



**Program Directory for
IBM IMS Index Builder for z/OS**

V03.01.01

Program Number 5655-R01

FMID H22O310

for Use with
z/OS

Document Date: June 2021

GI10-8571-03

Note

Before using this information and the product it supports, be sure to read the general information under 7.0, "Notices" on page 24.

A form for reader's comments appears at the back of this publication. When you send information to IBM, you grant IBM a nonexclusive right to use or distribute the information in any way it believes appropriate without incurring any obligation to you.

© **Copyright International Business Machines Corporation 2000, 2021. All rights reserved.**

Note to U.S. Government Users — Documentation related to restricted rights — Use, duplication or disclosure is subject to restrictions set forth in GSA ADP Schedule Contract with IBM Corp.

Contents

1.0 Introduction	1
1.1 IMS Index Builder Description	1
1.2 IMS Index Builder FMID	3
2.0 Program Materials	4
2.1 Basic Machine-Readable Material	4
2.2 Optional Machine-Readable Material	5
2.3 Program Publications	5
2.3.1 Basic Program Publications	5
2.3.2 Optional Program Publications	5
2.4 Program Source Materials	6
2.5 Publications Useful During Installation	6
3.0 Program Support	7
3.1 Program Services	7
3.2 Preventive Service Planning	7
3.3 Statement of Support Procedures	8
4.0 Program and Service Level Information	9
4.1 Program Level Information	9
4.2 Service Level Information	10
5.0 Installation Requirements and Considerations	11
5.1 Driving System Requirements	11
5.1.1 Machine Requirements	11
5.1.2 Programming Requirements	11
5.2 Target System Requirements	12
5.2.1 Machine Requirements	12
5.2.2 Programming Requirements	12
5.2.2.1 Installation Requisites	12
5.2.2.2 Operational Requisites	13
5.2.2.3 Toleration/Coexistence Requisites	14
5.2.2.4 Incompatibility (Negative) Requisites	14
5.2.3 DASD Storage Requirements	14
5.3 FMIDs Deleted	16
5.4 Special Considerations	17
6.0 Installation Instructions	18
6.1 Installing IMS Index Builder	18
6.1.1 SMP/E Considerations for Installing IMS Index Builder	18
6.1.2 SMP/E Options Subentry Values	18
6.1.3 Sample Jobs	18

6.1.4 Allocate SMP/E CSI (Optional)	20
6.1.5 Allocate SMP/E CSI (Optional)	20
6.1.6 Perform SMP/E RECEIVE	20
6.1.7 Allocate SMP/E Target and Distribution Libraries	20
6.1.8 Create DDDEF Entries	20
6.1.9 Perform SMP/E APPLY	21
6.1.10 Perform SMP/E ACCEPT	22
6.1.11 Run REPORT CROSSZONE	23
6.2 Activating IMS Index Builder	23
7.0 Notices	24
7.1 Trademarks	25
Reader's Comments	26

Figures

1. Program File Content IMS Index Builder	4
2. Basic Material: Unlicensed Publications	5
3. Basic Material: Other Unlicensed or Licensed Publications	5
4. Publications Useful During Installation	6
5. PSP Upgrade and Subset ID	7
6. Component IDs	8
7. Driving System Software Requirements	12
8. Target System Mandatory Installation Requisites	13
9. Target System Mandatory Operational Requisites	13
10. Target System Conditional Operational Requisites	14
11. Total DASD Space Required by IMS Index Builder	14
12. Storage Requirements for IMS Index Builder Target Libraries	16
13. Storage Requirements for IMS Index Builder Distribution Libraries	16
14. SMP/E Options Subentry Values	18
15. Sample Installation Jobs	19

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 Index Builder for z/OS. This publication refers to IBM IMS Index Builder for z/OS as IMS Index Builder.

