



**Program Directory for
IBM IMS Recovery Expert for z/OS**

V02.02.00

Program Number 5655-S98

FMID HAEP220

for Use with
z/OS

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Note

Before using this information and the product it supports, be sure to read the general information under 7.0, "Notices" on page 25.

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1.0 Introduction

This program directory is intended for system programmers who are responsible for program installation and maintenance. It contains information about the material and procedures associated with the installation of IBM IMS Recovery Expert for z/OS. This publication refers to IBM IMS Recovery Expert for z/OS as IMS Recovery Expert.

The Program Directory contains the following sections:

- 2.0, “Program Materials” on page 5 identifies the basic program materials and documentation for IMS Recovery Expert.
- 3.0, “Program Support” on page 8 describes the IBM support available for IMS Recovery Expert.
- 4.0, “Program and Service Level Information” on page 10 lists the APARs (program level) and PTFs (service level) that have been incorporated into IMS Recovery Expert.
- 5.0, “Installation Requirements and Considerations” on page 11 identifies the resources and considerations that are required for installing and using IMS Recovery Expert.
- 6.0, “Installation Instructions” on page 18 provides detailed installation instructions for IMS Recovery Expert. It also describes the procedures for activating the functions of IMS Recovery Expert, or refers to appropriate publications.

Before installing IMS Recovery Expert, read the *CBPDO Memo To Users* and the *CBPDO Memo To Users Extension* that are supplied with this program in softcopy format and this program directory; then keep them for future reference. Section 3.2, “Preventive Service Planning” on page 8 tells you how to find any updates to the information and procedures in this program directory.

IMS Recovery Expert is supplied in a Custom-Built Product Delivery Offering (CBPDO, 5751-CS3). The program directory that is provided in softcopy format on the CBPDO tape is identical to the hardcopy format if one was included with your order. All service and HOLDDATA for IMS Recovery Expert are included on the CBPDO tape.

Do not use this program directory if you install IMS Recovery Expert with a SystemPac or ServerPac. When you use one of those offerings, use the jobs and documentation supplied with the offering. The offering will point you to specific sections of this program directory as needed.

1.1 IMS Recovery Expert Description

IBM IMS Recovery Expert for z/OS, V2.2 (5655-S98) is a storage-aware backup and recovery solution that integrates storage processor fast replication facilities with IMS backup and recovery operations to allow near instantaneous backups with no application downtime and to help reduce recovery time and simplify disaster recovery procedures while using fewer CPU, I/O, and storage resources. The IMS Recovery Expert product belongs to the family of IMS Tools that provides backup and recovery solutions.

IMS Recovery Expert for z/OS has integrated Intelligent Recovery and Disaster Recovery Managers that analyze recovery assets and establish optimal recovery procedures to help minimize recovery time and recovery point objectives. Recovery jobs are tailored specifically to available backup and hardware resources.

IMS Recovery Expert for z/OS validates backups to allow users to verify that all data has a backup and that the backup is recoverable. When a recovery needs to be performed, IMS Recovery Expert for z/OS determines the recovery assets to use and the recovery steps to run, and then manages the entire recovery process for an entire IMS system, an application, or database.

Further, IMS Recovery Expert for z/OS transforms disaster recovery into a disaster restart process, helping to reduce recovery time objectives (RTO). The tool simplifies and automates the backup, recovery, and disaster recovery processes.

A system backup can remain on disk for local recoveries or can be automatically offloaded to tape for local or remote recovery.

IMS Recovery Expert for z/OS provides the ability to automate the process of backing up entire IMS subsystems by volume. It also helps safeguard IMS applications and increases application availability with point-in-time recoveries.

IMS Recovery Expert for z/OS can leverage IBM Space Efficient FlashCopy, IBM or STK Snapshot, and EMC TimeFinder/Snap virtual devices to create IMS system clones from the backups without using additional storage.

IMS Recovery Expert for z/OS can help with the following:

- Back up entire IMS systems nearly instantaneously with a significantly reduced likelihood of application downtime
- Recover more quickly and more easily using Intelligent Recovery Managers for local and remote recovery support
- Reduce recovery time and complexity with faster restore and parallel recovery (log apply)
- Support efforts to reduce storage costs by utilizing one backup for multiple purposes
- Reduce the effort required to accomplish IMS backup and recovery management through an easier-to-use ISPF interface
- Use fewer CPU, I/O, and tape resources than image copy
- Identify assets and prepare files and JCL for a more successful disaster recovery or disaster restart
- Automatically perform backup validation to achieve more successful recoveries
- Document compliance efforts against internal requirements or federal regulations
- Reduce recovery time objectives by transforming disaster recovery into a disaster restart process
- Eliminate backup windows and extend batch processing windows by eliminating many image copies

