IBM IMS Library Integrity Utilities for z/OS
Version 2 Release 2

User's Guide

SC19-3979-05

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Note:
Before using this information and the product it supports, read the "Notices" topic at the end of this information.

Sixth Edition (August 2019)

This edition applies to Version 2 Release 2 of IBM IMS Library Integrity Utilities for z/OS (program number 5655-U08) and to all subsequent releases and modifications until otherwise indicated in new editions.

This edition replaces SC19-3979-04.

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About this information

IBM® IMS™ Library Integrity Utilities for z/OS® (also referred to as IMS Library Integrity Utilities or IMS LIU) is a tool that helps you in managing data for the libraries, such as the DBD libraries, PSB libraries, ACB libraries, and RECON data sets that you use when referring to the IMS database.

These topics are designed for system programmers, application programmers, system analysts, database administrators, and computer operators perform these tasks:

- Understand the functions and utilities of IMS Library Integrity Utilities
- Run and use IMS Library Integrity Utilities after it is installed
- Interpret IMS Library Integrity Utilities reports
- Diagnose and recover from IMS Library Integrity Utilities problems

To use these topics, you should have a working knowledge of:

- The z/OS operating system
- ISPF
- SMP/E

Always refer to the IMS Tools Product Documentation web page for complete product documentation resources:

http://www.ibm.com/support/docview.wss?uid=swg27020942

The IMS Tools Product Documentation web page includes:

- Links to IBM Knowledge Center for the user guides ("HTML")
- PDF versions of the user guides ("PDF")
- Program Directories for IMS Tools products
- Recent updates to the user guides, referred to as "Tech docs" ("See updates to this information!")
- Technical notes from IBM Software Support, referred to as "Tech notes"
- White papers that describe product business scenarios and solutions

Chapter 1. IMS Library Integrity Utilities overview

IBM IMS Library Integrity Utilities for z/OS (also referred to as IMS Library Integrity Utilities or IMS LIU) aids you in managing data for the libraries, such as DBD libraries, PSB libraries, ACB libraries, RECON data sets, IMS catalog, IMS directory, and libraries containing DFSMDA members that you use when referring to IMS databases.

Topics:

- "What's new in IMS Library Integrity Utilities" on page 2
- "IMS Library Integrity Utilities terminology" on page 7
- "What does IMS Library Integrity Utilities do?" on page 9
- "IMS Library Integrity Utilities solutions" on page 15
- "Functional enhancements in IMS Library Integrity Utilities Version 2" on page 17
- "Service updates and support information" on page 22
- "Product documentation and updates" on page 23
- "Accessibility features for IMS Library Integrity Utilities" on page 25

What's new in IMS Library Integrity Utilities

This topic summarizes the technical changes for this edition.

New and changed information is indicated by a vertical bar (|) to the left of a change. Editorial changes that have no technical significance are not noted.

SC19-3979-05 (August 2019)

Catalog Manager utility

- The utility has been enhanced to support BMP regions (APAR PH04670). For more information, see "DD statements" on page 366.
- The function to validate IMS control blocks in the IMS catalog and the IMS directory has been enhanced to support the IMS directory staging data set (APAR PH09134). By this enhancement, the algorithm for validating the time stamps of ACBs in the ACB libraries and in the IMS directory and instances in the IMS catalog database has changed. Also, the format of the IMS Catalog Validation report has been changed.

  For more information, see the following topics:

  – "Catalog Manager utility overview" on page 356
  – "Output from the validate function" on page 384

SC19-3979-04 (October 2018)

MDA Reversal utility

A new utility, MDA Reversal, is added. The utility converts DFSMDA members to DFSMDA macros (APAR PI98748). The utility can also generate a report that lists information about all the DFSMDA members found in libraries that you specify. For more information, see Chapter 9, "MDA Reversal utility," on page 337.

Catalog Manager utility

The utility supports the following new functions (APAR PI95272).

- Compare IMS control blocks in the IMS directory with those in ACB libraries, DBD libraries, or PSB libraries.
- Convert ACBs in the IMS directory into IMS DBDGEN control statements or into IMS PSBGEN control statements.

The utility has also been enhanced to compare IMS control blocks in the IMS directory (APAR PH00141).

For more information, see Chapter 10, "Catalog Manager utility," on page 355.

SC19-3979-03 (September 2017)

DBD/PSB/ACB Compare utility

- The utility supports a new parameter, METADATA, for the NOCOMP statement (APAR PI67745). This parameter indicates that the metadata fields in DBD, PSB, or ACB are not compared. The behavior of this parameter is the same as NOCOMP=CATALOG. For more information, see "NOCOMP control statement" on page 217.
- The utility supports new parameters for the NOCOMP statement (APAR PI71280). The new parameters are LANG, LIST, PROCOPT, PROCSEQ, PROCSEQD, PSB_ACCESS, and PSB_PSELOPT. For more information, see "NOCOMP control statement" on page 217.

IMS Administration Tool support

IMS Library Integrity Utilities extends the functions of IBM IMS Administration Tool for z/OS (APAR PI67745). If IMS Library Integrity Utilities is configured for IMS Administration Tool, IMS Library Integrity Utilities enables the following functions of IMS Administration Tool:

- View IMS databases (DBDs) and program views (PSBs) of Database and Application administration
- IMS Catalog Management
- Program View of IMS SPUFI

For more information, see the *IMS Administration Tool User's Guide and Reference*.

Explanations of return codes and messages that you might receive using IMS Library Integrity Utilities under IMS Administration Tool are provided in Chapter 15, "Troubleshooting," on page 489.

SC19-3979-02 (March 2016)

DBD/PSB/ACB Compare utility

The utility supports a new control statement, CTLSTMT. Use this control statement to echo the SYSIN control statements and selected runtime options to the SYSPRINT data set (APAR PI35148). For more information, see "Control statements for the DBD/PSB/ACB Compare utility" on page 211.

DBD/PSB/ACB Mapper utility

The utility prints the version of IMS that was used to generate the control block in the SYSPRINT data set (APAR PI33159). For more information, see the reports in "SYSPRINT data set" on page 263.

DBD/PSB/ACB Reversal utility

- The following new control statements are supported (APAR PI47105):
  - ACB_REFENRECED option to decode DBD-type ACBs that are not referenced by any PSB-type ACBs.
  - PGM_COBOL option to set LANG=COBOL instead of LANG=ASSEM in the decoded PSB source.
  - DECOPT PCB_LABEL option to print the PCBNAME in the label instead of printing the PCBNAME parameter in the decoded PSB source.
  - DECOPT SENSEG_PROCOPT option to always print the SENSEG PROCOPT value in the decoded PSB source.

  This APAR also adds a new function control statement, UNREF ACB. Use this control statement to generate the Unreferenced ACB(DBD) report in the SYSPRINT data set.

  For more information, see the following topics:
  - "Control statements for the DBD/PSB/ACB Reversal utility" on page 292
  - "Unreferenced ACB(DBD) report" on page 327
- LISTLIB DBD and LISTLIB PSB control statements generate DBD and PSB library member list reports in the SYSPRINT data set (APAR PI53117). The report contains information about the members in the data sets that are concatenated to DBDLIB DD or PSBLIB DD. For more information, see the following topics:

- "Control statements for the DBD/PSB/ACB Reversal utility" on page 292
- "Library member list report for DBD or PSB" on page 327

Catalog Manager utility

The utility provides the function to check the time stamp of DBD-type ACB and PSB-type ACB members in the IMS catalog directory (APAR PI36550). For more information, see "Catalog Manager utility overview" on page 356.

DBD/PSB Map Viewer

The following capabilities have been added to the DBD/PSB Map Viewer for Management Console (APAR PI50732):

- Viewing program specifications, PSB source, and PSB XML document
- Listing logical DBDs and PSBs that refer to a specific DBD

SC19-3979-01

Integrity Checker utility

Instructions to maintain RDEs for HALDBs and DEDBs during an online database change were added. For more information, see the following topics:

- "Considerations for activating Integrity Checker" on page 52
- "Altering the definition of a DMB verification-enabled online HALDB by using the HALDB alter function" on page 74
- "Altering the definition of a DMB verification-enabled online DEDB by using the DEDB Alter utility (DBFUDA00)" on page 75

Multiple Resource Checker utility

The utility supports a new option that you can use when you compare multiple sets of RECON data sets. When you use this option, you can compare only the database definitions in RECON data sets or both database definitions and recovery environment definitions in RECON data sets (APAR PI12851). The following topics were added or updated to support this enhancement:

- "Multiple Resource Checker utility overview" on page 160
- "Checking the consistency of multiple sets of RECON data sets" on page 166
- "JCL requirements for the Multiple Resource Checker utility" on page 175
- "Control statements for the Multiple Resource Checker utility" on page 178
- "Fields compared in RECON data sets" on page 181
- "FABWSUMM data set" on page 193
- "FABWRRPT data set" on page 197

DBD/PSB/ACB Compare utility

- The utility supports new parameters for the NOCOMP statement. The new parameters are the AREA, RMNAME, COMPRTN, PCBNAME, and KEYLEN parameters (APAR PI21707). The following topics were updated to support this enhancement:
  - "Restrictions and considerations for the DBD/PSB/ACB Compare utility" on page 206

- "Control statements for the DBD/PSB/ACB Compare utility" on page 211

- The utility can generate source-level compare reports even when no difference is found (APAR PI18270). The following topics were added or updated to support this enhancement:
  - "DBD/PSB/ACB Compare utility overview" on page 204
  - "Restrictions and considerations for the DBD/PSB/ACB Compare utility" on page 206
  - "Control statements for the DBD/PSB/ACB Compare utility" on page 211

DBD/PSB/ACB Reversal utility

- The utility prints the following information with the converted IMS DBDGEN or IMS PSBGEN utility control statements in the SYSPUNCH data set (APAR PI21708):
  - The date and time when the DBD, PSB, or ACB control block was converted to IMS DBDGEN or IMS PSBGEN utility control statements
  - The version of IMS that was used to create the control block

  The report examples were updated in "SYSPUNCH data set" on page 309.
- The utility supports a new keyword, POPTREF, for defining criteria to identify and report on specific PSBs (APAR PI17798). The following topics were added or updated to support this enhancement:
  - "DBD/PSB/ACB Reversal utility overview" on page 284
  - "Control statements for the DBD/PSB/ACB Reversal utility" on page 292
  - "PSB PROCOPT reference reports for PSB and ACB(PSB)" on page 326

Catalog Manager utility

The new Catalog Manager utility can help you ensure that DBDs and PSBs in the IMS catalog match the DBD and PSB members in the ACB libraries (APAR PI21200). For more information, see Chapter 10, "Catalog Manager utility," on page 355.

ACBLIB Analyzer utility

The utility supports a new operand, GENDATE, for the LISTLIB command. This operand specifies to print the date and time when the ACB members were generated in the Library Contents report (APAR PI09309). The following topics were added or updated to support this enhancement:

- "JCL requirements for the ACBLIB Analyzer utility" on page 434
- "ACBSYSIN control statements" on page 436
- "Output from the ACBLIB Analyzer utility" on page 438
- "Library Contents report" on page 440

Also see "Functional enhancements in Version 2 Release 2" on page 17 for more information about these enhancements.

SC19-3979-00

Integrity Checker utility

Instructions to activate Integrity Checker are revised. To activate Integrity Checker, follow the instructions from "Planning for Integrity Checker configuration" on page 41.

Multiple Resource Checker utility

A new utility, Multiple Resource Checker, is added. You can use this utility to check the consistency of DBD and PSB definitions in the RECON data sets, DBD, PSB, and ACB libraries and to report differences between RECON data sets. See Chapter 5, “Multiple Resource Checker utility,” on page 159.

DBD/PSB/ACB Compare utility

DBD/PSB/ACB Compare can generate a source-level compare report for ACBLIB members that are generated by different IMS releases. For more information, see Chapter 6, “DBD/PSB/ACB Compare utility,” on page 203.

Others

Supports the DBD Map Viewer, which is the IMS Library Integrity Utilities extension for Management Console and Tools Base Administration Console, to view the graphical visualization of a database structure map, the DBD macro source, and the DBD XML document. For more information, see “Functional enhancements in Version 2 Release 2” on page 17.

IMS Library Integrity Utilities terminology

IMS Library Integrity Utilities information includes several unique terms that you need to understand before you begin to use IMS Library Integrity Utilities.

To make this information easier to read, the version and release levels of IMS are abbreviated, as follows:

- *IMS Version 14* refers to IMS Version 14 Release 1 and IBM IMS Database Value Unit Edition Version 14 Release 1.
- *IMS Version 15* refers to IMS Version 15 Release 1 and IBM IMS Database Value Unit Edition Version 15 Release 1.

The various versions of IMS are referred to simply as IMS, except where distinctions among them must be made.

The following table summarizes the terminology used in this information.

Table 1. IMS Library Integrity Utilities terminology

Acronym	Meaning
ACB	Application control block
BPE	Base Primitive Environment
DBD	Database description
DBRC	IMS Database Recovery Control facility
DIF	Device input format
DOF	Device output format
DMB	Data management block
DMCB	DEDB master control block
DRD	Dynamic resource definition
LICON	IMS LIU Integrity Control
MFS	Message Format Services
MID	Message input descriptor
MOD	Message output descriptor
PSB	Program specification block
RDE	Registered DMB entry
RDDS	Resource definition data set
RECON	Recovery Control

In this information, the following abbreviations are used for product and component names.

Table 2. Product short names

Short name	Product name
IMS Administration Tool	IBM IMS Administration Tool for z/OS
IMS Database Recovery Facility	IBM IMS Recovery Solution Pack for z/OS: IMS Database Recovery Facility
IMS Database Reorganization Expert	IBM IMS Database Reorganization Expert for z/OS

Table 2. Product short names (continued)

Short name	Product name
IMS HP Fast Path Utilities	IBM IMS Fast Path Solution Pack for z/OS: IMS High Performance Fast Path Utilities
IMS HP Image Copy	IBM IMS High Performance Image Copy for z/OS
IMS HP Load	IBM IMS High Performance Load for z/OS
IMS Library Integrity Utilities or IMS LIU	IBM IMS Library Integrity Utilities for z/OS (this product)
IMS Online Reorganization Facility	IBM IMS Database Solution Pack for z/OS: IMS Online Reorganization Facility
Management Console	IBM Management Console for IMS and Db2® for z/OS

What does IMS Library Integrity Utilities do?

IMS Library Integrity Utilities aids you in managing data for the libraries, such as DBD libraries, PSB libraries, ACB libraries, RECON data sets, IMS catalog, IMS directory, and libraries containing DFSMDA members that you use when referring to IMS databases.

Some typical data management functions are:

- To prevent the database corruption that the use of an incorrect member of a library can cause.
- To check the consistency among each library.
- To check, compare, change, generate, and maintain the members of a library.

These functions are provided by the following utilities:

- "Integrity Checker utility"
- "Consistency Checker utility" on page 10
- "Multiple Resource Checker utility" on page 11
- "DBD/PSB/ACB Compare utility" on page 11
- "DBD/PSB/ACB Mapper utility" on page 11
- "DBD/PSB/ACB Reversal utility" on page 11
- "MDA Reversal utility" on page 12
- "Catalog Manager utility" on page 12
- "Advanced ACB Generator utility" on page 12
- "ACBLIB Analyzer utility" on page 13
- "MFS Reversal utility" on page 13
- "MFS Compare utility" on page 14

Note: The utilities of IMS Library Integrity Utilities do not support IMS Partition DB (5697-A06, 5697-D85) or any other products with equivalent functions.

Integrity Checker utility

If the control blocks that IMS uses for access to a database are not the same as the ones that IMS used to load the database, data integrity can be compromised. This condition is one of the most common causes of corruption in IMS databases. Some typical reasons for using a wrong control block are as follows:

- A batch program uses a test DBD library to update a production database.
- A batch program uses a new DBD before the associated database is reorganized for that DBD.
- An online IMS subsystem uses an old ACB to update a database that has been reorganized since its associated DBD was changed.

Using a wrong IMS control block is a common procedural error, which IMS or DBRC cannot prevent.

Integrity Checker addresses this error. To prevent both batch programs and IMS systems from using the wrong IMS control blocks for access to a database, it verifies the following two IMS control blocks during the database authorization:

- The DMB that was used to load the database
- The DMB that IMS is using to get access to a database

In a batch environment, your program uses DBDs to get the database definition needed for access to a database. In an online environment, your IMS subsystem uses ACBs to get that database definition. In either case, DL/I internally builds a control block, called DMB, for each database to be accessed, from a DBD or an ACB. As soon as DMB is created, all information about the database definition refers to the DMB, not to the DBD or the ACB. Integrity Checker verifies the internal control block DMB rather than the DBD or ACB itself.

If a mismatch is found, Integrity Checker denies authorization to the database. This mechanism prevents any accidental updating of a database with an incorrect DBD, which would result in corruption of the database.

Some benefits of using Integrity Checker are as follows:

- It prevents the risk of corrupting data by using the wrong DBD.
- It prevents the risk that corrupted data will cause system outages.
- It reduces the cost of recovering databases that have been corrupted.

Integrity Checker provides an option to record database accesses that are made for database update, load, and unload operations. When you enable this option, Integrity Checker records database accesses that are made from the utilities and the application programs that are supported by Integrity Checker.

Consistency Checker utility

Consistency Checker ensures that the necessary definitions in an IMS subsystem have been created for your database or your application program. For a DBD in the DBD library, Consistency Checker verifies whether the following definitions have been created correctly in each library and whether these definitions are consistent with the DBD:

- The ACB in the ACB library
- The database definition entry in the MODBLKS module
- The database definition entry in the resource definition data sets (RDDSs)
- The DFSMDA dynamic allocation member for database data set in the MDA library
- The DB and DSG registration record in the RECON

Consistency Checker decides which definitions are to be verified depending on the user input and the database organization defined in the specified DBD.

Related reading: For the libraries to be verified for each database organization, see Table 4 on page 128.

For a PSB in the PSB library, Consistency Checker verifies whether the following definitions have been created correctly in each library and whether these definitions are consistent with the PSB:

- The ACB in the ACB library
- The application program definition entry in the MODBLKS module
- The application program definition entry in the resource definition data sets (RDDSs)

Consistency Checker generates reports after checks and helps you determine which definitions are needed before you start an IMS subsystem.

Multiple Resource Checker utility

The Multiple Resource Checker utility checks the consistency across multiple resources.

For DBDs, Multiple Resource Checker verifies whether the following resources exist in each library and whether the definitions contained are consistent:

- DBD members in DBD libraries
- ACB members in ACB libraries
- DB and DBDS records registered in RECON data sets

For PSBs, Multiple Resource Checker verifies whether the following definitions are the same in each library:

- PSB members in PSB libraries
- ACB members in ACB libraries

Multiple Resource Checker can process up to 10 DBD libraries, PSB libraries, ACB libraries, and 10 sets of RECON data sets in one job. The utility generates a Resource Check Summary report, which contains a matrix table that summarizes the results of checking.

You can use the Multiple Resource Checker to ensure that IMS resources are the same and, if inconsistencies are found, investigate which resources are inconsistent.

DBD/PSB/ACB Compare utility

The DBD/PSB/ACB Compare utility reports the differences between database description (DBD) control blocks, program specification blocks (PSB), or application control blocks (ACB). By using this utility, you can compare control blocks that have the same name but that reside in different libraries, or control blocks that have different names and that reside in the same object library or in different object libraries.

The reports produced by DBD/PSB/ACB Compare enables you to check the differences between DBDs, PSBs, and ACBs.

DBD/PSB/ACB Mapper utility

The DBD/PSB/ACB Mapper utility produces printed maps (pictures of the segment hierarchy) from DBDs, PSBs, and ACBs. It also produces detailed reports that describe DBDs, PSBs, and ACBs.

The maps produced by DBD/PSB/ACB Mapper can be used as recording mediums to retain the historical and current status of the IMS databases. They can also be used as a reference in comparing and evaluating the database requirements of current and proposed applications.

DBD/PSB/ACB Reversal utility

The DBD/PSB/ACB Reversal utility converts the DBD/PSB/ACB control blocks back into IMS DBDGEN/PSBGEN utility control statements. The DBD/PSB/ACB Reversal utility is helpful if you have lost your source libraries that contain DBDGEN/PSBGEN utility control statements.

The DBD/PSB/ACB Reversal utility also produces useful summary reports of IMS DBD, PSB, and ACB libraries. These reports represent the IMS member information, such as DBD, PSB, and ACB organization, PCB PROCOPT, and the relations among members.

MDA Reversal utility

The MDA Reversal utility converts DFSMDA members back into DFSMDA macros. Also, the utility generates a report that lists DFSMDA members and their properties.

- Convert DFSMDA members back into DFSMDA macros – converts DFSMDA members back into DFSMDA macros. This function reads one or more DFSMDA members from the specified library and converts them back into DFSMDA macros.
- Generate a report that contains a list of DFSMDA members – generates the Library Contents report which contains a list of DFSMDA members in the specified library. Detailed information about DFSMDA members, such as the name of the DD statement and the name of the data set, is shown for each DFSMDA member.

Catalog Manager utility

The Catalog Manager utility provides the capabilities to ensure that the IMS catalog and the IMS directory are maintained correctly and to analyze DBDs and PSBs in the IMS directory.

- Time stamp validation — checks DBDs and PSBs in the IMS catalog to ensure that they are maintained correctly. It checks the time stamps of DBDs and PSBs in the IMS catalog, the IMS directory, and ACB libraries to ensure that they are consistent.
- Compare IMS control blocks — compares IMS control blocks and reports the differences. The utility supports comparing IMS control blocks (DBD-type ACBs and PSB-type ACBs) within the IMS directory, and those between the IMS directory and ACB libraries. The utility also supports comparing those resources in the IMS directory with DBDs in DBD libraries and PSBs in PSB libraries.
- Convert IMS control blocks to IMS DBDGEN/PSBGEN utility control statements — converts ACBs in the IMS directory back into IMS DBDGEN/PSBGEN utility control statements. This function is useful, for example, when you no longer have the original source for ACBs and you need to re-create them.

Advanced ACB Generator utility

Advanced Application Control Block Generator (also referred to as Advanced ACBGEN utility) is a functional replacement for the IMS Application Control Blocks Maintenance utility (DFSUACB0, also referred to as IMS ACBGEN utility), with improvements. The Advanced ACBGEN utility can also replace the IMS ACBGEN utility (DFSUACB0) to generate ACB members within ACB Generation and Catalog Populate utility (DFS3UACB) jobs.

The Advanced ACBGEN utility uses some of the IMS provided modules and replaces others. Additionally, several utilities are provided to display and audit the contents of an ACB library.

Advanced ACBGEN utility provides the following features:

- Extensive and informative set of reports

  - Data set information about the ACB, PSB, and DBD libraries used
  - Summary of PSBs added, replaced, and deleted during ACBGEN
  - Summary of DBDs added, replaced, not replaced, and deleted during ACBGEN
  - Distribution of PSB and DBD sizes
  - Summary of DFS*nnnn* messages issued
- Utility to analyze an ACB library for potential problems
  - Verifies that all members are at the same IMS version and release level
  - Verifies that the ACB library does not contain any PSBs or DBDs inadvertently placed there during a DBDGEN or a PSBGEN
  - Generates a distribution of unique ACBGEN dates
- Improved performance
  - Elapsed time reductions of 200% to 500% (2 - 5 times as fast)
- Reduced use of system resources
  - Reduces use of CPU
  - Reduces EXCPs
  - Reduces volume of SYSPRINT
- Easy to use
  - Implemented by adding the load library of IMS Library Integrity Utilities to the top of the STEPLIB DD concatenation when invoking current JCL procedures
  - Uses but does not modify IMS modules

ACBLIB Analyzer utility

The ACBLIB Analyzer utility verifies that all ACB library members are at the same IMS Version/Release level, and that all members were placed in the ACB library by the ACBGEN process—that is, the library was not inadvertently used during a DBDGEN or PSBGEN. The utility program also produces several reports.

MFS Reversal utility

MFS Reversal is designed to convert Message Format Services (MFS) control blocks (MIDs, MODs, DIFs, and DOFs) back into IMS MFS utility control statements.

Note: MID refers to Message Input Descriptor and MOD to Message Output Descriptor; DIF refers to Device Input Format, and DOF to Device Output Format.

The primary purpose of MFS Reversal is to re-create MFS sources. This recovery function is important if you have lost your MFS source library or suspect a difference between the control blocks being used and the source.

In addition to decoding MFS control blocks, MFS Reversal provides valuable summary reports of IMS format libraries. You can use these reports to obtain the cross-reference information between the MID/MODs and the DIF/DOFs, and the cross-reference information between the MIDs and the MODs. Also, if a MID or MOD has been selected for reversal, the report informs you of other MIDs and MODs names that were not selected for reversal, but refer to the same DIFs and DOFs referenced by the selected MID or MOD.

You can optionally request the MFS Reversal utility to copy the selected MFS control blocks and their associated control blocks from the IMS format library to a user-specified partitioned data set.

MFS Compare utility

MFS Compare is designed to compare two sets of MFS format control blocks from two MFS format libraries to quickly highlight differences between them.

MFS Compare enables you to compare two MFS format libraries. If you are not sure whether the MFS you are running corresponds to your MFS source library, you can create MFS control blocks from your source statements and then compare the control blocks with the control blocks you are running. Thus, you can use MFS Compare to validate what actually is operating in a particular IMS environment.

IMS Library Integrity Utilities solutions

IMS Library Integrity Utilities helps you to validate, compare, report, and recover IMS libraries.

It is recommended that you run Integrity Checker in everyday operations. IMS uses database management blocks (DMB), which are stored in DBD libraries (DBDLIB) or ACB libraries (ACBLIB) as load modules, to obtain database definition when IMS databases are accessed by IMS online applications, batch applications, utilities, or IMS Tools jobs. If Integrity Checker is activated, it refers to the DMB information that is registered to the LICON data set (Library Integrity Control data set) at the time of database load, and ensures, every time IMS gets access to databases, that the ACB or DBD that is being used is the correct one by comparing the DMB and the DMB information in the LICON data set. Integrity Checker can be activated either online or by batch. If any inconsistency exists, it must be resolved, and to resolve the inconsistency, you can use the following utilities that IMS Library Integrity Utilities provides.

Consistency Checker can be used, for example, when migrating your IMS system, or creating new IMS subsystems. By use of Consistency Checker, you can check the necessary DBD, PSB, or both for your new system, and you can make sure that the associated definitions that you have made, such as the following definitions, are consistent with the DBD or the PSB:

For DBDs:

- The ACB in the ACB library
- The database definition entry in the MODBLKS module
- The database definition entry in the resource definition data sets (RDDSs)
- The DFSMDA dynamic allocation member for the database data set in the MDA library
- The DB and DSG registration record in the RECON

For PSBs:

- The ACB in the ACB library
- The application program definition entry in the MODBLKS module
- The application program definition entry in the resource definition data sets (RDDSs)

Multiple Resource Checker can be used, for example, to check the consistency of the IMS resources between the test environment and the production environment. By using Multiple Resource Checker, you can check the consistency of the following resources and definitions across multiple libraries and RECON data sets.

For DBDs:

- DBD members across multiple DBD libraries
- ACB members across multiple ACB libraries
- DB and DBDS records registered in RECON data sets

For PSBs:

- PSB members across multiple PSB libraries
- ACB members across multiple ACB libraries

If errors are detected by Integrity Checker, Consistency Checker, or Multiple Resource Checker, the following utilities can support you:

- DBD/PSB/ACB Compare reports the differences between DBDs, PSBs, or ACBs that have the same name but that reside in different libraries.
- DBD/PSB/ACB Mapper produces pictorial layouts of IMS physical and logical databases.
- DBD/PSB/ACB Reversal converts the DBD/PSB control blocks back into IMS DBDGEN/PSBGEN utility control statements.
- Advanced Application Control Block Generator provides a high-speed generation process, which becomes more important when processing large volumes of IMS ACBs.
- MDA Reversal converts DFSMDA members to DFSMDA macros.

If the IMS management of ACBs is enabled or you plan to migrate to the environment in which the IMS management of ACBs is enabled, the following utilities can help you.

Catalog Manager, for example, to migrate ACBs from ACB libraries to the IMS management of ACBs environment, or to maintain IMS resources if the IMS management of ACBs is enabled. If the IMS management of ACBs is enabled and you are maintaining IMS control blocks (DBDs and PSBs) by populating the IMS catalog, you must always ensure that the IMS catalog and the IMS directory are in sync with ACB libraries. You can do so by using Catalog Manager. Catalog Manager has the following capabilities:

- Validating IMS control blocks
- Comparing IMS control blocks
- Converting IMS control blocks to control statements

Advanced ACBGEN can also be used in such an environment. It can replace the IMS ACBGEN utility that is used to generate ACB members within ACB Generation and Catalog Populate utility (DFS3UACB) jobs.

Functional enhancements in IMS Library Integrity Utilities Version 2

This topic describes the major functional enhancements that have been made in IMS Library Integrity Utilities Version 2.

Functional enhancements in Version 2 Release 2

This topic describes the major functional enhancements that are made to IMS Library Integrity Utilities Version 2 Release 2.

Subsections:

- "Multiple Resource Checker utility"
- "DBD/PSB/ACB Compare utility"
- "DBD/PSB/ACB Mapper utility" on page 18
- "DBD/PSB/ACB Reversal utility" on page 18
- "MDA Reversal utility" on page 18
- "Catalog Manager utility" on page 18
- "ACBLIB Analyzer utility" on page 19
- "Other enhancements" on page 19

Multiple Resource Checker utility

- This new utility checks the consistency of DBD and PSB definitions in the RECON data sets, DBD, PSB, and ACB libraries. The utility can process up to 10 DBD libraries, PSB libraries, ACB libraries, and 10 sets of RECON data sets in one job. The utility generates a report that contains a matrix table that summarizes the results of consistency check. Additionally, the Multiple Resource Checker utility supports an option that can be used to report differences between two sets of RECON data sets.
- APAR PI12851 adds a new option that is used when comparing multiple sets of RECON data sets. When you use this option, you can compare only the database definitions in RECON data sets or both database definitions and recovery environment definitions in RECON data sets.

For more information, see Chapter 5, "Multiple Resource Checker utility," on page 159.

DBD/PSB/ACB Compare utility

- DBD/PSB/ACB Compare can generate a source-level compare report for ACBLIB members that are generated by different IMS releases.
- APAR PI18270 provides an option to generate source-level compare reports even when no difference is found.
- APAR PI21707 adds new parameters for the NOCOMP statement. The new parameters are the AREA, RMNAME, COMPRTN, PCBNAME, and KEYLEN parameters.
- APAR PI35148 adds a new keyword, CTLSTMT, for echoing the SYSIN control statements and selected runtime options to the SYSPRINT data set.
- APAR PI71280 adds new parameters for the NOCOMP statement. The new parameters are LANG, LIST, PROCOPT, PROCSEQ, PROCSEQD, PSB_ACCESS, and PSB_PSELOPT.

For more information, see Chapter 6, "DBD/PSB/ACB Compare utility," on page 203.

DBD/PSB/ACB Mapper utility

APAR PI33159 enhances the utility to print the version of IMS that was used to generate the control block in the SYSPRINT data set.

For more information, see Chapter 7, “DBD/PSB/ACB Mapper utility,” on page 247.

DBD/PSB/ACB Reversal utility

- APAR PI17798 adds a new keyword, POPTREF, for defining criteria to identify and report on specific PSBs.
- APAR PI21708 enhances the utility to print the following information with the converted IMS DBDGEN or IMS PSBGEN utility control statements in the SYSPUNCH data set:
  - The date and time when the DBD, PSB, or ACB control block was converted to IMS DBDGEN or IMS PSBGEN utility control statements
  - The version of IMS that was used to create the control block
- APAR PI47105 provides the following new options:
  - ACB_REFERENCED option to decode DBD-type ACBs that are not referenced by any PSB-type ACBs.
  - PGM_COBOL option to set LANG=COBOL instead of LANG=ASSEM in the decoded PSB source.
  - DECOPT PCB_LABEL option to print the PCBNAME in the label instead of printing the PCBNAME parameter in the decoded PSB source.
  - DECOPT SENSEG_PROCOPT option to always print the SENSEG PROCOPT value in the decoded PSB source.

  The APAR also adds a new function control statement, UNREF ACB, which generates an Unreferenced ACB(DBD) report. The report contains information about DBD-type ACBs that are not referenced by any PSB-type ACBs in the ACBLIB.
- APAR PI53117 adds new control statements, LISTLIB DBD and LISTLIB PSB, for generating DBD or PSB library member list report.

For more information, see Chapter 8, “DBD/PSB/ACB Reversal utility,” on page 283.

MDA Reversal utility

APAR PI98748 provides a new utility, the MDA Reversal utility. This new utility converts DFSMDA members to DFSMDA macros. The utility can also generate a report that lists information about all the DFSMDA members found in libraries that you specify. For more information, see Chapter 9, “MDA Reversal utility,” on page 337.

Catalog Manager utility

- APAR PI21200 provides a new utility, the Catalog Manager utility. This new utility helps you ensure that DBDs and PSBs in the IMS catalog match the DBD and PSB members in the ACB libraries.
- APAR PI36550 provides the function to check the time stamp of DBD-type ACB and PSB-type ACB members in the IMS catalog directory.
- APAR PI95272 provides the following new functions:

  - Compare IMS control blocks in the IMS directory with those in ACB libraries, DBD libraries, or PSB libraries. You can compare ACBs in the IMS directory with those in ACB libraries, or compare ACBs in the IMS directory with DBDs in DBD libraries or PSBs in PSB libraries.
  - Convert ACBs in the IMS directory into IMS DBDGEN control statements or into IMS PSBGEN control statements.
- APAR PH00141 provides the function to compare IMS control blocks in the IMS directory.
- APAR PH09134 enhances the validate function to support ACBs in the IMS directory staging data set. The validate function can check the time stamps of ACBs in the IMS directory staging data set to ensure the consistency of the ACBs in the IMS directory staging data set.

For more information, see Chapter 10, “Catalog Manager utility,” on page 355.

ACBLIB Analyzer utility

APAR PI09309 adds a new operand, GENDATE=YES, for the LISTLIB command of the ACBSYSIN control statement. If you specify the new GENDATE=YES operand, the Library Contents report additionally includes the date and time when the ACB members were generated. For more information, see “Library Contents report” on page 440.

Other enhancements

- Provides the DBD/PSB Map Viewer, which is the IMS Library Integrity Utilities extension for Management Console and Tools Base Administration Console. You can display the graphical visualization of a database structure map, program specifications, DBD and PSB macro source, and DBD and PSB XML document in the web interface of Management Console. You can also use the cross reference feature to list logical DBDs and PSBs that refer to a specific DBD.

  To use this feature, IMS Database Solution Pack, IMS Database Utility Solution, or IMS Fast Path Solution Pack is required. For more information, see the topic "Setting up the DBD/PSB Map Viewer for Management Console" in *IMS Database Solution Pack: Overview and Customization*, *IMS Database Utility Solution: Overview and Customization*, or in *IMS Fast Path Solution Pack: Overview and Customization*.
- IMS Library Integrity Utilities extends the functions of IBM IMS Administration Tool for z/OS (APAR PI67745, PI89811, and PH00141).

  If IMS Library Integrity Utilities is configured for IMS Administration Tool, IMS Library Integrity Utilities enables the following functions of IMS Administration Tool:
  - View IMS databases (DBDs) and program views (PSBs) of Database and Application administration
  - IMS Catalog Management
  - Program View of IMS SPUFI

  For more information, see the *IMS Administration Tool User's Guide and Reference*.

Functional enhancements in Version 2 Release 1

This topic describes the major functional enhancements that are made to IMS Library Integrity Utilities Version 2 Release 1.

Subsections:

- "Integrity Checker utility"
- "DBD/PSB/ACB Compare utility" on page 21
- "DBD/PSB/ACB Reversal utility" on page 21
- "Advanced ACB Generator utility" on page 21
- "MFS Reversal utility" on page 21

Integrity Checker utility

Automatic determination of the correct RDE

When you run a time stamp recovery job by using the recovery function of IMS HP Image Copy or IMS Database Recovery Facility, Integrity Checker automatically recovers the RDE that was valid at the specified recovery time, and uses that RDE for DMB verification. To use this automatic determination function, you must specify a large value for the GENMAX option so that enough number of expired RDEs can be kept in the LICON data set.

Enhancement for the verification option

You can set the CHECKRV verification option for database recovery jobs by specifying the CHECKRV option in global option modules or in RDEs.

You can verify the changes in the DEDB partition selection exit routines by specifying the CHKFPSEL option in the global option modules or in the RDEs. This option is provided by APARs PM37150 and PM46494.

For more information, see "JCL requirements for the FABLPGEN program" on page 94 and "INIT.DB command" on page 103.

Creating RDEs under IMS Database Reorganization Expert

When you reorganize a database by using the Smart Reorg utility of IMS Database Reorganization Expert or the IPR Driver of IMS Parallel Reorganization that has APAR PK69458 applied, and you specify the NEWDBD= control statement, Integrity Checker creates a new RDE for the new DBD.

Recording database accesses

Integrity Checker can record database accesses when database update, load, and unload operations are made by the supported utilities or application programs. The recorded access information includes the subsystem name and the time of the access. To use this feature, apply the following APARs:

- APAR PM17661, PM21355, PM28084, and PM30910 to IMS Library Integrity Utilities
- APAR PM27942, if IMS Fast Path Solution Pack: IMS High Performance Fast Path Utilities is used

Support for global option modules prefixed with LIUG

Integrity Checker supports global option modules that are prefixed with LIUG. You can use LIUGINST or LIUG*imsid* in addition to LIU@INST and LIU@*imsid*. You must apply APAR PM30256 to use the global option modules that are prefixed with LIUG.

Enhancement to the LICON utility to support HALDB partitions

The LICON utility of Integrity Checker supports creating and verifying RDEs for HALDB partitions. You can use the INIT.DB command to create RDEs for HALDB partitions and the VERIFY.DB command to verify the RDEs of HALDB partitions.

DBD/PSB/ACB Compare utility

The DBD/PSB/ACB Compare can compare a DBD to its corresponding ACB, and a PSB to its corresponding ACB. For more information, see Chapter 6, "DBD/PSB/ACB Compare utility," on page 203.

The DBD/PSB/ACB Compare utility can compare members that have different names and that reside in the same object library or in different object libraries. This feature is provided by APAR PM10930.

DBD/PSB/ACB Reversal utility

The DBD/PSB/ACB Reversal Site Default Generation utility can be used to set user-defined default values for the SYSIN control statements of DBD/PSB/ACB Reversal. This feature is provided by APAR PM91313. For more information, see "DBD/PSB/ACB Reversal Site Default Generation utility" on page 330.

Advanced ACB Generator utility

If an abend, such as a system B37 abend, occurs on an ACBLIB data set during the BUILD DBD= process for changed DBDs, and you have corrected the space problem, the Advanced ACBGEN utility processes, during the rerun of the job, the DBDs that are specified with BUILD DBD= control statements and all the necessary PSBs. Therefore, you no longer need to run BUILD PSB= or BUILD PSB=ALL to force the rebuild of PSBs that are affected by the changes in the DBDs.

Support for IMS ACBGEN enhancements for IMS catalog

The Advanced ACBGEN utility can replace the IMS ACBGEN utility (DFSUACB0) to generate ACB members within ACB Generation and Catalog Populate utility (DFS3UACB) jobs. For more information, see "Advanced ACBGEN utility overview" on page 402.

The Advanced ACBGEN utility also supports the IMS catalog feature that has been added to the IMS ACBGEN utility. When an ACBCATWK DD statement is specified for an IMS ACBGEN utility job, the IMS ACBGEN utility generates a list of the ACB members in the data set that is specified by the ACBCATWK DD statement. If you specify an ACBCATWK DD for the Advanced ACBGEN utility job, the Advanced ACBGEN utility also generates a list of the ACB members in the data set that is specified by the ACBCATWK DD. For more information, see "JCL requirements for the Advanced ACBGEN utility" on page 407.

MFS Reversal utility

Enhancement of the MID/MOD XREF report

The MID/MOD XREF report has been enhanced to display the cross-reference information between MIDs and MODs. This feature is provided by APAR PK84633.

Copy function for MFS format library members

The MFS Reversal utility can copy the selected members and their associated members (MIDs, MODs, DIFs, and DOFs) from the IMS format library to a user-specified partitioned data set. You can enable the copy function by the OPTION control statement. This feature is provided by APAR PM03227.

Service updates and support information

Service updates and support information for this product, including software fix packs, PTFs, frequently asked questions (FAQs), technical notes, troubleshooting information, and downloads, are available from the web.

To find service updates and support information, see the following website:

http://www.ibm.com/support/entry/portal/Overview/Software/Information_Management/IMS_Tools

Product documentation and updates

IMS Tools information is available at multiple places on the web. You can receive updates to IMS Tools information automatically by registering with the IBM My Notifications service.

Information on the web

Always refer to the IMS Tools Product Documentation web page for complete product documentation resources:

http://www.ibm.com/support/docview.wss?uid=swg27020942

The IMS Tools Product Documentation web page includes:

- Links to IBM Knowledge Center for the user guides ("HTML")
- PDF versions of the user guides ("PDF")
- Program Directories for IMS Tools products
- Recent updates to the user guides, referred to as "Tech docs" ("See updates to this information!")
- Technical notes from IBM Software Support, referred to as "Tech notes"
- White papers that describe product business scenarios and solutions

IBM Redbooks® publications that cover IMS Tools are available from the following web page:

http://www.redbooks.ibm.com

The IBM Information Management System website shows how IT organizations can maximize their investment in IMS databases while staying ahead of today's top data management challenges:

https://www.ibm.com/software/data/ims/

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4. Click **Continue** to specify the types of updates that you want to receive.
5. Click **Submit** to save your profile.

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Prerequisite knowledge

Before using the information, you should understand basic IMS concepts, the IMS environment, and your installation's IMS system.

The IMS publications are prerequisite for all IMS Library Integrity Utilities components.

Accessibility features for IMS Library Integrity Utilities

Accessibility features help a user who has a physical disability, such as restricted mobility or limited vision, to use information technology products successfully.

Accessibility features

The major accessibility feature in IMS Library Integrity Utilities is the keyboard-only operation for ISPF editors. It uses the standard TSO/ISPF interface.

Keyboard navigation

You can access the information center and IMS ISPF panel functions by using a keyboard or keyboard shortcut keys.

For information about navigating the IMS ISPF panels using TSO/E or ISPF, see the following guides:

- *z/OS ISPF User's Guide, Volume 1*
- *z/OS TSO/E Primer*
- *z/OS TSO/E User's Guide*

These guides describe how to use ISPF, including the use of keyboard shortcuts or function keys (PF keys), include the default settings for the PF keys, and explain how to modify their functions.

IBM and accessibility

See the IBM Human Ability and Accessibility Center at www.ibm.com/able for more information about the commitment that IBM has to accessibility.

Chapter 2. Configuring IMS Library Integrity Utilities

After you install IMS Library Integrity Utilities, you can use the utilities without configuration except for the Integrity Checker utility, the Consistency Checker utility, and the Multiple Resource Checker utility. If you have been using the Integrity Checker utility or the Advanced ACBGEN utility of an earlier release of IMS Library Integrity Utilities, review the migration steps before you install the product.

Topics:

- "Hardware and software prerequisites" on page 28
- "Configuring for initial installation" on page 29
- "Migration procedures" on page 30

Hardware and software prerequisites

Before you install IMS Library Integrity Utilities, prepare an environment that meets the software and hardware requirements of the product.

Complete information about installation requirements, prerequisites, and procedures for IMS Library Integrity Utilities is in the following publications:

- *Program Directory for IBM IMS Library Integrity Utilities for z/OS*
- *Program Directory for IBM IMS Database Solution Pack for z/OS*
- *Program Directory for IBM IMS Database Utility Solution for z/OS*
- *Program Directory for IBM IMS Fast Path Solution Pack for z/OS*

Hardware

IMS Library Integrity Utilities runs on any hardware configuration that supports the required versions of IMS.

Software

IMS Version 13 Release 1 or later, or IMS Database Value Unit Edition Version 13 Release 1 or later.

Integrity Checker utility

- To activate Integrity Checker, a DBRC environment is required. Also, the DBRC RECON data sets must be generated by IMS Version 11 Release 1 or later releases.
- To migrate your LICON data set from IMS Library Integrity Utilities Version 1 by using the LICON data set migration utility, IBM DFSORT (Data Facility Sort), which is a part of z/OS, or a functionally equivalent sort/merge program, is required.
- RECON data sets that are generated with MINVERS=9.1 or greater, and the IMS SDFSRESL library of IMS Version 9 Release 1 or of a later release can be used.

Multiple Resource Checker utility

- Supports DBDLIBs and PSBLIBs that are generated by any version of IMS. Supports ACBLIBs that are generated by IMS Version 11 or later.
- RECON data sets that are generated by IMS Version 11 or later, and the IMS SDFSRESL library of IMS Version 11 Release 1 or of a later release can be used.

DBD/PSB/ACB Compare utility
DBD/PSB/ACB Mapper utility
DBD/PSB/ACB Reversal utility

Supports DBDLIBs and PSBLIBs that are generated by any version of IMS. Supports ACBLIBs that are generated by IMS Version 11 or later.

Catalog Manager utility

Supports ACB libraries that are generated by IMS Version 12 or later.

Advanced ACB Generator utility

If the LISTLIB command parameter USESORT=YES is specified on the ACBSYSIN control statement of the ACBLIB Analyzer utility, IBM DFSORT (Data Facility Sort), which is a part of z/OS, or a functionally equivalent sort/merge program, is required unless otherwise stated.

Configuring for initial installation

Before you can activate Integrity Checker, Consistency Checker, or Multiple Resource Checker, you must configure the environment. Other utilities require no configuration tasks.

Integrity Checker
Configuration tasks include designing an Integrity Checker configuration. Follow the instructions in "Planning for Integrity Checker configuration" on page 41.

Consistency Checker
Multiple Resource Checker
If you protect DBRC commands or DBRC API requests with RACF®, you must set up the RACF security. Follow the instructions in "Setting up security for Consistency Checker and Multiple Resource Checker."

If RACF is not used for DBRC commands or DBRC API requests, you can use the utilities without configuration.

Setting up security for Consistency Checker and Multiple Resource Checker

Consistency Checker uses the DBRC command utility and Multiple Resource Checker uses the DBRC API to verify the registration of the databases and the data sets to the RECON data sets.

For Consistency Checker, if you protect DBRC commands with RACF by permitting appropriate user access to the profiles, you must permit appropriate users of jobs to use the DBRC command LIST.RECON.

For Multiple Resource Checker, if you protect DBRC API requests with RACF by permitting appropriate user access to the profiles, you must permit appropriate users of jobs to use the following DBRC API requests:

- STARTDBRC
- STOPDBRC
- QUERY

For details about the RACF settings for DBRC command and DBRC API requests, see the topic "DBRC security" in *IMS System Administration*.

Migration procedures

Out of the utilities provided in IMS Library Integrity Utilities Version 2 Release 2, only the Integrity Checker utility and the Advanced ACBGEN utility require migration tasks.

Other utilities require no migration tasks. You can use other utilities by installing and replacing the IMS Library Integrity Utilities load module library.

Follow the instructions in the following topics to complete migration for the Integrity Checker utility and the Advanced ACBGEN utility:

- "Migrating Integrity Checker"
- "Migrating Advanced ACBGEN" on page 35

Migrating Integrity Checker

The steps to migrate Integrity Checker from an earlier release of the product differ by the version of the product that you have been using and whether BPE-based DBRC was used.

Follow the instructions in the following topics:

- "Migrating from IMS Library Integrity Utilities Version 2 Release 1 (non BPE-based DBRC)"
- "Migrating from IMS Library Integrity Utilities Version 2 Release 1 (BPE-based DBRC)" on page 31
- "Migrating from IMS Library Integrity Utilities Version 1" on page 32

Migrating from IMS Library Integrity Utilities Version 2 Release 1 (non BPE-based DBRC)

When you migrate Integrity Checker from Version 2 Release 1 to this release of the product and BPE-based DBRC is not used, complete the following migration steps.

About this task

The global option modules, LICON data sets, JCL, and the control statements that are used in IMS Library Integrity Utilities Version 2 Release 1 are compatible.

However, in IMS Library Integrity Utilities Version 2 Release 2, alias name DSPCRTR0 is not assigned for the FABLRTR0 module by default. Therefore, you must perform the following steps to customize the LIU load modules to work with DBRC module DSPCRTR0.

Procedure

1. If one of the following conditions is met, shut down the IMS online systems in which Integrity Checker is activated.
   - You plan to install the IMS Library Integrity Utilities load modules (LIU load modules) into the existing IMS Library Integrity Utilities library.
   - You plan to merge the LIU load modules into the IMS SDFSRESL library.
2. Install IMS Library Integrity Utilities.

   Complete the SMP/E installation of IMS Library Integrity Utilities.
3. Assign alias name DSPCRTR0 for the FABLRTR0 module or merge Integrity Checker load modules into the IMS SDFSRESL library.

- If the Integrity Checker load modules were not merged into the IMS SDFSRESL library in the IMS Library Integrity Utilities Version 2 Release 1 environment, assign alias name DSPCRTR0 to the FABLRTR0 load module.

  For more information about completing this task, see "Method 1. Customizing LIU load modules by creating alias name DSPCRTR0" on page 62.
- If the Integrity Checker load modules were merged into the IMS SDFSRESL library in the IMS Library Integrity Utilities Version 2 Release 1 environment, merge the Integrity Checker load modules of IMS Library Integrity Utilities Version 2 Release 2 into the IMS SDFSRESL library.

  Tip: You do not need to run the FABLUMD1 job, which receives and applies USERMOD to install the FABLRTR0 module into your IMS SDFSRESL library because the FABLRTR0 module is compatible and it does not need to be updated.

  For more information about completing this task, see "Method 2. Customizing LIU load modules by merging into the IMS SDFSRESL library" on page 65.

4. Restart the IMS online systems in which you want to activate Integrity Checker.

   If you did not shut down the IMS online systems in the preceding step, shut down and restart the IMS online systems.

Migrating from IMS Library Integrity Utilities Version 2 Release 1 (BPE-based DBRC)

When you migrate Integrity Checker from Version 2 Release 1 to this release of the product and BPE-based DBRC is used, complete the following migration steps.

About this task

The global option modules, LICON data sets, JCL, and the control statements that are used in IMS Library Integrity Utilities Version 2 Release 1 are compatible.

However, in IMS Library Integrity Utilities Version 2 Release 2, alias name DSPCRTR0 is not assigned for the FABLRTR0 module by default. Therefore, you must perform the following steps to customize the LIU load modules to work with DBRC module DSPCRTR0.

Procedure

1. Install IMS Library Integrity Utilities.

   Complete the SMP/E installation of IMS Library Integrity Utilities.
2. Assign alias name DSPCRTR0 for the FABLRTR0 module or merge Integrity Checker load modules into the IMS SDFSRESL library.
   - If the Integrity Checker load modules were not merged into the IMS SDFSRESL library in the IMS Library Integrity Utilities Version 2 Release 1 environment, assign alias name DSPCRTR0 to the FABLRTR0 load module.

     For more information about completing this task, see "Method 1. Customizing LIU load modules by creating alias name DSPCRTR0" on page 62.
   - If the Integrity Checker load modules were merged into the IMS SDFSRESL library in the IMS Library Integrity Utilities Version 2 Release 1 environment, merge the Integrity Checker load modules of IMS Library Integrity Utilities Version 2 Release 2 into the IMS SDFSRESL library.

Tip: You do not need to run the FABLUMD1 job, which receives and applies USERMOD to install the FABLRTR0 module into your IMS SDFSRESL library because the FABLRTR0 module is compatible and it does not need to be updated.

For more information about completing this task, see "Method 2. Customizing LIU load modules by merging into the IMS SDFSRESL library" on page 65.

3. Issue the BPE REFRESH USEREXIT command to reload the Integrity Checker load modules.

   For more information about the BPE REFRESH USEREXIT statement, see the topic "BPE REFRESH USEREXIT command" in *IMS Commands*.

Migrating from IMS Library Integrity Utilities Version 1

When you migrate Integrity Checker from Version 1 to this release of the product, complete the following migration steps.

About this task

The global option modules, JCL, and the control statements that are used in IMS Library Integrity Utilities Version 1 are compatible. However, in IMS Library Integrity Utilities Version 2 Release 2, alias name DSPCRTR0 is not assigned for the FABLRTR0 module by default. Therefore, you must customize the LIU load modules to work with DBRC module DSPCRTR0. Also, the LICON data sets that are used in IMS Library Integrity Utilities Version 1 are not compatible. Therefore, you must migrate or re-create the LICON data sets.

Procedure

1. Shut down the IMS online systems in which Integrity Checker is activated.
2. Install IMS Library Integrity Utilities.

   Complete the SMP/E installation of IMS Library Integrity Utilities.
3. Optional: Create global option modules.

   Global option modules that were created by Integrity Checker of IMS Library Integrity Utilities Version 1 can be used in this version of the product. However, Integrity Checker of IMS Library Integrity Utilities Version 2 treats them as the global option modules in which the CHECKRV, the CHKFPSEL, the RECLD, the RECUL, and the RECUPD options are not specified.

   For more information about these options and instructions for changing the global option modules, see the following topics:
   - "JCL requirements for the FABLPGEN program" on page 94
   - "Changing the global option module" on page 77
4. Migrate or re-create the LICON data sets.

   The format of RDE records that are stored in LICON data sets has been changed in Integrity Checker of IMS Library Integrity Utilities Version 2. Therefore, Integrity Checker cannot process the RDEs that are created by Integrity Checker of IMS Library Integrity Utilities Version 1. You must complete one of the following steps:
   - Migrate the LICON data sets used by IMS Library Integrity Utilities Version 1 to the new format by using the LICON data set migration utility that is provided in IMS Library Integrity Utilities Version 2.
   - Allocate new LICON data sets and create new RDEs.

The following steps explain the procedure to migrate the format of a LICON data set from IMS Library Integrity Utilities Version 1 to the format of IMS Library Integrity Utilities Version 2.

a. Define a backup data set and a new LICON data set with enough free space.

   For more information about allocating LICON data sets, see the following topics:

   - "Estimating the size of the LICON data set" on page 53
   - "Defining and initializing the LICON data set" on page 58

b. Copy the LICON data set to the backup data set.

c. Migrate the original LICON data set from IMS Library Integrity Utilities Version 1 to IMS Library Integrity Utilities Version 2 by using the LICON data set migration utility.

d. Rename the migrated LICON data set name to the original LICON data set name.

   Attention: After you migrate the LICON data set, do not use the LICON data set with Integrity Checker of IMS Library Integrity Utilities Version 1. If the LICON data set is used in Integrity Checker of IMS Library Integrity Utilities Version 1, unexpected results can occur.

Use the JCL sample shown in Figure 1 on page 34 to migrate the LICON data set. This JCL sample is provided as a member of the SHPSSAMP library.

5. Assign alias name DSPCRTR0 for the FABLRTR0 module or merge Integrity Checker load modules into the IMS SDFSRESL library.

   - If the Integrity Checker load modules were not merged into the IMS SDFSRESL library in the IMS Library Integrity Utilities Version 1 environment, assign alias name DSPCRTR0 to the FABLRTR0 load module.

     For more information about completing this task, see "Method 1. Customizing LIU load modules by creating alias name DSPCRTR0" on page 62.

   - If the Integrity Checker load modules were merged into the IMS SDFSRESL library in the IMS Library Integrity Utilities Version 1 environment, merge the Integrity Checker load modules of IMS Library Integrity Utilities Version 2 Release 2 into the IMS SDFSRESL library.

     Tip: You do not need to run the FABLUMD1 job, which receives and applies USERMOD to install the FABLRTR0 module into your IMS SDFSRESL library because the FABLRTR0 module is compatible and it does not need to be updated.

     For more information about completing this task, see "Method 2. Customizing LIU load modules by merging into the IMS SDFSRESL library" on page 65.

6. Restart the IMS online systems in which you want to activate Integrity Checker.

Example

The following figures present a JCL sample to migrate a LICON data set. This JCL sample is in the SHPSSAMP library, member FABLCNV2.

```
//*
//JOBLIB    DD DISP=SHR,DSN=HPS.SHPSLMD0
//*
//*====================================================================
//*
//*  STEP1  :  ALLOCATE NEW LICON DATA SET AND BACK UP
//*
//*====================================================================
//STEP1    EXEC PGM=IDCAMS
//SYSPRINT DD SYSOUT=A
//SYSIN    DD *
 DELETE (LIUHLQ.LICONDSN.NEW)
 SET MAXCC=0
 DEFINE CLUSTER (NAME(LIUHLQ.LICONDSN.BACKUP) -
          INDEXED -
          KEY (32 0)  -
          SHAREOPTIONS(3,3) -
          NOREUSE -
          VOL (VVVVVV) -
          CYL (PP1 SS1) -
          RECORDSIZE (4096 32760) -
          FREESPACE(XX,YY)) -
          DATA(NAME(LIUHLQ.LICONDSN.DATA.BACKUP)) -
          INDEX(NAME(LIUHLQ.LICONDSN.INDEX.BACKUP))
 DEFINE CLUSTER (NAME(LIUHLQ.LICONDSN.NEW) -
          INDEXED -
          KEY (44 0)  -
          SHAREOPTIONS(3,3) -
          NOREUSE -
          VOL (VVVVVV) -
          CYL (PP2 SS2) -
          RECORDSIZE (4096 32760) -
          FREESPACE(XX,YY)) -
          DATA(NAME(LIUHLQ.LICONDSN.DATA.NEW)) -
          INDEX(NAME(LIUHLQ.LICONDSN.INDEX.NEW))
/*
//*====================================================================
//*
//*  STEP2  :  BACK UP LICON DATA SET
//*
//*====================================================================
//STEP2    EXEC PGM=IDCAMS,COND=(4,LT)
//INDD     DD DISP=SHR,DSN=LIUHLQ.LICONDSN
//OUTDD    DD DISP=SHR,DSN=LIUHLQ.LICONDSN.BACKUP
//SYSPRINT DD SYSOUT=A
//SYSIN    DD *
 REPRO  INFILE(INDD) OUTFILE(OUTDD)
/*
```

Figure 1. JCL sample to migrate a LICON data set (Part 1 of 2)

```
//*===================================================================
//*
//*  STEP3  :  CONVERT V1 LICON DATA SET TO V2
//*
//*===================================================================
//STEP3    EXEC PGM=SORT,COND=(4,LT)
//SORTOUT  DD DISP=SHR,DSN=LIUHLQ.LICONDSN.NEW
//SORTIN   DD DISP=SHR,DSN=LIUHLQ.LICONDSN.BACKUP
//SYSOUT   DD SYSOUT=*
//SYSUDUMP DD SYSOUT=*
//SYSIN    DD *
 SORT FIELDS=(5,44,BI,A)
 RECORD TYPE=V
 OPTION MAINSIZE=MAX
 MODS E15=(FABLE15A,70000)
/*
//*===================================================================
//*
//*  STEP4  :  RENAME NEW LICON DATA SET
//*
//*===================================================================
//STEP4    EXEC PGM=IDCAMS,COND=(4,LT)
//SYSPRINT DD SYSOUT=A
//SYSIN    DD *
 DELETE (LIUHLQ.LICONDSN)
 IF  MAXCC EQ 0 THEN -
   DO
     ALTER   LIUHLQ.LICONDSN.NEW             -
     NEWNAME(LIUHLQ.LICONDSN)
     ALTER   LIUHLQ.LICONDSN.DATA.NEW        -
     NEWNAME(LIUHLQ.LICONDSN.DATA)
     ALTER   LIUHLQ.LICONDSN.INDEX.NEW       -
     NEWNAME(LIUHLQ.LICONDSN.INDEX)
   END
/*
```

Figure 2. JCL sample to migrate a LICON data set (Part 2 of 2)

Migrating Advanced ACBGEN

If the load modules are not merged into the IMS SDFSRESL library, no migration tasks are required; you can migrate the utility by replacing and installing the IMS Library Integrity Utilities load module library. Complete this step only if the load modules are merged into the IMS SDFSRESL library.