The Program Directory contains the following sections:

- 2.0, “Program Materials” on page 4 identifies the basic and optional program materials and documentation for IMS Index Builder.
- 3.0, “Program Support” on page 7 describes the IBM support available for IMS Index Builder.
- 4.0, “Program and Service Level Information” on page 9 lists the APARs (program level) and PTFs (service level) that have been incorporated into IMS Index Builder.
- 5.0, “Installation Requirements and Considerations” on page 11 identifies the resources and considerations that are required for installing and using IMS Index Builder.
- 6.0, “Installation Instructions” on page 18 provides detailed installation instructions for IMS Index Builder. It also describes the procedures for activating the functions of IMS Index Builder, or refers to appropriate publications.

Before installing IMS Index Builder, 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.

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

Do not use this program directory if you install IMS Index Builder 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 Index Builder Description

IMS Index Builder for z/OS, V3.1.1 (5655-R01) provides improved technology for the recovery, maintenance, and addition of IMS indexes and eliminates the need to image copy index data sets for recovery and backup purposes. IMS Index Builder allows you to rebuild IMS indexes rather than recover or reorganize them using the traditional unload and reload processes used for the primary data store. This eliminates the need to image copy indexes, means faster recovery and reorganization times, and allows for adding new indexes quickly without the need to reorganize the primary databases. Index Builder

provides an easy-to-use, one-step procedure for building all IMS index types including primary, secondary, and indirect list data sets.

Index Builder:

- Provides advanced technology for IMS Index recovery, maintenance, and creation
- Substantially reduces processing time compared to traditional methods
- Eliminates the need to image copy index data sets
- Provides easy to use front-end for setup

IMS Index Builder offers the following features:

- Provides full support for IMS High Availability Large Database (HALDB) and for Database Recovery Control (DBRC).
- Offers an option to either directly scan the target database or use the DFSURWF1 file as input to build IMS secondary indexes. DFSURWF1 is created by the IMS reorganization reload or the initial load utility.
- Extracts data needed for prefix resolution from the DFSURWF1 file and writes it to a new data set. This split function reduces the size of the sort to perform prefix resolution.
- Initializes empty IMS secondary index databases.
- Creates separate address spaces for scanning prime database data sets and sorting index records.
- Builds primary indexes of HIDAM and PHIDAM databases using an existing primary index as input.
- Creates new primary indexes of HIDAM and PHIDAM databases where input is based on a scan of the physical database without using the existing primary index.
- Supports IDCAMS delete/define functionality for data sets being built based on a user-provided procedure library so that no preliminary IDCAMS job steps are required.

IMS Index Builder for z/OS, V3.1 contains all of the features and functions of the previous version and much more. The enhancements include:

- A new sequential scan technology for building primary, secondary, and ILDS indexes. Comparisons to prior release functionality show improved elapsed time.
- Support of secondary indexes with non-unique keys.
- Ability to rebuild selected PSINDEX partitions.
- Support for using PSE (Partition Selection Exits) when rebuilding PSINDEXes.
- Support for creating the HALDB ILDS where input is based on a scan of the physical HALDB partitions without using the existing ILDS.
- Improved usability by routing of system messages from the subordinate address space(s) to the main address space.
- Integration with IMS Tools Knowledge Base for storing and retrieving SYSPRINT output data.

1.2 IMS Index Builder FMID

IMS Index Builder consists of the following FMID:

H22O310 IMS Index Builder

2.0 Program Materials

An IBM program is identified by a program number. The program number for IMS Index Builder is 5655-R01.

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 Index Builder. 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 Index Builder in the *CBPDO Memo To Users Extension*.

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

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. Program File Content IMS Index Builder

Name	ORG	RECFM	LEN	BLK SIZE
SMPMCS	SEQ	FB	80	6400
IBM.H22O310.F1	SEQ	FB	80	8800
IBM.H22O310.F2	SEQ	FB	80	8800
IBM.H22O310.F3	SEQ	FB	80	8800
IBM.H22O310.F4	SEQ	U	0	6144
IBM.H22O310.F5	SEQ	FB	80	8800

2.2 Optional Machine-Readable Material

No optional machine-readable materials are provided for IMS Index Builder.

2.3 Program Publications

The following sections identify the basic and optional publications for IMS Index Builder.