- Perform IMS system cloning operations from a system-level backup without increasing storage for the clone when using space-efficient technologies
- Expand the backup and recovery scope by encompassing IMS and DB2 environments to combine and coordinate management of the two IBM database management systems

IMS Recovery Expert for z/OS, V2.2 offers the following enhancements:

- Accelerated offload
 - Enhances tape offload and restore processes through parallel processing.
- DB2 and IMS coordinated backup and recovery synergy
 - Identifies quiet time intersecting recovery points within IMS databases, and additionally between IMS and DB2, through a log analysis. Subsequent recovery can then be performed to the same coordinated point in time.
 - Creates clean, consistent recovery points across IMS databases or additionally, across IMS and DB2 objects.
 - Provides enhanced application recovery by coordinating object recovery for IMS and DB2 databases.
 - Improves disaster recovery planning by providing disaster recovery simulation. This timestamp determination process can be executed at the production site, in order to determine how far back the recovery point would be.
 - Option to use one backup process that combines system-level backups for many IMS systems.
- Ease of use
 - Improves system-level backup usage by optionally issuing NOTIFY.IC commands for data sets included in a system-level backup. This will allow the change accumulation process to be reset and inactive PRILOGs to be deleted.
 - Creates image copies, if needed for additional processes, directly from system-level backups.
 - Enhances support for user recovery utilities to allow for greater control on how recovery utilities are used.
 - Provides greater flexibility by providing SMS storage group discovery when creating a backup profile. This simplifies the definition of volumes to include in the backup.
- Improved availability and reliability
 - Takes advantage of the investment in FlashCopy by exploiting FlashCopy consistency groups functionality. This means that the IMS systems will not have to be suspended and consistency of non-IMS data sets can also be achieved.
- Improved serviceability
 - Provides a utility to easily identify current product module maintenance levels.

1.2 IMS Recovery Expert FMID

IMS Recovery Expert consists of the following FMID:

HAEP220

2.0 Program Materials

An IBM program is identified by a program number. The program number for IMS Recovery Expert is 5655-S98.

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

The program announcement material describes the features supported by IMS Recovery Expert. Ask your IBM representative for this information if you have not already received a copy.

2.1 Basic Machine-Readable Material

The distribution medium for this program is physical media or downloadable files. This program is in SMP/E RELFILE format and is installed by using SMP/E. See 6.0, "Installation Instructions" on page 18 for more information about how to install the program.

You can find information about the physical media for the basic machine-readable materials for IMS Recovery Expert in the *CBPDO Memo To Users Extension*.

Figure 1 describes the program file content for IMS Recovery Expert. You can refer to the *CBPDO Memo To Users Extension* to see where the files reside on the tape.

Notes:

1. The data set attributes in this table must be used in the JCL of jobs that read the data sets. However, because the data sets are in IEBCOPY unloaded format, their actual attributes might be different.
2. If any RELFILEs are identified as PDSEs, ensure that SMPTLIB data sets are allocated as PDSEs.

Figure 1 (Page 1 of 2). Program File Content

Name	O R G	R E C F M	L R E C L	BLK SIZE
SMPMCS	SEQ	FB	80	6400
IBM.HAEP220.F1	PDS	FB	80	8800
IBM.HAEP220.F2	PDS	FB	80	8800
IBM.HAEP220.F3	PDS	U	0	6144
IBM.HAEP220.F4	PDS	FB	80	8800
IBM.HAEP220.F5	PDS	FB	80	8800

Figure 1 (Page 2 of 2). Program File Content

Name	O R G	R E C F M	L R E C L	BLK SIZE
IBM.HAEP220.F6	PDS	FB	80	8800
IBM.HAEP220.F7	PDS	FB	80	8800

2.2 Optional Machine-Readable Material

No optional machine-readable materials are provided for IMS Recovery Expert.

2.3 Program Publications

The following sections identify the basic publications for IMS Recovery Expert.

Figure 2 identifies the basic unlicensed publications for IMS Recovery Expert. Those that are in softcopy format publications can be obtained from the IBM Publications Center website at:
<http://www.ibm.com/shop/publications/order/>

Figure 2. Basic Material: Unlicensed

Publication Title	Form Number	Media Format
IBM IMS Recovery Expert for z/OS License Information	GC19-2472	http://www.ibm.com/support/docview.wss?uid=swg27020942
IBM IMS Recovery Expert for z/OS User's Guide	SC19-4368	http://www.ibm.com/support/docview.wss?uid=swg27020942

2.3.1 Optional Program Publications

No optional publications are provided for IMS Recovery Expert.

2.4 Program Source Materials

No program source materials or viewable program listings are provided for IMS Recovery Expert.

