Program Directory for
IBM IMS Index Builder for z/OS

V03.01.00
Program Number 5655-R01
FMIDs H22O310, H32A130

for Use with
z/OS

Service Updated 9 September 2011

Document Date: September 2011
Before using this information and the product it supports, be sure to read the general information under 7.0, “Notices” on page 27.
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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 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 8 describes the IBM support available for IMS Index Builder.
- 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 Index Builder.
- 5.0, “Installation Requirements and Considerations” on page 12 identifies the resources and considerations that are required for installing and using IMS Index Builder.
- 6.0, “Installation Instructions” on page 20 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 8 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 tape 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 tape.

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 (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 FMIDs

IMS Index Builder consists of the following FMIDs:

- H22O310 IMS Index Builder
- H32A130 IMS Tools Generic Exits

**Important information with regard to FMID H32A130**

For detailed information and recommendations with regard to FMID H32A130 and its successor FMIDs, refer to 5.4, “Special Considerations” on page 18.
2.0  Program Materials

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

An IBM program is identified by a program number and a feature number. The program number for IMS Index Builder is 5655-R01 and its feature number is 5802.

Basic Machine-Readable Materials are materials that are supplied under the base license and feature numbers, and are required for the use of the product. Optional Machine-Readable Materials are orderable under separate feature numbers, and are not required for the product to function.

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 magnetic tape 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 20 for more information about how to install the program.

You can find information about the physical tape 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.

Figure 2 on page 5 describes the program file content for IMS Tools Generic Exits. 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.

<table>
<thead>
<tr>
<th>Name</th>
<th>R</th>
<th>L</th>
</tr>
</thead>
<tbody>
<tr>
<td>SMPMCS</td>
<td></td>
<td></td>
</tr>
<tr>
<td>IBM.H220310.F1</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
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 3 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: http://www.ibm.com/shop/publications/order/ Contact your IBM representative for further assistance.
Figure 4 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.

### Figure 4. Basic Material: Other Unlicensed or Licensed Publications

<table>
<thead>
<tr>
<th>Publication Title</th>
<th>Form Number</th>
<th>Media Format</th>
</tr>
</thead>
</table>

* Refer to 5.4, “Special Considerations” on page 18 for more detailed information on common code and when the IMS Tools Common Services Reference manual may be of use for you.

If you have IBM IMS Tools Base for z/OS, V1.1 (5655-V93) installed or are planning to install it, refer to IMS Tools Common Services User's Guide, SC19-2894 at URL: http://www.ibm.com/software/data/db2imstools/imstools-library.html.

If you have IBM Tools Base for z/OS, V1.2 (5655-V93) installed or are planning to install it, refer to Tools Base Common Services User's Guide, SC19-3266 at URL: http://www.ibm.com/software/data/db2imstools/imstools-library.html.

We recommend to install and use the latest available level of Tools Base for z/OS.

### 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 5 during the installation of IMS Index Builder. To order copies, contact your IBM representative or visit the IBM Publications Center at: http://www.ibm.com/shop/publications/order/
<table>
<thead>
<tr>
<th>Publication Title</th>
<th>Form Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>IBM SMP/E for z/OS User’s Guide</td>
<td>SA22-7773</td>
</tr>
<tr>
<td>IBM SMP/E for z/OS Commands</td>
<td>SA22-7771</td>
</tr>
<tr>
<td>IBM SMP/E for z/OS Reference</td>
<td>SA22-7772</td>
</tr>
<tr>
<td>IBM SMP/E for z/OS Messages, Codes, and Diagnosis</td>
<td>GA22-7770</td>
</tr>
</tbody>
</table>

Figure 5. Publications Useful During Installation
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:


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 Index Builder are shown as follows:

<table>
<thead>
<tr>
<th>UPGRADE</th>
<th>SUBSET</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>5655R01</td>
<td>H22O310/1129</td>
<td>IMS Index Builder</td>
</tr>
<tr>
<td>5655P01</td>
<td>H32A130</td>
<td>IMS Tools Generic Exits</td>
</tr>
</tbody>
</table>

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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 7 on page 9 identifies the component IDs (COMPID) for IMS Index Builder.