2.3.1 Basic Program Publications

Figure 2 identifies the basic unlicensed program publications for IMS Index Builder. One copy of each of these publications is included when you order the basic materials for IMS Index Builder. Additional copies can be obtained from the IBM Publications Website at URL:

<https://www.ibm.com/resources/publications/searchInput>

Contact your IBM representative for further assistance.

<i>Figure 2. Basic Material: Unlicensed Publications</i>	
Publication Title	Form Number
IBM IMS Index Builder for z/OS License Information	GC18-9100

Figure 3 identifies the basic unlicensed or licensed publications that are not available in hardcopy format, but are available through the internet or other media for IMS Index Builder.

<i>Figure 3. Basic Material: Other Unlicensed or Licensed Publications</i>		
Publication Title	Form Number	Media Format
IBM IMS Index Builder for z/OS User's Guide	SC18-9101	https://www.ibm.com/resources/publications/searchInput
IBM Tools Base Program Directory	G110-8819	https://www.ibm.com/resources/publications/searchInput
IBM Tools Base Configuration Guide for IMS	SC19-4370	https://www.ibm.com/resources/publications/searchInput

2.3.2 Optional Program Publications

No optional publications are provided for IMS Index Builder.

2.4 Program Source Materials

No program source materials or viewable program listings are provided for IMS Index Builder.

2.5 Publications Useful During Installation

You might want to use the publications listed in Figure 4 during the installation of IMS Index Builder. To order copies, contact your IBM representative or visit the IBM Publications Center at: <https://www.ibm.com/resources/publications/searchInput>

Figure 4. Publications Useful During Installation

Publication Title	Form Number
<i>IBM SMP/E for z/OS User's Guide</i>	SA23-2277
<i>IBM SMP/E for z/OS Commands</i>	SA23-2275
<i>IBM SMP/E for z/OS Reference</i>	SA23-2276
<i>IBM SMP/E for z/OS Messages, Codes, and Diagnosis</i>	GA32-0883

3.0 Program Support

This section describes the IBM support available for IMS Index Builder.

3.1 Program Services

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

3.2 Preventive Service Planning

Before you install IMS Index Builder, make sure that you have reviewed the current Preventive Service Planning (PSP) information. The PSP Buckets maintain current lists (which have been identified since the package was created) of any recommended or required service for the installation of this package. This service includes software PSP information that contains HIPER and required PTFs against the base release.

If you obtained IMS Index Builder as part of a CBPDO, HOLDDATA is included.

If the CBPDO for IMS Index Builder is older than two weeks by the time you install the product materials, you should 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 <https://www.ibm.com/support/home/>

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 Index Builder are shown as follows:

UPGRADE	SUBSET	Description
5655R01	H22O310	IMS Index Builder

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 6 on page 8 identifies the component IDs (COMPID) for IMS Index Builder.

<i>Figure 6. Component IDs</i>			
FMID	COMPID	Component Name	RETAIN Release
H22O310	5655E2400	IMS Index Builder	311

4.0 Program and Service Level Information

This section identifies the program and relevant service levels of IMS Index Builder. 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 Index Builder have been incorporated into this release. They are listed by FMID.

- FMID H22O230

PQ66736	PQ77944	PQ90767
PQ68391	PQ78016	PQ91025
PQ68576	PQ78795	PQ91157
PQ68578	PQ79536	PQ91637
PQ68833	PQ80038	PQ91694
PQ69295	PQ80093	PQ91828
PQ69757	PQ80216	PQ91986
PQ70150	PQ80527	PQ93232
PQ70421	PQ80650	PQ93439
PQ70737	PQ80709	PQ94145
PQ71035	PQ82443	PQ94416
PQ71418	PQ84251	PQ94830
PQ71798	PQ85424	PQ95727
PQ72294	PQ85516	PQ98350
PQ72674	PQ85744	PQ99037
PQ72834	PQ86098	PQ99068
PQ73096	PQ86103	PQ99082
PQ73570	PQ86256	PQ99933
PQ73974	PQ86612	PK00052
PQ74061	PQ86822	PK00306
PQ75154	PQ87341	PK01018
PQ75273	PQ87491	PK01679
PQ75320	PQ87769	PK01903
PQ75460	PQ87880	PK02268
PQ76219	PQ88453	PK02968
PQ76224	PQ89118	PK07556
PQ76691	PQ89532	PK07560
PQ76859	PQ89696	PK07563
PQ76857	PQ89869	PK07566
PQ77680	PQ90074	PK07569
PQ77794	PQ90076	PK08256