Procedure

Run the FABQUMD1 job, which is in the SHPSJCL0 JCL library, before merging the load modules of IMS Library Integrity Utilities Version 2 Release 2. This job deletes alias name DFSUACB0 from the IMS LIU SHPSLMD0 library and the LMOD entry of LIU SMP/E CSI of IMS Library Integrity Utilities Version 2 Release 2.
You do not need to run the FABQUMD2 job and the FABQUMD3 job. The FABQUMD2 job lists the IMS DFSRRA80 source entry, and the FABQUMD3 job receives and applies USERMOD to modify the IMS DFSRRA80 module so that the module invokes the IMS LIU FABQMAIN module instead of DFSUACB0.

Related tasks:

"Merging Advanced ACBGEN load modules into the IMS SDFSRESL library" on page 404

Chapter 3. Integrity Checker utility

The Integrity Checker utility prevents database corruption caused when IMS applications use incorrect IMS control blocks to get access to a database.

Topics:

- "Integrity Checker overview" on page 38
- "Planning for Integrity Checker configuration" on page 41
- "Activating Integrity Checker" on page 56
- "Maintaining Integrity Checker" on page 69
- "Preventing database corruption with Integrity Checker" on page 81
- "Deactivating Integrity Checker" on page 88
- "Output from Integrity Checker" on page 91
- "Global option module generation macro" on page 93
- "LICON utility reference" on page 100

Integrity Checker overview

Integrity Checker prevents database corruption that is caused by a use of incorrect database descriptions (DBDs).

Subsections:

- "DMB verification function"
- "How the DMB verification function works"
- "Change history report for DBDs and databases" on page 40
- "Supported database organizations" on page 40
- "Program structure" on page 40

DMB verification function

Integrity Checker supports the *DMB verification* function to prevent database corruptions that are caused by misuse of incorrect DBDLIBs or ACBLIBs.

When IMS databases are accessed by IMS online applications, batch applications, utilities, or IMS Tools jobs, IMS uses the *database management block* (DMB) to obtain database definition. DMBs are stored in the DBD libraries (DBDLIB) or ACB libraries (ACBLIB) as load modules.

Every IMS job requires a DBDLIB or an ACBLIB. IMS loads the DMB from the DBDLIB or the ACBLIB specified by the job, obtains the DMB, and processes the database based on the information in the DMB. If the DMB is incorrect and IMS uses the incorrect DMB to update the database, the database can become corrupted. For example, database corruptions can occur in the following cases:

- The ACBLIB for a test database is used to update the production database.
- After changing the DBD, the old DBDLIB is used to update the database.

How the DMB verification function works

When an IMS online application, batch application, utility, or IMS Tools job tries to access the database, while the job is being initialized, the Database Recovery Control facility (DBRC) performs authorization processing for the target database.

Integrity Checker stores the correct DBD definition in a control file called the *Library Integrity Control data set* (LICON data set). During the DBRC authorization process, Integrity Checker compares the DMB that is referred to by IMS and the DMB that is stored in the LICON data set to ensure that IMS is using the correct DMB.

If a mismatch is found between the two DMBs, the DMB verification process modifies the response from DBRC to deny the DBRC authorization request. When the job receives the authorization failure notification, the job terminates without updating the database.

The following figures illustrate how Integrity Checker prevents database corruptions. Figure 3 on page 39 shows DMB verification for IMS online applications, and Figure 4 on page 39 shows DMB verification for batch applications and utilities. The steps that follow the figures correspond to the numbers in the figures.

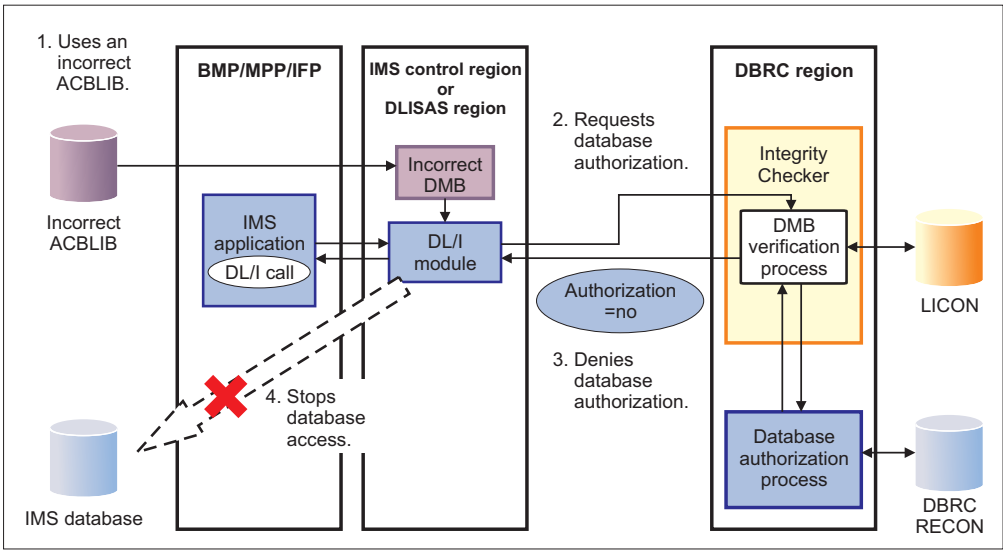


Figure 3. How Integrity Checker prevents database corruption: IMS online applications

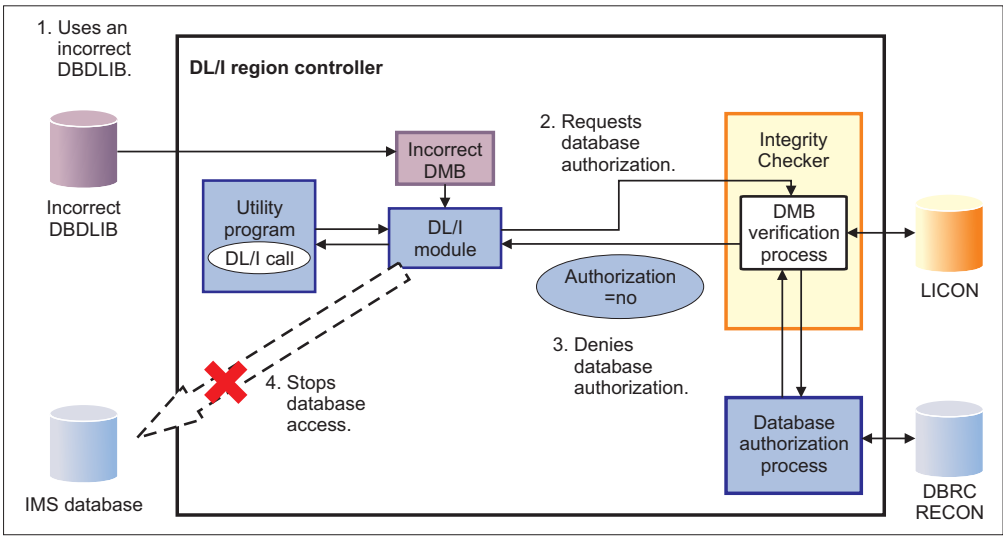


Figure 4. How Integrity Checker prevents database corruption: batch applications and utilities

1. IMS application or utility program uses an incorrect DBDLIB or ACBLIB.
2. The DL/I module requests DBRC authorization.
3. Integrity Checker compares the DMBs, detects a mismatch, and interrupts the DBRC authorization process to deny database authorization.
4. The IMS application or the utility program terminates before it updates the database.

Through these processes, Integrity Checker detects and prevents any access to the database that uses incorrect DMBs.

These figures illustrate the process flows in the non-BPE based DBRC environment. In the BPE-based DBRC environment, Integrity Checker runs as a DBRC Request exit routine to verify the DMBs.

Change history report for DBDs and databases

Integrity Checker keeps historical records of DBDs that were used in DMB verifications. You can print these records to review the change histories and to compare the current version of the DBD with an earlier version.

You can also record the time stamp of the last database access by using the database access recording option. If you activate this option, the time stamp of the last access made by IMS programs that have an update intent, load utility programs, and unload utility programs is recorded. Such records can also be printed in a report, and you can use the records for an audit evidence regarding database access.

Supported database organizations

Integrity Checker supports the following types of database organization:

- HSAM, HISAM, SHISAM, HIDAM, HDAM, INDEX
- PHDAM, PHIDAM, PSINDEX
- DEDB

MSDB and GSAM databases are not supported.

Program structure

Integrity Checker contains the following programs:

- DMB verification modules that do DMB verification
- The utility module that creates, maintains, and prints LICON data sets

Integrity Checker also provides a cataloged procedure and a macro for creating global option modules.

Planning for Integrity Checker configuration

Before you activate the DMB verification function of Integrity Checker, you must understand the resources used by Integrity Checker and design the most suitable Integrity Checker configuration for your IMS environment.

After you design your Integrity Checker configuration, activate Integrity Checker by completing the instructions in "Activating Integrity Checker" on page 56.

Use the following topics to design the Integrity Checker configuration:

- "LIU load module library customization"
- "LICON data sets and global option modules" on page 42
- "Integrity Checker configuration requirements" on page 43
- "Runtime options and environments" on page 49
- "Historical data maintained in LICON data sets" on page 50
- "Considerations for activating Integrity Checker" on page 52

LIU load module library customization

The IMS Library Integrity Utilities load module library (also referred to as LIU load module library) must be customized to use Integrity Checker.

The DMB verification function of Integrity Checker is triggered by IMS jobs (IMS online, application, IMS standard utility, and IMS Tools utility jobs) that access databases. Therefore, unlike other IMS Tools programs that run with JCL in which the EXEC PGM= parameter specifies the utility program name to execute, Integrity Checker must be customized to automatically start DMB verification when a database is accessed.

The DMB verification process runs as part of the DBRC authorization process. Therefore, instead of coding JCL statements, you must customize the LIU load module data set (SHPSLMD0 data set) to work with DBRC module DSPCRTR0.

Important: In IMS Library Integrity Utilities Version 2 Release 1 and earlier, alias name DSPCRTR0 was assigned for the FABLRTR0 module by default, but in IMS Library Integrity Utilities Version 2 Release 2 and later, the alias name is not assigned. You must customize the LIU load module library.

Methods for customizing the LIU load module library

Integrity Checker supports two methods for customizing the LIU load module data set. Compare the two methods and determine the best method for your environment.

Method 1: Defining alias name DSPCRTR0 for FABLRTR0 (recommended method)

Module FABLRTR0 is the program load module that is stored in the LIU load module library. Module DSPCRTR0 is the DBRC router module, which is one of the DBRC authorization modules.

If alias name DSPCRTR0 is defined for the FABLRTR0 module, and the LIU load module library precedes the IMS resident library (SDFSRESL data set) in the STEPLIB DD in JCL and procedures of IMS jobs, when a database is accessed by such jobs, instead of the DBRC module DSPCRTR0, the FABLRTR0 module starts and activates DMB verification. To apply this method, the LIU load module library must be APF-authorized.

- Advantage: You can use the standard SMP/E methods to apply program temporary fixes (PTFs) for both IMS Library Integrity Utilities and IMS.
- Disadvantage: You must modify the STEPLIB DD statement in JCL and procedures of all IMS jobs that access databases.

Method 2: Merging Integrity Checker load modules into the IMS resident library (SDFSRESL)

If all the Integrity Checker modules (FABL* members) in the LIU load module library are merged into the IMS SDFSRESL data set, when a database is accessed, the FABLRTR0 module, which is link-edited to the DBRC module DSPCRTR0 module, starts and activates DMB verification. Before the modules are merged, the FABLRTR0 module and DBRC module DSPCRTR0 must be link-edited to create one DSPCRTR0 module, and the module entry point must be set to FABLRTR0. Before the modules are merged, a backup of the IMS SDFSRESL data set must be created.

- Advantage: You do not need to modify the STEPLIB DD statement in each JCL and procedure of IMS jobs that access databases.
- Disadvantage: When you apply PTFs for IMS Library Integrity Utilities and IMS, the following additional steps are required:
  - For IMS Library Integrity Utilities, after you apply a PTF, you must merge the members again.
  - For IMS, if the PTF updates the DSPCRTR0 module, you must restore the DSPCRTR0 module before you apply the PTF. After you apply the PTF, create a backup of the SDFSRESL data set, and then link-edit FABLRTR0 and DSPCRTR0 again.

Integrity Checker supports multiple versions of IMS with one module. Therefore, with either method, if the version of IMS is supported by IMS Library Integrity Utilities, the same LIU load module data set can be used.

LICON data sets and global option modules

LICON data sets and global option modules are unique resources that are required by Integrity Checker.

LICON data sets

LIU Integrity control data sets (LICON data sets) are KSDS data sets that are the repositories for *registered DMB entries* (RDEs). RDEs contain database management block (DMB) information that is used in DMB verification. In the LICON data sets, RDEs are stored as KSDS records. At least one LICON data set must be defined and initialized.

Integrity Checker obtains the DMB information that IMS used to load the database, stores the information in the RDE as the correct DMB information, and refers to that DMB information to verify the DMB information obtained from the DBDLIB or ACBLIB that is referenced by IMS jobs.

In addition to the DMB information, RDEs contain the following information:

- Runtime options that are applied to DMB verification.
- Time stamp of the last database access made by load utility programs, unload utility programs, and utilities or application programs with an update intent in the PSB.

When a DBD is updated, Integrity Checker updates the corresponding RDE accordingly.

In addition to the RDE that contains the latest DMB information, Integrity Checker also maintains historical copies of RDEs. You can use those copies to review the DBD information before a DBD change, or when you restore DBDs, you can use the copies to restore RDEs.

Global option modules

Global option modules are the configuration definition modules of Integrity Checker. Each global option module defines the LICON data set and the runtime options that are applied to DMB verification. IMS Library Integrity Checker does not provide global option modules, so you must create at least one global option module.

IMS Library Integrity Utilities provides the FABLPGEN program for creating global option modules. The LICON data set name and runtime options are defined through FABLPGIN macro control statements of the FABLPGEN program.

After running the FABLPGEN program, the source code must be assembled and link-edited to a load module. The created global option module must be stored in the LIU load module library.

Integrity Checker configuration requirements

Because DMB verification works within DBRC authorization processing, DBRC must be active in your IMS environment. The number of LICON data sets and global option modules in an Integrity Checker configuration depends on how the DBRC environment is configured.

The basic rules for designing an Integrity Checker configuration are as follows:

- One LICON data set must be created for each set of RECON data sets. (A set consists of RECON1, RECON2, and RECON3.)
- Global option modules contain the names of the LICON data sets. Therefore, if your environment requires multiple LICON data sets, you must prepare the same number of global option modules.
- Global option modules must be named using the following naming convention:

  LIU@INST
  : The default name for the global option module. If your environment requires only one LICON data set, use this name.

  LIU@*imsid*
  : If your environment requires multiple LICON data sets, use this format. For *imsid*, use the IMS ID of each IMS subsystem.

    When multiple global option modules exist, Integrity Checker determines the global option module to use from the IMS ID. If no corresponding global option module is found for an IMS ID, Integrity Checker uses the default module LIU@INST. Even if the corresponding global option module is found, if some options are not defined in that module, the options that are defined in LIU@INST are applied. If LIU@INST is not found or some options are not defined in the LIU@INST, the system default values are used.

Tip: At sign (@) is a code-page-dependent character. If you are working in an environment where you cannot use the at sign (@), name the modules LIUGINST or LIUG*imsid*.

Use the following examples to design an Integrity Checker configuration for your environment.

- "Single IMS subsystem configuration example"
- "Multiple IMS subsystems configuration example: Data-sharing environment " on page 45
- "Multiple IMS subsystems configuration example: Non-data-sharing environment" on page 46
- "Multiple IMS subsystems configuration example: Multiple data-sharing environments" on page 47
- "Multiple IMS subsystems configuration example: XRF complex" on page 48

As a rule, the same runtime options must be defined for each LICON data set. To simplify the explanations, these examples are cases where one global option module refers to one LICON data set.

Tip: Certain runtime options can have different values within one LICON data set. To define different runtime option values, instead of assigning alias names for global option modules as shown in the examples, create one global option module for each IMS ID. For more information about the runtime options, see "Global option module generation macro" on page 93.

For IMS environments that are not explained in these examples, such as IMSplex, the basic rules are the same. For any IMS environment, you can follow these basic rules to design Integrity Checker configuration:

- One LICON data set for one set of RECON data sets
- One global option module for one LICON data set

Single IMS subsystem configuration example

The following figure shows the simplest configuration.

In this environment, one IMS subsystem is used and one set of RECON data sets is used, so the Integrity Checker resources that are required in this environment are as follows:

- Number of LICON data sets: 1
- Number of global option modules: 1

Because only one global option module is required, the name of the global option module is LIU@INST.

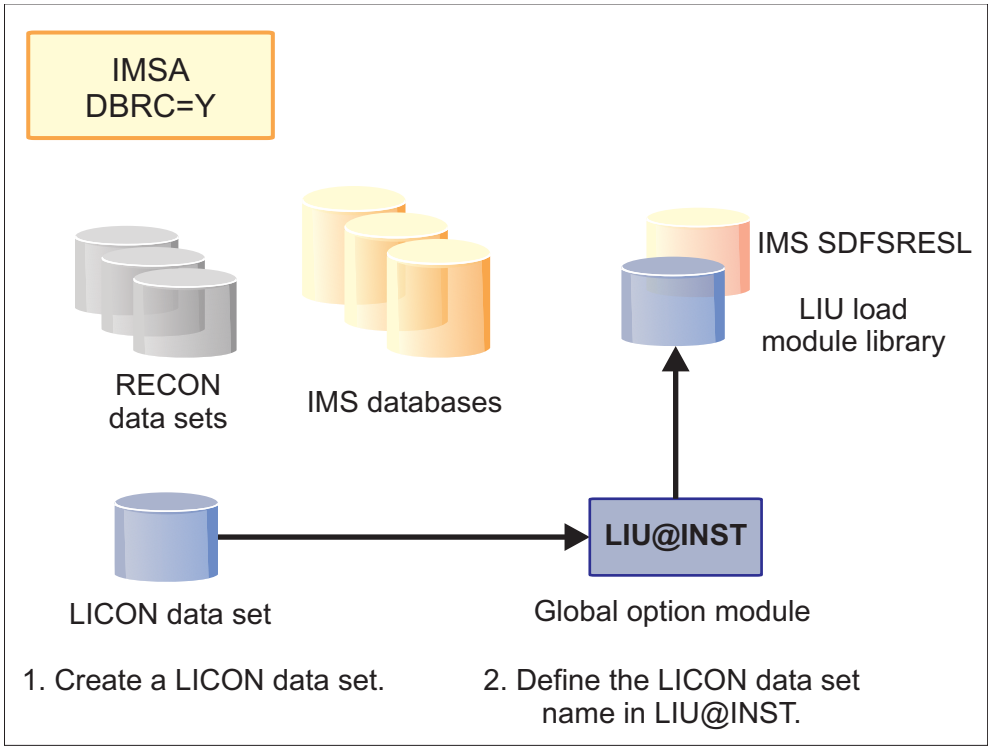


Figure 5. Integrity Checker configuration for a single IMS subsystem

Multiple IMS subsystems configuration example: Data-sharing environment

The following figure illustrates a configuration where two IMS subsystems share databases.

In this environment, two IMS subsystems are used and one set of RECON data sets is used, so the Integrity Checker resources that are required in this environment are as follows:

- Number of LICON data sets: 1
- Number of global option modules: 1

Because only one global option module is required, the name of the global option module is LIU@INST.

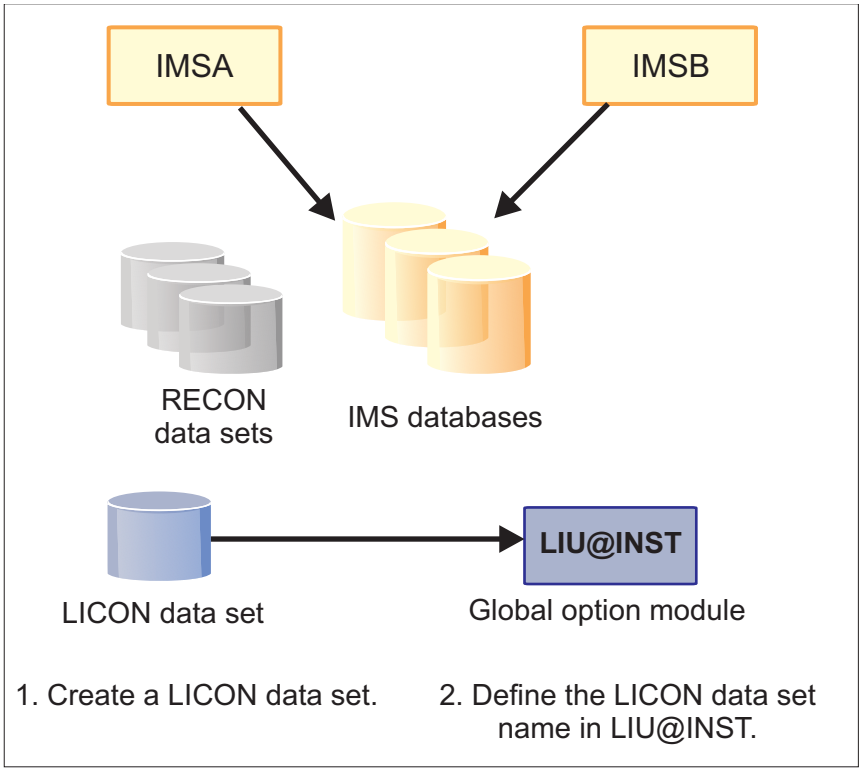


Figure 6. Integrity Checker configuration in a data-sharing environment

Multiple IMS subsystems configuration example: Non-data-sharing environment

The following figure illustrates a configuration where two IMS subsystems use a different set of databases. In such an environment, a LICON data set must be created for each IMS subsystem. Each LICON data set requires one global option module.

In this environment, two IMS subsystems are used and two sets of RECON data sets are used, so the Integrity Checker resources that are required in this environment are as follows:

- Number of LICON data sets: 2
- Number of global option modules: 2

Because two global option modules are required, the names of the global option modules are LIU@IMSA for IMS subsystem IMSA, and LIU@IMST for IMS subsystem IMST.

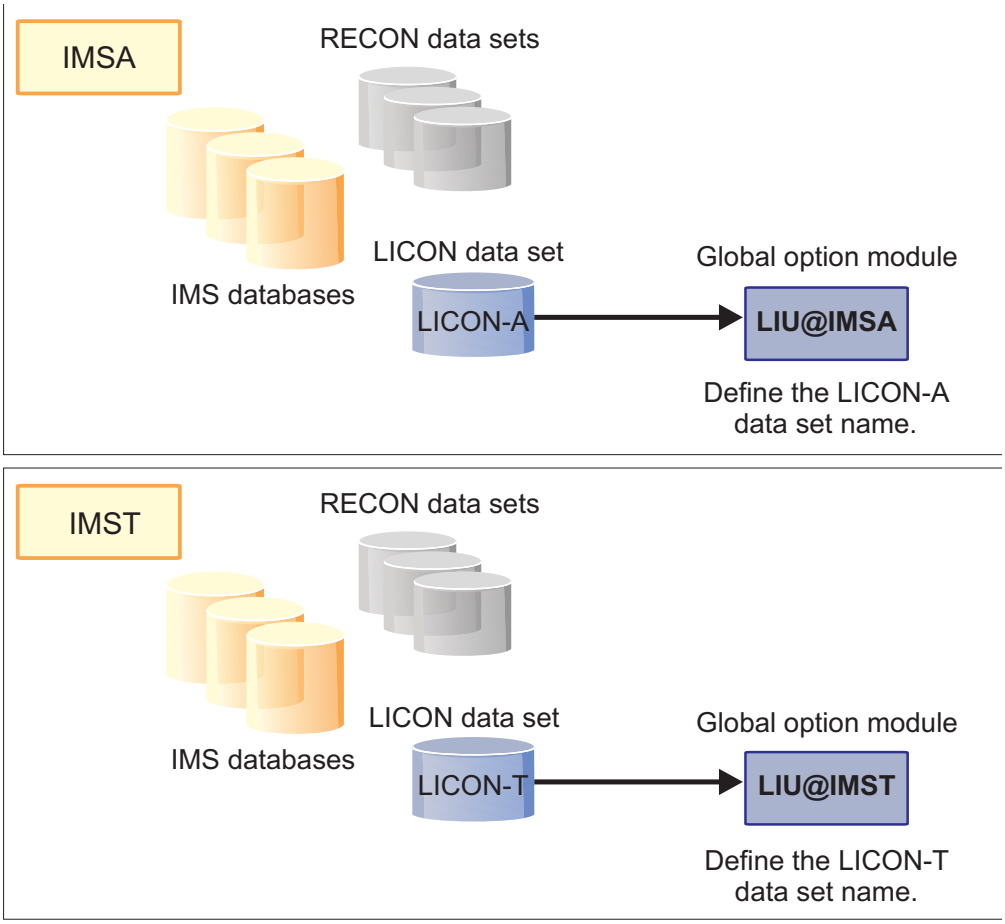


Figure 7. Integrity Checker configuration in a non-data-sharing environment

Multiple IMS subsystems configuration example: Multiple data-sharing environments

The following figure illustrates a configuration for multiple data-sharing environments. In each data-sharing environment, two IMS subsystems use the same set of databases. In such environments, a LICON data set must be created for each data-sharing environment.

Generally, when four IMS subsystems exist, four global option modules are required. However, as shown in the figure, if you create a global option module for each LICON data set and define an alias name for each global option module, you can design the Integrity checker configuration with two global option modules.

Create global option module LIU@IMSA for IMS subsystem IMSA, and then define alias name LIU@IMSB for LIU@IMSA so that IMS subsystem IMSB can also use LIU@IMSA. Do the same for IMS subsystems IMSC and IMSD.

Tip: If you create two global option modules (LIU@IMSA and LIU@IMSB), the LICON data set names and the runtime options must be the same between the two global option modules. By assigning an alias name and sharing a global option module, the same values are automatically applied; you can prevent errors that might be caused by inconsistency.

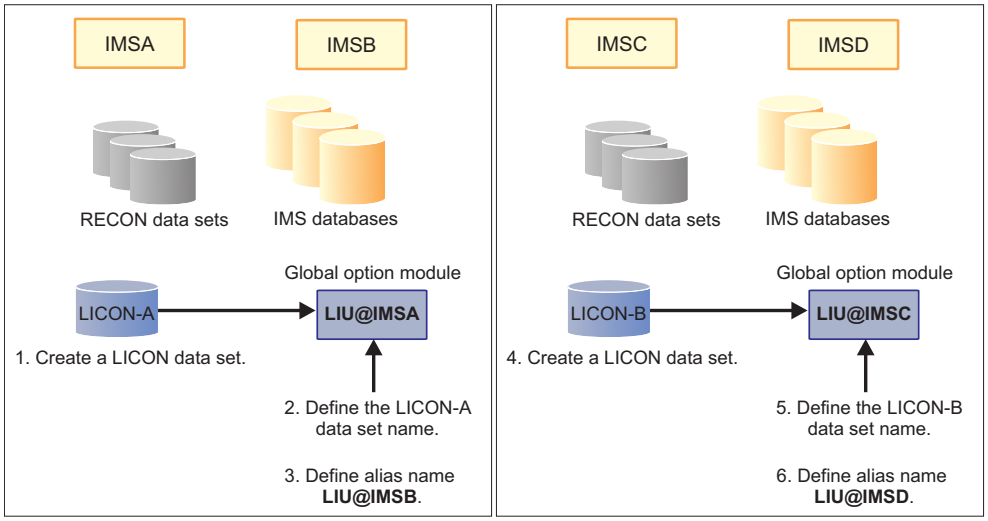


Figure 8. Integrity Checker configuration in multiple data-sharing environments

Multiple IMS subsystems configuration example: XRF complex

To use Integrity Checker in an XRF complex, the active IMS subsystems and the alternate IMS subsystems must use the same LICON data set. If they use different LICON data sets, the change log of the DMB is not inherited during takeover, and Integrity Checker might not detect the DMB inconsistency or might deny DBRC authorization even though the correct DBDLIB or ACBLIB is used.

If the number of active IMS subsystems is one, the number of required LICON data set is also one. The name of the global option module is LIU@INST.

If multiple active IMS subsystems exist, define a LICON data set for each set of RECON data sets, and create one global option module for each LICON data set.

For example, in an XRF complex shown in the following figure, create a global option module for each active IMS subsystem. Create LIU@IMS1 and LIU@IMS3, and then assign alias name LIU@IMS4 for LIU@IMS3.

Then, to apply the same runtime options to the active IMS subsystems and the alternate IMS subsystems, assign alias to the global option modules so that the alternate IMS subsystems can also use the same global option modules.

Specifically, IMS subsystems IMS1 and IMS2 are in a same XRF complex, so the two subsystems must use the same LICON data set. Therefore, assign alias name LIU@IMS2 for LIU@IMS1. IMS subsystems IMS5 and IMS6 are alternate IMS subsystems for IMS3 and IMS4, so all these subsystems must use the same LICON data set. Therefore, assign alias names LIU@IMS5 and LIU@IMS6 for LIU@IMS3.

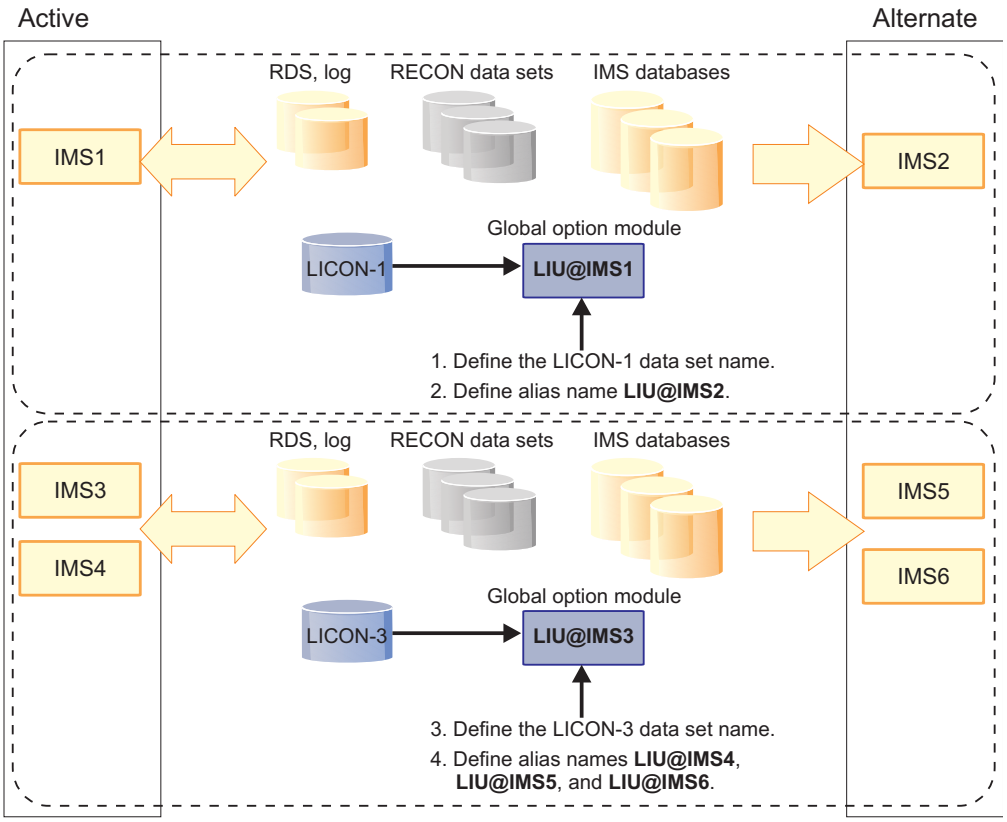


Figure 9. Integrity Checker configuration in an XRF complex

Runtime options and environments

RDEs contain runtime options for DMB verification. Some runtime options can be defined differently for each IMS processing environment.

How the runtime options are specified

The runtime options are commonly used across the environment that uses the global option module. The global default values that are applied to the options when creating new RDEs can be specified for each database.

The runtime options are defined in the global option module. You can specify the following runtime options:

- The data set name of the LICON data set
- DMB verification method (single-step or double-step)
- Routing codes and descriptor codes of Integrity Checker messages
- Option values to control the processing of Integrity Checker
- Global default values for the options used in creating new RDEs:
  - DMB verification option
  - Database access record option
  - Number of expired RDEs to maintain

You specify the option values in the global option module by using the global option module generation macro. The option values that you specify are copied to the RDE when an RDE is created.

Generally, you can use the option values without changing them, but by using the LICON utility, you can change the option values in RDEs after they are created. By changing the values, you can apply different options for each database. For more information about these options, see "Global option module generation macro" on page 93.

How the runtime options are applied

Some runtime options can be set differently for each environment that Integrity Checker operates. Such options are referred to as *DMB verification options*.

DMB verification options control the processing and the action taken when a DMB mismatch is found. You can specify the options for each of the following IMS processing environments:

- Online IMS subsystem
- Batch program
- User load program
- Batch image copy utility
- Database recovery utility

For each environment, you can specify:

- Whether to activate DMB verification.
- Whether DMB verification sets a nonzero return code for the database authorization request to deny it, or only issues a warning message and registers the DMB to the LICON data set.

Using these options, you can control the behavior of DMB verification differently in each environment.

Recommendation: In all environments, set the option to deny the database authorization request when a DMB mismatch is found. By setting this option, you can prevent database corruption when an incorrect DBDLIB or ACBLIB is used.

Attention: Use the option *Only issue a warning message and register the DMB to the LICON data set* with caution. Use this option only when you intend to change the DBD, and you want the updated DBD reflected in the RDE so that the new DMB information is used in future DMB verifications. When this option is used, database corruption caused by use of an incorrect DBDLIB or ACBLIB cannot be prevented.

For example, if you want to use the DBD that is specified by a user load program for future DMB verifications, but you want to restrict DBD changes in other environments, you can have Integrity Checker issue a warning message and update the RDE in the user load program jobs, but deny database authorization when a DMB mismatch is found in other environments.

Historical data maintained in LICON data sets

Integrity Checker stores historical copies of RDEs in the LICON data sets. RDEs record database access logs for database update, load, and unload applications.

Historical copies of DBD definition

Integrity Checker maintains historical copies of RDEs. Each of these copies contains a part of the database description (DBD) that is used in DMB verifications. Whenever a DBD is changed, Integrity Checker creates a new RDE that contains the latest DMB information. The historical copies of RDEs can be used to track the changes made to DBDs.

The content of the current RDE and historical copies of RDEs can be printed in reports. You can use the reports to examine the information in DBDs, review the changes made to DBDs, or to compare the difference between the current DBD and the DBDs used in the past.

To print the content of an RDE in a report, use the LIST.DB command of the LICON utility. For more information, see the following topics:

- To print a report, see "LIST.DB command" on page 115.
- For report field descriptions, see "Output from Integrity Checker" on page 91.

Database access recording option

Integrity Checker records the time stamp of the last database access that is made by update, load, and unload applications in the RDE together with the IMS subsystem name. Such information can be printed in a report, which can be used as evidence in database auditing.

To record database accesses, make the specifications in the RDE by using the global option module or the LICON utility. To use the database access recording option, specify the option for each of the following database access types:

Database access	Access type identified by Integrity Checker
Load utility	Load access
Reorganization utility	Load access
Unload utility	Unload access
Recovery utility	Update access
Utility or application program with the PCB processing option (PROCOPT) of A, I, R, or D	Update access

For instructions to specify these options, see the following topics:

- To set the options in the global option module, see "Global option module generation macro" on page 93.
- To update the options in RDEs, see "INIT.DB command" on page 103.

When Integrity Checker is activated in an IMS online environment, Integrity Checker records access information only for the first database authorization request, and the recorded time is not updated while the IMS online environment is active. To have the recorded information updated while the IMS online environment is active, the ACCESS parameter of the DATABASE macro statement must specify UP or EX (during the system definition stage), or the parameter for the /START DB ACCESS= command must specify UP or EX.

Restrictions: The database access recording option can be used for the utilities or the application programs that are supported by Integrity Checker. However, the following restrictions apply:

- This option is not effective for online reorganization functions or online reorganization utilities that are provided by IMS or IMS Tools.
- For a database access through the High-Speed DEDB Direct Reorganization utility, Integrity Checker identifies the database access type as a database update.
- Database access for load or unload operations is recorded only when the operations are done by IMS standard utilities or IMS Tools utilities.
- If a utility or an application program ends with an error after the Integrity Checker DMB verification process ends successfully, the database access information that is recorded in the RDE is updated in the same way as when the utility or the application program ended successfully, even though the utility or application program ended with an error.
- For index databases or secondary index databases that have no PCBs, Integrity Checker does not record database access information in the RDEs except when the database operation is done by IMS Database Reorganization Expert.

Considerations for activating Integrity Checker

Before you activate Integrity Checker, review these considerations.

Cases where DMB verification is not done
DMB verification is not done in certain environments or for certain application jobs.

For more information, see "Restrictions: Cases where DMB verification is not done" on page 81.

Size of the LICON data sets
Before creating LICON data sets, you can estimate the required storage for the LICON data sets.

For more information, see "Estimating the size of the LICON data set" on page 53.

LICON data set serialization consideration
If you want more than one MVS™ system to access the LICON data set, you must serialize the LICON data set. To access the LICON data set from more than one MVS system, Global Resource Serialization (GRS) or a similar global enqueue product must be installed.

For more information, see "Serializing the LICON data set" on page 59.

RACF security considerations
If you want to protect the LICON data sets with RACF or if you plan to use Integrity Checker in IMS Database Recovery Facility jobs, you must modify RACF security.

For more information, see "Setting up RACF security" on page 60.

Considerations when you alter the definition of an online HALDB or an online DEDB
When you alter the definition of an online HALDB database or an online DEDB database with the following IMS command or IMS utility, you must temporarily stop the DMB verification process.

- Use the INITIATE OLREORG command (with the ALTER option) and the online change (OLC) function to alter the definition of an online HALDB database.

- Use the DEDB Alter utility (DBFUDA00) to alter the definition of an online DEDB database.

After you alter the definition, restart the DMB verification process with new RDEs. Without these steps, the DMB verification process uses the old definitions to verify the DMBs. Therefore, the DMB verification process might deny database authorization requests that use correct IMS control blocks.

For detailed instructions, see the following topics:

- "Altering the definition of a DMB verification-enabled online HALDB by using the HALDB alter function" on page 74
- "Altering the definition of a DMB verification-enabled online DEDB by using the DEDB Alter utility (DBFUDA00)" on page 75

Consideration when you change the maximum size of OSAM data sets for a HALDB

When you change the maximum size of OSAM data sets for a HALDB from 4 GB to 8 GB or 8 GB to 4 GB, you must use the LICON utility and manually create RDEs to reflect the change for the DMB verification process.

For more information, see "Changing the maximum OSAM data set size for a DMB verification-enabled HALDB" on page 77.

Estimating the size of the LICON data set

Before you create LICON data sets, you can estimate the required storage for the LICON data sets.

About this task

Two methods are available for estimating the LICON data set size. The first method is more complicated but results in a precise data set size. The other method is simpler, but results in only an approximate data set size. You can use the simpler estimation method if the number of database segments is less than 20.

Tips:

- To accommodate any future increase in the number of databases, partitions, or DEDB areas, make the LICON data set size larger than the value that you calculate. For example, when you allocate a LICON data set, increase the calculated primary allocation size by 10% to 20%, and increase the secondary allocation size by approximately 10% of the primary allocation size.
- When you create multiple LICON data sets, you can create them on the same volume or on different volumes.

Procedure

For each LICON data set, use one of the following methods to estimate the data set size:

Estimating the precise LICON data set size

Use the following formula to calculate the precise LICON data set size:

```
LICON data set size = total_size_required_for_full-function_databases
                    + total_size_required_for_HALDBs
                    + total_size_required_for_DEDBs
```

total_size_required_for_full-function_databases
The total size of all the full-function databases that are to be processed.

For each full-function database, calculate the required size by using the following formula:

```
(450 + 32 * number_of_DSGs + 52 * number_of_segments
 + 180 * access_info_size) * 16
```

Note: DSG stands for data set group.

total_size_required_for_HALDBs
The total size of all the HALDB partitions that are to be processed.

For each HALDB partition, calculate the required size by using the following formula:

```
(450 + 32 * number_of_DSGs + 52 * number_of_segments
 + 180 * access_info_size) * 16
```

total_size_required_for_DEDBs
The total size of all the DEDB areas that are to be processed.

For each DEDB area, calculate the required size by using the following formula:

```
(220 + 48 * number_of_segments + 180 * access_info_size) * 16
```

Notes:

- If you do not enable the database access recording option (activated by the RECUPD, RECLD, or RECUL keyword in the global option module), *access_info_size* is 0. When this option is enabled, *access_info_size* increases by 1 for each keyword that you specify. For example, if you enable the RECUPD option (one keyword), *access_info_size* is 1. If you enable RECUPD and RECLD options (two keywords), *access_info_size* is 2.

  Related reading: For instructions to activate this option, see "Global option module generation macro" on page 93.
- For these formulas, the units are in bytes.
- Each formula is multiplied by 16 for storing histories of database definitions.

Estimating the approximate LICON data set size

Use the following formula to calculate the approximate LICON data set size:

```
LICON data set size = (32 * number_of_full-function_databases
                     + 32 * number_of_HALDB_partitions
                     + 16 * number_of_DEDB_areas) KB
```

number_of_full-function databases
The number of full-function databases (excluding HALDBs) that are to be processed.

number_of_HALDB_partitions
The number of HALDB partitions that are to be processed.

number_of_DEDB_areas
The number of DEDB areas that are to be processed.

Activating Integrity Checker

Activating Integrity Checker involves preparing the global option modules, LICON data sets, and LIU load modules, and other steps.

Before you begin

Before you activate Integrity Checker, plan an Integrity Checker configuration for your environment, as described in "Planning for Integrity Checker configuration" on page 41.

About this task

To activate Integrity Checker, you first prepare the global option modules and the LICON data sets. Then, by using the DBD or ACB library, register the DMB information for your databases in the LICON data set. When this registration is done, customize the LIU load modules by using either of the following methods:

- Create an alias of the DSPCRTR0 module and add DD statements to JCL or procedures of DBRC, IMS batch application, IMS utility, and IMS Tools (recommended method).
- Merge load modules into the IMS SDFSRESL library.

Finally, activate Integrity Checker by restarting IMS online and running IMS batch applications, IMS utilities, and IMS Tools jobs.

In both IMS batch and online environments, the steps to activate Integrity Checker are the same. These steps can be applied when you reactivate Integrity Checker after Integrity Checker is deactivated.

Procedure

To activate Integrity Checker, complete the following steps:

1. "Setting up the global option modules"
2. "Setting up the LICON data sets" on page 57
3. "Setting up RACF security" on page 60
4. "Customizing LIU load modules" on page 61
5. "Configuring for a BPE-based DBRC environment" on page 67
6. "Verifying that Integrity Checker is activated" on page 67
7. "Restarting IMS online and running IMS batch application, IMS utility, and IMS Tools jobs" on page 68

Setting up the global option modules

Create global option modules and, optionally, assign alias names to the global option modules. At least one global option module must be present when Integrity Checker is started because Integrity Checker uses it to obtain the name of the LICON data set that it uses.

Before you begin

See "Integrity Checker configuration requirements" on page 43 and determine the number of global option modules to create. Also, determine whether to share a global option module across multiple IMS subsystems.

Procedure

1. Create global option modules.

   To create global option modules, use the FABLPGEN procedure and provide the control statements by using the SYSIN input stream. The FABLPGEN procedure is in the SHPSSAMP data set. For an instruction, see "Global option module generation macro" on page 93.

   Tip: To avoid activating Integrity Checker until all of your installation activities are complete, have no global option modules created.

   Related reading: "Options applied to RDEs when multiple global option modules exist with different effective ranges" on page 78
2. If you want more than one IMS subsystems to use a set of options that are defined in a single global option module, use the linkage editor to assign an alias name to the global option module.

   In a database sharing environment where multiple IMS subsystems share databases, the LICON data set and option values that are defined in the global option module must be the same across the IMS subsystems. Assigning aliases is beneficial in such an environment as well as in XRF environments.

   Use the following job to assign an alias name to the global option module.

```
//LKED   JOB
//L      EXEC PGM=IEWL,PARM='XREF,LIST'
//SYSPRINT DD SYSOUT=*
//SYSUT1   DD UNIT=(SYSDA,SEP=(SYSLMOD,SYSLIN)),
//         SPACE=(1024,(100,10),RLSE),DISP=(,DELETE)
//SYSLMOD  DD DISP=SHR,DSN=HPS.SHPSLMD0
//SYSLIN   DD *
 INCLUDE  SYSLMOD(LIU@IMSA)  /* Global option module for IMSID=IMSA */
          ALIAS  LIU@IMSB    /* Alias for IMSID=IMSB                */
          NAME   LIU@IMSA    /* Original name for IMSID=IMSA        */
/*
```

Setting up the LICON data sets

Define and initialize LICON data sets, create RDEs to register the correct DMB information, and serialize the LICON data sets. At least one LICON data set must be present to activate Integrity Checker.

Before you begin

See "Integrity Checker configuration requirements" on page 43 to determine the number of LICON data sets to create.

Procedure

The following steps describe how to set up a single LICON data set. If more than one LICON data set is required for your environment, complete the following steps for each LICON data set.

1. "Defining and initializing the LICON data set" on page 58
2. "Creating an RDE to register DMB information" on page 58
3. "Serializing the LICON data set" on page 59

Defining and initializing the LICON data set

Define the LICON data set by using the DEFINE cluster command, and initialize it by using the INIT.LICON command of the LICON utility.

Procedure

1. Define the LICON data set by using the DEFINE CLUSTER command.

   Sample JCL is in the SHPSJCL0 library, member FABLINIT. The following figure shows the DEFLICON step of the sample JCL, which defines the LICON data set.

   Specify the values for the following parameters. For the CYL parameter, specify the size that you calculated in "Estimating the size of the LICON data set" on page 53.

```
//DEFLICON EXEC PGM=IDCAMS
//SYSPRINT DD   SYSOUT=*
//SYSIN    DD   *
  DELETE  (imshlq.licondsn) CLUSTER ERASE PURGE
  SET MAXCC=0
  DEFINE CLUSTER (NAME(imshlq.licondsn) -
         INDEXED -
         KEY (44 0)  -
         SHR(3 3) -
         NOREUSE -
         VOL (liconvol) -
         CYL (pri sec) -
         RECSZ (4096 32760) -
         FREESPACE (xx xx)) -
         DATA(NAME(imshlq.licondsn.DATA)) -
         INDEX(NAME(imshlq.licondsn.INDEX))
/*
```

2. Initialize the LICON data set by using the INIT.LICON command of the LICON utility.

   Sample JCL is in the SHPSJCL0 library, member FABLINIT. The following figure shows the INILICON step of the sample JCL, which initializes the LICON data set.

   Add the load module data sets that contain the global option module and the LIU load module library to the STEPLIB concatenation.

```
//INILICON EXEC PGM=FABLIU00
//STEPLIB   DD DISP=SHR,DSN=HPS.SHPSLMD0
//          DD DISP=SHR,DSN=IMSVS.SDFSRESL
//FABLPRNT  DD SYSOUT=*
//FABLIN    DD *
  INIT.LICON
/*
```

Creating an RDE to register DMB information

Create an RDE to register the correct DMB information by using the LICON utility.

About this task

This task is optional because if you do not create an RDE with the LICON utility, Integrity Checker creates an RDE automatically when the database is accessed for

the first time after Integrity Checker is activated. In this case, Integrity Checker creates an RDE for each database that is accessed while IMS is online. Therefore, the performance of IMS online processing might decline depending on the number of databases. Consider creating RDEs manually by using the LICON utility to avoid performance degradation.

If you want Integrity Checker to create RDEs automatically, you can skip this task.

Procedure

Use the LICON utility to create an RDE.
Ensure that you provide the following information with the JCL statements:

- Specify the DBD library or the ACB library that contains the DMB information to be used in DMB verifications.
- To verify the user exit routine, add the data set that contains the user exit routine to be used in DMB verifications to the STEPLIB concatenation.

Provide the INIT.DB command in the FABLIN input stream. The RDE is created in the LICON data set that is specified by the global option module found in the STEPLIB concatenation.

The following JCL example is for the LICON utility. `INIT.DB DBD(*)` specifies that an RDE is created for every DBD member in the DBD library IMSVS.DBDLIB.

```
//LICJOB   JOB
//        EXEC PGM=FABLIU00
//STEPLIB   DD DISP=SHR,DSN=HPS.SHPSLMD0
//          DD DISP=SHR,DSN=IMSVS.SDFSRESL
//DBDLIB    DD DISP=SHR,DSN=IMSVS.DBDLIB
//FABLPRNT  DD SYSOUT=*
//FABLIN    DD *
  INIT.DB DBD(*)
/*
```

Serializing the LICON data set

This step is optional. If you want more than one MVS system to access the LICON data set, you must serialize the LICON data set.

Procedure

To access the LICON data set from more than one MVS system, you must install Global Resource Serialization (GRS) or a similar global enqueue product. GRS processes the resource as a global resource. The global enqueue product must propagate the enqueues to all MVS hosts. If the enqueues are not propagated to all hosts that have access to the LICON data set, the data set becomes corrupted and unusable.
The LICON data set is enqueued with the following parameters at the SYSTEMS level:

Parameter	Value
QNAME	'FABLICON'
RNAME	The name of the LICON data set

Setting up RACF security

You can optionally set up RACF security to protect LICON data sets. If you plan to activate Integrity Checker in IMS Database Recovery Facility jobs and if DBRC command and API request authorization support is enabled with RACF, ensure that appropriate permission is given to users.

Procedure

Complete the following steps to set up RACF security:

- "Setting up security for LICON data sets"
- "Setting up security for IMS Database Recovery Facility jobs" on page 61

Setting up security for LICON data sets

This step is optional. If you want to protect the LICON data sets with RACF, complete this step.

About this task

The following procedure provides a brief overview of the security setting for LICON data sets.

For more information about the security setting of the started tasks, see the topics that describe how to associate started procedures and jobs with user IDs in the *z/OS Security Server RACF System Programmers Guide* and in the *z/OS Security Server RACF Security Administrators Guide*.

Procedure

To use RACF to protect the LICON data sets, define data set profiles for the LICON data sets. Also, because LICON data sets are accessed in each environment, consider the following requirements in both IMS online environment and batch environment.

IMS online environment

For IMS online processing, access to the LICON data set is done by the DBRC region. In this case, the DBRC region must be assigned a user ID, preferably by using the RACF STARTED class. This assignment can also be done by using the RACF started task table (ICHRIN03) or the USER= and PASSWORD= values on the DBRC job or the task JCL. Give UPDATE access authority to the LICON data set for the user ID assigned to the DBRC region.

The following list contains an example of the statements that are used to create and enable LICON data set protection by using RACF.

```
AG licongrp
AU liconusr DFLTGRP(licongrp)
RDEF STARTED dbrcrgn.* STDATA( USER(liconusr) GROUP(licongrp))
ADDSD liuhlq.licon UACC(NONE)
PE liuhlq.licon ID(licongrp) ACCESS(UPDATE)
```

AG *licongrp*
Creates a RACF group named *licongrp*.

AU *liconusr* **DFLTGRP(***licongrp***)**
Creates a RACF user ID of *liconusr* and assigns the default group *licongrp*.

RDEF STARTED *dbrcrgn***.* STDATA(USER(***liconusr***) GROUP(***licongrp***))**
Defines the STARTED class profile, which will assign the user ID to the *dbrcrgn* procedure. This statement assumes that the PDS member name of the procedure that is started is *dbrcrgn*. This statement assigns user ID *liconusr* to the started procedure.

ADDSD *liuhlq.licon* **UACC(NONE)**
Defines a data set profile for the LICON data set.

PE *liuhlq.licon* **ID(***licongrp***) ACCESS(UPDATE)**
Gives the *licongrp* group UPDATE access to the LICON data set.

Batch environment
The user ID created for the DBRC online region cannot be used because jobs can be submitted by many different users. The user ID will be used if the ID is correctly assigned through the use of the RACF STARTED class by coding entries for job names in the STARTED class and associating those entries with the user ID. However, the STARTED class is used only when the batch jobs are started with the MVS START command. Jobs submitted to a JES reader will not invoke a call to the STARTED class. Therefore, they might not be assigned a user ID that allows appropriate access to the LICON data set. In this case, all users authorized to run batch jobs must be identified and connected to a group that has UPDATE access to the LICON data set.

Setting up security for IMS Database Recovery Facility jobs

If you plan to activate Integrity Checker in IMS Database Recovery Facility jobs, complete this step.

Procedure

When you activate Integrity Checker in an IMS Database Recovery Facility job, Integrity Checker uses the DBRC command utility and the DBRC API. If you protect the DBRC command and DBRC API request authorization support with RACF by permitting appropriate user access to the profiles, you must permit appropriate users of jobs to use the following DBRC commands and DBRC API requests:

DBRC command
LIST.RECON

DBRC API requests

- STARTDBRC
- STOPDBRC
- RELBUF
- QUERY,TYPE=DB
- QUERY,TYPE=PART

For more information about the RACF settings for DBRC commands and DBRC API requests, see the topic "DBRC security" in *IMS System Administration*.

Customizing LIU load modules

Customize the LIU load modules to activate Integrity Checker.

Before you begin

See "LIU load module library customization" on page 41 to determine which method you use to customize the LIU load modules.

Procedure

Customize the LIU load modules by using either of the following methods:

- "Method 1. Customizing LIU load modules by creating alias name DSPCRTR0"
- "Method 2. Customizing LIU load modules by merging into the IMS SDFSRESL library" on page 65

Method 1. Customizing LIU load modules by creating alias name DSPCRTR0

Create an alias name DSPCRTR0, APF-authorize the LIU load module library, and add DD statements to JCL and procedures of DBRC, IMS batch applications, IMS utilities, and IMS tools.

Procedure

1. Create alias name DSPCRTR0 by link-editing the FABLRTR0 load module.

   Complete this step if either of the following conditions apply:

   - You are activating Integrity Checker for the first time.
   - You removed the alias name DSPCRTR0 by completing the steps in "Deactivating Integrity Checker when IMS Library Integrity Utilities is installed as a component of an IMS tools solution pack" on page 89 and you want to reactivate Integrity Checker.

     If you are reactivating Integrity Checker and the DSPCRTR0 alias that was created in the last activation still exists, you can skip this step.

   You can use the following JCL example to create alias name DSPCRTR0. This JCL is in the SHPSJCL0 library, member FABLALSC.

   When the job ends, confirm that the return code is 0.

```
//FABLALSC JOB
//*--------------------------------------------------------------------
//*   STEP1: Add the alias DSPCRTR0
//*--------------------------------------------------------------------
//LINK   EXEC PGM=IEWL,REGION=0M,
//   PARM='SIZE=(880K,64K),LET,LIST,NCAL,RENT,REFR,XREF'
//* IEWL = IEWBLINK
//*
//SYSPRINT DD  SYSOUT=*
//SYSLMOD  DD  DISP=OLD,DSN=LIU.SHPSLMD0  LIU target load module lib
//SYSUT1   DD  UNIT=SYSDA,SPACE=(CYL,(10,1))
//* CAUTION!!!
//*   SPECIFY SHPSLMD0 TO THE INCLUDE STATEMENT.
//*   IF YOU SPECIFY AHPSMOD0 TO THE INCLUDE STATEMENT,
//*   THE NON-ACCEPTED CHANGES WILL BE DELETED.
//SYSLIN   DD  *
  ENTRY    FABLRTR0
  INCLUDE  SYSLMOD(FABLRTR0)
  ALIAS    DSPCRTR0
  NAME     FABLRTR0(R)
/*
```

2. APF-authorize the LIU load module library.

   The LIU load module library and the load module data sets that contain the global option modules must be APF-authorized.

3. Add DD statements to JCL and procedures of DBRC, IMS batch applications, IMS utilities, and IMS tools.

   You must add DD statements to JCL and cataloged procedures for all the jobs that you want to activate Integrity Checker in. These JCL and procedures include those for DBRC, IMS batch applications, IMS utilities, and IMS Tools jobs that update IMS databases.

   Important: For integrity, ensure that all JCL and procedures that might change databases meet the following STEPLIB DD requirements.

   Add the following DD statements:

   STEPLIB DD
   Add the load module data sets that contain the global option module and the LIU load module library to the STEPLIB concatenation.

   The LIU load module library must be concatenated before the IMS load module library and must be APF-authorized.

   If you want Integrity Checker to detect changes in the logic of IMS user exits, which include randomizing routines, segment edit/compression exit routines, and HALDB or DEDB partition selection exit routines, also include the exit load modules in the STEPLIB concatenation. Integrity Checker does not check the user exit load modules in the LPA, ELPA, or LNKLST.

   FABLPRNT DD
   Optionally, you can specify the FABLPRNT DD statement in your procedures. This statement causes Integrity Checker to generate messages in the DD.

   If this statement is specified, Integrity Checker writes messages into this DD in addition to issuing the WTO macro. Each message contains a time stamp in its prefix, and you can easily identify the messages in relation to the authorization request from your application programs.

   FABLSNAP DD
   Optionally, you can specify the FABLSNAP DD statement in your online DBRC procedure. This statement causes Integrity Checker to generate diagnostic information for the VSAM control blocks when Integrity Checker gets a VSAM error. For DL/I batch jobs, you do not need to specify this DD statement because the jobs issue an abend dump when they get a VSAM error.