2.5 Publications Useful During Installation

You might want to use the publications listed in Figure 3 on page 7 during the installation of IMS Recovery Expert.

<i>Figure 3. Publications Useful During Installation</i>		
Publication Title	Form Number	Media Format
<i>IBM SMP/E for z/OS Messages, Codes, and Diagnosis</i>	GA22-7770	http://www.ibm.com/shop/publications/order/
<i>IBM SMP/E for z/OS Commands</i>	SA22-7771	http://www.ibm.com/shop/publications/order/
<i>IBM SMP/E for z/OS Reference</i>	SA22-7772	http://www.ibm.com/shop/publications/order/
<i>IBM SMP/E for z/OS User's Guide</i>	SA22-7773	http://www.ibm.com/shop/publications/order/

3.0 Program Support

This section describes the IBM support available for IMS Recovery Expert.

3.1 Program Services

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

3.2 Preventive Service Planning

Before you install IMS Recovery Expert, 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 6.1.10, “Perform SMP/E APPLY” on page 22 for a sample APPLY command.

If you obtained IMS Recovery Expert as part of a CBPDO, HOLDDATA is included.

If the CBPDO for IMS Recovery Expert is older than two weeks by the time you install the product materials, you can obtain the latest PSP Bucket information by going to the following website:

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

You can also use S/390 SoftwareXcel or contact the IBM Support Center to obtain the latest PSP Bucket information.

For program support, access the Software Support Website at <http://www-01.ibm.com/software/support/>.

PSP Buckets are identified by UPGRADEs, which specify product levels; and SUBSETs, which specify the FMIDs for a product level. The UPGRADE and SUBSET values for IMS Recovery Expert are included in Figure 4

UPGRADE	SUBSET	Description
5655S98	HAEP220	IMS Recovery Expert

3.3 Statement of Support Procedures

Report any problems which you feel might be an error in the product materials to your IBM Support Center. You may be asked to gather and submit additional diagnostics to assist the IBM Support Center in their analysis.

Figure 5 on page 9 identifies the component IDs (COMPID) for IMS Recovery Expert.

<i>Figure 5. Component IDs</i>			
FMID	COMPID	Component Name	RETAIN Release
HAEP220	5655S9800	IMS Recovery Expert	220

4.0 Program and Service Level Information

This section identifies the program and relevant service levels of IMS Recovery Expert. The program level refers to the APAR fixes that have been incorporated into the program. The service level refers to the PTFs that have been incorporated into the program.

4.1 Program Level Information

The following APAR fixes against previous releases of IMS Recovery Expert have been incorporated into this release. They are listed by FMID.

- FMID HAEP210

PM18464	PM43660	PM78637
PM19122	PM44870	PM78835
PM19515	PM47216	PM82925
PM20963	PM52000	PM84055
PM27126	PM52808	PM90100
PM27406	PM56003	PM92515
PM31691	PM61630	PM93956
PM33983	PM62187	PM98331
PM35283	PM71537	PI05351
PM35299	PM73060	PI07698
PM40229	PM74565	PI14347
PM42525		

4.2 Service Level Information

No PTFs against this release of IMS Recovery Expert have been incorporated into the product package.

Frequently check the IMS Recovery Expert PSP Bucket for HIPER and SPECIAL attention PTFs against all FMIDs that you must install. You can also receive the latest HOLDDATA, then add the **FIXCAT(IBM.PRODUCTINSTALL-REQUIRESERVICE)** operand on your APPLY CHECK command. This will allow you to review the recommended and critical service that should be installed with your FMIDs.

5.0 Installation Requirements and Considerations

The following sections identify the system requirements for installing and activating IMS Recovery Expert. The following terminology is used:

- *Driving system*: the system on which SMP/E is executed to install the program.
The program might have specific operating system or product level requirements for using processes, such as binder or assembly utilities during the installation.
- *Target system*: the system on which the program is configured and run.
The program might have specific product level requirements, such as needing access to the library of another product for link-edits. These requirements, either mandatory or optional, might directly affect the element during the installation or in its basic or enhanced operation.

In many cases, you can use a system as both a driving system and a target system. However, you can make a separate IPL-able clone of the running system to use as a target system. The clone must include copies of all system libraries that SMP/E updates, copies of the SMP/E CSI data sets that describe the system libraries, and your PARMLIB and PROCLIB.

Use separate driving and target systems in the following situations:

- When you install a new level of a product that is already installed, the new level of the product will replace the old one. By installing the new level onto a separate target system, you can test the new level and keep the old one in production at the same time.
- When you install a product that shares libraries or load modules with other products, the installation can disrupt the other products. By installing the product onto a separate target system, you can assess these impacts without disrupting your production system.

5.1 Driving System Requirements

This section describes the environment of the driving system required to install IMS Recovery Expert.