PK08310	PK23472	PK38318
PK08378	PK23611	PK39760
PK09651	PK24669	PK43506
PK09653	PK25874	PK45097
PK10153	PK26528	PK48933
PK10589	PK27239	PK49320
PK11329	PK29311	PK49450
PK11688	PK29622	PK52953
PK12755	PK30473	PK54177
PK13871	PK30688	PK55372
PK15198	PK31803	PK58860
PK16935	PK35505	PK60145
PK17414	PK36187	PK60460
PK18338	PK36340	PK63364
PK21544	PK36343	PK65117

4.2 Service Level Information

PTFs containing APAR fixes against previous versions of IMS Index Builder have been incorporated into this release. PTFs containing APAR fixes for IMS Index Builder V3.1 are not incorporated into this release.

It is highly recommended that you frequently check the IMS Index Builder PSP Bucket for HIPER and SPECIAL Attention PTFs against all FMIDs that you must install.

5.0 Installation Requirements and Considerations

The following sections identify the system requirements for installing and activating IMS Index Builder. 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 Index Builder.

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 7. Driving System Software Requirements

Program Number	Product Name	Minimum VRM	Minimum Service Level will satisfy these APARs	Included in this product's shipment?
Any one of the following:				
5650-ZOS	z/OS	V02.03.00	N/A	No
5655-G44	IBM SMP/E for z/OS	V03.05.00	N/A	No

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.

IMS Index Builder is installed into a zFS file system. Before installing IMS Index Builder, you must ensure that the target system file system data sets are available for processing on the driving system. OMVS must be active on the driving system and the target system file system data set must be mounted on the driving system.

If you plan on installing IMS Index Builder in a zFS file system, this requires that zFS be active on the driving system. Information on activating and using zFS can be found in z/OS Distributed File Service zSeries File System Administration, SC24-5989.

5.2 Target System Requirements

This section describes the environment of the target system required to install and use IMS Index Builder.

IMS Index Builder 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. These products are specified as PREs or REQs.

<i>Figure 8. Target System Mandatory Installation Requisites</i>				
Program Number	Product Name	Minimum VRM	Minimum Service Level will satisfy these APARs	Included in this product's shipment?
5655-V93	IBM Tools Base	01.06.00 or higher	N/A	NO

Note: *IBM IMS Tools Base for z/OS was renamed with V1.2 to IBM Tools Base for z/OS.

Note: Installation might require migration to new releases to obtain support. See <https://www.ibm.com/support/lifecycle/>

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. These products are specified as IF REQs.

IMS Index Builder 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. These products are specified as PREs or REQs.

<i>Figure 9. Target System Mandatory Operational Requisites</i>	
Program Number	Product Name and Minimum VRM/Service Level
Any one of the following:	
5635-A06	IMS V15.01.00 or later
5655-DS5	IMS Database Value Unit Edition V15.01.00 or later

Note: Installation might require migration to new releases to obtain support. See <https://www.ibm.com/support/lifecycle/>

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. These products are specified as IF REQs.

Figure 10. Target System Conditional Operational Requisites

Program Number	Product Name and Minimum VRM/Service Level	Function
5650-ZOS	z/OS V02.03.00 or higher -- DFSORT (included) or a functionally equivalent sort program	Index Build

Note: Installation might require migration to new releases to obtain support. See <https://www.ibm.com/support/lifecycle/>

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 Index Builder 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 Index Builder has no negative requisites.

5.2.3 DASD Storage Requirements

IMS Index Builder libraries can reside on all supported DASD types.

Figure 11 lists the total space that is required for each type of library.

Figure 11. Total DASD Space Required by IMS Index Builder

Library Type	Total Space Required in 3390 Trks
Target	240 tracks for H22O310
Distribution	340 tracks for H22O310

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 20.

