATBINPVT  IEAIPL04  IEANUC11  IEFITJT  IEFW21SD
IWM02CMD
```

Successful ACCEPT processing returns a condition code of 4.

8.7.3.2.2 Messages expected during Communications Server IP Services ACCEPT

During the ACCEPT of Communications Server IP Services, the following messages are received and are acceptable:

```
GIM61903W LMOD xxxxxxxx WAS NOT DELETED BY SYSMOD HIP6220
BECAUSE IT IS NOT IN THE dlib ZONE.
```

In the message, *xxxxxxx* will be one of the following modules:

```
EZAADMLR  EZAFTSRV  EZAIMSLN  EZAPPRT   EZAPPSST  GXDEM01
GXDEM02   GXDEM03   GXDEM04   GXDEM04A  GXDEM05   GXDEM06
```

The following MOD entries in the Communications Server IP Services FMID are superseded by MOD entries in feature FMIDs. Therefore, these MOD entries might be flagged as "NOT SEL" during the ACCEPT.

- MAC EZACDIRB
- MAC EZAODIRB
- MOD EZACXADE
- MOD EZACXAEN
- MOD EZACX3DE
- MOD EZACX3EN
- MOD EZACX3FR
- MOD EZACX3HD
- MOD EZACX3HE
- MOD EZACX3IK
- MOD EZACX3IV
- MOD EZAPX3CC
- MOD EZBISXGM
- MOD EZBISXES

8.7.3.3 Additional messages expected during Wave 1AL ACCEPT

Successful ACCEPT processing of Wave 1AL returns a condition code of 0 or 4.

8.7.3.4 Additional messages expected during Wave 1B ACCEPT

Successful ACCEPT processing of Wave 1B returns a condition code of 4.

8.7.3.4.1 Messages expected during DFSMS ACCEPT

The following messages may be received during ACCEPT processing of DFSMS.

```
GIM61903W LMOD yyyyyyyy WAS NOT DELETED BY HDZ2220 BECAUSE
IT IS NOT IN THE dlib ZONE.
```

In the message, *yyyyyyyy* will be one of the following modules and *xxxx* is the name of the distribution zone.

```
ARCZCUC  ARCZDLC  ARCZPUT  EDGCXTRC  EMODVOL1  IDA019BL
OMODVOL1
```

Successful ACCEPT processing returns a condition code of 4.

8.7.3.5 Additional messages expected during Wave 1C ACCEPT

Successful ACCEPT processing of Wave 1C returns a condition code of 4.

8.7.3.5.1 Message expected during EREP ACCEPT

```
GIM61903W LMOD IFCILG04 WAS NOT DELETED BY SYSMOD EER3500
BECAUSE IT IS NOT IN THE dlib ZONE
```

8.7.3.5.2 Messages expected during TSO/E ACCEPT

You might receive the following message, which is acceptable.

```
GIM61903W LMOD xxxxxxx WAS NOT DELETED BY SYSMOD HTE77A0
BECAUSE IT IS NOT IN THE dlib ZONE
```

In the message text, *xxxxxxx* is one of the following LMODs for SYSMOD HTE77A0:

```
IGC0006A IKJEFT02 IKJEFT09 IKJEGDRP IRXAPPC TEST
```

Successful ACCEPT processing returns a condition code of 4.

8.7.3.6 Additional messages expected during Wave 1D ACCEPT

Successful ACCEPT processing of Wave 1D returns a condition code of 0 or 4.

8.7.3.6.1 Messages expected during OCSF Security Level 3 ACCEPT

During the ACCEPT of OCSF Security Level 3, the following messages might be received. These messages are acceptable if they are the only cause of return code 4.

```
GIM61903W LMOD CDSNM036 WAS NOT DELETED BY SYSMOD
JCRY741 BECAUSE CDSNM036 IS NOT IN THE dlib ZONE
```

```
GIM61903W LMOD CDSNM037 WAS NOT DELETED BY SYSMOD
JCRY741 BECAUSE CDSNM037 IS NOT IN THE dlib ZONE
```

8.7.3.7 Additional messages expected during Wave 1E ACCEPT

Successful ACCEPT processing of Wave 1E returns a condition code of 0.

8.7.3.8 Additional messages expected during Wave 1F ACCEPT

Successful ACCEPT processing of Wave 1F returns a condition code of 0 or 4.

8.7.3.8.1 Messages expected during DFSORT ACCEPT

IEW2454W messages can be ignored if they are issued for symbols starting with "CEE," such as: CEEINT, CEESTART, CEEBETBL, CEETREC, CEESETL, CEEQRYL, CEEARLU, CEESTXF, and CEESCOL. (Other unlisted symbols starting with "CEE" can also be ignored.) These are typical messages from the Binder during steps that store modules into distribution libraries when you ACCEPT DFSORT FMIDs and PTFs at the same time. Any other messages should be investigated.

8.7.3.9 Additional messages expected during Wave 1G ACCEPT

Successful ACCEPT processing of Wave 1G returns a condition code of 0 or 4. Successful ACCEPT processing of Wave 1G returns a condition code of 4 when the expected messages documented in the following section are issued.

8.7.3.9.1 Messages expected during Distributed File Service ACCEPT

During the ACCEPT of Distributed File Service, the following messages might be received. These messages are acceptable if they are the only cause of the return code 4.

```
GIM61903W LMOD xxxxxxxx WAS NOT DELETED BY SYSMOD yyyyyyy
BECAUSE IT IS NOT IN THE xxxx ZONE
```

In the message text, *yyyyyyy* is either H0H2410 or HZFS420, *xxxxxxxx* is one of the following modules, and *xxxx* is the name of the distribution zone.

For H0H2410   IOECMINI, IOEGLUE
For HZFS420   IOEZM004, IOEZM006, IOEZM007

8.7.3.9.2 Messages expected during Network File System ACCEPT

During the ACCEPT of Network File System, the following message might be received. This message is acceptable if it is the only cause of the return code 4.

```
GIM61903W LMOD yyyyyyyy WAS NOT DELETED BY SYSMOD HDZ222N
BECAUSE yyyyyyyy IS NOT IN THE xxxx ZONE
```

In the message text, *yyyyyyyy* will be one of the following modules and *xxxx* is the name of the distribution zone.

```
GFSAMAIN  GFSCMAIN  GFSATCPL  GFSATPNL  GFSATPRL  GFSAXOUT
GFSAXPRT  GFSAXSRB  GFSAXTIN  GFSAHFST  GFSALEGT  GFSAXEPL
```

8.7.4 Do an SMP/E ACCEPT CHECK for Wave 2

Run an ACCEPT CHECK to identify any requisite service, and additional holds (for example, HOLDSYS(DOC)), that may need to be resolved before ACCEPT processing. Resolve any holds and receive any requisite service identified by the ACCEPT CHECK before the next step.

Figure 76 on page 291 shows a sample ACCEPT CHECK for the functions specified in the SELECT operand, plus APPLYed PTFs that are applicable only to the FMIDs listed in the FORFMID.

```
//CHECK JOB <job parameters>
//STEP1 EXEC PGM=GIMSMP,REGION=0M,TIME=NOLIMIT
//STEPLIB DD DSN=SYS1.MIGLIB,DISP=SHR,
//          UNIT=SYSALLDA,VOL=SER=v2r2vol1
//        DD DSN=ASM.SASMMOD1,DISP=SHR,
//          UNIT=SYSALLDA,VOL=SER=v2r2vol1
//SMPCSI DD DSN=zosv2r2.global.csi,DISP=SHR
//SMPCNTL DD *
  SET BOUNDARY(dlibzone)
      OPTIONS(ZOSOPT) .
  UPGRADE.
  ACCEPT CHECK  XZREQ
        FORFMID(HJE77A0,HQX77A0,HJS77A0
               JJE77AJ,JQX77AJ) /* If not ordered, remove */
        SELECT(HJE77A0,HQX77A0,HJS77A0
               JJE77AJ,JQX77AJ) /* If not ordered, remove */
  SOURCEID(ZOSV2R2,RSU*)
  FIXCAT(IBM.ProductInstall-RequiredService)
  GROUPEXTEND(NOAPARS,NOUSERMODS)
  BYPASS(HOLDSYSTEM,HOLDUSER,
  HOLDCLASS(ERREL,UCLREL,HIPER)) .
 /*
```

Figure 76. SMP/E ACCEPT CHECK for Wave 2 (All FMIDs and All Service)

Note: ZOSOPT is now the option name for z/OS.

Required Updates

1. Update the *job parameters*.

2. Update the v2r2vol1 with the volume serial number for the MIGLIB and SASMMOD1 libraries that are the targets of the Wave 0 installation. By doing so, you can access the z/OS V2.2.0 level of Wave 0 elements using the STEPLIB DD statements.

3. Replace the CSI name on the SMPCSI DD statement with your CSI name.

4. Update *dlibzone* to your dlib zone name.

5. The XZREQ operand only needs to be specified when cross-zone processing is required.

6. If you plan to use JES2 and SDSF, and did not order JES3, remove the JES3 FMID HJS77A0 from the FORFMID and SELECT operands in the sample job before running the job.

Note that if you BYPASS(HOLDCLASS(HIPER)), you should run the SMP/E REPORT ERRSYSMODS command to identify missing HIPER HOLDs before putting your system into production.

If you do not BYPASS(HOLDCLASS(HIPER)), the FMIDs may not be installed if any of the HIPER maintenance is unavailable.

Any messages other than those listed in 6.7, "Step 6: Review general installation notes" on page 44 or those listed below should be investigated.

Notes:

1. The XZREQ operand only needs to be specified when cross-zone processing is required. If this operand is specified when there is no zone group set up, the following messages will be received, which are acceptable:

```
GIM50810W THE XZREQ OPERAND WAS SPECIFIED ON THE ACCEPT CHECK
COMMAND BUT SINCE NO ZONES WERE APPLICABLE FOR CROSS-ZONE
REQUISITE CHECKING, THE XZREQ OPERAND WILL BE IGNORED.

GIM20501I ACCEPT PROCESSING IS COMPLETE. THE HIGHEST RETURN
CODE WAS 04.
```

Successful ACCEPT CHECK processing for JES2 and SDSF returns a condition code of 0.

8.7.4.1 Messages expected during ACCEPT CHECK Processing for JES3: During the installation of the JES3 component you can expect to receive the following messages:

```
GIM61903W LMOD IATUX86 WAS NOT DELETED BY SYSMOD HJS77A0
BECAUSE IT IS NOT IN THE dlib ZONE.

GIM61903W LMOD IATIMDL WAS NOT DELETED BY SYSMOD HJS77A0
BECAUSE IT IS NOT IN THE dlib ZONE.
```

A condition code of 4 is expected during ACCEPT CHECK processing.

8.7.5 Do an SMP/E ACCEPT for Wave 2

Do not specify ASSEM on the ACCEPT command for JES2, JES3, and SDSF. The specification of ASSEM on the ACCEPT command can cause serviceability problems.

Figure 77 on page 293 shows a sample ACCEPT for the functions specified in the SELECT operand, plus APPLY'd PTFs that are applicable only to the FMIDs listed in the FORFMID.

```
//ACCEPT JOB <job parameters>
//STEP1 EXEC PGM=GIMSMP,REGION=0M,TIME=NOLIMIT
//STEPLIB DD DSN=SYS1.MIGLIB,DISP=SHR,
//         UNIT=SYSALLDA,VOL=SER=v2r2vol1
//       DD DSN=ASM.SASMMOD1,DISP=SHR,
//         UNIT=SYSALLDA,VOL=SER=v2r2vol1
//SMPCSI DD DSN=zosv2r2.global.csi,DISP=SHR
//SMPCNTL DD *
  SET BOUNDARY(dlibzone)
      OPTIONS(ZOSOPT) .
  ACCEPT  XZREQ
       FORFMID(HJE77A0,HQX77A0,HJS77A0
               JJE77AJ,JQX77AJ) /* If not ordered, remove */
       SELECT(HJE77A0,HQX77A0,HJS77A0
               JJE77AJ,JQX77AJ) /* If not ordered, remove */
  SOURCEID(ZOSV2R2,RSU*)
  FIXCAT(IBM.ProductInstall-RequiredService)
  BYPASS(HOLDUSER,
  HOLDCLASS(ERREL,UCLREL,HIPER))
  GROUPEXTEND(NOAPARS,NOUSERMODS)
  COMPRESS(ALL) .
 /*
```

Figure 77. SMP/E ACCEPT for Wave 2 (FMIDs and All Service)

Note: ZOSOPT is now the option name for z/OS.

> **Required Updates**
>
> 1. Update the *job parameters*.
>
> 2. Update the v2r2vol1 with the volume serial number for the MIGLIB and SASMMOD1 libraries that are the targets of the Wave 0 installation. By doing so, you can access the z/OS V2.2.0 level of Wave 0 elements using the STEPLIB DD statements.
>
> 3. Replace the CSI name on the SMPCSI DD statement with your CSI name.
>
> 4. Update *dlibzone* to your dlib zone name.
>
> 5. The XZREQ operand only needs to be specified when cross-zone processing is required.
>
> 6. If you plan to use JES2 and SDSF, and did not order JES3, remove the JES3 FMID HJS77A0 from the FORFMID and SELECT operands in the sample job before running the job.

Note that if you BYPASS(HOLDCLASS(HIPER)), you should run the SMP/E REPORT ERRSYSMODS command to identify missing HIPER HOLDs before putting your system into production.

If you do not BYPASS(HOLDCLASS(HIPER)), the FMIDs may not be installed if any of the HIPER maintenance is unavailable.

Any messages other than those listed in 6.7, "Step 6: Review general installation notes" on page 44 or those listed below should be investigated.

Notes:

1. The XZREQ operand only needs to be specified when cross-zone processing is required. If this operand is specified when there is no zone group set up, the following messages will be received, which are acceptable:

```
GIM50810W THE XZREQ OPERAND WAS SPECIFIED ON THE ACCEPT COMMAND
BUT SINCE NO ZONES WERE APPLICABLE FOR CROSS-ZONE REQUISITE
CHECKING, THE XZREQ OPERAND WILL BE IGNORED.

GIM20501I ACCEPT PROCESSING IS COMPLETE. THE HIGHEST RETURN
CODE WAS 04.
```

Successful ACCEPT processing of JES2 and SDSF returns a condition code of 0.

8.7.5.1 Messages expected during ACCEPT Processing for JES3: During the installation of the JES3 component you can expect to receive the following messages:

```
GIM61903W LMOD IATUX86 WAS NOT DELETED BY SYSMOD HJS77A0
BECAUSE IT IS NOT IN THE dlib ZONE.