<table>
<thead>
<tr>
<th>FMID</th>
<th>COMPID</th>
<th>Component Name</th>
<th>RETAIN Release</th>
</tr>
</thead>
<tbody>
<tr>
<td>H22O310</td>
<td>5655E2400</td>
<td>IMS Index Builder</td>
<td>310</td>
</tr>
<tr>
<td>H32A130</td>
<td>5697E9901</td>
<td>IMS Tools Generic Exits</td>
<td>130</td>
</tr>
</tbody>
</table>
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

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

- FMID H32A120

PK32671  PK46891  PK62154  
PK34558  PK55913  PK63005  
PK37946

- FMID H2B7120

PK57154  
PK63428

4.2 Service Level Information

PTFs containing APAR fixes against this release of IMS Index Builder have been incorporated into this product tape. For a list of included PTFs, examine the ++VER statement in the product's SMPMCS.

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
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 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 by 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.

### Figure 8. Driving System Software Requirements

<table>
<thead>
<tr>
<th>Program Number</th>
<th>Product Name</th>
<th>Minimum VRM</th>
<th>Minimum Service Level will satisfy these APARs</th>
<th>Included in this product’s shipment?</th>
</tr>
</thead>
<tbody>
<tr>
<td>5694-A01</td>
<td>z/OS</td>
<td>V01.11.00</td>
<td>N/A</td>
<td>No</td>
</tr>
<tr>
<td>5655-G44</td>
<td>IBM SMP/E for z/OS</td>
<td>V03.05.00</td>
<td>N/A</td>
<td>No</td>
</tr>
</tbody>
</table>

Any one of the following:

Note: Any one of the following:

- 5694-A01 z/OS V01.11.00 N/A No
- 5655-G44 IBM SMP/E for z/OS V03.05.00 N/A No

### Figure 9. Target System Mandatory Installation Requisites

<table>
<thead>
<tr>
<th>Program Number</th>
<th>Product Name</th>
<th>Minimum VRM</th>
<th>Minimum Service Level will satisfy these APARs</th>
<th>Included in this product’s shipment?</th>
</tr>
</thead>
<tbody>
<tr>
<td>n/a</td>
<td>IMS Tools</td>
<td>01.03.00 or higher</td>
<td>N/A</td>
<td>YES</td>
</tr>
<tr>
<td></td>
<td>Generic Exits</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>H32A130</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Note: Installation may 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.

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.

Note: Refer to the IMS V12.01.00 Software Announcement for more information or talk to your IBM representative.

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.

Note: *IBM IMS Tools Base for z/OS was renamed with V1.2 to IBM Tools Base for z/OS.
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 12 lists the total space that is required for each type of library.

<table>
<thead>
<tr>
<th>Library Type</th>
<th>Total Space Required in 3390 Trks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Target</td>
<td>240 tracks for H22O310</td>
</tr>
<tr>
<td>Target</td>
<td>44 tracks for H32A130</td>
</tr>
<tr>
<td>Distribution</td>
<td>340 tracks for H22O310</td>
</tr>
<tr>
<td>Distribution</td>
<td>44 tracks for H32A130</td>
</tr>
</tbody>
</table>

**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).
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 23.

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 LNKLST.
   • Load libraries SIIULMOD, SGLXLOAD and SFOILOAD 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 13. Storage Requirements for IMS Index Builder Target Libraries

