



Program Directory for IBM DB2 Sort for z/OS

V02.01.00

Program Number 5655-AA9

FMID HCNK210

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 23.

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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 DB2 Sort for z/OS. This publication refers to IBM DB2 Sort for z/OS as DB2 Sort for z/OS.

The Program Directory contains the following sections:

- 2.0, “Program Materials” on page 4 identifies the basic program materials and documentation for DB2 Sort for z/OS.
- 3.0, “Program Support” on page 7 describes the IBM support available for DB2 Sort for z/OS.
- 4.0, “Program and Service Level Information” on page 9 lists the APARs (program level) and PTFs (service level) that have been incorporated into DB2 Sort for z/OS.
- 5.0, “Installation Requirements and Considerations” on page 10 identifies the resources and considerations that are required for installing and using DB2 Sort for z/OS.
- 6.0, “Installation Instructions” on page 16 provides detailed installation instructions for DB2 Sort for z/OS. It also describes the procedures for activating the functions of DB2 Sort for z/OS, or refers to appropriate publications.

Before installing DB2 Sort for z/OS, 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 7 tells you how to find any updates to the information and procedures in this program directory.

DB2 Sort for z/OS 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 DB2 Sort for z/OS are included on the CBPDO tape.

Do not use this program directory if you install DB2 Sort for z/OS 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 DB2 Sort for z/OS Description

IBM DB2 SORT FOR Z/OS, V02.01.00 (5655-AA9) is a DB2 tool that enables high-speed utility sort processing for data stored in IBM DB2 for z/OS databases. It can improve the sort performance of many of the DB2 utilities delivered in the IBM DB2 Utilities Suite and of several other DB2 management tools. DB2 Sort can improve sort performance through enhanced sort technology and by communicating with DB2 utilities and tools to adjust system resources for more optimal sorting. This approach to sorting can

result in reduced sort CPU time. The following DB2 utilities and tools can benefit from improved sorting performance by using DB2 Sort:

- DB2 utilities
 - CHECK DATA
 - CHECK INDEX
 - CHECK LOB
 - LOAD
 - REBUILD INDEX
 - REORG TABLESPACE
 - RUNSTATS
- DB2 Tools
 - IBM DB2 Change Accumulation Tool for z/OS V03.01.00, or later
 - IBM DB2 High Performance Unload for z/OS V04.02.00, or later
 - IBM DB2 Log Analysis Tool for z/OS V03.03.00, or later
 - IBM DB2 Recovery Expert for z/OS V03.01.00, or later
 - IBM DB2 Utilities Enhancement Tool for z/OS V02.02.00, or later releases, using the PRESORT option with the DB2 LOAD utility

DB2 Sort can help to improve the performance of utility sort processing, especially in environments with large volumes of data, large table spaces, or large indexes. These environments can require a more sophisticated sorting approach than that used by tools used for general sorting purposes. Sort processing in these environments often involves intensive CPU usage and heavy I/O activity, which in turn requires large amounts of memory and disk space. DB2 Sort is designed to meet these demands by optimizing the use of memory, utilizing IBM System z Integrated Information Processor (zIIP*) technology, and optimizing the management of sort work disk space. Workloads that could benefit most from DB2 Sort include:

- Highly transactional workloads that perform many insert, update, and delete operations that require REORG.
- Applications such as Data Warehousing applications that use LOAD and REBUILD INDEX with large volumes of data.
- Situations where data volume or inaccurate statistics have resulted in Sort Capacity Exceeded errors.

DB2 Sort is not intended to be a replacement for general-purpose sorting products that are invoked through the standard z/OS system sort interface.

New features and enhancements in DB2 Sort for z/OS, V02.01.00.

DB2 Sort for z/OS, V02.01.00 provides further reduction of elapsed time and CPU consumption with a bidirectional, multirecord interface that adjusts system resources for more optimal sorting during DB2 utility processing. The DB2 Sort for z/OS, V02.01.00 multirecord interface is also available for all IBM DB2 for z/OS Tools that can invoke DB2 Sort for utility processing. Implementation of the multirecord interface by IBM utilities and tools improves overall performance of the sort and provides additional opportunities to offload additional work to zIIP* processors.