Example

The following figures show examples of the procedures.

```
//       PROC RGN=64M,DPTY='(14,15)',SOUT=A,
//            IMSID=SYS3,SYS2=,IMSPLEX=
//IEFPROC EXEC PGM=DFSMVRC0,REGION=&RGN,
//            DPRTY=&DPTY,PARM='DRC,&IMSID,IMSPLEX=&IMSPLEX'
//*************************************************
//*
//STEPLIB  DD DSN=HPS.SHPSLMD0,DISP=SHR     <<---- STEPLIB DD
//         DD DSN=IMS.&SYS2.SDFSRESL,DISP=SHR
//PROCLIB  DD DSN=IMS.&SYS2.PROCLIB,DISP=SHR
//JCLOUT   DD SYSOUT=(A,INTRDR)
//JCLPDS   DD DSN=IMS.&SYS2.PROCLIB,DISP=SHR
//SYSUDUMP DD SYSOUT=&SOUT
//SYSABEND DD SYSOUT=&SOUT
//FABLPRNT DD SYSOUT=&SOUT                  <<---- FABLPRNT DD
//FABLSNAP DD SYSOUT=&SOUT                  <<---- FABLSNAP DD
```

Figure 10. Example of DBRC procedure for a non-BPE-based DBRC region

```
//DBRC    PROC RGN=0M,SOUT=A,
//             RESLIB='IMS.SDFSRESL',
//             BPECFG=BPECONFG,
//             DBRCINIT=000,
//             IMSID=IMS1,
//             PARM1='BPEINIT=DSPBINI0'
//*
//DBRCPROC   EXEC PGM=BPEINI00,REGION=&RGN,
// PARM='BPECFG=&BPECFG,DBRCINIT=&DBRCINIT,IMSID=&IMSID,&PARM1'
//*
//STEPLIB  DD DSN=HPS.SHPSLMD0,DISP=SHR     <<---- STEPLIB DD
//         DD DSN=&RESLIB,DISP=SHR
//         DD DSN=SYS1.CSSLIB,DISP=SHR
//PROCLIB  DD DSN=IMS.PROCLIB,DISP=SHR
//SYSPRINT DD SYSOUT=&SOUT
//SYSUDUMP DD SYSOUT=&SOUT
//JCLOUT   DD SYSOUT=(A,INTRDR)
//JCLPDS   DD DSN=IMS.PROCLIB,DISP=SHR
//SYSABEND DD SYSOUT=&SOUT
//FABLPRNT DD SYSOUT=&SOUT                  <<---- FABLPRNT DD
//FABLSNAP DD SYSOUT=&SOUT                  <<---- FABLSNAP DD
```

Figure 11. Example of DBRC procedure for a BPE-based DBRC region

```
//       PROC MBR=TEMPNAME,PSB=,BUF=7,
//            SPIE=0,TEST=0,EXCPVR=0,RST=0,PRLD=,
//            SRCH=0,CKPTID=,MON=N,LOGA=0,FMTO=T,
//            IMSID=,SWAP=,DBRC=,IRLM=,IRLMNM=,
//             BKO=N,IOB=,SSM=,APARM=,
//            RGN=4M,
//            SOUT=A,LOGT=2400,SYS2=,
//            LOCKMAX=,GSGNAME=,TMINAME=,
//            IMSPLEX=
//G      EXEC PGM=DFSRRC00,REGION=&RGN,
//            PARM=(DLI,&MBR,&PSB,&BUF,
//            &SPIE&TEST&EXCPVR&RST,&PRLD,
//            &SRCH,&CKPTID,&MON,&LOGA,&FMTO,
//            &IMSID,&SWAP,&DBRC,&IRLM,&IRLMNM,
//            &BKO,&IOB,&SSM,'&APARM',
//            &LOCKMAX,&GSGNAME,&TMINAME,
//            &IMSPLEX)
//STEPLIB  DD DSN=HPS.SHPSLMD0,DISP=SHR     <<---- STEPLIB DD
//         DD DSN=IMS.&SYS2.SDFSRESL,DISP=SHR
//         DD DSN=IMS.&SYS2.PGMLIB,DISP=SHR
//DFSRESLB DD DSN=IMS.&SYS2.SDFSRESL,DISP=SHR
//IMS      DD DSN=IMS.&SYS2.PSBLIB,DISP=SHR
//         DD DSN=IMS.&SYS2.DBDLIB,DISP=SHR
//PROCLIB  DD DSN=IMS.&SYS2.PROCLIB,DISP=SHR
//IEFRDER  DD DSN=IMSLOG,DISP=(,KEEP),VOL=(,,,99),
//         UNIT=(&LOGT,,DEFER),
//         DCB=(RECFM=VB,BLKSIZE=4096,
//         LRECL=4092,BUFNO=2)
//IEFRDER2 DD DSN=IMSLOG2,DISP=(,KEEP),VOL=(,,,99),
//         UNIT=(&LOGT,,DEFER,SEP=IEFRDER),
//         DCB=(RECFM=VB,BLKSIZE=4096,
//         LRECL=4092,BUFNO=2)
//SYSUDUMP DD SYSOUT=&SOUT,
//         DCB=(RECFM=FBA,LRECL=121,BLKSIZE=605),
//         SPACE=(605,(500,500),RLSE,,ROUND)
//IMSMON   DD DUMMY
//FABLPRNT DD SYSOUT=&SOUT                  <<---- FABLPRNT DD
```

Figure 12. Example of DLIBATCH procedure

Method 2. Customizing LIU load modules by merging into the IMS SDFSRESL library

Back up the IMS SDFSRESL library, and then merge the LIU load modules into the IMS SDFSRESL library.

Procedure

1. Back up the IMS SDFSRESL library.

   When program temporary fixes (PTFs) are released for the DSPCRTR0 module, you must restore the DSPCRTR0 module from the backup to apply the PTFs. Therefore, before merging LIU load modules, you must create a backup of the IMS SDFSRESL library. The backup is also required to deactivate Integrity Checker.
2. Use SMP/E to apply and accept IMS and IMS Library Integrity Utilities maintenance, and ensure that both are at the latest maintenance level.
3. Run the FABLUMD1 job that is in the SHPSJCL0 JCL library.

   This job updates the SMP/E CSI of IMS. It runs SMP/E RECEIVE/APPLY of USERMOD to install the FABLRTR0 module into the IMS SDFSRESL library.

The FABLUMD1 job is shown in "JCL example to install the FABLRTR0 module into the IMS SDFSRESL library."

4. Merge the LIU load modules (FABL* members) in the target library SHPSLMD0 into the IMS SDFSRESL library.

   If this step is not done, when Integrity Checker is activated, an ABENDU0109 load failure occurs for the required LIU load modules.

JCL example to install the FABLRTR0 module into the IMS SDFSRESL library

```
//FABLUMD1 JOB
//*--------------------------------------------------------------------
//*   STEP1: SMP/E RECEIVE/APPLY usermod ZZLIU01 to IMS CSI
//*--------------------------------------------------------------------
//STEP1   EXEC procedure name of IMS SMP/E job
//*
//*
//AHPSMOD0 DD DISP=SHR,DSN=LIU.AHPSMOD0
//*
//SMPPTFIN DD DATA,DLM=@@
++USERMOD(ZZLIU01)                    /*  LIU R2 USERMOD          */
      REWORK(2004058)                 /*                          */
 /*                                                               */
 /* OPTIONAL LIU USERMOD FOR IMS-DBRC FMIDS.                      */
 /* APPLY THIS USERMOD TO IMS-DBRC SMP/E CSI ONLY IF YOU WANT TO  */
 /* INSTALL LIU-MODIFIED VERSION OF DSPCRTR0 INTO YOUR IMS SMP/E  */
 /* CSI.                                                          */
 /*                                                               */
 /* BEFORE APPLYING THIS USERMOD, ALL MAINTENANCE FOR IMS-DBRC    */
 /* DSPCRTR0 MUST BE ACCEPTED OR RESTORED.                        */
 /*                                                               */.
++VER(P115)                           /*  IMS SYSTEM ID/FMID      */
      FMID(FMID of IMS)
                                      /*                          */.
++JCLIN CALLLIBS                      /*  JCLIN FOR LIU MODULES   */
                                      /*                          */.
//LINK   EXEC PGM=IEWL,REGION=0M,
//   PARM='SIZE=(880K,64K),LET,LIST,NCAL,RENT,REFR,XREF'
//SYSPRINT DD  SYSOUT=A
//AHPSMOD0 DD  DISP=OLD,DSN=LIU.AHPSMOD0
//ADFSLOAD DD  DISP=OLD,DSN=IMS.ADFSLOAD
//SYSLMOD  DD  DISP=OLD,DSN=IMS.SDFSRESL
//SYSUT1   DD  UNIT=SYSDA,SPACE=(CYL,(10,1))
//SYSLIN   DD  *
  INCLUDE AHPSMOD0(FABLRTR0)
  INCLUDE ADFSLOAD(DSPCRTR0)
  ENTRY   FABLRTR0
  NAME    DSPCRTR0(R)
/*
++MOD (FABLRTR0) LKLIB(AHPSMOD0)     /*  LIU MODULE MOD ENTRY     */.
@@
//SMPCNTL  DD *
  SET     BDY (GLOBAL).
  RECEIVE S   (ZZLIU01) SYSMODS.
  SET     BDY (TZONE name of IMS).
  APPLY   S   (ZZLIU01).
/*
```

Configuring for a BPE-based DBRC environment

To activate Integrity Checker in an IMS online environment that has a BPE-based DBRC region, you must configure the members of the IMS PROCLIB data set. This step is required only when a BPE-based DBRC is used.

Procedure

1. Set up the BPE configuration parameter member.

   Specify the DBRC user exit list member by using the EXITMBR statement in the BPE configuration parameter member. The BPE configuration parameter member is specified by the BPECFG= keyword in the DBRC procedure that is used for the BPE-based DBRC region in which you want to activate Integrity Checker.

   You can skip this step if the EXITMBR statement for the DBRC user exit list member already exists.

   The following example specifies the EXITMBR statement in a BPE configuration parameter member:

   ```
   #
   # User exit list PROCLIB member specification
   #
   EXITMBR=(member_name,DBRC) /* DBRC user exit list member */
   ```

   For more information about the EXITMBR statement, see the topic "BPE configuration parameter member of the IMS PROCLIB data set" in *IMS System Definition*.

2. Set up the DBRC user exit list member.

   Specify the Integrity Checker load module FABLBIN0 on the EXITDEF statement. The FABLBIN0 module must be specified as a DBRC Request exit in the DBRC user exit list member. The DBRC user exit list member is specified by the EXITMBR statement for DBRC in the BPE configuration parameter member.

   - When you have two or more DBRC user exits, the FABLBIN0 module must be specified as the first member on the EXITDEF statement.
   - Do not specify the ABLIM parameter on the EXITDEF statement.

   The following example specifies the Integrity Checker load module on the EXITDEF statement:

   ```
   ********************************************************************
   * DBRC USER EXIT LIST PROCLIB MEMBER                               *
   ********************************************************************
   #------------------------------------------------------------------#
   # DEFINE a DBRC request user exit.                                 #
   #------------------------------------------------------------------#
   EXITDEF(TYPE=REQUEST,EXITS=(FABLBIN0),COMP=DBRC)
   ```

   For information about the EXITDEF statement, see the topic "BPE exit list members of the IMS PROCLIB data set" in *IMS System Definition*.

Verifying that Integrity Checker is activated

IMS Library Integrity Utilities provides sample JCL for verifying successful activation of Integrity Checker. You can modify the sample JCL and then use it to ensure that Integrity Checker is running correctly.

About this task

This task is optional. Complete this task only if you want to ensure that Integrity Checker is activated.

Procedure

In the SHPSJCL0 library, locate sample JCL member FABLIVP3. Modify the sample JCL by following the instructions in the sample JCL and submit the JCL. Ensure that the job ends without errors.

Restarting IMS online and running IMS batch application, IMS utility, and IMS Tools jobs

When you have done all the steps, you are ready to restart IMS online to activate the DMB verification process.

Procedure

1. Restart IMS online and run IMS batch application jobs, IMS utility jobs, and IMS Tools jobs.
2. Confirm that the DMB verification process is activated by locating the following WTO message:

   ```
   FABL0114I LIU INTEGRITY CHECKER ACTIVATED. IMS VERSION IS version
   ```

Related reference:

"Output from Integrity Checker" on page 91

Maintaining Integrity Checker

To have Integrity Checker prevent database corruptions caused by using incorrect DBDLIBs, ACBLIBs, or RECON data sets, you must maintain the Integrity Checker resources appropriately.

The following topics explain the Integrity Checker maintenance tasks:

- "Maintaining RDEs"
- "Maintaining global option modules" on page 77
- "Maintaining LICON data sets" on page 79
- "Restarting Integrity Checker after an abend" on page 79
- "Applying PTFs to IMS Library Integrity Utilities and to IMS" on page 80

Important: Before you perform maintenance tasks on your databases, you must understand how Integrity Checker maintains RDEs and, if necessary, perform the manual operations that are required for such database maintenance tasks. Maintenance tasks in this context include the following tasks:

- Loading databases
- Reorganizing databases
- Recovering databases
- Changing DBDs
- Changing RECON records, for example, changing the maximum OSAM data set size for a HALDB

Maintaining RDEs

Integrity Checker automatically maintains the RDEs. However, with certain database maintenance tasks, you must use the LICON utility to manually re-create, delete, or expire RDEs.

Use the following topics to learn the maintenance tasks for RDEs that are required for each database maintenance task:

- "RDE maintenance at initial database load"
- "RDE maintenance at database reorganization" on page 70
- "RDE maintenance at database recovery" on page 72
- "RDE maintenance at DBD or RECON change" on page 73

RDE maintenance at initial database load

Integrity Checker stores the DMB information that IMS used to load the database in an RDE, and refers that DMB information as the correct DMB information.

When one of the following tools is used for the initial load of a database, Integrity Checker automatically creates an RDE for the database:

- IMS HISAM Reorganization Reload utility
- IMS HD Reorganization Reload utility
- IMS Database Reorganization Expert
  - IPR Reload Utility
  - Smart Reorg Driver with the REORGINPUT=ULDS option
- IMS High Performance Load
- IMS Online Reorganization Facility
- IMS Fast Path Advanced Tool of IMS Fast Path Solution Pack

If a database is initially loaded with another load application that runs with PROCOPT=L, Integrity Checker does not create an RDE; you must manually create an RDE by using the LICON utility. However, if an RDE does not exist for the database and the runtime option to automatically create an RDE is specified in the global option module (the RDEBUILD=Y option), Integrity Checker creates an RDE automatically.

RDE maintenance at database reorganization

Two types of reorganization are supported for IMS databases: reorganization without a DBD change and reorganization with a DBD change.

For a database reorganization without a DBD change, DMB verifications run while the database is being unloaded and reloaded by using the same DMB information. Because Integrity Checker uses the same RDE, the RDE does not need to be updated.

For a database reorganization with a DBD change, the first DMB verification is done while the database is being unloaded. For this DMB verification, Integrity Checker uses the DMB information before the DBD change. The second DMB verification is done while the database is being reloaded. For this DMB verification, Integrity Checker uses the DMB information that reflects the DBD change. Therefore, before the database is reloaded, the RDE must be re-created by using the updated DBD information.

If you use one of the following tools to reorganize the database, Integrity Checker automatically creates an RDE that contains the DMB information that reflects the DBD change:

- IMS HISAM Reorganization Reload utility
- IMS HD Reorganization Reload utility
- IMS Database Reorganization Expert
  - Smart Reorg utility
  - IPR Reload utility
- IMS High Performance Load
- IMS Online Reorganization Facility (without the ONLINECHANGE(N) option)
- IMS Fast Path Advanced Tool of IMS Fast Path Solution Pack

If you use other tools to reorganize the database, before you reload the database, use the INIT.DB command of the LICON utility to manually create an RDE by specifying the updated DBDLIB and the load library that contains the user exit routine as input to the utility.

If you use IMS Online Reorganization Facility with the ONLINECHANGE(N) option to reorganize the database, before you restart the database, use the INIT.DB command of the LICON utility to manually create an RDE by specifying the updated DBDLIB and the load library that contains the user exit routine as input to the utility.

Considerations when reorganizing databases with IMS Database Reorganization Expert

When you reorganize databases to change the DBD definition by using the Smart Reorg utility of IMS Database Reorganization Expert, Integrity Checker creates new RDEs for the changed databases. The following considerations pertain to the maintenance of RDEs.

When Integrity Checker fails to create RDEs

When Integrity Checker fails to create an RDE for a reason such as insufficient space in the LICON data set, it issues error messages. When you receive error messages, to secure the consistency of DMBs, you must confirm whether the RDEs contain the latest DMB information, and, if necessary, create new RDEs.

1. Check the time stamp of the RDEs.

   Run the LIST.DB command of the LICON utility by specifying the reorganized databases as input. From the listing that is generated by the job, check the time stamp to see when the RDE was created. If the time stamp matches the time of the reorganization, the latest RDE was created during the last reorganization.
2. Ensure that the reorganization of the databases completed successfully.

   Examine the messages and reports that are generated by the Smart Reorg utility of IMS Database Reorganization Expert to confirm that the reorganization of the databases completed successfully.
3. If the databases were reorganized successfully but RDEs are not the latest, create new RDEs.
   a. Resolve the cause of the error that occurred while creating new RDEs. For example, by defining a larger LICON data set and copying the data to the new LICON data set.
   b. Create new RDEs by using the INIT.DB command of the LICON utility and specifying the updated DBD library and the load library that contains the user exit routine as input. Alternatively, you can create new RDEs by running the reorganization job again.

When you restore the changed databases to their original state

If you decide not to use the reorganized database created with NAMESWAP=NO option or restore the databases and DBD definitions to the original state, you must also restore the RDEs. Run the RECOVER.DB command of the LICON utility.

To restore the RDE, both of the following requirements must be satisfied:

- Global option module specifies that historical copies of RDEs are kept (GENMAX=1 or higher).
- The RDE that was used before the DBD change is stored in the LICON data set as an expired RDE.

If the expired RDE does not exist, you must use the INIT.DB command of the LICON utility to manually create an RDE that contains the DMB information of the original state.

Considerations when reorganizing databases with IMS Fast Path Advanced Tool of IMS Fast Path Solution Pack

When you reorganize DEDB areas to change the DBD definition by using the Change function or the combination of the Unload and Reload functions, Integrity Checker creates new RDEs for the changed areas. The following considerations pertain to the maintenance of RDEs.

When Integrity Checker fails to create RDEs

When Integrity Checker fails to create an RDE for a reason such as insufficient space in the LICON data set, it issues error messages. When you receive error messages, to secure the consistency of DMBs, you must confirm whether the RDEs contain the latest DMB information, and, if necessary, create new RDEs.

1. Check the time stamp of the RDEs.

   Run the LIST.DB command of the LICON utility by specifying the reorganized areas as input. From the listing that is generated by the job, check the time stamp to see when the RDE was created. If the time stamp matches the time of the reorganization, the latest RDE was created during the last reorganization.
2. Ensure that the reorganization of the areas completed successfully.

   Examine the messages and reports that are generated by IMS Fast Path Advanced Tool to confirm that the reorganization of the areas completed successfully.
3. If the areas were reorganized successfully but RDEs are not the latest, create new RDEs.
   a. Resolve the cause of the error that occurred while creating new RDEs. For example, by defining a larger LICON data set and copying the data to the new LICON data set.
   b. Create new RDEs by using the INIT.DB command of the LICON utility and specifying the updated ACB library and the load library that contains the user exit routine as input. Alternatively, you can create new RDEs by running the reorganization job again.

When you restore the changed areas to their original state

If you restore the areas and DBD definitions to the original state, you must also restore the RDEs. Run the RECOVER.DB command of the LICON utility.

To restore the RDE, both of the following requirements must be satisfied:

- Global option module specifies that historical copies of RDEs are kept (GENMAX=1 or higher).
- The RDE that was used before the DBD change is stored in the LICON data set as an expired RDE.

If the expired RDE does not exist, you must use the INIT.DB command of the LICON utility to manually create an RDE that contains the DMB information of the original state.

Considerations when reorganizing databases with IMS Fast Path Basic Tools of IMS Fast Path Solution Pack

When you reorganize a DEDB area to change the DBD definition, Integrity Checker does not create an RDE for the reorganized area. Before you use the reorganized area, you must create an RDE for the area by using the LICON utility.

RDE maintenance at database recovery

Two recovery types are supported for IMS databases: recovery that recovers the database to the state that is defined by the current DBD, and recovery that recovers the database to a state before a DBD change (time stamp recovery).

When you recover the database to the state that is defined by the current DBD, Integrity Checker verifies the DMB by using the latest DMB information.

When you recover the database to the state before a DBD change with a time stamp recovery, Integrity Checker verifies the DMB by using the DMB information that was used when the database backup was created. Therefore, you must restore the RDE that contains the DMB information that was used when the backup was created.

If you use one of the following tools to recover the database, Integrity Checker automatically restores the RDE that was used when the backup was created:

- IMS High Performance Image Copy
- IMS Database Recovery Facility of IMS Recovery Solution Pack

However, to have Integrity Checker automatically restore the RDE, both of the following requirements must be satisfied:

- Global option module specifies that historical copies of RDEs are kept (GENMAX=1 or higher).
- The RDE that was used when the backup was created is stored in the LICON data set as an expired RDE.

If the expired RDE does not exist, use the INIT.DB command to manually create an RDE that contains the DMB information that was used before the DBD change.

When you run a time stamp recovery at a Remote Site Recovery (RSR) active site, you must recover the correct RDE at the RSR tracking site before running a recovery job at the RSR tracking site.

Considerations when recovering databases with IMS Database Recovery Facility

If you recover a database with the time stamp recovery function of IMS Database Recovery Facility and use old DBDs to rebuild index databases by using IMS Index Builder during the recovery, you must create RDEs for the old DBDs before rebuilding the index databases.

RDE maintenance at DBD or RECON change

If you change a DBD or a RECON record, you must have Integrity Checker make change in the RDE so that Integrity Checker uses the updated DMB information to verify the DMBs.

Except for cases where RDEs are created automatically during initial database load or database reorganization, whenever you change a DBD, re-create the RDE by using the INIT.DB command of the LICON utility to reflect the updated DBD information.

There might be cases where you want to roll back a DBD change and use the DBD that was used before the change. If you restore the DBD that was used before the change, Integrity Checker must refer to the DMB information that reflects the DBD before the change as the correct DMB information. For such cases, except for cases where RDEs are restored automatically during database recovery, restore the expired RDE manually by using the RECOVER.DB command of the LICON utility.

To restore the RDE, both of the following requirements must be satisfied:

- Global option module specifies that historical copies of RDEs are kept (GENMAX=1 or higher).
- The RDE that was used before the DBD change is stored in the LICON data set as an expired RDE.

If the expired RDE does not exist, you must use the INIT.DB command of the LICON utility to manually create an RDE that contains the DMB information that was used before the DBD change.

Altering the definition of a DMB verification-enabled online HALDB by using the HALDB alter function:

When you alter the definition of an online HALDB database that has DMB verification turned on by using the HALDB alter function of IMS, you must stop the DMB verification process and then restart the DMB verification process after the HALDB is altered.

About this task

When you alter the definition of an online HALDB database by using the INITIATE OLREORG command with the ALTER option and an online change command (which are both IMS commands), you must temporarily stop the DMB verification process. After the new definition is applied to the online database, restart the DMB verification process with the new RDEs that contain the new definition. Without these steps, the DMB verification process uses the old definitions to verify the DMBs. Therefore, the DMB verification process might deny database authorization requests that use correct IMS control blocks.

Note: The ALTER option is supported in IMS Version 13 and later.

The following figure shows the steps to alter the definition of an online HALDB database that has DMB verification turned on.

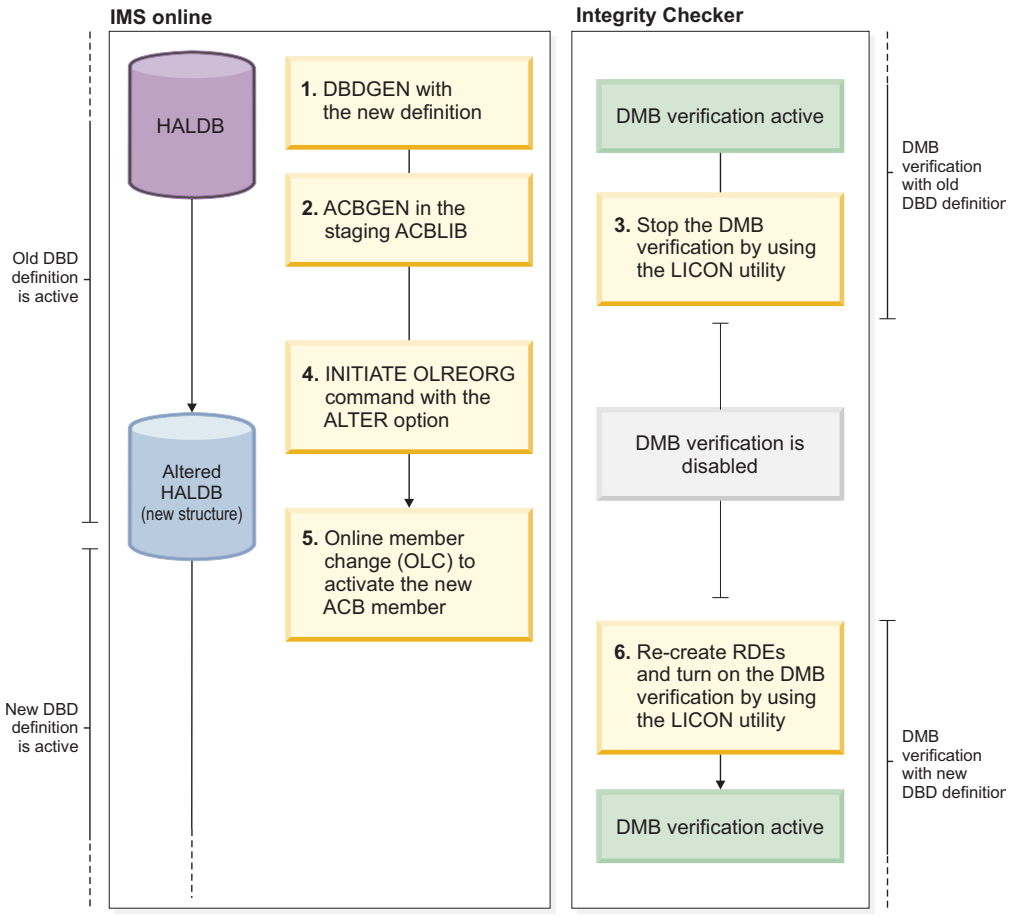


Figure 13. Steps to alter an online HALDB that has DMB verification turned on

Procedure

1. Run the DBDGEN procedure with the new definition to update the DBD member in the DBD library with the new database structure.
2. Run the ACBGEN utility to update the ACB member that is in the staging ACBLIB.
3. Use the LICON utility of the Integrity Checker utility to stop the DMB verification process. To do so, issue the following LICON utility command:

   ```
   CHANGE.DB DBD(dbname) CHECKON(N)
   ```

4. Apply the new definition to the online database by issuing the INITIATE OLREORG command with the OPTION(ALTER) parameter.

   IMS reads the staging ACB library and applies the changes to the online database.

   The ALTER option is supported only by the type-2 format of the command. For more information about the command, see the topic "INITIATE OLREORG command" in *IMS Commands*.
5. Use the ACB member online change (OLC) function to activate the new ACB member.

   The new DBD definition is applied to the ACBLIB and is used to access the altered database.

   For more information about the ACB member online change function, see the topic "Changing or adding IMS.ACBLIB members online" in *IMS System Administration*.
6. Use the LICON utility of the Integrity Checker utility to re-create the RDEs to reflect the new definition and start the DMB verification process. To do so, issue the following LICON utility command:

   ```
   INIT.DB DBD(dbname) CHECKON(Y,D) REPLACE
   ```

   The DMB verification process starts and uses the new DBD definition.

Altering the definition of a DMB verification-enabled online DEDB by using the DEDB Alter utility (DBFUDA00):

When you alter the definition of an online DEDB database that has DMB verification turned on by using the DEDB Alter utility (DBFUDA00) of IMS, you must stop the DMB verification process and then restart the DMB verification process after the DEDB is altered.

About this task

When you use the DEDB Alter utility (DBFUDA00) to alter the definition of an online DEDB, you must temporarily stop the DMB verification process. After the new definition is applied to the online database, restart the DMB verification process with the new RDEs that contain the new definition. Without these steps, the DMB verification process uses the old definitions to verify the DMBs. Therefore, the DMB verification process might deny database authorization requests that use correct IMS control blocks.

Note: The DEDB Alter utility is supported in IMS Version 13 and later.

The following figure shows the steps to alter the definition of an online DEDB that has DMB verification turned on.

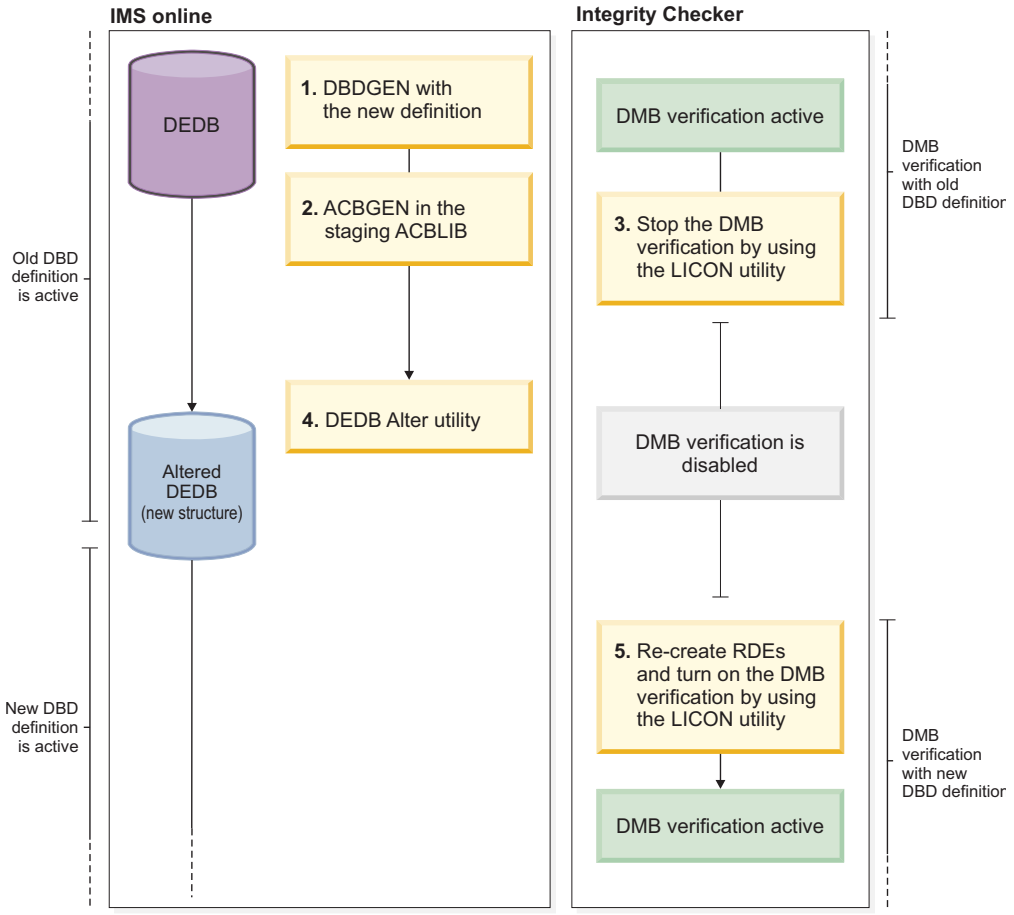


Figure 14. Steps to alter an online DEDB that has DMB verification turned on

Procedure

1. Run the DBDGEN procedure with the new definition to update the DBD member in the DBD library with the new database structure.
2. Run the ACBGEN utility to update the ACB member that is in the staging ACBLIB.
3. Use the LICON utility of the Integrity Checker utility to stop the DMB verification process. To do so, issue one of the following LICON utility commands:

Changed definition	LICON utility command
Altering a DEDB area	`CHANGE.DB DBD(dbname) AREA(areaname) CHECKON(N)`
Replacing the randomizer	`CHANGE.DB DBD(dbname) CHECKON(N)`

4. Run the DEDB Alter utility to apply the changes to the online DEDB.

   The new DBD definition is applied to the ACBLIB and is used to access the altered database.

   For more information about the DEDB Alter utility, see the topic "DEDB Alter utility (DBFUDA00)" in *IMS Database Utilities*.
5. Use the LICON utility of the Integrity Checker utility to re-create the RDEs to reflect the new definition and start the DMB verification process. To do so, issue one of the following LICON utility commands:

Changed definition	LICON utility command
Altering a DEDB area	`INIT.DB DBD(dbname) AREA(areaname) CHECKON(Y,D) REPLACE`
Replacing the randomizer	`INIT.DB DBD(dbname) CHECKON(Y,D) REPLACE`

The DMB verification process starts and uses the new DBD definition.

Changing the maximum OSAM data set size for a DMB verification-enabled HALDB:

When you change the maximum size of OSAM data sets for a HALDB from 4 GB to 8 GB or 8 GB to 4 GB, you must use the LICON utility and manually create RDEs to reflect the change for the DMB verification process.

About this task

IMS supports the capability to change the maximum size of OSAM data sets for a HALDB from 4 GB to 8 GB or from 8 GB to 4 GB. When you change the maximum size of OSAM data sets for a HALDB, you must also re-create RDEs. If you do not re-create RDEs, the DMB verification process uses the old definition to verify the DMBs and the process might deny database authorization requests that use correct IMS control blocks.

Procedure

Follow the instructions in the topic "The maximum size of OSAM data sets and HALDB databases" in *IMS Database Administration* to change the maximum size of the data sets. After you issue the CHANGE.DB command with the OSAM8G keyword or the NOOSAM8G keyword, use the LICON utility of the Integrity Checker utility to re-create the RDEs for all of the partitions to reflect the new definition. To do so, issue the following LICON utility command:

```
INIT.DB DBD(haldb_master) REPLACE
```

Then, continue with the steps in *IMS Database Administration* to make the changes effective.

Maintaining global option modules

You must maintain global options modules so that Integrity Checker applies appropriate values when creating RDEs. When multiple global option modules exist with different effective ranges, Integrity Checker uses its precedence rule to determine which options to apply in creating new RDEs.

See the following topics to maintain global option modules:

- "Changing the global option module"
- "Options applied to RDEs when multiple global option modules exist with different effective ranges" on page 78

Changing the global option module

To change the behavior of Integrity Checker or the default options used for creating new RDEs, change the global option module.

About this task

Global option modules contain the options for controlling the behavior of Integrity Checker and options that are applied when creating new RDEs. There might be

times when you want to change these options.

Procedure

To change the global option module, delete it and create a new one.
The global option values specified in the module are applied in creating new RDEs; replacing the module does not affect any existing RDEs.
If you want the values in the new global option module to be applied to the existing RDEs, by using the DELETE.DB or EXPIRE.DB command of the LICON utility, delete or expire the existing RDEs that correspond to the global option module, and create new ones.

Related tasks:

"Setting up the global option modules" on page 56

Related reference:

"DELETE.DB command" on page 112

Options applied to RDEs when multiple global option modules exist with different effective ranges

The effective range of a global option module is either the installation level or IMS subsystem level. When multiple global option modules with different effective ranges exist, the option values applied when creating an RDE are inherited from multiple global option modules.

You create each global option module with the required effective range for your environment, but you can also create multiple global option modules in different effective ranges.

For example, you have multiple non-data-sharing IMS environments and you create a LICON data set for each environment, but you want to apply some common options. In this case, you can create one global option module for each IMS environment to apply unique options to each environment (global option module at the IMS subsystem level), and one global option module that contains common options to apply to all the IMS environments (global option module at the installation level).

When multiple global option modules exist with different effective ranges, Integrity Checker uses the following precedence rules to determine the options to apply in creating new RDEs. The same rules are also used when you create RDEs with the LICON utility.

1. **Values hardcoded in Integrity Checker**
   In all the five IMS environments (online IMS subsystems, batch jobs, user load programs, batch image copy jobs, and database recovery jobs), the default values for the verification options are hardcoded as follows:
   - DMB verification is done.
   - If a mismatch is found, Integrity Checker denies authorization to access the database.
   - No expired RDE are kept in the LICON data set (GENMAX=0).
2. **Global option module at the installation level**
   If Integrity Checker finds LIU@INST or LIUGINST in the execution libraries, it loads the global option module at the installation level and uses it. The values that you specified in LIU@INST or LIUGINST override the default values hardcoded in Integrity Checker.

If Integrity Checker finds both LIU@INST and LIUGINST, Integrity Checker ignores LIUGINST and uses LIU@INST.

3. **Global option module at the IMS subsystem level**
   If Integrity Checker finds LIU@*imsid* or LIUG*imsid* that is associated with the IMS subsystem it runs in, it loads the global option module at the IMS subsystem level and uses it. The values that you specified in LIU@*imsid* or LIUG*imsid* override both the values in the global option module at installation level and the default values hardcoded in Integrity Checker.

   If Integrity Checker finds both LIU@*imsid* and LIUG*imsid*, Integrity Checker ignores LIUG*imsid* and uses LIU@*imsid*.

4. **FABLIN parameters that are provided in the LICON utility job run**
   If Integrity Checker finds any parameters that specify verification option values in the INIT.DB control statement of the LICON utility job (the job to create an RDE), those parameters override any other option values.

If you request Integrity Checker to automatically create an RDE during the first access to the database after the installation of Integrity Checker, Integrity Checker uses the option values in the preceding list except for the fourth one.

These precedence rules apply only for creating new RDEs, that is, when there are no existing RDEs. If an RDE exists, the verification option values that are set in the most recent RDE are carried over to the new RDE.

Maintaining LICON data sets

Because LICON data sets are KSDS data sets, CI/CA could split when Integrity Checker inserts a new RDE record into the LICON data set. Regular reorganization of the LICON data set helps you avoid frequent CI/CA splits.

Procedure

Tip: Frequent CI/CA splits might degrade performance. To avoid this, consider doing a batch registration of RDE, rather than having Integrity Checker create an RDE at the first opening of a database.
To reorganize a LICON data set, complete the following steps:

1. Define the output LICON data set with enough free space.
2. Copy the old LICON data set to the one defined by using the REPRO command of the VSAM access method services (IDCAMS).

   For more information about the REPRO command, see *z/OS DFSMS Access Method Services for Catalogs*.

Restarting Integrity Checker after an abend

When Integrity Checker terminates abnormally, the IMS online subsystems, batch applications, and utilities also terminate.

Procedure

Identify the cause of the error, correct the problem, and restart the IMS online applications, batch applications, or utilities.
If BPE-based DBRC is used, the IMS online subsystem does not terminate when Integrity Checker abnormally terminates. To reactivate Integrity Checker, after you correct the error, restart the IMS subsystem. Do not issue a BPE USEREXIT command until the IMS subsystem is restarted.

Applying PTFs to IMS Library Integrity Utilities and to IMS

If the Integrity Checker modules are merged into the IMS SDFSRESL library, in addition to the standard SMP/E steps, extra steps are required for applying PTFs.

Procedure

Complete the following steps when you apply PTFs:

- For IMS Library Integrity Utilities, after you apply a PTF, merge the members again.
- For IMS, if the PTF updates the DSPCRTR0 module, restore the DSPCRTR0 module before you apply the PTF. After you apply the PTF, create a backup of the IMS SDFSRESL data set, and then link-edit FABLRTR0 and DSPCRTR0 again.

After you apply the PTFs, complete either of the following steps depending on the DBRC environment used:

- For non-BPE based DBRC, restart the IMS online subsystems.
- For BPE-based DBRC, issue the BPE REFRESH USEREXIT command to reload the load modules of Integrity Checker. IMS online subsystems do not need to be restarted.

  For more information about the BPE REFRESH USEREXIT command, see the topic "BPE REFRESH USEREXIT command" in *IMS Commands*.

Preventing database corruption with Integrity Checker

When Integrity Checker is in operation, it alerts you whenever a DMB mismatch is found. When a problem is reported by Integrity Checker, you must identify the cause, determine the action, and correct the problem to prevent database corruptions.

The following topics explain how to address a DMB mismatch:

- "Restrictions: Cases where DMB verification is not done"
- "DMB mismatch in IMS online environment or application jobs" on page 82
- "DMB mismatch during database maintenance and operation" on page 85
- "Addressing a DMB mismatch" on page 86

Restrictions: Cases where DMB verification is not done

DMB verification is not done for IMS batch programs, IMS utility programs, or IMS Tools programs when these jobs are run with DBRC inactive (DBRC=N). Also, even when DBRC is active (DBRC=Y), DMB verification is not done when certain tools are used or under certain conditions.

- Even when DBRC is active, DMB verification is not done for the following utility jobs:

  IMS standard utilities

  - Database Prefix Resolution utility (DFSURG0)
  - MSDB to DEDB Conversion utility (DBFUCDB0)
  - Database Prereorganization utility (DFSURPR0) (for non-HALDBs)
  - Database Change Accumulation utility (DFSUCUM0)
  - Batch Backout utility (DFSDB000)
  - HISAM Reorganization Unload utility (DFSURUL0)
  - DEDB Initialization utility (DFSUMIN0)
  - Database Image Copy utility (DFSUDMP0) (for HALDBs)
  - Database Image Copy2 utility (DFSUDMP0) (for HALDBs)

  IMS Tools products

  - IMS High Performance Prefix Resolution
  - IMS High Performance Pointer Checker (for HALDBs)
  - IMS Fast Path Advanced Tool and IMS Fast Path Basic Tools of IMS Fast Path Solution Pack
- To activate DMB verification in IMS Index Builder jobs, APAR PM53350 must be applied to IMS Index Builder, and IMS Index Builder JCL must specify DBAUTH YES (default). Otherwise, DMB verification is not done.
- DMB verification cannot be used in IMS Fast Path Advanced Tool and IMS Fast Path Basic Tools jobs of IMS Fast Path Solution Pack.
  - DMB verification is supported in IMS Fast Path Online Tools jobs.
  - Integrity Checker can update RDEs and record time stamps when it is called in IMS Fast Path Advanced Tool jobs.
- When a database authorization request is made by the DBRC application programming interface (API), Integrity Checker does not verify the DMB.
- In an XRF environment, the alternate subsystem inherits databases and their authorization from the active subsystem during takeover. Integrity Checker does not verify the DMBs in the alternate subsystem (that is, the new active

subsystem) until the databases are stopped by the /STOP or the /DBR command, and then restarted by the /START command.

- In Fast Database Recovery (FDBR) regions, FDBR does not require authorization for any databases to be recovered. Consequently, Integrity Checker does not verify the DMBs in FDBR regions.

DMB mismatch in IMS online environment or application jobs

Integrity Checker verifies various information in DMBs. Therefore, before you address a DMB mismatch, you must know which elements are verified in DMB verification, how Integrity Checker verifies the DMBs, and the behavior of Integrity Checker when it detects a mismatch.

Subsections:

- "Elements verified in DMB verification"
- "DMB verification methods" on page 83
- "Actions when a DMB mismatch occurs" on page 83

Elements verified in DMB verification

Integrity Checker stores the DMB information that IMS used to load the database in the RDE, and refers to that information as the correct DMB information. Then, when the DMB verification process starts, it uses that information to verify whether the DMB in the DBDLIB or the ACBLIB referred to by the IMS application is correct.

Integrity Checker compares the following information against the information that is stored in the RDE. When a mismatch is found, Integrity Checker determines that an incorrect DMB is used.

Information defined in the DBD
Compares database definition information that is defined in the DBD. However, the following elements are not compared:

- Definitions that are not related to database structure
- Field information

Information defined in the RECON data sets
Compares the HALDB partition information and HALDB OSAM data set size information that is defined in the RECON data sets.

Logic of the user exit routine
DMB information includes the name of the user exit routine. Integrity Checker checks for changes in the logic of that user exit routine.

Integrity Checker calculates the checksum value of the user exit routine and stores it in the RDE. When DMB verification starts, Integrity Checker calculates the checksum of the user exit routine in the STEPLIB, and compares it with the value stored in the RDE. Even if the user exit routine is in an LPA or LINKLST, if you want to check for changes in the logic of the user exit routine, you must specify the library that contains the user exit routine in the STEPLIB.

This check is supported for the following user exit routines. Whether to verify each of these user exit routines can be requested individually by specifying the verification option.

- Randomizing routine
- Segment edit/compression exit routine

- HALDB partition selection exit routine
- DEDB partition selection exit routine

Version ID in the DBD

Compares the version ID in the DBD. Version ID is the 13-character time stamp of when the DBD was created or the character string that is specified on the VERSION keyword of the DBD statement that was supplied for DBDGEN. If the VERSION keyword was not specified, the version ID contains the time stamp of when the DBD was generated.

Unlike the other elements, the version ID is verified only when double-step verification is requested as the DMB verification method. The value is compared in the first step of double-step verification, and when a mismatch is found, the DMB verification process proceeds to the next step to verify other elements.

Even when a mismatch is found between the version IDs, Integrity Checker does not determine a version ID mismatch as a DMB mismatch.

DMB verification methods

For IMS full-function databases, DMB verification supports two methods: single-step verification and double-step verification. The global option module specifies which method to apply. When a method is not specified, single-step verification is applied. For DEDBs, single-step verification is always applied.

Single-step verification

Integrity Checker verifies all elements at once. This method is more reliable than the double-step method, but slower.

Double-step verification

Integrity Checker verifies the version ID of the DMB in the first step. If a mismatch is found between the version IDs, Integrity Checker proceeds to the next step and verifies the other elements. This method is faster than the single-step method, but less reliable.

Recommendation: Specify single-step verification. If you experience a performance problem, consider using double-step verification.

Actions when a DMB mismatch occurs

The behavior of Integrity Checker when it detects a DMB mismatch is controlled by the *DMB verification option*. By using the DMB verification option, you can request either of the following behaviors as the action taken:

- Deny authorization
- Issue a warning and continue

If neither is specified, Integrity Checker denies authorization.

Deny authorization

When the DMB verification option specifies to deny authorization or when the DMB verification option is not specified, Integrity Checker prevents database corruption when it detects a DMB mismatch.

Integrity Checker intercepts DBRC authorization processing and verifies the DMB that is being used. If it detects a mismatch, it returns a non-zero return code and reason code $$ to the DBRC authorization requester. When the requester receives these codes, the requester perceives that DBRC

authorization failed and terminates database processing. Because the access to the database with an incorrect DMB is avoided, the database is safe from corruption.

When the requester receives the DBRC authorization failure notification, the requester issues the following message:

```
DFS047A - UNABLE TO OBTAIN AUTH. RSN=$$
```

After issuing this message, BMP, MPP, or IFP region that runs in the IMS online environment or the batch utility job abends with ABENDU0047, ABENDU3303, or with another abend code.

Integrity Checker also issues the following error messages.

- When a DMB mismatch is found, Integrity Checker issues the following error messages to indicate which value in the DMB differs from the value in the RDE:

  ```
  FABL0204E DMB MISMATCH FOUND FOR DBD: dbdname
  FABL0204E   Field name in the DMB
  FABL0204E   RDE VALUE: the value in RDE
  FABL0204E   ACB VALUE: the value in ACB
  ```

- When a mismatch is found in the user exit routine checksum value, Integrity Checker issues the following error messages to indicate which user exit routine checksum differs from the checksum in the RDE:

  ```
  FABL0209E CHECKSUM MISMATCH FOUND FOR DBD: dbdname
  FABL0209E   Type of the user exit routine
  FABL0209E   MODULE NAME: name of the user exit routine
  ```

Issue a warning and continue

When the DMB verification option specifies to issue a warning and continue, even when a DMB mismatch is found, Integrity Checker allows the requester to access the database.

Attention: When this option is specified, even when a mismatch is found between the RDE and the DMB, Integrity Checker does not restrict database access. Use this option only when you intend to change the DBD and you want Integrity Checker to use the updated DMB information as the correct DMB information.

For example, user load applications match this case. So when you want to do an initial load the database with a user load application, use this DMB verification option.

If you specify this option when you do not intend to change the DBD, and if an incorrect DBDLIB or ACBLIB is used, Integrity Checker allows database access, and the database access might lead to a database corruption.

- When a DMB mismatch is found, Integrity Checker issues the following warning messages to indicate which value in the DMB differs from the value in the RDE:

  ```
  FABL0203W DMB MISMATCH FOUND FOR DBD: dbdname
  FABL0203W   Field name in the DMB
  FABL0203W   RDE VALUE: the value in RDE
  FABL0203W   ACB VALUE: the value in ACB
  ```

- When a mismatch is found in the user exit routine checksum value, Integrity Checker issues the following warning messages to indicate which user exit routine checksum differs from the checksum in the RDE:

```
FABL0208W CHECKSUM MISMATCH FOUND FOR DBD: dbdname
FABL0208W   Type of the user exit routine
FABL0208W   MODULE NAME: name of the use exit routine
```

After issuing the warning messages, Integrity Checker re-creates the RDE and issues the following informational message:

```
FABL0201I RDE CREATED FOR DBD: dbdname
```

In creating a new RDE, Integrity Checker uses the DMB information that is being used at the time when the RDE is created. The original RDE, which was valid until the time the new RDE was created, expires and is kept as the most recent historical copy of the RDE. If the maximum number for keeping expired RDEs exceeds, Integrity Checker deletes the oldest RDE.

DMB mismatch during database maintenance and operation

Integrity Checker might report a DMB mismatch during database maintenance tasks or while you operate on the databases.

Important: When you perform database maintenance tasks, RDEs must also be maintained. For RDE maintenance tasks that are required for each database maintenance task, see "Maintaining RDEs" on page 69.

Subsections:

- "Initial database load"
- "Database reorganization"
- "Database recovery" on page 86
- "DBD change" on page 86

Initial database load

If a DMB mismatch is found during the initial load of the database, use the LICON utility to create an RDE by specifying the DBDLIB and the load library that contains the user exit routine that is used for the initial load, and redo the initial load of the database.

In certain circumstances, Integrity Checker automatically creates an RDE and does not verify the DMBs. For more information about how Integrity Checker maintains RDEs during initial database load, see "RDE maintenance at initial database load" on page 69.

Database reorganization

For a database reorganization that does not accompany a DBD change, DMB verifications run while the database is being unloaded and reloaded. If a DMB mismatch is found, it means that an incorrect DBDLIB or a load library that contains incorrect user exit routine is used. To resolve the problem, see "Addressing a DMB mismatch" on page 86.

For a database reorganization that accompanies a DBD change, the first DMB verification is done while the database is being unloaded. For this DMB verification, Integrity Checker uses the DMB information before the DBD change. The second DMB verification is done while the database is being reloaded. For this DMB verification, Integrity Checker uses the DMB information after the DBD change. If a DMB mismatch is found, it indicates that either a new RDE was not created or an incorrect DBDLIB or a load library that contains incorrect user exit

routine is used. Ensure that a new RDE is created before database reload. For a DMB mismatch caused by other errors, see "Addressing a DMB mismatch."

In certain circumstances, Integrity Checker automatically creates an RDE. For more information about how Integrity Checker maintains RDEs during database reorganization, see "RDE maintenance at database reorganization" on page 70.

Database recovery

When you recover the database to the state that is defined by the current DBD, Integrity Checker verifies the DMB by using the latest DMB information. If a DMB mismatch is found, it means that an incorrect DBDLIB or a load library that contains incorrect user exit routine is used.

If a DMB mismatch is found during a recovery to a state before a DBD change (time stamp recovery), it means that the correct RDE is not restored or an incorrect DBDLIB or a load library that contains incorrect user exit routine is used. Ensure that the correct RDE is restored before recovering the database.

In both cases, for a DMB mismatch caused by other errors, see "Addressing a DMB mismatch."

In certain circumstances, Integrity Checker automatically restores the RDE. For more information about how Integrity Checker maintains RDEs during database recovery, see "RDE maintenance at database recovery" on page 72.

DBD change

If a DMB mismatch is found after a DBD change, ensure that an incorrect DBDLIB, incorrect RECON data sets, or a load library that contains incorrect user exit routine is not used. Also, ensure that the DBD change was done with appropriate procedures, and that the DBDLIB, the RECON data sets, or the user exit routine was regenerated to apply the change. If these steps are not done yet, perform the steps.

If a DMB mismatch is found after restoring a DBD change, ensure that an incorrect DBDLIB, incorrect RECON data sets, or a load library that contains incorrect user exit routine is not used. Also, ensure that the DBD was restored with appropriate procedures, and that the DBDLIB, the RECON data sets, or the user exit routine was regenerated or restored to roll back the change. If these steps are not done yet, perform the steps.

In both cases, for a DMB mismatch caused by other errors, see "Addressing a DMB mismatch."

Addressing a DMB mismatch

When Integrity Checker notifies you about a mismatch, it means that an incorrect DBDLIB, ACBLIB, or RECON data sets are used or a load library that contains incorrect user exit routine is used.

When a DMB mismatch is reported, investigate the cause. The cause can be, for example, errors in JCL modification or in re-creation of data sets. After you identify the cause, specify the correct data set and rerun the IMS job.

If a DBD change was made before the run, ensure that the DBD change was done with appropriate procedures, and that the DBDLIB, the ACBLIB, the RECON data sets, or the user exit routine is regenerated to apply the change. If these steps are not done, perform the steps.

You can use the following methods to identify the cause of the DMB mismatch and address the problem:

Search for the correct DBDLIB, ACBLIB, or RECON data sets that match the RDE
By using the VERIFY.DB command of the LICON utility, you can verify the DBDLIB, the ACBLIB, or the RECON data sets against the DMB information in the RDE.

If you have backups of the DBDLIB or the ACBLIB, you can compare them against the RDE and identify the DBDLIB or the ACBLIB that matches the RDE. If one of the backups match the RDE, you can use that DBDLIB backup or ACBLIB backup as the correct DBDLIB or ACBLIB.

If you maintain several sets of RECON data sets, you can check them against the RDE and identify whether those RECON data sets match the RDE. If a set of RECON data sets matches the RDE, you can use that set of RECON data sets as the correct RECON data sets.

Identify and correct the mismatching element in DBDLIB, ACBLIB, or RECON data sets
Identify the mismatching element in the DBDLIB, the ACBLIB, or the RECON data sets. The content of the RDE can be printed by using the LIST.DB command of the LICON utility, and the content of the DBDLIB, the ACBLIB, or the RECON data sets can be obtained by either of the following methods:

- Use the DBD/PSB/ACB Reversal function to print the content of the DBDLIB or the ACBLIB.
- From a web browser, use the DBD/PSB Map Viewer of Management Console to view the content of the DBDLIB.
- Use the DBRC LIST.DB command to print the content of the RECON data sets.

By comparing the two, correct the mismatching element in the DBDLIB, the ACBLIB, or the RECON data sets. Then, run DBDGEN, PSBGEN, ACBGEN, or issue a DBRC command and rerun the IMS job.

Search for the load library that contains the correct user exit routine
You can check whether the user exit routine is the correct routine by running the VERIFY.DB command of the LICON utility. For the STEPLIB of the LICON utility job, specify the load library that contains the user exit routine to check.

If you have multiple load libraries that each contains user exits, you can search for the correct load library by concatenating the libraries to the STEPLIB and running the VERIFY.DB command.

If the user exit routine used varies depending on the order of the load libraries concatenated to STEPLIB, then change the order of concatenation and run the VERIFY.DB command to identify the correct order of concatenation. After you identify the correct order of concatenation, update the JCL statements.

Deactivating Integrity Checker

Deactivate Integrity Checker if you want to stop using the DMB verification function.

About this task

The DMB verification process is activated when all of the following conditions are met:

- One or more global option modules exist.
- Alias name DSPCRTR0 is defined for the LIU FABLRTR0 load module or Integrity Checker modules are merged into the IMS SDFSRESL library.
- (When used in a BPE-based DBRC environment) DBRC user exit list member is modified for Integrity Checker.

To turn off Integrity Checker, complete one of the following procedures, depending on how IMS Library Integrity Utilities is installed in your environment.

If the LIU load module data set is merged into the IMS SDFSRESL library, the following procedures cannot be applied. You must restore the IMS SDFSRESL library from the backup or reinstall the IMS SDFSRESL library.

Procedure

Complete either of the following tasks to deactivate Integrity Checker:

- "Deactivating Integrity Checker when IMS Library Integrity Checker is installed as a stand-alone product"
- "Deactivating Integrity Checker when IMS Library Integrity Utilities is installed as a component of an IMS tools solution pack" on page 89

Deactivating Integrity Checker when IMS Library Integrity Checker is installed as a stand-alone product

If IMS Library Integrity Utilities is installed as a stand-alone product (that is, not through IMS Tools solution packs), the product target load module data set (SHPSLMD0) contains only the LIU modules. In such an environment, complete the following steps to deactivate Integrity Checker.

Before you begin

If multiple IMS Tools product target libraries are contained in a single data set, instead of completing the following steps, complete the steps in "Deactivating Integrity Checker when IMS Library Integrity Utilities is installed as a component of an IMS tools solution pack" on page 89 to deactivate Integrity Checker.

Procedure

1. Remove the product load module data set and the libraries that contain the global option modules from the STEPLIB concatenation in DBRC JCL, IMS batch application JCL, IMS utility JCL, and IMS Tools JCL.
2. If you use BPE-based DBRC, configure the member of the IMS PROCLIB data set to remove the FABLBIN0 module name from the EXITDEF statement of the DBRC user exit list.

   For more information about the EXITDEF statement, see the topic "BPE exit list members of the IMS PROCLIB data set" in *IMS System Definition*.

3. Complete either of the following steps depending on the DBRC environment used:
   - For non-BPE based DBRC, restart the IMS online subsystems.
   - For BPE-based DBRC, issue the BPE REFRESH USEREXIT command to deactivate Integrity Checker. IMS online subsystems do not need to be restarted.

   For more information about the BPE REFRESH USEREXIT command, see the topic "BPE REFRESH USEREXIT command" in *IMS Commands*.

Deactivating Integrity Checker when IMS Library Integrity Utilities is installed as a component of an IMS tools solution pack

If IMS Library Integrity Utilities is installed as a component of an IMS tools solution pack, all the product load modules are contained in the same data set. In such an environment, complete the following steps to deactivate Integrity Checker.

Procedure

1. Delete alias name DSPCRTR0, which is defined to the LIU FABLRTR0 load module. You can delete the alias name by running the IEHPROGM program.

   You can use the JCL example in "JCL example to remove alias name DSPCRTR0" to run this step. When the job ends, confirm that the return code is zero.
2. Remove the global option module from the STEPLIB concatenation in DBRC JCL, IMS batch application JCL, IMS utility JCL, and IMS Tools JCL.

   If the global option module is created in the load module library of an IMS solution pack, delete the global option module.

   If an alias name is defined for the global option module, delete the alias.
3. If you use BPE-based DBRC, configure the member of the IMS PROCLIB data set to remove the FABLBIN0 module name from the EXITDEF statement of the DBRC user exit list. Then, issue the BPE REFRESH USEREXIT command to deactivate Integrity Checker.

   See the following topics for additional information:
   - For the EXITDEF statement, see the topic "BPE exit list members of the IMS PROCLIB data set" in *IMS System Definition*.
   - For the BPE REFRESH USEREXIT command, see the topic "BPE REFRESH USEREXIT command" in *IMS Commands*.

JCL example to remove alias name DSPCRTR0

Use the following JCL example to remove alias name DSPCRTR0. This JCL is in the SHPSJCL0 library, member FABLALSD.

```
//FABLALSD JOB
//*-------------------------------------------------------------------*/
//*   STEP1: Scratch the alias DSPCRTR0 from SHPSLMD0
//*-------------------------------------------------------------------
//STEP1  EXEC PGM=IEHPROGM
//*
//*
//SYSPRINT DD SYSOUT=*
//liuvol   DD DISP=SHR,UNIT=SYSALLDA,VOL=SER=liuvol
//SYSIN    DD *
  SCRATCH MEMBER=DSPCRTR0,VOL=SYSALLDA=liuvol,                          C
               DSNAME=LIU.SHPSLMD0  LIU target load module lib
/*
```

Figure 15. Removing the alias name DSPCRTR0

Output from Integrity Checker

Output from the Integrity Checker consists of the FABLPRNT data set and the FABLSNAP data set.

FABLPRNT data set

The FABLPRNT data set, which is an optional data set, contains messages issued by Integrity Checker.