5.1.1 Machine Requirements

The driving system can run in any hardware environment that supports the required software.

5.1.2 Programming Requirements

Figure 6. Driving System Software Requirements

Program Number	Product Name	Minimum VRM	Minimum Service Level will satisfy these APARs	Included in the shipped product?
Any one of the following:				
5694-A01	z/OS	V01.13.00	N/A	No
5650-ZOS	z/OS	V02.01.00	N/A	No

Note: SMP/E is a requirement for Installation and is an element of z/OS but can also be ordered as a separate product, 5655-G44, minimally V03.06.00.

Note: Installation might require migration to new z/OS releases to be service supported. See http://www-03.ibm.com/systems/z/os/zos/support/zos_eos_dates.html.

5.2 Target System Requirements

This section describes the environment of the target system required to install and use IMS Recovery Expert.

IMS Recovery Expert installs in the DBS (P115) SREL.

5.2.1 Machine Requirements

IMS Recovery Expert for z/OS, V2.2 operates on any hardware configuration that supports the required versions of IMS. For Fast Replication backups and restores, if using IBM storage, FlashCopy V2 or a functionally equivalent product for FlashCopy, is required.

5.2.2 Programming Requirements

5.2.2.1 Installation Requisites: Installation requisites identify products that are required and *must* be present on the system or products that are not required but *should* be present on the system for the successful installation of this product.

Mandatory installation requisites identify products that are required on the system for the successful installation of this product.

IMS Recovery Expert has no mandatory installation requisites.

Conditional installation requisites identify products that are *not* required for successful installation of this product but can resolve such things as certain warning messages at installation time.

IMS Recovery Expert has no conditional installation requisites.

5.2.2.2 Operational Requisites: Operational requisites are products that are required and *must* be present on the system or products that are not required but *should* be present on the system for this product to operate all or part of its functions.

Mandatory operational requisites identify products that are required for this product to operate its basic functions.

<i>Figure 7. Target System Mandatory Operational Requisites</i>	
Program Number	Product Name and Minimum VRM/Service Level
Any one of the following:	
5635-A03	IBM IMS V12.01.00
5655-DSQ	IBM IMS Database Value Unit Edition V12.01.00 with PTF UK93908
5655-TM1	IBM IMS Transaction Manager Value Unit Edition V12.01.00
5635-A04	IBM IMS V13.01.00
5655-DSM	IBM IMS Database Value Unit Edition V13.01.00
5655-TM2	IBM IMS Transaction Manager Value Unit Edition V13.01.00

Conditional operational requisites identify products that are *not* required for this product to operate its basic functions but are required at run time for this product to operate specific functions.

<i>Figure 8 (Page 1 of 2). Target System Conditional Operational Requisites</i>		
Program Number	Product Name and Minimum VRM/Service Level	Function
5655-V86	IBM IMS Recovery Solution Pack for z/OS V01.01.00 or later *	For any forward recovery processing
5655-V93	IBM Tools Base for z/OS V01.04.00 or later	For saving reports in IMS Tools Knowledge Base
Any one of the following:		
5694-A01	z/OS, V01.13.00 or later, DFSMSdss and Flashcopy V2	For restoring IMS objects from FlashCopy backups on DASD
5650-ZOS	z/OS, V02.01.00 or later, DFSMSdss and Flashcopy V2	For restoring IMS objects from FlashCopy backups on DASD
Any one of the following:		
5694-A01	z/OS, V01.13.00 or later, DFSMSdss and 5655-P97 IBM Encryption Facility for z/OS, V01.02.00	For performing encryption during offloads
5650-ZOS	z/OS, V02.01.00 or later, DFSMSdss and 5655-P97 IBM Encryption Facility for z/OS, V01.02.00	For performing encryption during offloads

Figure 8 (Page 2 of 2). Target System Conditional Operational Requisites

Program Number	Product Name and Minimum VRM/Service Level	Function
Any one of the following:		
5694-A01	z/OS, V01.13.00 or later, IBM Cryptographic Services Facility (ICSF)	DFSMSDss requirement to perform encryption during offloads
5650-ZOS	z/OS, V02.01.00 or later, IBM Cryptographic Services Facility (ICSF)	DFSMSDss requirement to perform encryption during offloads

Note: IBM Tools Base for z/OS, a no-charge product, is a mandatory installation requisite for IMS Recovery Solution Pack for z/OS, V01.01.00

5.2.2.3 Toleration/Coexistence Requisites: Toleration/coexistence requisites identify products that must be present on sharing systems. These systems can be other systems in a multisystem environment (not necessarily sysplex), a shared DASD environment (such as test and production), or systems that reuse the same DASD environment at different time intervals.