Note

This information provides only general descriptions of the types and portions of workloads that are eligible for execution on Specialty Engines (SEs). IBM authorizes customers to use IBM SEs such as zIIPs, zAAPs, and IFLs only to execute the processing of Eligible Workloads of specific programs expressly authorized by IBM as specified in the Authorized Use Table for IBM Machines (AUT) provided at:-

http://www.ibm.com/systems/support/machine_warranties/machine_code/aut.html

No other workload processing is authorized for execution on an SE. IBM offers SEs at a lower price than General Processors/Central Processors because customers are authorized to use SEs only to process certain types or amounts of workloads as specified by IBM in the AUT.

1.2 DB2 Sort for z/OS FMID

DB2 Sort for z/OS consists of the following FMID:

HCNK210

2.0 Program Materials

An IBM program is identified by a program number. The program number for DB2 Sort for z/OS is 5655-AA9.

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 DB2 Sort for z/OS. 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 16 for more information about how to install the program.

You can find information about the physical media for the basic machine-readable materials for DB2 Sort for z/OS in the *CBPDO Memo To Users Extension*.

Figure 1 describes the program file content for DB2 Sort for z/OS. 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	ORG	RECFM	RECL	BLK SIZE
SMPMCS	SEQ	FB	80	6400
IBM.HCNK210.F1	PDS	FB	80	8800
IBM.HCNK210.F2	PDS	FB	80	8800
IBM.HCNK210.F3	PDS	U	0	6144
IBM.HCNK210.F4	PDS	FB	80	8800
IBM.HCNK210.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.HCNK210.F6	PDS	VB	6140	27998
IBM.HCNK210.F7	PDS	FB	80	8800

2.2 Optional Machine-Readable Material

No optional machine-readable materials are provided for DB2 Sort for z/OS.

2.3 Program Publications

The following sections identify the basic publications for DB2 Sort for z/OS.

Figure 2 identifies the basic unlicensed publications for DB2 Sort for z/OS. 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 DB2 Sort for z/OS License Information	GC19-4390	http://www.ibm.com/software/sla/sladb.nsf
IBM DB2 Sort for z/OS User's Guide	SC19-4387	http://www.ibm.com/support/docview.wss?uid=swg27020910

2.3.1 Optional Program Publications

No optional publications are provided for DB2 Sort for z/OS.

2.4 Program Source Materials

No program source materials or viewable program listings are provided for DB2 Sort for z/OS.

2.5 Publications Useful During Installation

You might want to use the publications listed in Figure 3 on page 6 during the installation of DB2 Sort for z/OS.

<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 DB2 Sort for z/OS.

3.1 Program Services

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

3.2 Preventive Service Planning

Before you install DB2 Sort for z/OS, 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 6.1.9, “Perform SMP/E APPLY” on page 19 for a sample APPLY command.

If you obtained DB2 Sort for z/OS as part of a CBPDO, HOLDDATA is included.

If the CBPDO for DB2 Sort for z/OS 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 DB2 Sort for z/OS are included in Figure 4

UPGRADE	SUBSET	Description
5655AA9	HCNK210	DB2 Sort for z/OS

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 8 identifies the component IDs (COMPID) for DB2 Sort for z/OS.

<i>Figure 5. Component IDs</i>			
FMID	COMPID	Component Name	RETAIN Release
HCNK210	5655W4200	DB2 Sort for z/OS	210

4.0 Program and Service Level Information

This section identifies the program and relevant service levels of DB2 Sort for z/OS. 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 DB2 Sort for z/OS have been incorporated into this release. They are listed by FMID.