If a FABLPRNT DD statement is specified in your procedure, Integrity Checker prints messages in this data set. The messages generated in this data set are the same as the WTO messages. Each message contains a time stamp in its prefix, and you can easily identify the messages in relation to the authorization request from your application programs.

The following figures show messages that are generated in the FABLPRNT data set.

The following messages are printed when no mismatches are found or when the verification option is set to (N), which means the verification option is turned off.

```
18086 20:09:58.63  FABL0101I LIU INTEGRITY CHECKER NOW ACTIVE WITH LICON: HLQ.IMS1.LICON
18086 20:09:58.63  FABL0102I LIU INTEGRITY CHECKER INITIALIZATION COMPLETED
18086 20:09:58.63  FABL0114I LIU INTEGRITY CHECKER ACTIVATED. IMS VERSION IS 15
```

Figure 16. Messages when no mismatches found or the verification option is (N)

The following messages are printed when the verification option is turned on and a mismatch is found. In this example, the verification option is set to (Y,W), which requests Integrity Checker to issue a warning message and create a new RDE when a mismatch is found.

```
18120 14:32:15.42  FABL0101I LIU INTEGRITY CHECKER NOW ACTIVE WITH LICON: HLQ.IMS1.LICON
18120 14:32:15.42  FABL0102I LIU INTEGRITY CHECKER INITIALIZATION COMPLETED
18120 14:32:15.42  FABL0114I LIU INTEGRITY CHECKER ACTIVATED. IMS VERSION IS 15
18120 14:32:18.61  FABL0203W DMB MISMATCH FOUND FOR DBD: DBTEST1
18120 14:32:18.61  FABL0203W   NUMBER OF SEGMENT TYPES
18120 14:32:18.61  FABL0203W   RDE VALUE:    3
18120 14:32:18.61  FABL0203W   ACB VALUE:    2
18120 14:32:18.61  FABL0205E VERIFICATION PROCESS FOR DBTEST1  HAS BEEN STOPPED
18120 14:32:18.61  FABL0205E   REASON: SEVERE DMB MISMATCH FOUND
18120 14:32:18.62  FABL0201I RDE CREATED FOR DBD: DBTEST1
```

Figure 17. Messages when the verification option is (Y,W) and a mismatch is found

The following messages are printed when the verification option is turned on and a mismatch is found. In this example, the verification option is set to (Y,D), which requests Integrity Checker to deny database authorization when a mismatch is found.

```
18120 15:26:14.88  FABL0101I LIU INTEGRITY CHECKER NOW ACTIVE WITH LICON: HLQ.IMS1.LICON
18120 15:26:14.88  FABL0102I LIU INTEGRITY CHECKER INITIALIZATION COMPLETED
18120 15:26:14.88  FABL0114I LIU INTEGRITY CHECKER ACTIVATED. IMS VERSION IS 15
18120 15:26:17.69  FABL0204E DMB MISMATCH FOUND FOR DBD: DBTEST1
18120 15:26:17.69  FABL0204E   NUMBER OF SEGMENT TYPES
18120 15:26:17.69  FABL0204E   RDE VALUE:    3
18120 15:26:17.69  FABL0204E   ACB VALUE:    2
18120 15:26:17.69  FABL0205E VERIFICATION PROCESS FOR DBTEST1  HAS BEEN STOPPED
18120 15:26:17.69  FABL0205E   REASON: SEVERE DMB MISMATCH FOUND
```

Figure 18. Messages when the verification option is (Y,D) and a mismatch is found

FABLSNAP data set

The FABLSNAP data set, which is an optional data set, contains diagnostic information about the VSAM control blocks. This data set is used only when Integrity Checker encounters a VSAM error.

Global option module generation macro

Use the global option module generation macro to create global option modules.

Creating global option modules

To activate Integrity Checker, create at least one global option module that contains the name of the LICON data set. If you want to change the default options of Integrity Checker globally, specify them when you create this module.

About this task

IBM does not supply global option modules. You must create at least one global option module before invoking Integrity Checker.

Procedure

To create a global option module, determine the type of the global option module, then use the FABLPGEN procedure (provided in the SHPSSAMP data set) to create it. Runtime options can be defined by using the SYSIN control statements.
There are two levels of global option modules that can be categorized by their effective range: installation level and IMS subsystem level.

Installation level
To set values that will be effective at the installation level, create a global option module named LIU@INST. The values in this module apply to all the databases that are defined in the IMS environment.

IMS subsystem level
To set values that will be effective at the IMS subsystem level, create a global option module named LIU@*imsid*, where *imsid* is the 4-character ID of the IMS subsystem. The values that you set in this module apply to all the databases that are defined to that IMS subsystem. In accordance with the options assignment rule, they override the values that are set in the LIU@INST module.

Tip: If you want more than one IMS subsystems to use a set of options that are defined in a single global option module, create a global option module for the IMS subsystem level and use the linkage editor to assign an alias to that global option module.

In a database sharing environment where more than one IMS subsystem shares databases, the LICON data set and option values defined in the global option module must be the same across the IMS subsystems. Assigning an alias is beneficial in such a case as well as in XRF environments. For information about how to assign an alias name, see "Setting up the global option modules" on page 56.

In environments where a LICON data set is used across multiple IMS subsystems, assigning an alias name for the global option module to apply the same runtime options for all IMS IDs is a good practice. However, if you want to set runtime options for each IMS ID, instead of assigning an alias name to the global option module, you can create one global option module for each IMS ID. In such a case, except for certain control statement keywords, the keyword parameters must be the same. You can set different parameters for the following control statement keywords:

- VERIFY=

- MSGROUT=
- MSGDESC=
- VERIFYLMT=
- RDEBUILD=
- INITERR=

When you create global option modules, name the modules LIU@*xxxx*. At sign (@) is a code-page-dependent character. If you are working in an environment where you cannot use the at sign (@), name the modules LIUG*xxxx*. Use either format for all the global option modules consistently because maintaining both LIU@*xxxx* and LIUG*xxxx* modules can cause confusion. If Integrity Checker finds both LIU@*imsid* and LIUG*imsid* in the same effective range level, Integrity Checker ignores LIUG*imsid* and uses LIU@*imsid*.

Related concepts:

"Options applied to RDEs when multiple global option modules exist with different effective ranges" on page 78

JCL requirements for the FABLPGEN program

The following JCL requirements must be met to create a global option module with the FABLPGEN program.

Subsections:

- "EXEC statement"
- "DD statements"
- "Control statement keywords" on page 95
- "Example" on page 99

EXEC statement

The EXEC statement must be in the following form.

```
//stepname  EXEC FABLPGEN,MBR=module,SOUT=x
```

MBR= Specifies the name of the global option module. *module* is LIU@INST, LIUGINST, LIU@*imsid*, or LIUG*imsid*.

SOUT=
Specifies the SYSOUT class to be used for SYSPRINT DD.

DD statements

Code the following DD statements to identify the source of input and the placement of output information:

SYSLIB DD
This statement specifies the macro library (SHPSMAC0) provided by IMS Library Integrity Utilities, or one of IMS tools solution packs. This library contains the FABLPGIN macro.

SYSIN DD
This statement specifies the input control statement stream.

SYSLMOD DD
This statement specifies the output data set for global option modules. If you merge the Integrity Checker load modules into the IMS SDFSRESL

library, specify the IMS SDFSRESL library for this DD statement. Otherwise, specify the Integrity Checker load module library for this DD statement.

You can create global option modules in a different library. If you do so, concatenate that library to the STEPLIB DD in JCL and cataloged procedures for all the jobs from which you want to activate Integrity Checker.

Control statement keywords

The control statement formats are as follows:

FABLPGIN
The IBM supplied macro for use in defining the global option module. The syntax of the parameter specifications of this macro is the same as the syntax of an ordinary assembler macro statement.

You must specify the statement label for the FABLPGIN macro. For the statement label, specify the name of the global option module, which is LIU@INST, LIUGINST, LIU@*imsid*, or LIUG*imsid* (in the example in Figure 19 on page 99, LIU@INST beginning at column 1.)

LICON=
Specifies the name of the LICON data set. No system default value is provided for this parameter.

VERIFY=
Specifies the method for verifying the DMBs; either SNGL or DBLE. SNGL specifies single-step verification and DBLE specifies double-step verification. The system default value for this parameter is SNGL.

You can choose either of the following two options for how Integrity Checker verifies the DMB of a full-function database against the DMB information registered in the RDE. Specify your choice in the global option module.

Single-step verification
Integrity Checker verifies all elements at once. This method is more reliable than the double-step method, but slower.

Double-step verification
Integrity Checker verifies the version ID of the DMB in the first step. Version ID is the 13-character time stamp of when the DBD was created or the character string that is specified on the VERSION= keyword of the DBD statement that was supplied for DBDGEN. If the version IDs are not the same, Integrity Checker proceeds to the next step to verify other elements. This method is faster than the single-step method, but less reliable.

For DEDBs, single-step verification is always applied.

Recommendation: Specify single-step verification. If you experience a performance problem, consider using double-step verification.

MSGROUT=
Specifies the message routing codes for write-to-operator (WTO) messages issued by Integrity Checker. You can specify values in the range of 1 - 16. The system default value for this parameter is (2,7,11).

MSGDESC=

Specifies the message descriptor codes for write-to-operator (WTO) messages issued by Integrity Checker. The system default value for this parameter is (7).

VERIFYLMT=

Specifies the maximum number of the mismatch messages to be issued for a DMB. For example, specifying 3 means Integrity Checker does not issue more than three mismatch messages for a DMB.

You can specify any number in the range of 0 - 99. 0 specifies that verification is to be done but no mismatch message issued. 99 specifies that the number of messages is unlimited. The system default value for this parameter is 10.

RDEBUILD=

Specifies whether Integrity Checker automatically creates an RDE. The system default value for this parameter is Y.

Y If no current RDE exists for a DEDB area, a non-HALDB full-function database, or a HALDB partition, Integrity Checker automatically creates an RDE during the first access to it.

N Even when no current RDE exists for a DEDB area, a non-HALDB full-function database, or a HALDB partition, Integrity Checker does not create an RDE during the first access to it.

INITERR=

Specifies whether Integrity Checker abnormally ends, or issues a warning message and stops its processing, when the initialization of Integrity Checker fails. The system default value for this parameter is A.

This option is not effective in an IMS online subsystem that has a BPE-based DBRC region. If you specify this option for such an environment, Integrity Checker stops processing, and the IMS online subsystem continues processing.

A If the initialization of Integrity Checker fails, it ends abnormally together with the IMS online subsystem that has a non-BPE-based DBRC region or the IMS batch job.

W If the initialization of Integrity Checker fails, it issues a warning message and stops its processing. The IMS online subsystem or the IMS batch job continues processing without the Integrity Checker function. However, Integrity Checker ends abnormally if errors occur before the effective value for this option is decided. Such errors are load failures of the following modules:

- FABLRTR*x* (*x*: 8, 9, A, B, C, or D)
- FABLWM0
- FABLAI0
- Global option module

CHECKON=

Specifies the verification option for online IMS subsystems. The system default value for this parameter is (Y,D). You can specify the following options:

Y Check. If you specify Y, you can specify either of the following parameters:

D If a mismatch is found, deny authorization to use the database.

W Issue a warning message and create a new RDE.

N Do not check.

CHECKBAT=

Specifies the verification option for batch jobs. The system default value for this parameter is (Y,D). You can specify the following options:

Y Check. If you specify Y, you can specify either of the following parameters:

D If a mismatch is found, deny authorization to use the database.

W Issue a warning message and create a new RDE.

N Do not check.

CHECKLD=

Specifies the verification option for user load program jobs. The system default value for this parameter is (Y,D). You can specify the following options:

Y Check. If you specify Y, you can specify either of the following parameters:

D If a mismatch is found, deny authorization to use the database.

W Issue a warning message and create a new RDE.

N Do not check.

CHECKIC=

Specifies the verification option for batch image copy jobs. The system default value for this parameter is (Y,D). You can specify the following options:

Y Check. If you specify Y, you can specify either of the following parameters:

D If a mismatch is found, deny authorization to use the database.

W Issue a warning message and create a new RDE.

N Do not check.

CHECKRV=

Specifies the verification option for database recovery jobs. The system default value for this parameter is (Y,D). You can specify the following options:

Y Check. If you specify Y, you can specify either of the following parameters:

D If a mismatch is found, deny authorization to use the database.

W Issue a warning message and create a new RDE.

N Do not check.

CHKRAND=

Specifies whether to verify changes in randomizing routines by checksum. The system default value for this parameter is N. You can specify the following options:

Y Check.

N Do not check.

If CHECKON, CHECKBAT, CHECKLD, CHECKIC, or CHECKRV is set to Y, this specification is effective in each IMS environment.

CHKCOMP=

Specifies whether to verify changes in segment edit/compression routines by checksum. The system default value for this parameter is N. You can specify the following options:

Y Check.

N Do not check.

If CHECKON, CHECKBAT, CHECKLD, CHECKIC, or CHECKRV is set to Y, this specification is effective in each IMS environment.

CHKPSEL=

Specifies whether to verify changes in HALDB partition selection exit routines by checksum. The system default value for this parameter is N. You can specify the following options:

Y Check.

N Do not check.

If CHECKON, CHECKBAT, CHECKLD, CHECKIC, or CHECKRV is set to Y, this specification is effective in each IMS environment.

CHKFPSEL=

Specifies whether to verify changes in DEDB partition selection exit routines by checksum. The system default value for this parameter is N. You can specify the following options:

Y Check.

N Do not check.

If CHECKON, CHECKBAT, CHECKLD, CHECKIC, or CHECKRV is set to Y, this specification is effective in each IMS environment.

GENMAX=

Specifies the maximum number of expired RDEs to be kept in the LICON data set for use in recoveries. The system default value for this parameter is 0 (do not keep expired RDEs). A maximum of 15 RDE copies can be kept.

RECUPD=

Specifies whether to record database update access information. The system default value for this parameter is N. You can specify the following options:

Y Record.

N Do not record.

RECLD=

Specifies whether to record database load access information. The system default value for this parameter is N. You can specify the following options:

Y Record.

N Do not record.

RECUL=

Specifies whether to record database unload access information. The system default value for this parameter is N. You can specify the following options:

Y Record.

N Do not record.

Example

Sample JCL is in the SHPSJCL0 library, member FABLINIT. The following figure shows the CREGOM step of the sample JCL, which creates global option module LIU@INST.

The name of a global option module can be LIU@INST, LIU@*imsid*, LIUGINST, or LIUG*imsid*. Replace LIU@INST in the JCL example to create a module with one of these names.

```
//CREGOM  EXEC FABLPGEN,MBR=LIU@INST,SOUT=A
//C.SYSLIB  DD DISP=SHR,DSN=HPS.SHPSMAC0
//C.SYSIN   DD *
LIU@INST FABLPGIN VERIFY=SNGL,     single step verification           X
               MSGROUT=(2,7,11),   WTO message rouing codes           X
               MSGDESC=(7),        WTO message descritor codes        X
               VERIFYLMT=5,        max number of mismatch messages    X
               CHECKON=(Y,D),      verification option - online       X
               CHECKBAT=(Y,D),     verification option - batch        X
               CHECKLD=(Y,D),      verification option - load         X
               CHECKIC=(Y,D),      verification option - image copy   X
               CHECKRV=(Y,D),      verification option - recovery     X
               GENMAX=3,           max number of expired RDE kept     X
               LICON=imshlq.licondsn
         END
/*
//L.SYSLMOD DD DISP=SHR,DSN=HPS.USERLIB(&MBR)
```

Figure 19. JCL for creating a global option module LIU@INST

LICON utility reference

The LICON utility provides several functions for handling LICON records.

The functions included are:

- Initialize a LICON data set. A LICON data set must be initialized before it is used.
- Create RDE. You can run a single job to register the DMB information for one, some, or all of the DBD/ACBs in the DBD or ACB library specified.
- Change RDE. You can change an RDE at any time after an RDE is created.
- Delete RDE. If an RDE is no longer needed, you can delete it from the LICON data set.
- Make the current RDE expire, and let the subsequent request for database authorization create a new one.
- Recover a current RDE from an expired RDE.
- List the contents of an RDE. You can print a report of the data stored in an RDE.
- Verify DMB in batch.

JCL requirements for the LICON utility

To run the LICON utility program (FABLIU00), supply an EXEC statement and DD statements.

Subsections:

- "EXEC statement"
- "Summary of DD names" on page 101
- "DD statements" on page 101
- "JCL example" on page 102

EXEC statement

The statement must have the following form:

```
// EXEC PGM=FABLIU00,
//      PARM='IMSID=imsid,IMSPLEX=imsplex,DBRCGRP=dbrcgrp'
```

IMSID=*imsid*

A 4-character IMS ID specifying which global option module is to be used at the IMS subsystem level.

This parameter is optional. If you omit it, the LICON utility determines the IMS ID by use of the batch SCD module (DFSVC000) loaded from the IMS load module library.

IMSPLEX=*imsplex*

A 1 - 5 character IMSplex name to be used for RECON data sets. This parameter is optional.

DBRCGRP=*dbrcgrp*

A 1 - 3 character identifier (ID) assigned to a group of DBRC instances that access the same RECON data set in an IMSplex. This parameter is optional.

Summary of DD names

The following table summarizes the DD names for the LICON utility.

Table 3. DD names for the LICON utility

DDNAME	Use	Format	Need
JOBLIB or STEPLIB	Input	PDS	Required
DFSRESLB	Input	PDS	Required
FABLICON	Input and output	KSDS	Required (see Note 1)
FABLPRNT	Output	SYSOUT	Required
FABLIN	Input	SYSIN	Required
DBDLIB	Input	PDS	Optional (see Note 2)
ACBLIB	Input	PDS	Optional (see Note 2)
RECON*x*	Input		Optional (see Note 1)

Notes:

1. If dynamic allocation is used, omit the DD statement.
2. Either DBDLIB or ACBLIB DD statement is required.

DD statements

Code the following DD statements to identify the source of input and the placement of output information:

JOBLIB or STEPLIB DD

Specifies the load module library, which contains the following resources:

- The LICON utility program (FABLIU00)
- The global option modules (installation level and IMS subsystem level)
- The IMS load module library
- The library that contains DFSMDA dynamic allocation members for the RECON data sets. If the RECON*x* DD statement is omitted, the library is required (only for HALDBs)
- The library that contains randomizing routines, segment edit/compression exit routines, HALDB partition selection exit, or DEDB partition selection exit when creating a new RDE or verifying a DMB against an RDE with CHKRAND=Y, CHKCOMP=Y, CHKPSEL=Y, or CHKFPSEL=Y option. Even if the exit routines are placed in the LPA and LINKLST, you must specify the library that contains them.
- The SCI exit routine for the RECON data sets (optional)

DFSRESLB DD

This DD statement is a required DD statement that specifies the library that contains the IMS load modules.

FABLICON DD

This statement defines the LICON data set. Do not use it if you want to make the LICON utility allocate the LICON data set dynamically.

DBDLIB DD

This statement specifies which input DBD library is to be used for the job.

ACBLIB DD

This statement specifies which input ACB library is to be used for the job.

Note: Either the DBDLIB or the ACBLIB DD statement is required. If both the DBDLIB and the ACBLIB DD statements are specified in your JCL, the commands of the LICON utility, except the VERIFY.DB command, use the DBDs in the specified DBDLIB data sets.

FABLPRNT DD
This statement specifies which output data set contains the report.

FABLIN DD
This statement specifies which input control statement stream.

RECON*x* DD
For HALDBs, the RECON*x* DD statement is required. If this DD statement is omitted, DBRC dynamically allocates the data sets by using DFSMDA dynamic allocation members.

JCL example

For a JCL example, see the relevant command topics under "LICON utility reference" on page 100.

Input for the LICON utility

The input for the LICON utility must be provided as FABLIN parameters.

Subsections:

- "Commands"
- "Control statement syntax"

Commands

The following commands are supported:

- INIT.DB
- INIT.LICON
- CHANGE.DB
- DELETE.DB
- EXPIRE.DB
- LIST.DB
- LIST.LICON
- RECOVER.DB
- VERIFY.DB

Control statement syntax

The following list describes the coding conventions that you must follow in writing control statements of the LICON utility.

- A control statement can be coded onto one or more lines.
- A control statement cannot contain two or more commands.
- A command and its parameters must be contained between columns 1 - 72.
- A parameter follows a command separated by one or more blanks. When more than one parameter is coded, they must also be separated by one or more blanks.
- A parameter with parentheses ( ) must be coded on the same line.

- A continuation character must be used if a control statement does not fit within a single input record. It is the minus (-) sign.
- Comments consist of character strings beginning with the symbols (/*) and ending with the symbols (*/). These symbols must be written on the same line.
- Comments can follow the continuation character on each line.

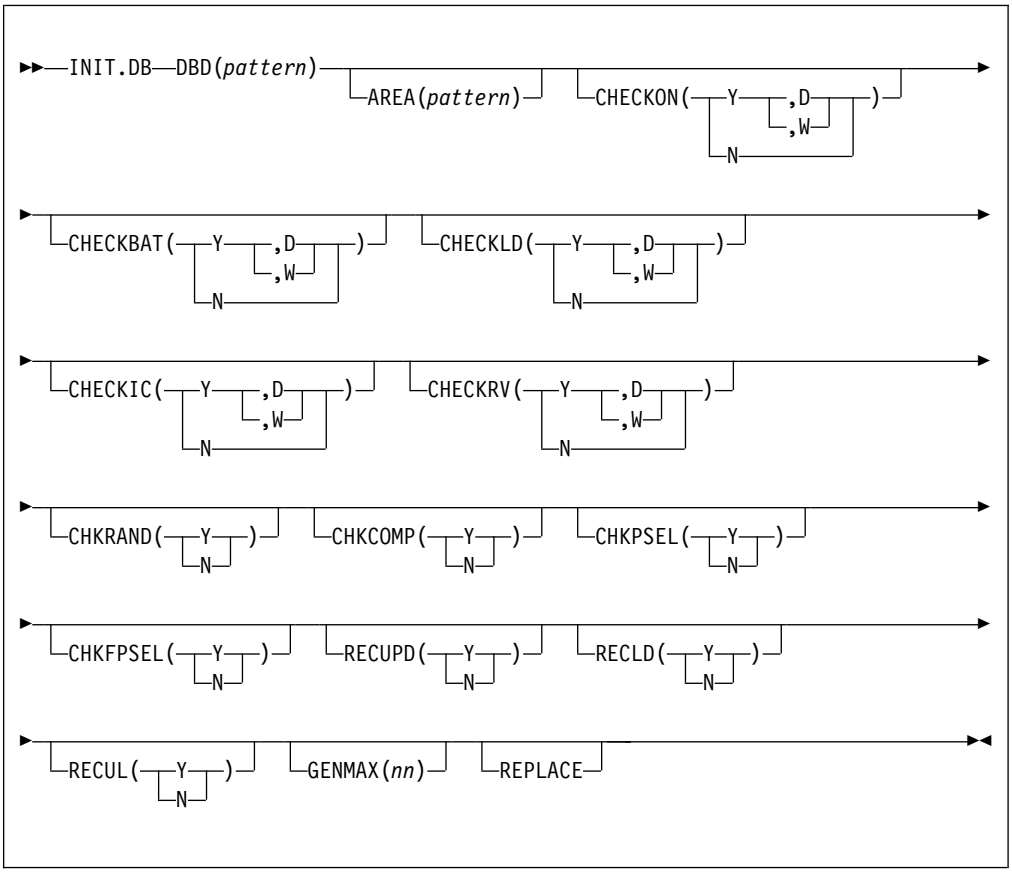
INIT.DB command

INIT.DB command creates an RDE for one, some, or all of the DBDs or ACBs in the specified DBD or ACB library.

Subsections:

- "Syntax"
- "Parameters"
- "IMS environments to be covered" on page 106
- "Response to a mismatch" on page 107
- "Examples" on page 107

Syntax



Parameters

DBD(*pattern*)

Specifies the database for which you want to create an RDE. You can specify either of the following patterns:

- A specific database name or HALDB partition name

- A partially specified database name pattern—for example, DH41*, where * means ALL

Note: A partially specified HALDB partition name is not supported. If it is specified, this command fails with message FABL0451E.

For HALDBs, if you specify a HALDB master name, all the RDEs of its partitions are created. If you specify a HALDB partition name, only the RDE of the partition is created.

AREA(*pattern*)
Specifies the DEDB area for which you want to create an RDE. Only when you specify a specific DEDB name in the DBD parameter, you can specify either of the following patterns:

- A specific DEDB area name
- A partially specified DEDB area name pattern

If you omit the keyword, the RDEs for all areas of the DEDB database that is specified with the DBD parameter are created.

Note for DBD and AREA:
You specify a wildcard in any position in a character string. The asterisk (*) and the percent sign (%) are supported as wildcard characters. An asterisk represents 0 - 8 characters, and a percent sign represents a single character. If two or more asterisks are specified sequentially, only the first asterisk is recognized.

CHECKON (Y or N, D or W)
Specifies the verification option in effect for online IMS subsystems. You can specify the following options:

Y Check. If you specify Y, you can specify either of the following parameters:

D If a mismatch is found, deny authorization to use the database.

W Issue a warning message and create a new RDE.

N Do not check.

CHECKBAT (Y or N, D or W)
Specifies the verification option in effect for batch jobs. You can specify the following options:

Y Check. If you specify Y, you can specify either of the following parameters:

D If a mismatch is found, deny authorization to use the database.

W Issue a warning message and create a new RDE.

N Do not check.

CHECKLD (Y or N, D or W)
Specifies the verification option in effect for user load program jobs. You can specify the following options:

Y Check. If you specify Y, you can specify either of the following parameters:

D If a mismatch is found, deny authorization to use the database.

W Issue a warning message and create a new RDE.

N Do not check.

CHECKIC (Y or N, D or W)
Specifies the verification option in effect for batch image copy jobs. You can specify the following options:

Y Check. If you specify Y, you can specify either of the following parameters:

D If a mismatch is found, deny authorization to use the database.

W Issue a warning message and create a new RDE.

N Do not check.

CHECKRV (Y or N, D or W)
Specifies the verification option in effect for database recovery jobs. You can specify the following options:

Y Check. If you specify Y, you can specify either of the following parameters:

D If a mismatch is found, deny authorization to use the database.

W Issue a warning message and create a new RDE.

N Do not check.

CHKRAND (Y or N)
Specifies the option to determine whether to verify changes in randomizing routines by checksum. You can specify the following options:

Y Check.

N Do not check.

If CHECKON, CHECKBAT, CHECKLD, CHECKIC, or CHECKRV is set to Y, this specification is effective in each IMS environment.

CHKCOMP (Y or N)
Specifies the option to determine whether to verify changes in segment edit/compression exit routines by checksum. You can specify the following options:

Y Check.

N Do not check.

If CHECKON, CHECKBAT, CHECKLD, CHECKIC, or CHECKRV is set to Y, this specification is effective in each IMS environment.

CHKPSEL (Y or N)
Specifies the option to determine whether to verify changes in HALDB partition selection exit routines by checksum. You can specify the following options:

Y Check.

N Do not check.

If CHECKON, CHECKBAT, CHECKLD, CHECKIC, or CHECKRV is set to Y, this specification is effective in each IMS environment.

CHKFPSEL (Y or N)
Specifies the option to determine whether to verify changes in DEDB partition selection exit routines by checksum. You can specify the following options:

Y Check.

N Do not check.

If CHECKON, CHECKBAT, CHECKLD, CHECKIC, or CHECKRV is set to Y, this specification is effective in each IMS environment.

RECUPD (Y or N)
Specifies the option to determine whether to record database update access information. You can specify the following options:

Y Record.

N Do not record.

RECLD (Y or N)
Specifies the option to determine whether to record database load access information. You can specify the following options:

Y Record.

N Do not record.

RECUL (Y or N)
Specifies the option to determine whether to record database unload access information. You can specify the following options:

Y Record.

N Do not record.

GENMAX (*nn*)
Specifies the maximum number of expired RDEs to be kept in the LICON data set for use in recoveries. A maximum of 15 RDE copies can be kept.

REPLACE
Specifies that an RDE is to be created even if one already exists. The existing RDE expires, and a new one is created. If you do not specify the REPLACE option, and an RDE already exists, the INIT.DB command fails.

IMS environments to be covered

Integrity Checker can be invoked in any of five IMS processing environments:

- An online IMS subsystem
- A batch program
- A database loading program
- A batch image copy utility
- A database recovery utility

For each of these environments, you can specify (a) whether DMB verification is to be invoked and (b) whether, if DMB verification is invoked, it is set to issue a nonzero return code for the denial of a request for database authorization, or only to issue a warning message and register the DMB that IMS is using in the LICON data set.

Response to a mismatch

You can choose either of two options as the action to be taken when the DMB that IMS is using for access to the database is not the same as the one registered in the LICON data set:

Deny authorization
Integrity Checker returns a nonzero return code with a reason code of $$ to the requester. It also issues error messages that tell you which value in the DMB is different from the registered one.

Issue a warning and continue
Integrity Checker issues a warning message to notify you of the mismatch, but it continues processing the DMB, and it replaces the RDE in the LICON data set with the one created by the DMB that IMS is using.

Examples

In these examples, the following conditions are assumed:

- The IMS ID is taken from the batch SCD module (DFSVC000) loaded by the IMS load module library IMSVS.SDFSRESL.
- The LICON data set is dynamically allocated by the LICON utility. The data set name is provided by one of the global option modules.

INIT.DB with ACBLIB
This example creates an RDE for every DMB-type ACB member in the ACB library IMSVS.ACBLIB.

```
//LICJOB   JOB
//        EXEC PGM=FABLIU00
//STEPLIB   DD DISP=SHR,DSN=HPS.SHPSLMD0
//          DD DISP=SHR,DSN=IMSVS.SDFSRESL
//ACBLIB    DD DISP=SHR,DSN=IMSVS.ACBLIB
//FABLPRNT  DD SYSOUT=*
//FABLIN    DD *
  INIT.DB DBD(*)
/*
```

INIT.DB with DBDLIB
This example creates an RDE for every DBD member in the DBD library IMSVS.DBDLIB.

```
//LICJOB   JOB
//        EXEC PGM=FABLIU00
//STEPLIB   DD DISP=SHR,DSN=HPS.SHPSLMD0
//          DD DISP=SHR,DSN=IMSVS.SDFSRESL
//DBDLIB    DD DISP=SHR,DSN=IMSVS.DBDLIB
//FABLPRNT  DD SYSOUT=*
//FABLIN    DD *
  INIT.DB DBD(*)
/*
```

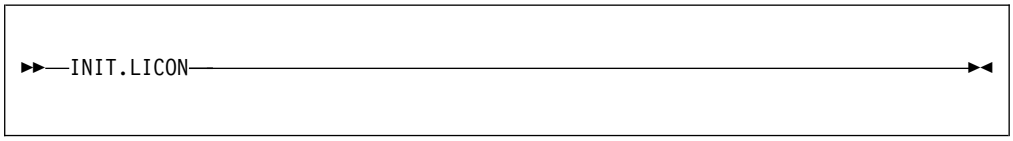
INIT.LICON command

INIT.LICON command initializes the LICON data set so that it can be used.

Subsections:

- "Syntax"
- "Parameters"
- "Example"

Syntax



Parameters

This command has no parameters.

Example

In this example, the following conditions are assumed:

- The IMS ID is taken from the batch SCD module (DFSVC000) loaded by the IMS load module library IMSVS.SDFSRESL.
- The LICON data set is dynamically allocated by the LICON utility. The data set name is provided by one of the global option modules.

This example initializes the LICON data set for use.

```
//LICJOB   JOB
//        EXEC PGM=FABLIU00
//STEPLIB   DD DISP=SHR,DSN=HPS.SHPSLMD0
//          DD DISP=SHR,DSN=IMSVS.SDFSRESL
//FABLPRNT  DD SYSOUT=*
//FABLIN    DD *
  INIT.LICON
/*
```

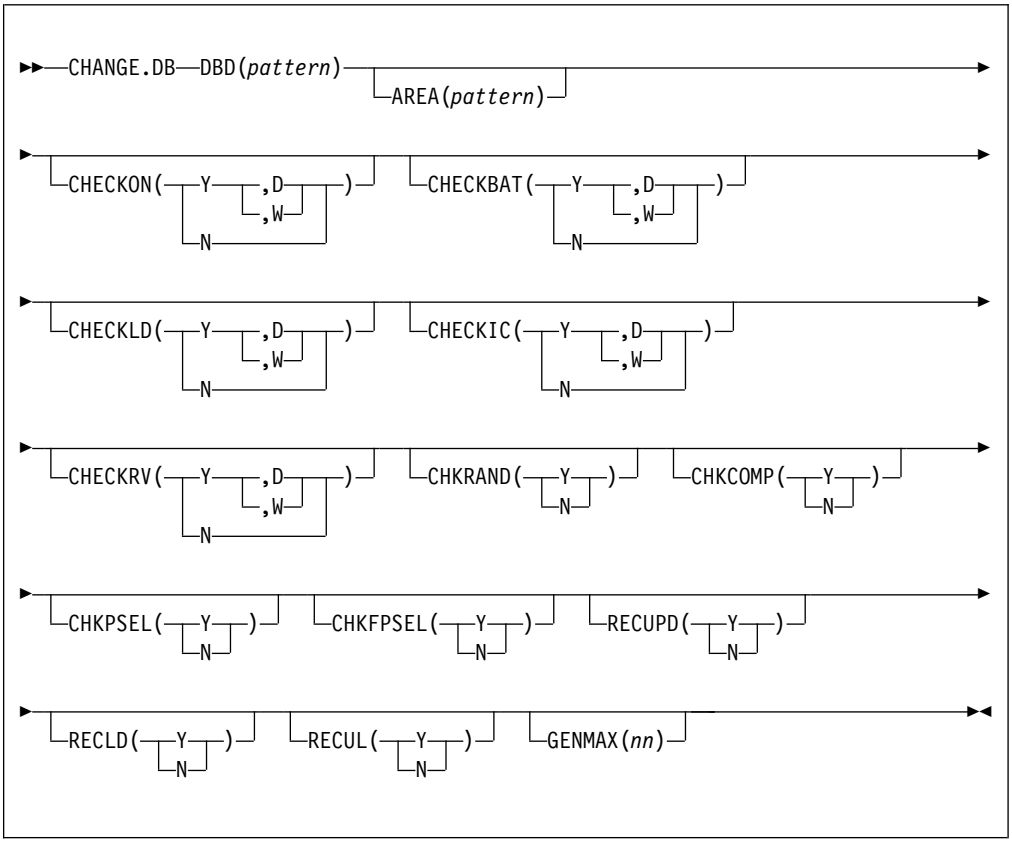
CHANGE.DB command

The CHANGE.DB command changes the verification options of the current RDE for the specified non-HALDB full-function database, HALDB partition, or DEDB area.

Subsections:

- "Syntax" on page 109
- "Parameters" on page 109
- "Example" on page 112

Syntax



Parameters

DBD(*pattern*)

Specifies the database for which you want to change an RDE. You can specify either of the following patterns:

- A specific database name or a specific HALDB partition name
- A partially specified database name pattern or a partially specified HALDB partition name pattern—for example, DH41*, where * means ALL

Note: A partially specified HALDB master name is not supported. If it is specified, this command fails with message FABL0461E.

For HALDBs, if you specify a HALDB master name, all the RDEs of its partitions are changed. If you specify a HALDB partition name, only the RDE of the partition is changed.

AREA(*pattern*)

Specifies the DEDB area for which you want to change an RDE. Only when you specify a specific DEDB name in the DBD parameter, you can specify either of the following patterns:

- A specific DEDB area name
- A partially specified DEDB area name pattern

If you omit the keyword, the RDEs for all areas of the DEDB database that is specified with the DBD parameter are changed.

CHECKON (Y or N, D or W)
Specifies the verification option in effect for online IMS subsystems. You can specify the following options:

Y Check. If you specify Y, you can specify either of the following parameters:

D If a mismatch is found, deny authorization to use the database.

W Issue a warning message and create a new RDE.

N Do not check.

CHECKBAT (Y or N, D or W)
Specifies the verification option in effect for batch jobs. You can specify the following options:

Y Check. If you specify Y, you can specify either of the following parameters:

D If a mismatch is found, deny authorization to use the database.

W Issue a warning message and create a new RDE.

N Do not check.

CHECKLD (Y or N, D or W)
Specifies the verification option in effect for user load program jobs. You can specify the following options:

Y Check. If you specify Y, you can specify either of the following parameters:

D If a mismatch is found, deny authorization to use the database.

W Issue a warning message and create a new RDE.

N Do not check.

CHECKIC (Y or N, D or W)
Specifies the verification option in effect for batch image copy jobs. You can specify the following options:

Y Check. If you specify Y, you can specify either of the following parameters:

D If a mismatch is found, deny authorization to use the database.

W Issue a warning message and create a new RDE.

N Do not check.

CHECKRV (Y or N, D or W)
Specifies the verification option in effect for database recovery jobs. You can specify the following options:

Y Check. If you specify Y, you can specify either of the following parameters:

D If a mismatch is found, deny authorization to use the database.

W Issue a warning message and create a new RDE.

N Do not check.

CHKRAND (Y or N)
Specifies the option to determine whether to verify changes in randomizing routines by checksum. You can specify the following options:

Y Check.

N Do not check.

If CHECKON, CHECKBAT, CHECKLD, CHECKIC, or CHECKRV is set to Y, this specification is effective in each IMS environment.

CHKCOMP (Y or N)
Specifies the option to determine whether to verify changes in segment edit/compression exit routines by checksum. You can specify the following options:

Y Check.

N Do not check.

If CHECKON, CHECKBAT, CHECKLD, CHECKIC, or CHECKRV is set to Y, this specification is effective in each IMS environment.

CHKPSEL (Y or N)
Specifies the option to determine whether to verify changes in HALDB partition selection exit routines by checksum. You can specify the following options:

Y Check.

N Do not check.

If CHECKON, CHECKBAT, CHECKLD, CHECKIC, or CHECKRV is set to Y, this specification is effective in each IMS environment.

CHKFPSEL (Y or N)
Specifies the option to determine whether to verify changes in DEDB partition selection exit routines by checksum. You can specify the following options:

Y Check.

N Do not check.

If CHECKON, CHECKBAT, CHECKLD, CHECKIC, or CHECKRV is set to Y, this specification is effective in each IMS environment.

RECUPD (Y or N)
Specifies the option to determine whether to record database update access information. You can specify the following options:

Y Record.

N Do not record.

RECLD (Y or N)
Specifies the option to determine whether to record database load access information. You can specify the following options:

Y Record.

N Do not record.

RECUL (Y or N)

Specifies the option to determine whether to record database unload access information. You can specify the following options:

Y Record.

N Do not record.

If RECUPD, RECLD, or RECUL is set to Y and Integrity Checker starts recording database accesses, the recorded information remains until the RDE is re-created or the option is changed from Y to N.

GENMAX (*nn*)

Specifies the maximum number of expired RDEs to be kept in the LICON data set for use in recoveries. A maximum of 15 RDE copies can be kept.

Example

In this example, the following conditions are assumed:

- The IMS ID is taken from the batch SCD module (DFSVC000) loaded by the IMS load module library IMSVS.SDFSRESL.
- The LICON data set is dynamically allocated by the LICON utility. The data set name is provided by one of the global option modules.

CHANGE.DB with DBDLIB

This example changes the maximum number of expired RDEs to be kept in the LICON data set to 2.

```
//LICJOB   JOB
//        EXEC PGM=FABLIU00
//STEPLIB   DD DISP=SHR,DSN=HPS.SHPSLMD0
//          DD DISP=SHR,DSN=IMSVS.SDFSRESL
//DBDLIB    DD DISP=SHR,DSN=IMSVS.DBDLIB
//FABLPRNT  DD SYSOUT=*
//FABLIN    DD *
  CHANGE.DB DBD(DH41TS01) GENMAX(2)
/*
```

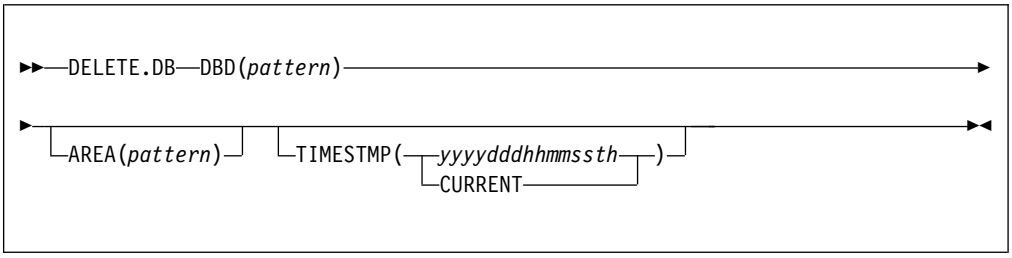
DELETE.DB command

The DELETE.DB command causes the specified RDEs to be deleted.

Subsections:

- "Syntax" on page 113
- "Parameters" on page 113
- "Example" on page 113

Syntax



Parameters

DBD(*pattern*)

Specifies the database from which you want to delete an RDE. You can specify either of the following patterns:

- A specific database name or a specific HALDB partition name
- A partially specified database name pattern or a partially specified HALDB partition name pattern—for example, DH41*, where * means ALL

Note: A partially specified HALDB master name is not supported. If it is specified, this command fails with message FABL0460E or FABL0461E.

For HALDBs, if you specify a HALDB master name, all the RDEs of its partitions are deleted. If you specify a HALDB partition name, only the RDE of the partition is deleted.

AREA(*pattern*)

Specifies the DEDB area for which you want to delete an RDE. Only when you specify a specific DEDB name in the DBD parameter, you can specify either of the following patterns:

- A specific DEDB area name
- A partially specified DEDB area name pattern

If you omit the keyword, the RDEs for all areas of the DEDB database that is specified with the DBD parameter are deleted.

TIMESTMP(*yyyydddhhmmssth*)

Specifies the local time stamp value of the RDE you want to delete. You can use the fully specified local time stamp *yyyydddhhmmssth* or the keyword CURRENT for the current RDE. If you omit the keyword, all of the RDEs associated with the DBD are deleted.

Example

In this example, the following conditions are assumed:

- The IMS ID is taken from the batch SCD module (DFSVC000) loaded by the IMS load module library IMSVS.SDFSRESL.
- The LICON data set is dynamically allocated by the LICON utility. The data set name is provided by one of the global option modules.

DELETE.DB with DBDLIB

This example deletes all RDEs, including the current one and any expired ones, for any database whose name matches the DH41* pattern.

```
//LICJOB   JOB
//        EXEC PGM=FABLIU00
//STEPLIB   DD DISP=SHR,DSN=HPS.SHPSLMD0
//          DD DISP=SHR,DSN=IMSVS.SDFSRESL
//DBDLIB    DD DISP=SHR,DSN=IMSVS.DBDLIB
//FABLPRNT  DD SYSOUT=*
//FABLIN    DD *
  DELETE.DB DBD(DH41*)
/*
```

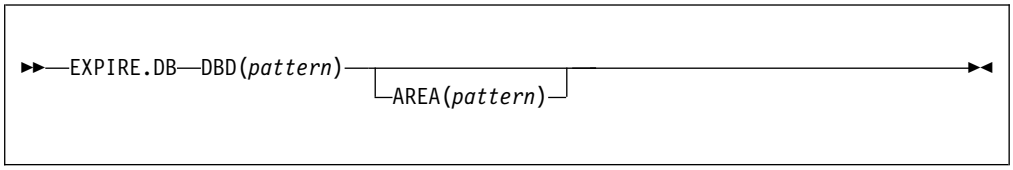
EXPIRE.DB command

The EXPIRE.DB command causes the current RDE for the specified database to expire. An expiry time stamp is assigned to the current RDE.

Subsections:

- "Syntax"
- "Parameters"
- "Example" on page 115

Syntax



Parameters

DBD(*pattern*)

Specifies the database whose current RDE is to expire. You can specify either of the following patterns:

- A specific database name or a specific HALDB partition name
- A partially specified database name pattern or a partially specified HALDB partition name pattern—for example, DH41*, where * means ALL

Note: A partially specified HALDB master name is not supported. If it is specified, this command fails with message FABL0461E.

For HALDBs, if you specify a HALDB master name, all the RDEs of its partitions are expired. If you specify a HALDB partition name, only the RDE of the partition is expired.

AREA(*pattern*)

Specifies the DEDB area whose current RDE is to expire. Only when you specify a specific DEDB name in the DBD parameter, you can specify either of the following patterns:

- A specific DEDB area name
- A partially specified DEDB area name pattern

If you omit the keyword, the RDEs for all areas of the DEDB database that is specified with the DBD parameter are expired.

Example

In this example, the following conditions are assumed:

- The IMS ID is taken from the batch SCD module (DFSVC000) loaded by the IMS load module library IMSVS.SDFSRESL.
- The LICON data set is dynamically allocated by the LICON utility. The data set name is provided by one of the global option modules.

EXPIRE.DB with DBDLIB

This example expires the current RDE for any database whose name matches the DH41* pattern.

```
//LICJOB   JOB
//        EXEC PGM=FABLIU00
//STEPLIB   DD DISP=SHR,DSN=HPS.SHPSLMD0
//          DD DISP=SHR,DSN=IMSVS.SDFSRESL
//DBDLIB    DD DISP=SHR,DSN=IMSVS.DBDLIB
//FABLPRNT  DD SYSOUT=*
//FABLIN    DD *
  EXPIRE.DB DBD(DH41*)
/*
```

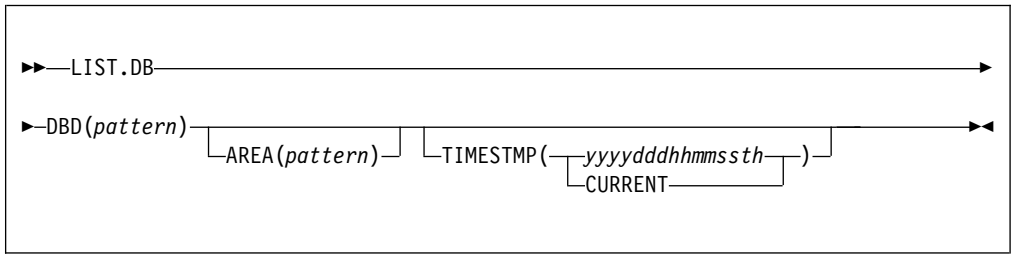
LIST.DB command

The LIST.DB command shows you the contents of the specified RDEs, with a report.

Subsections:

- "Syntax"
- "Parameters"
- "Example" on page 116

Syntax



Parameters

DBD(*pattern*)

Specifies the database for which you want to list the contents of an RDE. You can specify either of the following patterns:

- A specific database name or a specific HALDB partition name
- A partially specified database name pattern or a partially specified HALDB partition name pattern—for example, DH41*, where * means ALL

Note: A partially specified HALDB master name is not supported. If it is specified, this command fails with message FABL0460E or FABL0461E.

For HALDBs, if you specify a HALDB master name, all the RDEs of its partitions are listed. If you specify a HALDB partition name, only the RDE of the partition is listed.

AREA(*pattern*)
Specifies the DEDB area for which you want to list the contents of an RDE. Only when you specify a specific DEDB name in the DBD parameter, you can specify either of the following patterns:

- A specific DEDB area name
- A partially specified DEDB area name pattern

If you omit the keyword, the RDEs for all areas of the DEDB database that is specified with the DBD parameter are listed.

TIMESTMP(*yyyydddhhmmssth*)
Specifies the local time stamp value of the RDE you want to list. You can use a fully specified local time stamp *yyyydddhhmmssth* or, to get the current RDE, the keyword CURRENT. If you omit the keyword, all of the RDEs associated with the DBD are listed.

Example

In this example, the following conditions are assumed:

- The IMS ID is taken from the batch SCD module (DFSVC000) loaded by the IMS load module library IMSVS.SDFSRESL.
- The LICON data set is dynamically allocated by the LICON utility. The data set name is provided by one of the global option modules.

LIST.DB with ACBLIB
This example lists all current RDEs for the database whose name matches the DH41* pattern.

```
//LICJOB   JOB
//        EXEC PGM=FABLIU00
//STEPLIB   DD DISP=SHR,DSN=HPS.SHPSLMD0
//          DD DISP=SHR,DSN=IMSVS.SDFSRESL
//ACBLIB    DD DISP=SHR,DSN=IMSVS.ACBLIB
//FABLPRNT  DD SYSOUT=*
//FABLIN    DD *
  LIST.DB DBD(DH41*) TIMESTMP(CURRENT)
/*
```

LIST.LICON command

The LIST.LICON command evokes a listing of the contents of all the current RDEs in the LICON data set.

Note: The report evoked by the LIST.LICON command lists only the current RDEs. It does not contain information about any expired RDE.

Subsections:

- "Syntax" on page 117
- "Parameters" on page 117
- "Example" on page 117

Syntax

Parameters

There are no parameters for the LIST.LICON command.

Example

In this example, the following conditions are assumed:

- The IMS ID is taken from the batch SCD module (DFSVC000) loaded by the IMS load module library IMSVS.SDFSRESL.
- The LICON data set is dynamically allocated by the LICON utility. The data set name is provided by one of the global option modules.

LIST.LICON with ACBLIB

This example lists the current RDEs for all the databases in the LICON data set.

```
//LICJOB   JOB
//        EXEC PGM=FABLIU00
//STEPLIB   DD DISP=SHR,DSN=HPS.SHPSLMD0
//          DD DISP=SHR,DSN=IMSVS.SDFSRESL
//ACBLIB    DD DISP=SHR,DSN=IMSVS.ACBLIB
//FABLPRNT  DD SYSOUT=*
//FABLIN    DD *
  LIST.LICON
/*
```

RECOVER.DB command

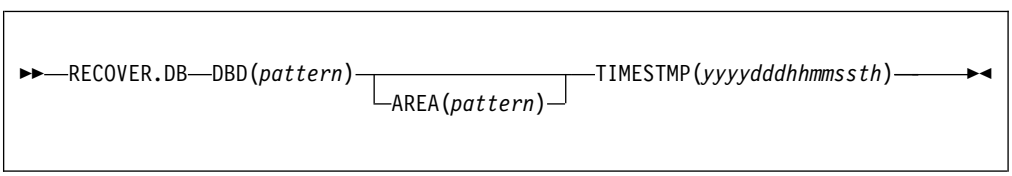
The RECOVER.DB command causes the specified RDE to be recovered by use of the expired RDE specified.

When you issue the RECOVER.DB command, the current RDE expires and the RDE specified by the TIMESTMP parameter becomes current.

Subsections:

- "Syntax"
- "Parameters" on page 118
- "Example" on page 118

Syntax



Parameters

DBD(*pattern*)

Specifies the database from which you want to recover an RDE. You can specify either of the following patterns:

- A specific database name or a specific HALDB partition name
- A partially specified database name pattern or a partially specified HALDB partition name pattern—for example, DH41*, where * means ALL

Note: A partially specified HALDB master name is not supported. If it is specified, this command fails with message FABL0461E.

AREA(*pattern*)

Specifies the DEDB area for which you want to recover an RDE. Only when you specify a specific DEDB name in the DBD parameter, you can specify either of the following patterns:

- A specific DEDB area name
- A partially specified DEDB area name pattern

If you omit the keyword, the RDEs for all areas of the DEDB database that is specified with the DBD parameter are recovered.

TIMESTMP(*yyyydddhhmmssth*

Specifies the local time stamp value of the RDE with which you want to recover the current RDE. Specify the entire local time stamp, *yyyydddhhmmssth*.

Example

In this example, the following conditions are assumed:

- The IMS ID is taken from the batch SCD module (DFSVC000) loaded by the IMS load module library IMSVS.SDFSRESL.
- The LICON data set is dynamically allocated by the LICON utility. The data set name is provided by one of the global option modules.

RECOVER.DB with ACBLIB

This example changes the expired RDE which has the local time stamp 201806511301302 into a current RDE. At the same time the former current RDE is changed to an expired RDE, in which a time stamp with the time at which this action was taken is set.

```
//LICJOB   JOB
//        EXEC PGM=FABLIU00
//STEPLIB   DD DISP=SHR,DSN=HPS.SHPSLMD0
//          DD DISP=SHR,DSN=IMSVS.SDFSRESL
//ACBLIB    DD DISP=SHR,DSN=IMSVS.ACBLIB
//FABLPRNT  DD SYSOUT=*
//FABIN     DD *
  RECOVER.DB DBD(DH41TS01) TIMESTMP(201806511301302)
/*
```

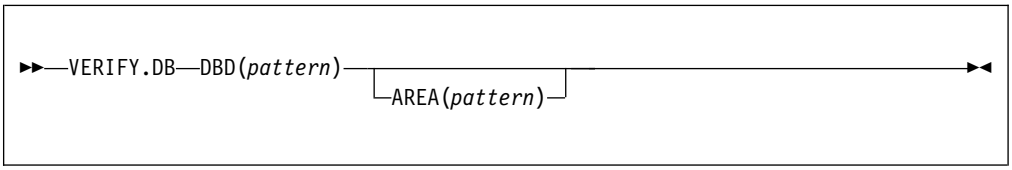
VERIFY.DB command

The VERIFY.DB command verifies the DBDs or ACBs in the specified DBD or ACB libraries against the RDEs stored in the LICON data set.

Subsections:

- "Syntax"
- "Parameters"
- "Example"

Syntax



Parameters

DBD(*pattern*)
Specifies the database for which you want to verify the DBD/ACBs. You can specify either of the following patterns:

- A specific database name or HALDB partition name
- A partially specified database name pattern. For example, DH41*, where * means ALL

Note: A partially specified HALDB partition name is not supported. If it is specified, this command fails with message FABL0451E.

For HALDBs, if you specify a HALDB master name, all the RDEs of its partitions are verified. If you specify a HALDB partition name, only the RDE of the partition is verified.

AREA(*pattern*)
Specifies the DEDB area for which you want to verify the DBD/ACBs. Only when you specify a specific DEDB name in the DBD parameter, you can specify either of the following patterns:

- A specific DEDB area name
- A partially specified DEDB area name pattern

If you omit the keyword, you can verify the DBD/ACBs against the RDEs for all areas of the DEDB database that is specified with the DBD parameter.

You can specify both ACBLIB and DBDLIB DD statements in your JCL.

Example

In this example, the following conditions are assumed:

- The IMS ID is taken from the batch SCD module (DFSVC000) loaded by the IMS load module library IMSVS.SDFSRESL.
- The LICON data set is dynamically allocated by the LICON utility. The data set name is provided by one of the global option modules.

VERIFY.DB with both DBDLIB and ACBLIB
This example verifies all current RDEs in the LICON data set.

```
//LICJOB JOB
//      EXEC PGM=FABLIU00
//STEPLIB   DD DISP=SHR,DSN=HPS.SHPSLMD0
//          DD DISP=SHR,DSN=IMSVS.SDFSRESL
//DBDLIB    DD DISP=SHR,DSN=IMSVS.DBDLIB
//ACBLIB    DD DISP=SHR,DSN=IMSVS.ACBLIB
//FABLPRNT  DD SYSOUT=*
//FABLIN    DD *
  VERIFY.DB DBD(*)
/*
```

Output from the LICON utility

Output from the LICON utility consists of the FABLPRNT data set.

FABLPRNT data set

The output from the LICON utility includes the control statements that are specified in the FABLIN data set, the listing of RDE, and the messages issued by Integrity Checker.

The listing of RDE, which is printed only when the LIST.DB command or the LIST.LICON command is specified, contains information about the DMB that is stored in the RDE.

This listing for an RDE record identified by the RDE key contains the following sections:

- Control section
- Historical data section
- If the database access recording option is used, the recorded access information section
- If the database is a HALDB, the PNT section
- If the database is a full-function database, the DMB section.
- If the database is a DEDB, the DMCB section.

The following figure shows an example of the output from the LICON utility.

```
IMS LIBRARY INTEGRITY UTILITIES - LICON UTILITY                        PAGE 0001

   LIST.DB DBD( *        )

2018.274 17:05:00.87           "LISTING OF RDE"                        PAGE 0002
------------------------------------------------------------------------------
 RDE KEY:
  DBD=DBDLIUIV TIMESTAMP=** CURRENT **

  ...
  ...

FABL0441I DATABASE: DBDLIUIV TIMESTMP: CURRENT SUCCESSFULLY PROCESSED
FABL0410I COMMAND COMPLETED WITH RC = 00
FABL0400I LICON UTILITY COMMAND PROCESSING COMPLETE. HIGHEST RC = 00
```

Figure 20. Output from the LICON utility

Subsections:

- "Sample report"
- "Report field descriptions" on page 122

Sample report

The following figure shows an example of the listing of RDE.

```
IMS LIBRARY INTEGRITY UTILITIES - LICON UTILITY                        PAGE 0001

  LIST.DB DBD(*       )

2018.274 20:16:13.23            "LISTING OF RDE"                      PAGE 0002

--------------------------------------------------------------------------------
 RDE KEY:

  DBD=DBHDAM10 TIMESTAMP=** CURRENT **


 CONTROL SECTION:

  CHECK OPTION FOR ONLINE   = (Y,D)
  CHECK OPTION FOR BATCH    = (Y,D)
  CHECK OPTION FOR LOAD APL = (Y,D)
  CHECK OPTION FOR IC       = (Y,D)
  CHECK OPTION FOR RECOVERY = (Y,D)
  GENMAX                    = 1
  CHECK OPTION FOR RANDOMZR = Y
  CHECK OPTION FOR COMPRESS = Y
  RECORD OPTION FOR UPDATE  = Y
  RECORD OPTION FOR LOAD    = Y
  RECORD OPTION FOR UNLOAD  = Y


 HISTORICAL DATA SECTION:

  CREATION DATE OF RDE      = 2018.274 16:16:12.479195 (LOCAL)
                            = 2018.274 07:16:12.479195 (UTC)
  LATEST CHANGE DATE OF RDE = N/A                      (LOCAL)
                            = N/A                      (UTC)
  RDE FORMAT LEVEL          = 2.2
  RECOVERABLE WITH TIMESTAMP= Y


 RECORDED ACCESS INFORMATION SECTION:

  LATEST ACCESS FOR UPDATE
   DATE                     = 2018.274 17:37:48.404348 (LOCAL)
                            = 2018.274 08:37:48.404348 (UTC)
   SUBSYSTEM NAME           = JOBUPD
  LATEST ACCESS FOR LOAD
   DATE                     = 2018.274 17:30:52.619082 (LOCAL)
                            = 2018.274 08:30:52.619082 (UTC)
   SUBSYSTEM NAME           = JOBLD
  LATEST ACCESS FOR UNLOAD
   DATE                     = 2018.274 17:31:05.178342 (LOCAL)
                            = 2018.274 08:31:05.178342 (UTC)
   SUBSYSTEM NAME           = JOBUL
```

Figure 21. Listing of RDE (HDAM) (Part 1 of 2)

```
DMB SECTION:

  DB ORGANIZATION           = HDAM/VSAM
  NUMBER OF DATA SET GROUPS =          2
  NUMBER OF SEGMENTS        =          3
  DATXEXIT USED             = NO
  VERSION ID LENGTH         =         13
  VERSION ID                = 10/01/1819.10

  DACS:

  RANDOMIZER NAME           = RNM2
  HIGHEST RBN IN RAA        =       9000
  NUMBER OF RAPS PER BLOCK  =          3

  AMPS:

  DSG NUMBER                =          1
  NUMBER OF RAPS PER BLOCK  =          3
  PRIME DD NAME             = HDAMDD10    OVERFLOW DD NAME          = N/A

  DSG NUMBER                =          2
  NUMBER OF RAPS PER BLOCK  =          0
  PRIME DD NAME             = HDAMDD11    OVERFLOW DD NAME          = N/A

  PSDBS:

  SEGMENT CODE              =         01  PARENT SEGMENT CODE       =         00
  HIERARCHICAL LEVEL        =          1
  PTR NUM IN PARENT TO 1ST  =          0  PTR NUM IN PARENT TO LAST =          0
  PREFIX SIZE               =         18  PREFIX FLAGS              =         60
  DATA LENGTH               =         28
  INSERT RULES              =         23  DELETE/REPLACE RULES      =         45

...
```

Figure 22. Listing of RDE (HDAM) (Part 2 of 2)

Report field descriptions

RDE KEY:

DBD=
DBD name or HALDB partition name

AREA=
AREA name. This field is only for DEDB.