GIM61903W LMOD IATIMDL WAS NOT DELETED BY SYSMOD HJS77A0
BECAUSE IT IS NOT IN THE dlib ZONE.
```

A condition code of 4 is expected during ACCEPT processing for JES3.

8.8 Step 8: Clean up after Wave 1 and Wave 2

To do an optional global zone cleanup, see Appendix D, "Do global zone cleanup for deleted FMIDs" on page 383.

8.8.1 Do global zone cleanup for previous versions of JES2, JES3, and SDSF

Because each version of JES2, JES3, and SDSF are complete replacements for previous versions of JES2, JES3, and SDSF, you might want to delete the old FMIDs so future (unneeded) service will not be received for them, unless you plan to share the SMPPTS between z/OS V2.2.0 and systems having other levels of JES2, JES3, and SDSF.

The FMIDs listed as deleted in the output of the ACCEPT of the base FMIDs (HJE77A0, HJS77A0, and HQX77A0) can be deleted from the FMID list in the global zone.

8.8.1.1 Do global zone cleanup for JES2: Sample job HASIGCLN is provided by the JES2 element. You can use HASIGCLN to delete old JES2 FMIDs, the associated SYSMODS of these JES2 FMIDs, and HOLDDATA from the SMP/E global zone. To perform the deletion, copy member HASIGCLN from JES2 library SHASSAMP, modify it for your environment, and run the job.

8.8.1.2 Do global zone cleanup for JES3: Sample job IATIGCLN is provided by the JES3 element. You can use IATIGCLN to delete old JES3 FMIDs, the associated SYSMODS of these JES3 FMIDs, and HOLDDATA from the SMP/E global zone. To perform the deletion, copy member IATIGCLN from JES3 library SIATSAMP, modify it for your environment, and run the job.

8.8.1.3 Do global zone cleanup for SDSF: Sample job ISFIGCLN is provided by the SDSF element. You can use ISFIGCLN to delete old SDSF FMIDs, the associated SYSMODS of these SDSF FMIDs, and HOLDDATA from the SMP/E global zone. To perform the deletion, copy member ISFIGCLN from SDSF library SISFJCL, modify it for your environment, and run the job. This sample job completes with a return code of 4.

Refer to *z/OS V2R2 Migration* for a complete list of clean up activities including:

- Delete obsolete libraries, DDDEFs and Zones
- Run SMP/E Report Crosszone

Appendix A. Component IDs for Elements in z/OS V2.2.0

This appendix lists each z/OS Version 2 Release 2 Component ID along with its corresponding FMIDs. The table is listed by Component ID in alphanumeric order.

Figure 78 (Page 1 of 12). Component IDs			
FMID	**COMP ID**	**Component Name**	**RETAIN Release**
HOPI7A0 JOPI7AJ	5647A01OP	InfoPrint Server (Print Interface and IP PrintWay extended mode)	7A0 7AJ
HFNT11J HFNT110	5650FNT00	z/OS Font Collection	11J 110
HBKQ400	5655A2000	Bookserver Library Server	400
H24P111 J24P112	5655A4501	C/C++ Base Performance Analyzer	111 112
HIP6220 JIP622K JIP622X	5655HAL00	Communications Server for z/OS IP Services (TCP/IP /TCPIP) Communications Server Security Level 3 (TCP/IP / TCPIP) Communications Server X11R4 XWindows (TCP/IP / TCPIP)	220 22K 22X
HHAP90P	5655I3510	WebSphere® Application Server z/OS IHS Z APACHE	90P
HKCZ100	5655K2000	Knowledge Center for z/OS	100
HOS2220	5655M2301	OpenSSH for z/OS	220
HSMA22A	5655S28CA	z/OSMF Configuration Assistant	22A
HSMA220	5655S28RF	z/OSMF RESTFILES	220
HSMA220	5655S28RJ	z/OSMF RESTJobs (Representational State Transfer)	220
HSMA220	5655S28SM	z/OSMF Core	220
HSMA220	5655S28TS	z/OSMF TSO REST Services	220
HSMA221	5655S2801	z/OSMF ISPF	221
HSMA222	5655S2802	z/OSMF RMF	222
HSMA223	5655S2803	z/OSMF WLM Administration	223
HSMA224	5655S2804	z/OSMF Software Deployment	224
HSMA225	5655S2805	z/OSMF Incident Log	225
HSMA226	5655S2806	z/OSMF Capacity Provisioning	226
HSMA227	5655S2807	z/OSMF Workflow	227
HSMA228	5655S28CU	z/OSMF Plug-in	228
HSMA229	5655S2809	z/OSMF Plug-in	229
HSMA22B	5655S28ZE	z/OSMF Plug-in	22B

FMID	COMP ID	Component Name	RETAIN Release
HIF7P02 JIF7P11 JIF7P14 JIF7P15 JIF7P16	565504201	ISPF for z/OS - DM and C/S (Interactive System Productivity Facility)	P02 P11 P14 P15 P16
HIF7P02 JIF7P11 JIF7P14 JIF7P15 JIF7P16	565504202	ISPF for z/OS - PDF and SCLM (Interactive System Productivity Facility)	P02 P11 P14 P15 P16
HRSL420 JRSL42J JRSL421	565506803	Tivoli Directory Server for z/OS (TDS for z/OS / LDAP)	420 42J 421
HCRY740 JCRY741	565506804	Integrated Security Services OCSF Integrated Security Services OCSF Security Level 3	740 741
HCPT420 JCPT42J JCPT421	565506805	System SSL	420 42J 421
HSWK420 JSWK42J JSWK421	565506807	Integrated Security Services Network Authentication Service	420 42J 421
HRO7740	565506809	Integrated Security Services OCEP Enhanced Plugin	740
H0GI400	565510400	OSA/SF (Open Systems Adapter / Support Facility)	400
HLB77A0 JLB77AJ	56551210A	XL C/C++ Compiler	7A0 7AJ
HTV77A0 JTV77AJ	56551210D	Runtime Library Extensions	7A0 7AJ
EER3500	565826001	EREP	500
EDU1H01	565899201	ICKDSF	H01
FDU1H07 FDU1H08 FDU1H09	565899202	ICKDSF ISMF Panels	H07 H08 H09
HTE77A0	5665IXX00	TSO/E REXX SAA (Time Sharing Option/Extensions)	7A0
HRM77A0 JRM77AJ	566527404	RMF (Resource Measurement Facility)	7A0 7AJ
HTE77A0 JTE77AC JTE77AG JTE77AJ	566528501	TSO/E Edit (Time Sharing Option/Extensions)	7A0 7AC 7AG 7AJ

Figure 78 (Page 2 of 12). Component IDs

Figure 78 (Page 3 of 12). Component IDs

FMID	COMP ID	Component Name	RETAIN Release
HTE77A0 JTE77AC JTE77AG JTE77AJ	566528502	TSO/E Scheduler (Time Sharing Option/Extensions)	7A0 7AC 7AG 7AJ
HTE77A0 JTE77AC JTE77AG JTE77AJ	566528503	TSO/E Test (Time Sharing Option/Extensions)	7A0 7AC 7AG 7AJ
HTE77A0 JTE77AC JTE77AG JTE77AJ	566528504	TSO/E XMIT - IDTF (Time Sharing Option/Extensions - Transmit and Receive - Interactive Data Transmission Facility)	7A0 7AC 7AG 7AJ
HTE77A0 JTE77AC JTE77AG JTE77AJ	566528505	TSO/E Session Manager (Time Sharing Option/Extensions)	7A0 7AC 7AG 7AJ
JTE77AC JTE77AE JTE77AG JTE77AJ	566528506	TSO/E ICF (Time Sharing Option/Extensions - Information Center Facility)	7AC 7AE 7AG 7AJ
HTE77A0 JTE77AC JTE77AG JTE77AJ	566528507	TSO/E ECF - MVSSERV (Time Sharing Option/Extensions - Enhanced Connectivity Facility)	7A0 7AC 7AG 7AJ
HTE77A0 JTE77AC JTE77AG JTE77AJ	566528508	TSO/E REXX (Time Sharing Option/Extensions)	7A0 7AC 7AG 7AJ
HIO1104	566529101	Input/Output Configuration Program (IOCP common)	104
HIO1104	566529102	Input/Output Configuration Program (IOCP MVS Control External Writer)	104
HIO1104	566529103	Input/Output Configuration Program (IOCP) Standalone	104
HBD6602 JBD6201 JBD6202	566530201	Bulk Data Transfer (BDT) including File-to-File and SNA NJE	602 201 202
HFX1112	566531101	3270 PC File Transfer Program	112
HQX77A0 JQX77AJ	566548801	SDSF (System Display and Search Facility)	7A0 7AJ

FMID	COMP ID	Component Name	RETAIN Release
Figure 78 (Page 4 of 12). Component IDs			
HQX77A0 JQX77AJ	566548802	SDSF z/OSMF Plugin	7A0 7AJ
HGD3201	566881201	GDDM-PGF (Graphical Data Display Manager - Presentation Graphics Feature)	201
HMP1J00 JMP1J11	566894901	SMP/E (System Modification Program Extended)	J00 J11
HBCNC00 HBCND0B JBCND1B	566894902	SMP/E - Planning/Migration Assistant (PMA) Including Software Information Base for Planning SMP/E - Planning/Migration Assistant (PMA) Including Software Information Base for Planning	C00 D0B D1B
HSWF100	568500101	ESCON Director Support	100
HCR77B0	568505101	ICSF (Integrated Cryptographic Service Facility) - HCR77B0 Cryptographic Support for z/OS V1.13 through z/OS V2.1	7B0
HLE77A0 JLE77AJ	568819801	Language Environment (LE) CEL / Common Execution Library	7A0 7AJ
HLE77A0 JLE77AJ	568819802	Language Environment (LE) COBOL Library	7A0 7AJ
HLE77A0 JLE77AJ	568819803	Language Environment (LE) PL/I Library	7A0 7AJ
HLE77A0 JLE77AJ	568819804	Language Environment (LE) Fortran Library	7A0 7AJ
HLE77A0 JLE77AJ	568819805	Language Environment (LE) C/C++ Run Time Library (RTL)	7A0 7AJ
HLE77A0 JLE77AJ	568819806	Language Environment (LE) VA PL/I Library	7A0 7AJ
HLE77A0 JLE77AJ	568819807	Language Environment (LE) ANSI C/C++ Class Library	7A0 7AJ
HLE77A0 JLE77AJ	568819812	Language Environment (LE) Enterprise COBOL Library	7A0 7AJ
HDZ2220	5695DF1VR	DFSMS-CICSVR Server Support	220
HDZ2220	5695DF100	DFSMS Installation	220
HDZ2220	5695DF101	DFSMS SMS (Storage Management Subsystem)	220
HDZ2220	5695DF102	DFSMS BAM (Base Access Methods)	220
HDZ2220	5695DF103	DFSMS AMS (Access Method Services)	220
HDZ2220	5695DF104	DFSMS Common Services	220

FMID	COMP ID	Component Name	RETAIN Release
HDZ2220	5695DF105	DFSMS ICF Catalog and CVOL	220
HDZ2220	5695DF106	DFSMS VSAM/Media Manager	220
HDZ2220	5695DF107	DFSMS OCEOV/DADSM/CVAF (Data Management Support)	220
HDZ2220	5695DF109	DFSMS Checkpoint Restart	220
HDZ2220	5695DF110	DFSMS Device Support - BTLS/Tape	220
HDZ2220	5695DF111	DFSMS Device Support - DASD	220
HDZ2220	5695DF113	DFSMS Device Support Services	220
HDZ2220	5695DF114	DFSMS Utilities	220
HDZ2220	5695DF115	DFSMS PDSE (Partitioned Datas Set Extended) and FAMS	220
HDZ2220	5695DF116	DFSMS VMA (Volume Mount Analyzer)	220
HDZ2220	5695DF117	DFSMS SDM (System Data Mover)	220
HDZ2220	5695DF118	DFSMS Compression Services	220
HDZ2220	5695DF119	DFSMS Common Function/Reuse	220
HDZ2220	5695DF120	DFSMS Distributed File Manager (DFM)	220
HDZ222N JDZ222J	5695DF121	DFSMS Network File System (NFS) Server	22N 22J
HDZ2220	5695DF122	DFSMS VSAM Record Level Sharing (RLS)	220
HDZ2220 JDZ222K	5695DF123	DFSMS Naviquest	220 22K
HDZ2220	5695DF126	DFSMS Media Manager	220
HDZ2220	5695DF133	DFSMS Device Management Services	220
HDZ2220	5695DF140	DFSMS CDRA (Character Data Representation Architecture)	220
HDZ2220 JDZ222K	5695DF161	DFSMS ISMF and HCD (Interactive Storage Management Facility)	220 22K
HDZ2220 JDZ222K	5695DF170	DFSMShsm (Hierarchical Storage Management)	220 22K
HDZ2220 JDZ222K	5695DF175	DFSMSdss (Data Set Services)	220 22K
HDZ2220	5695DF180	DFSMSoam (Object Access Method)	220
HDZ2220	5695DF185	DFSMS Hierarchical File System (HFS)	220
HDZ2220 JDZ222K	5695DF186	DFSMSrmm (Removable Media Manager)	220 22K
HPM77A0	5695PMB01	Program Management (Binder)	7A0

Figure 78 (Page 5 of 12). Component IDs

FMID	COMP ID	Component Name	RETAIN Release
HOT77A0 JOT77AJ	5695SCPE1	z/OS UNIX System Services (USS) Parallel Environment	7A0 7AJ
HBB77A0 JBB77AC JBB77AJ	5695SCPX1	z/OS UNIX System Services (USS) Kernel and File System	7A0 7AC 7AJ
HOT77A0 JOT77AC JOT77AJ	5695SCPX2	z/OS UNIX System Services (USS) Shell and Utilities	7A0 7AC 7AJ
HOT77A0	5695SCPX3	z/OS UNIX System Services (USS) Debugger (DBX)	7A0
HOT77A0 JOT77AJ JOT77AC	5695SCPX4	z/OS UNIX System Services (USS) Application Services	7A0 7AJ 7AC
HOT77A0	5695SCPX7	z/OS UNIX System Services (USS) Compression Library	7A0
HCS77A0 JCS77AJ	5695SC1XL	HCD (Hardware Configuration Definition)	7A0 7AJ
HWJ9143 JWJ9144	569501403	Alternate Library for REXX	143 144
HNET7A0 JNET7AJ	569504002	PSF NetSpool	7A0 7AJ
HMOS705 JMOS7J5	569504004	PrintWay basic mode	705 7J5
HFST101	569504402	FFST (First Failure Support Technology™)	101
HBKM300 JBKM310 JBKM311 JBKM312 JBKM313 JBKM314 JBKM315 JBKM316 JBKM317 JBKM318	569504600	BookManager READ for z/OS	300 310 311 312 313 314 315 316 317 318
HVT6220	569511701	Communications Server for z/OS SNA Services (VTAM)	220
HGD3200	569516701	GDDM (Graphical Data Display Manager)	200

Figure 78 (Page 6 of 12). Component IDs

Figure 78 (Page 7 of 12). Component IDs

FMID	COMP ID	Component Name	RETAIN Release
JGD3219	569516702	GDDM National Language Support (Graphical Data Display Manager NLS)	219
JGD3220			220
JGD3221			221
JGD3222			222
JGD3223			223
JGD3224			224
JGD3225			225
JGD3226			226
JGD3227			227
JGD3228			228
JGD3229			229
JGD3230			230
JGD3231			231
JGD3232			232
HZFS420	5696EFS00	Distributed File Service (ZFS)	420
JZFS42J			42J
HMQ4160	569623400	High Level Assembler (HLASM)	160
JMQ416A	569623401	High Level Assembler (HLASM) Toolkit	16A
H0H2410	569694200	Distributed File Service / Server Message Block (DFS/SMB)	410
J0H241J			41J
HCM1F10	569711900	Hardware Configuration Manager (HCM)	F10
HSM1M00	5740SM105	DFSORT	M00
HBB77A0	5752BB1CS	Dynamic Device Reconfiguration (DDR)	7A0
JBB77AJ			7AJ
HBB77A0	5752BB1CT	Machine Check Handler (MCH)	7A0
JBB77AJ			7AJ
HBB77A0	5752BB131	Event Notification Facility (ENF) Dynamic output	7A0
JBB77AJ			7AJ
HBB77A0	5752BDPUT	z/OS Service	7A0
HBB77A0	5752BDTST	z/OS Preventive Service	7A0
HBB77A0	5752OS390	z/OS General	7A0
HBB77A0	5752SCACB	Advanced Program-to-Program Communication (APPC)	7A0
JBB77AJ			7AJ
HBB77A0	5752SCACR	ACR (Alternate CPU Recovery)	7A0
JBB77AJ			7AJ
HBB77A0	5752SCASA	z/OS Reuse	7A0
JBB77AJ			7AJ
HBB77A0	5752SCASE	Address Space Services	7A0

FMID	COMP ID	Component Name	RETAIN Release
Figure 78 (Page 8 of 12). Component IDs			
HBB77A0	5752SCASR	Symptom Record (SYMREC) services	7A0
HBB77A0 JBB77AJ	5752SCAVM	Availability Manager	7A0 7AJ
HBB77A0	5752SCAXR	System REXX	7A0
HBB77A0	5752SCBBR	Component Broker	7A0
HPV77A0	5752SCCAP	Capacity Provisioning	7A0
HSD7780	5752SCCCR	Metal C Runtime Library	780
HBB77A0	5752SCCEA	Common Event Adapter	7A0
HPG77A0	5752SCCIM	CIM (Common Information Model)	7A0
HPG77A0	5752SCCM2	CIM ESERVER OS Management (Common Information Model)	7A0
HPG77A0	5752SCCM3	CIM Client for Java (Common Information Model)	7A0
HPG77A0	5752SCCM4	CIM Job Cluster Management (Common Information Model)	7A0
HPG77A0	5752SCCM5	CIM Problem Determination (Common Information Model)	7A0
HPG77A0	5752SCCM6	CIM Workload Manager (Common Information Model)	7A0
HPG77A0	5752SCCM7	CIM SMI-S	7A0
HPG77A0	5752SCCM8	CIM Performance Monitoring (Common Information Model)	7A0
HBB77A0 JBB77AJ	5752SCCSR	Callable Service Requests	7A0 7AJ
HBB77A0 JBB77AJ	5752SCCTX	Context Services	7A0 7AJ
HBB77A0 JBB77AJ	5752SCDIV	Data-in-virtual (DIV)	7A0 7AJ
HBB77A0 JBB77AJ	5752SCDMP	SNAP/ABDUMP SDUMP	7A0 7AJ
HBB77A0 JBB77AJ	5752SCEZA	zAware Bulk Load Client	7A0 7AJ
HBB77A0 JBB77AJ	5752SCGTZ	BCP Generic Tracker	7A0 7AJ
HBB77A0	5752SCHCW	Device Driver Manager	7A0
HBB77A0 JBB77AJ	5752SCHIS	z/OS Hardware Instrumentation	7A0 7AJ
HBB77A0 JBB77AJ	5752SCHWI	HWIBCPII - BCPii (Base Control Program Internal Interface)	7A0 7AJ
HBB77A0	5752SCHWT	WEB Enablement toolkit	7A0

FMID	COMP ID	Component Name	RETAIN Release
HBB77A0 JBB77AJ	5752SCHZS	Health Checker	7A0 7AJ
HBB77A0	5752SCIQP	z/OS PCIe Services	7A0
HBB77A0 JBB77AJ	5752SCIXL	Cross System Extended Services (XES)	7A0 7AJ
HBB77A0	5752SCJSC	JES Common Coupling	7A0
HBB77A0	5752SCLDR	Program Loader	7A0
HBB77A0 JBB77AJ	5752SCLOG	System logger	7A0 7AJ
HBB77A0 JBB77AJ	5752SCLWT	Loadwait/Restart	7A0 7AJ
HBB77A0 JBB77AJ	5752SCMCA	Guest Platform Management Provider	7A0 7AJ
HBB77A0 JBB77AJ	5752SCMMS	MVS message service (MMS)	7A0 7AJ
HBB77A0 JBB77AJ	5752SCOBR	Outboard recording (OBR) of SYS1.LOGREC error recording	7A0 7AJ
HBB77A0 JBB77AJ	5752SCPFA	Predictive Failure Analysis (PFA)	7A0 7AJ
HBB77A0 JBB77AJ	5752SCRRS	Resource Recovery Services (RRS)	7A0 7AJ
HBB77A0	5752SCRTD	Runtime Diagnostics (RTD)	7A0
HBB77A0 JBB77AJ	5752SCRTM	Recovery Termination Manager (RTM)	7A0 7AJ
HBB77A0 JBB77AJ	5752SCSDS	Global Resource Serialization (GRS)	7A0 7AJ
HBB77A0 JBB77AJ	5752SCSLP	SLIP/PER	7A0 7AJ
HBB77A0 JBB77AJ	5752SCSPI	Service processor interface (SPI)	7A0 7AJ
HBB77A0 JBB77AJ	5752SCTRC	Component Trace	7A0 7AJ
HBB77A0 JBB77AJ	5752SCTTR	Transaction Trace	7A0 7AJ
HUN77A0 JUN77AJ	5752SCUNI	Support for Unicode	7A0 7AJ

Figure 78 (Page 9 of 12). Component IDs

FMID	COMP ID	Component Name	RETAIN Release
Figure 78 (Page 10 of 12). Component IDs			
HBB77A0	5752SCURP	Usage Reporting Program	7A0
HBB77A0 JBB77AJ	5752SCVTM	Virtual Terminal Manager	7A0 7AJ
HBB77A0 JBB77AJ	5752SCWLM	Workload Manager (WLM)	7A0 7AJ
HBB77A0 JBB77AJ	5752SCXCF	Cross System Coupling Facility (XCF)	7A0 7AJ
HBB77A0	5752SCXML	XML System Services	7A0
HBB77A0 JBB77AJ	5752SCXMS	Cross Memory Services (XMS)	7A0 7AJ
HJS77A0	5752SC1BA	JES3 (Job Entry Subsystem 3)	7A0
HBB77A0	5752SC1BC	BCP Batch Container	7A0
HJE77A0 JJE77AJ	5752SC1BH	JES2 (Job Entry Subsystem 2)	7A0 7AJ
HBB77A0	5752SC1BL	Multi Leaving Workstation (MLW)	7A0
HBB77A0	5752SC1BN	System Security Support (SAF)	7A0
HBB77A0 JBB77AJ	5752SC1B2	External Writer (XWTR)	7A0 7AJ
HBB77A0 JBB77AJ	5752SC1B3	Scheduler Restart	7A0 7AJ
HBB77A0 JBB77AJ	5752SC1B4	Allocation/Unallocation	7A0 7AJ
HBB77A0	5752SC1B5	SWA Manager	7A0
HBB77A0 JBB77AJ	5752SC1B6	Initiator/Terminator	7A0 7AJ
HBB77A0 JBB77AJ	5752SC1B8	Command processing - includes - Command processors / Master scheduler / Master trace	7A0 7AJ
HBB77A0 JBB77AJ	5752SC1B9	Converter/Interpreter	7A0 7AJ
HBB77A0 JBB77AJ	5752SC1CH	Virtual Storage Management (VSM)	7A0 7AJ
HBB77A0 JBB77AJ	5752SC1CJ	Contents Supervisor	7A0 7AJ
HBB77A0 JBB77AJ	5752SC1CK	Communications Task (COMMTASK)	7A0 7AJ

FMID	COMP ID	Component Name	RETAIN Release
Figure 78 (Page 11 of 12). Component IDs			
HBB77A0	5752SC1CL	Task Manager	7A0
HBB77A0 JBB77AJ	5752SC1CM	Recovery Termination Manager (RTM)	7A0 7AJ
HBB77A0	5752SC1CP	Extended Precision Floating Point Register	7A0
HBB77A0 JBB77AJ	5752SC1CR	Real Storage Manager (RSM)	7A0 7AJ
HBB77A0 JBB77AJ	5752SC1CU	Region Control Task (RCT)	7A0 7AJ
HBB77A0 JBB77AJ	5752SC1CV	Timer Supervisor	7A0 7AJ
HBB77A0 JBB77AJ	5752SC1CW	Auxiliary Storage Manager (ASM)	7A0 7AJ
HBB77A0 JBB77AJ	5752SC1CX	System Resource Manager (SRM)	7A0 7AJ
HBB77A0 JBB77AJ	5752SC1CZ	MP Reconfiguration	7A0 7AJ
HBB77A0 JBB77AJ	5752SC1C3	I/O Supervisor (IOS)	7A0 7AJ
HBB77A0 JBB77AJ	5752SC1C4	Device Independent Display Operator Control (DIDOCS)	7A0 7AJ
HBB77A0 JBB77AJ	5752SC1C5	Supervisor Control - includes Interrupt handlers / Dispatcher	7A0 7AJ
HBB77A0	5752SC1C6	Execute Channel Program (EXCP)	7A0
HBB77A0	5752SC1C8	Nucleus Initialization Program (NIP)	7A0
HBB77A0	5752SC1C9	Initial Program Loader (IPL)	7A0
EMI2220	5752SC1DF	3890 Document Processor	220
EMI2220	5752SC1DL	Optical Character Reader (OCR)	220
EMI2220	5752SC1DM	3895 Document Reader/Inscriber	220
EMI2220	5752SC1DN	3540 Diskette I/O Unit	220
EMI2220	5752SC1D5	Output Control Record	220
HBB77A0	5752SC1GC	BCP Portable Grid Container	7A0
HBB77A0	5752SC1S4	Supervisor SYSGEN	7A0
HBB77A0	5752SC1S5	Scheduler SYSGEN	7A0
ETI1106	5752SC1T3	TSO TIOC (Terminal Input/Output Controller)	106

FMID	COMP ID	Component Name	RETAIN Release
HBB77A0 JBB77AJ	5752SC100	SMF Scheduler	7A0 7AJ
HBB77A0	5752SC101	Supervisor Mapping Macro (MAPMACS)	7A0
HBB77A0	5752SC102	System Management Facility (SMF)	7A0
HBB77A0 JBB77AJ	5752SC106	On Line Test Executive Program (OLTEP)	7A0 7AJ
HBB77A0 JBB77AJ	5752SC111	Generalized Trace Facility (GTF)	7A0 7AJ
HBB77A0	5752SC112	Super Zap (AMASPZAP) / AMATERSE	7A0
HBB77A0	5752SC115	Stand-Alone Dump (AMDSADMP)	7A0
HBB77A0	5752SC118	GTF Trace edit	7A0
HBB77A0	5752SC132	Interactive Problem Control System (IPCS)	7A0
HBB77A0	5752SC141	JES Services	7A0
HBB77A0 JBB77AJ	5752SC142	System Trace	7A0 7AJ
HBB77A0 JBB77AJ	5752SC143	Auto Dump Services (DAE)	7A0 7AJ
HBB77A0	5752SC144	Allocation Services	7A0
HBB77A0 JBB77AJ	5752SC164	Virtual Lookaside Facility (VLF)	7A0 7AJ
HBB77A0	5752SYBLD	z/OS Install	7A0
HIT7750	5752XXEIM	Enterprise Identity Mapping (EIM)	750
HRF77A0 JRF77AJ	5752XXH00	RACF (Security Server Resource Access Control Facility)	7A0 7AJ
HKY77A0	5752XXPKI	PKI Services (Public Key Infrastructure)	7A0

Figure 78 (Page 12 of 12). Component IDs

Appendix B. APARs Incorporated into Elements of z/OS V2.2.0

This appendix is sorted by the element name.

APARs Incorporated into HBB77A0 (BCP)

OA27099 OA36053 OA38019 OA38279 OA38303 OA38416 OA38541
OA38754 OA38812 OA38971 OA39064 OA39076 OA39180 OA39232
OA39331 OA39413 OA39656 OA39698 OA39838 OA39886 OA40065
OA40471 OA40474 OA40548 OA40576 OA40650 OA40661 OA40747
OA40921 OA40933 OA40952 OA40966 OA41029 OA41040 OA41113
OA41118 OA41147 OA41161 OA41203 OA41232 OA41240 OA41269
OA41288 OA41295 OA41308 OA41401 OA41516 OA41528 OA41554
OA41560 OA41568 OA41628 OA41635 OA41645 OA41661 OA41678
OA41696 OA41718 OA41729 OA41759 OA41760 OA41776 OA41777
OA41778 OA41784 OA41789 OA41795 OA41796 OA41809 OA41811
OA41816 OA41817 OA41818 OA41819 OA41820 OA41824 OA41825
OA41828 OA41830 OA41848 OA41860 OA41862 OA41867 OA41868
OA41876 OA41878 OA41880 OA41885 OA41889 OA41890 OA41893
OA41897 OA41898 OA41903 OA41904 OA41909 OA41910 OA41912
OA41919 OA41920 OA41921 OA41933 OA41943 OA41945 OA41946
OA41947 OA41950 OA41961 OA41968 OA41970 OA41971 OA41985
OA41993 OA41994 OA41999 OA42003 OA42005 OA42006 OA42006
OA42021 OA42024 OA42026 OA42033 OA42039 OA42039 OA42040
OA42041 OA42084 OA42086 OA42090 OA42093 OA42095 OA42097
OA42118 OA42130 OA42143 OA42158 OA42163 OA42165 OA42169
OA42192 OA42208 OA42221 OA42231 OA42236 OA42237 OA42240
OA42241 OA42242 OA42263 OA42268 OA42272 OA42278 OA42302
OA42303 OA42311 OA42319 OA42321 OA42323 OA42336 OA42342
OA42345 OA42346 OA42350 OA42352 OA42361 OA42372 OA42388
OA42405 OA42412 OA42426 OA42436 OA42438 OA42439 OA42450
OA42453 OA42466 OA42467 OA42472 OA42475 OA42477 OA42519