IMS Recovery Expert has no toleration/coexistence requisites.

5.2.2.4 Incompatibility (Negative) Requisites: Negative requisites identify products that must *not* be installed on the same system as this product.

IMS Recovery Expert has no negative requisites.

5.2.3 DASD Storage Requirements

IMS Recovery Expert libraries can reside on all supported DASD types.

Figure 9 lists the total space that is required for each type of library.

Figure 9. Total DASD Space Required by IMS Recovery Expert

Library Type	Total Space Required in 3390 Trks
Target	517 Tracks
Distribution	517 Tracks

Notes:

1. For non-RECFM U data sets, IBM recommends using system-determined block sizes for efficient DASD utilization. For RECFM U data sets, IBM recommends using a block size of 32760, which is most efficient from the performance and DASD utilization perspective.

2. Abbreviations used for data set types are shown as follows.

- U** Unique data set, allocated by this product and used by only this product. This table provides all the required information to determine the correct storage for this data set. You do not need to refer to other tables or program directories for the data set size.
- S** Shared data set, allocated by this product and used by this product and other products. To determine the correct storage needed for this data set, add the storage size given in this table to those given in 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 other products. This data set is *not* allocated by this product. To determine the correct storage for this data set, add the storage size given in this table to those given in other tables (perhaps in other program directories). If the data set already exists, it must have enough free space to accommodate the storage size given in this table.

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

For more information about the names and sizes of the required data sets, see 6.1.8, "Allocate SMP/E Target and Distribution Libraries" on page 21.

3. All target and distribution libraries listed have the following attributes:

- The default name of the data set can be changed.
- The default block size of the data set can be changed.
- The data set can be merged with another data set that has equivalent characteristics.
- The data set can be either a PDS or a PDSE.

4. All target libraries listed have the following attributes:

- These data sets can be SMS-managed, but they are not required to be SMS-managed.
- These data sets are not required to reside on the IPL volume.
- The values in the "Member Type" column are not necessarily the actual SMP/E element types that are identified in the SMPMCS.

5. All target libraries that are listed and contain load modules have the following attributes:

- These data sets can be in the LPA, but they are not required to be in the LPA.
- These data sets can be in the LNKLIST.
- SBSYLOAD must be APF-authorized.

The following figures describe the target and distribution libraries required to install IMS Recovery Expert. The storage requirements of IMS Recovery Expert must be added to the storage required by other programs that have data in the same library.

Note: Use the data in these tables to determine which libraries can be merged into common data sets. In addition, since some ALIAS names may not be unique, ensure that no naming conflicts will be introduced before merging libraries.

Figure 10. Storage Requirements for IMS Recovery Expert Target Libraries

Library DDNAME	Member Type	Target Volume	T Y P E	O R G	R E C F M	L R E C L	No. of 3390 Trks	No. of DIR Blks
SBSYBASE	Sample	Any	U	PDS	FB	80	4	2
SBSYLOAD	LMOD	Any	U	PDS	U	0	227	80
SBSYMENU	Message	Any	U	PDS	FB	80	14	25
SBSYPENU	Panel	Any	U	PDS	FB	80	240	275
SBSYSAMP	Sample	Any	U	PDS	FB	80	9	10
SBSYSLIB	Skel	Any	U	PDS	FB	80	23	20

Figure 11. Storage Requirements for IMS Recovery Expert Distribution Libraries

Library DDNAME	T Y P E	O R G	R E C F M	L R E C L	No. of 3390 Trks	No. of DIR Blks
ABSYBASE	U	PDS	FB	80	4	2
ABSYLOAD	U	PDS	U	0	227	80
ABSYMENU	U	PDS	FB	80	14	25
ABSYMENU	U	PDS	FB	80	240	275
ABSYSAMP	U	PDS	FB	80	9	10
ABSYSLIB	U	PDS	FB	80	23	20

5.3 FMIDs Deleted

Installing IMS Recovery Expert might result in the deletion of other FMIDs. To see which FMIDs will be deleted, examine the ++VER statement in the SMPMCS of the product.

If you do not want to delete these FMIDs at this time, install IMS Recovery Expert into separate SMP/E target and distribution zones.

Note: These FMIDs are not automatically deleted from the Global Zone. If you want to delete these FMIDs from the Global Zone, use the SMP/E REJECT NOFMID DELETEFMID command. See the SMP/E Commands book for details.

5.4 Special Considerations

IMS Recovery Expert has no special considerations for the target system.

6.0 Installation Instructions

This chapter describes the installation method and the step-by-step procedures to install and to activate the functions of IMS Recovery Expert.