TIMESTAMP=
Time stamp of the RDE. For current RDEs, ** CURRENT ** is shown. For expired RDEs, the expiry date and time are shown in local time, in the format *YYYY.DDD HH:MM:SS.TH*.

CONTROL SECTION:

CHECK OPTION FOR ONLINE
Check option used for IMS online environment.

CHECK OPTION FOR BATCH
Check option used for IMS batch jobs.

CHECK OPTION FOR LOAD APL
Check option used for IMS database load applications.

CHECK OPTION FOR IC
Check option used for batch image copy jobs.

CHECK OPTION FOR RECOVERY
Check option used for IMS database recovery jobs.

GENMAX
The number of expired RDEs for the database to be kept.

CHECK OPTION FOR RANDOMZR
Check option used for a randomizing routine.

CHECK OPTION FOR COMPRESS
Check option used for segment edit/compression exit routines.

CHECK OPTION FOR PART SEL
Check option used for a HALDB partition selection exit routine.

CHECK OPTION FOR FP PSEL
Check option used for a DEDB partition selection exit routine.

RECORD OPTION FOR UPDATE
Record option used for recording database update accesses.

RECORD OPTION FOR LOAD
Record option used for recording database load accesses (except in IMS online environments).

RECORD OPTION FOR UNLOAD
Record option used for recording database unload accesses.

HISTORICAL DATA SECTION

CREATION DATE OF RDE
The creation date of the RDE is shown in local time and in UTC, in the format *YYYY.DDD HH:MM:SS.THMIJU*. If the RDE has been converted by the LICON data set migration utility, UTC is shown as N/A.

LATEST CHANGE DATE OF RDE
The latest change date of the RDE is shown in local time and in UTC, in the format *YYYY.DDD HH:MM:SS.THMIJU*. If the RDE has not been changed since creation, N/A is shown. If the RDE has been converted by the LICON data set migration utility, UTC is shown as N/A.

RDE FORMAT LEVEL
The level of the RDE record format.

RECOVERABLE WITH TIMESTAMP
Information that indicates whether Integrity Checker verifies if the RDE was valid for the DMB verification, at the specific recovery time—the point in time to which a non-HALDB full-function database, a HALDB partition, or a DEDB area is to be recovered by using time stamp recovery of IMS HP Image Copy.

Y Integrity Checker verifies whether the RDE was valid at the specific recovery time. If Integrity Checker determines that it was valid at that time, Integrity Checker recovers the RDE and uses it for the DMB verification.

N Integrity Checker does not verify whether the RDE was valid at the specific recovery time.

RECORDED ACCESS SECTION
This section contains recorded database access information for update, load, and unload operations.

LATEST ACCESS FOR UPDATE
This field shows the information about the latest database access made for update operation. This field is shown when the record option for database update access is specified as Y.

DATE The date and the time of the latest access for database update operation is shown in local time and in UTC, in the format *YYYY.DDD HH:MM:SS.THMIJU*. When database update access information is not recorded, this field shows N/A.

SUBSYSTEM
The name of the subsystem that most recently accessed the databases for database update operation. The subsystem name is the same as the name recorded in the RECON data set. When database update access information is not recorded, this field shows N/A.

LATEST ACCESS FOR LOAD
This field shows the information about the latest database access made for load operation. This field is shown when the record option for database load access is specified as Y.

DATE The date and the time of the latest access for database load operation is shown in local time and in UTC, in the format *YYYY.DDD HH:MM:SS.THMIJU*. When database load access information is not recorded, this field shows N/A.

SUBSYSTEM
The name of the subsystem that most recently accessed the databases for database load operation. The subsystem name is the same as the name recorded in the RECON data set. When database load access information is not recorded, this field shows N/A.

LATEST ACCESS FOR UNLOAD
This field shows the information about the latest database access made for unload operation. This field is shown when the record option for database unload access is specified as Y.

DATE The date and the time of the latest access for database unload operation is shown in local time and in UTC, in the format *YYYY.DDD HH:MM:SS.THMIJU*. When database unload access information is not recorded, this field shows N/A.

SUBSYSTEM
The name of the subsystem that most recently accessed the databases for database unload operation. The subsystem name is the same as the name recorded in the RECON data set. When database unload access information is not recorded, this field shows N/A.

PNT SECTION (for HALDBs)
This section contains information about the PNT. It also contains information related to the HALDB partition.

DMB SECTION (for full-function databases)
This section contains the information about the DMB. It also contains the following subsections:

DACS Information related to randomizing parameters. This field is only for HDAM.

AMPS Information related to the data set groups.

PSDBS
Information related to the segments.

DMCB SECTION (for DEDBs)
This section contains the information about the DMCB. It also contains the following subsections:

SDBF Information related to the segments.

DMAC
Information related to the area.

CRTE Information related to the indexes.

Each item has a self-explanatory label to help you understand the information.

Chapter 4. Consistency Checker utility

The Consistency Checker utility helps you ensure that the necessary definitions in an IMS subsystem have been created for your database or your application program.

Topics:

- "Consistency Checker utility overview" on page 128
- "Restriction for Consistency Checker" on page 131
- "Checking the consistency of definitions" on page 132
- "JCL requirements for the Consistency Checker utility" on page 133
- "Control statements for the Consistency Checker utility" on page 136
- "JCL examples for the Consistency Checker utility" on page 139
- "Output from the Consistency Checker utility" on page 142

Consistency Checker utility overview

The Consistency Checker utility ensures that the definitions necessary to an IMS subsystem have been created for your database or your application program.

Subsections:

- "Function overview"
- "Program structure" on page 129
- "Data flow" on page 129

Function overview

For a DBD in the DBD library, Consistency Checker verifies whether the following definitions have been created correctly in each library and whether these definitions are consistent with the DBD:

- The ACB in the ACB library
- The database definition entry in the MODBLKS module
- The database definition entry in the resource definition data sets (RDDSs)
- The DFSMDA dynamic allocation member for the database data set in the MDA library
- The DB and DSG registration record in the RECON

Consistency Checker determines which type of library is to verify depending on both the user input and the database organization defined in the specified DBD, as shown in the following table.

Table 4. Verified libraries for each database organization

Database organization	ACBLIB (ACBLIB data set is specified)	MODBLKS (MODBLKS data set is specified and DRD=NO is specified)	DFSMDA (DFSMDA data set is specified)	RECON (CHKRECON=YES is specified)	DRD (DRD=YES is specified)
HSAM (including SHSAM)	Yes	Yes	Yes	Yes	Yes
HISAM (including SHISAM)	Yes	Yes	Yes	Yes	Yes
HDAM	Yes	Yes	Yes	Yes	Yes
HIDAM	Yes	Yes	Yes	Yes	Yes
INDEX (including Fast Path secondary indexes)	Yes	Yes	Yes	Yes	Yes
PHDAM	Yes	Yes	No (see note 1)	Yes	Yes
PHIDAM	Yes	Yes (see note 2)	No (see note 1)	Yes	Yes (see note 2)
PSINDEX	Yes	Yes (see note 2)	No (see note 1)	Yes	Yes (see note 2)
GSAM	No (see note 3)	No (see note 4)	No (see note 3)	No (see note 5)	No (see note 4)
LOGICAL	No (see note 3)	No (see note 4)	No (see note 6)	No (see note 6)	No (see note 4)
MSDB	Yes (see note 6)	Yes	No (see note 6)	No (see note 6)	Yes
DEDB	Yes	Yes	No (see note 7)	Yes	Yes

Table 4. Verified libraries for each database organization (continued)

Database organization	ACBLIB (ACBLIB data set is specified)	MODBLKS (MODBLKS data set is specified and DRD=NO is specified)	DFSMDA (DFSMDA data set is specified)	RECON (CHKRECON=YES is specified)	DRD (DRD=YES is specified)

Notes:

1. The DFSMDA dynalloc allocation member for HALDB is not used by IMS.
2. There is no need to create a MODBLKS or RDDS entry for IMS catalog databases.
3. No ACB member is generated for GSAM or LOGICAL databases.
4. There is no need to create a MODBLKS entry or an RDDS entry for GSAM or LOGICAL databases.
5. There is no need to register GSAM databases to RECON.
6. No database data set is generated for LOGICAL or MSDB databases.
7. For a DEDB database, there is no need to supply DFSMDA member if the database data sets are registered to RECON. Consistency Checker does not verify DFSMDA members for DEDB area data sets.

For a PSB in the PSB library, Consistency Checker verifies whether the following definitions have been created correctly in each library and whether these definitions are consistent with the PSB:

- The ACB in the ACB library
- The application program definition entry in the MODBLKS module
- The application program definition entry in the resource definition data sets (RDDSs)

Notes:

- Consistency Checker does not verify GSAM PCBs because no ACB member is generated.
- Consistency Checker does not verify the MODBLKS or RDDS entry when DBDs or PSBs of IMS catalog databases are processed because these entries are not required.

Consistency Checker generates a DBD Check report, a PSB Check report, or both, after each check and helps you determine which definitions are needed before you start an IMS subsystem.

Program structure

Consistency Checker is provided as an MVS batch utility program, and depending on the specifications on the control statements, its functions can be invoked from the load module FABLECHK.

Data flow

The following figure shows the general data flow for Consistency Checker (FABLECHK). The input consists of the SYSIN data set (contains the control statements), the DBDLIB data set, the PSBLIB data set, the ACBLIB data set, the DFSMDA data set, the MODBLKS data set, the resource definition data set, and RECON*n* data sets. The output consists of reports and an activity log.

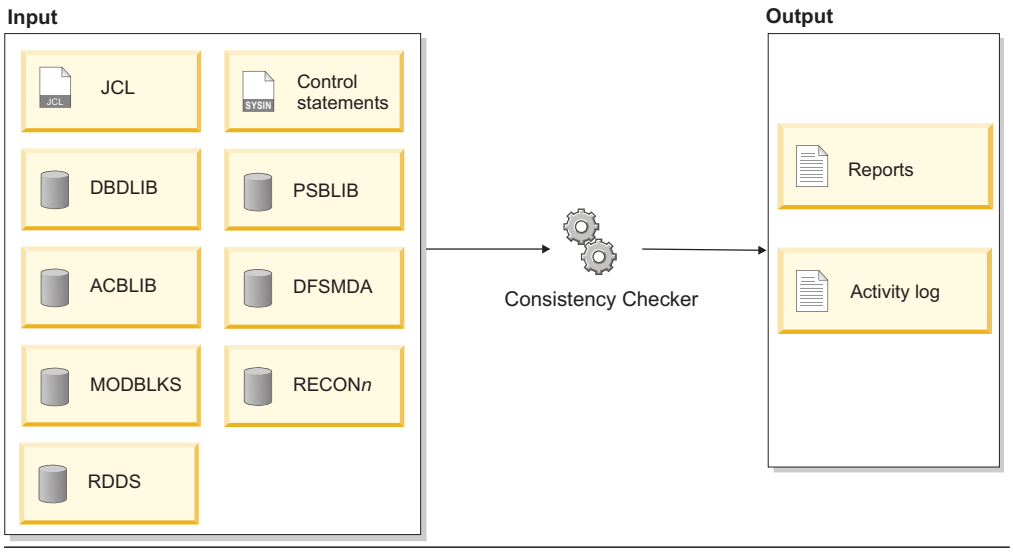


Figure 23. Data flow for Consistency Checker

Restriction for Consistency Checker

Certain restriction applies when you use the Consistency Checker utility.

Consistency Checker does not support verification of IMS catalog partition definition data sets. If CHKRECON=YES is specified and if the IMS catalog database is not registered to the RECON data set, Consistency Checker determines that the definition is not consistent with the DBDs of the IMS catalog database.

Checking the consistency of definitions

To check the consistency of definitions that are required to run the IMS subsystem by using the Consistency Checker utility, you must prepare JCL for the Consistency Checker utility, submit the job, and check the DBD and PSB Check reports.

About this task

Sample JCL for the Consistency Checker utility is in the SHPSJCL0 library, member FABLIVP2. You can modify this sample JCL and then use it to run the utility.

Procedure

1. In the Consistency Checker JCL, code the EXEC statement and DD statements.
   See "JCL requirements for the Consistency Checker utility" on page 133.
2. In the SYSIN data set, code the control statements for Consistency Checker.
   See "Control statements for the Consistency Checker utility" on page 136.
3. Submit the job.
4. Check the output data sets that are generated.
   See "Output from the Consistency Checker utility" on page 142.

Related reference:

"JCL examples for the Consistency Checker utility" on page 139

JCL requirements for the Consistency Checker utility

When you code the JCL to run the Consistency Checker utility, include the EXEC statement and appropriate DD statements.

Subsections:

- "JCL example"
- "EXEC statement"
- "DD statements"

JCL example

The following figure shows the JCL that is required for checking consistency of DBDs and PSBs.

```
//stepname EXEC PGM=FABLECHK
//STEPLIB  DD   DSN=HPS.SHPSLMD0,DISP=SHR
//         DD   DSN=IMSVS.DFSMDA,DISP=SHR
//         DD   DSN=IMSVS.SDFSRESL,DISP=SHR
//DFSRESLB DD   DSN=IMSVS.SDFSRESL,DISP=SHR
//DBDLIB   DD   DSN=IMSVS.DBDLIB,DISP=SHR
//PSBLIB   DD   DSN=IMSVS.PSBLIB,DISP=SHR
//ACBLIB   DD   DSN=IMSVS.ACBLIB,DISP=SHR
//DFSMDA   DD   DSN=IMSVS.DFSMDA,DISP=SHR
//MODBLKS  DD   DSN=IMSVS.MODBLKS,DISP=SHR
//SYSRDDS  DD   DSN=IMSVS.SYSRDDS,DISP=SHR
//NSYSRDDS DD   DSN=IMSVS.NSYSRDDS,DISP=SHR
//SYSOUT   DD   SYSOUT=A
//SYSPRINT DD   SYSOUT=A
//SYSIN    DD   *
    (control statements)
/*
```

Figure 24. JCL for checking consistency of DBDs and PSBs

EXEC statement

The EXEC statement must be in the following format:

```
//stepname EXEC PGM=FABLECHK,PARM='IMSPLEX=imsplex,DBRCGRP=dbrcgrp'
```

IMSPLEX=*imsplex*
: A 1 - 5 character IMSplex name used for RECON data sets. This parameter is optional.

DBRCGRP=*dbrcgrp*
: A 1 - 3 character identifier (ID) assigned to a group of DBRC instances that access the same RECON data set in an IMSplex. This parameter is optional.

DD statements

Code the following DD statements to identify the source of input and the placement of output information.

Consistency Checker verifies the libraries that the input DD statements specify, however, depending on the type of database organization, Consistency Checker does not verify certain libraries. For more information, see Verified libraries for each database organization.

STEPLIB DD

Required. This DD statement defines the input data sets as follows:

- IMS Library Integrity Utilities load module library (required)
- The library that contains DFSMDA dynamic allocation members for the RECON data set. When the RECON*n* DD statement is omitted, this DD is required. When the members are included in the library that the DFSMDA DD statement specifies, this DD is not required.
- The library that contains the IMS load modules, and is optional. When CHKRECON=YES is specified, this DD statement is required.
- If you use the SCI exit routine for your IMS environment, specify the load module data set that contains the exit routine.

DFSRESLB DD

Required. This input DD statement points to the library that contains the IMS load modules.

DBDLIB DD

Required if the DBD control statement is specified. This input DD statement points to the library that contains the DBDs to check.

PSBLIB DD

Required if the PSB control statement is specified. This input DD statement points to the library that contains the PSBs to check.

ACBLIB DD

Optional. This input DD statement points to the library that contains the ACBs to check. If you specify this DD statement, Consistency Checker verifies whether the ACB member that corresponds to the specified DBD or PSB has been created. If the ACB member exists, Consistency Checker verifies whether the member is consistent with the DBD or the PSB. If this data set is not specified, Consistency Checker does not check ACBs for any DBD or PSB.

DFSMDA DD

Optional. This input DD statement points to the library that contains the DFSMDA dynamic allocation members. If you specify this DD statement, Consistency Checker verifies whether the DFSMDA dynamic allocation member that corresponds to the specified DBD has been created. If the dynamic allocation member exists, Consistency Checker verifies whether the DSG registration record is consistent with the DBD. If this data set is not specified, Consistency Checker does not check DFSMDA members for any DBDs.

MODBLKS DD

Optional. This input DD statement points to the library that contains MODBLKS, which are control block modules created by IMS system definition. If the data set is specified and DRD=NO is specified in the SYSIN data set, Consistency Checker verifies whether an entry that corresponds to the specified DBD or PSB has been created in the MODBLKS module and, if so, whether it is consistent with the DBD or the PSB. If this data set is not specified, Consistency Checker does not check the MODBLKS for any DBD or PSB.

SYSRDDS DD

Optional. This input DD statement points to the data set that contains the system RDDSs, which are defined in DRD environments. If the data set is specified and DRD=YES is specified in the SYSIN data set, Consistency Checker verifies whether a definition that corresponds to the specified

DBD or PSB has been created in the RDDS and, if created, whether it is consistent with the DBD or the PSB. If this data set is not specified, Consistency Checker does not check the RDDS for any DBD or PSB. Consistency Checker verifies only the latest RDDS even if multiple RDDSs are specified.

NSYSRDDS DD
Optional. This input DD statement points to the data set that contains the non-system RDDS, which is not defined in DRD environments. If the data set is specified and DRD=YES is specified in the SYSIN data set, Consistency Checker verifies whether a definition that corresponds to the specified DBD or PSB has been created in the RDDS and, if created, whether it is consistent with the DBD or the PSB. If this data set is not specified, Consistency Checker does not check the RDDS for any DBD or PSB. The data set must be created by the EXPORT TYPE(ALL) NAME(*) command to contain all the resource definitions. Concatenated data sets are not used.

RECON*x* DD
Optional. These input DD statements point to the RECON data sets. If the data set is specified and CHKRECON=YES is specified in the SYSIN data set, Consistency Checker verifies whether a definition that corresponds to the specified DBD has been created in the RECON data set. If the definition exists, Consistency Checker verifies whether the definition and the DBDS records in the RECON data sets are consistent with the DBD. If this DD statement is omitted, DBRC dynamically allocates the data sets by using DFSMDA dynamic allocation members when Consistency Checker issues a DBRC command internally.

SYSOUT DD
Required. This output DD statement points the data set for generating all activity logs and error messages. The record format is fixed-blocked. The logical record length is 133. Block size, if coded, must be a multiple of 133.

SYSPRINT DD
Required. This output DD statement points to the data set in which Consistency Checker generates the DBD check report, the PSB check report, or both. Each report is sorted alphabetically by member name. The record format is fixed-blocked. The logical record length is 133. Block size, if coded, must be a multiple of 133.

SYSIN DD
Required. The SYSIN DD is the control data set for this program. The record format is fixed-blocked. The logical record length is 80. Block size, if coded, must be a multiple of 80. You can specify up to 9999 control statements by using the SYSIN DD statement.

Related reading: See “Control statements for the Consistency Checker utility” on page 136 for control statements.

Control statements for the Consistency Checker utility

The input to the Consistency Checker utility consists of control statements in the SYSIN data set.

Subsections:

- "Control statement example"
- "Syntax rules"
- "Control statement keywords"

Control statement example

The following figure shows the control statements that can be coded in the SYSIN data set.

```
//SYSIN    DD   *
    DDIRSFX=A
    CHKRECON=YES
    FAILONLY=YES
    FAILRC=04
    DBD=TESTDB1
    DBD=TESTDB2
/*
```

Figure 25. Example of the control statements for Consistency Checker

Syntax rules

The following guidelines apply to the control statements for Consistency Checker:

- The control statements can be coded anywhere between columns 2 - 80.
- In the control statement field, blanks must not be used between keyword, equal sign, and member name.
- Comments can be written after a blank because a blank is considered the delimiter.
- Statements with an asterisk (*) in column 1 are treated as comments.

Control statement keywords

The format of each control statement is as follows:

Note: DDIRSFX, PDIRSFX, CHKRECON, PCBERRLMT, FAILONLY, and FAILRC statements can be specified only once, in no special order. DDIRSFX and CHKRECON are effective for all DBD members, PDIRSFX and PCBERRLMT are effective for all PCB members, and FAILONLY and FAILRC are effective for all DBD and PSB members.

DDIRSFX=[*x* | 0]
: This statement specifies the alphanumeric suffix character appended to DFSDDIR of the MODBLKS module name. The default is 0. If MODBLKS data set is specified in the MODBLKS DD statement, this specification is effective. If DRD=YES is specified in the SYSIN data set, this specification is ignored.

PDIRSFX=[*x* | 0]
: This statement specifies the alphanumeric suffix character that is appended

to DFSPDIR of the MODBLKS module name. The default is 0. If MODBLKS data set is specified in the MODBLKS DD statement, this specification is effective. If DRD=YES is specified in the SYSIN data set, this specification is ignored.

CHKRECON=YES | NO
This statement specifies whether to verify the registration of the database and the data set to RECON. The default is NO.

FAILONLY=YES | NO
This statement specifies whether the DBD check reports are to be printed only for the DBDs that fail the consistency check, and whether the PSB check reports are to be printed only for the PSBs and the PCBs that fail the consistency check. The default is NO, which means these check reports are printed for all of the DBDs and for all of the PSBs to be checked.

FAILRC=*nn*
This statement specifies the return code by two-digit decimal number which is returned when the consistency check fails for any DBDs or any PSBs. The default is 08.

PCBERRLMT=*nnnn*
This statement specifies the maximum number of inconsistent PCBs in each PSB that is to be printed on the PSB check report. If the number of inconsistent PCBs in each PSB has exceeded the value specified in this statement, Consistency Checker will not check further PCBs. You can specify a left-aligned decimal number in the range of 0 - 2500. This specification is effective only when FAILONLY=YES is specified. The default is 2500.

NOCHKORG=*dborg*
This statement specifies that the database organization is to be excluded from the consistency check. One or more of the following types can be specified:

- HSAM, HISAM, HDAM, HIDAM, INDEX, PHDAM, PHIDAM, PSINDEX, GSAM, LOGICAL, MSDB, and DEDB.

  Note: Here, HSAM includes SHSAM, and HISAM includes SHISAM.

For example, specifying the following statement causes the DBDs that are defined as HSAM, SHSAM, or GSAM to be excluded from consistency checking.

```
NOCHKORG=HSAM,GSAM
```

When specifying two or more statements, specify them as follows:

```
NOCHKORG=HSAM
NOCHKORG=GSAM
```

DRD=YES | NO
This statement specifies whether Dynamic Resource Definition (DRD) is enabled in your IMS system. The default is NO. If an RDDS data set is specified in the SYSRDDS or NSYSRDDS DD statement, this specification is effective.

DBD=*member*
This statement specifies the DBD member names to be checked. You can use wildcards to specify multiple members.

PSB=*member*

This statement specifies the PSB member names to be checked. You can use wildcards to specify multiple members.

Note: For the DBD and PSB control statements, wildcards that can be used are an asterisk (*) and a percent sign (%). An asterisk represents 0 - 8 characters, and a percent sign represents a single character. If two or more asterisks are specified sequentially, only the first asterisk is recognized.

JCL examples for the Consistency Checker utility

The following topics provide JCL examples for running the Consistency Checker utility to check the consistency of DBDs and PSBs.

Example: Checking the consistency of DBDs

The following figure shows example JCL for checking whether the ACB member, the MODBLKS module, the DFSMDA member, and the RECON data are consistent with each DBD in the specified DBD library.

In this example, the RECON data sets are allocated dynamically by use of the DFSMDA dynamic allocation members in the library that is specified in the DFSMDA DD statement, without the specification of the RECON*n* DD statement.

In the SYSIN data set, in addition to the DBD member names to be checked, the following optional control statements are specified:

- DDIRSFX=A specifies that the MODBLKS module name to be verified is DFSDDIRA.
- CHKRECON=YES specifies to verify the registration in the RECON data set.
- FAILONLY=YES specifies that the DBD check reports are printed only for DBDs whose consistency check fails.
- FAILRC=08 specifies the return code is 08 when the consistency check fails for any DBDs.
- DBD=* specifies that all DBDs in the specified DBD library are to be checked.

```
//stepname EXEC PGM=FABLECHK
//STEPLIB  DD   DSN=HPS.SHPSLMD0,DISP=SHR
//         DD   DSN=IMSVS.SDFSRESL,DISP=SHR
//DFSRESLB DD   DSN=IMSVS.SDFSRESL,DISP=SHR
//DBDLIB   DD   DSN=IMSVS.DBDLIB,DISP=SHR
//ACBLIB   DD   DSN=IMSVS.ACBLIB,DISP=SHR
//MODBLKS  DD   DSN=IMSVS.MODBLKS,DISP=SHR
//DFSMDA   DD   DSN=IMSVS.DFSMDA,DISP=SHR
//SYSOUT   DD   SYSOUT=A
//SYSPRINT DD   SYSOUT=A
//SYSIN    DD   *
    DDIRSFX=A
    CHKRECON=YES
    FAILONLY=YES
    FAILRC=08
    DBD=*
/*
```

Figure 26. Checking the consistency of DBDs

Example: Checking the consistency of PSBs

The following figure shows example JCL for checking whether the ACB member and the MODBLKS module are consistent with each PSB in the specified PSB library.

In the SYSIN data set, in addition to the PSB member names to be checked, the following optional control statements are specified:

- PDIRSFX=A specifies that the MODBLKS module name to be verified is DFSPDIRA.
- FAILONLY=YES specifies that the PSB check reports are printed only for PSBs and PCBs whose consistency check fails.
- PCBERRLMT=5 specifies the maximum number of the inconsistent PCBs in each PSB that is to be printed on the PSB check report.
- PSB=* specifies that all PSBs in the specified PSB library are to be checked.

```
//stepname EXEC PGM=FABLECHK
//STEPLIB  DD   DSN=HPS.SHPSLMD0,DISP=SHR
//         DD   DSN=IMSVS.SDFSRESL,DISP=SHR
//DFSRESLB DD   DSN=IMSVS.SDFSRESL,DISP=SHR
//PSBLIB   DD   DSN=IMSVS.PSBLIB,DISP=SHR
//ACBLIB   DD   DSN=IMSVS.ACBLIB,DISP=SHR
//MODBLKS  DD   DSN=IMSVS.MODBLKS,DISP=SHR
//SYSOUT   DD   SYSOUT=A
//SYSPRINT DD   SYSOUT=A
//SYSIN    DD   *
    PDIRSFX=A
    FAILONLY=YES
    PCBERRLMT=5
    PSB=*
/*
```

Figure 27. Checking the consistency of PSBs

Example: Checking the consistency of DBDs and PSBs

The following figure shows example JCL for checking whether the ACB member and the MODBLKS module are consistent with each DBD and PSB in the specified DBD and PSB library.

```
//stepname EXEC PGM=FABLECHK
//STEPLIB  DD   DSN=HPS.SHPSLMD0,DISP=SHR
//         DD   DSN=IMSVS.SDFSRESL,DISP=SHR
//DFSRESLB DD   DSN=IMSVS.SDFSRESL,DISP=SHR
//DBDLIB   DD   DSN=IMSVS.DBDLIB,DISP=SHR
//PSBLIB   DD   DSN=IMSVS.PSBLIB,DISP=SHR
//ACBLIB   DD   DSN=IMSVS.ACBLIB,DISP=SHR
//MODBLKS  DD   DSN=IMSVS.MODBLKS,DISP=SHR
//SYSOUT   DD   SYSOUT=A
//SYSPRINT DD   SYSOUT=A
//SYSIN    DD   *
    DBD=TESTDB1
    DBD=TESTDB2
    PSB=TESTPSB1
    PSB=TESTPSB2
/*
```

Figure 28. Checking the consistency of DBDs and PSBs

Output from the Consistency Checker utility

Consistency Checker generates the outputs in the SYSOUT data set and the SYSPRINT data set.

SYSOUT data set

The SYSOUT data set contains activity logs and error messages issued by Consistency Checker.

The messages also show the following information:
- Which parameter is applied to each control statement
- Whether the specified DBD was found in the DBD library
- Whether the consistency check for each DBD succeeded or failed
- Whether the specified PSB was found in the PSB library
- Whether the consistency check for each PSB succeeded or failed

The following figure shows messages that are generated in the SYSOUT data set.

```
IMS LIBRARY INTEGRITY UTILITIES - CONSISTENCY CHECKER               "MESSAGES"                                    PAGE:     1
5655-U08                                              DATE: 10/01/2018  TIME: 12.04.07                     FABLECHK - V2.R2

FABL2010I CONTROL CARD SUPPLIED IS:      DDIRSFX=A
FABL2010I CONTROL CARD SUPPLIED IS:      PDIRSFX=A
FABL2010I CONTROL CARD SUPPLIED IS:      FAILONLY=YES
FABL2010I CONTROL CARD SUPPLIED IS:      FAILRC=04
FABL2010I CONTROL CARD SUPPLIED IS:      CHKRECON=YES
FABL2010I CONTROL CARD SUPPLIED IS:      DBD=TESTDB1
FABL2010I CONTROL CARD SUPPLIED IS:      DBD=TESTDB2
FABL2010I CONTROL CARD SUPPLIED IS:      PSB=TESTPSB1
FABL2010I CONTROL CARD SUPPLIED IS:      PSB=TESTPSB2
FABL2007I PARAMETER USED IS: DDIRSFX=A
FABL2007I PARAMETER USED IS: PDIRSFX=A
FABL2007I PARAMETER USED IS: FAILONLY=YES
FABL2007I PARAMETER USED IS: FAILRC=04
FABL2007I PARAMETER USED IS: PCBERRLMT=2500
FABL2007I PARAMETER USED IS: CHKRECON=YES
FABL2006I ACBLIB   DATA SET IS SPECIFIED
FABL2006I MODBLKS  DATA SET IS SPECIFIED
FABL2006I DFSMDA   DATA SET IS SPECIFIED
FABL2001I DBD TO BE PROCESSED IS TESTDB1
FABL2003E CONSISTENCY CHECK FAILED FOR TESTDB1
FABL2001I DBD TO BE PROCESSED IS TESTDB2
FABL2002I CONSISTENCY CHECK WAS SUCCESSFUL FOR TESTDB2
FABL2001I PSB TO BE PROCESSED IS TESTPSB1
FABL2003E CONSISTENCY CHECK FAILED FOR TESTPSB1
FABL2001I PSB TO BE PROCESSED IS TESTPSB2
FABL2002I CONSISTENCY CHECK WAS SUCCESSFUL FOR TESTPSB2
```

Figure 29. Messages in the SYSOUT data set

SYSPRINT data set

The SYSPRINT data set contains the DBD Check reports, the PSB Check reports, or both. Each report is sorted alphabetically by member name.

The SYSPRINT data set must contain fixed-length records of 133 bytes, and a block size of 133 or a multiple of 133.

DBD Check report

The DBD Check report is generated in the SYSPRINT data set as a result of the consistency check for DBDs.

This report contains the following three parts:
- Library information
- Database (DB) information
- Data set group (DSG) information

The library information part is printed once, on the first page. If FAILONLY=YES statement is specified in SYSIN DD, the database information part and the data set group information part are printed only for the DBDs for which any inconsistency was detected in the consistency check. Otherwise, these parts are printed for all DBDs.

Subsections:
- "Sample report"
- "Report field descriptions for the library information part" on page 144
- "Report field descriptions for the DB information part" on page 145
- "Report field descriptions for the DSG information part" on page 148

Sample report

The following figure shows an example of the DBD Check report.

```
IMS LIBRARY INTEGRITY UTILITIES - CONSISTENCY CHECKER            "DBD CHECK REPORT"                                  PAGE:     1
5655-U08                                                 DATE: 10/01/2018  TIME: 18.21.32                      FABLECHK - V2.R2

LIBRARY INFORMATION
-------------------

  IMS       : 15.1
  RECON     : 15.1
  DFSRESLB  : VOLUME=IMSVS   DSNAME=IMSVS.SDFSRESL
  DBDLIB    : VOLUME=IMSVS   DSNAME=IMSVS.DBDLIB
  ACBLIB    : VOLUME=IMSVS   DSNAME=IMSVS.ACBLIB
  MODBLKS   : VOLUME=IMSVS   DSNAME=IMSVS.MODBLKS                                    SUFFIX = A
  DFSMDA    : VOLUME=IMSVS   DSNAME=IMSVS.MDALIB
  RECON1    :                DSNAME=IMSVS.RECON1
  RECON2    :                DSNAME=IMSVS.RECON2
  RECON3    :                DSNAME=IMSVS.RECON3
```

Figure 30. DBD Check report (Part 1 of 2)

```
IMS LIBRARY INTEGRITY UTILITIES - CONSISTENCY CHECKER            "DBD CHECK REPORT"                                  PAGE:     2
5655-U08                                                  DATE: 10/01/2018  TIME: 18.21.32                      FABLECHK - V2.R2

DBD NAME  : TESTDB1  VOLUME=IMSVS    DSNAME=IMSVS.DBDLIB

DB INFORMATION
--------------

  LIBRARY   CHK  ITEM/FIELD    CONTENTS                  DBDLIB
  --------  ---  ------------  ------------------------  ------------------------
  ACBLIB         ACB MBR       FOUND
                  IMSREL       1510                      1510
            ***   GENDATE      04/15/2018 15:35          02/15/2018 11:25
                  ACCESS       HDAM,OSAM                 HDAM,OSAM
                  SEGS               10                        10
                  RMNAME       RM@D01A                   RM@D01A
                  ANCH                1                         1
                  RBN               500                       500
                  BYTES            1024                      1024
  MODBLKS         DB DEF        FOUND
                  ACCSLVL       EXCLUSIVE
  DFSMDA          MDA MBR       FOUND
  RECON           DB RECORD     FOUND
                  SHRLVL        2
                  TYPE          IMS
                  DBORG/DSORG   HDAM,OSAM
                  BACKOT NEED   ON
                  PROHBT AUTH   OFF
                  RECOV NEED#          0
                  IC NEED#             6

DSG INFORMATION
---------------
             D  ----- DBDLIB ----  ---- ACBLIB ----   M  ------------------- DFSMDA / RECON ---------------------------------
  DSG #  CHK  D  DD1/DD2     BLKSZ  DD1/DD2    BLKSZ   R  DD1/DD2    DISP   DSNAME                                        FLG
  -----  ---  -  --------   ------  --------   -----   -  --------   ----   -------------------------------------------   ---
      1       1  DD@D01A      2048  DD@D01A     2048   B  DD@D01A    SHR    TESTDS.LIUV2.TESTDB1.DD@D01A                  I.-
      2  ***  1  DD@D01BB     2048  DD@D01B *   2048   M  ---     *  --- *  ---                                  *
         ***                                           R  DD@D01B *        TESTDS.LIUV2.TESTDB1.DD@D01B                  *  I.-
      3       1  DD@D01C      2048  DD@D01C     2048   B  DD@D01C    SHR    TESTDS.LIUV2.TESTDB1.DD@D01C                  I.
      4       1  DD@D01D      2048  DD@D01D     2048   B  DD@D01D    SHR    TESTDS.LIUV2.TESTDB1.DD@D01D                  I.-
      5       1  DD@D01E      2048  DD@D01E     2048   B  DD@D01E    SHR    TESTDS.LIUV2.TESTDB1.DD@D01E                  I.-
      6       1  DD@D01F      2048  DD@D01F     2048   B  DD@D01F    SHR    TESTDS.LIUV2.TESTDB1.DD@D01F                  I.-
      -  ***  1  ---          ----  ---         ----   M  DD@D01B *  SHR    TESTDS.LIUV2.TESTDB1.DD@D01B                  *

LEGEND
------
  MR       - SHOWS 'DFSMDA / RECON' DATA IS:
               B:  RETRIEVED FROM BOTH DFSMDA AND RECON
               M:  RETRIEVED FROM DFSMDA
               R:  RETRIEVED FROM RECON
  FLG      - SHOWS RECON FLAGS ARE TURNED ON FOR:
               I:  IMAGE_COPY_NEEDED
               R:  RECOVERY_NEEDED
               P:  PROHIBIT_AUTHORIZATION
```

Figure 31. DBD Check report (Part 2 of 2)

Report field descriptions for the library information part

This part contains information about the input libraries for the DBD check.

IMS IMS version and release number retrieved from the library specified in DFSRESLB DD

RECON
RECON version and release number retrieved by the DBRC command

The following lines show the volume name and the data set name of each library.

DFSRESLB
IMS load library specified in DFSRESLB DD

DBDLIB
DBD library specified in DBDLIB DD

ACBLIB
ACB library specified in ACBLIB DD

Unless each data set is specified in the DD statement, the line for the library is not shown.

MODBLKS
MODBLKS module library specified in MODBLKS DD

MODBLKS information is not printed in the following cases:

- When DRD=YES is specified in SYSIN DD.
- When the data set is not specified on the DD statement.
- When an IMS catalog DBD is processed.

SUFFIX = (x)
Suffix appended to DFSDDIR of the MODBLKS module name

SYSRDDS
System RDDS specified in SYSRDDS DD

SYSRDDS information is not printed in the following cases:

- When DRD=NO is specified in SYSIN DD.
- When the data set is not specified on the DD statement.
- When an IMS catalog DBD is processed.

NSYSRDDS
Non-system RDDS specified in NSYSRDDS DD

NSYSRDDS information is not printed in the following cases:

- When DRD=NO is specified in SYSIN DD.
- When the data set is not specified on the DD statement.
- When an IMS catalog DBD is processed.

DFSMDA
DFSMDA dynamic allocation module library specified in DFSMDA DD

Unless each data set is specified in the DD statement, the line for the library is not shown.

RECON*n*
DBRC RECON data set name

If CHKRECON=NO is specified in SYSIN DD, the lines for RECON*n* are not shown.

Report field descriptions for the DB information part

This part contains information about each database definition and the results of the consistency check.

For each DBD, Consistency Checker decides which type of library is to be verified depending on both the user input and the database organization defined in the DBD as shown in Table 4 on page 128. In this part, information about the only libraries to be verified is printed.

DBD NAME
DBD name. Volume serial number and data set name of the library that contains the DBD member.

The columns of the table in the DB information part are as follows:

LIBRARY
Library that contains each definition

CHK The mark *** is shown if any inconsistency is detected between the DBD and each definition

ITEM/FIELD
Definition item or field

CONTENTS
Contents of each field

DBDLIB
Contents of the DBDs field

The rows of the table in the DB information part are as follows:

ACBLIB

ACB MBR
Whether an ACB member corresponding to the DBD is found in the ACB library.

GENDATE
The date and time when the ACB was generated.

Note: If the generation date of the DBD is later than the generation date of the ACB, Consistency Checker regards them as inconsistent.

IMSREL
The IMS version and release that generated the ACB.

Note: If they are different from the IMS version and release defined in the DFSRESLB library, Consistency Checker regards them as inconsistent.

ACCESS
The DL/I access method and the operating system access method.

SEGS The number of segments in the database. If it is a DEDB database, the number does not include the dummy segments.

RMNAME
The name of randomizing module. This field is shown only for an HDAM, a PHDAM, or a DEDB database.

ANCH
The number of root anchor points in each control interval or block. This field is shown only for an HDAM or a PHDAM database.

RBN The maximum relative block number value. This field is shown only for an HDAM or a PHDAM database.

BYTES
The maximum number of bytes of database record that can be stored in the root addressable area (RAA). This field is shown only for an HDAM or a PHDAM database.

XCI Whether this DEDB uses the Extended Call Interface when making calls to the randomizer or not. This field is shown only for a DEDB database.

MODBLKS

DB DEF
Whether a database definition that corresponds to the DBD is found in the specified MODBLKS module.

ACCSLVL
The access for the defined database:
EX: Exclusive
UP: Update
RO: Read only
RD: Read

MODBLKS information is not printed in the following cases:

- When DRD=YES is specified in SYSIN DD.
- When the data set is not specified on the DD statement.
- When an IMS catalog DBD is processed.

SYSRDDS

DB DEF
Whether a database definition that corresponds to the DBD is found in the specified system RDDS.

ACCSLVL
The access for the defined database:
EX: Exclusive
UP: Update
RO: Read only
RD: Read

SYSRDDS information is not printed in the following cases:

- When DRD=NO is specified in SYSIN DD.
- When the data set is not specified on the DD statement.
- When an IMS catalog DBD is processed.

NSYSRDDS

DB DEF
Whether a database definition that corresponds to the DBD is found in the specified non-system RDDS.

ACCSLVL
The access for the defined database:
EX: Exclusive
UP: Update
RO: Read only
RD: Read

NSYSRDDS information is not printed in the following cases:

- When DRD=NO is specified in SYSIN DD.
- When the data set is not specified on the DD statement.
- When an IMS catalog DBD is processed.

DFSMDA

MDA MBR
Whether a DFSMDA dynamic allocation member that corresponds to the DBD is found in the DFSMDA data set.

RECON

DB RECORD
Whether a DB record that corresponds to the DBD is found in the RECON.

SHRLVL
The level of data sharing (0, 1, 2, or 3).

TYPE The type of database (FP, IMS, or HALDB).

DBORG/DSORG
The database organization and the data set organization.

PARTITIONS
The number of partitions. This field is shown only for PHDAM, PHIDAM, or PSINDEX databases.

BACKOT NEED
The BACKOUT NEEDED flag (ON or OFF). For DEDB, this field is not shown.

PROHBT AUTH
The PROHIBIT AUTHORIZATION flag (ON or OFF).

RECOV NEED#
The count of RECOVERY NEEDED.

IC NEED#
The count of IMAGE COPY NEEDED.

OLR CAPABLE
The online reorganization capable flag (YES or NO). This field is shown only for PHDAM, PHIDAM, or PSINDEX databases.

Report field descriptions for the DSG information part

This part contains information about data set group definitions and results of the consistency check.

The columns of the table in the DSG information part are as follows:

DSG #
The sequential number of the data set groups.

CHK The mark *** is shown if any inconsistency is detected between each definition and the DBD. Additionally the mark * is shown on the right side of each data which is determined as inconsistent.

DD This column indicates one of the following DD of the data set group:
1: DD1
2: DD2 or OVFLW

ACBLIB, DBDLIB
These columns show the following fields found in the DBD and the ACB:

DD1/DD2
The ddname of the data set. For a HALDB, the ddname is retrieved from the specification on the DSGROUP parameter of the SEGM statement in the DBD.

BLKSIZE
The block size of the data set. The value is shown only for (HDAM,OSAM) or (HIDAM,OSAM). For other databases, N/A is shown.

MR Identifies whether the information on the right is of DFSMDA, RECON, or both.

B: The information about DFSMDA and RECON are the same.
M: The information is about DFSMDA.
R: The information is about RECON.

If the information about DFSMDA and RECON are not the same, or if only one of them exists, the column shows M or R.

DFSMDA/RECON

These columns show that the following fields were found both in the DFSMDA dynalloc allocation member and in the DBDS record in the RECON.

DD1/DD2
The ddname of the data set.

DISP The disposition the data set (OLD or SHR). This field is shown only for the DFSMDA dynalloc allocation member.

DSNAME
The name of the data set.

FLG Shows whether the following flags in RECON are ON.

I: The image copy needed flag
R: The recovery needed flag
P: The prohibit authorization flag (FP only)

If a flag is OFF, period (.) is shown. If the flag does not exist in the DBDS record, hyphen (-) is shown.

Notes:

1. For HALDBs, this table shows information only for A-side (A-J, L, X) data set groups in the first defined partition.
2. For DEDB databases, this table shows information only for the first defined area data set (ADS) of each area.

PSB Check report

The PSB Check report is generated in the SYSPRINT data set as a result of the consistency check for PSBs.

This report contains the following three parts:

- Library information
- Program Specification Block (PSB) information
- Program Communication Block (PCB) information

The library information part is printed once on the first page. If FAILONLY=YES statement is specified in SYSIN DD, the Program Specification Block information part and the Program Communication Block information part are printed only for the PSBs and the PCBs for which any inconsistency was detected in the consistency check. Otherwise, these parts are printed for all PSBs.

Subsections:

- "Sample report"
- "Report field descriptions for the library information part" on page 151
- "Report field descriptions for the PSB information part" on page 152
- "Report field descriptions for the PCB information part" on page 155

Sample report

The following figure shows an example of the PSB Check report.

```
IMS LIBRARY INTEGRITY UTILITIES - CONSISTENCY CHECKER            "PSB CHECK REPORT"                                PAGE:     1
5655-U08                                                DATE: 10/01/2018  TIME: 12.04.07                     FABLECHK - V2.R2

LIBRARY INFORMATION
-------------------

  IMS       : 15.1
  DFSRESLB  : VOLUME=IMSVS   DSNAME=IMSVS.SDFSRESL
  PSBLIB    : VOLUME=IMSVS   DSNAME=IMSVS.PSBLIB
  ACBLIB    : VOLUME=IMSVS   DSNAME=IMSVS.ACBLIB
  MODBLKS   : VOLUME=IMSVS   DSNAME=IMSVS.MODBLKS                                    SUFFIX = A
```

Figure 32. PSB Check report (Part 1 of 2)

```
IMS LIBRARY INTEGRITY UTILITIES - CONSISTENCY CHECKER            "PSB CHECK REPORT"                                PAGE:     2
5655-U08                                                  DATE: 10/01/2018  TIME: 12.04.07                    FABLECHK - V2.R2

PSB NAME  : TESTPSB1  VOLUME=IMSVS   DSNAME=IMSVS.PSBLIB

PSB INFORMATION
---------------

  LIBRARY   CHK  ITEM/FIELD    CONTENTS                   PSBLIB
  --------  ---  ------------  -------------------------  -------------------------
  ACBLIB         ACB MBR       FOUND
                  IMSREL       1510                       1510
            ***   GENDATE      05/20/2018 15:31           01/12/2018 11:14
                  LANG         ASSEM/COBOL                ASSEM/COBOL
                  TPPCB NO            3                         3
                  DBPCB NO            4                         4
                  MAXQ                1                         1
                  SSASIZE          3000                      3000
                  IOEROPN             0                         0
                  LOCKMAX             0                         0
                  CMPAT        YES                        YES
                  OLIC         NO                         NO
                  GSROLBOK     NO                         NO
  MODBLKS        PSB DEF       FOUND
                  PGMTYPE      BATCH

TPPCB INFORMATION
-----------------

              P  ------------------- PSBLIB / ACBLIB --------------------
  PCB #  CHK  A  LTERM/NAME   PCBNAME    ALTR   SAME   MODI   EXPR   LIST
  -----  ---  -  -----------  --------  ----   ----   ----   ----   ----
      2       P               PCBTTP1B  NO     NO     YES    NO     YES
         ***  A  TESTTP1B  *  PCBTTP1B  NO     NO     NO  *  NO     YES

LEGEND
------
  PA       - SHOWS 'PSBLIB / ACBLIB' DATA IS:
               B:  RETRIEVED FROM BOTH PSBLIB AND ACBLIB
               P:  RETRIEVED FROM PSBLIB
               A:  RETRIEVED FROM ACBLIB

DBPCB INFORMATION
-----------------

              P  ---------------------------- PSBLIB / ACBLIB -----------------------------
  PCB #  CHK  A  DBDNAME    PCBNAME    SENSEGS   KEYLN   PROCOPT   PROCSEQ(D) VIEW    LIST
  -----  ---  -  --------   --------   -------   -----   -------   --------   -----   ----
      1       P  TESTDB1    PCBTDB1         10      24   G         TESTIDX1           YES
         ***  A  TESTDB1    PCBTDB11*       10      24   G                  *          YES
      4       P  TESTDB2    PCBTDB2          4      18   A                             YES
         ***  A  TESTDB2    PCBTDB2          4      18   I      *                      YES
```

Figure 33. PSB Check report (Part 2 of 2)

Report field descriptions for the library information part

This part contains information about the input libraries for the PSB check.

IMS IMS version and release number retrieved from the library that is specified in DFSRESLB DD.

The following lines show the volume name and the data set name of each library.

DFSRESLB
IMS load library specified in DFSRESLB DD.

PSBLIB
PSB library specified in PSBLIB DD.

ACBLIB
ACB library specified in ACBLIB DD.

Unless each data set is specified in the DD statement, the line for the library is not printed.

MODBLKS
MODBLKS module library specified in MODBLKS DD.

MODBLKS information is not printed in the following cases:

- When DRD=YES is specified in SYSIN DD.
- When the data set is not specified on the DD statement.
- When an IMS catalog PSB is processed.

SUFFIX = (x)
Suffix of the MODBLKS module name DFSPDIR*x*.

SYSRDDS
System RDDS specified in SYSRDDS DD

SYSRDDS information is not printed in the following cases:

- When DRD=NO is specified in SYSIN DD.
- When the data set is not specified on the DD statement.
- When an IMS catalog PSB is processed.

NSYSRDDS
Non-system RDDS specified in NSYSRDDS DD

NSYSRDDS information is not printed in the following cases:

- When DRD=NO is specified in SYSIN DD.
- When the data set is not specified on the DD statement.
- When an IMS catalog PSB is processed.

Report field descriptions for the PSB information part

This part contains information about each application program definition and the results of the consistency check.

In this part, information about only the libraries to be verified is printed.

PSB NAME
PSB name. Volume serial number and data set name of the library that contains the PSB member.

The columns of the table in the PSB information part are as follows:

LIBRARY
Library that contains each definition.

CHK If any inconsistency is detected between the PSB and each definition, *** is shown.

ITEM/FIELD
Definition item or field.

CONTENTS
Contents of each field.

PSBLIB
Contents of the PSBs field.

The rows of the table in the PSB information part are as follows:

ACBLIB

ACB MBR
Whether an ACB member that corresponds to the PSB is found in the ACB library.

GENDATE
The date and time when the ACB was generated.

Notes:

1. If the generation date of the PSB is later than the generation date of the ACB, Consistency Checker regards them as inconsistent.
2. If the PSB was generated by IMS Version 3 or higher, the PSB's field is shown.

IMSREL
The version and release of the IMS system that generated the ACB.

Notes:

1. If they are different from the version and release of the IMS system that is defined in the DFSRESLB library, Consistency Checker regards them as inconsistent.
2. If the PSB was generated by IMS Version 3 or higher, the PSB's field is shown.

LANG
The compiler language.

Even if you specify LANG=*blank* on the PSBGEN statement, LANG=ASSEM/COBOL is shown.

TPPCB NO
The number of TP PCBs in the PSB.

DBPCB NO
The number of DB PCBs in the PSB.

GSAMPCB NO
The number of GSAM PCBs in the PSB.

MAXQ
The maximum number of database calls with Q*x* command codes that can be issued between synchronization points.

SSASIZE
The maximum total length of all SSAs used by the application program.

Unless SSASIZE is specified on the PSBGEN, Consistency Checker does not verify this field.

IOEROPN
The condition code that is returned to the operating system when the IMS system terminates normally, and errors that occurred on any database while running the application program.

LOCKMAX
The maximum number of locks that an application program can get at one time.

CMPAT
Whether the PSB is treated as if there were an I/O PCB.

OLIC Whether the user of the PSB is authorized to run the Online Database Image Copy utility or the Surveyor utility feature that runs as a BMP against a database named in the PSB.

GSROLBOK
Whether an internal ROLB call should be done to roll back non-GSAM database updates.

MODBLKS

PSB DEF
Whether an application program definition that corresponds to the PSB is found in the specified MODBLKS module.

PGMTYPE
The type of application program.

TP: This value specifies that the IMS system schedules the program when messages processed by the program exist in the system.

BATCH:
This value specifies that the program can use DL/I in the system region of the IMS control program and can refer to the message queues.

MODBLKS information is not printed in the following cases:

- When DRD=YES is specified in SYSIN DD.
- When the data set is not specified on the DD statement.
- When an IMS catalog PSB is processed.

SYSRDDS

PSB DEF
Whether an application program definition that corresponds to the PSB is found in the specified system RDDS.

PGMTYPE
The type of application program.

TP: This value specifies that the IMS system schedules the program when messages processed by the program exist in the system.

BATCH:
This value specifies that the program can use DL/I in the system region of the IMS control program and can refer to the message queues.

SYSRDDS information is not printed in the following cases:

- When DRD=NO is specified in SYSIN DD.
- When the data set is not specified on the DD statement.
- When an IMS catalog PSB is processed.

NSYSRDDS

PSB DEF
Whether an application program definition that corresponds to the PSB is found in the specified non-system RDDS.

PGMTYPE
The type of application program.

TP: This value specifies that the IMS system schedules the program when messages processed by the program exist in the system.

BATCH:
This value specifies that the program can use DL/I in the system region of the IMS control program and can refer to the message queues.

NSYSRDDS information is not printed in the following cases:

- When DRD=NO is specified in SYSIN DD.
- When the data set is not specified on the DD statement.
- When an IMS catalog PSB is processed.

Report field descriptions for the PCB information part

This part contains information about program communication block definitions, and results of the consistency check.

Notes:

1. If you define TP PCBs or DB PCBs in a PSB, the TP PCB information part or the DB PCB information part is shown.
2. When you specify FAILONLY=YES and PCBERRLMT=*nnnn*, only the inconsistent PCBs up to *nnnn* in each PSB will be printed, and no consistent PCBs will be shown in this part.

TPPCB INFORMATION

The columns of the table in the TP PCB information part are as follows:

PCB # The sequential number of the TP PCBs.

CHK If any inconsistency is detected between each definition and the PSB, *** is printed. Additionally * is shown on the right side of each data that is determined as inconsistent.

PA Identifies whether the information on the right is of PSBLIB, ACBLIB, or both.
B: The information about PSBLIB and ACBLIB are the same.
P: The information is about PSBLIB.
A: The information is about ACBLIB.

If the information about PSBLIB and ACBLIB are not the same, or if only one of them exists, the column shows P or A.

PSBLIB/ACBLIB
These columns show the following fields that are found in the PSB and the ACB:

LTERM/NAME
The output message destination.

PCBNAME (label)
The name of the PCB or the label for the PCB.

ALTR: ALTRESP
Whether the PCB can be used instead of the I/O PCB.

SAME: SAMETRM
Whether the IMS system verifies that the logical terminal

named in the response alternate PCB is assigned to the same physical terminal as the logical terminal that originated the input message.

MODI: MODIFY
Whether the dynamic modification of the destination name is allowed.

EXPR: EXPRESS
Whether messages from the PCB are to be sent or are to be backed out when the application program abends.

LIST Whether the named PCB is included in the PCB list that is passed to the application program at the entry.

DBPCB INFORMATION

The columns of the table in the DB PCB information part are as follows:

PCB #
The sequential number of the DB PCBs.

CHK If any inconsistency is detected between each definition and the PSB, *** is printed. Additionally * is shown on the right side of each data that is determined as inconsistent.

PA Identifies whether the information on the right is of PSBLIB, ACBLIB, or both.
B: The information about PSBLIB and ACBLIB are the same.
P: The information is about PSBLIB.
A: The information is about ACBLIB.

If the information about PSBLIB and ACBLIB are not the same, or if only one of them exists, the column shows P or A.

PSBLIB/ACBLIB
These columns show that the following fields are found in the PSB and the ACB:

DBDNAME
DBD name.

PCBNAME (label)
The name of the PCB or the label for the PCB.

SENSEGS
The number of sensitive segments defined in the PCB.

KEYLN
The longest concatenated key length.

Note: If the key length of the PCB for a DEDB database that is defined in the ACB is the same as that in the PSB adjusted to the fullword boundary, Consistency Checker regards them as consistent.

PROCOPT
The processing options on sensitive segments that are specified on the PCB statement.

Note: Even if PROCOPT=L is specified in a PCB for an HIDAM or a PHIDAM database, Consistency Checker regards it as PROCOPT=LS.

PROCSEQ(D)
The name of a secondary index that is used to process a database through a secondary processing sequence.

VIEW Whether applications use MSDB commit view.

LIST Whether the named PCB is included in the PCB list that is passed to the application program at the entry.

Chapter 5. Multiple Resource Checker utility

The Multiple Resource Checker utility checks the consistency across multiple resources.

Topics:

- "Multiple Resource Checker utility overview" on page 160
- "Checking consistencies with the Multiple Resource Checker utility" on page 162
- "JCL requirements for the Multiple Resource Checker utility" on page 175
- "Control statements for the Multiple Resource Checker utility" on page 178
- "Fields compared in RECON data sets" on page 181
- "JCL examples for the Multiple Resource Checker" on page 185
- "Output from the Multiple Resource Checker utility" on page 193

Multiple Resource Checker utility overview

The Multiple Resource Checker utility checks the consistency across multiple resources, such as across DBDLIBs, PSBLIBs, ACBLIBs, and sets of RECON data sets.

Subsections:

- "Function overview"
- "Program structure" on page 161
- "Restriction" on page 161
- "Data flow" on page 161

Function overview

The Multiple Resource Checker utility checks the consistency across multiple resources.

If you have multiple DBD libraries, PSB libraries, ACB libraries, and sets of RECON data sets, and you want to identify the libraries and RECON data sets that contain different definitions, run the Multiple Resource Checker utility to generate a Resource Check Summary report. This report is generated in the FABWSUMM data set and contains a matrix table that summarizes any differences in the libraries and RECON data sets.

The Multiple Resource Checker utility can process up to 10 DBDLIBs, PSBLIBs, ACBLIBs, and 10 sets of RECON data sets in one job.

This utility checks each DBD, PSB, and ACB member across libraries and database definitions across multiple sets of RECON data sets. The utility reports that the members or definitions are different when one or more of the following occurrences are detected:

- One or more DBD or PSB members do not exist in one or more libraries
- DBD or PSB members exist in every library, but their definitions are different
- One or more DBD members are not registered in one or more sets of RECON data sets
- DBD members are registered in each set of RECON data sets, but their definitions, such as the database organization type or the DD name, are different from the definitions in the library
- Database definitions and database recovery definitions in the DB record fields or the DBDS record fields are different across sets of RECON data sets

The Multiple Resource Checker utility can also check the consistency across multiple sets of RECON data sets and generate a RECON difference report in the FABWRRPT data set. It checks database definitions and database recovery definitions in RECON record fields, DB record fields, DBDS record fields, and data group record fields.

The utility does not check all of the fields in RECON data sets. For RECON data sets, the utility checks the definitions that relate to the database and, optionally, the definitions that relate to the database recovery environment. Then, the utility reports the results in the Resource Check Summary report and the RECON Difference report. For more information about the fields that are checked, see "Fields compared in RECON data sets" on page 181.

Program structure

The Multiple Resource Checker utility is provided as an MVS batch utility program. Based on the control statements, the program generates a Resource Check Summary report and, optionally, a RECON Difference report, for the specified libraries. This function is invoked by the FABWMCHK load module.

Restriction

The Multiple Resource Checker utility cannot compare database definitions in RECON data sets with ACB members in ACBLIB.

Data flow

The following figure shows the general data flow for Multiple Resource Checker (FABWMCHK).