<table>
<thead>
<tr>
<th>Library DDNAME</th>
<th>Member Type</th>
<th>Target Volume</th>
<th>T</th>
<th>Y</th>
<th>O</th>
<th>R</th>
<th>E</th>
<th>C</th>
<th>L</th>
<th>R</th>
<th>No. of 3390 Trks</th>
<th>No. of DIR Blks</th>
</tr>
</thead>
<tbody>
<tr>
<td>SIIUBASE</td>
<td>Sample</td>
<td>Any</td>
<td>U</td>
<td>PDS</td>
<td>FB</td>
<td>80</td>
<td>5</td>
<td>30</td>
<td>15</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SIIUCNTL</td>
<td>Macro</td>
<td>Any</td>
<td>U</td>
<td>PDS</td>
<td>FB</td>
<td>80</td>
<td>5</td>
<td>5</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SIIULMOD</td>
<td>Module</td>
<td>Any</td>
<td>U</td>
<td>PDS</td>
<td>U</td>
<td>0</td>
<td>200</td>
<td>80</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SIIUPROC</td>
<td>Procedure</td>
<td>Any</td>
<td>U</td>
<td>PDS</td>
<td>FB</td>
<td>80</td>
<td>5</td>
<td>5</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Figure 14. Storage Requirements for IMS Tools Generic Exits Target Libraries

<table>
<thead>
<tr>
<th>Library DDNAME</th>
<th>Member Type</th>
<th>Target Volume</th>
<th>T</th>
<th>Y</th>
<th>O</th>
<th>R</th>
<th>E</th>
<th>C</th>
<th>L</th>
<th>R</th>
<th>No. of 3390 Trks</th>
<th>No. of DIR Blks</th>
</tr>
</thead>
<tbody>
<tr>
<td>SFOILOAD</td>
<td>Module</td>
<td>Any</td>
<td>U</td>
<td>PDS</td>
<td>U</td>
<td>0</td>
<td>17</td>
<td>15</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SGLXLOAD</td>
<td>Module</td>
<td>Any</td>
<td>U</td>
<td>PDS</td>
<td>FB</td>
<td>80</td>
<td>2</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SGLXMAC</td>
<td>Macro</td>
<td>Any</td>
<td>U</td>
<td>PDS</td>
<td>FB</td>
<td>80</td>
<td>2</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Figure 15. Storage Requirements for IMS Index Builder Distribution Libraries

<table>
<thead>
<tr>
<th>Library DDNAME</th>
<th>Target Volume</th>
<th>T</th>
<th>Y</th>
<th>O</th>
<th>R</th>
<th>E</th>
<th>C</th>
<th>L</th>
<th>R</th>
<th>No. of 3390 Trks</th>
<th>No. of DIR Blks</th>
</tr>
</thead>
<tbody>
<tr>
<td>AIUUBASE</td>
<td>U PDS FB</td>
<td>80</td>
<td>30</td>
<td>15</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>AIUUCNTL</td>
<td>U PDS FB</td>
<td>80</td>
<td>5</td>
<td>5</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>AIUULMOD</td>
<td>U PDS U</td>
<td>0</td>
<td>300</td>
<td>100</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>AIUUPROC</td>
<td>U PDS FB</td>
<td>80</td>
<td>5</td>
<td>5</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
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 delivers common code, IMS Tools Generic Exits, FMID H32A130.

- **Considerations**
  1. The PSP Bucket has the most current information and must be reviewed before installation.
  2. For data set directory blocks and space requirements refer to the "DASD Space Required" table and to the distribution and target library requirements sections specified in applicable program directories.
  3. Several of the IMS tools deliver common code, shipping the same FMIDs or their successors as discussed below in greater detail.
  4. It is strongly recommended to install all the IMS tools that share FMIDs into the same SMP/E target and distribution zones to avoid maintaining multiple instances of these FMIDs. If you use different SMP/E target and distribution zones, you will have to install and maintain multiple instances of the same FMIDs, which will increase your maintenance and DASD requirements.

- **FMID H32A130 Considerations**
  - If IMS Index Builder, FMID H32A130, is already installed into the intended distribution and target zones, do not attempt to install FMID H32A130 again.