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OA43363 OA43366 OA43374 OA43377 OA43388 OA43398 OA43407
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OA44590 OA44618 OA44621 OA44629 OA44631 OA44656 OA44662
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OA44753 OA44761 OA44763 OA44782 OA44783 OA44790 OA44808
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OA44971 OA44997 OA45005 OA45023 OA45037 OA45039 OA45042
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OA46672 OA46683 OA46707 OA46743 OA46759 OA46770 OA46775

OA46799 OA46809 OA46811 OA46873 OA46884 OA46889 OA46898
OA46962 OA46978 OA46981 OA46992 OA47001 OA47010 OA47017
OA47084 OA47139

APARs Incorporated into JBB77AC

No APARs have been incorporated at this time.

APARs Incorporated into JBB77AJ

OA41308 OA41820

APARs Incorporated into HPV77A0 (BCP - Capacity Provisioning)

OA42220 OA43840 OA45342 OA45495 OA45904 OA46719

APARs Incorporated into HUN77A0 (BCP - Support for Unicode)

OA41197 OA41509 OA41932 OA41955 OA42445 OA42886 OA42936
OA43021 OA43076 OA43409 OA43471 OA43974 OA44045 OA44703

APARs Incorporated into JUN77AJ (Unicode JPN)

No APARs have been incorporated at this time.

APARs Incorporated into HPM77A0 (BCP Program Management Binder)

OA41504 OA42047 OA42461 OA42509 OA43343 OA43539 OA43813
OA44098 OA44133 OA44452 OA44717 OA44721 OA45463 OA45732
OA45733 OA45739 OA45802 OA45965 OA45972 OA46103 OA46441

APARs Incorporated into HBD6602 (BDT)

OW02466 OW02491 OW02703 OW06303 OW07581 OW08052 OW13686 OW14761
OW16558 OY00989 OY01181 OY01214 OY01465 OY01657 OY01963 OY02278
OY02507 OY02517 OY02556 OY02855 OY03037 OY03043 OY03193 OY03823
OY03900 OY04558 OY04723 OY04746 OY04757 OY04797 OY04960 OY05750
OY05860 OY05862 OY06461 OY06694 OY06854 OY07282 OY07358 OY07532
OY07737 OY07738 OY08097 OY08243 OY08520 OY08693 OY09047 OY09152
OY09208 OY09266 OY09340 OY09444 OY09724 OY09810 OY09814 OY10011
OY10450 OY10548 OY10660 OY10846 OY10938 OY11070 OY11117 OY11225
OY11226 OY11415 OY11487 OY11702 OY11739 OY12279 OY12342 OY12437
OY12637 OY13131 OY13133 OY13406 OY13591 OY14050 OY14244 OY14749
OY14959 OY15068 OY15125 OY15218 OY15466 OY15882 OY15962 OY16130
OY16264 OY16719 OY16986 OY17085 OY17238 OY17314 OY17428 OY17457
OY17584 OY17640 OY17978 OY17985 OY18308 OY18469 OY18554 OY18731
OY18908 OY19076 OY19284 OY19321 OY19388 OY19391 OY19894 OY19898

OY19902 OY19960 OY20171 OY20431 OY20784 OY20901 OY20923 OY21002
OY21460 OY21506 OY21813 OY21829 OY21841 OY21875 OY22428 OY22674
OY22782 OY23216 OY23309 OY23876 OY24777 OY25628 OY25822 OY26508
OY27326 OY27346 OY27743 OY27892 OY27898 OY27956 OY28054 OY28281
OY28729 OY29281 OY29347 OY29399 OY29778 OY29957 OY30006 OY30068
OY30079 OY30258 OY30281 OY31473 OY33022 OY33144 OY33982 OY33985
OY34270 OY35019 OY35732 OY36496 OY38230 OY39828 OY40931 OY41599
OY45904 OY47404 OY47780 OY52343 OY53129 OY54436 OY55413 OY58208
OY59355 OY60833 OY60850 OY64461 OZ96792 OZ96975 OZ97192 OZ97459
OZ97533 OZ97640 OZ97699 OZ97701 OZ97702 OZ97703 OZ97723 OZ97724
OZ97905

APARs Incorporated into JBD6201 (BDT File-to-File)

OW18026

APARs Incorporated into JBD6202 (BDT SNA NJE)

OY10539 OY11415 OY12637 OY16986 OY17978 OY18308 OY18908 OY19960
OY21506 OY26802 OY29281 OY30281 OY38230 OY54126 OY59355

APARs Incorporated into HBKM300 (BookManager READ)

PN01436 PN01438 PN01441 PN02112 PN02114 PN02115 PN02892 PN03579
PN04139 PN05596 PN05610 PN05613 PN05614 PN06306 PN06704 PN06719
PN06803 PN06810 PN06983 PN07217 PN07424 PN07658 PN07660 PN07976
PN08151 PN08219 PN08349 PN08430 PN08696 PN09081 PN09081 PN09330
PN09561 PN09797 PN10118 PN10394 PN10575 PN11373 PN11590 PN11610
PN11819 PN11915 PN12359 PN12679 PN12950 PN13295 PN13753 PN14344
PN15138 PN15246 PN15317 PN15503 PN15540 PN15715 PN15803 PN15916
PN15983 PN16213 PN16636 PN16640 PN16815 PN17253 PN17368 PN17421
PN17714 PN17951 PN18463 PN18465 PN18470 PN18625 PN18800 PN18861
PN19068 PN19141 PN19238 PN19601 PN19793 PN19815 PN20588 PN21881
PN22012 PN22171 PN22345 PN22390 PN22534 PN22685 PN22863 PN22864
PN23143 PN23200 PN23427 PN23482 PN24226 PN24332 PN24478 PN24777
PN24780 PN26506 PN27890 PN28240 PN28565 PN28703 PN29102 PN29165
PN29241 PN29249 PN29459 PN30430 PN30445 PN30620 PN30622 PN30671
PN30686 PN30771 PN30925 PN31340 PN31762 PN31926 PN32595 PN32673
PN32793 PN33508 PN33509 PN33807 PN33849 PN33871 PN34842 PN35066
PN36073 PN36839 PN37420 PN38106 PN38133 PN38410 PN38855 PN39554
PN39613 PN39813 PN39914 PN41056 PN41227 PN42150 PN43221 PN43465
PN43520 PN43900 PN44340 PN45205 PN45609 PN45863 PN45949 PN46174
PN46285 PN46303 PN46521 PN47014 PN47166 PN47168 PN47840 PN47956
PN48037 PN49359 PN49362 PN49412 PN50606 PN50775 PN51413 PN52136
PN52672 PN52917 PN53402 PN54310 PN54377 PN54694 PN54772 PN56624
PN58277 PN58820 PQ75262 PM59706 PK21196

APARs Incorporated into JBKM310

No APARs have been incorporated at this time.

APARs Incorporated into JBKM311

No APARs have been incorporated at this time.

APARs Incorporated into JBKM312

No APARs have been incorporated at this time.

APARs Incorporated into JBKM313

No APARs have been incorporated at this time.

APARs Incorporated into JBKM314

No APARs have been incorporated at this time.

APARs Incorporated into JBKM315

No APARs have been incorporated at this time.

APARs Incorporated into JBKM316

No APARs have been incorporated at this time.

APARs Incorporated into JBKM317

No APARs have been incorporated at this time.

APARs Incorporated into JBKM318

No APARs have been incorporated at this time.

APARs Incorporated into HPG77A0 (Common Information Model (CIM))

OA41958 OA43670 OA44582 OA45894

APARs Incorporated into HIP6220 (Communications Server IP Services)

PI04745 PI04881 PI04972 PI05065 PI05583 PI05991 PI06005 PI06083
PI06388 PI07430 PI07587 PI07940 PI08351 PI08513 PI08869 PI09163
PI09283 PI09301 PI09477 PI11617 PI11897 PI12404 PI13288 PI14176
PI14530 PI16098 PI16976 PI17124 PI18046 PI18168 PI18664 PI18672
PI18794 PI19005 PI19917 PI19955 PI20493 PI21269 PI22806 PI23187
PI23805 PI23941 PI24041 PI24371 PI24392 PI24720 PI24969 PI25181

PI25403 PI25559 PI25622 PI26087 PI26191 PI26396 PI26413 PI27440
PI27524 PI27772 PI28295 PI28323 PI28400 PI28592 PI28679 PI29091
PI29788 PI30115 PI30195 PI31314 PI31994 PI32639 PI36109 PI36113
PI36638 PI36683 PM86356 PM87339 PM87535 PM87908 PM88067 PM88075
PM88076 PM88077 PM88078 PM88514 PM88785 PM88813 PM89382 PM90215
PM90567 PM90782 PM91127 PM91543 PM91583 PM91717 PM91749 PM92185
PM92259 PM92656 PM92871 PM93264 PM93637 PM94040 PM94392 PM94502
PM94506 PM94558 PM94590 PM94662 PM94671 PM95157 PM96396 PM96751
PM97638 PM97943 PM98428 PM98521 PM98806 PM99138 PM99172 PM99468

APARs Incorporated into HVT6220 (Communications Server for z/OS SNA Services)

OA41902 OA42002 OA42088 OA42089 OA42180 OA42308 OA42380 OA42386
OA42404 OA42465 OA42527 OA42600 OA42657 OA42687 OA42689 OA42730
OA42816 OA42870 OA42982 OA42983 OA43077 OA43167 OA43208 OA43259
OA43382 OA43396 OA43397 OA43580 OA43635 OA43773 OA43844 OA43867
OA44053 OA44090 OA44091 OA44269 OA44348 OA44408 OA44479 OA44643
OA44751 OA44873 OA45064 OA45197 OA45401 OA45622 OA45843 OA46032
OA46037 OA46081 OA46197 OA46203 OA46221 OA46359 OA46434 OA46566
OA46718 OA46837 OA46916 OA46917 OA46921 OA47086 OA47097 OA47129
OA47284 OA47307

APARs Incorporated into JIP622K (Communications Server Security Level 3)

No APARS were integrated into JIP622K.

APARs Incorporated into JIP622X (XWINDOWS)

No APARs were integrated into JIP622X.

APARs Incorporated into HCRY740 (Cryptographic Services: OCSF)

No APARs have been incorporated at this time.

APARs Incorporated into HKY77A0 (Cryptographic Services PKI Services)

OA42233 OA42480 OA42965 OA44110 OA44305 OA46700

APARs Incorporated into HCPT420 (Cryptographic Services: System SSL)

OA42102 OA42605 OA42741 OA44467 OA44842 OA45216 OA45324 OA46489
OA46805

APARs Incorporated into JCPT42J (Cryptographic Services: System SSL Japanese)

No APARs have been incorporated at this time.

APARs Incorporated into HDZ2220 (DFSMS)

OA37549 OA37870 OA38211 OA38314 OA39509 OA39733 OA40205
OA40270 OA40290 OA40509 OA40510 OA40552 OA40557 OA40572
OA40573 OA40574 OA40575 OA40602 OA40653 OA40698 OA40719
OA40720 OA40721 OA40722 OA40731 OA40835 OA40886 OA40888
OA40943 OA41006 OA41018 OA41053 OA41138 OA41144 OA41305
OA41362 OA41383 OA41408 OA41425 OA41438 OA41454 OA41482
OA41500 OA41536 OA41551 OA41558 OA41564 OA41574 OA41582
OA41584 OA41586 OA41589 OA41617 OA41627 OA41638 OA41649
OA41663 OA41664 OA41665 OA41667 OA41676 OA41679 OA41684
OA41690 OA41691 OA41702 OA41706 OA41707 OA41713 OA41728
OA41734 OA41739 OA41743 OA41747 OA41755 OA41764 OA41769
OA41771 OA41775 OA41786 OA41810 OA41833 OA41836 OA41859
OA41865 OA41872 OA41874 OA41905 OA41916 OA41917 OA41936
OA41940 OA41963 OA41964 OA41965 OA41967 OA41969 OA41974
OA41979 OA41980 OA41995 OA42008 OA42018 OA42019 OA42022
OA42042 OA42046 OA42048 OA42049 OA42051 OA42077 OA42078
OA42100 OA42109 OA42111 OA42113 OA42124 OA42125 OA42126
OA42129 OA42131 OA42140 OA42142 OA42171 OA42173 OA42174
OA42175 OA42179 OA42194 OA42195 OA42196 OA42197 OA42198
OA42199 OA42200 OA42201 OA42203 OA42210 OA42224 OA42229
OA42230 OA42238 OA42239 OA42243 OA42252 OA42254 OA42258
OA42266 OA42267 OA42271 OA42277 OA42279 OA42283 OA42284
OA42288 OA42294 OA42296 OA42298 OA42299 OA42300 OA42312
OA42316 OA42324 OA42325 OA42340 OA42347 OA42354 OA42358
OA42362 OA42363 OA42368 OA42374 OA42377 OA42379 OA42381
OA42390 OA42392 OA42394 OA42395 OA42396 OA42401 OA42403
OA42406 OA42407 OA42408 OA42410 OA42425 OA42434 OA42437
OA42440 OA42447 OA42460 OA42462 OA42471 OA42489 OA42500
OA42513 OA42514 OA42516 OA42538 OA42540 OA42541 OA42543
OA42551 OA42553 OA42559 OA42568 OA42571 OA42573 OA42574
OA42582 OA42584 OA42596 OA42597 OA42598 OA42608 OA42617
OA42618 OA42619 OA42623 OA42625 OA42626 OA42630 OA42633
OA42637 OA42639 OA42645 OA42652 OA42654 OA42656 OA42662
OA42675 OA42677 OA42679 OA42694 OA42703 OA42708 OA42713
OA42714 OA42715 OA42716 OA42724 OA42742 OA42745 OA42753
OA42756 OA42758 OA42762 OA42767 OA42770 OA42774 OA42775
OA42776 OA42779 OA42783 OA42788 OA42791 OA42795 OA42798
OA42799 OA42801 OA42817 OA42824 OA42835 OA42846 OA42848
OA42856 OA42858 OA42879 OA42891 OA42908 OA42927 OA42929
OA42933 OA42935 OA42938 OA42940 OA42943 OA42945 OA42947
OA42955 OA42960 OA42961 OA42969 OA42975 OA42976 OA42977
OA42981 OA42984 OA42985 OA43000 OA43003 OA43004 OA43010
OA43011 OA43019 OA43022 OA43025 OA43031 OA43035 OA43036
OA43042 OA43053 OA43055 OA43056 OA43070 OA43079 OA43089

OA43095 OA43104 OA43105 OA43116 OA43117 OA43140 OA43142
OA43148 OA43153 OA43161 OA43162 OA43164 OA43165 OA43169
OA43170 OA43171 OA43175 OA43177 OA43191 OA43195 OA43198
OA43200 OA43202 OA43203 OA43205 OA43207 OA43213 OA43214
OA43217 OA43220 OA43221 OA43226 OA43228 OA43229 OA43234
OA43235 OA43244 OA43261 OA43280 OA43291 OA43292 OA43311
OA43338 OA43346 OA43347 OA43348 OA43357 OA43358 OA43360
OA43361 OA43362 OA43369 OA43371 OA43376 OA43380 OA43381
OA43385 OA43389 OA43391 OA43402 OA43414 OA43415 OA43417
OA43418 OA43421 OA43422 OA43430 OA43431 OA43434 OA43439
OA43440 OA43441 OA43451 OA43462 OA43465 OA43470 OA43489
OA43490 OA43491 OA43494 OA43514 OA43521 OA43522 OA43523
OA43524 OA43529 OA43540 OA43542 OA43543 OA43548 OA43557
OA43568 OA43574 OA43576 OA43583 OA43593 OA43600 OA43606
OA43613 OA43619 OA43625 OA43628 OA43654 OA43661 OA43662
OA43663 OA43665 OA43684 OA43693 OA43695 OA43696 OA43697
OA43701 OA43702 OA43706 OA43712 OA43715 OA43716 OA43717
OA43723 OA43724 OA43725 OA43729 OA43730 OA43743 OA43752
OA43800 OA43806 OA43818 OA43821 OA43829 OA43835 OA43838
OA43843 OA43858 OA43870 OA43878 OA43886 OA43901 OA43904
OA43908 OA43911 OA43913 OA43921 OA43922 OA43927 OA43928
OA43930 OA43951 OA43952 OA43959 OA43961 OA43970 OA43972
OA43978 OA43980 OA43983 OA43996 OA44000 OA44004 OA44007
OA44008 OA44010 OA44016 OA44021 OA44026 OA44061 OA44064
OA44069 OA44084 OA44085 OA44088 OA44095 OA44102 OA44106
OA44111 OA44112 OA44127 OA44131 OA44135 OA44150 OA44151
OA44153 OA44157 OA44167 OA44168 OA44172 OA44179 OA44180
OA44182 OA44191 OA44193 OA44205 OA44210 OA44211 OA44228
OA44234 OA44239 OA44243 OA44249 OA44254 OA44271 OA44277
OA44284 OA44289 OA44303 OA44309 OA44312 OA44317 OA44318
OA44321 OA44330 OA44331 OA44338 OA44341 OA44345 OA44346
OA44351 OA44352 OA44353 OA44354 OA44355 OA44356 OA44375
OA44377 OA44381 OA44382 OA44400 OA44402 OA44407 OA44410
OA44413 OA44417 OA44422 OA44423 OA44426 OA44433 OA44447
OA44455 OA44461 OA44468 OA44478 OA44489 OA44495 OA44505
OA44518 OA44519 OA44527 OA44528 OA44533 OA44535 OA44546
OA44554 OA44573 OA44586 OA44602 OA44603 OA44607 OA44611
OA44615 OA44616 OA44628 OA44632 OA44634 OA44638 OA44642
OA44645 OA44647 OA44649 OA44650 OA44664 OA44666 OA44673
OA44675 OA44681 OA44682 OA44686 OA44688 OA44690 OA44692
OA44700 OA44707 OA44712 OA44718 OA44740 OA44745 OA44792
OA44794 OA44799 OA44806 OA44812 OA44813 OA44817 OA44830
OA44831 OA44832 OA44834 OA44836 OA44839 OA44843 OA44844
OA44846 OA44859 OA44860 OA44862 OA44866 OA44881 OA44886
OA44889 OA44891 OA44895 OA44896 OA44900 OA44901 OA44904
OA44905 OA44911 OA44922 OA44930 OA44961 OA44963 OA44964

OA44968 OA44973 OA44976 OA44981 OA44982 OA44983 OA44985
OA44986 OA44989 OA44996 OA44998 OA45006 OA45017 OA45020
OA45022 OA45027 OA45028 OA45038 OA45040 OA45043 OA45055
OA45061 OA45067 OA45069 OA45075 OA45083 OA45097 OA45105
OA45107 OA45113 OA45121 OA45125 OA45135 OA45148 OA45149
OA45151 OA45155 OA45156 OA45157 OA45160 OA45163 OA45166
OA45168 OA45170 OA45176 OA45188 OA45191 OA45194 OA45199
OA45203 OA45204 OA45208 OA45214 OA45217 OA45223 OA45229
OA45233 OA45241 OA45242 OA45245 OA45248 OA45250 OA45251
OA45269 OA45271 OA45279 OA45280 OA45305 OA45308 OA45309
OA45312 OA45313 OA45315 OA45330 OA45368 OA45369 OA45370
OA45392 OA45398 OA45399 OA45400 OA45410 OA45412 OA45413
OA45416 OA45420 OA45424 OA45438 OA45442 OA45443 OA45449
OA45450 OA45454 OA45455 OA45458 OA45460 OA45462 OA45464
OA45472 OA45476 OA45478 OA45493 OA45506 OA45510 OA45513
OA45519 OA45526 OA45527 OA45528 OA45543 OA45551 OA45552
OA45556 OA45557 OA45562 OA45568 OA45576 OA45577 OA45579
OA45589 OA45596 OA45602 OA45613 OA45616 OA45621 OA45625
OA45627 OA45628 OA45631 OA45643 OA45663 OA45664 OA45665
OA45682 OA45684 OA45685 OA45689 OA45695 OA45704 OA45705
OA45706 OA45710 OA45718 OA45722 OA45744 OA45745 OA45763
OA45770 OA45772 OA45786 OA45801 OA45824 OA45825 OA45828
OA45854 OA45863 OA45877 OA45878 OA45881 OA45882 OA45887
OA45888 OA45892 OA45896 OA45899 OA45914 OA45918 OA45924
OA45931 OA45935 OA45939 OA45942 OA45945 OA45950 OA45959
OA45966 OA45978 OA45980 OA45983 OA46004 OA46007 OA46018
OA46019 OA46023 OA46042 OA46047 OA46061 OA46062 OA46069
OA46072 OA46074 OA46078 OA46086 OA46090 OA46098 OA46109
OA46113 OA46123 OA46129 OA46134 OA46138 OA46152 OA46174
OA46198 OA46231 OA46252 OA46254 OA46255 OA46256 OA46263
OA46272 OA46283 OA46307 OA46313 OA46327 OA46328 OA46360
OA46362 OA46376 OA46390 OA46399 OA46416 OA46438 OA46442
OA46449 OA46472 OA46482 OA46486 OA46487 OA46492 OA46496
OA46499 OA46501 OA46522 OA46524 OA46536 OA46538 OA46559
OA46567 OA46598 OA46605 OA46627 OA46631 OA46640 OA46666
OA46669 OA46682 OA46684 OA46686 OA46716 OA46723 OA46732
OA46765 OA46772 OA46785 OA46795 OA46820 OA46823 OA46826
OA46827 OA46835 OA46844 OA46850 OA46862 OA46864 OA46881
OA46899 OA46925 OA46940 OA46941 OA46942 OA46943 OA46947
OA46964 OA46988 OA47002 OA47035 OA47038 OA47059 OA47076
OA47105

APARs Incorporated into JDZ222K (DFSMS Japanese)

OA41010 OA41159 OA41757 OA42061 OA42260 OA42337 OA42493
OA42867 OA43330 OA43331 OA43553 OA44453 OA44581 OA44804
OA44919 OA44955 OA45178 OA45474 OA45541 OA45876

APARs Incorporated into HSM1M00 (DFSORT)

PI06322 PI09439 PI10536 PI16208 PI17536 PI21636 PI22436
PI22631 PI22817 PI25208 PI30312 PI31693 PM96940 PM97012
PM98284

APARs Incorporated into H0H2410 (Distributed File Service)

OA33455 OA36267 OA36619 OA36698 OA36998 OA37058 OA37474
OA37780 OA38301 OA38410 OA38985 OA39436 OA39745 OA40712
OA41000 OA41176

APARs Incorporated into J0H241J

No APARs have been incorporated at this time.

APARs Incorporated into HZFS420 (z/OS File System)

OA40505 OA41126 OA41135 OA41385 OA41523 OA41757 OA41767
OA41798 OA41870 OA42293 OA42332 OA42364 OA42397 OA42504
OA42544 OA42629 OA42655 OA42672 OA42810 OA42884 OA42953
OA42973 OA43048 OA43052 OA43059 OA43064 OA43073 OA43215
OA43249 OA43339 OA43342 OA43425 OA43601 OA43722 OA43740
OA43781 OA43782 OA43847 OA43879 OA43890 OA43914 OA43940
OA43960 OA44015 OA44087 OA44214 OA44630 OA44635 OA44685
OA44780 OA44810 OA44820 OA44848 OA44931 OA45026 OA45041
OA45046 OA45252 OA45414 OA45563 OA45726 OA45948 OA46026
OA46171 OA46297 OA46334 OA46368 OA46479 OA46541 OA46665
OA46804 OA47054

APARs Incorporated into JZFS42J

No APARs have been incorporated at this time.

APARs Incorporated into EER3500 (EREP - REWORK 199105)

This is the version that was shipped since OS/390 R1.

IR80711 IR80768 IR81185 IR81370 IR81547 IR81591 IR81804 IR82451
IR82751 IR82977 IR83371 IR83723 IR83856 IR83943 IR85611 IR85611
IR85711 IR85846 IR85846 IR85931 IR86094 IR86094 IR86191 IR86533
IR86533 IR86658 IR86881 IR87037 IR87038 IR87038 IR87039 IR87040
IR87242 IR87623 IR87632 IR87733 IR87733 IR88018 IR88180 IR88291

IR88374 IR88472 IR88473 IR88596 IR88730 IR88730 IR88776 IR88841
IR88854 IR88949 IR88949 IR88991 IR89166 IR89166 IR89210 IR89296
IR89318 IR89400 IR89419 IR89539 IR89685 IR89922 IR89922 IR89966
IR90141 IR90561 IR90741 IR90770 IR90850 IR90868 IR90959 IR90959
IR91068 IR91068 IR91068 IR91215 IR91464 IR91592 IR91601 IR91836
IR91852 IR92091 IR92091 IR92091 IR92396 IR92655 IR92798 IR92852
IR93183 IR93183 IR93227 IR93460

APARs Incorporated in EER3500 (EREP-SUP'd in z/OS V1.7.0)

This is the version that is SUP'd in z/OS V1.7.0. The APARs listed in the preceding section are still in this version.

IR22107 IR22113 IR22155 IR22361 IR22450 IR22549 IR22587 IR22987
IR23340 IR23532 IR25252 IR25562 IR25718 IR25856 IR27261 IR27350
IR27351 IR27996 IR28576 IR28731 IR29301 IR29955 IR30614 IR30886
IR31012 IR31687 IR32362 IR32608 IR32927 IR32971 IR33045 IR33151
IR33211 IR34613 IR34712 IR35814 IR35816 IR36215 IR36491 IR37709
IR37835 IR38057 IR38058 IR38450 IR38641 IR38950 IR39127 IR39721
IR39722 IR40683 IR40684 IR41039 IR41115 IR41673 IR41712 IR41986
IR42026 IR42503 IR42671 IR42672 IR43043 IR43044 IR43045 IR43046
IR44590 IR44854 IR45030 IR46224 IR46582 IR47431 IR48613 IR49633
IR50051 IR50866 IR50902 IR51078 IR51695 IR53169 IR53273 IR54199
IR54657 IR93614 IR94013 IR94126 IR94181 IR94340 IR94385 IR94450
IR94783 IR94943 IR95091 IR95102 IR95192 IR95324 IR95338 IR95500
IR95588 IR95713 IR95908 IR95965 IR96031 IR96698 IR96724 IR97014
IR97218 IR97314 IR97326 IR97455 IR97631 IR97934 IR97983 IR98123
IR98372 IR98410 IR98501 IR99102 IR99109 IR99262 IR99281

APARs Incorporated into HSWF100 (ESCON Director)

No APARs have been incorporated at this time.

APARs Incorporated into HFST101 (FFST)

PN29099 PN29717 PN29718 PN31356 PN31357 PN31410 PN31484 PN31768
PN31914 PN31916 PN33190 PN34219 PN34224 PN34526 PN35401 PN35590
PN35723 PN36140 PN36526

APARs Incorporated into HGD3200 (GDDM)

PN59427 PN62024 PN62733 PN63738 PN64024 PN65404 PN65498 PN65512
PN65514 PN65681 PN65937 PN65966 PN66171 PN66450 PN66458 PN66461
PN66468 PN66474 PN66507 PN66951 PN67035 PN67882 PN68256 PN68922
PN68927 PN69043 PN69302 PN69421 PN69423 PN69592 PN69719 PN69769
PN70250 PN70433 PN70441 PN70621 PN72131 PN72461 PN72998 PN73336

PN73449 PN73542 PN73588 PN73756 PN73783 PN73970 PN74028 PN74032
PN74087 PN74186 PN74248 PN74255 PN74318 PN74817 PN75807 PN76011
PN76158 PN76418 PN76534 PN76546 PN77428 PN77824 PN78575 PN79934
PN80122 PN80374 PN80720 PN82044 PN82794

APARs Incorporated into HGD3201 (GDDM-PGF)

PN43524 PN45816 PN53932 PN62127 PN64948 PN66658 PN74910 PN79959
PN84114

APARs Incorporated into HCS77A0 (HCD)

OA39234 OA42083 OA42116 OA42876 OA42974 OA43262 OA43853
OA44260 OA44274 OA44294 OA44501 OA44626 OA45382 OA45831
OA46609 OA46750 OA46818 OA47046 OA47060 OA47165 OA47242
OA47336 OA47416 OA47877 OA47994 OA48079

APARs Incorporated into JCS77AJ

OA39234 OA42083 OA42974 OA44260 OA44294 OA47165

APARs Incorporated into HCM1F10 (HCM)

IO18884 IO19407 IO19542 IO19822 IO20615

APARs Incorporated into HMQ4160 (HLASM)

PQ88271 PQ88470 PQ89655 PQ90802 PQ91893 PQ92291 PQ92371 PQ92508
PQ92579 PQ93977 PQ95145 PQ96292 PQ98607 PQ99158 PQ99706 PK00040
PK01064 PK02523 PK02660 PK05761 PK06113 PK06652 PK07828 PK09700
PK12545 PK14299 PK15306 PK17439 PK17447 PK17728 PK18170 PK19083
PK23005 PK24143 PK25298 PK25410 PK26756 PK27282 PK27577 PK27657
PK27979 PK29624 PK31383 PK31465 PK34746 PK36579 PK37014 PK37093
PK40237 PK42535 PK43179 PK55677 PK55678 PK56245 PK56672 PK58463

APARs Incorporated into JMQ416A (HLASM Toolkit)

PQ90771 PQ91484 PQ94993 PQ96247 PQ98212 PK01063 PK01283 PK05664
PK06190 PK06707 PK07828 PK07940 PK08886 PK09261 PK10316 PK10355
PK12514 PK12866 PK13983 PK15286 PK15984 PK17443 PK19580 PK20237