The input consists of the FABWCTL data set (contains the control statements), RECON data sets, DBDLIB data sets, PSBLIB data sets, and ACBLIB data sets. The output consists of reports and an activity log.

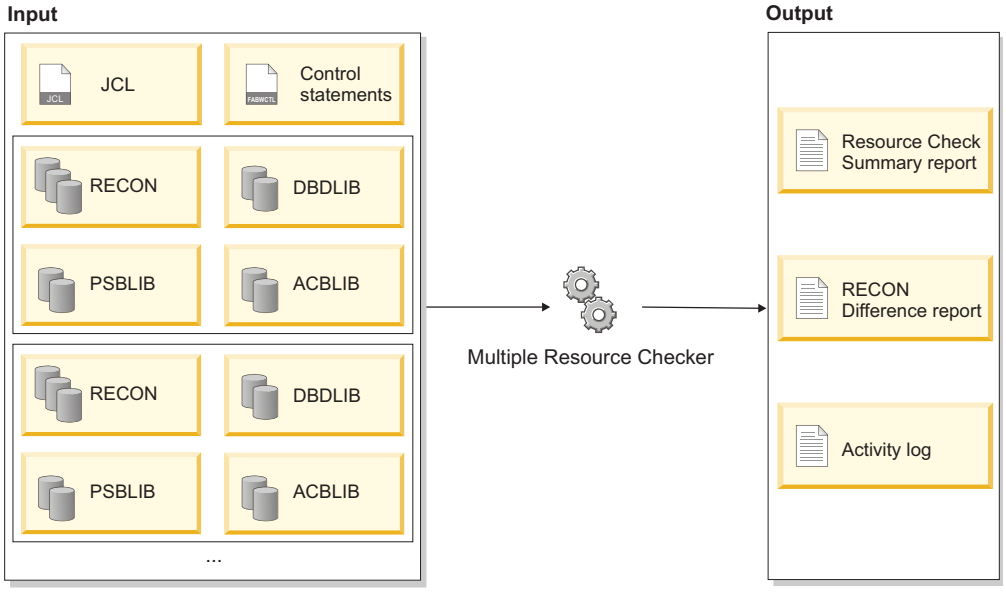


Figure 34. Data flow for Multiple Resource Checker

Checking consistencies with the Multiple Resource Checker utility

The Multiple Resource Checker utility supports several scenarios for checking the consistency of DBDLIBs, PSBLIBs, ACBLIBs, and sets of RECON data sets.

Checking the consistency of multiple resources

Use the Multiple Resource Checker utility to detect inconsistencies in DBDs or PSBs that are stored in multiple libraries or that are defined in multiple sets of RECON data sets.

About this task

If you have multiple IMS subsystems and each subsystem uses different RECON data sets, DBDLIBs, PSBLIBs, and ACBLIBs, and you want to identify the resources that contain different definitions, run the Multiple Resource Checker to generate a Resource Check Summary report.

The following figure illustrates the resources that are compared in this scenario.

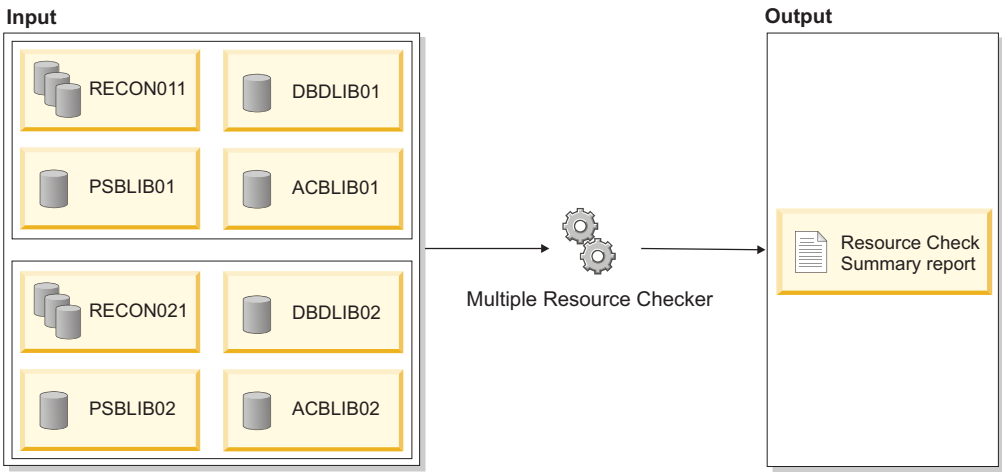


Figure 35. Checking the consistency of multiple resources

The Multiple Resource Checker utility can process resources that were generated by different IMS releases. To process multiple sets of RECON data sets that are of different IMS releases, the IMS RESLIB of each IMS release is required.

The elapsed time that is required for a job increases as the number of resources to check increases. If you want to check a specific member, you can specify the member name to generate a report for that member. By limiting the number of resources, you can reduce the elapsed time for the job.

Sample JCL for the Multiple Resource Checker utility is in the SHPSJCL0 library, member FABWIVP. You can modify this sample JCL and then use it to run the utility.

Procedure

1. Code the EXEC statement and DD statements for the Multiple Resource Checker utility.

   The following JCL example is for comparing multiple resources:

```
//MULTIJB    EXEC PGM=FABWMCHK
//STEPLIB  DD   DISP=SHR,DSN=HPS.SHPSLMD0
//IMSV12   DD   DISP=SHR,DSN=IMS12A.SDFSRESL                    1
//IMSV13   DD   DISP=SHR,DSN=IMS13A.SDFSRESL
//RECON011 DD   DISP=SHR,DSN=IMSVS.TEST.IMS12.RECON011          2
//RECON012 DD   DISP=SHR,DSN=IMSVS.TEST.IMS12.RECON012
//RECON013 DD   DISP=SHR,DSN=IMSVS.TEST.IMS12.RECON013
//RECON021 DD   DISP=SHR,DSN=IMSVS.TEST.IMS13.RECON021
//RECON022 DD   DISP=SHR,DSN=IMSVS.TEST.IMS13.RECON022
//RECON023 DD   DISP=SHR,DSN=IMSVS.TEST.IMS13.RECON023
//DBDLIB01 DD   DISP=SHR,DSN=IMSVS.TEST.IMS13.DBDLIB01          3
//DBDLIB02 DD   DISP=SHR,DSN=IMSVS.TEST.IMS13.DBDLIB02
//PSBLIB01 DD   DISP=SHR,DSN=IMSVS.TEST.IMS13.PSBLIB01
//PSBLIB02 DD   DISP=SHR,DSN=IMSVS.TEST.IMS13.PSBLIB02
//ACBLIB01 DD   DISP=SHR,DSN=IMSVS.TEST.IMS13.ACBLIB01
//ACBLIB02 DD   DISP=SHR,DSN=IMSVS.TEST.IMS13.ACBLIB02
//FABWOUT  DD   SYSOUT=A                                         4
//FABWSUMM DD   SYSOUT=A
//SYSPRINT DD   SYSOUT=A                                         5
```

- **1** To check the RECON data sets generated by different IMS releases, code an IMSV*nn* DD statement for each IMS release.
- **2** To check two sets of RECON data sets, code three RECON*xxn* DD statements for each set of the RECON data sets.
- **3** To check DBDs, PSBs, and ACBs in different libraries, specify a DBDLIB*xx*, PSBLIB*xx*, ACBLIB*xx* DD statement for each library.
- **4** To generate messages and the Resource Check Summary report, specify the FABWOUT and FABWSUMM DD statements.
- **5** To access the RECON data sets, code the SYSPRINT DD statement.

For a description of the JCL statements, see "JCL requirements for the Multiple Resource Checker utility" on page 175.

2. In the FABWCTL data set, code the control statements for the Multiple Resource Checker utility.

   To check the resources that are generated by different IMS releases, specify the NOCOMP=IMSREL control statement as follows:

   ```
   //FABWCTL  DD   *
     NOCOMP=IMSREL
   /*
   ```

   For a description of the control statements, see "Control statements for the Multiple Resource Checker utility" on page 178.
3. Submit the job.
4. Examine the Resource Check Summary report that is generated in the FABWSUMM data set.

   The following figure shows an example of the Resource Check Summary report.

```
IMS LIBRARY INTEGRITY UTILITIES - MULTIPLE RESOURCE CHECKER              "RESOURCE CHECK SUMMARY REPORT"              PAGE:     1
5655-U08                                              DATE: 10/01/2018  TIME: 17.57.02                       FABWMCHK - V2.R2

...
...

DBD RECORDS
-----------------
                  | RECON DD NUMBER               | DBD DD NUMBER                 | ACB DD NUMBER
  DBDNAME  RESULT | 01 02 03 04 05 06 07 08 09 10 | 01 02 03 04 05 06 07 08 09 10 | 01 02 03 04 05 06 07 08 09 10
  -------- ------ + -- -- -- -- -- -- -- -- -- -- + -- -- -- -- -- -- -- -- -- -- + -- -- -- -- -- -- -- -- -- --
  DBD@0001 SAME   |  *  *  -  -  -  -  -  -  -  -  |  *  *  -  -  -  -  -  -  -  -  |  *  *  -  -  -  -  -  -  -  -        1
  DBD@0002 DIFF   |  *  *  -  -  -  -  -  -  -  -  |  *  *  -  -  -  -  -  -  -  -  |  *  *  -  -  -  -  -  -  -  -        2
  DBD@0003 DIFF   |        -  -  -  -  -  -  -  -  |  *  *  -  -  -  -  -  -  -  -  |        -  -  -  -  -  -  -  -        3
  ...

PSB RECORDS
-----------------
                  | PSB DD NUMBER                 | ACB DD NUMBER
  DBDNAME  RESULT | 01 02 03 04 05 06 07 08 09 10 | 01 02 03 04 05 06 07 08 09 10
  -------- ------ + -- -- -- -- -- -- -- -- -- -- + -- -- -- -- -- -- -- -- -- --
  PSB@001  SAME   |  *  *  -  -  -  -  -  -  -  -  |  *  *  -  -  -  -  -  -  -  -                                        4
  PSB@002  DIFF   |  *  *  -  -  -  -  -  -  -  -  |  *  *  -  -  -  -  -  -  -  -                                        5
  PSB@003  DIFF   |  *  *  -  -  -  -  -  -  -  -  |     *  -  -  -  -  -  -  -  -                                        6
  ...
```

Figure 36. Report example: Resource Check Summary report for multiple resources

From this report, you can identify that:

- **1** The DBD DBD@0001 exists in all of the specified libraries and in each set of the RECON data sets. The definitions are the same.
- **2** The DBD DBD@0002 exists in all of the specified libraries and in each set of the RECON data sets. However, some of them have different definitions.
- **3** The DBD DBD@0003 is not registered in the RECON data sets and does not exist in the ACB libraries.
- **4** The PSB PSB@0001 exists in all of the specified libraries and its definitions are the same.
- **5** The PSB PSB@0002 exists in all of the specified libraries, but some of them have different definitions.
- **6** The PSB-type ACB PSB@0003 does not exist in one of the ACB libraries.

For a description of the report, see "FABWSUMM data set" on page 193.

What to do next

When inconsistent resources are found, you can use IMS Library Integrity Utilities to investigate the differences:

- To check the differences between the members in two libraries, use the DBD/PSB/ACB Compare utility. See Chapter 6, "DBD/PSB/ACB Compare utility," on page 203.
- To identify the specific RECON field that is different in the RECON data sets, generate a RECON Difference report by using the Multiple Resource Checker utility. See "Checking the consistency of multiple sets of RECON data sets" on page 166.
- To view the database structure, use the DBD/PSB/ACB Mapper utility. See Chapter 7, "DBD/PSB/ACB Mapper utility," on page 247.

  If you have IMS Database Solution Pack, IMS Database Utility Solution, or IMS Fast Path Solution Pack, you can also use the DBD/PSB Map Viewer, the IMS Library Integrity Utilities extension for Management Console, to view the database structure and program specifications through a web browser. For more information, see the *Management Console User's Guide*.

Related reference:
"Examples: Checking the consistency of multiple resources" on page 185

Checking the consistency of multiple sets of RECON data sets

Use the Multiple Resource Checker utility to check the consistency of definitions across multiple sets of RECON data sets. When inconsistencies are found, you can request an additional report that shows which definitions in the RECON data sets are different.

About this task

If you have multiple sets of RECON data sets and you want to ensure that the definitions in the RECON data sets are consistent, run the Multiple Resource Checker utility to generate a Resource Check Summary report. The Multiple Resource Checker utility checks for inconsistencies in DB record fields and DBDS record fields. If inconsistencies are found, the utility summarizes the differences in the Resource Check Summary report. The Multiple Resource Checker utility also reports the inconsistencies in the RECON record fields, DB record fields, DBDS record fields, and data group record fields in the RECON Difference report.

Restriction: The utility does not check all of the fields in RECON data sets. For the record fields that are checked by the Multiple Resource Checker utility, see "Fields compared in RECON data sets" on page 181.

The following figure illustrates the resources that are compared in this scenario.

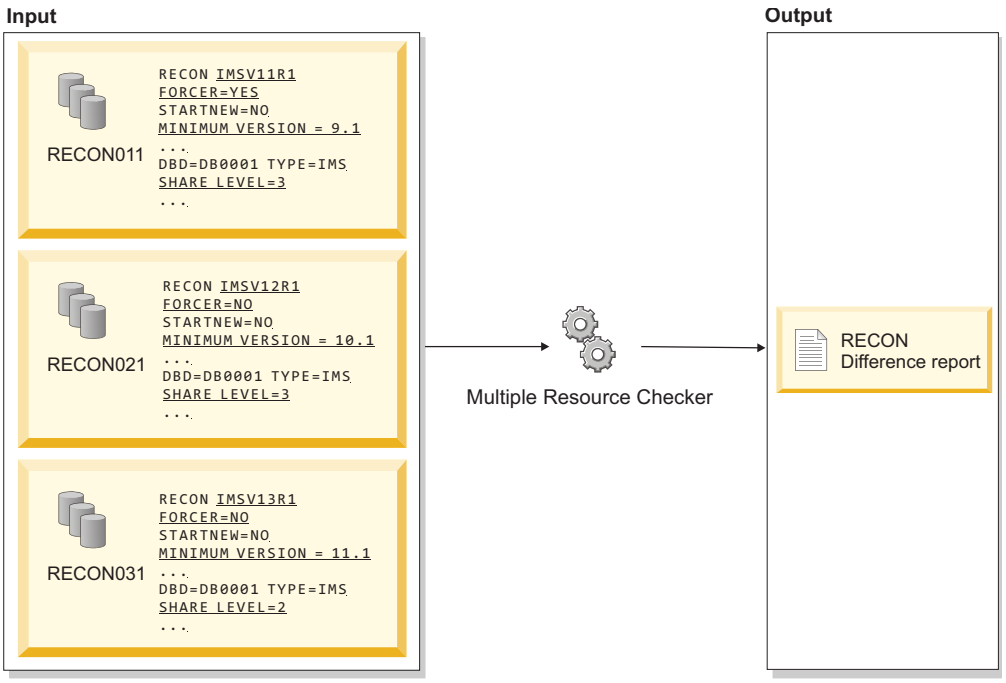


Figure 37. Checking the consistency of multiple sets of RECON data sets

Sample JCL for the Multiple Resource Checker utility is in the SHPSJCL0 library, member FABWIVP. You can modify this sample JCL and then use it to run the utility.

Procedure

1. Code the EXEC statement and DD statements for the Multiple Resource Checker utility.

The following JCL example is for comparing multiple sets of RECON data sets:

```
//MLTISTP     EXEC PGM=FABWMCHK
//STEPLIB  DD   DISP=SHR,DSN=HPS.SHPSLMD0
//IMSV11   DD   DISP=SHR,DSN=IMS11A.SDFSRESL                    1
//IMSV12   DD   DISP=SHR,DSN=IMS12A.SDFSRESL
//IMSV13   DD   DISP=SHR,DSN=IMS13A.SDFSRESL
//RECON011 DD   DISP=SHR,DSN=IMSVS.TEST.IMS11.RECON011          2
//RECON012 DD   DISP=SHR,DSN=IMSVS.TEST.IMS11.RECON012
//RECON013 DD   DISP=SHR,DSN=IMSVS.TEST.IMS11.RECON013
//RECON021 DD   DISP=SHR,DSN=IMSVS.TEST.IMS12.RECON021
//RECON022 DD   DISP=SHR,DSN=IMSVS.TEST.IMS12.RECON022
//RECON023 DD   DISP=SHR,DSN=IMSVS.TEST.IMS12.RECON023
//RECON031 DD   DISP=SHR,DSN=IMSVS.TEST.IMS13.RECON031
//RECON032 DD   DISP=SHR,DSN=IMSVS.TEST.IMS13.RECON032
//RECON033 DD   DISP=SHR,DSN=IMSVS.TEST.IMS13.RECON033
//FABWOUT  DD   SYSOUT=A                                        3
//FABWSUMM DD   SYSOUT=A
//FABWRRPT DD   SYSOUT=A                                        4
//SYSPRINT DD   SYSOUT=A                                        5
```

- **1** To check the RECON data sets generated by different IMS releases, code an IMSV*nn* DD statement for each IMS release.
- **2** To check three sets of RECON data sets, code three RECON*xxn* DD statements for each set of the RECON data sets.
- **3** To generate messages and the Resource Check Summary report, specify the FABWOUT and FABWSUMM DD statements.
- **4** To generate the RECON Difference report, specify the FABWRRPT DD statement.
- **5** To access the RECON data sets, code the SYSPRINT DD statement.

For a description of the JCL statements, see "JCL requirements for the Multiple Resource Checker utility" on page 175.

2. In the FABWCTL data set, code the control statements for the Multiple Resource Checker utility.

   To generate the RECON Difference report, specify DIFFREP=YES control statement as follows:

   ```
   //FABWCTL  DD   *
     NOCOMP=IMSREL
     DIFFREP=YES
   /*
   ```

   For a description of the control statements, see "Control statements for the Multiple Resource Checker utility" on page 178.
3. Submit the job.
4. Examine the Resource Check Summary report that is generated in the FABWSUMM data set. If a RECON Difference report is generated in the FABWRRPT data set, also examine that report.

   The following figure shows an example of the Resource Check Summary report.

```
IMS LIBRARY INTEGRITY UTILITIES - MULTIPLE RESOURCE CHECKER              "RESOURCE CHECK SUMMARY REPORT"              PAGE:     1
5655-U08                                                 DATE: 10/01/2018  TIME: 17.57.02                      FABWMCHK - V2.R2

...
...

DBD RECORDS
------------------
                   | RECON DD NUMBER
  DBDNAME  RESULT  | 01 02 03 04 05 06 07 08 09 10
  -------- ------ + -- -- -- -- -- -- -- -- -- --
  DBD00001 DIFF    |  *  *  *  -  -  -  -  -  -  -                                                          1
  DBD00002 SAME    |  *  *  *  -  -  -  -  -  -  -                                                          2
  ...
```

Figure 38. Report example: Resource Check Summary report for RECON data sets

From this report, you can identify whether the database definitions in the DB record fields and DBDS record fields are the same across the sets of RECON data sets.

- **1** The database definition for DBD00001 is registered in all the specified RECON data sets. However, the definitions are different in some RECON data sets.
- **2** The database definition for DBD00002 is registered in all the specified RECON data sets. The definitions in all the RECON data sets are the same.

The following figure shows an example of the RECON Difference report.

```
IMS LIBRARY INTEGRITY UTILITIES - MULTIPLE RESOURCE CHECKER          "RECON DIFFERENCE REPORT"                    PAGE:     1
5655-U08                                                 DATE: 04/01/2018  TIME: 11.20.23                      FABWMCHK - V2.R2

 DBNAME=DB00001 TYPE=DB

  FIELD (SAME)        DD  VALUE               FIELD (DIFF)     1    DD  VALUE
  ------------------  --  ----------------    ------------------  --  ----------------
   DBD                **  DB00001             SHARE LEVEL        01  3
  ------------------                          ------------------  02  2
                                                                  03  3
IMS LIBRARY INTEGRITY UTILITIES - MULTIPLE RESOURCE CHECKER          "RECON DIFFERENCE REPORT"                    PAGE:     2
5655-U08                                                 DATE: 04/01/2018  TIME: 11.20.23                      FABWMCHK - V2.R2

 DBNAME=DB00001  TYPE=DBDS
 DDN=DD0000A

  FIELD (SAME)        DD  VALUE               FIELD (SAME)        DD  VALUE               FIELD (SAME)        DD  VALUE
  ------------------  --  ----------------    ------------------  --  ----------------    ------------------  --  ----------------
   DDN                **  DD0000A              DBD                **  DB00001              TYPE               **  IMS
  ------------------                          ------------------                       ------------------

  FIELD (SAME)        DD  VALUE               FIELD (SAME)        DD  VALUE
  ------------------  --  ----------------    ------------------  --  ----------------
   DBORG              **  HDAM                 DSORG              **  VSAM
  ------------------                          ------------------
```

Figure 39. Report example: RECON Difference report when inconsistencies are detected

From this report, you can identify that in the DB record fields, the value of SHARE LEVEL differs for DBD DBD00001 **1** .

For a description of the reports, see the following topics:

- "FABWSUMM data set" on page 193
- "FABWRRPT data set" on page 197

Related reference:

"Example: Comparing the database definitions across multiple sets of RECON data sets" on page 192

Checking the consistency across two resource types

Use the Multiple Resource Checker utility to check the consistency of DBDs between DBD libraries and ACB libraries, or PSBs between PSB libraries and ACB libraries.

About this task

You can use the Multiple Resource Checker utility to check the consistency of DBD or PSB members between multiple DBD or PSB libraries and multiple ACB libraries in one job.

If you want to check the consistency of a specific DBD or PSB member in multiple libraries, you can specify the member name on the DBD= or the PSB= control statement. Doing so improves the performance of the job.

The following figure illustrates the resources that are compared in this scenario.

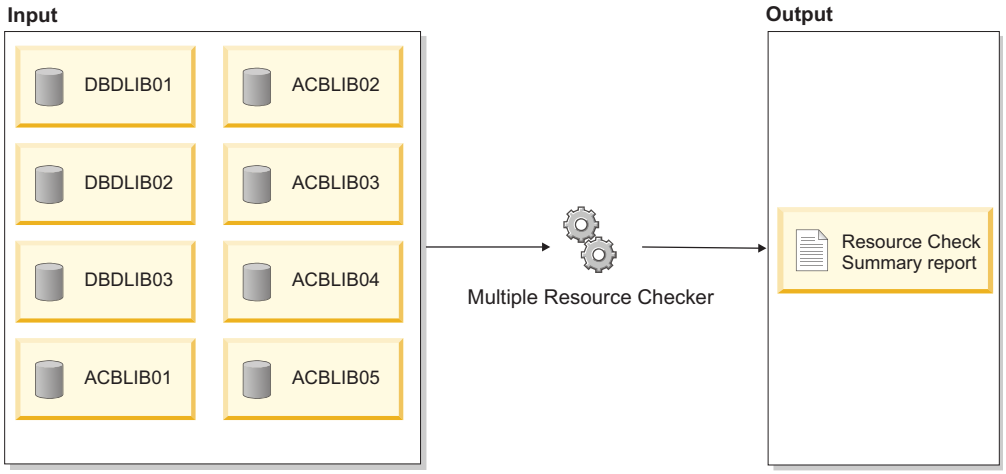


Figure 40. Checking the consistency of DBDs in DBD libraries and ACB libraries

Sample JCL for the Multiple Resource Checker utility is in the SHPSJCL0 library, member FABWIVP. You can modify this sample JCL and then use it to run the utility.

Procedure

1. Code the EXEC statement and DD statements for the Multiple Resource Checker utility.

   The following JCL example is for checking the consistency of DBDs and ACBs in multiple libraries:

```
//MLTISTP     EXEC PGM=FABWMCHK
//STEPLIB  DD   DISP=SHR,DSN=HPS.SHPSLMD0
//DBDLIB01 DD   DISP=SHR,DSN=IMSVS.TEST.IMS13.DBDLIB01              1
//DBDLIB02 DD   DISP=SHR,DSN=IMSVS.TEST.IMS13.DBDLIB02
//DBDLIB03 DD   DISP=SHR,DSN=IMSVS.TEST.IMS13.DBDLIB03
//ACBLIB01 DD   DISP=SHR,DSN=IMSVS.TEST.IMS13.ACBLIB01              2
//ACBLIB02 DD   DISP=SHR,DSN=IMSVS.TEST.IMS13.ACBLIB02
//ACBLIB03 DD   DISP=SHR,DSN=IMSVS.TEST.IMS13.ACBLIB03
//ACBLIB04 DD   DISP=SHR,DSN=IMSVS.TEST.IMS13.ACBLIB04
//ACBLIB05 DD   DISP=SHR,DSN=IMSVS.TEST.IMS13.ACBLIB05
//FABWOUT  DD   SYSOUT=A                                            3
//FABWSUMM DD   SYSOUT=A
```

- **1** To check the DBD members in DBD libraries, specify a DBDLIB*xx* DD statement for each DBD library.
- **2** To check the DBD-type ACB members in ACB libraries, specify an ACBLIB*xx* DD statement for each ACB library.
- **3** To generate messages and the Resource Check Summary report, specify the FABWOUT and FABWSUMM DD statements.

For a description of the JCL statements, see "JCL requirements for the Multiple Resource Checker utility" on page 175.

2. In the FABWCTL data set, code the control statements for the Multiple Resource Checker utility.

   If you do not specify control statements, all the members in the specified libraries are checked.

   For a description of the control statements, see "Control statements for the Multiple Resource Checker utility" on page 178.
3. Submit the job.
4. Examine the Resource Check Summary report that is generated in the FABWSUMM data set.

   The following figure shows an example of the Resource Check Summary report.

```
IMS LIBRARY INTEGRITY UTILITIES - MULTIPLE RESOURCE CHECKER              "RESOURCE CHECK SUMMARY REPORT"              PAGE:     1
5655-U08                                              DATE: 10/01/2018  TIME: 17.57.02                      FABWMCHK - V2.R2

...
...
DBD RECORDS
------------------
                    | DBD DD NUMBER                 | ACB DD NUMBER
  DBDNAME  RESULT   | 01 02 03 04 05 06 07 08 09 10 | 01 02 03 04 05 06 07 08 09 10
  -------- ------ + -- -- -- -- -- -- -- -- -- -- + -- -- -- -- -- -- -- -- -- --
  DBD00001 SAME     |  *  *  *  -  -  -  -  -  -  - |  *  *  *  *  *  -  -  -  -  -                                    1
  DBD00002 DIFF     |  *  *  *  -  -  -  -  -  -  - |  *  *  *  *  *  -  -  -  -  -                                    2
  DBD00003 DIFF     |  *  *  *  -  -  -  -  -  -  - |  *  *  *        -  -  -  -  -                                    3
...
```

Figure 41. Report example: Resource Check Summary report for DBDs in DBD and ACB libraries

From this report, you can identify that:

- **1** The DBD DBD00001 exists in all of the specified libraries and its definitions are the same.
- **2** The DBD DBD00002 exists in all of the specified libraries, but some of them have different definitions.
- **3** The DBD-type ACB DBD00003 does not exist in two ACB libraries.

For a description of the report, see "FABWSUMM data set" on page 193.

What to do next

When inconsistent DBD or PSB members are found, you can use IMS Library Integrity Utilities to investigate the differences:

- To check the differences between the members in two libraries, use the DBD/PSB/ACB Compare utility. See Chapter 6, "DBD/PSB/ACB Compare utility," on page 203.
- To view the database structure, use the DBD/PSB/ACB Mapper utility. See Chapter 7, "DBD/PSB/ACB Mapper utility," on page 247.

  If you have IMS Database Solution Pack, IMS Database Utility Solution, or IMS Fast Path Solution Pack, you can also use the DBD/PSB Map Viewer, the IMS Library Integrity Utilities extension for Management Console, to view the database structure and program specifications through a web browser. For more information, see the *Management Console User's Guide*.

Checking the consistency of same resource-type members in multiple libraries

Use the Multiple Resource Checker utility to check the consistency of a DBD or a PSB across multiple libraries.

About this task

You can use the Multiple Resource Checker utility to check the consistency of the same resource-type members across multiple libraries in one job.

The following figure illustrates the resources that are compared in this scenario.

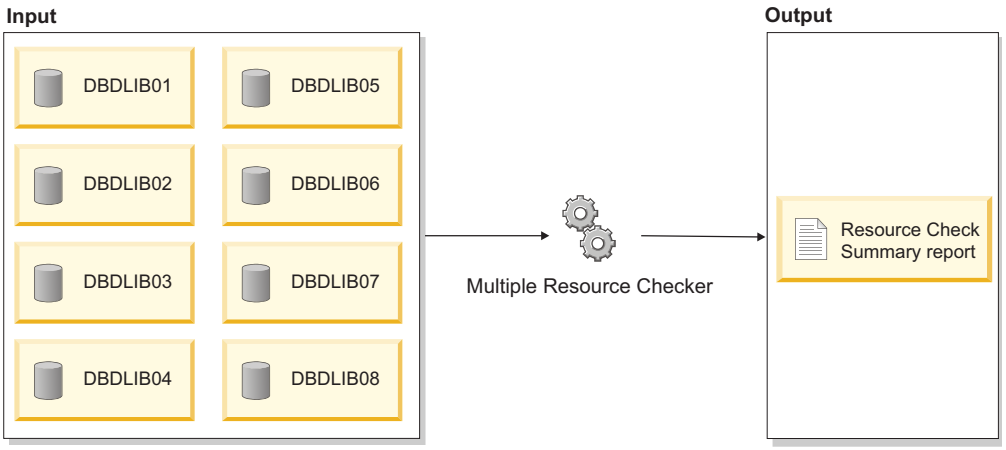


Figure 42. Checking the consistency of DBDs in multiple DBD libraries

Sample JCL for the Multiple Resource Checker utility is in the SHPSJCL0 library, member FABWIVP. You can modify this sample JCL and then use it to run the utility.

Procedure

1. Code the EXEC statement, DD statements, and control statements for the Multiple Resource Checker utility.

   The following JCL example is for comparing DBD members in multiple DBD libraries:

```
//MLTISTP     EXEC PGM=FABWMCHK
//STEPLIB  DD   DISP=SHR,DSN=HPS.SHPSLMD0
//DBDLIB01 DD   DISP=SHR,DSN=IMSVS.TEST.IMS13.DBDLIB01                1
//DBDLIB02 DD   DISP=SHR,DSN=IMSVS.TEST.IMS13.DBDLIB02
//DBDLIB03 DD   DISP=SHR,DSN=IMSVS.TEST.IMS13.DBDLIB03
//DBDLIB04 DD   DISP=SHR,DSN=IMSVS.TEST.IMS13.DBDLIB04
//DBDLIB05 DD   DISP=SHR,DSN=IMSVS.TEST.IMS13.DBDLIB05
//DBDLIB06 DD   DISP=SHR,DSN=IMSVS.TEST.IMS13.DBDLIB06
//DBDLIB07 DD   DISP=SHR,DSN=IMSVS.TEST.IMS13.DBDLIB07
//DBDLIB08 DD   DISP=SHR,DSN=IMSVS.TEST.IMS13.DBDLIB08
//ACBLIB01 DD   DISP=SHR,DSN=IMSVS.TEST.IMS13.ACBLIB01
//ACBLIB02 DD   DISP=SHR,DSN=IMSVS.TEST.IMS13.ACBLIB02
//FABWOUT  DD   SYSOUT=A                                              2
//FABWSUMM DD   SYSOUT=A
//FABWCTL  DD   *
  CHKONLY=DBD                                                         3
/*
```

- **1** To check the DBD members in DBD libraries, specify a DBDLIB*xx* DD statement for each DBD library.
- **2** To generate messages and the Resource Check Summary report, specify the FABWOUT and FABWSUMM DD statements.
- **3** To check only the DBD libraries, specify CHKONLY=DBD. In this example, ACB libraries are also specified by the ACBLIB*xx* DD statements. The CHKONLY=DBD specification causes the utility to ignore the ACB libraries that are specified by the ACBLIB*xx* DD statements. By using this keyword, you can check only the libraries you want without changing the DD statements.

See the following topics to code the JCL statements and control statements:

- "JCL requirements for the Multiple Resource Checker utility" on page 175
- "Control statements for the Multiple Resource Checker utility" on page 178

2. Submit the job.
3. Examine the Resource Check Summary report that is generated in the FABWSUMM data set.

   The following figure shows an example of the Resource Check Summary report.

```
IMS LIBRARY INTEGRITY UTILITIES - MULTIPLE RESOURCE CHECKER              "RESOURCE CHECK SUMMARY REPORT"              PAGE:     1
5655-U08                                                 DATE: 10/01/2018  TIME: 17.57.02                  FABWMCHK - V2.R2


...
...
DBD RECORDS
------------------
                  | DBD DD NUMBER
  DBDNAME  RESULT | 01 02 03 04 05 06 07 08 09 10
  -------- ------ + -- -- -- -- -- -- -- -- -- --
  DBD@0001 SAME   |  *  *  *  *  *  *  *  *  -  -                    1
  DBD@0002 DIFF   |  *  *  *        *  *  *  -  -                    3
  DBD@0003 DIFF   |  *  *  *                  -  -                    3
  DBD@0004 DIFF   |  *  *  *                  -  -                    3
  DBD@0005 DIFF   |  *  *  *  *  *  *  *  *  -  -                    2
  DBD@0006 DIFF   |  *  *  *  *  *  *  *  *  -  -                    2
  DBD@0007 SAME   |  *  *  *  *  *  *  *  *  -  -                    1
  DBD@0008 SAME   |  *  *  *  *  *  *  *  *  -  -
...
```

Figure 43. Report example: Resource Check Summary report for a single resource

From this report, you can identify that:

- 1 The DBDs DBD@0001, DBD@0007, and DBD@0008 exist in all of the specified libraries and their definitions are the same.
- 2 The DBDs DBD@0005 and DBD@0006 exist in all of the specified libraries, but some of them have different definitions.
- 3 The DBDs DBD@0002, DBD@0003, and DBD@0004 do not exist in some DBD libraries.

For a description of the report, see "FABWSUMM data set" on page 193.

What to do next

When inconsistent DBD or PSB members are found, you can use IMS Library Integrity Utilities to investigate the differences:

- To check the differences between the members in two libraries, use the DBD/PSB/ACB Compare utility. See Chapter 6, "DBD/PSB/ACB Compare utility," on page 203.
- To view the database structure, use the DBD/PSB/ACB Mapper utility. See Chapter 7, "DBD/PSB/ACB Mapper utility," on page 247.

  If you have IMS Database Solution Pack, IMS Database Utility Solution, or IMS Fast Path Solution Pack, you can also use the DBD/PSB Map Viewer, the IMS Library Integrity Utilities extension for Management Console, to view the database structure and program specifications through a web browser. For more information, see the *Management Console User's Guide*.

JCL requirements for the Multiple Resource Checker utility

When you code a JCL job to run the Multiple Resource Checker utility, include the EXEC statement and appropriate DD statements.

Subsections:

- "JCL example"
- "EXEC statement"
- "DD statements" on page 176

JCL example

The following figure shows a JCL example that contains the JCL statements for checking the consistency of multiple resources and reporting the differences in multiple sets of RECON data sets.

```
//stepname EXEC PGM=FABWMCHK
//STEPLIB  DD   DSN=HPS.SHPSLMD0,DISP=SHR
//IMSV11   DD   DSN=IMSV11.RESLIB,DISP=SHR
//IMSV12   DD   DSN=IMSV12.RESLIB,DISP=SHR
//IMSV13   DD   DSN=IMSV13.RESLIB,DISP=SHR
//RECON011 DD   DSN=IMSVS1.RECON1,DISP=SHR
//RECON012 DD   DSN=IMSVS1.RECON2,DISP=SHR
//RECON013 DD   DSN=IMSVS1.RECON3,DISP=SHR
//RECON021 DD   DSN=IMSVS2.RECON1,DISP=SHR
//RECON022 DD   DSN=IMSVS2.RESON2,DISP=SHR
//RECON023 DD   DSN=IMSVS2.RECON3,DISP=SHR
//RECON031 DD   DSN=IMSVS3.RECON1,DISP=SHR
//RECON032 DD   DSN=IMSVS3.RECON2,DISP=SHR
//RECON033 DD   DSN=IMSVS3.RECON3,DISP=SHR
//DBDLIB01 DD   DSN=IMSVS.DBDLIB1,DISP=SHR
//DBDLIB02 DD   DSN=IMSVS.DBDLIB2,DISP=SHR
//DBDLIB03 DD   DSN=IMSVS.DBDLIB3,DISP=SHR
//DBDLIB04 DD   DSN=IMSVS.DBDLIB4,DISP=SHR
//PSBLIB01 DD   DSN=IMSVS.PSBLIB1,DISP=SHR
//PSBLIB02 DD   DSN=IMSVS.PSBLIB2,DISP=SHR
//ACBLIB01 DD   DSN=IMSVS.ACBLIB1,DISP=SHR
//ACBLIB02 DD   DSN=IMSVS.ACBLIB2,DISP=SHR
//ACBLIB03 DD   DSN=IMSVS.ACBLIB3,DISP=SHR
//ACBLIB04 DD   DSN=IMSVS.ACBLIB4,DISP=SHR
//FABWOUT  DD   SYSOUT=A
//FABWSUMM DD   SYSOUT=A
//FABWRRPT DD   SYSOUT=A
//SYSPRINT DD   SYSOUT=A
//FABWCTL  DD   *
     (control statements)
/*
```

Figure 44. JCL for checking the consistency of multiple resources and the difference in multiple sets of RECON data sets

EXEC statement

The EXEC statement must be in the following format:

```
//stepname EXEC PGM=FABWMCHK
```

You can optionally specify the IMSPLEX and DBRCGRP parameters on the EXEC statement. If specified, the utility processes RECON data sets that belong to the

same group identified by the IMSPLEX and DBRCGRP parameters. The utility cannot process the RECON data sets that do not belong to the group.

For example:

```
//stepname EXEC PGM=FABWMCHK,PARM='IMSPLEX=imsplex,DBRCGRP=dbrcgrp'
```

IMSPLEX=*imsplex*
A 1-to-5 character IMSplex name to be used for RECON data sets.

DBRCGRP=*dbrcgrp*
A 1-to-3 character identifier (ID) assigned to a group of DBRC instances that access the same RECON data set in an IMSplex.

DD statements

Code the following DD statements to identify the source of input and the placement of output information:

STEPLIB DD or JOBLIB DD
Required. This input DD statement defines the IMS Library Integrity Utilities load module library.

IMSV*nn* DD
Optional. This input DD statement points to the library that contains the IMS load modules. Specify this DD statement if you want to compare RECON data sets.

For *nn*, specify the version of IMS. For example, to process the RECON data sets that were generated by IMS Version 15, specify an IMSV15 DD statement.

If you use the DBRC Structured Call Interface (SCI) Registration Exit to access RECON data sets, specify it in this DD statement. If specified, the utility processes the RECON data sets that can be accessed with the SCI exit.

RECON*xxn* DD
Optional. This input DD statement points to the RECON data sets.

xx Specify 01 to process one set of RECON data sets. To process multiple sets of RECON data sets, specify a sequential number for each set of the RECON data sets. Up to 10 sets can be specified.

n Specify 1, 2, or 3 to identify the RECON data set within a set of RECON data sets:

1 Copy1 RECON data set.

2 Copy2 RECON data set.

3 Spare RECON data set.

DBDLIB*xx* DD
Optional. This input data set points to the library that contains the DBDs to check. For *xx*, assign a sequential number for up to 10 libraries.

Concatenation of multiple DBD libraries is not supported.

PSBLIB*xx* DD
Optional. This input data set points to the library that contains the PSBs to check. For *xx*, assign a sequential number for up to 10 libraries.

Concatenation of multiple PSB libraries is not supported.

ACBLIB*xx* DD

Optional. This input data set points to the library that contains the ACBs to check. For *xx*, assign a sequential number for up to 10 libraries.

Concatenation of multiple ACB libraries is not supported.

FABWOUT DD

Required. All the input parameters, runtime parameters, and error messages are written to this output data set.

The record format is fixed block (FB). The logical record length is 133. Block size, if coded, must be a multiple of 133.

FABWSUMM DD

Required. The Resource Check Summary report is generated in this output data set.

The record format is fixed block (FB). The logical record length is 133. Block size, if coded, must be a multiple of 133.

FABWRRPT DD

Optional. The RECON Difference report is generated in this output data set. If you specify DIFFREP=Y on the FABWCTL statement, which requests to generate the RECON Difference report, you must specify this DD statement.

The record format is fixed block (FB). The logical record length is 133. Block size, if coded, must be a multiple of 133.

FABWCTL DD

Optional. This input data set contains the control statements for the FABWMCHK program.

The record format is fixed block (FB). The logical record length is 80. Block size, if coded, must be a multiple of 80.

For a complete description of the control statements, see "Control statements for the Multiple Resource Checker utility" on page 178.

SYSPRINT DD

Optional. This data set is used when the utility accesses RECON data sets. If you specify the RECON*xxn* DD statements, specify this DD statement.

The record format is fixed block (FB). The logical record length is 133. Block size, if coded, must be a multiple of 133.

The following messages are written to this data set until the utility finds a valid combination of IMS versions in IMS DD and RECON DD statements.

```
DSP0024I  RECON(n) HEADER RECORD MISSING OR INVALID
DSP0245I  JOB TERMINATED DUE TO UNAVAILABLE RECON DATA SETS
```

Control statements for the Multiple Resource Checker utility

The input to the Multiple Resource Checker utility consists of control statements in the FABWCTL data set. These control statements contain keywords that specify the function and the names of the DBDs, PSBs, or ACBs to check.

If the FABWCTL data set is not specified, the default options are used in the job, and all the members and databases in the specified libraries and RECON data sets are checked.

You can specify up to 9999 control statements in the FABWCTL statement.

This data set usually resides in the input stream. However, it can be defined as a sequential data set or as a member of a partitioned data set. It must contain one 80-byte fixed-length record for each control statement. Block size, if coded, must be a multiple of 80.

A Resource Check Summary report is always generated. In the report, the members are reported in alphabetical order, regardless of the order they are specified in the control statements.

Subsections:

- "Control statement example"
- "Syntax rules"
- "Control statement keywords" on page 179

Control statement example

Control statements can be coded as follows:

```
//FABWCTL DD *
    NOCOMP=parameter,parameter
    CHKONLY=parameter,parameter
    CHKRECON=parameter
    DIFFREP=parameter
    DBD=member
/*
```

Syntax rules

The control statements for Multiple Resource Checker must adhere to the following syntax rules:

- Control statements can be coded on any columns in the range of 2 - 80.
- In the control statement fields, keywords, equal signs (=), and member names must not be separated by blanks. Because a blank serves as the delimiter, only a comment can be written after a blank.
- A statement with an asterisk (*) in column 1 is treated as a comment.
- The control statements can be specified in any order. For example:

```
DBD=member
CHKONLY=parameter
CHKRECON=parameter
NOCOMP=parameter
DIFFREP=parameter
```

Control statement keywords

The following keywords are supported:

CHKONLY=*parameter*

This keyword causes the utility to check only the specific resources.

For example, if you specify DBDLIB*xx* DD and ACBLIB*xx* DD statements and CHKONLY=DBD,ACB, the utility checks the consistency of DBD members across the DBD libraries and the consistency of ACB members across the ACB libraries. Without the CHKONLY control statement, the utility checks the consistency between the DBD libraries and the ACB libraries.

DBD Compares the members in the libraries that are specified by the DBDLIB*xx* DD statements.

PSB Compares the members in the libraries that are specified by the PSBLIB*xx* DD statements.

ACB Compares the members in the libraries that are specified by the ACBLIB*xx* DD statements.

RECON

Compares the database definitions in the RECON data sets that are specified by the RECON*xxn* DD statements.

CHKRECON=DBDEF | DBDEF_RCV

Specifies the scope of the fields to compare when the utility checks the consistency of definitions across multiple sets of RECON data sets.

DBDEF

Compares the fields that relate to database definitions. CHKRECON=DBDEF is the default value.

DBDEF_RCV

Compares the fields that relate to database definitions and the fields that relate to the database recovery environment.

For a list of the record fields that are compared by this option, see "Fields compared in RECON data sets" on page 181.

NOCOMP=*parameter*

Specifies the fields that you do not want to check.

IMSREL

The utility compares the DBD, PSB, ACB members that are generated by the DBDGEN, PSBGEN, or ACBGEN utility of different IMS release levels or sets of RECON data sets that are generated by different IMS release levels. If you specify this parameter, IMS release levels are not checked. Also the fields that were added or deleted in a higher release of IMS are not checked.

The DBD and PSB fields that are not checked when NOCOMP=IMSREL is specified are the same as the fields that are not compared by the DBD/PSB/ACB Compare utility. For such fields, see "NOCOMP control statement" on page 217.

VERSION

The field that is related to the VERSION= statement of the DBDGEN utility in DBD and ACB members is not checked.

METADATA
The metadata field in DBDs, PSBs, and ACBs are not checked.

Instead of specifying NOCOMP=METADATA, you can specify NOCOMP=CATALOG. CATALOG is an alias for METADATA.

DIFFREP=YES | NO
Specifies whether to generate the RECON Difference report. This keyword can be specified only once.

YES Generate the RECON Difference report when inconsistencies are found in the RECON data sets.

NO Do not generate the RECON Difference report. DIFFREP=NO is the default value.

DBD=*member*
The name of the member to check.

PSB=*member*
The name of the member to check.

For DBD= and PSB= keywords, you can specify a wildcard in any position of a character string. The asterisk (*) and the percent sign (%) are supported as wildcard characters. An asterisk represents 0 - 8 characters, and the percent sign represents a single character. If two or more asterisks are specified sequentially, only the first asterisk is recognized.

Fields compared in RECON data sets

When the Multiple Resource Checker utility checks the consistency of database definitions across multiple sets of RECON data sets, the record fields that are compared depend on the parameter that is specified for the CHKRECON keyword in the FABWCTL control statement.

- If you specify CHKRECON=DBDEF, the fields that relate to database definitions are compared.
- If you specify CHKRECON=DBDEF_RCV, the fields that relate to database definitions and database recovery environment definitions are compared. For the fields that relate to the database recovery environment definitions, the utility compares only the fields that IMS does not change.

The following tables show the fields that are compared by the Multiple Resource Checker utility.

Note: To learn more about these fields, see the following topics in *IMS Commands*:

- "Data group record fields"
- "DB (IMS) record fields"
- "DB (HALDB) record fields"
- "DB (PART) record fields"
- "DB (Fast Path) record fields"
- "DBDS (non-Fast Path) record fields"
- "DBDS (Fast Path) record fields"

Table 5. DB (IMS) record fields

Field	CHKRECON= DBDEF	CHKRECON= DBDEF_RCV
DBD=*dbdname*	Compared	Compared
TYPE=IMS	Compared	Compared
SHARE LEVEL=*n*	Compared	Compared
DBRCVGRP=*rcvgrpnm*	-	Compared
FLAG: RECOVERABLE= YES | NO	-	Compared
FLAG: DATABASE LEVEL TRACK= YES | NO	-	Compared
IC NEEDED DISABLED	-	Compared

Table 6. DB (HALDB) record fields

Field	CHKRECON= DBDEF	CHKRECON= DBDEF_RCV
DBD=*dbdname*	Compared	Compared
TYPE=HALDB	Compared	Compared
SHARE LEVEL=*n*	Compared	Compared
DBRCVGRP=*rcvgrpnm*	-	Compared
PSNAME=*psname*	Compared	Compared
DBORG=*dbaseorg* DSORG=*dsetorg*	Compared	Compared
RECOVERABLE= YES | NO	-	Compared
PARTITIONS=*n*	Compared	Compared

Table 6. DB (HALDB) record fields (continued)

Field	CHKRECON= DBDEF	CHKRECON= DBDEF_RCV
ONLINE REORG CAPABLE= YES | NO	Compared	Compared
DATA SET GROUP MEMBERS	Compared	Compared
IC NEEDED DISABLED	-	Compared

Table 7. DB (PART) record fields

Field	CHKRECON= DBDEF	CHKRECON= DBDEF_RCV
DBD=*dbdname*	Compared	Compared
MASTER DB=*HALDB master name*	Compared	Compared
TYPE=PART	Compared	Compared
DSN PREFIX=*dsname*	-	Compared
PARTITION ID=*nnnnn*	Compared	Compared
REORG# = *nnnnn*	Compared	Compared
RANDOMIZER: NAME= ANCHOR= HIGH BLOCK#= BYTES=*nnnnnnnn*	Compared	Compared
FREE SPACE: FREE BLOCK FREQ FACTOR=*nnn* FREE SPACE PERCENTAGE=*nn*	Compared	Compared
PARTITION HIGH KEY/STRING (CHAR): (LENGTH=NNN)	Compared	Compared
PARTITION HIGH KEY/STRING (HEX):	Compared	Compared
OSAM BLOCK SIZE: *s = nnnnn*	Compared	Compared
ALTER BLOCK SIZE: *s = nnnnn*	Compared	Compared
DATABASE LEVEL TRACK=YES | NO	-	Compared
PARTITION DISABLED=YES | NO	-	Compared
ONLINE REORG CAPABLE= YES | NO	Compared	Compared

Table 8. DB (FP) record fields

Field	CHKRECON= DBDEF	CHKRECON= DBDEF_RCV
DBD=*dbdname*	Compared	Compared
TYPE=FP	Compared	Compared
SHARE LEVEL=*n*	Compared	Compared
RECOVERABLE= YES | NO	-	Compared
FULLSEG DEFAULT=YES | NO	Compared	Compared

Table 9. DBDS (non-FP) record fields

Field	CHKRECON= DBDEF	CHKRECON= DBDEF_RCV
DSN=*dsname*	-	Compared
TYPE=IMS	Compared	Compared
TYPE=PART	Compared	Compared

Table 9. DBDS (non-FP) record fields (continued)

Field	CHKRECON= DBDEF	CHKRECON= DBDEF_RCV
DBD=*dbdname* DDN=*ddname*	Compared	Compared
DBORG=*dbaseorg* DSORG=*dsetorg*	Compared	Compared
CAGRP=*cagrpname*	-	Compared
GENMAX=*nnnn*	-	Compared
REUSE | NOREUSE	-	Compared
RECOVPD= *nnn*	-	Compared
DEFLTJCL= *member*	-	Compared
ICJCL=*member*	-	Compared
OICJCL=*member*	-	Compared
RECOVJCL=*member*	-	Compared
RECVJCL=*member*	-	Compared

Table 10. DBDS (FP) record fields

Field	CHKRECON= DBDEF	CHKRECON= DBDEF_RCV
DBD=*dbdname* AREA=*areaname*	Compared	Compared
TYPE=FP	Compared	Compared
SHARE LEVEL=*n*	Compared	Compared
BORG=*dbaseorg* DSORG=*dsetorg*	Compared	Compared
CAGRP=*cagrpnam*	-	Compared
GENMAX=*nnnn*	-	Compared
REUSE|NOREUSE	-	Compared
RECOVPD=*nnn*	-	Compared
VSO|NOVSO	Compared	Compared
PREOPEN|NOPREOPEN	Compared	Compared
PRELOAD|NOPRELOAD	Compared	Compared
FULLSEG | NOFULLSG	Compared	Compared
CFSTR1=*cfstr_name*	Compared	Compared
CFSTR2=*cfstr_name*	Compared	Compared
LKASID | NOLKASID	Compared	Compared
MAS|NOMAS	Compared	Compared
DEFLTJCL=*member*	-	Compared
ICJCL=*member*	-	Compared
RECVJCL=*member*	-	Compared
RECOVJCL=*member*	-	Compared
DBRCVGRP=*rcvgrpnm*	-	Compared
DATABASE LEVEL TRACK=YES|NO	-	Compared

The fields in the following two tables are compared only when FABWRRPT DD is specified.

Table 11. RECON record fields

Field	CHKRECON= DBDEF	CHKRECON= DBDEF_RCV
RECOVERY CONTROL DATA SET, IMS V*x*R*x*	-	Compared
FORCER | NOFORCER	-	Compared
LOG DSN CHECK=*xxxxxx*	-	Compared
STARTNEW=YES|NO	-	Compared
TRACEON | TRACEOFF	-	Compared
SSID=*xxxxxxxx*	-	Compared
LISTDLOG=YES|NO	-	Compared
CA | IC | LOG DATA SETS CATALOGED=YES|NO	-	Compared
LOG RETENTION PERIOD=*yy.ddd hh:mm:ss.t*	-	Compared
COMMAND AUTH=SAF | EXIT | BOTH | NONE	-	Compared
HLQ=*hql name*	-	Compared
RCNQUAL=*data_set_name*	-	Compared
CATALOG=*catalog_name*	-	Compared
ACCESS=SERIAL | PARALLEL	-	Compared
LIST=STATIC | CONCURR	-	Compared
SIZALERT=*xxxxxxxx xxxxxxxx*	-	Compared
LOGALERT=*xxxxxxxx xxxxxxxx*	-	Compared
REORG NUMBER VERIFICATION=YES | NO	-	Compared
IMSPLEX=*imsplex_name*, GROUP ID=*group_ID*	-	Compared

Table 12. Data group record fields

Field	CHKRECON= DBDEF	CHKRECON= DBDEF_RCV
GRPNAME=*grpname*	-	Compared
#MEMBERS=*nnn*	-	Compared
dbdname ddname/areaname	-	Compared

JCL examples for the Multiple Resource Checker

The following topics provide JCL examples for running the Multiple Resource Checker utility.

Examples: Checking the consistency of multiple resources

Use the following examples to check the consistency of multiple resources with the Multiple Resource Checker utility.

Example: Checking the consistency of database definitions across multiple libraries and RECON data sets

The following JCL example is for checking the consistency of DBD members and DBD-type ACB members in DBDLIBs and ACBLIBs. This JCL job also checks the consistency of database definitions across multiple sets of RECON data sets.

The DBD= keywords specify the DBD members to check.

```
//stepname EXEC PGM=FABWMCHK
//STEPLIB  DD   DSN=HPS.SHPSLMD0,DISP=SHR
//IMSV11   DD   DSN=IMSV11.RESLIB,DISP=SHR
//IMSV12   DD   DSN=IMSV12.RESLIB,DISP=SHR
//IMSV13   DD   DSN=IMSV13.RESLIB,DISP=SHR
//RECON011 DD   DSN=IMSVS1.RECON1,DISP=SHR
//RECON012 DD   DSN=IMSVS1.RECON2,DISP=SHR
//RECON013 DD   DSN=IMSVS1.RECON3,DISP=SHR
//RECON021 DD   DSN=IMSVS2.RECON1,DISP=SHR
//RECON022 DD   DSN=IMSVS2.RESON2,DISP=SHR
//RECON023 DD   DSN=IMSVS2.RECON3,DISP=SHR
//RECON031 DD   DSN=IMSVS3.RECON1,DISP=SHR
//RECON032 DD   DSN=IMSVS3.RECON2,DISP=SHR
//RECON033 DD   DSN=IMSVS3.RECON3,DISP=SHR
//DBDLIB01 DD   DSN=IMSVS.DBDLIB1,DISP=SHR
//DBDLIB02 DD   DSN=IMSVS.DBDLIB2,DISP=SHR
//DBDLIB03 DD   DSN=IMSVS.DBDLIB3,DISP=SHR
//DBDLIB04 DD   DSN=IMSVS.DBDLIB4,DISP=SHR
//ACBLIB01 DD   DSN=IMSVS.ACBLIB1,DISP=SHR
//ACBLIB02 DD   DSN=IMSVS.ACBLIB2,DISP=SHR
//ACBLIB03 DD   DSN=IMSVS.ACBLIB3,DISP=SHR
//ACBLIB04 DD   DSN=IMSVS.ACBLIB4,DISP=SHR
//ACBLIB05 DD   DSN=IMSVS.ACBLIB5,DISP=SHR
//FABWOUT  DD   SYSOUT=A
//FABWSUMM DD   SYSOUT=A
//SYSPRINT DD   SYSOUT=A
//FABWCTL  DD   *
 DBD=DBD001
 DBD=DBD002
 DBD=DBD003
/*
```

Figure 45. Example for checking the consistency of database definitions across multiple libraries and RECON data sets

Example: Checking the consistency of DBDs and DBD-type ACBs

The following JCL example is for checking the consistency of DBD members in DBDLIBs and DBD-type ACB members in ACBLIBs.

The DBD= keywords specify the DBD or DBD-type ACB members to check.

```
//stepname EXEC PGM=FABWMCHK
//STEPLIB  DD   DSN=HPS.SHPSLMD0,DISP=SHR
//DBDLIB01 DD   DSN=IMSVS.DBDLIB1,DISP=SHR
//DBDLIB02 DD   DSN=IMSVS.DBDLIB2,DISP=SHR
//DBDLIB03 DD   DSN=IMSVS.DBDLIB3,DISP=SHR
//DBDLIB04 DD   DSN=IMSVS.DBDLIB4,DISP=SHR
//DBDLIB05 DD   DSN=IMSVS.DBDLIB5,DISP=SHR
//DBDLIB06 DD   DSN=IMSVS.DBDLIB6,DISP=SHR
//DBDLIB07 DD   DSN=IMSVS.DBDLIB7,DISP=SHR
//DBDLIB08 DD   DSN=IMSVS.DBDLIB8,DISP=SHR
//DBDLIB09 DD   DSN=IMSVS.DBDLIB9,DISP=SHR
//DBDLIB10 DD   DSN=IMSVS.DBDLIBA,DISP=SHR
//ACBLIB01 DD   DSN=IMSVS.ACBLIB1,DISP=SHR
//ACBLIB02 DD   DSN=IMSVS.ACBLIB2,DISP=SHR
//ACBLIB03 DD   DSN=IMSVS.ACBLIB3,DISP=SHR
//ACBLIB04 DD   DSN=IMSVS.ACBLIB4,DISP=SHR
//FABWOUT  DD   SYSOUT=A
//FABWSUMM DD   SYSOUT=A
//FABWCTL  DD   *
 DBD=DBD0001
 DBD=DBD0002
 DBD=DBD0003
 DBD=DBD0004
/*
```

Figure 46. Example for checking the consistency of DBDs and DBD-type ACBs

Example: Checking the consistency of PSBs and PSB-type ACBs

The following JCL example is for checking the consistency of PSB members in PSBLIBs and PSB-type ACB members in ACBLIBs.