Please note the following points:

- If you want to install IMS Recovery Expert into its own SMP/E environment, consult the SMP/E manuals for instructions on creating and initializing the SMPCSI and the SMP/E control data sets.
- You can use the sample jobs that are provided to perform part or all of the installation tasks. The SMP/E jobs assume that all DDDEF entries that are required for SMP/E execution have been defined in appropriate zones.
- You can use the SMP/E dialogs instead of the sample jobs to accomplish the SMP/E installation steps.

6.1 Installing IMS Recovery Expert

6.1.1 SMP/E Considerations for Installing IMS Recovery Expert

Use the SMP/E RECEIVE, APPLY, and ACCEPT commands to install this release of IMS Recovery Expert.

6.1.2 SMP/E Options Subentry Values

The recommended values for certain SMP/E CSI subentries are shown in Figure 12. Using values lower than the recommended values can result in failures in the installation. DSSPACE is a subentry in the GLOBAL options entry. PEMAX is a subentry of the GENERAL entry in the GLOBAL options entry. See the SMP/E manuals for instructions on updating the global zone.

Figure 12. SMP/E Options Subentry Values

Subentry	Value	Comment
DSSPACE	(200,200,500)	3390 DASD tracks
PEMAX	SMP/E Default	IBM recommends using the SMP/E default for PEMAX.

6.1.3 SMP/E CALLLIBS Processing

IMS Recovery Expert uses the CALLLIBS function provided in SMP/E to resolve external references during installation. When IMS Recovery Expert is installed, ensure that DDDEFs exist for the following libraries:

- SISPLoad
- CSSLIB

Note: CALLLIBS uses the previous DDDEFs only to resolve the link-edit for IMS Recovery Expert. These data sets are not updated during the installation of IMS Recovery Expert.

6.1.4 Sample Jobs

The following sample installation jobs are provided as part of the product to help you install IMS Recovery Expert:

<i>Figure 13. Sample Installation Jobs</i>			
Job Name	Job Type	Description	RELFILE
BSYALA	SMP/E	Sample job to allocate and initialize a new SMP/E CSI data set (Optional)	IBM.HAEP220.F2
BSYALB	SMP/E	Sample job to allocate SMP/E data sets (Optional)	IBM.HAEP220.F2
BSYRECEV	RECEIVE	Sample RECEIVE job	IBM.HAEP220.F2
BSYALLOC	ALLOCATE	Sample job to allocate target and distribution libraries	IBM.HAEP220.F2
BSYDDDEF	DDDEF	Sample job to define SMP/E DDDEFs	IBM.HAEP220.F2
BSYAPPLY	APPLY	Sample APPLY job	IBM.HAEP220.F2
BSYACCEP	ACCEPT	Sample ACCEPT job	IBM.HAEP220.F2

You can access the sample installation jobs by performing an SMP/E RECEIVE (refer to 6.1.7, “Perform SMP/E RECEIVE” on page 21) then copy the jobs from the RELFILES to a work data set for editing and submission. See Figure 13 to find the appropriate refile data set.

You can also copy the sample installation jobs from the tape or product files by submitting the following job. Depending on your distribution medium, use either the //TAPEIN or the //FILEIN DD statement and comment out or delete the other statement. Before you submit the job, add a job card and change the lowercase parameters to uppercase values to meet the requirements of your site.

```

//STEP1 EXEC PGM=IEBCOPY
//SYSPRINT DD SYSOUT=*
//*****
//* Make the //TAPEIN DD statement below active if you install*
//* from a CBPDO tape by uncommenting the DD statement below. *
//*****
//*TAPEIN DD DSN=IBM.HAEP220.F2,UNIT=tunit,
//* VOL=SER=volser,LABEL=(x,SL),
//* DISP=(OLD,KEEP)
//*****
//* Make the //TAPEIN DD statement below active if you install*
//* from a product tape received outside the CBPDO process *
//* (using the optional SMP/E RECEIVE job) by uncommenting *
//* the DD statement below. *
//*****
//*TAPEIN DD DSN=IBM.HAEP220.F2,UNIT=tunit,
//* VOL=SER=AEP220,LABEL=(3,SL),
//* DISP=(OLD,KEEP)
//*****
//* Make the //FILEIN DD statement below active for *
//* downloaded DASD files. *
//*****
//*FILEIN DD DSN=IBM.HAEP220.F2,UNIT=SYSALLDA,DISP=SHR,
//* VOL=SER=filevol
//OUT DD DSNAME=jcl-library-name,
// DISP=(NEW,CATLG,DELETE),
// VOL=SER=dasdvol,UNIT=SYSALLDA,
// SPACE=(TRK,(20,10,5))
//SYSUT3 DD UNIT=SYSALLDA,SPACE=(CYL,(1,1))
//SYSIN DD *
COPY INDD=xxxxIN,OUTDD=OUT
/*

```

See the following information to update the statements in the previous sample:

TAPEIN:

- tunit** is the unit value that matches the product package.
- volser** is the volume serial that matches the product package.
- x** is the tape file number that indicates the location of the data set name on the tape. See the documentation that is provided by CBPDO for the location of IBM.HAEP220.F2 on the tape.