PK21002 PK25270 PK26240 PK26914 PK28745 PK29714 PK30620 PK30719
PK31375 PK31469 PK39957 PK40271 PK40813 PK41381 PK42140 PK42414
PK43326 PK43386 PK45696 PK46123 PK47176 PK50735 PK56760

APARs Incorporated into H24P111 (Host Performance Analyzer)

PQ06312 PQ07631 PQ11614 PQ19762 PQ30041 PQ39109 PQ51796 PQ517796
PQ71319 PQ75940

APARs Incorporated into J24P112 (Host Performance Analyzer JPN)

PQ06312 PQ19762 PQ11614

APARs Incorporated into HHAP90P (IBM HTTP Server - Powered by Apache)

PI11659 PI21538 PI25124 PI30622 PI36674

APARs Incorporated into HRSL420 (IBM Tivoli Directory Server for z/OS Base)

OA41596 OA41612 OA41741 OA42012 OA42479 OA42782 OA43623
OA43909 OA45189 OA45714 OA46153

APARs Incorporated into JRSL42J (IBM Tivoli Directory Server for z/OS JPN)

No APARs have been incorporated at this time.

APARs Incorporated into EDU1H01 (ICKDSF)

PN60520 PN60881 PN61480 PN62330 PN62342 PN62444 PN63044 PN63507
PN64655 PN64868 PN65609 PN66540 PN66541 PN67080 PN68358 PN69166
PN69797 PN70013 PN70767 PN71101 PN71972 PN72104 PN73132 PN74048
PN74223 PN76727 PN76862 PN76939 PN77249 PN79757 PN80327 PN80879
PN83877 PN84194 PN84489 PN84759 PN85067 PN85631 PN86705 PN87929
PN88014 PN89166 PN89905 PN91223 PQ00652 PQ02288 PQ03341 PQ05231
PQ07015 PQ08691 PQ10899 PQ11775 PQ11919 PQ13687 PQ18005 PQ18393
PQ20390 PQ20391 PQ23131 PQ24114 PQ24577 PQ26800 PQ29648 PQ32380
PQ37791 PQ38921 PQ42534 PQ43495 PQ44667 PQ46396 PQ47472 PQ49243
PQ50940 PQ53196 PQ53326 PQ56431 PQ62077

APARs Incorporated into FDU1H07 and FDU1H08

PL84215 PN00713 PN03938 PN09082 PN18300 PN18847 PN19767 PN20378
PN21633 PN24896 PN24903 PN38041 PN38414 PN42498 PN42602 PN50159
PN50950 PN55778 PN61073 PN61959 PN66436 PN66767 PN68866 PN73788
PN87510 PQ13447 PQ26624 PQ47107 PQ57770

APARs Incorporated into FDU1H09

PL84215 PN00713 PN03938 PN18300 PN18847 PN19767 PN20378 PN24896
PN24903 PN38414 PN50159 PN50950 PN55778 PN61073 PN61959 PN73788
PN87510 PQ13447 PQ26624 PQ47107 PQ57770

APARs Incorporated into HCR77B0 (ICSF)

OA42246 OA43012 OA43015 OA43218 OA43219 OA43231 OA43237 OA43238
OA43239 OA43386 OA43444 OA43688 OA43734 OA43816 OA43848 OA43906
OA43936 OA43937 OA43943 OA44115 OA44368 OA44411 OA44444 OA44456
OA44816 OA44821 OA44910 OA44917 OA45021 OA45226 OA45358 OA45379
OA45546 OA45548 OA45634 OA45703 OA45708 OA45911 OA45970 OA46000
OA46034 OA46164 OA46165 OA46206 OA46265 OA46373 OA46414 OA46445
OA46558 OA46614 OA46624 OA46625

APARs Incorporated into HNET7A0 (Infoprint Server NetSpool)

OA41869 OA42997 OA43726 OA45036

APARs Incorporated into JNET7AJ

No APARs have been incorporated at this time.

APARs Incorporated into HOPI7A0 (Infoprint Server Print Interface)

OA41992 OA42228 OA42251 OA42253 OA42255 OA42329 OA42330 OA42331
OA42508 OA42550 OA42673 OA42719 OA43032 OA43094 OA43299 OA43368
OA43503 OA43506 OA43749 OA43784 OA43932 OA43947 OA43975 OA44491
OA44652 OA44706 OA45049 OA45050 OA45134 OA45839 OA45840 OA46210
OA46211

APARs Incorporated into JOPI7AJ

OA42253 OA42331

APARs Incorporated into HMOS705 (Infoprint Server IP PrintWay Basic Mode)

OW39337 OW40050 OW40901 OW41343 OW41808 OW42039 OW42727 OW44057
OW44111 OW44172 OW44216 OW44283 OW44335 OW44464 OW44603 OW44687
OW44788 OW44965 OW45138 OW45332 OW45368 OW45718 OW45762 OW45827
OW45852 OW45913 OW46013 OW46331 OW46515 OW46596 OW46688 OW46968
OW47002 OW47086 OW47479 OW47560 OW47717 OW47960 OW48211 OW48387
OW48525 OW48557 OW48955

APARs Incorporated into JMOS7J5

OW44283 OW44965 OW45368 OW46331 OW46515 OW47560 OW48387 OW48557

APARs Incorporated into HSWK420 (Integrated Security Services Network Authentication Service)

OA43655 OA43801 OA46245 OA46457 OA46753

APARs Incorporated into JSWK42J (Integrated Security Services Network Authentication Service JPN)

No APARs have been incorporated at this time.

APARs Incorporated into HRO7740 (Integrated Security Services OCEP)

No APARs have been incorporated at this time.

APARs Incorporated into HIO1104 (IOCP)

OY01989 OY03274 OY11391 OY13461 OY14989 OY16934 OY17169 OZ87310
OZ90023 OZ91644 OZ92967

APARs Incorporated into HIF7P02 (ISPF)

OA41987 OA42247 OA42248 OA43136 OA43242 OA43327 OA43336 OA43410
OA43419 OA43463 OA43473 OA43525 OA43544 OA43579 OA43649 OA43718
OA43727 OA43738 OA43791 OA43792 OA43809 OA43888 OA43988 OA43989
OA44152 OA44263 OA44267 OA44291 OA44369 OA44388 OA44636 OA44646
OA44708 OA44711 OA44713 OA44762 OA44778 OA44802 OA44978 OA44994
OA45071 OA45110 OA45220 OA45293 OA45338 OA45343 OA45389 OA45426
OA45487 OA45535 OA45893 OA45915 OA46051 OA46148 OA46150 OA46534
OA46886 OA46945

APARs Incorporated into JIF7P11

OA40872 OA41384 OA42248 OA42815 OA43113 OA43136 OA43201 OA43718
OA44152 OA44713 OA45426

APARs Incorporated into JIF7P14

OA40872 OA41384 OA42248 OA42815 OA43113 OA43136 OA43201 OA43718
OA44152 OA44713 OA45426

APARs Incorporated into JIF7P15

OA40872 OA41384 OA42248 OA42815 OA43113 OA43136 OA43201 OA43718
OA44152 OA44713 OA45426

APARs Incorporated into JIF7P16

OA40872 OA42248 OA42815 OA43113 OA43201 OA43718 OA45426

APARs Incorporated into HJE77A0 (JES2)

OA41043 OA41380 OA41400 OA41422 OA41566 OA41571 OA41698
OA41738 OA41768 OA41793 OA41881 OA42098 OA42099 OA42367
OA42427 OA42442 OA42452 OA42463 OA42494 OA42507 OA42545
OA42595 OA42642 OA42653 OA42683 OA42686 OA42726 OA42787

OA42821 OA42850 OA42872 OA42893 OA42962 OA42996 OA43046
OA43072 OA43123 OA43179 OA43184 OA43194 OA43315 OA43335
OA43367 OA43405 OA43456 OA43531 OA43541 OA43604 OA43658
OA43676 OA43786 OA43851 OA43882 OA43894 OA43900 OA43997
OA44039 OA44055 OA44056 OA44065 OA44178 OA44222 OA44262
OA44434 OA44474 OA44564 OA44612 OA44670 OA44809 OA44852
OA44908 OA44967 OA45088 OA45118 OA45123 OA45138 OA45232
OA45257 OA45259 OA45337 OA45349 OA45532 OA45560 OA45713
OA45752 OA45760 OA45845 OA45859 OA45923 OA46115 OA46125
OA46199 OA46200 OA46266 OA46342 OA46455 OA46503 OA46510
OA46554 OA46596 OA46621 OA46706 OA46843 OA46919 OA46927
OA46966

APARs Incorporated into JJE77AJ

No APARs have been incorporated at this time.

APARs Incorporated into HJS77A0 (JES3)

OA40461 OA41512 OA41576 OA41633 OA41680 OA41800 OA41978
OA41983 OA41998 OA42045 OA42105 OA42108 OA42496 OA42547
OA42641 OA42725 OA42754 OA42792 OA42826 OA42864 OA42865
OA42954 OA43129 OA43344 OA43464 OA43488 OA43624 OA43680
OA43739 OA43772 OA43779 OA43796 OA43839 OA44052 OA44117
OA44231 OA44261 OA44268 OA44358 OA44454 OA44480 OA44693
OA44732 OA44736 OA44867 OA44894 OA44907 OA45000 OA45076
OA45253 OA45303 OA45372 OA45396 OA45486 OA45498 OA45508
OA45584 OA45590 OA45698 OA45701 OA45730 OA45736 OA45837
OA46001 OA46039 OA46191 OA46250 OA46393 OA46451 OA46502
OA46766 OA46880 OA47090 OA47156

APARs Incorporated into HLE77A0 (Language Environment)

PI04785 PI05189 PI05313 PI08453 PI10714 PI11922 PI12412
PI15479 PI16681 PI16756 PI18849 PI22096 PI22296 PI22513
PI22755 PI23067 PI23841 PI24074 PI27322 PI28749 PI29344
PI30472 PI30847 PI33004 PI33613 PM40804 PM62648 PM64838
PM67161 PM68947 PM69669 PM71354 PM73574 PM74689 PM76220
PM79618 PM81270 PM82237 PM84026 PM84041 PM87183 PM87637
PM87642 PM87944 PM88150 PM88742 PM90528 PM92486 PM92578
PM93058 PM93199 PM93436 PM93862 PM93977 PM96877 PM98022
PM98033 PM98899 PM99349

APARs Incorporated into JLE77AJ

No Apars incorporated at this time.

APARs Incorporated into HBKQ400 (Library Server)

PM19309 PM22488 PM28410 PM32141 PM38784 PM47052 PM53418 PM54287
PM56965 PM66423 PM71648 PM73800 PM78824 PM80334 PM85010 PM93406
PM97292

APARs Incorporated into HSD7780 (Metal C Runtime Library)

OA30396 OA34838

APARs Incorporated into EMI2220 (MICR/OCR)

Service up to, and including, PUT8605 Program Update Tape (service
level) is included in this FMID.

APARs Incorporated into HDZ222N (Network File System)

OA37904 OA38246 OA38272 OA38277 OA38657 OA38737 OA38901
OA38906 OA38932 OA39007 OA39040 OA39114 OA39115 OA39160
OA39218 OA39219 OA39246 OA39393 OA39524 OA39587 OA39685
OA39732 OA39902 OA40139 OA40156 OA40175 OA40191 OA40215
OA40217 OA40244 OA40303 OA40314 OA40416 OA40516 OA40584
OA40588 OA40592 OA40694 OA40706 OA40708 OA40709 OA40746
OA40753 OA40802 OA40804 OA40805 OA40806 OA40917 OA40935
OA40971 OA40999 OA41035 OA41168 OA41178 OA41301 OA41312
OA41861 OA41926 OA42060 OA42064 OA42076 OA42081 OA42087
OA42301 OA42306 OA42314 OA42355 OA42523 OA42663 OA42763
OA42931 OA42941 OA42986 OA42994 OA42995 OA43078 OA43144
OA43352 OA43355 OA43815 OA43856 OA43883 OA44037 OA44063
OA44119 OA44176 OA44264 OA44723 OA44747 OA44785 OA45011
OA45016 OA45019 OA45209 OA45210 OA45345 OA45395 OA45423
OA45427 OA45453 OA45475 OA45598 OA45748 OA45855 OA45862
OA45883 OA46091 OA46288 OA46303 OA46305 OA46333 OA46629
OA46659

APARs Incorporated into JDZ222J (NFS Japanese)

OA42064 OA46679

APARs Incorporated into HOS2220 (OpenSSH for z/OS)

OA34210 OA37278 OA39283 OA41089 OA41247 OA41704 OA42064 OA42286
OA42873 OA43100 OA43934 OA44038 OA45001 OA46679 OA46951 OA47011

APARs Incorporated into H0GI400 (OSA/SF)

OW51180 OW51720 OW54217 OW54990 OW55733 OW57242

APARs Incorporated into HRM77A0 (RMF)

OA40515 OA41591 OA42066 OA42067 OA42068 OA42164 OA42511
OA42555 OA42589 OA42668 OA42759 OA43155 OA43159 OA43302
OA43329 OA43493 OA43799 OA43905 OA44101 OA44120 OA44502
OA44503 OA44524 OA44771 OA44801 OA45063 OA45109 OA45331
OA45364 OA45385 OA45421 OA45490 OA45542 OA45603 OA45867
OA45985 OA46131 OA46182 OA46663

APARs Incorporated into JRM77AJ

OA42066 OA43155 OA44101 OA44502 OA45542

APARs Incorporated into HQX77A0 (SDSF)

PI05980 PI07376 PI07884 PI10237 PI10364 PI11088 PI11452
PI11707 PI14806 PI17465 PI18213 PI18272 PI20254 PI21162
PI22594 PI23071 PI31172 PI32418 PI33423 PM86301 PM86303
PM86820 PM88921 PM89554 PM91409 PM91418 PM92885 PM93751
PM95671 PM98296 PM98418 PM99257 PM99456

APARs Incorporated into JQX77AJ

No APARs have been incorporated at this time.

APARs Incorporated into HRF77A0 (Security Server: RACF)

OA28010 OA35325 OA36987 OA37511 OA37537 OA37690 OA37716
OA37949 OA38335 OA38517 OA38584 OA38594 OA38618 OA38745
OA38852 OA38900 OA39072 OA39548 OA39645 OA39713 OA39751
OA39759 OA39792 OA40231 OA40304 OA40364 OA40604 OA40819
OA41023 OA41056 OA41162 OA41282 OA41364 OA41386 OA41393
OA41458 OA41508 OA41670 OA42055 OA42183 OA42261 OA42264
OA42483 OA42610 OA42638 OA42706 OA42738 OA42794 OA43020
OA43037 OA43224 OA43248 OA43250 OA43428 OA43482 OA43559
OA43705 OA43811 OA43976 OA44018 OA44047 OA44146 OA44198
OA44366 OA44391 OA44481 OA44696 OA44918 OA45237 OA45402
OA45520 OA45586 OA45642 OA45787 OA46082 OA46236 OA46331
OA46341 OA46694 OA46777 OA47024

APARs Incorporated into JRF77AJ

No APARs have been incorporated at this time.

APARs Incorporated into HIT7750 (Integrated Security Services Enterprise Identity Mapping)

No APARs have been incorporated at this time.

APARs Incorporated into HWJ9143 (Alternate Library for REXX)

PN71194 PQ00096

APARs Incorporated into JWJ9144 (Alternate Library for REXX (Japanese))

No APARs have been incorporated at this time.

APARs Incorporated into HTV77A0 (Runtime Library Extensions)

PI15655

APARs Incorporated into JTV77AJ (Runtime Library Extensions JPN)

No APARs have been incorporated at this time.

APARs Incorporated into HMP1J00 and JMP1J11 (SMP/E)

IO08762 IO08897 IO09256 IO09341 IO09355 IO09386 IO09452 IO09476
IO09513 IO09549 IO09716 IO09940 IO10260 IO10344 IO10362 IO10377
IO10392 IO10404 IO10494 IO10537 IO10550 IO10675 IO10688 IO10753
IO10924 IO10945 IO11169 IO11349 IO11433 IO11458 IO11463 IO11487
IO11583 IO11698 IO11805 IO11793 IO11941 IO12183 IO12263 IO12338
IO12380 IO12940 IO13217 IO13229 IO13463 IO13643 IO13710 IO13944

APARs Incorporated into HBCND0B (SMP/E Planning and Migration Assistant)

IR39002 IR39263 IR39454 IR39791 IR39923 IR39982 IR40499 IR40721
IR41032 IR41082 IR41093 IR41714 IR42543 IR42962 IR43513

APARs Incorporated into JBCND1B (SMP/E Planning and Migration Assistant JPN)

No APARs have been incoporated at this time.

APARs Incorporated into HBCNC00

No APARs have been incorporated at this time.

APARs Incorporated into ETI1106 (TIOC)

OZ27476 OZ28922 OZ34273 OZ36819 OZ39784 OZ42197 OZ42972 OZ43111
OZ43223 OZ43490 OZ44359 OZ44765 OZ45384 OZ46377 OZ46729 OZ48113
OZ48875 OZ49608 AZ49617 AZ50214 AZ51683 AZ56262 AZ56745 AZ57305
AZ59270 AZ61617 AZ62047

APARs Incorporated into HTE77A0 (TSO/E)

OA41010 OA41159 OA41757 OA42061 OA42260 OA42337 OA42493
OA42867 OA43330 OA43331 OA43553 OA44453 OA44581 OA44804
OA44919 OA44955 OA45178 OA45474 OA45541 OA45876

APARs Incorporated into JTE77AE

No APARs incorporated at this time.

APARs Incorporated into JTE77AC

No APARs incorporated at this time.

APARs Incorporated into JTE77AG

No APARs incorporated at this time.

APARs Incorporated into JTE77AJ

No APARs incorporated at this time.

APARs Incorporated into HLB77A0 (XL C/C++)

PI12283 PI19301 PI20174 PI24418 PI24799 PI24986 PI25228
PI25252 PI25804 PI25812 PI28924 PI29230 PI31815

APARs Incorporated into JLB77AJ (XL C/C++ JPN)

No APARs have been incorporated at this time.

APARs Incorporated into HSMA220 (z/OSMF Core Functions)

PI05636 PI06751 PI07001 PI08188 PI08507 PI09400 PI12185
PI12929 PI14160 PI14291 PI15112 PI15218 PI15679 PI15682
PI16584 PI19002 PI20091 PI20092 PI20099 PI20366 PI21258
PI25049 PI26092 PI28047 PI29465 PI32148 PM95295 PM97866
PM98630 PM99500 PM99501 PM99672

APARs Incorporated into HSMA221 (z/OSMF ISPF)

PI05322

APARs Incorporated into HSMA222 (z/OSMF Resource Monitoring)

PI08825 PI15997 PI20138 PI32157

APARs Incorporated into HSMA223 (z/OSMF WLM)

PI08826 PI20139 PI22086 PI22177

APARs Incorporated into HSMA224 (z/OSMF Software Management)

PI17002 PI20151 PI32158 PM97005 PM99316 PM99518

APARs Incorporated into HSMA225 (z/OSMF Incident Log)

PI08847 PI20153 PM86472

APARs Incorporated into HSMA226 (z/OSMF Capacity Provisioning)

PI20166

APARs Incorporated into HSMA227 (z/OSMF Workflow)

PI20168 PI21902 PI22397 PI25955 PI32163 PM98632

APARs Incorporated into HSMA228 (z/OSMF Plug-in A)

No Apars incorporated at this time.

APARs Incorporated into HSMA229 (z/OSMF Plug-in B)

No Apars incorporated at this time.

APARs Incorporated into HSMA22A (z/OSMF Configuration Assistant)

PI05774 PI08194 PI08749 PI10370 PI16476 PI22515 PI31225
PM96630 PM97218 PM97743

APARs Incorporated into HSMA22B (z/OSMF Plug-in C)

No Apars incorporated at this time.

APARs Incorporated into JCRY741 (z/OS Security Level 3 OCSF)

No APARs have been incorporated at this time.

APARs Incorporated into JCPT421 (z/OS Security Level 3 System SSL Security Level 3)

No APARs have been incorporated at this time.

APARs Incorporated into JSWK421 (z/OS Security Level 3 - Network Authentication Service Security Level 3)

No APARs have been incorporated at this time.

APARs Incorporated into JRSL421 (z/OS Security Level 3 IBM TDS Security Level 3)

No APARs have been incorporated at this time.

APARs Incorporated into HOT77A0 (z/OS UNIX System Services Application Services)

OA41069 OA41625 OA42034 OA42530 OA42563 OA43644 OA43857
OA44122 OA44399

APARs Incorporated into JOT77AJ

No APARs have been incorporated at this time.

APARs Incorporated into JOT77AC

No APARs have been incorporated at this time.

APARs Incorporated into HFX1112 (3270 PC File Transfer Program)

No APARs have been incorporated at this time.

Appendix C. DASD Storage Requirements Tables

The following sections contain information about storage requirements for DASD.

C.1 Understanding the DASD Storage Requirements Tables

The DASD space requirements shown in this appendix represent the actual storage required by the FMIDs listed in Figure 1 on page 2 after the product and integration-tested service are installed and the data sets are compressed, plus approximately 15%. The directory blocks have been increased by 40% for load libraries and 15% for the rest. The additional space allows for service installation. When allocating these data sets, you can specify additional storage and directory blocks to allow for future maintenance.

The storage requirements tables in this appendix reflect the data sets required if you are installing **all** base and optional elements of z/OS. They do not reflect any customization performed by the customer. For example, the PARMLIB and PROCLIB space shown is the space required for the SMP/E installation without taking into account copying members from your production PARMLIB and PROCLIB data sets.

For libraries required for IPL, libraries that cannot have secondary space allocated, data sets that cannot be partitioned data set extended (PDSE), and data sets that should have a high-level qualifier of SYS1, see the information sent with the z/OS product. For references to cataloging, see *z/OS DFSMS Managing Catalogs*.

Sample jobs to allocate the target and distribution libraries for certain elements are provided. For descriptions and locations of these jobs, see:

- 7.2.2, "Allocate Target and Distribution Libraries for Wave 0 elements" on page 54
- 8.1.7, "Allocate target and distribution libraries for Wave 1 elements" on page 84
- 8.3.3, "Allocate Target and Distribution Libraries for Wave 2 Elements" on page 119

You only need to run these jobs if any of the libraries do not exist on the target system.

Similarly, sample jobs for certain elements are provided to set up the HFS or zFS directories. For more information about these jobs and where to find them, see:

- 7.2.3, "Create File System Directories for Wave 0" on page 55
- 8.1.8, "Create file system directories for Wave 1" on page 89
- 8.3.4, "Set up File System Directories for Wave 2" on page 119

Sample jobs to define DDDEF entries for the target and distribution libraries for certain elements are provided. For descriptions and locations of these jobs, see:

- 7.2.4, "Define DDDEFs for Wave 0 elements" on page 55
- 8.1.9, "Define DDDEFs for Wave 1 Elements" on page 92
- 8.3.5, "Define DDDEFs for Wave 2 Elements" on page 120

You only need to run these jobs if any of the DDDEF entries do not exist.

Note that the DDDEFs should point to the target system data sets and not to the production data sets. To use the target PARMLIB data set to IPL, you can use the PARMLIB concatenation to isolate the new members or copy the members to the production library. Refer to 8.5.2, "PARMLIB member considerations" on page 134 for more information on using the target system libraries.

C.2 SMP/E Data Sets for z/OS V2.2.0

A complete set of SMP/E data sets is required for the installation of z/OS Version 2 Release 2. See *SMP/E for z/OS Reference*, for information on the use of these data sets.

Figure 79. Storage Requirements for the SMP/E Work Data Sets							
DDDEF Name	DSORG	RECFM	LRECL	BLK SIZE	No. of BLKS	No. of 3390 TRKS	No. of DIR BLKS
SMPWRK1	PO	FB	80	n/a	n/a	150	300
SMPWRK2	PO	FB	80	n/a	n/a	150	300
SMPWRK3	PO	FB	80	n/a	n/a	9500	990
SMPWRK4	PO	FB	80	n/a	n/a	132	300
SMPWRK6	PO	FB	80	n/a	n/a	20000	1500
SYSUT1	--	--	--	n/a	n/a	7500	seq
SYSUT2	--	--	--	n/a	n/a	1500	seq
SYSUT3	--	--	--	n/a	n/a	960	seq
SYSUT4	--	--	--	n/a	n/a	3000	seq
Note: Space for SYSUT1 through SYSUT4 cannot be allocated in blocks (BLKS).							

Abbreviations used for the ORG field are:

HFS file system
PDS Partition Data Set
PDSE Partition Data Set Extended

			R E C F	L R E C	No. of	No. of
		N O T			3390	DIR
DDDEF	**O** **R**					
Name	**G**	**E**	**M**	**L**	**TRKS**	**BLKS**
SMPJHOME	HFS					
SMPLTS	PDSE		U	0	0	--
SMPMTS	PDS		FB	80	6	2
SMPPTS	PDSE		FB	80	940	--
SMPSCDS	PDS		FB	80	5	15
SMPSTS	PDS		FB	80	7	2

Figure 80. Storage Required for SMP/E Data Sets for z/OS V2.2.0

Note: The DDDEF SMPJHOME is required during the SMP/E installation of the product. Ensure the SMPJHOME DDDEF in the SMP/E zone in which z/OS is being installed refers to the path containing the Java Software Development Kit, Version 6.0 or later. This DDDEF will be used to find the jar command during SMP/E APPLY or RESTORE processing.

SMPPTS Considerations

The size of the SMPPTS data set reflects the total space requirements after receiving the changed and unchanged FMIDs for z/OS V2.2.0. Additional space will be required for the SMPPTS based on the service received. The size of the SMPPTS shown does not include service since the total space required for the SMPPTS is dependent on the amount of service received.

C.3 Load Module libraries references

Load module libraries (or "load libraries"), which are data sets containing load modules, have been divided into several tables. Several tables are used because load libraries with different characteristics must be managed differently. You must put some load libaries in specific places in the system-wide search order for programs, such as in the link pack area (LPA) list. Others you can add anywhere in the search order for programs; however, performance and virtual storage considerations will govern appropriate placement for each installation.