3. Abbreviations used for the file system path type are as follows.

- N** New path, created by this product.
- X** Path created by this product, but might already exist from a previous release.
- P** Previously existing path, created by another product.

4. 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.

5. 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.

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

- SIIULMOD contains non-reentrant modules that may not be placed into the LPA.
- The data set can be placed in the LNKST.
- Load libraries SIIULMOD must be APF-authorized

The following figures describe the target and distribution libraries and file system paths required to install IMS Index Builder. The storage requirements of IMS Index Builder must be added to the storage required by other programs that have data in the same library or path.

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 12. Storage Requirements for IMS Index Builder 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
SIIBASE	Sample	Any	U	PDS	FB	80	30	15
SIUCNTL	Macro	Any	U	PDS	FB	80	5	5
SIULMOD	Module	Any	U	PDS	U	0	200	80
SIUPROC	Procedure	Any	U	PDS	FB	80	5	5

Figure 13. Storage Requirements for IMS Index Builder 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
AIIIBASE	U	PDS	FB	80	30	15
AIIUCNTL	U	PDS	FB	80	5	5
AIIULMOD	U	PDS	U	0	300	100
AIIUPROC	U	PDS	FB	80	5	5

5.3 FMIDs Deleted

Installing IMS Index Builder 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 Index Builder 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, see the SMP/E manuals for instructions.

5.4 Special Considerations

IMS Index Builder (5655-R01) FMID H22O310 has an SMP/E installation required dependency of FMID H32A130. FMID H32A130 is obsolete and replaced by FMID HAHN160 which is only available in the separate product 5655-V93 (IBM Tools Base for z/OS). The installation of IBM Tools Base supersedes any installation of FMID H32A130 (or earlier) installed functions. It is **imperative** that FMID H22O310 installs into an SMP/E environment where one of the following is true:

- IBM Tools Base for z/OS already exists
- You plan to simultaneously install 5655-V93 and 5655-R01

SMP/E installation JCL Job samples may have references to FMID H32A130. Delete or comment out any references to FMID H32A130, and ignore any JCL Job samples that are specific to the installation of FMID H32A130.

IMS Index Builder and Tools Base for z/OS, V1.6 (5655-V93) Considerations

- Tools Base for z/OS (5655-V93) is a no-charge product and must be ordered separately. We recommend to order the latest available version/release of this product.
- Tools Base for z/OS is required by multiple IMS tools.
- It is recommended to install all the IMS tools that use Tools Base for z/OS into the same SMP/E target and distribution zones to avoid maintaining multiple instances of the FMID.
- Tools Base, FMID HAHN160, DELETEDs and SUPERSEDEs the following FMIDs:
 - IMS Tools Base for z/OS, V1.5, FMID HAHN150 and all FMIDs associated with prior releases of Tools Base
 - Common Code IMS Tools Online System Interface, FMID H2B7110 and H2B7120
 - Common Code IMS Tools Generic Exits, FMID H32A110, H32A120, and H32A130
 - IMS Hardware Data Compression Extended, FMID H08J110, H08J120, H22D210, and H22D220
 - IMS Tools Knowledge Base, FMID HABW110
- Should you receive FMID H2B7110, H2B7120, H32A110, H32A120, or H32A130 with another IMS tool, do not attempt to install any of the superseded FMIDs into this environment. Install and use the latest available level of Tools Base for z/OS instead.
- For data set directory blocks and space requirements, refer to the distribution and target library requirements sections specified in particular program directories.
- For migration and customization information refer to IBM Tools Base IMS Tools Common Services for z/OS User's Guide, SC19-4371 at URL: <http://www.ibm.com/support/pages/node/712955>

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 Index Builder.

Please note the following:

- If you want to install IMS Index Builder 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 Index Builder

6.1.1 SMP/E Considerations for Installing IMS Index Builder

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

6.1.2 SMP/E Options Subentry Values

The recommended values for certain SMP/E CSI subentries are shown in Figure 14. 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.