FILEIN:

- filevol** is the volume serial of the DASD device where the downloaded files reside.

OUT:

- jcl-library-name** is the name of the output data set where the sample jobs are stored.
- dasdvol** is the volume serial of the DASD device where the output data set resides.

SYSIN:

- xxxxIN** is either TAPEIN or FILEIN depending on your input DD statement.

6.1.5 Allocate SMP/E CSI (Optional)

If you are using an existing CSI, do not execute this job.

If you are allocating a new SMP/E data set for this install, edit and submit sample job BSYALA to allocate the SMP/E data set for IMS Recovery Expert. Consult the instructions in the sample job for more information.

Expected Return Codes and Messages: You will receive a return code of 0 if this job runs correctly.

6.1.6 Initialize CSI zones (Optional)

If you are using an existing CSI, do not execute this job.

Edit and submit sample job BSYALB to initialize SMP/E zones for IMS Recovery Expert. Consult the instructions in the sample job for more information.

Expected Return Codes and Messages: You will receive a return code of 0 if this job runs correctly.

6.1.7 Perform SMP/E RECEIVE

If you have obtained IMS Recovery Expert as part of a CBPDO, use the RCVPDO job in the CBPDO RIMLIB data set to receive the IMS Recovery Expert FMIDs, service, and HOLDDATA that are included on the CBPDO package. For more information, see the documentation that is included in the CBPDO.

You can also choose to edit and submit sample job BSYRECEV to perform the SMP/E RECEIVE for IMS Recovery Expert. Consult the instructions in the sample job for more information.

Expected Return Codes and Messages: You will receive a return code of 0 if this job runs correctly.

6.1.8 Allocate SMP/E Target and Distribution Libraries

Edit and submit sample job BSYALLOC to allocate the SMP/E target and distribution libraries for IMS Recovery Expert. Consult the instructions in the sample job for more information.

Expected Return Codes and Messages: You will receive a return code of 0 if this job runs correctly.

6.1.9 Create DDDEF Entries

Edit and submit sample job BSYDDDEF to create DDDEF entries for the SMP/E target and distribution libraries for IMS Recovery Expert. Consult the instructions in the sample job for more information.

Expected Return Codes and Messages: You will receive a return code of 0 if this job runs correctly.

6.1.10 Perform SMP/E APPLY

1. Ensure that you have the latest HOLDDATA; then edit and submit sample job BSYAPPLY to perform an SMP/E APPLY CHECK for IMS Recovery Expert. Consult the instructions in the sample job for more information.

The latest HOLDDATA is available through several different portals, including <http://service.software.ibm.com/holdata/390holddata.html>. The latest HOLDDATA may identify HIPER and FIXCAT APARs for the FMIDs you will be installing. An APPLY CHECK will help you determine if any HIPER or FIXCAT APARs are applicable to the FMIDs you are installing. If there are any applicable HIPER or FIXCAT APARs, the APPLY CHECK will also identify fixing PTFs that will resolve the APARs, if a fixing PTF is available.

You should install the FMIDs regardless of the status of unresolved HIPER or FIXCAT APARs. However, do not deploy the software until the unresolved HIPER and FIXCAT APARs have been analyzed to determine their applicability. That is, before deploying the software either ensure fixing PTFs are applied to resolve all HIPER or FIXCAT APARs, or ensure the problems reported by all HIPER or FIXCAT APARs are not applicable to your environment.

To receive the full benefit of the SMP/E Causer SYSMOD Summary Report, do *not* bypass the PRE, ID, REQ, and IFREQ on the APPLY CHECK. The SMP/E root cause analysis identifies the cause only of *errors* and not of *warnings* (SMP/E treats bypassed PRE, ID, REQ, and IFREQ conditions as warnings, instead of errors).

Here are sample APPLY commands:

- a. To ensure that all recommended and critical service is installed with the FMIDs, receive the latest HOLDDATA and use the APPLY CHECK command as follows

```
APPLY S(fmid,fmid,...) CHECK
FORFMID(fmid,fmid,...)
SOURCEID(RSU*)
FIXCAT(IBM.ProductInstall-RequiredService)
GROUPEXTEND .
```

Some HIPER APARs might not have fixing PTFs available yet. You should analyze the symptom flags for the unresolved HIPER APARs to determine if the reported problem is applicable to your environment and if you should bypass the specific ERROR HOLDS in order to continue the installation of the FMIDs.