The load library tables are:

- Required LPA and optional RMODE 31 LPA-eligible libraries; see Figure 81 on page 334.
- LPA-eligible RMODE 24 libraries; see Figure 82 on page 334.
- Load libraries for change migration; see Figure 83 on page 334.
- Load libraries for callable services; see Figure 84 on page 335.

Some load libraries fall into more than one category and thus could be placed in more than one table. However, we've selected the most likely tables for these load libraries rather than listing them in multiple tables.

Figure 81 lists z/OS libraries that contain required LPA and optional RMODE 31 LPA-eligible modules. Because the only libraries listed in this category are those that contain only RMODE 31 load modules, no virtual storage below 16 MB is used when the libraries are included in the LPA list.

Figure 81. Required LPA and optional RMODE 31 LPA-eligible load libraries			
DDDEF name	**Element or feature name**	**Volume**	**Type**
LPALIB	BCP, DFSMSdfp, DFSMSdss, DFSMShsm, DFSMSrmm, DFSMStvs, FFST, Communications Server, ISPF, Security Server RACF, TIOC, TSO/E, z/OS UNIX System Services	TVOL1	LMOD
SCEELPA	Language Environment	TVOL1	LMOD
SEOYLPA	BookManager READ	TVOL1	LMOD
SERBLPA	RMF	TVOL1	LMOD

Figure 82 lists z/OS libraries that contain RMODE 24 LPA-eligible modules. All RMODE 24 modules placed in LPA are loaded below 16 MB. Placing them in LPA increases common area used below 16 MB and might decrease the private area available below 16 MB. Some of the modules in these libraries need to be placed in LPA to use a z/OS element or function. Other elements and functions can be used without having their modules placed in LPA but perform better when their modules are placed in LPA. For more information about placing modules in LPA and the effects of doing so on performance and virtual storage, see *z/OS MVS Initialization and Tuning Guide*.

Figure 82. LPA-eligible RMODE 24 load libraries			
DDDEF name	**Element or feature name**	**Volume**	**Type**
SBDTLPA	BDT	TVOL1	LMOD
SEZALPA	Communications Server	TVOL1	LMOD
SIATLPA	JES3	TVOL1	LMOD
SICELPA	DFSORT	TVOL1	LMOD
SISFLPA	SDSF	TVOL1	LMOD
SISPLPA	ISPF	TVOL1	LMOD
SORTLPA	DFSORT	TVOL1	LMOD

Figure 83 lists z/OS libraries that contain load modules that are used from another system for migration purposes. These libraries are used, or might be used, during migration from one level of software to another. For example, the MIGLIB library contains load modules used by IPCS to read dumps taken on one level of z/OS on another level. Also included in this list are libraries containing WLM functions.

Figure 83. Load libraries for change migration			
DDDEF name	**Element or feature name**	**Volume**	**Type**
MIGLIB	BCP, BDT, Communications Server, Cryptographic Services, DFSMSdfp, DFSMSdss, DFSMShsm, DFSMSrmm, DFSMStvs, Security Server RACF, SMP/E, TSO/E	TVOL1	LMOD
SCBDHENU	HCD	TVOL1	LMOD
SHASMIG	JES2	TVOL1	LMOD
SIATMIG	JES3	TVOL1	LMOD

Figure 84 lists z/OS libraries that contain load modules that are used as callable services from other elements and non-z/OS products.

Figure 84. Load libraries for callable services			
DDDEF name	**Element or feature name**	**Volume**	**Type**
CSSLIB	BCP, DFSMSdfp, Infoprint Server	TVOL1	LMOD
SAFHFORT	Language Environment	TVOL1	LMOD
SCEEBIND	Language Environment	TVOL1	LMOD
SCEELKED	Language Environment	TVOL1	LMOD
SCEESPC	Language Environment	TVOL1	LMOD
SDMSSVM	DFSMSdfp	TVOL1	LMOD
SEZACMTX	Communications Server	TVOL1	LMOD
SEZADPIL	Communications Server	TVOL1	LMOD
SEZARPCL	Communications Server	TVOL1	LMOD
SIBMCAL2	Language Environment	TVOL1	LMOD
SIBMAM24	Language Environment	TVOL1	LMOD
SIBMCALL	Language Environment	TVOL1	LMOD
SIBMMATH	Language Environment	TVOL1	LMOD
SIBMTASK	Language Environment	TVOL1	LMOD
SIOAMMOD	OSA/SF	TVOL1	LMOD
SISPLOAD	ISPF	TVOL1	LMOD

C.4 Target Libraries for z/OS V2.2.0

Figure 85 on page 338 describes the target libraries required to install z/OS V2.2.0. It maps all the z/OS target libraries to either target library volume 1 (TVOL1) or target library volume 2 (TVOL2). This mapping comprises IBM's recommended system layout. Abbreviations used for Member Type for z/OS V2.2.0 are:

CLST	CLIST
DATA	Data
EXEC	Exec
FONT	Font
HELP	Help
LMOD	Load Module
MAC	Macro
MSG	Message
PARM	Parameter
PANL	Panel
PROC	Procedure
SAMP	Sample
SKEL	Skeleton
BOOK	Book
SRCE	Source
TABL	Table
TEXT	Text

Abbreviations used for Target Volume Are:

T1	TVOL1
T2	TVOL2

Abbreviations used for the data set type field are:

U   Unique data set, allocated by this product and used only by this product. 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, allocated by this product and used by this product and others. 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.

E   Existing shared data set, used by this product and others. This data set is NOT allocated by this product. 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). This existing data set must have enough free space to accommodate the storage size given in this table.

The following abbreviations are used for the ORG field.

PDS	Partition Data Set
PDSE	Partition Data Set Extended
SEQ	Sequential Data Set

In the tables, abbreviations used for the **NOTE** column are:

1   New library introduced in z/OS Version 1 Release 1.

2	New library introduced in z/OS Version 1 Release 2.
3	New library introduced in z/OS Version 1 Release 3.
4	New library introduced in z/OS Version 1 Release 4.
5	New library introduced in z/OS Version 1 Release 5.
6	New library introduced in z/OS Version 1 Release 6.
7	New library introduced in z/OS Version 1 Release 7.
8	New library introduced in z/OS Version 1 Release 8.
9	New library introduced in z/OS Version 1 Release 9.
10	New library introduced in z/OS Version 1 Release 10.
11	New library introduced in z/OS Version 1 Release 11.
21	New library introduced in z/OS Version 2 Release 1.
22	New library introduced in z/OS Version 2 Release 2.
N	Library used only for National Language support. This library can be empty if the language is not ordered.
*	An "*" in the NOTE column indicates that the library is empty after the z/OS release is installed.

All target libraries listed have the following attributes:

- The default name of the data set may be changed.

    Note: Target IPCS data sets (data sets that start with the low level qualifier of SBLS) may be renamed. Be aware, however, if the name is different from SYS1.SBLS*, then clists in the SBLSCLI0 data set will have to be modified. In SBLSCLI0, the data set names within several clists are specified as:
    - SYS1.SBLSCLI0
    - SYS1.SBLSMSG0
    - SYS1.SBLSKEL0
    - SYS1.SBLSPNL0
    - SYS1.SBLSTBL0
- The default block size of the data set may be changed.
- The data set may be merged with another data set that has equivalent characteristics. You must not merge any data sets that contain like-named members or aliases. For example, SFOMOBJ and SCLBCPP are the two libraries that cannot be merged together.
- The data set may be either a PDS or a PDSE.
- The data set may be SMS managed.
- It is not required for the data set to be SMS managed.
- The data set may be in the LPA; see Figure 81 on page 334 for required LPA and optional RMODE 31 LPA-eligible libraries, and Figure 82 on page 334 for LPA-eligible RMODE 24 libraries.
- The data set may be in the LNKLST.
- Some of the target libraries must be APF-authorized; see 8.5.2, "PARMLIB member considerations" on page 134 for information about the data sets that must be APF-authorized.
- It is not required for the data set to reside on the IPL volume.
- The values in the "Member Type" column are not necessarily the actual SMP/E element types identified in the SMPMCS.

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 if 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.

Figure 85 (Page 1 of 20). Storage required for target libraries for z/OS V2.2.0									
Library DDNAME	Mem Type	Tar Vol	T Y P E	Org	RECFM	LRECL	No. of 3390 Trks	No. of DIR Blks	N O T E
ADFMAC1	CLST	T1	U	PDS	FB	80	2	2	
CBRDBRM	DATA	T1	U	PDS	FB	80	7	3	
CHSLIB	LMOD	T1	U	PDS	U	0	4	6	N
CMDLIB	LMOD	T1	E	PDS	U	0	73	75	
CSSLIB	LMOD	T1	E	PDS	U	0	90	271	
DBBLIB	DATA	T1	U	PDS	VB	80	53	34	
DFQLLIB	LMOD	T1	U	PDS	U	0	6	5	
DFQMKLB	MSG	T1	U	PDS	FB	80	3	2	N
DFQMLIB	MSG	T1	U	PDS	FB	80	3	2	
DFQPKLB	PANL	T1	U	PDS	FB	80	36	17	N
DFQPLIB	PANL	T1	U	PDS	FB	80	36	17	
DGTCLIB	CLST	T1	U	PDS	FB	80	167	14	
DGTLLIB	LMOD	T1	U	PDS	U	0	207	142	
DGTMKLB	MSG	T1	U	PDS	FB	80	45	30	N
DGTMLIB	MSG	T1	U	PDS	FB	80	45	30	
DGTPKLB	PANL	T1	S	PDS	FB	80	823	377	N
DGTPLIB	PANL	T1	U	PDS	FB	80	826	377	
DGTSKLB	SKEL	T1	U	PDS	FB	80	4	2	N
DGTSLIB	SKEL	T1	U	PDS	FB	80	33	5	
DGTTLIB	TABL	T1	U	PDS	FB	80	6	5	
FONTLIB	LMOD	T2	U	PDS	VBM	12284	275	200	21
FONTLIBB	LMOD	T2	U	PDS	VBM	12284	2848	480	21
FONT300	LMOD	T2	U	PDS	VBM	12284	3479	466	21
GERLIB	LMOD	T1	U	PDS	U	0	4	6	N
GHELP	HELP	T1	U	PDS	FB	80	37	13	N
HELP	HELP	T1	E	PDS	FB	80	217	49	
HELPENP	HELP	T1	U	PDS	FB	80	35	10	

Library DDNAME	Mem Type	Tar Vol	T Y P E	Org	RECFM	LRECL	No. of 3390 Trks	No. of DIR Blks	N O T E
HLPKLB	HELP	T1	U	PDS	FB	80	4	4	N
HRFCLST	CLST	T1	U	PDS	FB	80	17	3	
HRFMSG	MSG	T1	U	PDS	FB	80	12	5	
HRFPANL	PANL	T1	U	PDS	FB	80	217	88	
HRFSKEL	SKEL	T1	U	PDS	FB	80	65	13	
ICQABTXT	MAC	T2	U	PDS	FB	80	5	3	
ICQCCLIB	CLST	T1	U	PDS	FB	80	165	10	
ICQGABTX	MAC	T2	U	PDS	FB	80	5	4	N
ICQGCLIB	CLST	T1	U	PDS	FB	80	2	2	N
ICQGILIB	MAC	T2	U	PDS	FB	80	3	3	N
ICQGMLIB	MSG	T1	U	PDS	FB	80	18	30	N
ICQGPLIB	PANL	T1	U	PDS	FB	80	341	424	N
ICQGTABL	TABL	T1	U	PDS	FB	80	9	11	N
ICQILIB	MAC	T2	U	PDS	FB	80	3	2	
ICQKABTX	MAC	T2	U	PDS	FB	80	5	4	N
ICQKCLIB	CLST	T1	U	PDS	FB	80	2	2	N
ICQKILIB	MAC	T2	U	PDS	FB	80	3	3	N
ICQKMLIB	MSG	T1	U	PDS	FB	80	18	30	N
ICQKPLIB	PANL	T1	U	PDS	FB	80	342	424	N
ICQKTABL	TABL	T1	U	PDS	FB	80	7	11	N
ICQMLIB	MSG	T1	U	PDS	FB	80	17	15	
ICQPABTX	MAC	T2	U	PDS	FB	80	5	4	N
ICQPCLIB	CLST	T1	U	PDS	FB	80	2	2	N
ICQPILIB	MAC	T2	U	PDS	FB	80	3	3	N
ICQPLIB	PANL	T1	U	PDS	FB	80	335	213	
ICQPMLIB	MSG	T1	U	PDS	FB	80	18	30	N
ICQPPLIB	PANL	T1	U	PDS	FB	80	342	424	N
ICQPTABL	TABL	T1	U	PDS	FB	80	7	11	N
ICQSLIB	SKEL	T1	U	PDS	FB	80	2	2	
ICQTABLS	TABL	T1	U	PDS	FB	80	9	6	

Figure 85 (Page 2 of 20). Storage required for target libraries for z/OS V2.2.0

Figure 85 (Page 3 of 20). Storage required for target libraries for z/OS V2.2.0									
Library DDNAME	Mem Type	Tar Vol	TYPE	Org	RECFM	LRECL	No. of 3390 Trks	No. of DIR Blks	NOTE
IGDVBS1	DATA	T1	U	PDS	VB	4100	9	2	
IMAGELIB	LMOD	T1	U	PDS	U	0	20	30	
KANLIB	LMOD	T1	U	PDS	U	0	4	6	N
KHELP	HELP	T1	E	PDS	FB	80	46	17	N
LINKLIB	LMOD	T1	E	PDS	U	0	3116	1039	
LPALIB	LMOD	T1	E	PDS	U	0	1094	448	
MACLIB	MAC	T2	E	PDS	FB	80	4139	149	
MIGLIB	LMOD	T1	E	PDS	U	0	1217	471	
MODGEN	MAC	T2	E	PDS	FB	80	643	56	
MSGCHS	MSG	T2	S	PDS	VB	259	11	2	N
MSGDEU	MSG	T2	U	PDS	VB	259	10	2	N
MSGENP	MSG	T2	U	PDS	VB	259	9	2	N
MSGENU	MSG	T2	U	PDS	VB	259	59	10	
MSGJPN	MSG	T2	S	PDS	VB	259	50	10	N
NFSLIBE	LMOD	T1	U	PDSE	U	0	226	-	7
NFSMAC	MAC	T2	U	PDS	FB	80	4	2	
NFSSAMP	SAMP	T2	U	PDS	FB	80	14	3	
NFSTARB	DATA	T1	U	PDS	VB	264	26	2	
NUCLEUS	LMOD	T1	E	PDS	U	0	661	153	
PARMLIB	PARM	T1	E	PDS	FB	80	20	9	
PHELP	HELP	T1	S	PDS	FB	80	38	17	N
PROCLIB	PROC	T1	E	PDS	FB	80	9	6	
SACBCNTL	SAMP	T2	U	PDS	FB	80	27	7	
SADMCDA	DATA	T1	U	PDS	FB	400	2	2	
SADMCFO	DATA	T1	U	PDS	FB	400	2	2	
SADMDAT	DATA	T1	U	PDS	VB	255	29	2	
SADMGDF	DATA	T1	U	PDS	FB	400	9	3	
SADMIMG	DATA	T1	U	PDS	FB	400	2	2	
SADMMAP	DATA	T1	U	PDS	FB	400	109	6	
SADMMOD	LMOD	T1	U	PDS	U	0	464	307	

Library DDNAME	Mem Type	Tar Vol	TYPE	Org	RECFM	LRECL	No. of 3390 Trks	No. of DIR Blks	NOTE
SADMMSG	MSG	T1	U	PDS	FB	80	2	2	
SADMOPS	SAMP	T2	U	PDS	VB	255	7	2	
SADMPCF	DATA	T2	U	PDS	FB	400	97	6	
SADMPNL	PANL	T1	U	PDS	FB	80	4	3	
SADMSAM	SAMP	T2	U	PDS	FB	80	195	14	
SADMSYM	DATA	T2	U	PDS	FB	400	212	30	
SADRYLIB	DATA	T1	U	PDS	FB	80	11	6	
SAFHFORT	LMOD	T1	U	PDS	U	0	19	69	
SAMPLIB	SAMP	T2	E	PDS	FB	80	1545	95	
SAOPEXEC	EXEC	T1	U	PDS	FB	80	3	2	
SAOPMENU	MSG	T1	U	PDS	FB	80	4	3	
SAOPMJPN	MSG	T1	U	PDS	FB	80	4	3	N
SAOPPENU	PANL	T1	U	PDS	FB	80	83	34	
SAOPPJPN	PANL	T1	U	PDS	FB	80	84	37	N
SASMMAC1	MAC	T2	U	PDS	FB	80	12	2	
SASMMAC2	MAC	T2	U	PDS	FB	80	5	2	
SASMMOD1	LMOD	T1	U	PDS	U	0	53	6	
SASMMOD2	LMOD	T1	U	PDS	U	0	74	5	
SASMPUT2	DATA	T2	U	PDS	FB	80	134	2	
SASMSAM1	SAMP	T2	U	PDS	FB	80	25	3	
SASMSAM2	SAMP	T2	U	PDS	FB	80	12	2	
SAXREXEC	DATA	T2	U	PDS	VB	255	15	3	9
SBDTCLI0	CLST	T1	U	PDS	FB	80	4	2	
SBDTCMD	LMOD	T1	U	PDS	U	0	2	2	
SBDTHELP	HELP	T1	U	PDS	FB	80	3	2	
SBDTLIB	LMOD	T1	U	PDS	U	0	21	16	
SBDTLINK	LMOD	T1	U	PDS	U	0	3	2	
SBDTLPA	LMOD	T1	U	PDS	U	0	3	2	
SBDTMAC	MAC	T2	U	PDS	FB	80	118	19	
SBDTMSG	MSG	T1	U	PDS	FB	80	2	2	

Figure 85 (Page 4 of 20). Storage required for target libraries for z/OS V2.2.0

Library DDNAME	Mem Type	Tar Vol	TYPE	Org	RECFM	LRECL	No. of 3390 Trks	No. of DIR Blks	NOTE
SBDTPNL0	PANL	T1	U	PDS	FB	80	7	5	
SBDTSAMP	SAMP	T2	U	PDS	FB	80	11	2	
SBLSCLI0	CLST	T1	E	PDS	FB	80	311	18	
SBLSKEL0	SKEL	T1	E	PDS	FB	80	7	6	
SBLSMSG0	MSG	T1	E	PDS	FB	80	10	10	
SBLSPNL0	PANL	T1	E	PDS	FB	80	360	226	
SBLSTBL0	TABL	T1	E	PDS	FB	80	6	3	
SBPXEXEC	EXEC	T1	U	PDS	FB	80	33	4	
SBPXMCHS	MSG	T1	U	PDS	FB	80	12	10	N
SBPXMENU	MSG	T1	U	PDS	FB	80	11	10	
SBPXMJPN	MSG	T1	U	PDS	FB	80	11	10	N
SBPXPCHS	PANL	T1	U	PDS	FB	80	35	28	N
SBPXPENU	PANL	T1	U	PDS	FB	80	34	27	
SBPXPJPN	PANL	T1	U	PDS	FB	80	36	28	N
SBPXTCHS	TABL	T1	U	PDS	FB	80	2	2	N
SBPXTENU	TABL	T1	U	PDS	FB	80	2	2	
SBPXTJPN	TABL	T1	U	PDS	FB	80	2	2	N
SCBDCLST	CLST	T1	U	PDS	FB	80	3	2	
SCBDHENU	LMOD	T1	U	PDS	U	0	427	695	
SCBDHJPN	LMOD	T1	U	PDS	U	0	846	1371	N
SCBDMENU	MSG	T1	U	PDS	FB	80	20	18	
SCBDMJPN	MSG	T1	U	PDS	FB	80	20	18	N
SCBDPENU	PANL	T1	U	PDS	FB	80	82	32	
SCBDPJPN	PANL	T1	U	PDS	FB	80	83	32	N
SCBDTEMP	DATA	T1	U	PDS	FB	80	18	2	
SCBDTENU	TABL	T1	U	PDS	FB	80	2	2	
SCBDTJPN	TABL	T1	U	PDS	FB	80	2	2	N
SCCNCMP	LMOD	T1	U	PDSE	U	0	4247	-	2
SCCNDOC	BOOK	T2	U	PDS	FB	80	2	2	2
SCCNJCL	SAMP	T2	U	PDS	FB	80	4	2	2

Figure 85 (Page 5 of 20). Storage required for target libraries for z/OS V2.2.0

Library DDNAME	Mem Type	Tar Vol	TYPE	Org	RECFM	LRECL	No. of 3390 Trks	No. of DIR Blks	NOTE
SCCNM10	DATA	T1	U	PDS	FB	80	25	11	22
SCCNM11	DATA	T1	U	PDS	FB	80	25	11	22
SCCNN10	DATA	T1	U	PDS	FB	80	35	11	22
SCCNN11	DATA	T1	U	PDS	FB	80	56	17	22
SCCNOBJ	DATA	T1	U	PDS	FB	80	35	5	5
SCCNPRC	PROC	T1	U	PDS	FB	80	7	5	2
SCCNSAM	SAMP	T2	U	PDS	FB	80	26	14	2
SCCNUTL	EXEC	T1	U	PDS	FB	80	7	2	2
SCCR3BND	LMOD	T1	U	PDS	U	0	13	35	11
SCCR6BND	LMOD	T1	U	PDS	U	0	13	35	11
SCDRTABL	DATA	T1	U	PDS	FB	80	283	2	
SCDSSAMP	SAMP	T2	U	PDS	FB	80	3	2	
SCEEBIND	LMOD	T1	U	PDSE	U	0	11	-	
SCEEBND2	DATA	T2	U	PDS	FB	80	4	7	2
SCEECICS	LMOD	T1	U	PDS	U	0	2	2	
SCEECLST	CLST	T1	U	PDS	FB	80	10	2	
SCEECMAP	DATA	T1	U	PDS	FB	80	479	11	
SCEECPP	DATA	T1	U	PDS	FB	80	20	5	
SCEEGXLT	DATA	T1	U	PDS	FB	80	128	35	
SCEEH	MAC	T2	U	PDS	FB	120	117	12	2
SCEEHARP	MAC	T2	U	PDS	FB	80	3	2	
SCEEHH	MAC	T2	U	PDS	FB	80	140	19	
SCEEHNEI	MAC	T2	U	PDS	FB	80	5	2	
SCEEHNET	MAC	T2	U	PDS	FB	80	3	2	
SCEEHSYS	MAC	T2	U	PDS	FB	80	23	6	
SCEEHT	MAC	T2	U	PDS	FB	120	21	3	2
SCEELIB	DATA	T1	U	PDS	FB	80	49	3	
SCEELKED	LMOD	T1	U	PDS	U	0	636	2694	
SCEELKEX	DATA	T1	U	PDS	FB	80	109	194	
SCEELOCL	DATA	T1	U	PDS	FB	80	75	5	

Figure 85 (Page 6 of 20). Storage required for target libraries for z/OS V2.2.0

Library DDNAME	Mem Type	Tar Vol	TYPE	Org	RECFM	LRECL	No. of 3390 Trks	No. of DIR Blks	NOTE
SCEELOCX	DATA	T1	U	PDS	FB	80	850	22	
SCEELPA	LMOD	T1	U	PDS	U	0	244	3	
SCEEMAC	MAC	T2	U	PDS	FB	80	86	10	
SCEEMSGP	MSG	T1	U	PDS	FB	150	2	2	N
SCEEOBJ	DATA	T1	U	PDS	FB	80	7	5	
SCEEPROC	PROC	T1	U	PDS	FB	80	4	3	
SCEERUN	LMOD	T1	U	PDS	U	0	1677	929	
SCEERUN2	LMOD	T1	U	PDSE	U	0	24643	-	
SCEESAMP	SAMP	T2	U	PDS	FB	80	132	42	
SCEESPC	LMOD	T1	U	PDS	U	0	13	77	
SCEESPCO	DATA	T1	U	PDS	FB	80	4	4	
SCLBCPP	DATA	T1	U	PDS	FB	80	83	9	
SCLBDLL	LMOD	T1	U	PDS	U	0	19	3	
SCLBDLL2	LMOD	T1	U	PDSE	U	0	20	-	2
SCLBHH	DATA	T2	U	PDS	FB	120	10	2	
SCLBJCL	SAMP	T2	U	PDS	FB	80	5	2	
SCLBSID	DATA	T1	U	PDS	FB	80	3	2	
SCSFCLI0	CLST	T1	U	PDS	FB	80	30	3	
SCSFHDRS	DATA	T2	U	PDS	FB	80	6	2	
SCSFMOD0	LMOD	T1	U	PDS	U	0	127	163	
SCSFMOD1	LMOD	T1	U	PDS	U	0	2	2	
SCSFMSG0	MSG	T1	U	PDS	FB	80	7	5	
SCSFOBJ	DATA	T2	U	PDS	FB	80	2	2	
SCSFPNL0	PANL	T1	U	PDS	FB	80	34	17	
SCSFSKL0	SKEL	T1	U	PDS	FB	80	2	2	
SCSFTLIB	TABL	T1	U	PDS	FB	80	2	2	
SCTVJCL	SAMP	T2	U	PDS	FB	80	3	2	
SCTVMOD	LMOD	T1	U	PDS	U	0	12	3	
SCUNHF	DATA	T2	U	PDS	VB	255	11	2	2
SCUNJCL	SAMP	T2	U	PDS	FB	80	3	2	2

Figure 85 (Page 7 of 20). Storage required for target libraries for z/OS V2.2.0

Library DDNAME	Mem Type	Tar Vol	TYPE	Org	RECFM	LRECL	No. of 3390 Trks	No. of DIR Blks	NOTE
SCUNLOCL	DATA	T1	U	PDS	FB	80	960	43	8
SCUNMENU	DATA	T1	U	PDS	VB	259	2	2	4
SCUNMJPN	DATA	T1	U	PDS	VB	259	2	2	N
SCUNTBL	DATA	T1	U	PDS	FB	256	43404	978	2
SDFQPKSR	DATA	T2	U	PDS	VB	255	14	3	N
SDFQPSRC	DATA	T2	U	PDS	VB	255	14	3	
SDGTPKSR	DATA	T2	U	PDS	VB	255	227	63	N
SDGTPSRC	DATA	T2	U	PDS	VB	255	226	63	
SDGTTSRC	DATA	T2	U	PDS	VB	255	3	3	
SDMSSVM	LMOD	T1	U	PDS	U	0	72	177	
SDMSSVMS	LMOD	T1	U	PDS	U	0	2	2	
SDWWDLPA	LMOD	T1	U	PDS	U	0	2	2	3
SEAGALT	LMOD	T2	U	PDS	U	0	3	3	9
SEAGJENU	SAMP	T2	U	PDS	FB	80	4	2	9
SEAGMENU	MSG	T1	U	PDS	VB	255	2	2	9
SEAGMJPN	MSG	T1	U	PDS	VB	255	2	2	N
SEAGSAM	SAMP	T2	U	PDS	FB	80	2	2	9
SEDGEXE1	EXEC	T1	U	PDS	FB	80	102	7	
SEDGMENU	MSG	T1	U	PDS	FB	80	12	11	
SEDGMJPN	MSG	T1	U	PDS	FB	80	12	11	N
SEDGPENU	PANL	T1	U	PDS	FB	80	181	86	
SEDGPJPN	PANL	T1	U	PDS	FB	80	183	84	N
SEDGPKSR	DATA	T2	U	PDS	VB	255	65	30	N
SEDGPSRC	DATA	T2	U	PDS	VB	255	66	30	
SEEQINST	DATA	T2	U	PDS	FB	80	2136	2	
SEOXFONT	FONT	T2	U	PDS	VBM	8300	3	2	
SEOXIDAN	FONT	T2	U	PDS	VBM	8300	7	2	N
SEOXIDEU	FONT	T2	U	PDS	VBM	8300	7	2	N
SEOXIENU	FONT	T2	U	PDS	VBM	8300	7	2	
SEOXIESP	FONT	T2	U	PDS	VBM	8300	7	2	N

Figure 85 (Page 8 of 20). Storage required for target libraries for z/OS V2.2.0

Library DDNAME	Mem Type	Tar Vol	TYPE	Org	RECFM	LRECL	No. of 3390 Trks	No. of DIR Blks	NOTE
SEOXIFRA	FONT	T2	U	PDS	VBM	8300	7	2	N
SEOXIFRC	FONT	T2	U	PDS	VBM	8300	7	2	N
SEOXIITA	FONT	T2	U	PDS	VBM	8300	7	2	N
SEOXINLD	FONT	T2	U	PDS	VBM	8300	7	2	N
SEOXIPTB	FONT	T2	U	PDS	VBM	8300	7	2	N
SEOXODAN	BOOK	T2	U	PDS	FB	4096	22	2	N
SEOXODEU	BOOK	T2	U	PDS	FB	4096	22	2	N
SEOXOENU	BOOK	T2	U	PDS	FB	4096	22	2	
SEOXOESP	BOOK	T2	U	PDS	FB	4096	21	2	N
SEOXOFRA	BOOK	T2	U	PDS	FB	4096	22	2	N
SEOXOFRC	BOOK	T2	U	PDS	FB	4096	22	2	N
SEOXOITA	BOOK	T2	U	PDS	FB	4096	22	2	N
SEOXONLD	BOOK	T2	U	PDS	FB	4096	22	2	N
SEOXOPTB	BOOK	T2	U	PDS	FB	4096	22	2	N
SEOX1DAN	BOOK	T2	U	PDS	VB	259	7	2	N
SEOX1DEU	BOOK	T2	U	PDS	VB	259	7	2	N
SEOX1ENU	BOOK	T2	U	PDS	VB	259	7	2	
SEOX1ESP	BOOK	T2	U	PDS	VB	259	7	2	N
SEOX1FRA	BOOK	T2	U	PDS	VB	259	7	2	N
SEOX1FRC	BOOK	T2	U	PDS	VB	259	7	2	N
SEOX1ITA	BOOK	T2	U	PDS	VB	259	7	2	N
SEOX1NLD	BOOK	T2	U	PDS	VB	259	7	2	N
SEOX1PTB	BOOK	T2	U	PDS	VB	259	7	2	N
SEOX2DAN	BOOK	T2	U	PDS	VB	259	4	2	N
SEOX2DEU	BOOK	T2	U	PDS	VB	259	4	2	N
SEOX2ENU	BOOK	T2	U	PDS	VB	259	4	2	
SEOX2ESP	BOOK	T2	U	PDS	VB	259	4	2	N
SEOX2FRA	BOOK	T2	U	PDS	VB	259	5	2	N
SEOX2FRC	BOOK	T2	U	PDS	VB	259	5	2	N
SEOX2ITA	BOOK	T2	U	PDS	VB	259	4	2	N

Figure 85 (Page 9 of 20). Storage required for target libraries for z/OS V2.2.0

Library DDNAME	Mem Type	Tar Vol	T Y P E	Org	RECFM	LRECL	No. of 3390 Trks	No. of DIR Blks	N O T E
SEOX2NLD	BOOK	T2	U	PDS	VB	259	4	2	N
SEOX2PTB	BOOK	T2	U	PDS	VB	259	4	2	N
SEOX3DAN	BOOK	T2	U	PDS	VB	259	23	3	N
SEOX3DEU	BOOK	T2	U	PDS	VB	259	23	3	N
SEOX3ENU	BOOK	T2	U	PDS	VB	259	23	3	
SEOX3ESP	BOOK	T2	U	PDS	VB	259	25	3	N
SEOX3FRA	BOOK	T2	U	PDS	VB	259	28	3	N
SEOX3FRC	BOOK	T2	U	PDS	VB	259	28	3	N
SEOX3ITA	BOOK	T2	U	PDS	VB	259	23	3	N
SEOX3NLD	BOOK	T2	U	PDS	VB	259	23	3	N
SEOX3PTB	BOOK	T2	U	PDS	VB	259	23	3	N
SEOX4DAN	BOOK	T2	U	PDS	VB	259	7	2	N
SEOX4DEU	BOOK	T2	U	PDS	VB	259	6	2	N
SEOX4ENU	BOOK	T2	U	PDS	VB	259	7	2	
SEOX4ESP	BOOK	T2	U	PDS	VB	259	6	2	N
SEOX4FRA	BOOK	T2	U	PDS	VB	259	7	2	N
SEOX4FRC	BOOK	T2	U	PDS	VB	259	7	2	N
SEOX4ITA	BOOK	T2	U	PDS	VB	259	7	2	N
SEOX4NLD	BOOK	T2	U	PDS	VB	259	6	2	N
SEOX4PTB	BOOK	T2	U	PDS	VB	259	6	2	N
SEOYBDAN	MSG	T1	U	PDS	FB	80	2	2	N
SEOYBDEU	MSG	T1	U	PDS	FB	80	2	2	N
SEOYBENU	MSG	T1	U	PDS	FB	80	2	2	
SEOYBESP	MSG	T1	U	PDS	FB	80	2	2	N
SEOYBFRA	MSG	T1	U	PDS	FB	80	2	2	N
SEOYBFRC	MSG	T1	U	PDS	FB	80	2	2	N
SEOYBITA	MSG	T1	U	PDS	FB	80	2	2	N
SEOYBNLD	MSG	T1	U	PDS	FB	80	2	2	N
SEOYBPTB	MSG	T1	U	PDS	FB	80	2	2	N
SEOYCLIB	CLST	T1	U	PDS	FB	80	23	3	

Figure 85 (Page 10 of 20). Storage required for target libraries for z/OS V2.2.0

Library DDNAME	Mem Type	Tar Vol	TYPE	Org	RECFM	LRECL	No. of 3390 Trks	No. of DIR Blks	NOTE
SEOYGDAN	DATA	T2	U	PDS	FB	80	2	2	N
SEOYGDEU	DATA	T2	U	PDS	FB	80	2	2	N
SEOYGENU	DATA	T2	U	PDS	FB	80	2	2	
SEOYGESP	DATA	T2	U	PDS	FB	80	2	2	N
SEOYGFRA	DATA	T2	U	PDS	FB	80	2	2	N
SEOYGFRC	DATA	T2	U	PDS	FB	80	2	2	N
SEOYGITA	DATA	T2	U	PDS	FB	80	2	2	N
SEOYGNLD	DATA	T2	U	PDS	FB	80	2	2	N
SEOYGPTB	DATA	T2	U	PDS	FB	80	2	2	N
SEOYLDAN	DATA	T2	U	PDS	FB	80	2	2	N
SEOYLDEU	DATA	T2	U	PDS	FB	80	2	2	N
SEOYLENU	DATA	T2	U	PDS	FB	80	2	2	
SEOYLESP	DATA	T2	U	PDS	FB	80	2	2	N