- FMID HCNK130

PI08309	PM72339	PM82947
PI10056	PM73242	PM82949
PI12481	PM74357	PM86039
PI13150	PM80144	PM86040
PI15416	PM80364	PM91929
PI20369	PM80367	PM95459
PI22414	PM80754	PM97410
PM71117		

4.2 Service Level Information

No PTFs against this release of DB2 Sort for z/OS have been incorporated into the product package.

Frequently check the DB2 Sort for z/OS 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 DB2 Sort for z/OS. 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 DB2 Sort for z/OS.

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 DB2 Sort for z/OS.

DB2 Sort for z/OS installs in the DBS (P115) SREL.

5.2.1 Machine Requirements

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

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.

DB2 Sort for z/OS 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.

DB2 Sort for z/OS 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.

Figure 7. Target System Mandatory Operational Requisites	
Program Number	Product Name and Minimum VRM/Service Level
5655-V93	IBM Tools Base for z/OS V01.05.00 - HTCZ110*
Any one of the following:	
5605-DB2	DB2 for z/OS V10.01.00
5697-P31	DB2 for z/OS Value Unit Edition V10.01.00
5615-DB2	DB2 for z/OS V11.01.00
5697-P43	DB2 for z/OS Value Unit Edition V11.01.00
Any one of the following:	
5655-V41	DB2 Utilities Suite for z/OS V10.01.00 If running DB2 V10.01.00 plus APAR PI19784
5655-W87	DB2 Utilities Suite for z/OS V11.01.00 If running DB2 V11.01.00 plus APAR PI19784

Note: *IBM Tools Base for z/OS (5655-V93) is a mandatory operational requisite for DB2 Sort for z/OS. IBM Tools Base for z/OS is a no-charge product that must be separately ordered. Tools Base contains IBM Tools Customizer for z/OS, FMID HTCZ110, which must be installed in order to customize DB2 Automation Tool. Refer to the IBM Tools Base for z/OS, Program Directory (GI10-8819) for installation instructions.

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.

DB2 Sort for z/OS has no conditional operational requisites.

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.

DB2 Sort for z/OS 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.

DB2 Sort for z/OS has no negative requisites.

5.2.3 DASD Storage Requirements

DB2 Sort for z/OS libraries can reside on all supported DASD types.

Figure 8 on page 13 lists the total space that is required for each type of library.

<i>Figure 8. Total DASD Space Required by DB2 Sort for z/OS</i>	
Library Type	Total Space Required in 3390 Trks
Target	136 tracks
Distribution	303 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 6.1.7, “Allocate SMP/E Target and Distribution Libraries” on page 19.

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 LNKLST.
 - The SCNKLPA data set can be in the LPA, but it is not required to be in the LPA.
 - If the SCNKLPA data set is not in the LPA, it will need to be APF-authorized.
 - The SCNKLINK data set will need to be APF-authorized.

The following figures describe the target and distribution libraries required to install DB2 Sort for z/OS. The storage requirements of DB2 Sort for z/OS 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 9. Storage Requirements for DB2 Sort for z/OS 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
SCNKBASE	SAMP	Any	U	PDS	FB	80	6	5
SCNKBENU	DATA	Any	U	PDS	VB	6140	16	5
SCNKDENU	DATA	Any	U	PDS	FB	80	6	5
SCNKLINK	MOD	Any	U	PDS	U	0	13	5
SCNKLPA	MOD	Any	U	PDS	U	0	76	25
SCNKSAMP	SAMP	Any	U	PDS	FB	80	6	5
SCNKUSER	MAC	Any	U	PDS	FB	80	13	5

Figure 10 (Page 1 of 2). Storage Requirements for DB2 Sort for z/OS 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
ACNKBASE	U	PDS	FB	80	6	5

Figure 10 (Page 2 of 2). Storage Requirements for DB2 Sort for z/OS 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
ACNKBENU	U	PDS	VB	6140	16	5
ACNKDENU	U	PDS	FB	80	6	5
ACNKLOAD	U	PDS	U	0	256	240
ACNKSAMP	U	PDS	FB	80	6	5
ACNKUSER	U	PDS	FB	80	13	5

5.3 FMIDs Deleted

Installing DB2 Sort for z/OS 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 DB2 Sort for z/OS 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

DB2 Sort for z/OS 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 DB2 Sort for z/OS.