This method requires more initial research, but can provide resolution for all HIPERs that have fixing PTFs available and are not in a PE chain. Unresolved PEs or HIPERs might still exist and require the use of BYPASS.

- b. To install the FMIDs without regard for unresolved HIPER APARs, you can add the BYPASS(HOLDCLASS(HIPER)) operand to the APPLY CHECK command. This will allow you to install FMIDs even though one or more unresolved HIPER APARs exist. After the FMIDs are installed, use the SMP/E REPORT ERRSYSMODS command to identify unresolved HIPER APARs and any fixing PTFs.

```
APPLY S(fmid,fmid,...) CHECK
FORFMID(fmid,fmid,...)
SOURCEID(RSU*)
FIXCAT(IBM.ProductInstall-RequiredService)
GROUPEXTEND
BYPASS(HOLDCLASS(HIPER),HOLDFIXCAT) .
..any other parameters documented in the program directory
```

This method is the quicker, but requires subsequent review of the Exception SYSMOD report produced by the REPORT ERRSYSMODS command to investigate any unresolved HIPERs. If you have received the latest HOLDDATA, you can also choose to use the REPORT MISSINGFIX command and specify Fix Category IBM.ProductInstall-RequiredService to investigate missing recommended service.

If you bypass HOLDs during the installation of the FMIDs because fixing PTFs are not yet available, you can be notified when the fixing PTFs are available by using the APAR Status Tracking (AST) function of ServiceLink or the APAR Tracking function of ResourceLink.

2. After you take actions that are indicated by the APPLY CHECK, remove the CHECK operand and run the job again to perform the APPLY.

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

Expected Return Codes and Messages from APPLY CHECK: You will receive a return code of 0 if this job runs correctly.

Expected Return Codes and Messages from APPLY: You will receive a return code of 0 if this job runs correctly.

6.1.11 Perform SMP/E ACCEPT

Edit and submit sample job BSYACCEP to perform an SMP/E ACCEPT CHECK for IMS Recovery Expert. Consult the instructions in the sample job for more information.

To receive the full benefit of the SMP/E Causer SYSMOD Summary Report, do *not* bypass the PRE, ID, REQ, and IFREQ on the ACCEPT CHECK. The SMP/E root cause analysis identifies the cause of only *errors* but not *warnings* (SMP/E treats bypassed PRE, ID, REQ, and IFREQ conditions as warnings rather than errors).

Before you use SMP/E to load new distribution libraries, it is recommended that you set the ACCJCLIN indicator in the distribution zone. In this way, you can save the entries that are produced from JCLIN in the distribution zone whenever a SYSMOD that contains inline JCLIN is accepted. For more information about the ACCJCLIN indicator, see the description of inline JCLIN in the SMP/E Commands book for details.

After you take actions that are indicated by the ACCEPT CHECK, remove the CHECK operand and run the job again to perform the ACCEPT.

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

Expected Return Codes and Messages from ACCEPT CHECK: You will receive a return code of 0 if this job runs correctly.

If PTFs that contain replacement modules are accepted, SMP/E ACCEPT processing will link-edit or bind the modules into the distribution libraries. During this processing, the Linkage Editor or Binder might issue messages that indicate unresolved external references, which will result in a return code of 4 during the ACCEPT phase. You can ignore these messages, because the distribution libraries are not executable and the unresolved external references do not affect the executable system libraries.

Expected Return Codes and Messages from ACCEPT: You will receive a return code of 0 if this job runs correctly.

6.1.12 Run REPORT CROSSZONE

The SMP/E REPORT CROSSZONE command identifies requisites for products that are installed in separate zones. This command also creates APPLY and ACCEPT commands in the SMPPUNCH data set. You can use the APPLY and ACCEPT commands to install those cross-zone requisites that the SMP/E REPORT CROSSZONE command identifies.

After you install IMS Recovery Expert, it is recommended that you run REPORT CROSSZONE against the new or updated target and distribution zones. REPORT CROSSZONE requires a global zone with ZONEINDEX entries that describe all the target and distribution libraries to be reported on.

For more information about REPORT CROSSZONE, see the SMP/E manuals.

6.2 Activating IMS Recovery Expert

6.2.1 Product Customization

The publication *IBM IMS Recovery Expert for z/OS User's Guide* (SC19-4368) contains the necessary information to customize and use IMS Recovery Expert.

7.0 Notices

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APAR numbers are provided in this document to assist in locating PTFs that may be required. Ongoing problem reporting may result in additional APARs being created. Therefore, the APAR lists in this document may not be complete. To obtain current service recommendations and to identify current product service requirements, always contact the IBM Customer Support Center or use S/390 SoftwareXcel to obtain the current "PSP Bucket".

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Program Directory for IBM IMS Recovery Expert for z/OS, October 2014

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