SEOYLEXS	DATA	T2	U	PDS	FB	512	362	2	
SEOYLFRA	DATA	T2	U	PDS	FB	80	2	2	N
SEOYLFRC	DATA	T2	U	PDS	FB	80	2	2	N
SEOYLITA	DATA	T2	U	PDS	FB	80	2	2	N
SEOYLNLD	DATA	T2	U	PDS	FB	80	2	2	N
SEOYLOAD	LMOD	T1	U	PDS	U	0	117	3	
SEOYLPA	LMOD	T1	U	PDS	U	0	40	5	
SEOYLPTB	DATA	T2	U	PDS	FB	80	2	2	N
SEOYMDAN	MSG	T1	U	PDS	FB	80	5	5	N
SEOYMDEU	MSG	T1	U	PDS	FB	80	5	5	N
SEOYMENU	MSG	T1	U	PDS	FB	80	5	5	
SEOYMESP	MSG	T1	U	PDS	FB	80	5	5	N
SEOYMFRA	MSG	T1	U	PDS	FB	80	5	5	N
SEOYMFRC	MSG	T1	U	PDS	FB	80	5	5	N
SEOYMITA	MSG	T1	U	PDS	FB	80	5	5	N
SEOYMNLD	MSG	T1	U	PDS	FB	80	5	5	N
SEOYMPTB	MSG	T1	U	PDS	FB	80	5	5	N

Figure 85 (Page 11 of 20). Storage required for target libraries for z/OS V2.2.0

Library DDNAME	Mem Type	Tar Vol	T Y P E	Org	RECFM	LRECL	No. of 3390 Trks	No. of DIR Blks	N O T E
SEOYPDAN	PANL	T1	U	PDS	FB	80	164	60	N
SEOYPDEU	PANL	T1	U	PDS	FB	80	165	63	N
SEOYPENU	PANL	T1	U	PDS	FB	80	153	60	
SEOYPESP	PANL	T1	U	PDS	FB	80	166	60	N
SEOYPFRA	PANL	T1	U	PDS	FB	80	165	64	N
SEOYPFRC	PANL	T1	U	PDS	FB	80	166	60	N
SEOYPITA	PANL	T1	U	PDS	FB	80	161	60	N
SEOYPNLD	PANL	T1	U	PDS	FB	80	164	60	N
SEOYPPTB	PANL	T1	U	PDS	FB	80	165	63	N
SEOYPROC	PROC	T1	U	PDS	FB	80	2	2	
SEOYSAMP	SAMP	T2	U	PDS	FB	80	9	2	
SEOYSDAN	BOOK	T2	U	PDS	VB	259	2	2	N
SEOYSDEU	BOOK	T2	U	PDS	VB	259	2	2	N
SEOYSENU	BOOK	T2	U	PDS	VB	259	2	2	
SEOYSESP	BOOK	T2	U	PDS	VB	259	2	2	N
SEOYSFRA	BOOK	T2	U	PDS	VB	259	2	2	N
SEOYSFRC	BOOK	T2	U	PDS	VB	259	2	2	N
SEOYSITA	BOOK	T2	U	PDS	VB	259	2	2	N
SEOYSNLD	BOOK	T2	U	PDS	VB	259	2	2	N
SEOYSPTB	BOOK	T2	U	PDS	VB	259	2	2	N
SEOYTDAN	TABL	T1	U	PDS	FB	80	3	2	N
SEOYTDEU	TABL	T1	U	PDS	FB	80	3	2	N
SEOYTENU	TABL	T1	U	PDS	FB	80	4	2	
SEOYTESP	TABL	T1	U	PDS	FB	80	3	2	N
SEOYTFRA	TABL	T1	U	PDS	FB	80	3	2	N
SEOYTFRC	TABL	T1	U	PDS	FB	80	3	2	N
SEOYTITA	TABL	T1	U	PDS	FB	80	3	2	N
SEOYTNLD	TABL	T1	U	PDS	FB	80	3	2	N
SEOYTPTB	TABL	T1	U	PDS	FB	80	3	2	N
SEOYXDAN	BOOK	T2	U	PDS	FB	4096	7	2	N

Figure 85 (Page 12 of 20). Storage required for target libraries for z/OS V2.2.0

Library DDNAME	Mem Type	Tar Vol	T Y P E	Org	RECFM	LRECL	No. of 3390 Trks	No. of DIR Blks	N O T E
SEOYXDEU	BOOK	T2	U	PDS	FB	4096	14	2	N
SEOYXENU	BOOK	T2	U	PDS	FB	4096	14	2	
SEOYXESP	BOOK	T2	U	PDS	FB	4096	15	2	N
SEOYXFRA	BOOK	T2	U	PDS	FB	4096	17	2	N
SEOYXFRC	BOOK	T2	U	PDS	FB	4096	17	2	N
SEOYXITA	BOOK	T2	U	PDS	FB	4096	7	2	N
SEOYXNLD	BOOK	T2	U	PDS	FB	4096	7	2	N
SEOYXPTB	BOOK	T2	U	PDS	FB	4096	14	2	N
SEPHBOK1	BOOK	T2	U	PDS	VB	259	77	3	
SEPHCLB1	CLST	T1	U	PDS	FB	80	2	2	
SEPHCLIB	CLST	T1	U	PDS	FB	80	2	2	
SEPHDAT1	DATA	T2	U	PDS	V	256	3	3	
SEPHLOD1	LMOD	T1	U	PDS	U	0	17	2	
SEPHMSG1	MSG	T1	U	PDS	FB	80	2	2	
SEPHPNL1	PANL	T1	U	PDS	FB	80	6	4	
SEPHSAMP	SAMP	T2	U	PDS	FB	80	5	2	
SEPHSAM1	SAMP	T2	U	PDS	FB	80	2	2	
SEPHTAB	DATA	T1	U	PDS	FB	4096	81	2	
SEPHTBL1	DATA	T1	U	PDS	FB	4096	2	2	
SEPWBENU	DATA	T2	U	PDS	FB	4096	6	2	N
SEPWCENU	CLST	T1	U	PDS	FB	80	3	2	
SEPWMAC1	MAC	T2	U	PDS	FB	80	2	2	N
SEPWMOD1	LMOD	T1	U	PDS	U	0	13	12	
SEPWMOD2	LMOD	T1	U	PDS	U	0	4	6	
SEPWMOD3	LMOD	T1	U	PDS	U	0	2	2	
SEPWMOD4	LMOD	T1	U	PDS	U	0	145	75	
SEPWPENU	PANL	T1	U	PDS	FB	80	3	2	
SEPWSRC1	DATA	T2	U	PDS	FB	80	6	2	
SEPWSRC2	SAMP	T2	U	PDS	FB	80	4	2	
SERBCLS	CLST	T1	U	PDS	FB	80	29	3	

Figure 85 (Page 13 of 20). Storage required for target libraries for z/OS V2.2.0

Library DDNAME	Mem Type	Tar Vol	TYPE	Org	RECFM	LRECL	No. of 3390 Trks	No. of DIR Blks	NOTE
SERBLINK	LMOD	T1	U	PDS	U	0	494	45	
SERBLPA	LMOD	T1	U	PDS	U	0	7	14	
SERBMENU	MSG	T1	U	PDS	FB	80	6	6	
SERBMJPN	MSG	T1	U	PDS	FB	80	6	6	N
SERBPENU	PANL	T1	U	PDS	FB	80	358	132	
SERBPJPN	PANL	T1	U	PDS	FB	80	367	135	N
SERBPWSV	DATA	T2	U	PDS	VB	255	3437	2	
SERBT	TABL	T1	U	PDS	FB	80	18	5	N
SERBTENU	TABL	T1	U	PDS	FB	80	7	2	
SERBTJPN	TABL	T1	U	PDS	FB	80	7	2	N
SEUVFEXC	EXEC	T1	U	PDS	FB	80	2	2	
SEUVFLIB	DATA	T2	U	PDS	FB	80	7	2	N
SEUVFSAM	SAMP	T2	U	PDS	FB	80	4	2	
SEZACMAC	MAC	T2	U	PDS	FB	80	605	91	
SEZACMTX	LMOD	T1	U	PDS	U	0	37	194	
SEZADBCX	DATA	T1	U	PDS	VB	231	225	2	
SEZADBRM	DATA	T1	U	PDS	FB	80	11	2	
SEZADPIL	LMOD	T1	U	PDS	U	0	4	6	
SEZADSIL	DATA	T1	U	PDS	U	0	25	3	
SEZADSIM	DATA	T1	U	PDS	FB	80	4	3	
SEZADSIP	PARM	T1	U	PDS	FB	80	2	2	
SEZAEXEC	EXEC	T1	U	PDS	FB	80	7	2	11
SEZAINST	SAMP	T2	U	PDS	FB	80	240	53	
SEZALIBN	LMOD	T1	U	PDS	U	0	7	44	
SEZALNK2	LMOD	T1	U	PDS	U	0	13	2	
SEZALOAD	LMOD	T1	U	PDSE	U	0	2760	-	4
SEZALPA	LMOD	T1	U	PDS	U	0	3	5	4
SEZAMENU	MSG	T1	U	PDS	FB	80	4	4	
SEZANCLS	CLST	T1	U	PDS	FB	80	82	12	
SEZANMAC	MAC	T2	U	PDS	FB	80	78	6	

Figure 85 (Page 14 of 20). Storage required for target libraries for z/OS V2.2.0

Library DDNAME	Mem Type	Tar Vol	TYPE	Org	RECFM	LRECL	No. of 3390 Trks	No. of DIR Blks	NOTE
SEZANPNL	DATA	T1	U	PDS	FB	80	42	20	
SEZAOLDX	LMOD	T1	U	PDS	U	0	3	5	3
SEZAPENU	PANL	T1	U	PDS	FB	80	13	7	
SEZARNT1	DATA	T1	U	PDS	FB	80	207	64	
SEZARNT2	DATA	T1	U	PDS	FB	80	35	6	3
SEZARNT3	DATA	T1	U	PDS	FB	80	151	12	3
SEZARNT4	DATA	T1	U	PDS	FB	80	17	6	
SEZAROE1	DATA	T1	U	PDS	FB	80	207	60	
SEZAROE2	DATA	T1	U	PDS	FB	80	35	6	3
SEZAROE3	DATA	T1	U	PDS	FB	80	151	12	3
SEZARPCL	LMOD	T1	U	PDS	U	0	10	40	
SEZATCP	LMOD	T1	U	PDS	U	0	118	13	
SEZATCPX	DATA	T1	U	PDS	FB	80	14	7	
SEZATELX	DATA	T1	U	PDS	FB	80	10	7	
SEZAXAWL	DATA	T1	U	PDS	U	0	13	51	3
SEZAXLD1	DATA	T1	U	PDS	F	256	2	2	
SEZAXLD2	DATA	T1	U	PDS	VB	5124	87	11	
SEZAXMLB	DATA	T1	U	PDS	U	0	49	181	3
SEZAXTLB	DATA	T1	U	PDS	U	0	19	114	3
SEZAX11L	DATA	T1	U	PDS	U	0	57	286	3
SFNTILIB	LMOD	T2	U	PDS	VBM	16124	3193	527	21
SFOMHDRS	MAC	T2	U	PDS	FB	80	18	2	
SFOMOBJ	DATA	T1	U	PDS	FB	80	68	37	
SFONDLIB	LMOD	T2	U	PDS	VBM	12284	18764	740	21
SGIMCLS0	CLST	T1	U	PDS	FB	80	14	3	
SGIMLMD0	LMOD	T1	U	PDS	U	0	98	12	
SGIMMENU	MSG	T1	U	PDS	FB	80	10	7	
SGIMMJPN	MSG	T1	U	PDS	FB	80	10	7	N
SGIMPENU	PANL	T1	U	PDS	FB	80	160	89	
SGIMPJPN	PANL	T1	U	PDS	FB	80	159	89	N

Figure 85 (Page 15 of 20). Storage required for target libraries for z/OS V2.2.0

Library DDNAME	Mem Type	Tar Vol	TYPE	Org	RECFM	LRECL	No. of 3390 Trks	No. of DIR Blks	NOTE
SGIMSENU	SKEL	T1	U	PDS	FB	80	18	6	
SGIMTENU	TABL	T1	U	PDS	FB	80	630	2	
SGIMTJPN	TABL	T1	U	PDS	FB	80	2	2	N
SGLDEXEC	EXEC	T1	U	PDS	FB	80	2	3	
SGLDEXPC	DATA	T2	U	PDS	FB	80	3	2	
SGLDHDRC	DATA	T2	U	PDS	FB	80	9	2	
SGLDSAMP	SAMP	T2	U	PDS	FB	80	13	3	
SGSKSAMP	SAMP	T2	U	PDS	FB	80	4	2	
SHAPEXE3	EXEC	T1	S	PDS	VB	255	2	2	22
SHAPJCL3	SAMP	T2	S	PDS	FB	80	2	2	22
SHASLNKE	LMOD	T1	U	PDSE	U	0	111	-	7
SHASMAC	MAC	T2	U	PDS	FB	80	939	56	
SHASMENU	MSG	T1	U	PDS	VB	259	10	2	
SHASMIG	LMOD	T1	U	PDS	U	0	150	68	
SHASMJPN	MSG	T1	U	PDS	VB	259	11	2	N
SHASPARM	PARM	T1	U	PDS	FB	80	3	2	
SHASPNL0	PANL	T1	U	PDS	FB	80	32	4	
SHASSAMP	SAMP	T2	U	PDS	FB	80	182	6	
SHASSRC	SRCE	T2	U	PDS	FB	80	3975	23	
SIATCLI0	CLST	T1	U	PDS	FB	80	18	2	
SIATLIB	LMOD	T1	U	PDS	U	0	562	118	
SIATLINK	LMOD	T1	U	PDS	U	0	37	7	
SIATLPA	LMOD	T1	U	PDS	U	0	59	17	
SIATMAC	MAC	T2	U	PDS	FB	80	1297	74	
SIATMIG	LMOD	T1	U	PDS	U	0	199	84	
SIATMSG0	MSG	T1	U	PDS	FB	80	2	2	
SIATPARM	PARM	T1	U	PDS	FB	80	3	2	
SIATPNL0	PANL	T1	U	PDS	FB	80	22	7	
SIATSAMP	SAMP	T2	U	PDS	FB	80	32	3	
SIATSRC	SRCE	T2	U	PDS	FB	80	6877	89	

Figure 85 (Page 16 of 20). Storage required for target libraries for z/OS V2.2.0

Figure 85 (Page 17 of 20). Storage required for target libraries for z/OS V2.2.0										
Library DDNAME	Mem Type	Tar Vol	T Y P E	Org	RECFM	LRECL	No. of 3390 Trks	No. of DIR Blks	N O T E
SIATTBL0	TABL	T1	U	PDS	FB	80	3	2	
SIBMAM24	LMOD	T1	U	PDS	U	0	7	24	
SIBMCALL	LMOD	T1	U	PDS	U	0	2	2	
SIBMCAL2	LMOD	T1	U	PDS	U	0	2	2	
SIBMMATH	LMOD	T1	U	PDS	U	0	14	56	
SIBMTASK	LMOD	T1	U	PDS	U	0	2	3	
SICELINK	LMOD	T1	U	PDS	U	0	23	13	
SICELPA	LMOD	T1	U	PDS	U	0	2	2	
SICEPROC	SAMP	T2	U	PDS	FB	80	2	2	
SICESAMP	SAMP	T2	U	PDS	FB	80	7	3	
SICESRCE	MAC	T2	U	PDS	FB	80	4	3	
SICEUSER	MAC	T2	U	PDS	FB	80	17	2	
SICHMJPN	MSG	T1	U	PDS	FB	80	11	5	N
SICHPJPN	PANL	T1	U	PDS	FB	80	224	87	N
SIEAHDR	MAC	T2	U	PDS	FB	80	84	6	
SIEAHDRV	DATA	T2	U	PDS	VB	260	26	4	6
SIEALNKE	LMOD	T1	S	PDSE	U	0	3597	-	6
SIEAMIGE	LMOD	T1	S	PDSE	U	0	19	-	7
SIEASID	DATA	T2	U	PDS	FB	80	7	4	6
SIFALIB	LMOD	T1	U	PDS	U	0	9	2	
SIOAIBIN	DATA	T2	U	PDS	FB	256	78	2	
SIOAJAVA	DATA	T2	U	PDS	VB	84	44	2	
SIOALMOD	LMOD	T1	U	PDS	U	0	50	3	
SIOAMMOD	LMOD	T1	U	PDS	U	0	2	3	
SIOASAMP	SAMP	T2	U	PDS	FB	80	63	3	
SIOEEXEC	EXEC	T1	U	PDS	FB	80	18	2	
SIOEMJPN	MSG	T1	U	PDS	VB	255	7	2	N
SIOEPROC	PROC	T1	U	PDS	FB	80	2	2	
SIOESAMP	SAMP	T2	U	PDS	FB	80	4	2	
SISFEXEC	EXEC	T1	U	PDS	FB	80	28	3	

Library DDNAME	Mem Type	Tar Vol	TYPE	Org	RECFM	LRECL	No. of 3390 Trks	No. of DIR Blks	NOTE
SISFHELP	HELP	T1	U	PDS	FB	80	2	2	4
SISFJCL	SAMP	T2	U	PDS	FB	80	20	2	
SISFLINK	LMOD	T1	U	PDS	U	0	4	2	
SISFLOAD	LMOD	T1	U	PDS	U	0	396	17	
SISFLPA	LMOD	T1	U	PDS	U	0	2	2	
SISFMAC	SRCE	T2	U	PDS	FB	80	102	3	9
SISFMIG	LMOD	T1	U	PDS	U	0	21	37	10
SISFMLIB	MSG	T1	U	PDS	FB	80	3	2	
SISFPLIB	PANL	T1	U	PDS	FB	80	1332	375	
SISFSLIB	SKEL	T1	U	PDS	FB	80	7	4	
SISFSRC	SRCE	T2	U	PDS	FB	80	4	2	
SISFTLIB	TABL	T1	U	PDS	FB	80	170	2	
SISPALIB	DATA	T2	U	PDS	FB	80	2	2	
SISPCLIB	CLST	T1	U	PDS	FB	80	19	4	
SISPEXEC	EXEC	T1	U	PDS	FB	80	107	4	
SISPGDES	DATA	T2	U	PDS	FB	80	285	201	N
SISPGDEU	DATA	T2	U	PDS	FB	80	285	201	N
SISPGENP	DATA	T2	U	PDS	FB	80	278	199	N
SISPGENU	DATA	T2	U	PDS	FB	80	279	201	
SISPGJPN	DATA	T2	U	PDS	FB	80	279	201	N
SISPGMLI	DATA	T2	U	PDS	FB	80	175	79	
SISPGUI	DATA	T2	U	PDS	VB	255	317	2	
SISPHELP	HELP	T1	U	PDS	FB	80	3	2	
SISPLOAD	LMOD	T1	U	PDS	U	0	128	72	
SISPLPA	LMOD	T1	U	PDS	U	0	457	44	
SISPMACS	MAC	T2	U	PDS	FB	80	58	12	
SISPMDES	MSG	T1	U	PDS	FB	80	53	51	N
SISPMDEU	MSG	T1	U	PDS	FB	80	53	51	N
SISPMENP	MSG	T1	U	PDS	FB	80	48	51	N
SISPMENU	MSG	T1	U	PDS	FB	80	48	51	

Figure 85 (Page 18 of 20). Storage required for target libraries for z/OS V2.2.0

Library DDNAME	Mem Type	Tar Vol	T Y P E	Org	RECFM	LRECL	No. of 3390 Trks	No. of DIR Blks	N O T E
SISPMJPN	MSG	T1	U	PDS	FB	80	50	51	N
SISPPDES	PANL	T1	U	PDS	FB	80	503	308	N
SISPPDEU	PANL	T1	U	PDS	FB	80	503	308	N
SISPPENP	PANL	T1	U	PDS	FB	80	489	308	N
SISPPENU	PANL	T1	U	PDS	FB	80	493	308	
SISPPJPN	PANL	T1	U	PDS	FB	80	489	308	N
SISPSAMP	SAMP	T2	U	PDS	FB	80	98	21	
SISPSDES	SKEL	T1	U	PDS	FB	80	113	75	N
SISPSDEU	SKEL	T1	U	PDS	FB	80	113	75	N
SISPSENP	SKEL	T1	U	PDS	FB	80	106	75	N
SISPSENU	SKEL	T1	U	PDS	FB	80	106	75	
SISPSJPN	SKEL	T1	U	PDS	FB	80	107	75	N
SISPSLIB	SKEL	T1	U	PDS	FB	80	26	7	
SISPTDES	TABL	T1	U	PDS	FB	80	4	2	N
SISPTDEU	TABL	T1	U	PDS	FB	80	4	2	N
SISPTENP	TABL	T1	U	PDS	FB	80	4	2	N
SISPTENU	TABL	T1	U	PDS	FB	80	4	2	
SISPTJPN	TABL	T1	U	PDS	FB	80	4	2	N
SISTASGD	DATA	T1	U	PDS	VB	512	61	5	
SISTASN1	DATA	T1	U	PDS	FB	1024	11	4	
SISTCLIB	LMOD	T1	U	PDS	U	0	97	117	
SISTCMIP	DATA	T1	U	PDS	FB	80	2	2	
SISTDAT1	DATA	T1	U	PDS	VB	6156	28	2	
SISTDAT2	DATA	T1	U	PDS	VB	259	6	2	
SISTGDMO	DATA	T1	U	PDS	FB	500	120	2	
SISTMAC1	MAC	T2	U	PDS	FB	80	17	3	
SORTLIB	LMOD	T1	U	PDS	U	0	28	41	
SORTLPA	LMOD	T1	U	PDS	U	0	32	13	
SVCLIB	LMOD	T1	U	PDS	U	0	2	2	
UADS	DATA	T1	U	PDS	FB	80	2	2	

Figure 85 (Page 19 of 20). Storage required for target libraries for z/OS V2.2.0

Figure 85 (Page 20 of 20). Storage required for target libraries for z/OS V2.2.0									
Library DDNAME	Mem Type	Tar Vol	T Y P E	Org	RECFM	LRECL	No. of 3390 Trks	No. of DIR Blks	N O T E
VTAMLIB	LMOD	T1	U	PDS	U	0	282	83	

C.5 Distribution Libraries for z/OS V2.2.0

Figure 86 on page 358 describes the distribution libraries required to install z/OS V2.2.0. Abbreviations used for the data set type field are:

U   Unique data set, allocated by this product and used only by this product. 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, allocated by this product and used by this product and others. 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.

E   Existing shared data set, used by this product and others. This data set is NOT allocated by this product. 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). This existing data set must have enough free space to accommodate the storage size given in this table.

Abbreviations used for the ORG field are:

PDS   Partition Data Set
PDSE   Partition Data Set Extended
SEQ   Sequential Data Set

In the tables, abbreviations used for the **NOTE** column are:

1   New library introduced in z/OS Version 1 Release 1.
2   New library introduced in z/OS Version 1 Release 2.
3   New library introduced in z/OS Version 1 Release 3.
4   New library introduced in z/OS Version 1 Release 4.
5   New library introduced in z/OS Version 1 Release 5.
6   New library introduced in z/OS Version 1 Release 6.
7   New library introduced in z/OS Version 1 Release 7.
8   New library introduced in z/OS Version 1 Release 8.
9   New library introduced in z/OS Version 1 Release 9.
10   New library introduced in z/OS Version 1 Release 10.
11   New library introduced in z/OS Version 1 Release 11.
21   New library introduced in z/OS Version 2 Release 1.

22	New library introduced in z/OS Version 2 Release 2.
N	Library used only for National Language support. This library can be empty if the language is not ordered.
*	An "*" in the NOTE column indicates that the library is empty after the z/OS release is installed.

All distribution libraries listed have the following attributes:
- The default name of the data set may be changed
- The default block size of the data set may be changed
- The data set may be merged with another data set that has equivalent characteristics
- The data set may be either a PDS or a PDSE.

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 or not 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 on the names and sizes of the required data sets, refer to 7.2.2, "Allocate Target and Distribution Libraries for Wave 0 elements" on page 54 and 8.1.7, "Allocate target and distribution libraries for Wave 1 elements" on page 84.

Figure 86 (Page 1 of 20). Storage required for distribution libraries for z/OS V2.2.0

Library DDNAME	TYPE	ORG	RECFM	LRECL	No. of 3390 Trks	No. of DIR Blks	NOTE
AACBCNTL	-	PDS	FB	80	27	7	
AADFMAC1	-	PDS	FB	80	2	2	
AADMCDA	-	PDS	FB	400	2	2	
AADMCFO	-	PDS	FB	400	2	2	
AADMDAT	-	PDS	VB	255	29	2	
AADMGDF	-	PDS	FB	400	9	3	
AADMIMG	-	PDS	FB	400	2	2	
AADMMAP	-	PDS	FB	400	109	6	
AADMMOD	-	PDS	U	0	669	775	
AADMMSG	-	PDS	FB	80	2	2	
AADMOPS	-	PDS	VB	255	7	2	
AADMPCF	-	PDS	FB	400	97	6	
AADMPNL	-	PDS	FB	80	4	3	
AADMSAM	-	PDS	FB	80	195	14	
AADMSYM	-	PDS	FB	400	212	30	
AADRLIB	-	PDS	U	0	103	82	
AADRYLIB	-	PDS	FB	80	11	6	

Library DDNAME	TYPE	ORG	RECFM	LRECL	No. of 3390 Trks	No. of DIR Blks	NOTE
					Figure 86 (Page 2 of 20). Storage required for distribution libraries for z/OS V2.2.0		
AAFHMOD1	-	PDS	U	0	168	709	
AAFHSRC1	-	PDS	FB	80	18	4	
AAOPEXEC	-	PDS	FB	80	3	2	
AAOPHFS	-	PDS	VB	255	2650	21	
AAOPHJPN	-	PDS	VB	255	368	7	
AAOPMENU	-	PDS	FB	80	4	3	
AAOPMJPN	-	PDS	FB	80	4	3	
AAOPMOD1	-	PDS	U	0	195	62	
AAOPPENU	-	PDS	FB	80	83	34	
AAOPPJPN	-	PDS	FB	80	84	37	
AASMMAC1	-	PDS	FB	80	18	2	
AASMMAC2	-	PDS	FB	80	5	2	
AASMMOD1	-	PDS	U	0	34	24	
AASMMOD2	-	PDS	U	0	113	107	
AASMPUT2	-	PDS	FB	80	134	2	
AASMSAM1	-	PDS	FB	80	25	3	
AASMSAM2	-	PDS	FB	80	12	2	
AAXREXEC	-	PDS	VB	255	14	3	
ABDTCLI0	-	PDS	FB	80	4	2	
ABDTHELP	-	PDS	FB	80	3	2	
ABDTMAC	-	PDS	FB	80	118	19	
ABDTMOD	-	PDS	U	0	38	45	
ABDTMSG	-	PDS	FB	80	2	2	
ABDTPNL0	-	PDS	FB	80	7	5	
ABDTSAMP	-	PDS	FB	80	11	2	
ABLSCLI0	-	PDS	FB	80	311	18	
ABLSKEL0	-	PDS	FB	80	7	6	
ABLSMSG0	-	PDS	FB	80	10	10	
ABLSPNL0	-	PDS	FB	80	360	226	
ABLSTBL0	-	PDS	FB	80	6	3	
ABMFMOD0	-	PDS	U	0	34	27	

Library DDNAME	TYPE	ORG	RECFM	LRECL	No. of 3390 Trks	No. of DIR Blks	NOTE
ABPXEXEC	-	PDS	FB	80	35	4	
ABPXMCHS	-	PDS	FB	80	12	10	
ABPXMENU	-	PDS	FB	80	11	10	
ABPXMJPN	-	PDS	FB	80	11	10	
ABPXMOD1	-	PDS	U	0	324	208	
ABPXPCHS	-	PDS	FB	80	35	28	
ABPXPENU	-	PDS	FB	80	34	27	
ABPXPJPN	-	PDS	FB	80	36	28	
ABPXSPC	-	PDS	U	0	5	6	
ABPXTCHS	-	PDS	FB	80	2	2	
ABPXTENU	-	PDS	FB	80	2	2	
ABPXTJPN	-	PDS	FB	80	2	2	
ABPXXMLS	-	PDS	VB	256	4	2	
ACBDCLST	-	PDS	FB	80	3	2	
ACBDEHFS	-	PDS	VB	255	3	2	
ACBDHENU	-	PDS	U	0	427	695	
ACBDHJPN	-	PDS	U	0	444	1371	
ACBDMENU	-	PDS	FB	80	20	18	
ACBDMJPN	-	PDS	FB	80	20	18	
ACBDMOD1	-	PDS	U	0	365	135	
ACBDMOD2	-	PDS	U	0	6	9	
ACBDMOD3	-	PDS	U	0	6	9	
ACBDPENU	-	PDS	FB	80	82	32	
ACBDPJPN	-	PDS	FB	80	83	32	
ACBDTEMP	-	PDS	FB	80	18	2	
ACBDTENU	-	PDS	FB	80	2	2	
ACBDTJPN	-	PDS	FB	80	2	2	
ACBRDBRM	-	PDS	FB	80	7	3	
ACBRMOD0	-	PDS	U	0	167	178	
ACCNCMP	-	PDSE	U	0	4246	-	
ACCNSR1	-	PDS	FB	80	75	23	

Figure 86 (Page 3 of 20). Storage required for distribution libraries for z/OS V2.2.0

Library DDNAME	TYPE	ORG	RECFM	LRECL	No. of 3390 Trks	No. of DIR Blks	NOTE
ACCNSR2	-	PDS	FB	80	25	11	22
ACCNSR3	-	PDS	FB	80	35	11	22
ACCNSR4	-	PDS	FB	80	25	11	22
ACCNSR5	-	PDS	FB	80	56	17	22
ACCRHFS	-	PDS	VB	256	3	2	
ACCRMOD	-	PDS	U	0	26	24	
ACDMMOD0	-	PDS	U	0	53	40	
ACDRMODS	-	PDS	U	0	9	2	
ACDRTABL	-	PDS	FB	80	283	2	
ACDSHFS	-	PDS	VB	255	558	5	
ACDSSAMP	-	PDS	FB	80	3	2	
ACEEMOD1	-	PDS	U	0	457	506	
ACEEMOD2	-	PDSE	U	0	23550	-	
ACEESRC1	-	PDS	FB	80	163	15	
ACEESRC2	-	PDS	FB	120	114	12	
ACEESRC3	-	PDS	FB	120	19	3	
ACFZHFS	-	PDS	VB	255	947	2	
ACLBDLL	-	PDS	U	0	107	5	
ACLBDLL2	-	PDSE	U	0	316	-	
ACLBHFS1	-	PDS	VB	255	3925	9	
ACLBOBJ	-	PDS	FB	80	122	10	
ACLBSR1	-	PDS	FB	120	18	3	
ACLMMOD0	-	PDS	U	0	267	189	
ACMDLIB	-	PDS	U	0	36	41	
ACSFCLI0	U	PDS	FB	80	30	3	
ACSFHDRS	U	PDS	FB	80	6	2	
ACSFHFS	U	PDS	VB	255	37	3	
ACSFMOD0	U	PDS	U	0	166	194	
ACSFMOD1	U	PDS	U	0	2	2	
ACSFMSG0	U	PDS	FB	80	7	5	
ACSFOBJ	U	PDS	FB	80	2	2	

Figure 86 (Page 4 of 20). Storage required for distribution libraries for z/OS V2.2.0

Library DDNAME	TYPE	ORG	RECFM	LRECL	No. of 3390 Trks	No. of DIR Blks	NOTE
ACSFPNL0	U	PDS	FB	80	34	17	
ACSFSKL0	U	PDS	FB	80	2	2	
ACSFTLIB	U	PDS	FB	80	2	2	
ACSSLIB	-	PDS	U	0	87	259	
ACTVMOD	-	PDS	U	0	12	2	
ACTVSRC	-	PDS	FB	80	3	2	
ACUNHF	-	PDS	VB	255	11	2	
ACUNJCL	-	PDS	FB	80	3	2	
ACUNLOCL	-	PDS	FB	80	960	43	
ACUNMAC	-	PDS	FB	80	89	3	
ACUNMENU	-	PDS	VB	259	2	2	
ACUNMJPN	-	PDS	VB	259	2	2	
ACUNMOD	-	PDS	U	0	69	54	
ACUNSAMP	-	PDS	FB	80	42	4	
ACUNTBL	-	PDS	FB	256	43404	978	
ADBBLIB	-	PDS	VB	80	55	34	
ADFPMOD0	-	PDS	U	0	27	20	
ADFQMKLB	-	PDS	FB	80	3	2	
ADFQMLIB	-	PDS	FB	80	3	2	
ADFQPKLB	-	PDS	FB	80	36	17	
ADFQPKSR	-	PDS	VB	255	14	3	
ADFQPLIB	-	PDS	FB	80	36	17	
ADFQPSRC	-	PDS	VB	255	14	3	
ADGTCLIB	-	PDS	FB	80	167	14	
ADGTLLIB	-	PDS	U	0	245	292	
ADGTMKLB	-	PDS	FB	80	45	30	
ADGTMLIB	-	PDS	FB	80	45	30	
ADGTPKLB	-	PDS	FB	80	825	377	
ADGTPKSR	-	PDS	VB	255	227	63	
ADGTPLIB	-	PDS	FB	80	828	377	
ADGTPSRC	-	PDS	VB	255	226	63	

Figure 86 (Page 5 of 20). Storage required for distribution libraries for z/OS V2.2.0

Library DDNAME	TYPE	ORG	RECFM	LRECL	No. of 3390 Trks	No. of DIR Blks	NOTE
ADGTSKLB	-	PDS	FB	80	4	2	
ADGTSLIB	-	PDS	FB	80	33	5	
ADGTTLIB	-	PDS	FB	80	6	5	
ADGTTSRC	-	PDS	VB	255	3	3	
ADMSSVM	-	PDS	U	0	38	177	
AEAGJENU	-	PDS	FB	80	4	2	
AEAGMENU	-	PDS	VB	255	2	2	
AEAGMJPN	-	PDS	VB	255	2	2	
AEAGMOD1	-	PDS	U	0	3	3	
AEAGSAM	-	PDS	FB	80	2	2	
AEDCCPP1	-	PDS	FB	80	17	5	
AEDCHFS	-	PDS	VB	255	4075	75	
AEDCMOD1	-	PDS	U	0	1403	1784	
AEDCMOD2	-	PDS	U	0	13	73	
AEDCMSEP	-	PDS	FB	150	2	2	
AEDCOBJ1	-	PDS	FB	80	9	7	
AEDCSRC6	-	PDS	FB	80	703	68	
AEDCSRC7	-	PDS	FB	80	1086	243	
AEDGEXE1	-	PDS	FB	80	102	7	
AEDGHFS	-	PDS	VB	256	56	3	
AEDGMENU	-	PDS	FB	80	12	11	
AEDGMJPN	-	PDS	FB	80	12	11	
AEDGMOD1	-	PDS	U	0	55	33	
AEDGPENU	-	PDS	FB	80	182	86	
AEDGPJPN	-	PDS	FB	80	184	84	
AEDGPKSR	-	PDS	VB	255	65	30	
AEDGPSRC	-	PDS	VB	255	66	30	
AEDGSRC1	-	PDS	FB	80	19	2	
AEEQINST	-	PDS	FB	80	2136	2	
AEOXFONT	-	PDS	VBM	8300	3	2	
AEOXIDAN	-	PDS	VBM	8300	7	2	

Library DDNAME	TYPE	ORG	RECFM	LRECL	No. of 3390 Trks	No. of DIR Blks	NOTE
AEOXIDEU	-	PDS	VBM	8300	7	2	
AEOXIENU	-	PDS	VBM	8300	7	2	
AEOXIESP	-	PDS	VBM	8300	7	2	
AEOXIFRA	-	PDS	VB	8300	7	2	
AEOXIFRC	-	PDS	VBM	8300	7	2	
AEOXIITA	-	PDS	VBM	8300	7	2	
AEOXINLD	-	PDS	VBM	8300	7	2	
AEOXIPTB	-	PDS	VBM	8300	7	2	
AEOXODAN	-	PDS	FB	4096	22	2	
AEOXODEU	-	PDS	FB	4096	22	2	
AEOXOENU	-	PDS	FB	4096	22	2	
AEOXOESP	-	PDS	FB	4096	21	2	
AEOXOFRA	-	PDS	FB	4096	22	2	
AEOXOFRC	-	PDS	FB	4096	22	2	
AEOXOITA	-	PDS	FB	4096	22	2	
AEOXONLD	-	PDS	FB	4096	22	2	
AEOXOPTB	-	PDS	FB	4096	22	2	
AEOX1DAN	-	PDS	VB	259	7	2	
AEOX1DEU	-	PDS	VB	259	7	2	
AEOX1ENU	-	PDS	VB	259	7	2	
AEOX1ESP	-	PDS	VB	259	7	2	
AEOX1FRA	-	PDS	VB	259	7	2	
AEOX1FRC	-	PDS	VB	259	7	2	
AEOX1ITA	-	PDS	VB	259	7	2	
AEOX1NLD	-	PDS	VB	259	7	2	
AEOX1PTB	-	PDS	VB	259	7	2	
AEOX2DAN	-	PDS	VB	259	4	2	
AEOX2DEU	-	PDS	VB	259	4	2	
AEOX2ENU	-	PDS	VB	259	4	2	
AEOX2ESP	-	PDS	VB	259	4	2	
AEOX2FRA	-	PDS	VB	259	5	2	

Figure 86 (Page 7 of 20). Storage required for distribution libraries for z/OS V2.2.0

Library DDNAME	TYPE	ORG	RECFM	LRECL	No. of 3390 Trks	No. of DIR Blks	NOTE
AEOX2FRC	-	PDS	VB	259	5	2	
AEOX2ITA	-	PDS	VB	259	4	2	
AEOX2NLD	-	PDS	VB	259	4	2	
AEOX2PTB	-	PDS	VB	259	4	2	
AEOX3DAN	-	PDS	VB	259	23	3	
AEOX3DEU	-	PDS	VB	259	23	3	
AEOX3ENU	-	PDS	VB	259	23	3	
AEOX3ESP	-	PDS	VB	259	25	3	
AEOX3FRA	-	PDS	VB	259	28	3	
AEOX3FRC	-	PDS	VB	259	28	3	
AEOX3ITA	-	PDS	VB	259	23	3	
AEOX3NLD	-	PDS	VB	259	23	3	
AEOX3PTB	-	PDS	VB	259	23	3	
AEOX4DAN	-	PDS	VB	259	7	2	
AEOX4DEU	-	PDS	VB	259	6	2	
AEOX4ENU	-	PDS	VB	259	7	2	
AEOX4ESP	-	PDS	VB	259	6	2	
AEOX4FRA	-	PDS	VB	259	7	2	
AEOX4FRC	-	PDS	VB	259	7	2	
AEOX4ITA	-	PDS	VB	259	7	2	
AEOX4NLD	-	PDS	VB	259	6	2	
AEOX4PTB	-	PDS	VB	259	6	2	
AEOYBDAN	-	PDS	FB	80	2	2	
AEOYBDEU	-	PDS	FB	80	2	2	
AEOYBENU	-	PDS	FB	80	2	2	