<table>
<thead>
<tr>
<th>Library DDNAME</th>
<th>T</th>
<th>Y</th>
<th>O</th>
<th>P</th>
<th>R</th>
<th>F</th>
<th>E</th>
<th>G</th>
<th>M</th>
<th>L</th>
<th>R</th>
<th>No. of 3390 Trks</th>
<th>No. of DIR Blks</th>
</tr>
</thead>
<tbody>
<tr>
<td>AFOILOAD</td>
<td>U</td>
<td>PDS</td>
<td>U</td>
<td>0</td>
<td>17</td>
<td>15</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>AGLXLOAD</td>
<td>U</td>
<td>PDS</td>
<td>U</td>
<td>0</td>
<td>23</td>
<td>12</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>AGLXMAC</td>
<td>U</td>
<td>PDS</td>
<td>FB</td>
<td>80</td>
<td>2</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>AGLXSAMP</td>
<td>U</td>
<td>PDS</td>
<td>FB</td>
<td>80</td>
<td>2</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Note: If not already done, we recommend to order Tools Base for z/OS (5655-V93) which DELETEs and SUPERSEDEs H32A130. If you do not have Tools Base available, you are required to use FMID H32A130.

- **IMS Index Builder and Tools Base for z/OS, V1.1 (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 HAHN120, DELETEs and SUPERSEDEs the following FMIDs:
    - IMS Tools Base for z/OS, V1.1, FMID HAHN110
    - 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.
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 17. 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.

<table>
<thead>
<tr>
<th>Subentry</th>
<th>Value</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>DSSPACE</td>
<td>(200,200,500)</td>
<td>3390 DASD tracks</td>
</tr>
<tr>
<td>PEMAX</td>
<td>SMP/E Default</td>
<td>IBM recommends using the SMP/E default for PEMAX.</td>
</tr>
</tbody>
</table>

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 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 18 on page 20 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.H22O310.F2,UNIT=tunit, 
//* VOL=SER=volser,LABEL=(x,SL), 
//* DISP=(OLD,KEEP)
***************************************************************************
/* Make the //FILEIN DD statement below active for * 
/* downloaded DASD files. * 
***************************************************************************
//*FILEIN DD DSN=IBM.H22O310.F1,UNIT=SYSALLDA,DISP=SHR, 
//* VOL=SER=filevol
***************************************************************************
/* 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.H220310.F2,UNIT=tunit,
VOL=SER=220310,LABEL=(3,SL),
DISP=(OLD,KEEP)

OUT DD DSNAME=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=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 tape.
  volser is the volume serial that matches the product tape.
  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.H22O310.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.

6.1.4 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 tape. For more information, see the documentation that is included in the CBPDO.

Note: IMS Tools Generic Exits, H32A130, is a mandatory installation requisite for IMS Index Builder. If you have already installed IMS Tools Generic Exits, H32A130, do not receive this FMID again.

• 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.

• You can also choose to edit and submit sample job IIURECV2 to perform the SMP/E RECEIVE for IMS Tools Generic Exits. Consult the instructions in the sample job for more information.

  Expected Return Codes and Messages for IIURECV2: 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.

If you are installing IMS Tools Generic Exits, edit and submit sample job IIUALLC2 to allocate the SMP/E target and distribution libraries for IMS Tools Generic Exits. Consult the instructions in the sample job for more information.

Expected Return Codes and Messages for IIUALLC2: 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.

If you are installing IMS Tools Generic Exits, edit and submit sample job IUDDDEF2 to create DDDEF entries for the SMP/E target and distribution libraries for IMS Tools Generic Exits. Consult the instructions in the sample job for more information.
Expected Return Codes and Messages for IIUDDEF2: 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 IIUAPPLY 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/holdata/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/c5197) 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.

6.1.10 Perform SMP/E ACCEPT

Edit and submit sample job IIUACCEP 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.

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

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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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Reader's Comments

Program Directory for IBM IMS Index Builder for z/OS, September 2011

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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.

<table>
<thead>
<tr>
<th>RATING SCALE</th>
</tr>
</thead>
<tbody>
<tr>
<td>very satisfied</td>
</tr>
<tr>
<td>1</td>
</tr>
</tbody>
</table>

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
If yes, how many years? __

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

________________________________________________________________________
________________________________________________________________________
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