The PSB= keywords specify the PSB members or PSB-type ACB members to check.

```
//stepname EXEC PGM=FABWMCHK
//STEPLIB  DD   DSN=HPS.SHPSLMD0,DISP=SHR
//PSBLIB01 DD   DSN=IMSVS.PSBLIB1,DISP=SHR
//PSBLIB02 DD   DSN=IMSVS.PSBLIB2,DISP=SHR
//PSBLIB03 DD   DSN=IMSVS.PSBLIB3,DISP=SHR
//PSBLIB04 DD   DSN=IMSVS.PSBLIB4,DISP=SHR
//PSBLIB05 DD   DSN=IMSVS.PSBLIB5,DISP=SHR
//PSBLIB06 DD   DSN=IMSVS.PSBLIB6,DISP=SHR
//PSBLIB07 DD   DSN=IMSVS.PSBLIB7,DISP=SHR
//PSBLIB08 DD   DSN=IMSVS.PSBLIB8,DISP=SHR
//PSBLIB09 DD   DSN=IMSVS.PSBLIB9,DISP=SHR
//PSBLIB10 DD   DSN=IMSVS.PSBLIBA,DISP=SHR
//ACBLIB01 DD   DSN=IMSVS.ACBLIB1,DISP=SHR
//ACBLIB02 DD   DSN=IMSVS.ACBLIB2,DISP=SHR
//ACBLIB03 DD   DSN=IMSVS.ACBLIB3,DISP=SHR
//ACBLIB04 DD   DSN=IMSVS.ACBLIB4,DISP=SHR
//ACBLIB05 DD   DSN=IMSVS.ACBLIB5,DISP=SHR
//ACBLIB06 DD   DSN=IMSVS.ACBLIB6,DISP=SHR
//ACBLIB07 DD   DSN=IMSVS.ACBLIB7,DISP=SHR
//ACBLIB08 DD   DSN=IMSVS.ACBLIB8,DISP=SHR
//ACBLIB09 DD   DSN=IMSVS.ACBLIB9,DISP=SHR
//ACBLIB10 DD   DSN=IMSVS.ACBLIBA,DISP=SHR
//FABWOUT  DD   SYSOUT=A
//FABWSUMM DD   SYSOUT=A
//FABWCTL  DD   *
 PSB=PSB0001
 PSB=PSB0002
 PSB=PSB0003
 PSB=PSB0004
 PSB=PSB0005
/*
```

Figure 47. Example for checking the consistency of PSBs and PSB-type ACBs

Example: Checking the consistency of database definitions across multiple sets of RECON data sets

The following JCL example is for checking the consistency between 10 sets of RECON data sets.

The utility checks the consistency of database definitions in the DB record fields and the DBDS record fields.

```
//stepname EXEC PGM=FABWMCHK
//STEPLIB  DD   DSN=HPS.SHPSLMD0,DISP=SHR
//IMSV11   DD   DSN=IMSV11.RESLIB,DISP=SHR
//IMSV12   DD   DSN=IMSV12.RESLIB,DISP=SHR
//IMSV13   DD   DSN=IMSV13.RESLIB,DISP=SHR
//RECON011 DD   DSN=IMSVS1.RECON1,DISP=SHR
//RECON012 DD   DSN=IMSVS1.RECON2,DISP=SHR
//RECON013 DD   DSN=IMSVS1.RECON3,DISP=SHR
//RECON021 DD   DSN=IMSVS2.RECON1,DISP=SHR
//RECON022 DD   DSN=IMSVS2.RESON2,DISP=SHR
//RECON023 DD   DSN=IMSVS2.RECON3,DISP=SHR
//RECON031 DD   DSN=IMSVS3.RECON1,DISP=SHR
//RECON032 DD   DSN=IMSVS3.RECON2,DISP=SHR
//RECON033 DD   DSN=IMSVS3.RECON3,DISP=SHR
//RECON041 DD   DSN=IMSVS4.RECON1,DISP=SHR
//RECON042 DD   DSN=IMSVS4.RECON2,DISP=SHR
//RECON043 DD   DSN=IMSVS4.RECON3,DISP=SHR
//RECON051 DD   DSN=IMSVS5.RECON1,DISP=SHR
//RECON052 DD   DSN=IMSVS5.RECON2,DISP=SHR
//RECON053 DD   DSN=IMSVS5.RECON3,DISP=SHR
//RECON061 DD   DSN=IMSVS6.RECON1,DISP=SHR
//RECON062 DD   DSN=IMSVS6.RECON2,DISP=SHR
//RECON063 DD   DSN=IMSVS6.RECON3,DISP=SHR
//RECON071 DD   DSN=IMSVS7.RECON1,DISP=SHR
//RECON072 DD   DSN=IMSVS7.RECON2,DISP=SHR
//RECON073 DD   DSN=IMSVS7.RECON3,DISP=SHR
//RECON081 DD   DSN=IMSVS8.RECON1,DISP=SHR
//RECON082 DD   DSN=IMSVS8.RECON2,DISP=SHR
//RECON083 DD   DSN=IMSVS8.RECON3,DISP=SHR
//RECON091 DD   DSN=IMSVS9.RECON1,DISP=SHR
//RECON092 DD   DSN=IMSVS9.RECON2,DISP=SHR
//RECON093 DD   DSN=IMSVS9.RECON3,DISP=SHR
//RECON101 DD   DSN=IMSVSA.RECON1,DISP=SHR
//RECON102 DD   DSN=IMSVSA.RECON2,DISP=SHR
//RECON103 DD   DSN=IMSVSA.RECON3,DISP=SHR
//FABWOUT  DD   SYSOUT=A
//FABWSUMM DD   SYSOUT=A
//SYSPRINT DD   SYSOUT=A
```

Figure 48. Example for checking the consistency of RECON data sets

Example: Checking the consistency of DBDs

The following JCL example is for checking the consistency of DBD members in DBDLIBs.

The DBD=DBD* keyword specifies that all the DBD members that start with DBD are checked.

```
//stepname EXEC PGM=FABWMCHK
//STEPLIB  DD   DSN=HPS.SHPSLMD0,DISP=SHR
//DBDLIB01 DD   DSN=IMSVS.DBDLIB1,DISP=SHR
//DBDLIB02 DD   DSN=IMSVS.DBDLIB2,DISP=SHR
//DBDLIB03 DD   DSN=IMSVS.DBDLIB3,DISP=SHR
//DBDLIB04 DD   DSN=IMSVS.DBDLIB4,DISP=SHR
//DBDLIB05 DD   DSN=IMSVS.DBDLIB5,DISP=SHR
//DBDLIB06 DD   DSN=IMSVS.DBDLIB6,DISP=SHR
//DBDLIB07 DD   DSN=IMSVS.DBDLIB7,DISP=SHR
//DBDLIB08 DD   DSN=IMSVS.DBDLIB8,DISP=SHR
//DBDLIB09 DD   DSN=IMSVS.DBDLIB9,DISP=SHR
//DBDLIB10 DD   DSN=IMSVS.DBDLIBA,DISP=SHR
//FABWOUT  DD   SYSOUT=A
//FABWSUMM DD   SYSOUT=A
//FABWCTL  DD   *
 DBD=DBD*
/*
```

Figure 49. Example for checking the consistency of DBDs

Example: Checking the consistency of PSBs

The following JCL example is for checking the consistency of PSB members in PSBLIBs.

The PSB=PSB* keyword specifies that all the PSB members that start with PSB are checked.

```
//stepname EXEC PGM=FABWMCHK
//STEPLIB  DD   DSN=HPS.SHPSLMD0,DISP=SHR
//PSBLIB01 DD   DSN=IMSVS.PSBLIB1,DISP=SHR
//PSBLIB02 DD   DSN=IMSVS.PSBLIB2,DISP=SHR
//PSBLIB03 DD   DSN=IMSVS.PSBLIB3,DISP=SHR
//PSBLIB04 DD   DSN=IMSVS.PSBLIB4,DISP=SHR
//PSBLIB05 DD   DSN=IMSVS.PSBLIB5,DISP=SHR
//PSBLIB06 DD   DSN=IMSVS.PSBLIB6,DISP=SHR
//PSBLIB07 DD   DSN=IMSVS.PSBLIB7,DISP=SHR
//PSBLIB08 DD   DSN=IMSVS.PSBLIB8,DISP=SHR
//PSBLIB09 DD   DSN=IMSVS.PSBLIB9,DISP=SHR
//PSBLIB10 DD   DSN=IMSVS.PSBLIBA,DISP=SHR
//FABWOUT  DD   SYSOUT=A
//FABWSUMM DD   SYSOUT=A
//FABWCTL  DD   *
 PSB=PSB*
/*
```

Figure 50. Example for checking the consistency of PSBs

Example: Checking the consistency of ACBs

The following JCL example is for checking the consistency of ACB members in ACBLIBs.

The DBD= keywords specify the DBD-type ACB members to check.

```
//stepname EXEC PGM=FABWMCHK
//STEPLIB  DD   DSN=HPS.SHPSLMD0,DISP=SHR
//ACBLIB01 DD   DSN=IMSVS.ACBLIB1,DISP=SHR
//ACBLIB02 DD   DSN=IMSVS.ACBLIB2,DISP=SHR
//ACBLIB03 DD   DSN=IMSVS.ACBLIB3,DISP=SHR
//ACBLIB04 DD   DSN=IMSVS.ACBLIB4,DISP=SHR
//ACBLIB05 DD   DSN=IMSVS.ACBLIB5,DISP=SHR
//ACBLIB06 DD   DSN=IMSVS.ACBLIB6,DISP=SHR
//ACBLIB07 DD   DSN=IMSVS.ACBLIB7,DISP=SHR
//ACBLIB08 DD   DSN=IMSVS.ACBLIB8,DISP=SHR
//ACBLIB09 DD   DSN=IMSVS.ACBLIB9,DISP=SHR
//ACBLIB10 DD   DSN=IMSVS.ACBLIBA,DISP=SHR
//FABWOUT  DD   SYSOUT=A
//FABWSUMM DD   SYSOUT=A
//FABWCTL  DD   *
 DBD=DBD0001
 DBD=DBD0002
/*
```

Figure 51. Example for checking the consistency of ACBs

Example: Comparing the database definitions across multiple sets of RECON data sets

The following JCL example is for generating a RECON Difference report, which reports details about the RECON fields that differ between multiple sets of RECON data sets.

The utility checks the consistency of database definitions in the DB record fields and DBDS record fields.

```
//stepname EXEC PGM=FABWMCHK
//STEPLIB  DD   DSN=HPS.SHPSLMD0,DISP=SHR
//IMSV11   DD   DSN=IMSV11.RESLIB,DISP=SHR
//IMSV12   DD   DSN=IMSV12.RESLIB,DISP=SHR
//IMSV13   DD   DSN=IMSV13.RESLIB,DISP=SHR
//RECON011 DD   DSN=IMSVS1.RECON1,DISP=SHR
//RECON012 DD   DSN=IMSVS1.RECON2,DISP=SHR
//RECON013 DD   DSN=IMSVS1.RECON3,DISP=SHR
//RECON021 DD   DSN=IMSVS2.RECON1,DISP=SHR
//RECON022 DD   DSN=IMSVS2.RESON2,DISP=SHR
//RECON023 DD   DSN=IMSVS2.RECON3,DISP=SHR
//RECON031 DD   DSN=IMSVS3.RECON1,DISP=SHR
//RECON032 DD   DSN=IMSVS3.RECON2,DISP=SHR
//RECON033 DD   DSN=IMSVS3.RECON3,DISP=SHR
//FABWOUT  DD   SYSOUT=A
//FABWSUMM DD   SYSOUT=A
//FABWRRPT DD   SYSOUT=A
//SYSPRINT DD   SYSOUT=A
//FABWCTL  DD   *
 DIFFREP=YES
 DBD=DBD001
 DBD=DBD002
 DBD=DBD003
/*
```

Figure 52. Example for creating a RECON Difference report

Output from the Multiple Resource Checker utility

The output from the Multiple Resource Checker utility includes the FABWOUT data set, the FABWSUMM data set, and the FABWRRPT data set.

FABWOUT data set

The FABWOUT data set contains the information about the parameters that were applied to each control statement and any error messages issued by Multiple Resource Checker.

The following figure shows examples of the messages that are generated in the FABWOUT data set.

```
IMS LIBRARY INTEGRITY UTILITIES - MULTIPLE RESOURCE CHECKER          "MESSAGE"                                    PAGE:     1
5655-U08                                                  DATE: 10/01/2018  TIME: 17.57.02                  FABWMCHK - V2.R2

FABW0001I CONTROL STATEMENT SUPPLIED IS: DIFFREP=YES
FABW0001I CONTROL STATEMENT SUPPLIED IS: NOCHECK=IMSREL
FABW0001I CONTROL STATEMENT SUPPLIED IS: DBD=DBD00001
FABW0001I CONTROL STATEMENT SUPPLIED IS: DBD=DBD00002
FABW0002I PARAMETER USED IS: DIFFREP=NO
FABW0002I PARAMETER USED IS: NOCHECK=IMSREL
```

Figure 53. Messages in the FABWOUT data set

FABWSUMM data set

The FABWSUMM data set contains the Resource Check Summary report. This report contains the results of the consistency check.

The FABWSUMM data set must contain fixed-length records of 133 bytes, and a block size of 133 or a multiple of 133.

This report consists of the following two parts:

- The first part provides a list of data sets that were checked.
- The second part provides a matrix table that summarizes whether differences were found.

Subsections:

- "Report field description"
- "Sample report " on page 195

Report field description

The first part contains information about the input libraries and the DD numbers that are assigned to the libraries by the utility. These DD numbers correspond to the DD numbers used in the second part of the report.

RECON DD NUMBER
A list of the RECON data sets that were checked.

NUM Sequential numbers that the utility assigned to the sets of RECON data sets.

DDNAME
DBRC RECON data set names that you specified with the RECON*xxn* DD statements.

IMS VER
Version and release of IMS that is retrieved from the RECON data sets.

MINVERS
The MINVERS value that is retrieved from the RECON data sets.

DB# The number of databases that are registered in the RECON data sets.

For RECON data sets that were generated by IMS Version 11, `NOT SUPPORTED` is shown.

DBDLIB DD NUMBER
PSBLIB DD NUMBER
ACBLIB DD NUMBER
A list of the libraries that were checked.

NUM Sequential numbers that the utility assigned to the libraries.

DDNAME
DD names that you specified with the DBDLIB*xx*, PSBLIB*xx*, and ACBLIB*xx* DD statements.

The second part of the report provides a matrix table that shows whether the resources are found in each library and whether they are the same.

DBD RECORDS
PSB RECORDS
Contains a matrix table for the resources that were compared.

DBDNAME
DBD members that were found in the DBDLIBs, ACBLIBs, and RECON data sets.

PSBNAME
PSB members that were found in the PSBLIBs and ACBLIBs.

RESULT
Whether the resources are the same.

SAME All of the definitions are the same across the checked libraries.

DIFF Members in some libraries are different. DIFF is printed when one of the following conditions is met:

- Definitions in the members are different.
- The member does not exist in some libraries.
- The DBD is not registered in the RECON data sets.

When the utility checks for consistency across multiple sets of RECON data sets, only the differences in the DB record fields and the DBDS record fields in the RECON data sets are used to determine the value for the RESULT field. Differences that are found in the RECON record fields and in the data group fields do not affect the value that is shown in the RESULT field.

RECON DD NUMBER
Each number indicates a set of RECON data sets. The numbers are assigned by the utility. See the RECON DD NUMBER field in the first part of the report to identify which DD number corresponds to which set of RECON data sets.

DBD DD NUMBER
Each number indicates a DBD library. The numbers are assigned by the utility. See the DBD DD NUMBER field in the first part of the report to identify which DD number corresponds to which DBD library.

PSB DD NUMBER
Each number indicates a PSB library. The numbers are assigned by the utility. See the PSB DD NUMBER field in the first part of the report to identify which DD number corresponds to which PSB library.

ACB DD NUMBER
Each number indicates an ACB library. The numbers are assigned by the utility. See the ACB DD NUMBER field in the first part of the report to identify which DD number corresponds to which ACB library.

Asterisk (*)
Indicates that the member exists in the library. For RECON data sets, it indicates that the DBD is registered in the set of the RECON data sets.

Hyphen (-)
Indicates that the library or RECON data sets are not specified in the JCL stream.

(Blank)
Indicates that the member does not exist in the library. For RECON data sets, it indicates that the DBD is not registered in the RECON data sets.

Sample report

The following figure shows an example of the Resource Check Summary report.

```
IMS LIBRARY INTEGRITY UTILITIES - MULTIPLE RESOURCE CHECKER              "RESOURCE CHECK SUMMARY REPORT"              PAGE:     1
5655-U08                                                 DATE: 04/01/2018  TIME: 17.57.02                      FABWMCHK - V2.R2


RECON DD NUMBER
----------------
  NUM DDNAME
  --- ----------
  01  RECON011  : VOLUME=IMSVS1  DSNAME=IMSVS1.RECON1                              IMS VER=V12R1 MINVERS=11.1 DB#=10
      RECON012  : VOLUME=IMSVS1  DSNAME=IMSVS1.RECON2
      RECON013  : VOLUME=IMSVS1  DSNAME=IMSVS1.RECON3
  02  RECON021  : VOLUME=IMSVS1  DSNAME=IMSVS2.RECON1                              IMS VER=V13R1 MINVERS=11.1 DB#=10
      RECON022  : VOLUME=IMSVS1  DSNAME=IMSVS2.RECON2
      RECON023  : VOLUME=IMSVS1  DSNAME=IMSVS2.RECON3

DBDLIB DD NUMBER
----------------
  NUM DDNAME
  --- ----------
  01  DBDLIB01  : VOLUME=IMSVS1  DSNAME=IMSVS1.DBDLIB1
  02  DBDLIB02  : VOLUME=IMSVS2  DSNAME=IMSVS2.DBDLIB1
  03  DBDLIB03  : VOLUME=IMSVS3  DSNAME=IMSVS3.DBDLIB1

PSBLIB DD NUMBER
----------------
  NUM DDNAME
  --- ----------
  01  PSBLIB01  : VOLUME=IMSVS1  DSNAME=IMSVS1.PSBLIB1
  02  PSBLIB02  : VOLUME=IMSVS2  DSNAME=IMSVS2.PSBLIB1
  03  PSBLIB03  : VOLUME=IMSVS3  DSNAME=IMSVS3.PSBLIB1
  04  PSBLIB04  : VOLUME=IMSVS4  DSNAME=IMSVS4.PSBLIB1
  05  PSBLIB05  : VOLUME=IMSVS5  DSNAME=IMSVS5.PSBLIB1
  06  PSBLIB06  : VOLUME=IMSVS6  DSNAME=IMSVS6.PSBLIB1
  07  PSBLIB07  : VOLUME=IMSVS7  DSNAME=IMSVS7.PSBLIB1
  08  PSBLIB08  : VOLUME=IMSVS8  DSNAME=IMSVS8.PSBLIB1
  09  PSBLIB09  : VOLUME=IMSVS9  DSNAME=IMSVS9.PSBLIB1
  10  PSBLIB10  : VOLUME=IMSVSA  DSNAME=IMSVSA.PSBLIB1

ACBLIB DD NUMBER
----------------
  NUM DDNAME
  --- ----------
  01  ACBLIB01  : VOLUME=IMSVS1  DSNAME=IMSVS1.ACBLIB1
  02  ACBLIB02  : VOLUME=IMSVS2  DSNAME=IMSVS2.ACBLIB1

DBD RECORDS
-------------------
                   | RECON DD NUMBER               | DBD DD NUMBER                 | ACB DD NUMBER
  DBDNAME  RESULT  | 01 02 03 04 05 06 07 08 09 10 | 01 02 03 04 05 06 07 08 09 10 | 01 02 03 04 05 06 07 08 09 10
  -------- ------ + -- -- -- -- -- -- -- -- -- -- + -- -- -- -- -- -- -- -- -- -- + -- -- -- -- -- -- -- -- -- --
  DBD00001 SAME    |  *  *  -  -  -  -  -  -  -  -  |  *  *  *  -  -  -  -  -  -  -  |  *  *  -  -  -  -  -  -  -  -
  DBD00002 DIFF    |  *  *  -  -  -  -  -  -  -  -  |  *  *  *  -  -  -  -  -  -  -  |  *  *  -  -  -  -  -  -  -  -
  DBD00003 DIFF    |  *  *  -  -  -  -  -  -  -  -  |  *  *     -  -  -  -  -  -  -  |  *  *  -  -  -  -  -  -  -  -
  DBD00004 SAME    |  *  *  -  -  -  -  -  -  -  -  |  *  *  *  -  -  -  -  -  -  -  |  *  *  -  -  -  -  -  -  -  -
  DBD00005 SAME    |  *  *  -  -  -  -  -  -  -  -  |  *  *  *  -  -  -  -  -  -  -  |  *  *  -  -  -  -  -  -  -  -
  DBD00006 SAME    |  *  *  -  -  -  -  -  -  -  -  |  *  *  *  -  -  -  -  -  -  -  |  *  *  -  -  -  -  -  -  -  -
  DBD00007 SAME    |  *  *  -  -  -  -  -  -  -  -  |  *  *  *  -  -  -  -  -  -  -  |  *  *  -  -  -  -  -  -  -  -
  DBD00008 SAME    |        -  -  -  -  -  -  -  -  |  *  *  *  -  -  -  -  -  -  -  |        -  -  -  -  -  -  -  -
  DBD00009 DIFF    |  *     -  -  -  -  -  -  -  -  |  *  *  *  -  -  -  -  -  -  -  |  *  *  -  -  -  -  -  -  -  -
  DBD00010 DIFF    |  *  *  -  -  -  -  -  -  -  -  |  *  *  *  -  -  -  -  -  -  -  |  *     -  -  -  -  -  -  -  -

PSB RECORDS
-------------------
                   | PSB DD NUMBER                 | ACB DD NUMBER
  PSBNAME  RESULT  | 01 02 03 04 05 06 07 08 09 10 | 01 02 03 04 05 06 07 08 09 10
  -------- ------ + -- -- -- -- -- -- -- -- -- -- + -- -- -- -- -- -- -- -- -- --
  PSB00001 SAME    |  *  *  *  *  *  *  *  *  *  *  |  *  *  -  -  -  -  -  -  -  -
  PSB00002 DIFF    |  *  *        *  *  *  *        |  *     -  -  -  -  -  -  -  -
  PSB00003 DIFF    |  *  *        *  *  *  *        |  *     -  -  -  -  -  -  -  -
  PSB00004 SAME    |  *  *  *  *  *  *  *  *  *  *  |  *  *  -  -  -  -  -  -  -  -
  PSB00005 SAME    |  *  *  *  *  *  *  *  *  *  *  |  *  *  -  -  -  -  -  -  -  -

LEGEND
-------------------
  SAME   : THE COMPARED RESOURCES CONTAIN THE SAME INFORMATION.
  DIFF   : THE COMPARED RESOURCES CONTAIN DIFFERENT INFORMATION.
  *      : INDICATES THAT THE MEMBER EXISTS.
  (BLANK): INDICATES THAT THE MEMBER DOES NOT EXIST.
  -      : INDICATES THAT THE DD STATEMENT IS NOT SPECIFIED.
```

Figure 54. Example of the Resource Check Summary report

FABWRRPT data set

The FABWRRPT data set contains the RECON Difference report, which contains names of the RECON fields that were compared.

The FABWRRPT data set must contain fixed-length records of 133 bytes, and a block size of 133 or a multiple of 133.

The Multiple Resource Checker utility checks whether the definitions that relate to the database and the database recovery environment in the following RECON fields are the same:

- RECON record fields
- Data group record fields
- DB record fields
- DBDS record fields

When a difference is found, the utility reports the difference by showing a DIFF indicator in the FIELD column.

Subsections:

- "Report field description"
- "Sample report " on page 198

Report field description

This report consists of the following fields.

TYPE=
DBNAME=*dbname* TYPE=
TYPE= shows the type of the RECON record field. DBNAME= is printed before TYPE=.

TYPE= shows one of the following RECON fields:

RECON
RECON record fields

DBDSGRP
Data group record fields

DBGRP
Data group record fields

RECOVGRP
Data group record fields

DB DB record fields

DBDS DBDS record fields

For information about the RECON record fields, see the topic "Fields in a RECON listing, by record type" in *IMS Commands*.

FIELD (SAME | DIFF)
The name of the RECON field and an indicator that shows whether the field values are the same.

The utility does not check all of the fields in RECON data sets. For the fields that are compared, see “Fields compared in RECON data sets” on page 181.

DD Each number indicates a set of RECON data sets. The numbers are assigned by the utility. See the RECON DD NUMBER field in the first part of the Resource Check Summary report to identify which DD number corresponds to which set of RECON data sets. ** indicates that the fields are the same across RECON data sets.

VALUE
The value that is defined in each set of RECON data sets.

If the field is not defined in the RECON data sets, N/A is printed.

For RECON data sets that were generated by an IMS version that does not support the field, `NOT SUPPORTED` is shown.

Sample report

The following figure shows an example of the RECON Difference report.

```
IMS LIBRARY INTEGRITY UTILITIES - MULTIPLE RESOURCE CHECKER          "RECON DIFFERENCE REPORT"                        PAGE:     1
5655-U08                                              DATE: 12/19/2018  TIME: 10.47.15                          FABWMCHK - V2.R2

 TYPE=RECON

  FIELD (SAME)        DD  VALUE               FIELD (SAME)        DD  VALUE               FIELD (SAME)        DD  VALUE
  ------------------  --  ----------------    ------------------  --  ----------------    ------------------  --  ----------------
   FORCER             **  NOFORCER             LOG DSN CHECK      **  CHECK17              STARTNEW           **  NO
  ------------------                          ------------------                          ------------------

  FIELD (SAME)        DD  VALUE               FIELD (SAME)        DD  VALUE               FIELD (SAME)        DD  VALUE
  ------------------  --  ----------------    ------------------  --  ----------------    ------------------  --  ----------------
   GTF TRACE          **  TRACEOFF             SSID               **  **NULL**             LIST DLOG          **  NO
  ------------------                          ------------------                          ------------------

  FIELD (SAME)        DD  VALUE               FIELD (SAME)        DD  VALUE               FIELD (SAME)        DD  VALUE
  ------------------  --  ----------------    ------------------  --  ----------------    ------------------  --  ----------------
   CA/IC/LOG CATALG   **  NO                   LOGRET PERIOD      **  0.001  0:00:00.0     COMMAND AUTH       **  NONE
  ------------------                          ------------------                          ------------------

  FIELD (SAME)        DD  VALUE
  ------------------  --  ----------------
   HLQ                **  **NULL**
  ------------------

  FIELD (SAME)        DD  VALUE
  ------------------  --  ----------------------------------------------
   RCNQUAL            **  **NULL**
  ------------------

  FIELD (SAME)        DD  VALUE               FIELD (SAME)        DD  VALUE               FIELD (SAME)        DD  VALUE
  ------------------  --  ----------------    ------------------  --  ----------------    ------------------  --  ----------------
   CATALOG            **  **NULL**             ACCESS             **  SERIAL               LIST               **  STATIC
  ------------------                          ------------------                          ------------------

  FIELD (SAME)        DD  VALUE               FIELD (SAME)        DD  VALUE               FIELD (SAME)        DD  VALUE
  ------------------  --  ----------------    ------------------  --  ----------------    ------------------  --  ----------------
   SIZALERT DSNUM     **  15                   SIZALERT VOLNUM    **  16                   SUZALERT PERCENT   **  95
  ------------------                          ------------------                          ------------------

  FIELD (SAME)        DD  VALUE               FIELD (SAME)        DD  VALUE               FIELD (SAME)        DD  VALUE
  ------------------  --  ----------------    ------------------  --  ----------------    ------------------  --  ----------------
   LOGALERT DSNUM     **  3                    LOGALERT VOLNUM    **  16                   REORG# VERIFY      **  NO
  ------------------                          ------------------                          ------------------

  FIELD (SAME)        DD  VALUE               FIELD (SAME)        DD  VALUE
  ------------------  --  ----------------    ------------------  --  ----------------
   IMSPLEX            **  ** NONE **           GROUP ID           **  ** NONE **
  ------------------                          ------------------
```

Figure 55. Example of the RECON Difference report when CHKRECON=DBDEF_RCV is specified (Part 1 of 3)

```
IMS LIBRARY INTEGRITY UTILITIES - MULTIPLE RESOURCE CHECKER          "RECON DIFFERENCE REPORT"                        PAGE:     3
5655-U08                                                 DATE: 12/19/2018  TIME: 10.47.15                        FABWMCHK - V2.R2

 DBNAME=DB00001 TYPE=DB

  FIELD (SAME)        DD  VALUE               FIELD (SAME)        DD  VALUE               FIELD (SAME)        DD  VALUE
  ------------------  --  ----------------    ------------------  --  ----------------    ------------------  --  ----------------
   DBD                **  DB00001              SHARE LEVEL        **  3                    DBRCVGRP           **  **NULL**
  ------------------                          ------------------                       ------------------

  FIELD (SAME)        DD  VALUE               FIELD (SAME)        DD  VALUE               FIELD (DIFF)        DD  VALUE
  ------------------  --  ----------------    ------------------  --  ----------------    ------------------  --  ----------------
   RECOVERABLE        **  NO                   DB LEVEL TRACK     **  N/A                  IC NEEDED          01  DISABLED
  ------------------                          ------------------                       ------------------  02  DISABLED
                                                                                                               03  ENABLED
IMS LIBRARY INTEGRITY UTILITIES - MULTIPLE RESOURCE CHECKER          "RECON DIFFERENCE REPORT"                        PAGE:     4
5655-U08                                                 DATE: 12/19/2018  TIME: 10.47.15                        FABWMCHK - V2.R2

 DBNAME=DB00001 TYPE=DBDS
 DDN=DD0000A

  FIELD (SAME)        DD  VALUE               FIELD (SAME)        DD  VALUE
  ------------------  --  ----------------    ------------------  --  ----------------
   DDN                **  DD0000A              DBD                **  DB00001
  ------------------                          ------------------

  FIELD (SAME)        DD  VALUE
  ------------------  --  ----------------------------------------------
   DSN                **  IMSVS.TEST.IMS12.DD0000A
  ------------------

  FIELD (SAME)        DD  VALUE               FIELD (SAME)        DD  VALUE               FIELD (DIFF)        DD  VALUE
  ------------------  --  ----------------    ------------------  --  ----------------    ------------------  --  ----------------
   TYPE               **  IMS                  DBORG              **  HDAM                 DSORG              01  VSAM
  ------------------                          ------------------                       ------------------  02  VSAM
                                                                                                               03  OSAM

  FIELD (DIFF)        DD  VALUE               FIELD (SAME)        DD  VALUE               FIELD (SAME)        DD  VALUE
  ------------------  --  ----------------    ------------------  --  ----------------    ------------------  --  ----------------
   CAGRP              01  CAGRPD03             GENMAX             **  3                    REUSE              **  NOREUSE
  ------------------  02  CAGRPD03            ------------------                       ------------------
                      03  CAGR@D03

  FIELD (DIFF)        DD  VALUE               FIELD (SAME)        DD  VALUE               FIELD (SAME)        DD  VALUE
  ------------------  --  ----------------    ------------------  --  ----------------    ------------------  --  ----------------
   RECOVPD            01  31                   DEFLTJCL           **  **NULL**             ICJCL              **  ICJCL
  ------------------  02  31                  ------------------                       ------------------
                      03  365

  FIELD (SAME)        DD  VALUE               FIELD (SAME)        DD  VALUE               FIELD (SAME)        DD  VALUE
  ------------------  --  ----------------    ------------------  --  ----------------    ------------------  --  ----------------
   OICJCL             **  OICJCL               RECOVJCL           **  RECOVJCL             RECVJCL            **  ICRCVJCL
  ------------------                          ------------------                       ------------------
```

Figure 56. Example of the RECON Difference report when CHKRECON=DBDEF_RCV is specified (Part 2 of 3)

```
IMS LIBRARY INTEGRITY UTILITIES - MULTIPLE RESOURCE CHECKER          "RECON DIFFERENCE REPORT"                      PAGE:     2
5655-U08                                              DATE: 12/19/2018  TIME: 10.47.15                          FABWMCHK - V2.R2

 DBNAME=DB00002 TYPE=DB

  FIELD (SAME)        DD  VALUE               FIELD (SAME)        DD  VALUE               FIELD (SAME)        DD  VALUE
  ------------------  --  ----------------    ------------------  --  ----------------    ------------------  --  ----------------
   DBD                **  DB00002              SHARE LEVEL        **  3                    RECOVERABLE        **  YES
  ------------------                          ------------------                          ------------------

  FIELD (DIFF)        DD  VALUE
  ------------------  --  ----------------
   FULLSEG DEFAULT    01  NOT SUPPORTED
  ------------------  02  NO
                      03  NO
IMS LIBRARY INTEGRITY UTILITIES - MULTIPLE RESOURCE CHECKER          "RECON DIFFERENCE REPORT"                      PAGE:     3
5655-U08                                              DATE: 12/19/2018  TIME: 11.05.11                          FABWMCHK - V2.R2

 DBNAME=DB00002 TYPE=DBDS
 AREA=DD0002A

  FIELD (SAME)        DD  VALUE               FIELD (SAME)        DD  VALUE               FIELD (SAME)        DD  VALUE
  ------------------  --  ----------------    ------------------  --  ----------------    ------------------  --  ----------------
   AREA               **  DD0002A              DBD                **  DB00002              SHARE LEVEL        **  3
  ------------------                          ------------------                          ------------------

  FIELD (SAME)        DD  VALUE               FIELD (SAME)        DD  VALUE               FIELD (DIFF)        DD  VALUE
  ------------------  --  ----------------    ------------------  --  ----------------    ------------------  --  ----------------
   DBORG              **  DEDB                 DSORG              **  VSAM                 CAGRP              01  GRP100
  ------------------                          ------------------                          ------------------  02  GRP100
                                                                                                              03  GRP300

  FIELD (SAME)        DD  VALUE               FIELD (SAME)        DD  VALUE               FIELD (DIFF)        DD  VALUE
  ------------------  --  ----------------    ------------------  --  ----------------    ------------------  --  ----------------
   GENMAX             **  3                    REUSE              **  NOREUSE              RECOVPD            01  100
  ------------------                          ------------------                          ------------------  02  100
                                                                                                              03  300

  FIELD (SAME)        DD  VALUE               FIELD (SAME)        DD  VALUE               FIELD (SAME)        DD  VALUE
  ------------------  --  ----------------    ------------------  --  ----------------    ------------------  --  ----------------
   VSO                **  NOVSO                PREOPEN            **  NOPREOPEN            PRELOAD            **  NOPRELOAD
  ------------------                          ------------------                          ------------------

IMS LIBRARY INTEGRITY UTILITIES - MULTIPLE RESOURCE CHECKER          "RECON DIFFERENCE REPORT"                      PAGE:     4
5655-U08                                              DATE: 12/19/2018  TIME: 11.05.11                          FABWMCHK - V2.R2

  FIELD (DIFF)        DD  VALUE               FIELD (SAME)        DD  VALUE               FIELD (SAME)        DD  VALUE
  ------------------  --  ----------------    ------------------  --  ----------------    ------------------  --  ----------------
   FULLSEG            01  NOT SUPPORTED        CFSTR1            **  **NULL**             CFSTR2             **  **NULL**
  ------------------  02  NOFULLSG            ------------------                          ------------------
                      03  NOFULLSG

  FIELD (SAME)        DD  VALUE               FIELD (SAME)        DD  VALUE               FIELD (SAME)        DD  VALUE
  ------------------  --  ----------------    ------------------  --  ----------------    ------------------  --  ----------------
   LKASID             **  NOLKASID             MAS                **  NOMAS                DEFLTJCL           **  **NULL**
  ------------------                          ------------------                          ------------------

  FIELD (SAME)        DD  VALUE               FIELD (SAME)        DD  VALUE               FIELD (SAME)        DD  VALUE
  ------------------  --  ----------------    ------------------  --  ----------------    ------------------  --  ----------------
   ICJCL              **  ICJCL                RECVJCL            **  ICRCVJCL             RECOVJCL           **  RECOVJCL
  ------------------                          ------------------                          ------------------

  FIELD (SAME)        DD  VALUE               FIELD (SAME)        DD  VALUE
  ------------------  --  ----------------    ------------------  --  ----------------
   DBRCVGRP           **  **NULL**             DB LEVEL TRACK     **  YES
  ------------------                          ------------------
```

Figure 57. Example of the RECON Difference report when CHKRECON=DBDEF_RCV is specified (Part 3 of 3)

Chapter 6. DBD/PSB/ACB Compare utility

The DBD/PSB/ACB Compare utility compares two IMS control blocks and reports the differences between the control blocks.

Topics:

- "DBD/PSB/ACB Compare utility overview" on page 204
- "Restrictions and considerations for the DBD/PSB/ACB Compare utility" on page 206
- "Comparing IMS control blocks" on page 207
- "JCL requirements for the DBD/PSB/ACB Compare utility" on page 208
- "Control statements for the DBD/PSB/ACB Compare utility" on page 211
- "JCL examples for the DBD/PSB/ACB Compare utility" on page 227
- "Output from the DBD/PSB/ACB Compare utility" on page 231

DBD/PSB/ACB Compare utility overview

The DBD/PSB/ACB Compare utility reports the differences between two control blocks (DBDs, PSBs, or ACBs), of the same type or different types, that have the same name but reside in different IMS libraries. The utility also reports the differences between two control blocks of the same type that have different names and that reside in the same IMS library or in different IMS libraries. If there are no differences, only activity messages are produced. However, you can optionally generate source-level compare reports even when no difference is found.

Subsections:

- "Function overview"
- "Program structure and job step"
- "Data flow" on page 205

Function overview

The utility provides the following functions:

DBD Compare function
This function compares two control blocks, that is, two DBDs or a DBD and a DBD-type ACB that have the same name but reside in different libraries, and produces a report that shows the differences. Additionally, this function compares two DBDs that have different names and that reside in the same library or in different libraries.

PSB Compare function
This function compares two control blocks, that is, two PSBs or a PSB and a PSB-type ACB that have the same name but reside in different libraries, and produces a report that shows the differences. Additionally, this function compares two PSBs that have different names and that reside in the same library or in different libraries.

ACB Compare function
This function compares two control blocks, that is, two ACBs, a DBD-type ACB and a DBD, or a PSB-type ACB and a PSB that have the same name but reside in different libraries, and produces a report that shows the differences. Additionally, this function compares two ACBs that have different names and that reside in the same library or in different libraries.

Program structure and job step

DBD/PSB/ACB Compare consists of one program, FABLCOMP that controls other load modules and compares two control blocks (DBDs, PSBs or ACBs). This program builds and prints a report that shows the differences between two control blocks of the same type or different types that have the same name but that reside in different libraries. It also builds and prints a report that shows differences between two control blocks, of the same type, that have different names and that reside in the same library or different libraries. If no difference is found, the compare report is not created, and only activity messages are produced. However, if SOURCE and NODIFF parameters are both specified on the REPORT statement, the utility generates source-level compare reports even when no difference is found.

This program uses simple input formats that are specified in the SYSIN data set. All activity and error messages are written in the data set that is defined by the SYSOUT DD statement. If the CTLSTMT parameter is specified for the REPORT

statement, the echo of the SYSIN control statements and selected runtime options are written to the SYSPRINT data set.

Data flow

The following figure shows the general data flow for DBD/PSB/ACB Compare (FABLCOMP). Input consists of the SYSIN data set and the DBDLIB, PSBLIB, and ACBLIB data sets. Output consists of the reports and activity log.

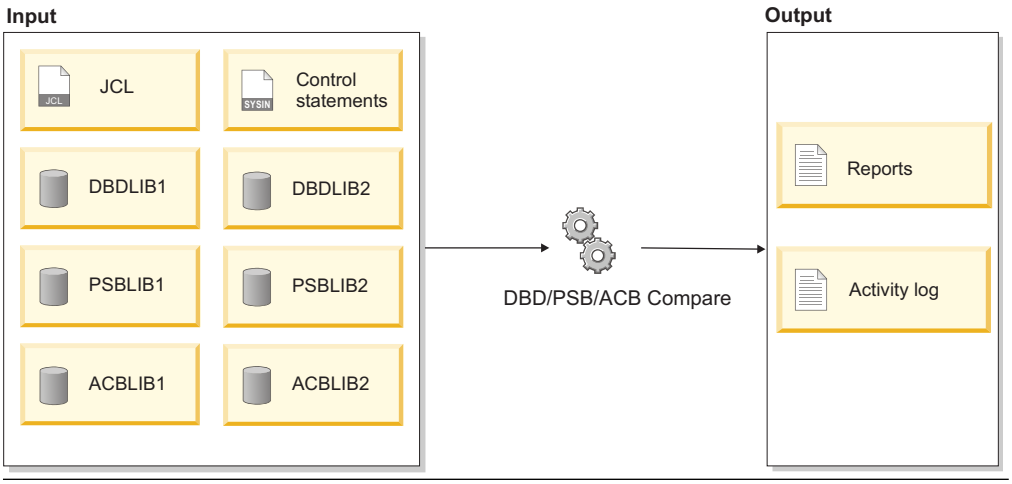


Figure 58. Data flow for DBD/PSB/ACB Compare

Restrictions and considerations for the DBD/PSB/ACB Compare utility

Certain restrictions and considerations apply when you use the DBD/PSB/ACB Compare utility.

The DBD/PSB/ACB Compare utility compares the DBD/PSB fields even if they are not used for some IMS versions and releases.

The DBD/PSB/ACB Compare utility supports only the ACBs generated by IMS of the same version and release when generating block-level compare reports.

When the DBD/PSB/ACB Compare utility compares DBD-type ACBs for a DEDB to generate a source-level compare report, the utility also uses the PSB-type ACB that references the DBD to obtain the DBD VERSION= parameter value. If a problem occurs when reading the PSB-type ACB, the DBD VERSION= parameter value is not compared.

When the DBD/PSB/ACB Compare utility compares a PSB that was generated by IMS Version 2 Release 2, the name of the PCB is not compared even if the name is defined.

When you compare ACBs by using a source-level compare report, the following restrictions apply. These restrictions are the same as the restrictions for the DBD/PSB/ACB Reversal utility.

- Because the DBD/PSB/ACB Compare utility cannot obtain segment name information and database name information of the SOURCE parameter for virtually paired logical relationship, the program does not compare these names.
- Because the DBD/PSB/ACB Compare utility cannot obtain information about the INDICES parameter of the SENSEG statement, the program does not compare the fields of the parameter.
- Because the DBD/PSB/ACB Compare utility cannot obtain label information of the DATASET statement, the program does not compare the label fields.

When you compare ACBs with DBDs, the following restrictions apply:

- The DBD/PSB/ACB Compare utility compares only parameters that exist in ACB libraries. When the utility compares DBD-type ACBs with DBDs, it ignores the parameters that exist only in DBD libraries. For information about parameters that are not contained in ACB libraries, see “Restrictions on the generated control statements” on page 310.
- If the index target segment type that the XDFLD statement specifies is assumed to be the index source segment, the program does not compare the SEGMENT parameter.

The NODIFF option, which generates compare reports even when no difference is found, is supported only for source-level compare reports.

For the restrictions that apply to the generated control statements, see “Restrictions on the generated control statements” on page 310.

Comparing IMS control blocks

To compare DBDs, PSBs, and ACBs by using the DBD/PSB/ACB Compare utility, you must prepare JCL for the DBD/PSB/ACB Compare utility, submit the job, and check the differences in the compare reports.

About this task

Sample JCL for the DBD/PSB/ACB Compare utility is in the SHPSJCL0 library, member FABLIVP1. You can modify this sample JCL and then use it to run the utility.

Procedure

1. In the DBD/PSB/ACB Compare JCL, code the EXEC statement and DD statements.

   See "JCL requirements for the DBD/PSB/ACB Compare utility" on page 208.
2. In the SYSIN data set, code the control statements for the DBD/PSB/ACB Compare utility.

   See "Control statements for the DBD/PSB/ACB Compare utility" on page 211.
3. Submit the job.
4. Check the compare reports that are generated in the output data sets.

   See "Output from the DBD/PSB/ACB Compare utility" on page 231.

What to do next

If you identify differences between two control blocks after running the DBD/PSB/ACB Compare utility, you can run the DBD/PSB/ACB Mapper utility, or the DBD/PSB/ACB Reversal utility to obtain more information about the control blocks.

Related reference:

"JCL examples for the DBD/PSB/ACB Compare utility" on page 227

JCL requirements for the DBD/PSB/ACB Compare utility

When you code the JCL to run the DBD/PSB/ACB Compare utility, include the EXEC statement and appropriate DD statements.

Subsections:

- "JCL example"
- "EXEC statement"
- "DD statements"

JCL example

An example of the JCL that is required for DBD/PSB/ACB Compare is shown in the following figure.

```
//stepname EXEC PGM=FABLCOMP,REGION=512K
//STEPLIB  DD   DSN=HPS.SHPSLMD0,DISP=SHR
//DBDLIB   DD   DSN=IMSVS.DBDLIB,DISP=SHR
//DBDLIB2  DD   DSN=IMSVS.TEST.DBDLIB,DISP=SHR
//PSBLIB   DD   DSN=IMSVS.PSBLIB,DISP=SHR
//PSBLIB2  DD   DSN=IMSVS.TEST.PSBLIB,DISP=SHR
//ACBLIB   DD   DSN=IMSVS.ACBLIB,DISP=SHR
//ACBLIB2  DD   DSN=IMSVS.TEST.ACBLIB,DISP=SHR
//SYSOUT   DD   SYSOUT=A
//SYSPRINT DD   SYSOUT=A
//SYSIN    DD   *
    (control statements)
/*
```

Figure 59. Example of DBD/PSB/ACB Compare JCL (FABLCOMP JCL)

EXEC statement

The EXEC statement must be in the following format:

```
//stepname EXEC PGM=FABLCOMP
```

DD statements

Code the following DD statements to identify the source of input and the placement of output information:

STEPLIB DD or JOBLIB DD
: This DD statement is required. This input DD statement defines the IMS Library Integrity Utilities load module library.

DBDLIB DD
: This DD statement is required when the DBD= control statement is specified. The DBDLIB DD input data set is the library that contains the DBDs to be compared.

DBDLIB2 DD
: This DD statement is required when you want to compare a DBD to another DBD, or a DBD-type ACB to a DBD. The DBDLIB2 DD input data set is the library that contains the DBDs to be compared.

Note: When comparing two DBDs that have the same name, the libraries specified in the DBDLIB DD and DBDLIB2 DD statements must be different libraries, and each of them must contain at least one DBD that has the same name.

PSBLIB DD
This DD statement is required when the PSB= control statement is specified. The PSBLIB DD input data set is the library that contains the PSBs to be compared.

PSBLIB2 DD
This DD statement is required when you want to compare a PSB to another PSB, or a PSB-type ACB to a PSB. The PSBLIB2 DD input data set is the library that contains the PSBs to be compared.

Note: When comparing two PSBs that have the same name, the libraries specified in the PSBLIB DD and PSBLIB2 DD statements must be different libraries, and each of them must contain at least one PSB that has the same name.

ACBLIB DD
This DD statement is required when the ACB= control statement is specified. The ACBLIB DD input data set is the library that contains the ACBs (PSB-type ACBs or DBD-type ACB) to be compared.

ACBLIB2 DD
This DD statement is required when you want to compare an ACB (PSB-type ACB or DBD-type ACB) to another ACB, a DBD to a DBD-type ACB, or a PSB to a PSB-type ACB. The ACBLIB2 DD input data set is the library that contains the ACBs (PSB-type ACBs or DBD-type ACB) to be compared.

Note: When comparing two ACBs that have the same name, the libraries specified in the ACBLIB DD and ACBLIB2 DD statements must be different libraries, and each must contain at least one ACB that has the same name.

SYSOUT DD
This DD statement is required. This output data set contains all activity messages and error messages. The record format is fixed-blocked. The logical record length is 133. Block size, if coded, must be a multiple of 133.

SYSPRINT DD
This DD statement is required. This output data set contains the reports of the comparisons made by DBD/PSB/ACB Compare. The reports are classified as DBD, PSB, and ACB Compare reports, and then each group is sorted alphabetically by member name in the DBDLIB, the PSBLIB, and the ACBLIB libraries. This output data set also contains the echo of the SYSIN control statements and selected runtime options when the CTLSTMT parameter is specified for the REPORT statement. The record format is fixed-blocked. The logical record length is 133. Block size, if coded, must be a multiple of 133.

SYSIN DD
This DD statement is required. SYSIN DD is the control data set for this program.

The record format is fixed-blocked. The logical record length is 80. Block size, if coded, must be a multiple of 80.

Up to 9999 control statements can be specified by use of the SYSIN DD statement. If there are more than 9999 control statements, the excess control statements are ignored.

Related reading: For the format of the control statements, see "Control statements for the DBD/PSB/ACB Compare utility" on page 211.

Control statements for the DBD/PSB/ACB Compare utility

The input to the DBD/PSB/ACB Compare utility consists of control statements in the SYSIN data set. These control statements contain keywords that indicate the function and the names of the DBDs, PSBs, or ACBs for which the reports are created.

This data set usually resides in the input stream. However, it can be defined as a sequential data set or as a member of a partitioned data set. It must contain one 80-byte fixed-length record for each DBD, PSB, or ACB member to be compared. Block size, if coded, must be a multiple of 80.

Output reports are always generated in the order of DBD Compare reports, PSB Compare reports, and ACB Compare reports, with members in each group sorted alphabetically.

DBD, PSB, ACB control statements
A DBD control statement, PSB control statement, or ACB control statement specifies the member to compare. See "DBD, PSB, ACB control statements" on page 213.

REPORT control statement
A REPORT control statement controls report output. See "REPORT control statement" on page 216.

NOCOMP control statement
A NOCOMP control statement specifies the field that you want to exclude from comparison. See "NOCOMP control statement" on page 217.

Control statement example

The SYSIN data set can be coded as shown in the following figure.

```
//SYSIN DD *
    REPORT=SOURCE,NODIFF
    NOCOMP=parameter,parameter
    DBD=member
    DBD=member1:member2
    DBD=member,ACB
    PSB=member
    PSB=member1:member2
    PSB=member,ACB
    ACB=member
    ACB=member1:member2
    ACB=member,DBD
    ACB=member,PSB
    ACB=member,BOTH
/*
```

Figure 60. Examples of control statements for DBD/PSB/ACB Compare

Syntax rules

The control statements for DBD/PSB/ACB Compare must adhere to the following syntax rules:

- Control statements can be coded anywhere between columns 2 - 80.

- In the control statement field, keyword, equal sign, and member name must not be separated by blanks. Because a blank serves as the delimiter, only a comment can be written after a blank.
- A statement with an asterisk (*) in column 1 is treated as a comment.
- The control statements can be specified in any order. For example, in the following order:

```
ACB=XXXXXXXX
PSB=XXXXXXXX
PSB=XXXXXXXX
NOCOMP=XXXXXXX
ACB=XXXXXXXX
DBD=XXXXXXXX
```

DBD, PSB, ACB control statements

A DBD control statement, PSB control statement, or ACB control statement specifies the members to compare.

Subsections:

- "DBD control statement"
- "PSB control statement"
- "ACB control statement"
- "Use of wildcards " on page 214
- "Quick reference for DBD, PSB, ACB control statements and DD statements" on page 214

DBD control statement

DBD=*member*

The members (*member*) in the libraries specified in the DBDLIB DD and DBDLIB2 DD statements are to be compared. The result is written to DBD Compare reports.

DBD=*member1*:*member2*

The member (*member1*) in the library that is specified in the DBDLIB DD statement and the member (*member2*) in the library that is specified in the DBDLIB2 DD statement are to be compared. The results are written to the DBD Compare report.

DBD=*member*,ACB

The members (*member*) in the libraries that are specified in the DBDLIB DD and ACBLIB2 DD statements are to be compared at their source level. The result is written to DBD Compare reports. The abbreviation A can be used instead of the parameter ACB.

PSB control statement

PSB=*member*

The members (*member*) in the libraries specified in the PSBLIB DD and PSBLIB2 DD statements are to be compared. The result is written to PSB Compare reports.

PSB=*member1*:*member2*

The member (*member1*) in the library that is specified in the PSBLIB DD statement and the member (*member2*) in the library that is specified in the PSBLIB2 DD statement are to be compared. The results are written to the PSB Compare report.

PSB=*member*,ACB

The members (*member*) in the libraries that are specified in the PSBLIB DD and ACBLIB2 DD statements are to be compared at their source level. The result is written to PSB Compare reports. The abbreviation A can be used instead of the parameter ACB.

ACB control statement

ACB=*member*

The members (*member*) in the libraries specified in the ACBLIB DD and ACBLIB2 DD statements are to be compared. The result is written to ACB Compare reports.

ACB=*member1*:*member2*

The member (*member1*) in the library that is specified in the ACBLIB DD statement and the member (*member2*) in the library that is specified in the ACBLIB2 DD statement are to be compared. The results are written to the ACB Compare report.

ACB=*member*,*parameter*

The members (*member*) in the libraries that are specified in the ACBLIB DD statement are to be compared to the members in the libraries that are specified in the DBDLIB2 DD, PSBLIB2 DD, or in both DD statements at their source level. The results are written to ACB Compare reports.

The following options can be specified for *parameter* (the allowed abbreviation is shown in parentheses):

DBD (D)

This option specifies that the members in the libraries that are specified in the ACBLIB are to be compared to the members in the libraries that are specified in DBDLIB2 at their source level.

PSB (P)

This option specifies that the members in the libraries that are specified in the ACBLIB are to be compared to the members in the libraries that are specified in PSBLIB2 at their source level.

BOTH (B)

This option specifies that the members in the libraries that are specified in the ACBLIB are to be compared to the members in the libraries specified in DBDLIB2 and PSBLIB2 at their source level.

Use of wildcards

For *member* and *member1* (the first member name), you can specify a wildcard in any position of a character string. The asterisk (*) and the percent sign (%) are supported as wildcard characters. An asterisk represents 0 - 8 characters, and a percent sign represents a single character. If two or more asterisks are specified sequentially, only the first asterisk is recognized. You cannot use wildcard characters to specify *member2* (the second member name).

Quick reference for DBD, PSB, ACB control statements and DD statements

The following table lists the DBD/PSB/ACB Compare functions, control statements, and DD statements.

Table 13. DBD/PSB/ACB Compare functions, control statements, and DD statements

Function	Control keyword	Required DD statements (O: Optional R: Required)								
		SYS PRINT	SYS OUT	DBD LIB	DBD LIB2	PSB LIB	PSB LIB2	ACB LIB	ACB LIB2	SYS IN
DBD compare	DBD=	R	R	R	R					R
	DBD=*member1*:*member2*	R	R	R	R					R
	DBD=*member*,A	R	R	R					R	R
PSB compare	PSB=	R	R			R	R			R
	PSB=*member1*:*member2*	R	R			R	R			R
	PSB=*member*,A	R	R			R			R	R

Table 13. DBD/PSB/ACB Compare functions, control statements, and DD statements (continued)

Function	Control keyword	Required DD statements (O: Optional R: Required)								
		SYS PRINT	SYS OUT	DBD LIB	DBD LIB2	PSB LIB	PSB LIB2	ACB LIB	ACB LIB2	SYS IN
ACB compare	ACB=	R	R					R	R	R
	ACB=*member1*:*member2*	R	R					R	R	R
	ACB=*member*,D	R	R		R			R		R
	ACB=*member*,P	R	R				R	R		R
	ACB=*member*,B	R	R		R		R	R		R

REPORT control statement

A REPORT control statement controls report output. The REPORT statement applies to all members that are specified in the SYSIN DD statement, regardless of the order of the statements.

The REPORT control statement supports the following parameters:

SOURCE
This parameter specifies to generate the source-level compare reports in the SYSPRINT data set.

NODIFF
This parameter specifies to generate the source-level compare reports even when no difference is found. This parameter is effective only when the SOURCE parameter is specified on the REPORT statement.

CTLSTMT
This parameter specifies to generate the control statement report in the SYSPRINT data set.