Please note the following points:

- If you want to install DB2 Sort for z/OS 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 DB2 Sort for z/OS

6.1.1 SMP/E Considerations for Installing DB2 Sort for z/OS

Use the SMP/E RECEIVE, APPLY, and ACCEPT commands to install this release of DB2 Sort for z/OS.

6.1.2 SMP/E Options Subentry Values

The recommended values for certain SMP/E CSI subentries are shown in Figure 11. 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 11. SMP/E Options Subentry Values

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

6.1.3 Sample Jobs

The following sample installation jobs are provided as part of the product to help you install DB2 Sort for z/OS:

Figure 12. Sample Installation Jobs

Job Name	Job Type	Description	RELFILE
CNKALA	SMP/E	Sample job to allocate and initialize a new SMP/E CSI data set (Optional)	IBM.HCNK210.F7
CNKALB	SMP/E	Sample job to allocate SMP/E data sets (Optional)	IBM.HCNK210.F7
CNKRECEV	RECEIVE	Sample RECEIVE job	IBM.HCNK210.F7
CNKALLOC	ALLOCATE	Sample job to allocate target and distribution libraries	IBM.HCNK210.F7
CNKDDDEF	DDDEF	Sample job to define SMP/E DDDEFS	IBM.HCNK210.F7
CNKAPPLY	APPLY	Sample APPLY job	IBM.HCNK210.F7
CNKACCEP	ACCEPT	Sample ACCEPT job	IBM.HCNK210.F7

You can access the sample installation jobs by performing an SMP/E RECEIVE (refer to 6.1.6, “Perform SMP/E RECEIVE” on page 19) then copy the jobs from the RELFILES to a work data set for editing and submission. See Figure 12 on page 16 to find the appropriate relfile 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.HCNK210.F7,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.HCNK210.F7,UNIT=tunit,
/* VOL=SER=CNK210,LABEL=(8,SL),
/* DISP=(OLD,KEEP)
//*****
/* Make the //FILEIN DD statement below active for *
/* downloaded DASD files. *
//*****
/*FILEIN DD DSN=IBM.HCNK210.F7,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.HCNK210.F7 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.

6.1.4 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 CNKALA to allocate the SMP/E data set for DB2 Sort for z/OS. 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.

6.1.5 Initialize CSI zones (Optional)

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

Edit and submit sample job CNKALB to initialize SMP/E zones for DB2 Sort for z/OS. 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 Perform SMP/E RECEIVE

If you have obtained DB2 Sort for z/OS as part of a CBPDO, use the RCPDO job in the CBPDO RIMLIB data set to receive the DB2 Sort for z/OS 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 CNKRECEV to perform the SMP/E RECEIVE for DB2 Sort for z/OS. 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 Allocate SMP/E Target and Distribution Libraries

Edit and submit sample job CNKALLOC to allocate the SMP/E target and distribution libraries for DB2 Sort for z/OS. 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 Create DDDEF Entries

Edit and submit sample job CNKDDDEF to create DDDEF entries for the SMP/E target and distribution libraries for DB2 Sort for z/OS. 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 Perform SMP/E APPLY

1. Ensure that you have the latest HOLDDATA; then edit and submit sample job CNKAPPLY to perform an SMP/E APPLY CHECK for DB2 Sort for z/OS. 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.

6.1.10 Perform SMP/E ACCEPT

Edit and submit sample job CNKACCEP to perform an SMP/E ACCEPT CHECK for DB2 Sort for z/OS. 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.

6.1.11 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 DB2 Sort for z/OS, 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 Product Customization

The publication *DB2 Sort for z/OS User's Guide* (SC19-4387) contains the necessary information to customize and use DB2 Sort for z/OS.

7.0 Notices

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Program Directory for IBM DB2 Sort for z/OS, June 2015

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