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 Sample Jobs

The following sample installation jobs are provided as part of the product to help you install IMS Index Builder. You will find undocumented samples and samples that make references to FMID H32A130. Ignore undocumented samples shipped with FMID H22O310. Delete or comment out references to H32A130 in sample jobs used to install FMID H22O310, since FMID H32A130 has been superseded by IBM Tools Base (5655-V93).

Figure 15. Sample Installation Jobs

Job Name	Job Type	Description	RELFILE
IIUALA	SMP/E	Sample job to allocate and initialize a new SMP/E CSI data set (Optional)	IBM.H22O310.F2
IIUALB	SMP/E	Sample job to allocate SMP/E data sets (Optional)	IBM.H22O310.F2
IIURECEV	RECEIVE	Sample RECEIVE job for IMS Index Builder	IBM.H22O310.F2
IIUALLOC	ALLOCATE	Sample job to allocate target and distribution libraries for IMS Index Builder	IBM.H22O310.F2
IIUDDDEF	DDDEF	Sample job to define SMP/E DDDEFs for IMS Index Builder	IBM.H22O310.F2
IIUAPPLY	APPLY	Sample APPLY job	IBM.H22O310.F2
IIUACCEP	ACCEPT	Sample ACCEPT job	IBM.H22O310.F2

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 15 on page 18 to find the appropriate relfile data set.

You can also copy the sample installation jobs from the product files by submitting the following job. 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 //FILEIN DD statement below active for *
//* downloaded DASD files. *
//*****
//FILEIN DD DSN=IBM.H220310.F2,UNIT=SYSALLDA,DISP=SHR,
// VOL=SER=filevol
//OUT DD DSN=jcl-library-name,
// DISP=(NEW,CATLG,DELETE),
// VOL=SER=dasdvol,UNIT=SYSALLDA,
// SPACE=(TRK,(30,15,15))
//SYSUT3 DD UNIT=SYSALLDA,SPACE=(CYL,(1,1))
//SYSIN DD *
COPY INDD=FILEIN,OUTDD=OUT
/*
```

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

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.

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 IIUALA to allocate the SMP/E data set for IMS Index Builder.

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

6.1.5 Allocate SMP/E CSI (Optional)

Edit and submit sample job IIUALB to initialize SMP/E zones for IMS Index Builder. 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 IMS Index Builder as part of a CBPDO, use the RCVPDO job in the CBPDO RIMLIB data set to receive the IMS Index Builder FMIDs, service, and HOLDDATA that are included on the CBPDO media. For more information, see the documentation that is included in the CBPDO.

- You can also choose to edit and submit sample job IIURECEV to perform the SMP/E RECEIVE for IMS Index Builder. Consult the instructions in the sample job for more information.

Expected Return Codes and Messages for IIURECEV: 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 IIUALLOC to allocate the SMP/E target and distribution libraries for IMS Index Builder. Consult the instructions in the sample job for more information.

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

6.1.8 Create DDDEF Entries

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

Expected Return Codes and Messages for IIUDDDEF: 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 IJUAPPLY to perform an SMP/E APPLY CHECK for IMS Index Builder. Consult the instructions in the sample job for more information.

HOLDDATA introduces ERROR HOLDS against FMIDs for HIPER APARs. Before the installation, ensure that you have the latest HOLDDATA, which is available through several different portals, including <http://service.software.ibm.com/holddata/390holddata.html>. Install the FMIDs regardless of the status of unresolved HIPERs. However, do not deploy the software until the unresolved HIPERs are analyzed to determine applicability.

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 is a sample to install FMIDs when ++HOLDS for HIPERs exist for the FMIDs that you install:

- a. To ensure that all recommended and critical service is installed with the FMIDs, if you have received the latest HOLDDATA, add the FIXCAT operand to the APPLY command as shown below.

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

Some HIPER APARs might not have PTFs available yet. You have to analyze the symptom flags to determine if you want to bypass the specific ERROR HOLDS and continue the installation of the FMIDs.

This method requires more initial research, but can provide resolution for all HIPERs that have fixes 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 the HIPERs, you can add a BYPASS(HOLDCLASS(HIPER)) operand to the APPLY command. In this way, you can install FMIDs even though HIPER ERROR HOLDS against them still exist. Only the HIPER ERROR HOLDS are bypassed. After the FMIDs are installed, run the SMP/E REPORT ERRSYSMODS command to identify missing HIPER maintenance.