AEOYBESP	-	PDS	FB	80	2	2	
AEOYBFRA	-	PDS	FB	80	2	2	
AEOYBFRC	-	PDS	FB	80	2	2	
AEOYBITA	-	PDS	FB	80	2	2	
AEOYBNLD	-	PDS	FB	80	2	2	
AEOYBPTB	-	PDS	FB	80	2	2	

Figure 86 (Page 8 of 20). Storage required for distribution libraries for z/OS V2.2.0

Library DDNAME	TYPE	ORG	RECFM	LRECL	No. of 3390 Trks	No. of DIR Blks	NOTE
AEOYCLIB	-	PDS	FB	80	23	3	
AEOYGDAN	-	PDS	FB	80	2	2	
AEOYGDEU	-	PDS	FB	80	2	2	
AEOYGENU	-	PDS	FB	80	2	2	
AEOYGESP	-	PDS	FB	80	2	2	
AEOYGFRA	-	PDS	FB	80	2	2	
AEOYGFRC	-	PDS	FB	80	2	2	
AEOYGITA	-	PDS	FB	80	2	2	
AEOYGNLD	-	PDS	FB	80	2	2	
AEOYGPTB	-	PDS	FB	80	2	2	
AEOYLDAN	-	PDS	FB	80	2	2	
AEOYLDEU	-	PDS	FB	80	2	2	
AEOYLENU	-	PDS	FB	80	2	2	
AEOYLESP	-	PDS	FB	80	2	2	
AEOYLEXS	-	PDS	FB	512	362	2	
AEOYLFRA	-	PDS	FB	80	2	2	
AEOYLFRC	-	PDS	FB	80	2	2	
AEOYLITA	-	PDS	FB	80	2	2	
AEOYLNLD	-	PDS	FB	80	2	2	
AEOYLOAD	-	PDS	U	0	89	26	
AEOYLPTB	-	PDS	FB	80	2	2	
AEOYMDAN	-	PDS	FB	80	5	5	
AEOYMDEU	-	PDS	FB	80	5	5	
AEOYMENU	-	PDS	FB	80	5	5	
AEOYMESP	-	PDS	FB	80	5	5	
AEOYMFRA	-	PDS	FB	80	5	5	
AEOYMFRC	-	PDS	FB	80	5	5	
AEOYMITA	-	PDS	FB	80	5	5	
AEOYMNLD	-	PDS	FB	80	5	5	
AEOYMPTB	-	PDS	FB	80	5	5	
AEOYPDAN	-	PDS	FB	80	164	60	

Figure 86 (Page 9 of 20). Storage required for distribution libraries for z/OS V2.2.0

Library DDNAME	TYPE	ORG	RECFM	LRECL	No. of 3390 Trks	No. of DIR Blks	NOTE
Figure 86 (Page 10 of 20). Storage required for distribution libraries for z/OS V2.2.0							
AEOYPDEU	-	PDS	FB	80	165	63	
AEOYPENU	-	PDS	FB	80	153	60	
AEOYPESP	-	PDS	FB	80	166	60	
AEOYPFRA	-	PDS	FB	80	165	64	
AEOYPFRC	-	PDS	FB	80	166	60	
AEOYPITA	-	PDS	FB	80	161	60	
AEOYPNLD	-	PDS	FB	80	164	60	
AEOYPPTB	-	PDS	FB	80	165	63	
AEOYPROC	-	PDS	FB	80	2	2	
AEOYSAMP	-	PDS	FB	80	9	2	
AEOYSDAN	-	PDS	VB	259	2	2	
AEOYSDEU	-	PDS	VB	259	2	2	
AEOYSENU	-	PDS	VB	259	2	2	
AEOYSESP	-	PDS	VB	259	2	2	
AEOYSFRA	-	PDS	VB	259	2	2	
AEOYSFRC	-	PDS	VB	259	2	2	
AEOYSITA	-	PDS	VB	259	2	2	
AEOYSNLD	-	PDS	VB	259	2	2	
AEOYSPTB	-	PDS	VB	259	2	2	
AEOYTDAN	-	PDS	FB	80	3	2	
AEOYTDEU	-	PDS	FB	80	3	2	
AEOYTENU	-	PDS	FB	80	4	2	
AEOYTESP	-	PDS	FB	80	3	2	
AEOYTFRA	-	PDS	FB	80	3	2	
AEOYTFRC	-	PDS	FB	80	3	2	
AEOYTITA	-	PDS	FB	80	3	2	
AEOYTNLD	-	PDS	FB	80	3	2	
AEOYTPTB	-	PDS	FB	80	3	2	
AEOYXDAN	-	PDS	FB	4096	7	2	
AEOYXDEU	-	PDS	FB	4096	14	2	
AEOYXENU	-	PDS	FB	4096	14	2	

Library DDNAME	TYPE	ORG	RECFM	LRECL	No. of 3390 Trks	No. of DIR Blks	NOTE
AEOYXESP	-	PDS	FB	4096	15	2	
AEOYXFRA	-	PDS	FB	4096	17	2	
AEOYXFRC	-	PDS	FB	4096	17	2	
AEOYXITA	-	PDS	FB	4096	7	2	
AEOYXNLD	-	PDS	FB	4096	7	2	
AEOYXPTB	-	PDS	FB	4096	14	2	
AEPHBOK1	-	PDS	FB	4096	78	2	
AEPHBOOK	-	PDS	FB	4096	449	3	
AEPHCLB1	-	PDS	FB	80	2	2	
AEPHCLIB	-	PDS	VB	255	2494	28	
AEPHDAT1	-	PDS	V	256	3	12	
AEPHLOAD	-	PDS	U	0	14	2	
AEPHLOD1	-	PDS	U	0	15	2	
AEPHMSG1	-	PDS	FB	80	2	2	
AEPHPNL1	-	PDS	FB	80	6	5	
AEPHPLIB	-	PDS	VB	255	2	2	
AEPHTBL1	-	PDS	FB	80	2	2	
AEPHSAMP	-	PDS	FB	80	5	3	
AEPHSAM1	-	PDS	FB	80	2	2	
AEPHTAB	-	PDS	FB	4096	81	2	21
AEPWBENU	-	PDS	FB	4096	6	2	
AEPWMOD1	-	PDS	U	0	133	114	
AEPWSRC1	-	PDS	FB	80	12	3	
AERBCLS	-	PDS	FB	80	29	3	
AERBMAC1	-	PDS	FB	80	61	4	
AERBMENU	-	PDS	FB	80	6	6	
AERBMJPN	-	PDS	FB	80	6	6	
AERBMOD1	-	PDS	U	0	454	164	
AERBPENU	-	PDS	FB	80	358	132	
AERBPJPN	-	PDS	FB	80	367	135	
AERBPWSV	-	PDS	VB	255	3513	2	

Figure 86 (Page 11 of 20). Storage required for distribution libraries for z/OS V2.2.0

Figure 86 (Page 12 of 20). Storage required for distribution libraries for z/OS V2.2.0							
Library DDNAME	TYPE	ORG	RECFM	LRECL	No. of 3390 Trks	No. of DIR Blks	NOTE
AERBT	-	PDS	FB	80	18	5	
AERBTENU	-	PDS	FB	80	7	2	
AERBTJPN	-	PDS	FB	80	7	2	
AEUVFEXC	-	PDS	FB	80	2	2	
AEUVFHFS	-	PDS	VB	255	59	3	
AEUVFLIB	-	PDS	FB	80	7	2	
AEUVFSAM	-	PDS	FB	80	4	2	
AEZADBR1	-	PDS	FB	80	6	2	
AEZAMAC1	-	PDS	FB	80	92	13	
AEZAMAC2	-	PDS	FB	80	389	88	
AEZAMAC3	-	PDS	FB	80	141	26	
AEZAMODS	-	PDSE	U	0	3542	-	
AEZARNT1	-	PDS	FB	80	105	64	
AEZARNT2	-	PDS	FB	80	18	6	
AEZARNT3	-	PDS	FB	80	76	12	
AEZARNT4	-	PDS	FB	80	9	6	
AEZAROE1	-	PDS	FB	80	105	60	
AEZAROE2	-	PDS	FB	80	18	6	
AEZAROE3	-	PDS	FB	80	76	12	
AEZASMP1	-	PDS	FB	80	1594	109	
AEZAXLTD	-	PDS	F	256	2	2	
AEZAXLTK	-	PDS	VB	5124	104	13	
AEZAXLT1	-	PDS	FB	80	7	7	
AEZAXLT2	-	PDS	FB	80	5	7	
AEZAXLT3	-	PDS	VB	231	1364	89	
AFNTDLIB	-	PDS	VBM	12284	18764	740	21
AFNTILIB	-	PDS	VBM	16124	3193	527	21
AFNTLIB	-	PDS	VBM	12284	275	200	21
AFNTLIBB	-	PDS	VBM	12284	2848	480	21
AFNT300	-	PDS	VBM	12284	3479	466	21
AFOMHDRS	-	PDS	FB	80	22	2	

Library DDNAME	TYPE	ORG	RECFM	LRECL	No. of 3390 Trks	No. of DIR Blks	NOTE
Figure 86 (Page 13 of 20). Storage required for distribution libraries for z/OS V2.2.0							
AFOMHFS	-	PDS	VB	255	26180	147	
AFOMMOD1	-	PDS	U	0	534	44	
AFOMOBJ	-	PDS	FB	80	68	37	
AFONTHFS	-	PDS	VB	255	31077	4	21
AGDEMOD0	-	PDS	U	0	65	55	
AGENLIB	-	PDS	FB	80	6	2	
AGFTAJL1	-	PDS	FB	80	2	2	
AGFTAMD1	-	PDS	U	0	22	23	
AGFUMOD1	-	PDS	U	0	34	23	
AGHELP	-	PDS	FB	80	37	13	
AGIMBIN	-	PDS	VB	255	4	3	
AGIMCLS0	-	PDS	FB	80	14	3	
AGIMMENU	-	PDS	FB	80	10	7	
AGIMMJPN	-	PDS	FB	80	10	7	
AGIMPENU	-	PDS	FB	80	160	89	
AGIMPJPN	-	PDS	FB	80	159	89	
AGIMSENU	-	PDS	FB	80	18	6	
AGIMTENU	-	PDS	FB	80	319	2	
AGIMTJPN	-	PDS	FB	80	2	2	
AGLDEXEC	-	PDS	FB	80	2	3	
AGLDEXPC	-	PDS	FB	80	3	2	
AGLDHCLI	-	PDS	VB	255	6	2	
AGLDHDRC	-	PDS	FB	80	9	2	
AGLDHFS	-	PDS	VB	255	74	4	
AGLDHJPN	-	PDS	VB	255	3	2	
AGLDSAMP	-	PDS	FB	80	13	3	
AGLIB	-	PDS	U	0	4	6	
AGSKHFS	-	PDS	VB	255	15	3	
AGSKSAMP	-	PDS	FB	80	4	2	
AHAPEXE3	-	PDS	VB	255	2	2	22
AHAPINC3	-	PDS	VB	255	387	2	22

Library DDNAME	TYPE	ORG	RECFM	LRECL	No. of 3390 Trks	No. of DIR Blks	NOTE
AHAPJCL3	-	PDS	FB	80	2	2	22
AHASMAC	-	PDS	FB	80	479	56	
AHASMENU	-	PDS	VB	259	6	2	
AHASMJPN	-	PDS	VB	259	6	2	
AHASMOD	-	PDS	U	0	285	69	
AHASPARM	-	PDS	FB	80	2	2	
AHASPNL0	-	PDS	FB	80	17	4	
AHASSAMP	-	PDS	FB	80	91	6	
AHASSRC	-	PDS	FB	80	2015	23	
AHELP	-	PDS	FB	80	217	49	
AHELPENP	-	PDS	FB	80	35	10	
AHKCKC4Z	U	PDS	VB	259	572	2	22
AHLPKLB	-	PDS	FB	80	4	4	
AIATCLI0	-	PDS	FB	80	10	2	
AIATMAC	-	PDS	FB	80	650	74	
AIATMOD	-	PDS	U	0	501	238	
AIATMSG0	-	PDS	FB	80	2	2	
AIATPARM	-	PDS	FB	80	2	2	
AIATPNL0	-	PDS	FB	80	12	7	
AIATSAMP	-	PDS	FB	80	17	3	
AIATSRC	-	PDS	FB	80	3469	89	
AIATTBL0	-	PDS	FB	80	2	2	
AIBMMOD3	-	PDS	U	0	351	660	
AIBMSRC3	-	PDS	FB	80	27	9	
AICELIB	-	PDS	U	0	88	94	
AICESAMP	-	PDS	FB	80	7	3	
AICESRCE	-	PDS	FB	80	4	3	
AICEUSER	-	PDS	FB	80	17	2	
AICHMJPN	-	PDS	FB	80	11	5	
AICHPJPN	-	PDS	FB	80	224	87	
AICQAB	-	PDS	FB	80	5	3	

Figure 86 (Page 14 of 20). Storage required for distribution libraries for z/OS V2.2.0

Figure 86 (Page 15 of 20). Storage required for distribution libraries for z/OS V2.2.0							
Library DDNAME	TYPE	ORG	RECFM	LRECL	No. of 3390 Trks	No. of DIR Blks	NOTE
AICQGAB	-	PDS	FB	80	5	4	
AICQGILB	-	PDS	FB	80	3	3	
AICQGMA1	-	PDS	FB	80	341	424	
AICQGMA3	-	PDS	FB	80	18	30	
AICQGMA4	-	PDS	FB	80	9	11	
AICQGMA5	-	PDS	FB	80	2	2	
AICQILIB	-	PDS	FB	80	3	2	
AICQKAB	-	PDS	FB	80	5	4	
AICQKILB	-	PDS	FB	80	3	3	
AICQKMA1	-	PDS	FB	80	342	424	
AICQKMA3	-	PDS	FB	80	18	30	
AICQKMA4	-	PDS	FB	80	7	11	
AICQKMA5	-	PDS	FB	80	2	2	
AICQMAC1	-	PDS	FB	80	335	213	
AICQMAC2	-	PDS	FB	80	2	2	
AICQMAC3	-	PDS	FB	80	17	15	
AICQMAC4	-	PDS	FB	80	9	6	
AICQMAC5	-	PDS	FB	80	165	10	
AICQPAB	-	PDS	FB	80	5	4	
AICQPILB	-	PDS	FB	80	3	3	
AICQPMA1	-	PDS	FB	80	342	424	
AICQPMA3	-	PDS	FB	80	18	30	
AICQPMA4	-	PDS	FB	80	7	11	
AICQPMA5	-	PDS	FB	80	2	2	
AIEAHDR	-	PDS	FB	80	84	6	
AIEAHDRV	-	PDS	VB	260	26	4	
AIEALNKE	-	PDSE	U	0	3463	-	
AIEAMIGE	-	PDSE	U	0	17	-	
AIEASID	-	PDS	FB	80	7	4	
AIEWMOD0	-	PDS	U	0	88	62	
AIFALIB	-	PDS	U	0	10	6	

Library DDNAME	TYPE	ORG	RECFM	LRECL	No. of 3390 Trks	No. of DIR Blks	NOTE
					Figure 86 (Page 16 of 20). Storage required for distribution libraries for z/OS V2.2.0			
AIGDVBS1	-	PDS	VB	4100	14	2	
AIGZMOD1	-	PDS	U	0	130	280	
AIGZSRC1	-	PDS	FB	80	34	11	
AIKYHFS	-	PDS	VB	255	1384	9	
AIMAGE	-	PDS	FB	80	630	17	
AIMFMOD0	-	PDS	U	0	9	5	
AINDLMD	-	PDS	U	0	3	3	
AIOAIBIN	-	PDS	FB	256	78	2	
AIOAJAVA	-	PDS	VB	204	44	2	
AIOALMOD	-	PDS	U	0	64	44	
AIOAMMOD	-	PDS	U	0	2	2	
AIOASAMP	-	PDS	FB	80	63	3	
AIOEEXEC	-	PDS	FB	80	18	2	
AIOEHJPN	-	PDS	VB	255	12	5	
AIOEHLIB	-	PDS	VB	255	157	5	
AIOEHSAM	-	PDS	VB	255	2	2	
AIOEHSHL	-	PDS	VB	255	2	2	
AIOEHSRC	-	PDS	VB	255	2	2	
AIOEMJPN	-	PDS	VB	255	7	2	
AIOEPROC	-	PDS	FB	80	2	2	
AIOESAMP	-	PDS	FB	80	4	2	
AISFEXEC	-	PDS	FB	80	14	3	
AISFHELP	-	PDS	FB	80	2	2	
AISFHFS	-	PDS	VB	255	109	3	10
AISFJCL	-	PDS	FB	80	11	2	
AISFLINK	-	PDS	U	0	2	2	
AISFLOAD	-	PDS	U	0	166	107	
AISFMAC	-	PDS	FB	80	38	3	
AISFMLIB	-	PDS	FB	80	3	2	
AISFPLIB	-	PDS	FB	80	694	375	
AISFSLIB	-	PDS	FB	80	7	4	

Figure 86 (Page 17 of 20). Storage required for distribution libraries for z/OS V2.2.0							
Library DDNAME	TYPE	ORG	RECFM	LRECL	No. of 3390 Trks	No. of DIR Blks	NOTE
AISFSRC	-	PDS	FB	80	3	2	
AISFTLIB	-	PDS	FB	80	89	2	
AISPALIB	-	PDS	FB	80	2	2	
AISPCLIB	-	PDS	FB	80	19	4	
AISPEXEC	-	PDS	FB	80	107	4	
AISPGDES	-	PDS	FB	80	285	201	
AISPGDEU	-	PDS	FB	80	285	201	
AISPGENP	-	PDS	FB	80	278	199	
AISPGENU	-	PDS	FB	80	279	201	
AISPGJPN	-	PDS	FB	80	279	201	
AISPGMLI	-	PDS	FB	80	175	79	
AISPGUI	-	PDS	VB	255	317	2	
AISPHELP	-	PDS	FB	80	3	2	
AISPMACS	-	PDS	FB	80	58	12	
AISPMDES	-	PDS	FB	80	53	51	
AISPMDEU	-	PDS	FB	80	53	51	
AISPMENP	-	PDS	FB	80	46	51	
AISPMENU	-	PDS	FB	80	46	51	
AISPMJPN	-	PDS	FB	80	50	51	
AISPMOD1	-	PDS	U	0	592	549	
AISPPDES	-	PDS	FB	80	502	308	
AISPPDEU	-	PDS	FB	80	502	308	
AISPPENP	-	PDS	FB	80	488	308	
AISPPENU	-	PDS	FB	80	492	308	
AISPPJPN	-	PDS	FB	80	488	308	
AISPSAMP	-	PDS	FB	80	102	22	
AISPSDES	-	PDS	FB	80	112	75	
AISPSDEU	-	PDS	FB	80	112	75	
AISPSENP	-	PDS	FB	80	106	75	
AISPSENU	-	PDS	FB	80	106	75	
AISPSJPN	-	PDS	FB	80	107	75	

Library DDNAME	TYPE	ORG	RECFM	LRECL	No. of 3390 Trks	No. of DIR Blks	NOTE
AISPSLIB	-	PDS	FB	80	26	7	
AISPTDES	-	PDS	FB	80	4	2	
AISPTDEU	-	PDS	FB	80	4	2	
AISPTENP	-	PDS	FB	80	4	2	
AISPTENU	-	PDS	FB	80	4	2	
AISPTJPN	-	PDS	FB	80	4	2	
AISTASGD	-	PDS	VB	512	61	5	
AISTASN1	-	PDS	FB	1024	11	4	
AISTCMIP	-	PDS	FB	80	2	2	
AISTDAT1	-	PDS	VB	6156	28	2	
AISTDAT2	-	PDS	VB	259	6	2	
AISTGDMO	-	PDS	FB	500	120	2	
AISTMAC1	-	PDS	FB	80	17	3	
AITYHFS	-	PDS	VB	255	101	2	
AIZUFS	-	PDSE	VB	259	4979	-	22
AKHELP	-	PDS	FB	80	45	17	
AKLIB	-	PDS	U	0	4	6	
ALINKLIB	-	PDS	U	0	217	259	
ALPALIB	-	PDS	U	0	27	35	
AMACLIB	-	PDS	FB	80	3885	134	
AMIGLIB	-	PDS	U	0	158	219	
AMODGEN	-	PDS	FB	80	643	56	
AMSGCHS	-	PDS	VB	259	12	2	
AMSGDEU	-	PDS	VB	259	10	2	
AMSGENP	-	PDS	VB	259	9	2	
AMSGENU	-	PDS	VB	259	59	10	
AMSGJPN	-	PDS	VB	259	50	10	
ANFSLIBE	-	PDSE	U	0	290	-	
ANFSMAC	-	PDS	FB	80	4	2	
ANFSSAMP	-	PDS	FB	80	14	3	
ANFSTARB	-	PDS	VB	264	26	2	

Figure 86 (Page 18 of 20). Storage required for distribution libraries for z/OS V2.2.0

Library DDNAME	TYPE	ORG	RECFM	LRECL	No. of 3390 Trks	No. of DIR Blks	NOTE
ANUCLEUS	-	PDS	U	0	42	56	
AOSACB	-	PDS	U	0	110	98	
AOSA0	-	PDS	U	0	152	119	
AOSA1	-	PDS	U	0	119	83	
AOSBN	-	PDS	U	0	345	290	
AOSB0	-	PDS	U	0	3	3	
AOSB3	-	PDS	U	0	182	195	
AOSCA	-	PDS	U	0	5	5	
AOSCD	-	PDS	U	0	173	201	
AOSCE	-	PDS	U	0	9	12	
AOSC2	-	PDS	U	0	2	2	
AOSC5	-	PDS	U	0	1691	1343	
AOSC6	-	PDS	U	0	9	10	
AOSD0	-	PDS	U	0	144	171	
AOSD7	-	PDS	U	0	6	9	
AOSG0	-	PDS	U	0	2	2	
AOSJSC	-	PDS	U	0	3	3	
AOST3	-	PDS	U	0	15	23	
AOST4	-	PDS	U	0	157	185	
AOSU0	-	PDS	U	0	394	275	
AOSXCF	-	PDS	U	0	241	159	
AOS00	-	PDS	U	0	23	19	
AOS04	-	PDS	U	0	7	6	
AOS05	-	PDS	U	0	3	2	
AOS06	-	PDS	U	0	13	17	
AOS11	-	PDS	U	0	12	12	
AOS12	-	PDS	U	0	242	145	
AOS24	-	PDS	U	0	9	7	
AOS26	-	PDS	U	0	893	989	
AOS28	-	PDS	U	0	296	257	
AOS32	-	PDS	U	0	69	104	

Figure 86 (Page 19 of 20). Storage required for distribution libraries for z/OS V2.2.0

Library DDNAME	TYPE	ORG	RECFM	LRECL	No. of 3390 Trks	No. of DIR Blks	NOTE
APARMLIB	-	PDS	FB	80	20	9	
APHELP	-	PDS	FB	80	38	17	
APLIB	-	PDS	U	0	4	6	
APROCLIB	-	PDS	FB	80	9	6	
ASAMPLIB	-	PDS	FB	80	961	83	
ASSFMOD0	-	PDS	U	0	121	59	
ATSOMAC	-	PDS	FB	80	86	13	
AUADS	-	PDS	FB	80	2	2	
CIPLIB	-	PDS	U	0	7	9	
HHRFCLST	-	PDS	FB	80	17	3	
HHRFMSG	-	PDS	FB	80	12	5	
HHRFPANL	-	PDS	FB	80	217	88	
HHRFSKEL	-	PDS	FB	80	65	13	

C.6 File System for z/OS V2.2.0

Abbreviations used for the HFS or zFS Path type are:

N   New path, created by this product.
P   Previously existing path, created by another product.
X   Path created by this product, but may already exist from a previous release.

Abbreviations for the NOTE column are:

ZV1R1   New file system path introduced in z/OS Version 1 Release 1
ZV1R2   New file system path introduced in z/OS Version 1 Release 2
ZV1R3   New file system path introduced in z/OS Version 1 Release 3
ZV1R4   New file system path introduced in z/OS Version 1 Release 4
ZV1R5   New file system path introduced in z/OS Version 1 Release 5
ZV1R6   New file system path introduced in z/OS Version 1 Release 6
ZV1R7   New file system path introduced in z/OS Version 1 Release 7
ZV1R9   New file system path introduced in z/OS Version 1 Release 9
ZV1R10 New file system path introduced in z/OS Version 1 Release 10
ZV1R11 New file system path introduced in z/OS Version 1 Release 11
ZV1R13 New file system path introduced in z/OS Version 1 Release 13
ZV2R1   New file system path introduced in z/OS Version 2 Release 1
ZV2R2   New file system path introduced in z/OS Version 2 Release 2
Z9X   New file system path introduced in z990 Exploitation feature

NLV   File system path for NLV

Note: The NLV directories will be empty if the NLV features are not ordered.

Figure 87 (Page 1 of 4). HFS or zFS Paths for z/OS V2.2.0			
DDDEF Name	**TYPE**	**PATH**	**Note**
NFSCUTIL	X	/usr/lpp/NFS/IBM/	
SAOPBIN	X	/usr/lpp/Printsrv/bin/IBM/	
SAOPCLAS	X	/usr/lpp/Printsrv/classes/IBM/	
SAOPICEN	N	/usr/lpp/Printsrv/InfoprintCentral/IBM/	ZV2R2
SAOPICHE	X	/usr/lpp/Printsrv/InfoprintCentral/help/En_US/IBM/	ZV1R5
SAOPICHJ	X	/usr/lpp/Printsrv/InfoprintCentral/help/Ja_JP/IBM/	ZV1R5NLV
SAOPICIM	X	/usr/lpp/Printsrv/InfoprintCentral/Images/IBM/	ZV1R5
SAOPICSC	X	/usr/lpp/Printsrv/InfoprintCentral/Scripts/IBM/	ZV1R5
SAOPICTE	X	/usr/lpp/Printsrv/InfoprintCentral/html/En_US/IBM/	ZV1R5
SAOPICTJ	X	/usr/lpp/Printsrv/InfoprintCentral/html/Ja_JP/IBM/	ZV1R5NLV
SAOPICXC	X	/usr/lpp/Printsrv/InfoprintCentral/xsl/Controls/IBM/	ZV1R5
SAOPICXE	X	/usr/lpp/Printsrv/InfoprintCentral/xml/En_US/IBM/	ZV1R5
SAOPICXJ	X	/usr/lpp/Printsrv/InfoprintCentral/xml/Ja_JP/IBM/	ZV1R5NLV
SAOPICXM	X	/usr/lpp/Printsrv/InfoprintCentral/xml/IBM/	ZV1R5
SAOPICXP	X	/usr/lpp/Printsrv/InfoprintCentral/xsl/Page/IBM/	ZV1R5
SAOPICXS	X	/usr/lpp/Printsrv/InfoprintCentral/xsl/IBM/	ZV1R5
SAOPJAJP	X	/usr/lpp/Printsrv/Ja_JP/IBM/	NLV
SAOPLIB	X	/usr/lpp/Printsrv/lib/IBM/	
SAOPMCT1	X	/usr/lpp/Printsrv/man/C/cat1/IBM/	
SAOPMCT5	X	/usr/lpp/Printsrv/man/C/cat5/IBM/	
SAOPMCT8	X	/usr/lpp/Printsrv/man/C/cat8/IBM/	
SAOPSAM1	X	/usr/lpp/Printsrv/samples/IBM/	
SAOPUSEN	X	/usr/lpp/Printsrv/C/IBM/	
SAOPWENU	X	/usr/lpp/Printsrv/win/En_US/IBM/	
SAOPWJPN	X	/usr/lpp/Printsrv/win/Ja_JP/IBM/	NLV
SBPXXMLS	X	/usr/lib/xml_schema/IBM/	ZV1R6
SCBDETCH	X	/usr/lpp/hcd/etc/IBM/	ZV1R10
SCBDEXMP	X	/usr/lpp/hcd/examples/IBM/	
SCBDHFSL	X	/usr/lpp/hcd/bin/IBM/	Z9X
SCBDMLDP	X	/usr/lpp/hcd/msg/IBM/	

DDDEF Name	TYPE	PATH	Note
		Figure 87 (Page 2 of 4). HFS or zFS Paths for z/OS V2.2.0	
SCDSHFS	X	/usr/lpp/ocsf/IBM/	
SCEEI	X	/usr/include/IBM/	
SCEEIARP	X	/usr/include/arpa/IBM/	
SCEEINEI	X	/usr/include/netinet/IBM/	
SCEEINET	X	/usr/include/net/IBM/	
SCEEISYS	X	/usr/include/sys/IBM/	
SCEEMTHD	X	/usr/lib/nls/method/IBM/	ZV1R2
SCEESAMC	X	/usr/lpp/le/samples/ansic++/IBM/	ZV1R2
SCFZHFS	X	/usr/lpp/wbem/IBM/	ZV1R7
SCLBHFS1	X	/usr/lpp/cbclib/IBM/	ZV1R5
SCPOHFS	X	/usr/lpp/cpo/IBM/	ZV1R9
SCPOLIB	X	/usr/lpp/cpo/lib/IBM/	ZV1R9
SCSFHFS	X	/usr/lpp/pkcs11/IBM/	ZV1R9
SEDGHFS	X	/usr/lpp/dfsms/rmm/IBM/	ZV1R7
SEPHBOOK	X	/usr/lpp/booksrv/books/IBM/	
SEPHCASE	X	/usr/lpp/booksrv/cases/IBM/	ZV1R5
SEPHGIF	X	/usr/lpp/booksrv/public/bookmgr/IBM/	
SEPHLOAD	X	/usr/lpp/booksrv/cgi-bin/IBM/	
SEPHPLIB	X	/usr/lpp/booksrv/plugins/IBM/	ZV2R1
SEPHPUB	X	/usr/lpp/booksrv/public/IBM/	
SEPHSRVR	X	/usr/lpp/booksrv/public/bookmgr/libraryserver/IBM/	ZV1R5
SEPHTPLT	X	/usr/lpp/booksrv/public/bookmgr/templates/IBM/	ZV1R5
SEPHSHLF	X	/usr/lpp/booksrv/shelves/IBM/	ZV1R5
SERBHFS	X	/usr/lpp/gpm/IBM/	ZV1R13
SEUVFHFS	X	/usr/lpp/skrb/IBM/	ZV1R6
SEZABIN	X	/usr/lpp/tcpip/bin/IBM/	
SEZAHTCP	X	/usr/lpp/tcpip/IBM/	
SEZAMCT1	X	/usr/lpp/tcpip/man/C/cat1/IBM/	
SEZAMMSC	X	/usr/lpp/tcpip/lib/nls/msg/C/IBM/	
SEZASAMP	X	/usr/lpp/tcpip/samples/IBM/	
SEZASBIN	X	/usr/lpp/tcpip/sbin/IBM/	
SEZAXAR	X	/usr/lpp/tcpip/X11R6/lib/IBM/	

DDEF Name	TYPE	PATH	Note
		Figure 87 (Page 3 of 4). HFS or zFS Paths for z/OS V2.2.0	
SEZAXINC	X	/usr/lpp/tcpip/X11R6/include/IBM/	
SEZAXSMP	X	/usr/lpp/tcpip/X11R6/Xamples/IBM/	
SFNTWTYP	N	/usr/lpp/fonts/worldtype/IBM/	ZV2R1
SFOMBCPH	X	/usr/lpp/bcp/IBM/	ZV1R10
SFOMCEA	X	/usr/share/cea/IBM/	ZV1R10
SFOMINC	X	/usr/include/IBM/	
SFOMINCM	X	/usr/include/metal/IBM/	ZV1R9
SFOMJVCL	X	/usr/include/java_classes/IBM/	ZV1R5
SFOMJVRT	X	/usr/lib/java_runtime/IBM/	ZV1R5
SFOMJ64R	X	/usr/lib/java_runtime64/IBM/	ZV1R6
SFOMTA	X	/usr/share/lib/terminfo/a/IBM/	
SFOMTC	X	/usr/share/lib/terminfo/c/IBM/	
SFOMTD	X	/usr/share/lib/terminfo/d/IBM/	
SFOMTH	X	/usr/share/lib/terminfo/h/IBM/	
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SFOMTL2	X	/usr/share/lib/terminfo/L/IBM/	
SFOMTV	X	/usr/share/lib/terminfo/v/IBM/	
SFOMTW	X	/usr/share/lib/terminfo/w/IBM/	
SFOMTX	X	/usr/share/lib/terminfo/x/IBM/	
SFOM1MNC	X	/usr/man/C/man1/IBM/	
SFOM1MNJ	X	/usr/man/Ja_JP/man1/IBM/	NLV
SFOTSSH	X	/usr/lib/ssh/IBM/	
SFSUMANC	X	/usr/man/C/IBM/	
SFSUMANJ	X	/usr/man/Ja_JP/IBM/	NLV
SFSUMBIN	X	/bin/IBM/	
SFSUMCHR	X	/usr/lib/nls/charmap/IBM/	
SFSUMCHS	X	/usr/lib/nls/msg/Zh_CN/IBM/	NLV
SFSUMJPN	X	/usr/lib/nls/msg/Ja_JP/IBM/	NLV
SFSUMLCD	X	/usr/lib/nls/localedef/IBM/	
SFSUMLCL	X	/usr/lib/nls/locale/IBM/	

DDDEF Name	TYPE	PATH	Note
SFSUMLIB	X	/usr/lib/IBM/	
SFSUMMSC	X	/usr/lib/nls/msg/C/IBM/	
SFSUMUUC	X	/usr/lib/uucp/IBM/	
SFSUSAMP	X	/samples/IBM/	
SFSUSBIN	X	/usr/sbin/IBM/	
SGFUBIN	X	/usr/lpp/dfsms/bin/IBM/	
SGFUMSG	X	/usr/lpp/dfsms/nls/msg/C/IBM/	
SGIMDIR	X	/usr/lpp/smp/IBM/	ZV1R7
SGLDHCLI	X	/usr/lpp/ldapclient/IBM/	
SGLDHFS	X	/usr/lpp/ldap/IBM/	ZV1R4
SGLDHJPN	X	/usr/lpp/ldap/lib/nls/msg/Ja_JP/IBM/	NLV
SGSKHFS	X	/usr/lpp/gskssl/IBM/	
SHAPBIN3	N	/usr/lpp/ihsa_zos/IBM/	ZV2R2
SHKCKC4Z	N	/usr/lpp/kc4z/IBM/	ZV2R2
SHZCINC	X	/usr/lpp/hzc/include/IBM/	ZV2R1
SHZCLIB	X	/usr/lpp/hzc/lib/IBM/	ZV2R1
SIKYHFS	X	/usr/lpp/pkiserv/IBM/	ZV1R3
SIOEHJPN	X	/usr/lpp/dfs/global/lib/nls/msg/Ja_JP/IBM/	NLV
SIOEHLIB	X	/usr/lpp/dfs/global/lib/IBM/	
SIOEHLMD	X	/usr/lpp/dfs/global/bin/IBM/	
SIOEHSAM	X	/usr/lpp/dfs/global/examples/IBM/	
SIOEHSHL	X	/usr/lpp/dfs/global/scripts/IBM/	
SIOEHSRC	X	/usr/lpp/dfs/global/src/IBM/	
SISFHFS	X	/usr/lpp/sdsf/IBM/	ZV1R10
SISPZHFS	X	/usr/lpp/ispf/bin/IBM/	ZV1R10
SITYHFS	X	/usr/lpp/eim/IBM/	ZV1R5
SIZUFSD	X	/usr/lpp/zosmf/IBM/	ZV2R2
	X	/usr/man/C/cat1/IBM/	
	X	/usr/man/Ja_JP/cat1/IBM/	

Figure 87 (Page 4 of 4). HFS or zFS Paths for z/OS V2.2.0

For more information about creating file system directories, see 8.1.8, "Create file system directories for Wave 1" on page 89.

C.7 Additional Data Sets

Several elements require additional data sets to complete installation of z/OS V2.2.0. These libraries are created while running Post-APPLY steps. See 8.4, "Step 4: Do Post-APPLY work for Wave 1 and Wave 2" on page 126 for more information.

- BookManager READ data sets created by post-installation job EOXUNLD:
  - EIJBPOR.LEXIS
  - EIJCFRE.LEXIS
  - EIJDANI.LEXIS
  - EIJDUTC.LEXIS
  - EIJENGL.LEXIS
  - EIJFREN.LEXIS
  - EIJGERM.LEXIS
  - EIJITAL.LEXIS
  - EIJNORW.LEXIS
  - EIJPORT.LEXIS
  - EIJSPAN.LEXIS
  - EIJSWED.LEXIS
  - EIJUKEN.LEXIS
  - ENU.ADMGDF
  - ENU.BOOKMGR.BKINDEX
  - ENU.BOOKMGR.BKLIST
  - ENU.BOOKMGRR.BKINDEX
  - ENU.BOOKMGRR.BKLIST
  - ENU.BOOKMGRR.BKSHELF
  - ENU.EOX01MST.BOOK
  - ENU.EOX02MST.BOOK
  - ENU.EOX03MST.BOOK
  - ENU.EOX04MST.BOOK
  - ENU.EOX05MST.BOOK
- SMP/E library required for execution:
  - SMPTABL

Appendix D. Do global zone cleanup for deleted FMIDs

Because z/OS Version 2 Release 2 is a complete replacement for previous releases of z/OS, you might want to delete the old FMIDs from the global zone so future (unneeded) service will not be received for them, unless you plan to share the global zone and SMPPTS between z/OS Version 2 Release 2 and systems with older levels of z/OS.

The FMIDs listed as deleted in the output of the ACCEPT of all Wave 0, Wave 1 and 2 FMIDs may be deleted from the FMID list in the global zone. Refer to the following sample job in your SAMPLIB target library for global zone clean up:

- CLNGLOB

After z/OS V2R2 is installed, an obsolete LMOD entry for IMWSNDML will reside in the target and distribution zones in the SMP/E CSI. The LMOD entry for IMWSNDML is not required and can be removed by using the SMP/E UCLIN command to delete the LMOD entry for IMWSNDML from the target and distribution zones in the SMP/E CSI.

Figure 88 shows a sample job that uses UCLIN statements to remove the obsolete LMOD entry from the SMP/E CSI.

```
//HTTPUCLN JOB <job parameter>
//*
//STEP1 EXEC PGM=GIMSMP
//SMPCSI DD DSN=ZOSV2R2.GLOBAL.CSI,DISP=SHR
//SMPCNTL DD DDNAME=SYSIN
//SMPLOG DD DUMMY
//SYSIN DD *
SET BDY(#tzone) .
UCLIN .
DEL LMOD(IMWSNDML) .
ENDUCL.
SET BDY(#dzone) .
UCLIN .
DEL LMOD(IMWSNDML) .
ENDUCL .
```

Figure 88. Sample Job to remove obsolete LMOD entry

Update the job as required before running the job. Change the SMPCSI DD statement to the SMP/E CSI that was used for the installation of z/OS V2R2 and change #tzone and #dzone to the appropriate target and distribution zones before running the job.

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The Preventive Service Planning (PSP) information should be reviewed prior to installing the elements of z/OS. Refer to 3.2, "Preventive Service Planning (PSP)" on page 15 for more information about retrieving the current PSPs APARs and contacting the support center if you need help getting the information you need.

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HIF7P02   323
HIO1104   323
HIP6220   313
HIT7750   326
HJE77A0   323
HJS77A0   324
HKY77A0   314
HLB77A0   328
HLE77A0   324
HMOS705   322
HMP1J00   327
HNET7A0   322
HOPI7A0   322
HOS2220   325
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HPM77A0   311
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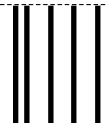Name   Address
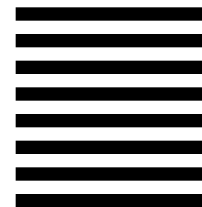
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