```
APPLY S(fmid,fmid,...)
FORFMID(fmid,fmid,...)
SOURCEID(RSU*)
GROUPEXTEND
BYPASS(HOLDCLASS(HIPER)) .
..any other parameters documented in the program directory
```

This method is the quicker of the two, but requires subsequent review of the REPORT ERRSYSMODS to investigate any HIPERs. If you have received the latest HOLDDATA, you can

also choose to run REPORT MISSINGFIX for Fix Category IBM.ProductInstall-RequiredService to investigate missing recommended service.

If you bypass HOLDS during the installation of the FMIDs because PTFs are not yet available, you can be notified when the 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.

Note: When doing the APPLY of FMIDs and PTF service, your output may contain message ID IEW2454W. Certain PTF service installation may cause these kinds of messages. Product function will continue to work normally.

6.1.10 Perform SMP/E ACCEPT

Edit and submit sample job IJUACCEP to perform an SMP/E ACCEPT CHECK for IMS Index Builder. 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 manuals.

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.

Note: When doing the ACCEPT of FMIDs and PTF service. Your output may contain message ID IEW2454W. Certain PTF service installation may cause these kinds of messages. Product function will continue to work normally.

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 IMS Index Builder, 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 Index Builder

The publication *IMS Index Builder for z/OS User's Guide, SC18-9101* contains the necessary information to customize and use IMS Index Builder.

7.0 Notices

References in this document to IBM products, programs, or services do not imply that IBM intends to make these available in all countries in which IBM operates. Any reference to an IBM product, program, or service is not intended to state or imply that only IBM's product, program, or service may be used. Any functionally equivalent product, program, or service that does not infringe on any of IBM's intellectual property rights may be used instead of the IBM product, program, or service. Evaluation and verification of operation in conjunction with other products, except those expressly designated by IBM, is the user's responsibility.

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".

IBM may have patents or pending patent applications covering subject matter in this document. The furnishing of this document does not give you any license to these patents. You can send license inquiries, in writing, to the

IBM Director of Licensing
IBM Corporation
North Castle Drive
Armonk, New York 10504-1785
USA

For online versions of this book, we authorize you to:

- Copy, modify, and print the documentation contained on the media, for use within your enterprise, provided you reproduce the copyright notice, all warning statements, and other required statements on each copy or partial copy.
- Transfer the original unaltered copy of the documentation when you transfer the related IBM product (which may be either machines you own, or programs, if the program's license terms permit a transfer). You must, at the same time, destroy all other copies of the documentation.

You are responsible for payment of any taxes, including personal property taxes, resulting from this authorization.

THERE ARE NO WARRANTIES, EXPRESS OR IMPLIED, INCLUDING THE WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE.

Some jurisdictions do not allow the exclusion of implied warranties, so the above exclusion may not apply to you.

Your failure to comply with the terms above terminates this authorization. Upon termination, you must destroy your machine readable documentation.

7.1 Trademarks

IBM, the IBM logo, and ibm.com are trademarks or registered trademarks of International Business Machines Corp., registered in many jurisdictions worldwide. Other product and service names might be trademarks of IBM or other companies. A current list of IBM trademarks is available on the Web at "Copyright and trademark information" at www.ibm.com/legal/copytrade.shtml.

Reader's Comments

Program Directory for IBM IMS Index Builder for z/OS, June 2021

You may use this form to comment about this document, its organization, or subject matter with the understanding that IBM may use or distribute whatever information you supply in any way it believes appropriate without incurring any obligation to you.

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.

RATING SCALE					
very satisfied	<----->	very dissatisfied	not 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

How did you order this product?

- CBPDO
- CustomPac
- ServerPac
- Independent
- Other

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

- Yes
- No

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

- Yes

International Business Machines Corporation
Reader's Comments
Department DTX/E269
555 Bailey Avenue
San Jose, California
USA
95141-9989

E-Mail: comments@us.ibm.com



Printed in USA

G110-8571-03