Examples

You can code the REPORT control statement in the following ways:

- `REPORT=SOURCE`
- `REPORT=CTLSTMT`
- `REPORT=SOURCE,NODIFF`
- `REPORT=SOURCE,NODIFF,CTLSTMT`
- ```
  REPORT=SOURCE
  REPORT=NODIFF
  REPORT=CTLSTMT
  ```
  ```

NOCOMP control statement

A NOCOMP control statement specifies the field that you want to exclude from comparison. A NOCOMP control statement applies to all members that the SYSIN DD statement specifies, regardless of the order of the statements.

Subsections:

- "Summary of NOCOMP keyword parameters for source-level compare"
- "Summary of NOCOMP keyword parameters for block-level compare" on page 218
- "Description of NOCOMP keyword parameters" on page 223
- "Examples" on page 226

Summary of NOCOMP keyword parameters for source-level compare

The following table summarizes the NOCOMP keyword parameters and, for each parameter, the statements and parameters that are not compared. Refer to this table when you compare members at the source level.

Table 14. Source-level compare: Statements and parameters that are not compared

NOCOMP keyword parameter	Affected member type	Statements and parameters not compared
AREA	DBD	**AREA statement** AREA statements and any parameters on the AREA statements
COMPRTN	DBD	**SEGM statement** COMPRTN=
DBDNAME	DBD	**DBD statement** NAME=
IMSREL	DBD	**AREA, DATASET statements** DEVICE= (Removed by IMS Version 4. If a member is generated by IMS V3 or earlier and the other member is generated by IMS V4 or later, the utility does not compare this parameter.) **DBD statement** DATXEXIT= (Added by IMS Version 3. If a member is generated by IMS V2 or earlier and the other is generated by IMS V3 or later, the utility does not compare this parameter.)
	PSB	**PCB statement** PCBNAME=, LIST= (Added by IMS Version 3. If a member is generated by IMS V2 or earlier and the other is generated by IMS V3 or later, the utility does not compare these parameters.)
KEYLEN	PSB	**PCB statement** KEYLEN=
LANG	PSB	**PSBGEN statement** LANG=
LIST	PSB	**PCB statement** LIST=

Table 14. Source-level compare: Statements and parameters that are not compared (continued)

NOCOMP keyword parameter	Affected member type	Statements and parameters not compared
METADATA (or CATALOG)	DBD	**DFSMARSH, DFSMAP, DFSCASE statements** These statements and any parameters on these statements **FIELD statement** CASENAME=, DATATYPE=, DEPENDSON=, EXTERNALNAME=, MINOCCURS=, MAXOCCURS=, MAXBYTES=, PARENT=, REDEFINES=, RELSTART=, REMARKS=, STARTAFTER= **Other statements** ENCODING=, EXTERNALNAME=, REMARKS=
	PSB	EXTERNALNAME=, REMARKS=
PCBNAME	PSB	**PCB statement** PCBNAME= or label
PROCOPT	PSB	**DB PCB, GSAM PCB, SENSEG statements** PROCOPT=
PROCSEQ	PSB	**DB PCB statement** PROCSEQ=
PROCSEQD	PSB	**DB PCB statement** PROCSEQD=
PSB_ACCESS	PSB	**DB PCB statement** ACCESS=
PSB_PSELOPT	PSB	**DB PCB statement** PSELOPT=
PSBNAME	PSB	**PSBGEN statement** PSBNAME=
RMNAME	DBD	**DBD statement** RMNAME=
VERSION	DBD	**DBD statement** VERSION= **Note:** NOCOMP=VERSION parameter specifies that the value of the VERSION= parameter of the DBD statement is not compared. It is not for the DBVER= parameter of the DBD statement, which is used for database versioning.

Summary of NOCOMP keyword parameters for block-level compare

The following table summarizes the NOCOMP keyword parameters and, and for each parameter, the fields that are not compared. Refer to this table when you compare members at the block level.

Table 15. Block-level compare: Fields that are not compared

NOCOMP keyword parameter	Affected member type	Fields that are not compared (Section and field description)
AREA	DBD	Fields related to the AREA statement and the following fields: **IMS IDBD macro - PRFX DB section** • NO OF SEGMENTS **IMS IDBD macro - PRFX DSG section** • LOGICAL RECORD LENGTH • OVERFLOW/OUTPUT LOGICAL RECORD LENGTH
	DBD-type ACB	Fields related to the AREA statement and the following fields: **IMS DBFDMCB macro - DMCB DBD section** • ADDRESS OF FDT ENTRY FOR ROOT KEY • MAXIMUM IOA LENGTH • OFFSET FROM BEGINNING OF DMCB
COMPRTN	DBD	Fields related to the COMPRTN= parameter of the SEGM statement and the following fields: **IMS IDBD macro - PRFX DSG section** • LONGEST SEGMENT LENGTH **IMS IDBD macro - SEGTAB SEG section** • MIN LENGTH OR ZERO FOR FIX LENGTH SEGS
	DBD-type ACB	Fields related to the COMPRTN= parameter of the SEGM statement and the following fields: **IMS DFSDMB macro - PRFX section** • DMB SIZE IN BYTES **IMS DFSDMB macro - AMPBPX section** • LENGTH OF LARGEST SEGMENT IN DATASET **IMS DFSDMB macro - PSDB section** • FOR VAR LENGTH SEG - MIN VALUE **IMS DBFDMCB macro - DMCB DBD section** • ADDRESS OF FDT ENTRY FOR ROOT KEY. • OFFSET FROM BEGINNING OF DMCB
DBDNAME	DBD, DBD-type ACB	Fields related to the DBD NAME= statement
DMBNUM	DBD-type ACB	DMB number field

Table 15. Block-level compare: Fields that are not compared (continued)

NOCOMP keyword parameter	Affected member type	Fields that are not compared (Section and field description)
IMSREL	DBD	**IMS IDBD macro - DIR section** • DBDGEN DONE ON IMSV12 OR LATER (Added by IMS Version 12) **IMS IDBD macro - PRFX DB section** • NO OF AREAS(NEW) (Added by IMS Version 8) If this field exists in both members, the utility compares this field. **IMS IDBD macro - PRFX DSG section** • AREA ID(NEW) (Added by IMS Version 8) If this field exists in both members, the utility compares this field. • DEVICE TYPE OR RESERVED FIELD (Removed by IMS Version 4) **IMS IDBD macro - DBDXTB section** • "DBDX" EYECATCHER (Added by IMS Version 3) • LENGTH OF DBDXTAB (Added by IMS Version 3) • LEVEL OF DBDGEN • CALL DFSDBUX1 USER EXIT • "V" = VERSION ID, • "T" = TIMESTAMP • LENGTH OF VERSION ID (HEX) • VERSION ID (VARIABLE LENGTH) **IMS IDBD macro - EXITTB section** • NODLET OPTION (Y/N) • NO BEFORE OPTION (Y/N) **IMS DBDGEN macro - DBDGEN section** • IMS RELEASE LEVEL
	PSB	**IMS DFSIPSB macro - PRFX section** • INCREASED LIMIT OF SENSEGS (Added by IMS Version 7) • IMS V12 FLAG (Added by IMS Version 12) **IMS DFSIPSB macro - SENSEG section** • PARENT OFFSET IN SEGTBL (Added by IMS Version 7) **IMS PSBGEN macro - PSBGEN section** • IMS RELEASE LEVEL (Added by IMS Version 3)

Table 15. Block-level compare: Fields that are not compared (continued)

NOCOMP keyword parameter	Affected member type	Fields that are not compared (Section and field description)
KEYLEN	PSB	Fields related to the KEYLEN= parameter of the PCB statement
	PSB-type ACB	Fields related to the KEYLEN= parameter of the PCB statement and the following fields: **IMS DFSIPSB macro - PRFX section** • PSB SIZE (W/O INTENT LIST) • PSB SIZE (WITH INTENT LIST) • SIZE OF CSA PART OF PSB • TOTAL SIZE OF PSB WORK AREA • MAX I/O WORK AREA SIZE • ADDR OF FAST PATH CONTROL BLOCK • LENGTH OF THIS DBPCB MINUS PREFIX
LANG	PSB, PSB-type ACB	Field related to the LANG= parameter
LIST	PSB, PSB-type ACB	Field related to the LIST= parameter
METADATA (or CATALOG)	DBD, DBD-type ACB, PSB, PSB-type ACB	Fields related to the metadata fields in DBD, PSB, or ACB
PCBNAME	PSB	Fields related to the PCBNAME= parameter, the label parameter of the PCB statement, and the following fields: **IMS DFSIPSB macro - DBPCB PCB section** • SEGMENT NAME FEEDBACK **IMS DFSIPSB macro - GSPCB PCB section** • SEGMENT NAME FEEDBACK
	PSB-type ACB	Fields related to the PCBNAME= parameter, the label parameter of the PCB statement, and the following field: **IMS DFSIPSB macro - DBPCB PCB section** • SEGMENT NAME FEEDBACK

Table 15. Block-level compare: Fields that are not compared (continued)

NOCOMP keyword parameter	Affected member type	Fields that are not compared (Section and field description)
PROCOPT	PSB	Fields related to the PROCOPT= parameter
	PSB-type ACB	Fields related to the PROCOPT= parameter and the following fields: **IMS DFSIPSB macro - PPFX section** • SIZE OF INDEX MAINT WORK AREA • SIZE OF SEGMENT WORK AREA • SIZE NEEDED FOR UPDATED DB LIST • SIZE OF SEGWK FOR GO EXPANSION • PSB SIZE (W/O INTENT LIST) • PSB SIZE (WITH INTENT LIST) • TOTAL SIZE OF PSB WORK AREA • MAX I/O WORK AREA SIZE • ADDR OF FAST PATH CONTROL BLOCK **IMS DFSSDBM macro - SDB SEG (*segname*) section** • RELATIVE OFFSET TO THE PHYSICAL DSG OF THIS SDB • ADDR OF THE DSG SECTION OF THE JCB FOR THIS SEG
PROCSEQ	PSB	Fields related to the PROCSEQ= parameter
	PSB-type ACB	Fields related to the PROCSEQ= parameter and the following fields: **IMS DFSIPSB macro - PRFX section** • SIZE OF INDEX MAINT WORK AREA • PSB SIZE (W/O INTENT LIST) • PSB SIZE (WITH INTENT LIST) • TOTAL SIZE OF PSB WORK AREA • MAX I/O WORK AREA SIZE • ADDR OF FAST PATH CONTROL BLOCK **IMS DFSSDBM macro - SDB SEG (*segname*) section** • SECONDARY INDEX IS MAIN PROCESSING SEQ. • RELATIVE OFFSET TO THE PHYSICAL DSG OF THIS SDB • ADDR OF THE DSG SECTION OF THE JCB FOR THIS SEG • SDB LOGICALLY RELATED • ADDRESS OF SDB EXPANSION • SEGMENT IS RETRIEVED VIA INDEX • SDB EXPANSION FOR SECONDAR IND

Table 15. Block-level compare: Fields that are not compared (continued)

NOCOMP keyword parameter	Affected member type	Fields that are not compared (Section and field description)
PROCSEQD	PSB	Fields related to the PROCSEQD= parameter **IMS DFSIPSB macro - PRFX section** • PST ADDR OF SCHED REGIN • EITHER 0000 OR THE OFFSET FROM • PSB SIZE
	PSB-type ACB	Fields related to the PROCSEQD= parameter and the following fields: **IMS DFSIPSB macro - PRFX section** • MAXIMUM DBPCB KEY FEEDBACK LENGTH • NUMBER OF DBPCBS IN THIS PSB • TOTAL NUMBER OF PCBS IN THIS PSB • PSB SIZE (W/O INTENT LIST) • PSB SIZE (WITH INTENT LIST) • SIZE OF CSA PART OF PSB • ADDR OF USER PARMS IN CTRL RGN • MAX I/O WORK AREA SIZE • ADDR OF FAST PATH CONTROL BLOCK • IMS/VS DL/I DB ACCESS INDICATOR • OFFSET TO THE FIRST GSAM PCB • PSB SIZE
PSB_ACCESS	PSB, PSB-type ACB	Fields related to the ACCESS= parameter
PSB_PSELOPT	PSB, PSB-type ACB	Fields related to the PSELOPT= parameter
PSBNAME	PSB, PSB-type ACB	Fields related to the PSBNAME= parameter
RMNAME	DBD	Fields related to the RMNAME= parameter
	DBD-type ACB	Fields related to the RMNAME= parameter and the following fields: **IMS DFSIPSB macro - PRFX section** • DMB SIZE IN BYTES • ECB FOR BACKGROUND WRITE TO POST
VERSION	DBD, DBD-type ACB, PSB-type ACB	Fields related to the VERSION= parameter **Note:** NOCOMP=VERSION parameter specifies that the value of the VERSION= parameter of the DBD statement is not compared. It is not for the DBVER= parameter of the DBD statement, which is used for database versioning.

Description of NOCOMP keyword parameters

With the following parameters, this statement specifies which field in all of the members specified in the SYSIN DD statement is not compared:

AREA This parameter indicates that for DBD and DBD-type ACB members, the AREA statements of the DBDGEN utility and the fields that relate to the AREA statements are not compared.

The AREA statement of the DBDGEN utility defines an area within the database, and it also affects fields in the member. If NOCOMP=AREA is specified, the fields that are defined by the AREA statement and any fields affected by the AREA statement are not compared.

COMPRTN
This parameter indicates that for DBD and DBD-type ACB members, the fields that relate to the COMPRTN= parameter of the SEGM statement of the DBDGEN utility are not compared.

The COMPRTN= parameter of the DBDGEN utility defines the segment compression parameters, and it also affects fields in the member. If NOCOMP=COMPRTN is specified, the fields that are defined by the COMPRTN= parameter and the fields affected by the COMPRTN= parameter are not compared.

DBDNAME
This parameter indicates that the fields that are related to the DBD NAME= statement, which was used for creating the DBD or DBD-type ACB member, are not compared. DBD names that are specified by other statements, such as external DBD names, are compared even if this parameter is specified. This parameter is useful for comparing members that have different names.

DMBNUM
This parameter indicates that the DMB number field in DBD-type ACB is not compared. This field value depends only on the order of ACB generations.

IMSREL
Even if two members are generated from the same source, if the version of IMS that generated the two members is different, the compare utility might report some differences between the members. If you specify NOCOMP=IMSREL, the utility does not compare such difference and reports that the two members are the same.

NOCOMP=IMSREL works as follows:

- For source-level compare, the utility does not compare the parameters that were added or removed by certain IMS versions.
- For block-level compare, the utility does not compare the fields that are different between certain IMS versions or that were added or removed by certain IMS versions.

Usage note: Whether NOCOMP=IMSREL is specified or not, the utility does not compare the IMS release that generated the DBD or the PSB members.

KEYLEN
This parameter indicates that for PSB and PSB-type ACB members, the fields that relate to the KEYLEN= parameter of the PCB statement of the PSBGEN utility are not compared.

The KEYLEN= parameter of the PSBGEN utility defines the length of the longest concatenated key for the PCB, and it also affects fields in the

member. If NOCOMP=KEYLEN is specified, the fields that are defined by the KEYLEN= parameter and the fields affected by the KEYLEN= parameter are not compared.

LANG
This parameter indicates that for PSB and PSB-type ACB members, the field that relates to the LANG= parameter of the PSBGEN utility is not compared.

LIST This parameter indicates that for PSB and PSB-type ACB members, the field that relates to the LIST= parameter of the PSBGEN utility is not compared.

METADATA
This parameter indicates that the metadata fields in DBD, PSB, or ACB are not compared.

Instead of specifying NOCOMP=METADATA, you can specify NOCOMP=CATALOG. CATALOG is an alias for METADATA.

PCBNAME
This parameter indicates that for PSB and PSB-type ACB members, the fields that relate to the PCBNAME= parameter and the label parameter of the PCB statement of the PSBGEN utility are not compared.

The PCBNAME= parameter and the label parameter of the PSBGEN utility define the name of the PCB, and they also affect fields in the member. If NOCOMP=PCBNAME is specified, the fields that are defined by these parameters and the fields affected by the parameters are not compared.

PROCOPT
This parameter indicates that for PSB and PSB-type ACB members, the fields that relate to the PROCOPT= parameter of the PSBGEN utility are not compared.

The PROCOPT= parameter of the PSBGEN utility defines the processing options, and it also affects fields in the member. If NOCOMP=PROCOPT is specified, the fields that are defined by the PROCOPT= parameter and the fields affected by the PROCOPT= parameter are not compared.

PROCSEQ
This parameter indicates that for PSB and PSB-type ACB members, the fields that relate to the PROCSEQ= parameter of the PSBGEN utility are not compared.

The PROCSEQ= parameter of PSBGEN utility defines the name of a secondary index, and it also affects fields in the member. If NOCOMP=PROCSEQ is specified, the fields that are defined by the PROCSEQ= parameter and the fields affected by the PROCSEQ= parameter are not compared.

PROCSEQD
This parameter indicates that for PSB and PSB-type ACB members, the fields that relate to the PROCSEQD= parameter of the PSBGEN utility are not compared.

The PROCSEQD= parameter of the PSBGEN utility defines the name of a secondary index for the primary DEDB database, and it also affects fields in the member. If NOCOMP=PROCSEQD is specified, the fields that are defined by the PROCSEQD= parameter and the fields affected by the PROCSEQD= parameter are not compared.

PSB_ACCESS
This parameter indicates that for PSB and PSB-type ACB members, the field that relates to the ACCESS= parameter of the PSBGEN utility is not compared.

PSB_PSELOPT
This parameter indicates that for PSB and PSB-type ACB members, the field that relates to the PSELOPT= parameter of the PSBGEN utility is not compared.

PSBNAME
This parameter indicates that the fields that are related to the PSBNAME= parameter, which was used for creating the PSB or PSB-type ACB member, are not compared. This parameter is useful for comparing members that have different names.

RMNAME
This parameter indicates that for DBD and DBD-type ACB members, the fields that relate to the RMNAME= parameter of the DBD statement of the DBDGEN utility are not compared.

The RMNAME= parameter of the DBDGEN utility defines the randomizing parameters, and it also affects fields in the member. If NOCOMP=RMNAME is specified, the fields that are defined by the RMNAME= parameter and the fields affected by the RMNAME= parameter are not compared.

VERSION
This parameter indicates that for DBD, DBD-type ACB, and PSB-type ACB members, the fields related to the VERSION= parameter of the DBDGEN utility is not compared.

Note: NOCOMP=VERSION parameter specifies that the value of the VERSION= parameter of the DBD statement is not compared. It is not for the DBVER= parameter of the DBD statement, which is used for database versioning.

Examples

You can specify the NOCOMP control statement in one of the following formats:

- To specify a single parameter, code the statement as follows:

```
NOCOMP=VERSION
```

- To specify multiple parameters, use commas to separate the parameters. For example:

```
NOCOMP=VERSION,DBDNAME,AREA
```

- To specify multiple parameters that cannot fit on one line, code multiple NOCOMP keywords as follows:

```
NOCOMP=VERSION,DMBNUM,IMSREL
NOCOMP=DBDNAME,PSBNAME
NOCOMP=AREA,RMNAME,COMPRTN,PCBNAME,KEYLEN
NOCOMP=LANG,LIST,PROCOPT,PROCSEQ
NOCOMP=PROCSEQD,PSB_PSELOPT,PSB_ACCESS
NOCOMP=METADATA
```

JCL examples for the DBD/PSB/ACB Compare utility

The following topics provide JCL examples for running the DBD/PSB/ACB Compare utility to compare DBDs, PSBs, and ACBs.

Example: Comparing two DBDs

The following figure shows example JCL for running the DBD/PSB/ACB Compare utility to compare several DBDs in DBD libraries IMSVS.DBDLIB and IMSVS.TEST.DBDLIB.

```
//stepname EXEC PGM=FABLCOMP
//STEPLIB    DD DSN=HPS.SHPSLMD0,DISP=SHR
//DBDLIB     DD DSN=IMSVS.DBDLIB,DISP=SHR
//DBDLIB2    DD DSN=IMSVS.TEST.DBDLIB,DISP=SHR
//SYSOUT     DD SYSOUT=A
//SYSPRINT   DD SYSOUT=A
//SYSIN      DD *
    REPORT=SOURCE
    DBD=BE1PARTS
    DBD=BE2LORDR
    DBD=BE2ORDER
    DBD=BE2PARTS
/*
```

Figure 61. Example of creating a DBD Compare report—Comparing two DBDs

Example: Comparing two DBDs that have different names

The following figure shows example JCL for comparing DBDs that have different member names. The members to be compared are delimited by a colon. In this example, the members before the colon are in DBD library IMSVS.DBDLIB, and the members after the colon are in DBD library IMSVS.TEST.DBDLIB.

```
//stepname EXEC PGM=FABLCOMP
//STEPLIB    DD DSN=HPS.SHPSLMD0,DISP=SHR
//DBDLIB     DD DSN=IMSVS.DBDLIB,DISP=SHR
//DBDLIB2    DD DSN=IMSVS.TEST.DBDLIB,DISP=SHR
//SYSOUT     DD SYSOUT=A
//SYSPRINT   DD SYSOUT=A
//SYSIN      DD *
    REPORT=SOURCE
    DBD=BE1PARTS:BE2PARTS
    DBD=BE1ORDER:BE2ORDER
    DBD=BE1LORDR:BE2RORDR
/*
```

Figure 62. Example of creating a DBD Compare report—Comparing two DBDs that have different names

Example: Comparing a DBD with a DBD-type ACB

The following figure shows example JCL for running the DBD/PSB/ACB Compare utility to compare several DBDs in DBD libraries IMSVS.DBDLIB with their corresponding DBD-type ACBs in ACB library IMSVS.ACBLIB.

```
//stepname EXEC PGM=FABLCOMP
//STEPLIB    DD DSN=HPS.SHPSLMD0,DISP=SHR
//DBDLIB     DD DSN=IMSVS.DBDLIB,DISP=SHR
//ACBLIB2    DD DSN=IMSVS.ACBLIB,DISP=SHR
//SYSOUT     DD SYSOUT=A
//SYSPRINT   DD SYSOUT=A
//SYSIN      DD *
    REPORT=SOURCE
    DBD=BE1PARTS,ACB
    DBD=BE2LORDR,ACB
    DBD=BE2ORDER,ACB
    DBD=BE2PARTS,ACB
/*
```

Figure 63. Example of creating a DBD Compare report—Comparing a DBD with DBD-type ACB

Example: Comparing two PSBs

The following figure shows example JCL for running the DBD/PSB/ACB Compare utility to compare several PSBs in PSB libraries IMSVS.PSBLIB and IMSVS.TEST.PSBLIB.

```
//stepname EXEC PGM=FABLCOMP
//STEPLIB    DD DSN=HPS.SHPSLMD0,DISP=SHR
//PSBLIB     DD DSN=IMSVS.PSBLIB,DISP=SHR
//PSBLIB2    DD DSN=IMSVS.TEST.PSBLIB,DISP=SHR
//SYSOUT     DD SYSOUT=A
//SYSPRINT   DD SYSOUT=A
//SYSIN      DD *
    REPORT=SOURCE
    PSB=PE1CPINV
    PSB=PE1CPPUR
    PSB=PE1PPINV
    PSB=PE2CORDR
/*
```

Figure 64. Example of creating a PSB Compare report—Comparing two PSBs

Example: Comparing a PSB with a PSB-type ACB

The following figure shows example JCL for running the DBD/PSB/ACB Compare utility to compare several PSBs in PSB library IMSVS.PSBLIB with their corresponding PSB-type ACBs in ACB library IMSVS.ACBLIB.

```
//stepname EXEC PGM=FABLCOMP
//STEPLIB    DD DSN=HPS.SHPSLMD0,DISP=SHR
//PSBLIB     DD DSN=IMSVS.PSBLIB,DISP=SHR
//ACBLIB2    DD DSN=IMSVS.ACBLIB,DISP=SHR
//SYSOUT     DD SYSOUT=A
//SYSPRINT   DD SYSOUT=A
//SYSIN      DD *
    REPORT=SOURCE
    PSB=PE1CPINV,ACB
    PSB=PE1CPPUR,ACB
    PSB=PE1PPINV,ACB
    PSB=PE2CORDR,ACB
/*
```

Figure 65. Example of creating a PSB Compare report—Comparing a PSB with PSB-type ACB

Example: Comparing two ACBs

The following figure shows example JCL for running the DBD/PSB/ACB Compare utility to compare several ACBs in ACB libraries IMSVS.ACBLIB and IMSVS.TEST.ACBLIB.

```
//stepname EXEC PGM=FABLCOMP
//STEPLIB    DD DSN=HPS.SHPSLMD0,DISP=SHR
//ACBLIB     DD DSN=IMSVS.ACBLIB,DISP=SHR
//ACBLIB2    DD DSN=IMSVS.TEST.ACBLIB,DISP=SHR
//SYSOUT     DD SYSOUT=A
//SYSPRINT   DD SYSOUT=A
//SYSIN      DD *
    REPORT=SOURCE
    ACB=PE1CPINV
    ACB=PE1CPPUR
    ACB=PE1PPINV
    ACB=PE2CORDR
/*
```

Figure 66. Example of creating an ACB Compare report—Comparing two ACBs

Example: Comparing ACBs with DBDs and PSBs

The following figure shows example JCL for running the DBD/PSB/ACB Compare utility to compare several ACBs in ACB library IMSVS.ACBLIB with their corresponding DBDs in DBD library IMSVS.DBDLIB and PSBs in PSB library IMSVS.PSBLIB.

```
//stepname EXEC PGM=FABLCOMP
//STEPLIB    DD DSN=HPS.SHPSLMD0,DISP=SHR
//ACBLIB     DD DSN=IMSVS.ACBLIB,DISP=SHR
//DBDLIB2    DD DSN=IMSVS.DBDLIB,DISP=SHR
//PSBLIB2    DD DSN=IMSVS.PSBLIB,DISP=SHR
//SYSOUT     DD SYSOUT=A
//SYSPRINT   DD SYSOUT=A
//SYSIN      DD *
    REPORT=SOURCE
    ACB=BE1PARTS,BOTH
    ACB=BE2LORDR,BOTH
    ACB=PE1PPINV,BOTH
    ACB=PE2CORDR,BOTH
/*
```

Figure 67. Example of creating an ACB Compare report—Comparing ACBs with DBDs and PSBs

Example: Comparing DBDs, PSBs, and ACBs

The following figure shows example JCL for running the DBD/PSB/ACB Compare utility to compare several DBDs, PSBs, and ACBs.

```
//stepname EXEC PGM=FABLCOMP
//STEPLIB    DD DSN=HPS.SHPSLMD0,DISP=SHR
//DBDLIB     DD DSN=IMSVS.DBDLIB,DISP=SHR
//DBDLIB2    DD DSN=IMSVS.TEST.DBDLIB,DISP=SHR
//PSBLIB     DD DSN=IMSVS.PSBLIB,DISP=SHR
//PSBLIB2    DD DSN=IMSVS.TEST.PSBLIB,DISP=SHR
//ACBLIB     DD DSN=IMSVS.ACBLIB,DISP=SHR
//ACBLIB2    DD DSN=IMSVS.TEST.ACBLIB,DISP=SHR
//SYSOUT     DD SYSOUT=A
//SYSPRINT   DD SYSOUT=A
//SYSIN      DD *
    REPORT=SOURCE
    DBD=BE1PARTS
    PSB=PE1CPINV
    ACB=PE1CPINV
    DBD=BE2LORDR
    PSB=PE1CPPUR
    ACB=PE1CPPUR
    DBD=BE2PARTS
    PSB=PE1PPINV
    PSB=PE2CORDR
    ACB=PE1PPINV
    ACB=PE2CORDR
/*
```

Figure 68. Example of creating a DBD, PSB, and ACB Compare report

Output from the DBD/PSB/ACB Compare utility

Output from the DBD/PSB/ACB Compare utility consists of the SYSOUT data set and the SYSPRINT data set.

SYSOUT data set

The SYSOUT data set contains a message for each input dbdname, psbname, and acbname. Each message states that the specified DBD, PSB, or ACB has been selected or not found in the DBD, PSB, or ACB library. It also contains all error messages. The summary of comparison, for each DBD, PSB, or ACB control statement, is also generated in the SYSOUT data set.

The following figure shows messages that are generated in the SYSOUT data set.

```
IMS LIBRARY INTEGRITY UTILITIES - DBD/PSB/ACB COMPARE                "MESSAGES"                                    PAGE :     1
5655-U08                                              DATE: 10/01/2018  TIME: 18.50.25                        FABLCOMP  - V2.R2
FABL0001I CONTROL CARD SUPPLIED IS:  REPORT=SOURCE
FABL0001I CONTROL CARD SUPPLIED IS:  DBD=TESTDB1
FABL0001I CONTROL CARD SUPPLIED IS:  PSB=TESTPSB1
FABL0001I CONTROL CARD SUPPLIED IS:  ACB=TESTDB1
FABL0001I CONTROL CARD SUPPLIED IS:  ACB=TESTPSB1
FABL0022I COMPARE MODE IS REPORT=SOURCE
FABL0004I DBD TO BE PROCESSED IS TESTDB1
FABL0007W DIFFERENCE FOUND DURING COMPARE DBD=TESTDB1
FABL0023I MEMBER TESTDB1  PROCESSED
FABL0004I PSB TO BE PROCESSED IS TESTPSB1
FABL0007W DIFFERENCE FOUND DURING COMPARE PSB=TESTPSB1
FABL0023I MEMBER TESTPSB1 PROCESSED
FABL0004I ACB TO BE PROCESSED IS TESTDB1
FABL0007W DIFFERENCE FOUND DURING COMPARE ACB=TESTDB1
FABL0023I MEMBER TESTDB1  PROCESSED
FABL0004I ACB TO BE PROCESSED IS TESTPSB1
FABL0006I NO DIFFERENCE FOUND DURING COMPARE ACB=TESTPSB1
FABL0023I MEMBER TESTPSB1 PROCESSED
FABL0042I COMPARED      1 DBD WITH DBD.  DETECTED      0 IDENTICAL SOURCES AND      1 MISMATCHED SOURCES.
FABL0042I COMPARED      1 PSB WITH PSB.  DETECTED      0 IDENTICAL SOURCES AND      1 MISMATCHED SOURCES.
FABL0042I COMPARED      2 ACB WITH ACB.  DETECTED      1 IDENTICAL SOURCES AND      1 MISMATCHED SOURCES.
```

Figure 69. Messages in the SYSOUT data set

SYSPRINT data set

The SYSPRINT data set contains reports that are classified as DBD, PSB, and ACB Compare, and each group is sorted alphabetically by member name.

The SYSPRINT data set must contain records of 133 bytes or a multiple of 133.

DBD/PSB/ACB Compare generates the following types of reports:

Block-level compare reports
DBD/PSB/ACB Compare compares two DBDs, PSBs, or ACBs, and generates DBD, PSB, or ACB Compare reports that contain comparison information about two DBDs, PSBs, or ACBs.

Source-level compare reports
DBD/PSB/ACB Compare compares two control blocks (DBDs, PSBs, or ACBs) of the same type or different types at their source levels, and generates DBD, PSB, or ACB Compare reports that contain comparison information about the two control blocks.

Control Statement report

If you specify the CTLSTMT parameter for the REPORT statement, the utility generates the Control Statement report in the SYSPRINT data set. This report shows the echo of the SYSIN control statements and the selected runtime options.

The following figure shows an example of the Control Statement report.

```
IMS LIBRARY INTEGRITY UTILITIES - DBD/PSB/ACB COMPARE           "CONTROL STATEMENT REPORT"                          PAGE:     1
5655-U08                                                 DATE: 11/28/2018  TIME: 13.21.16                      FABLCOMP - V2.R2

"CONTROL STATEMENTS"

0........1.........2.........3.........4.........5.........6.........7.........8
12345678901234567890123456789012345678901234567890123456789012345678901234567890

     REPORT=SOURCE,CTLSTMT
     NOCOMP=IMSREL,VERSION,DMBNUM,DBDNAME,PSBNAME,KEYLEN,PCBNAME,CATALOG,AREA
     NOCOMP=RMNAME,COMPRTN,LANG,LIST,PROCOPT,PROCSEQ
     NOCOMP=PROCSEQD,PSB_PSELOPT,PSB_ACCESS
     DBD=DBD@D01A

"RUNTIME OPTIONS"
  STATEMENT  PARAMETERS
  ---------  ------------------------------------------------------------------------------------------------------------------------
  REPORT     SOURCE,CTLSTMT
  NOCOMP     VERSION,DMBNUM,IMSREL,DBDNAME,PSBNAME,CATALOG,AREA,RMNAME,COMPRTN,PCBNAME,KEYLEN,LANG,LIST,PROCOPT,PROCSEQ,PROCSEQD,
             PSB_PSELOPT,PSB_ACCESS
```

Figure 70. Control Statement report

Block-level compare reports

The block-level compare reports contain comparison results for two DBDs, PSBs, or ACBs.

Subsections:

- "Report field description"
- "Sample report: Block-level compare report for DBDs" on page 237
- "Sample report: Block-level compare report for PSBs" on page 238
- "Sample report: Block-level compare reports for ACBs" on page 239

Report field description

The blocks in DBD/PSB/ACB in LIBRARY 1 are taken as the basis for the comparisons. If an entry of a table such as segment table (SEGTAB) and field table (FLDTAB) are found in either LIBRARY 1 or LIBRARY 2, all information contained in the entry is reported. If the entry is found only in LIBRARY 2, an asterisk (*) appears to the right of the contents of LIBRARY 2.

The headings of DBD, PSB, and ACB Compare reports contain the following items in common:

TYPE Function type (DBD, PSB, or ACB) specified with the control statement.

NAME
Name of the member or members that were compared. When the compared members have different names, the second member name follows the first member name, separated by a colon.

LIBRARY 1
Data set name and volume serial number of the library that contains the member. Corresponds to DBDLIB, PSBLIB, or ACBLIB DD statements.

LIBRARY 2
Data set name and volume serial number of the library that contains the member. Corresponds to DBDLIB2, PSBLIB2, or ACBLIB2 DD statements.

SECTIONS WHICH ARE DIFFERENT
List of sections in which the differences were found.

DBD/PSB/ACB Compare compares two DBDs, PSBs, or ACBs that have the same name but are in different libraries. It also compares DBDs, PSBs, or ACBs that have different names and that are in the same library or in different libraries. In each pair, it compares the sections summarized in the following tables.

Table 16. Sections in DBD Compare reports

Section	Description
DIR	Information about the construction of the DBD control block
PRFX DB (*dbname*)	Database information
PRFX DSG (*ddname*)	Data set information
PRFX DSG (*dsg-num*)	Data set information for HALDB
SEGTAB SEG (*segname*)	Segment information
CMPRTN SEG (*segname*) CMP (*exitname*)	Compression exit information
FLDTAB SEG (*segname*) FLD (*fldname*)	Field information
LCHLD LCH (*lchname*)	Logical child information
EXTDBD EXT (*extdbnam*)	External DB information that is referred to by the DBD
INDXTB	Index information
SSPTAB	Subset pointer information about DEDB DBD
SORTAB SEG (*segname*)	Source segment information
RDMRTN	HDAM randomizing routine information about HDAM DBD (see note)
DBDXTB	DBD extensional information
SEGXTB SEG (*segname*)	Segment exit table information
EXITTB SEG (*segname*) EXT (*exitname*)	Exit name array information
INDXMP PSL (*exitname*)	FPSI Partition Selection exit information

Table 16. Sections in DBD Compare reports (continued)

Section	Description
DXVECT DXDENT DXDRET DXSENT SEG (*segname*) DXSEXT SEG (*segname*) DXSRET DXFMCT DXFDTT DXFDOT DXFXTT DXFRDT DXFRET DXFPAT DXFCIT DXFCAT DXFCRT DXFMDT DXFMNT DXFMRT DXFSAT DXMENT DXMPAT DXMOVT DXMITT DXMUTT DXMPOT DXMPOE DXMURT DXMRET DXLRET DXXRET DXTRET DXARET DXFEXT FLD (*fldname*) DXDRET	Metadata information for DBD
DBDGEN	IMS release level information. If the DBD was generated by IMS Version 3 or higher, the level is shown.
CKTBL1	/CK search field information about DEDB DBD
CKTBL2	/CK subsequence field information about DEDB DBD

Note: The differences in this section are checked only if the RDMRTN section is customized. For details about customization, see the topic "HDAM and PHDAM randomizing routines (DFSHDC40)" in the *IMS Exit Routines*.

Table 17. Sections in PSB Compare reports

Section	Description
PRFX	PSB attributes information
TPPCB PCB (*ltrmname*)	TP PCB information
DBPCB PCB (*dbname*)	DB PCB information
GSPCB PCB (*dbname*)	GSAM DB PCB information
SENSEG PCB (*dbname*) SEG (*segname*)	Sensitive segment information about DB PCB
PSSPTB PCB (*dbname*) SEG (*segname*)	Subset pointer information about DB PCB

Table 17. Sections in PSB Compare reports (continued)

Section	Description
SENFLD PCB (*dbname*) SEG (*segname*) FLD (*fldname*)	Sensitive field information about DB PCB
REFTBL DB (*dbname*)	DB information referred to by DB PCB or GSAM PCB
PCBNAME NAM (*pcbname*)	PCB name information specified in the PCB statement
PXVECT PXPCRT PXPCXT PXSSRT PXSFRT PXPSRT	Metadata information for PSB
PSBGEN	IMS release level information. If the PSB was generated by IMS Version 3 or higher, the level is shown.

Table 18. Sections in ACB Compare reports

Section	Description
PRFX	ACB attributes and database information
TPPCB PCB (*ltrmname*)	TP PCB information
PCBNAME PCB (*ltrmname*) NAM (*pcbname*)	PCB name information about TP PCB
DBPCB PCB (*dbname*)	DB PCB information
DBPCBX PCB (*dbname*)	DB PCB extensional information
VERID PCB (*dbname*)	Version ID information about the DBD that is referred to by DB PCB
DMBXTB PCB (*dbname*)	DMB extensional information about DEDB DMB referred to by DB PCB
SEGXTB PCB (*dbname*) SEG (*segname*)	Segment exit table information about DEDB DMB referred to by DB PCB
EXITTB PCB (*dbname*) SEG (*segname*) EXT(*exitname*)	Exit name array information about DEDB DMB referred to by DB PCB
JCB PCB (*pcbname*)	JOB control block information
SDB SEG (*segname*)	Sensitive segment information about DB PCB
FSBLST	Information related to sensitive field of DB PCB
FSB FLD (*fldname*)	Sensitive field information about DB PCB
SPCB	DB PCB information for DEDB DBD
SMLT SEG (*segname*)	Sensitive segment information about DB PCB for DEDB DBD
RDMRTN	HDAM randomizing routine information about HDAM DBD
AMPBPX	Prefix information about the Access Method Prefix Block
AMPB	Access Method Prefix Block information
PSDB	Physical Segment Descriptor Block information
SECOND SEG (*segname*)	Secondary list information
FDB FLD (*fldname*)	Field Description Block information
DMBXTB	DMB extensional information
SEGXTB SEG (*segname*)	Segment exit table information
EXITTB SEG (*segname*) EXT (*exitname*)	Exit name array information

Table 18. Sections in ACB Compare reports (continued)

Section	Description
CPAC CMP (*exitname*)	Compression exit information
DMCB DBD (*dbdname*)	DEDB Master Control Block information about DEDB DBD
SDT SEG (*segname*)	Segment information about DEDB DBD
FDT SEG (*segname*) FLD (*fldname*)	Field information about DEDB DBD
MRMB DBD (*dbdname*)	DEDB Randomizing Module Block information about DEDB DBD
DMAC DBD (*dbdname*) DSG (*areaname*)	DEDB AREA Control List information about DEDB DBD
BHDR DBD (*dbdname*) FLD (*fldname*)	Header information about MSDB DBD
CRTE	DEDB secondary index cross reference table entries information
CRTEXD	INDEX record partitioning information

ACB Compare reports also contain metadata information for DBDs and PSBs. For those sections, see Table 16 on page 233 and Table 17 on page 234.

DIFFERENCE DESCRIPTION
Description of the field in which difference was found.

When differences are found between two control blocks after running DBD/PSB/ACB Compare, you can run DBD/PSB/ACB Mapper, or DBD/PSB/ACB Reversal to obtain more information about the control blocks.

Note: Any comparison of two variable-length fields in the IMS control blocks is based on the field length of the LIBRARY 1 block. If any difference is found, DBD/PSB/ACB Compare reports it in full length, using one or more lines in the LIBRARY 1 and LIBRARY 2 fields.

Sample report: Block-level compare report for DBDs

The following figure shows an example of the DBD Compare report.

```
IMS LIBRARY INTEGRITY UTILITIES - DBD/PSB/ACB COMPARE            "DBD COMPARE REPORT"                                  PAGE:     1
5655-U08                                                  DATE: 10/01/2018 TIME: 09.21.45                        FABLDBD0 - V2.R2

TYPE      : DBD
NAME      : DSFACHON
LIBRARY 1 : VOLUME=IMSVS   DSNAME=IMSVS.DBDLIB
LIBRARY 2 : VOLUME=IMSVS   DSNAME=IMSVS.TEST.DBDLIB

LIBRARY1  LIBRARY2   SECTIONS WHICH ARE DIFFERENT                      DIFFERENCE DESCRIPTION
--------  --------   ------------------------------------------------ ------------------------------------------------------------
NO        YES        PRFX   DB (DSFACHON)                             HIDAM OSAM
YES       NO         PRFX   DB (DSFACHON)                             HIDAM VSAM
DSFACH00  DSFACHO0   PRFX   DSG(DSFACH00)                             INPUT DD NAME/MSDB SEQUENCD FIELD NAME
3380      3350       PRFX   DSG(DSFACH00)                             DEVICE TYPE OR RESERVED FIELD
      57         52  PRFX   DSG(DSFACH00)                             LONGEST SEGMENT LENGTH
    2041          0  PRFX   DSG(DSFACH00)                             LOGICAL RECORD LENGTH
    2048       1690  PRFX   DSG(DSFACH00)                             BLOCK/CI SIZE
    2041          0  PRFX   DSG(DSFACH00)                             OVERFLOW/OUTPUT LOGICAL RECORD LENGTH
    2048       1690  PRFX   DSG(DSFACH00)                             OVERFLOW/OUTPUT BLOCK/CI SIZE
      35         30  SEGTAB SEG(SSFACP00)                             DATA LEN - SEGM LEN FOR FIXED LEN SEGMS
ETEANA00  ETEANAME   FLDTAB SEG(SSFACP00) FLD(ETEANA00)               FIELD/XDFLD NAME
NO        YES        INDXTB                                           INDEX POINTER IS SYMBOLIC
```

Figure 71. DBD Compare report

The records in the figure have the following meanings:

1st and 2nd records
In the prefix section, different access methods are specified: HIDAM VSAM in LIBRARY 1, and HIDAM OSAM in LIBRARY 2.

3rd record
In the prefix section, different DD names are specified: DSFACH00 in LIBRARY 1, and DSFACHO0 in LIBRARY 2.

10th record
In segment SSFACP00 in the SEGTAB section, different segment lengths are specified: 35 in LIBRARY 1, and 30 in LIBRARY 2.

11th record
In the FLDTAB section, different field names are specified for the ETEANA00 field of segment SSFACP00: ETEANA00 in LIBRARY 1, and ETEANAME in LIBRARY 2.

Sample report: Block-level compare report for PSBs

The following figure shows an example of the PSB Compare report.

```
IMS LIBRARY INTEGRITY UTILITIES - DBD/PSB/ACB COMPARE          "PSB COMPARE REPORT"                                PAGE:     1
5655-U08                                              DATE: 10/01/2018 TIME: 09.21.45                      FABLPSB0 - V2.R2

TYPE      : PSB
NAME      : PSBSMUUL
LIBRARY 1 : VOLUME=IMSVS   DSNAME=IMSVS.PSBLIB
LIBRARY 2 : VOLUME=IMSVS   DSNAME=IMSVS.TEST.PSBLIB

LIBRARY1  LIBRARY2   SECTIONS WHICH ARE DIFFERENT                    DIFFERENCE DESCRIPTION
--------  --------   ----------------------------------------------- ------------------------------------------------------------
NO        YES        PRFX                                           APPLICATION PROGRAM IS ASSEMBLER, COBOL OR NOT SPECIFIED
YES       NO         PRFX                                           APPLICATION PROGRAM IS PL/I
GID       A          DBPCB  PCB(DSFACHON)                           PROCESSING OPTIONS
GID       A          SENSEG PCB(DSFACHON) SEG(SSFACP00)             SENSEG PROCOPT.
GID       A          SENSEG PCB(DSFACHON) SEG(SSFACP11)             SENSEG PROCOPT.
GID       A          SENSEG PCB(DSFACHON) SEG(SSFACP12)             SENSEG PROCOPT.
     140       160   SENSEG PCB(DSSTUIVN) SEG(SSSTUP11)             PARENT OFFSET IN SEGTBL.
SSSTUP12             SENSEG PCB(DSSTUIVN) SEG(SSSTUP12)             SENSEG NAME.
A                    SENSEG PCB(DSSTUIVN) SEG(SSSTUP12)             SENSEG PROCOPT.
     140             SENSEG PCB(DSSTUIVN) SEG(SSSTUP12)             PARENT OFFSET IN SEGTBL.
                     SENSEG PCB(DSSTUIVN) SEG(SSSTUP12)             SOURCE SEGMENT OFFSET.
```

Figure 72. PSB Compare report

The records in the figure have the following meaning:

1st and 2nd records
In the prefix section, different application program languages are specified: PL/I in LIBRARY 1, and Assembler or COBOL in LIBRARY 2.

3rd record
In the DBPCB section, different processing options are specified in the DSFACHON PCB: GID in LIBRARY 1, and A in LIBRARY 2.

4th through 6th records
In the sensitive segments of DSFACHON in the SENSEG section, different processing options are specified: GID in LIBRARY 1, and A in LIBRARY 2.

Sample report: Block-level compare reports for ACBs

The following figure shows an example of the ACB Compare report.

```
IMS LIBRARY INTEGRITY UTILITIES - DBD/PSB/ACB COMPARE           "ACB COMPARE REPORT"                                PAGE:     1
5655-U08                                                 DATE: 10/01/2018 TIME: 09.21.45                      FABLACB0 - V2.R2

TYPE      : ACB
NAME      : DSFACHON
LIBRARY 1 : VOLUME=IMSVS   DSNAME=IMSVS.ACBLIB
LIBRARY 2 : VOLUME=IMSVS   DSNAME=IMSVS.TEST.ACBLIB

LIBRARY1  LIBRARY2   SECTIONS WHICH ARE DIFFERENT                    DIFFERENCE DESCRIPTION
--------  --------   ------------------------------------------------ ------------------------------------------------------------
     976       1088   PRFX                                           DMB SIZE IN BYTES
NO         YES        PRFX                                           HD INDEXED
YES        NO         PRFX                                           VSAM HIDAM
      57         52   AMPBPX                                         LENGTH OF LARGEST  SEGMENT IN DATASET
YES        NO         AMPB                                           ACCESS METHOD IS VSAM
YES        NO         AMPB                                           DATA SETS ARE PASSWORD PROTECTED
       0       1690   AMPB                                           OVERFLOW BLOCKSIZE
DSFACH00   DSFACHO0   AMPB                                           OVERFLOW DDNAME
      35         30   PSDB                                           DATA LENGTH OF THE SEGMENT
      35         30   PSDB                                           FOR VAR LENGTH SEG - MAX VALUE
```

Figure 73. ACB Compare report

The records in the figure have the following meaning:

2nd and 3rd records
: In the prefix section, different access methods are specified: HIDAM VSAM in LIBRARY 1, and HD INDEXED in LIBRARY 2.

4th record
: In the AMPBPX section, the lengths of largest segment in the data set are different: 57 in LIBRARY 1, and 52 in LIBRARY 2.

9th record
: In the PSDB section, the data lengths of the segment are different: 35 in LIBRARY 1, and 30 in LIBRARY 2.

The following figure shows another example for the ACB Compare report.

```
IMS LIBRARY INTEGRITY UTILITIES - DBD/PSB/ACB COMPARE          "ACB COMPARE REPORT"                                PAGE:     1
5655-U08                                                DATE: 10/01/2018 TIME: 09.21.45                    FABLACB0 - V2.R2

TYPE      : ACB
NAME      : PSBSMUUL
LIBRARY 1 : VOLUME=IMSVS   DSNAME=IMSVS.ACBLIB
LIBRARY 2 : VOLUME=IMSVS   DSNAME=IMSVS.TEST.ACBLIB

LIBRARY1  LIBRARY2   SECTIONS WHICH ARE DIFFERENT                    DIFFERENCE DESCRIPTION
--------  --------   ------------------------------------------------ ------------------------------------------------------------
NO        YES        PRFX                                           APPLICATION PROGRAM IS ASSEMBLER, COBOL OR NOT SPECIFIED
YES       NO         PRFX                                           APPLICATION PROGRAM IS PL/I
GID       A          DBPCB  PCB(DSSCHHVN)                           PROCESSING OPTIONS
       3          4   DBPCB  PCB(DSSCHHVN)                           NO OF SENSITIVE SEGMTS IN PCB
NO        YES        SDB    SEG(SSSCHP00)                           SENSITIVITY IS REPLACE
000000F0  00000140   SDB    SEG(SSSCHP00)                           SDB LOGICALLY RELATED
NO        YES        SDB    SEG(SSSCHP11)                           SENSITIVITY IS REPLACE
00000140  00000190   SDB    SEG(SSSCHP11)                           SDB LOGICALLY RELATED
SSSCHP13  SSSCHP12   SDB    SEG(SSSCHP13)                           SEGMENT SYMBOLIC NAME
C8D7F1F3  C8D7F1F2   SDB    SEG(SSSCHP13)                           NEXT SEGMENT ON LOGICAL TWIN CHAIN
NO        YES        SDB    SEG(SSSCHP13)                           SENSITIVITY IS REPLACE
       0         80   SDB    SEG(SSSCHP13)                           OFFSET TO SIBLING OF SDB
00000190  000001E0   SDB    SEG(SSSCHP13)                           SDB LOGICALLY RELATED
YES       NO         SDB    SEG(SSSCHP13)                           SEGMENT HAS A PHYSICAL TWIN BKW
YES       NO         SDB    SEG(SSSCHP13)                           SEGMENT HAS A LOGICAL TWIN BKWD
YES       NO         SDB    SEG(SSSCHP13)                           SEGMENT HAS A LOGICAL PARENT PO
      06         04   SDB    SEG(SSSCHP13)                           POINTER NO IN PARENT TO FIRST OCCURANCE
      00         05   SDB    SEG(SSSCHP13)                           POINTER NO IN PARENT TO LAST  OCCURANCE
      13         02   SDB    SEG(SSSCHP13)                           EXECUTABLE KEY LEN OF KEY FIELD
      04         03   SDB    SEG(SSSCHP13)                           SEGMENT CODE
GID       A          DBPCB  PCB(DSSTUIVN)                           PROCESSING OPTIONS
NO        YES        SDB    SEG(SSSTUP00)                           SENSITIVITY IS REPLACE
NO        YES        SDB    SEG(SSSTUP11)                           SENSITIVITY IS REPLACE
```

Figure 74. Another ACB Compare report

The records in the figure have the following meaning:

1st and 2nd records
In the prefix section, different application program languages are specified: PL/I in LIBRARY 1, and Assembler or COBOL in LIBRARY 2.

3rd record
In the DBPCB section, different processing options are specified in DSSCHHVN PCB: GID in LIBRARY 1, and A in LIBRARY 2.

4th record
In the DBPCB section, different numbers of the sensitive segments in DSSCHHVN PCB are given: three in LIBRARY 1, and four in LIBRARY 2.

Source-level compare reports

The source-level compare reports contain comparison results for comparing two control blocks at the source level.

Subsections:

- "Report field description"
- "Sample report: Source-level compare report for DBDs" on page 242
- "Sample report: Source-level compare report for PSBs" on page 243
- "Sample report: Source-level compare reports for ACBs" on page 244

Report field description

The sources of DBD, PSB, or ACB in LIBRARY 1 are taken as the basis for the comparisons if a source-level compare report is generated.

The headings of DBD, PSB, and ACB Compare reports contain the following items in common:

TYPE Function type (DBD, PSB, ACB, DBDACB, or PSBACB).

NAME
Name of the member or members that were compared. When the compared members have different names, the second member name follows the first member name, separated by a colon.

LIBRARY 1
Data set name and volume serial number of the library that contains the member. Corresponds to DBDLIB, PSBLIB, or ACBLIB DD statements.

LIBRARY 2
Data set name and volume serial number of the library that contains the member. Corresponds to DBDLIB2, PSBLIB2, or ACBLIB2 DD statements.

NUMBER OF DIFFERENT STATEMENTS
This part contains the summary information about statements which were inserted, deleted, or changed.

INSERTED
The number of statements which were found only in DBD, PSB, or ACB in LIBRARY 2.

DELETED
The number of statements which were found only in DBD, PSB, or ACB in LIBRARY 1.

CHANGED
The number of statements which were found in both DBD, PSB, or ACB in LIBRARY 1 and DBD, PSB, or ACB in LIBRARY 2, but were detected to be different.

DBDGEN/PSBGEN/ACBGEN
The date and time when the DBD/PSB/ACB was generated.

IMSREL
The IMS version and release that generated the DBD/PSB/ACB.

CHK The following characters are shown if any difference is found in DBDs/PSBs/ACBs between LIBRARY 1 and LIBRARY 2:

I When a statement is inserted into DBD/PSB/ACB in LIBRARY 2.

D When a statement is deleted from DBD/PSB/ACB in LIBRARY 1.

C When a statement in DBD/PSB/ACB in LIBRARY 1 is different from that in LIBRARY 2. An asterisk (*) is shown on the row of each data which is determined to be different.

LIBRARY 1 SOURCE LINES
The IMS DBDGEN or PSBGEN utility control statements which were decoded from DBD/PSB/ACB in LIBRARY 1.

LIBRARY 2 SOURCE LINES
The IMS DBDGEN or PSBGEN utility control statements which were decoded from DBD/PSB/ACB in LIBRARY 2.

Sample report: Source-level compare report for DBDs

The following figure is an example of a DBD Compare report.

```
IMS LIBRARY INTEGRITY UTILITIES - DBD/PSB/ACB COMPARE           "DBD COMPARE REPORT"                                PAGE:     1
5655-U08                                                 DATE: 10/01/2018  TIME: 17.57.02                    FABLDBD0 - V2.R2

TYPE      : DBD
NAME      : DBD@D03A
LIBRARY 1 : VOLUME=IMSVS   DSNAME=IMSVS.DBDLIB
LIBRARY 2 : VOLUME=IMSVS   DSNAME=IMSVS.TEST.DBDLIB

NUMBER OF DIFFERENT STATEMENTS
INSERTED  :      1
DELETED   :      0
CHANGED   :      3

    DBDGEN: 08/04/2018 17.41          | DBDGEN: 08/04/2018 17.41
    IMSREL: 1310                      | IMSREL: 1310

CHK LIBRARY 1 SOURCE LINES            | LIBRARY 2 SOURCE LINES
--- ----+----1----+----2----+----3--  | ----+----1----+----2----+----3--
C -       DBD                         |      DBD
            NAME=DBD@D03A,            |        NAME=DBD@D03A,
  *         ACCESS=(HDAM,OSAM),       |        ACCESS=(HDAM,VSAM),
            RMNAME=(RNM,2,500,800),   |        RMNAME=(RNM,2,500,800),
            PASSWD=NO,                |        PASSWD=NO,
            VERSION= 08/04/18 17.41   |        VERSION= 08/04/18 17.41
C - DSG1 DATASET                      | DSG1 DATASET
            DD1=DD@D03A,              |        DD1=DD@D03A,
  *         SIZE=(1690),              |        SIZE=(2048),
            SCAN=3,                   |        SCAN=3,
            FRSPC=(2,3)               |        FRSPC=(2,3)
C -       SEGM                        |      SEGM
            NAME=D03SEG1,             |        NAME=D03SEG1,
            PARENT=0,                 |        PARENT=0,
            BYTES=100,                |        BYTES=105,
            RULES=(LLL,LAST),         |        RULES=(LLL,LAST),
  *         PTR=(TWIN,,,,)            |        PTR=(TWINBWD,,,,)
          FIELD                       |      FIELD
            NAME=(D03FLD1A,SEQ,U),    |        NAME=(D03FLD1A,SEQ,U),
            START=1,                  |        START=1,
            BYTES=10,                 |        BYTES=10,
            TYPE=C                    |        TYPE=C
I -                                   |      FIELD
                                      |        NAME=(D01FLD1B),
                                      |        START=11,
                                      |        BYTES=10,
                                      |        TYPE=X
          SEGM                        |      SEGM
            NAME=D03SEG2,             |        NAME=D03SEG2,
            PARENT=((D03SEG1,)),      |        PARENT=((D03SEG1,)),
            BYTES=100,                |        BYTES=100,
            RULES=(LLL,LAST),         |        RULES=(LLL,LAST),
            PTR=(TWIN,,,,)            |        PTR=(TWIN,,,,)
          FIELD                       |      FIELD
            NAME=(D03FLD2A,SEQ,U),    |        NAME=(D03FLD2A,SEQ,U),
            START=1,                  |        START=1,
            BYTES=10,                 |        BYTES=10,
            TYPE=C                    |        TYPE=C
          DBDGEN                      |      DBDGEN
          FINISH                      |      FINISH
          END                         |      END
```

Figure 75. DBD source-level compare report

Sample report: Source-level compare report for PSBs

The following figure is an example of a PSB Compare report.

```
IMS LIBRARY INTEGRITY UTILITIES - DBD/PSB/ACB COMPARE            "PSB COMPARE REPORT"                                PAGE:     1
5655-U08                                                  DATE: 10/01/2018  TIME: 17.57.02                    FABLPSB0 - V2.R2

TYPE      : PSB
NAME      : PSB@003
LIBRARY 1 : VOLUME=IMSVS   DSNAME=IMSVS.PSBLIB
LIBRARY 2 : VOLUME=IMSVS   DSNAME=IMSVS.TEST.PSBLIB

NUMBER OF DIFFERENT STATEMENTS
INSERTED  :      0
DELETED   :      2
CHANGED   :      1

    PSBGEN: 07/20/2018 14.33          | PSBGEN: 07/20/2018 14.34
    IMSREL: 1310                      | IMSREL: 1310

CHK LIBRARY 1 SOURCE LINES            | LIBRARY 2 SOURCE LINES
--- ----+----1----+----2----+----3--  | ----+----1----+----2----+----3--
         PCB                          |      PCB
           TYPE=DB,                   |        TYPE=DB,
           DBDNAME=DBD@S01A,          |        DBDNAME=DBD@S01A,
           PROCOPT=G,                 |        PROCOPT=G,
           KEYLEN=30                  |        KEYLEN=30
         SENSEG                       |      SENSEG
           NAME=S02SEG1,              |        NAME=S02SEG1,
           PARENT=0                   |        PARENT=0
C -      PCB                          |      PCB
           TYPE=DB,                   |        TYPE=DB,
  *        DBDNAME=DBD@M02A,         |        DBDNAME=DBD@M01A,
           PROCOPT=G,                 |        PROCOPT=G,
           KEYLEN=30                  |        KEYLEN=30
         SENSEG                       |      SENSEG
           NAME=M02SEG1,              |        NAME=M02SEG1,
           PARENT=0                   |        PARENT=0
D -      PCB                          |
           TYPE=DB,                   |
           DBDNAME=DBD@S03A,          |
           PROCOPT=G,                 |
           KEYLEN=30                  |
D -      SENSEG                       |
           NAME=S03SEG1,              |
           PARENT=0                   |
         PSBGEN                       |      PSBGEN
           PSBNAME=PSB@003,           |        PSBNAME=PSB@003,
           LANG=PL/I,                 |        LANG=PL/I,
           IOEROPN=(100,WTOR),        |        IOEROPN=(100,WTOR),
           MAXQ=10,                   |        MAXQ=10,
           OLIC=YES,                  |        OLIC=YES,
           CMPAT=YES                  |        CMPAT=YES
         END                          |      END
```

Figure 76. PSB source-level compare report

Sample report: Source-level compare reports for ACBs

The following figure is an example of an ACB Compare report.

```
IMS LIBRARY INTEGRITY UTILITIES - DBD/PSB/ACB COMPARE           "ACB COMPARE REPORT"                                PAGE:     1
5655-U08                                                 DATE: 10/01/2018  TIME: 17.57.02                    FABLACB0 - V2.R2

TYPE      : ACB(DBD)
NAME      : DBD@D03A
LIBRARY 1 : VOLUME=IMSVS   DSNAME=IMSVS.ACBLIB
LIBRARY 2 : VOLUME=IMSVS   DSNAME=IMSVS.TEST.ACBLIB

NUMBER OF DIFFERENT STATEMENTS
INSERTED  :      1
DELETED   :      0
CHANGED   :      3

    ACBGEN: 07/20/2018 14.48          | ACBGEN: 07/20/2018 14.48
    IMSREL: 1310                      | IMSREL: 1310

CHK LIBRARY 1 SOURCE LINES            | LIBRARY 2 SOURCE LINES
--- ----+----1----+----2----+----3--  | ----+----1----+----2----+----3--
C -      DBD                          |      DBD
           NAME=DBD@D03A,             |        NAME=DBD@D03A,
           ACCESS=(HDAM,VSAM),        |        ACCESS=(HDAM,VSAM),
  *        RMNAME=(RNM,2,500,800),   |        RMNAME=(RNM,5,500,800),
           PASSWD=NO,                 |        PASSWD=NO,
           VERSION= 07/20/18 14.48    |        VERSION= 07/20/18 14.48
    DSG1 DATASET                      | DSG1 DATASET
           DD1=DD@D03A,               |        DD1=DD@D03A,
           SCAN=3,                    |        SCAN=3,
           FRSPC=(2,3)                |        FRSPC=(2,3)
C -      SEGM                         |      SEGM
  *        NAME=D03SEG1,              |        NAME=D01SEG1,
           PARENT=0,                  |        PARENT=0,
  *        BYTES=100,                 |        BYTES=105,
           RULES=(LLL,LAST),          |        RULES=(LLL,LAST),
           PTR=(TWIN,,,,)             |        PTR=(TWIN,,,,)
         FIELD                        |      FIELD
           NAME=(D03FLD1A,SEQ,U),     |        NAME=(D03FLD1A,SEQ,U),
           START=1,                   |        START=1,
           BYTES=10,                  |        BYTES=10,
           TYPE=C                     |        TYPE=C
I -                                   |      FIELD
                                      |        NAME=(D01FLD1B),
                                      |        START=11,
                                      |        BYTES=10,
                                      |        TYPE=X
C -      SEGM                         |      SEGM
           NAME=D03SEG2,              |        NAME=D03SEG2,
  *        PARENT=((D03SEG1,)),       |        PARENT=((D01SEG1,)),
           BYTES=100,                 |        BYTES=100,
           RULES=(LLL,LAST),          |        RULES=(LLL,LAST),
           PTR=(TWIN,,,,)             |        PTR=(TWIN,,,,)
         FIELD                        |      FIELD
           NAME=(D03FLD2A,SEQ,U),     |        NAME=(D03FLD2A,SEQ,U),
           START=1,                   |        START=1,
           BYTES=10,                  |        BYTES=10,
           TYPE=C                     |        TYPE=C
         DBDGEN                       |      DBDGEN
         FINISH                       |      FINISH
         END                          |      END
```

Figure 77. ACB source-level compare report (Sample 1)

The following figure is another example of an ACB Compare report.

```
IMS LIBRARY INTEGRITY UTILITIES - DBD/PSB/ACB COMPARE           "ACB COMPARE REPORT"                                PAGE:     1
5655-U08                                                 DATE: 10/01/2018  TIME: 17.57.02                    FABLACB0 - V2.R2

TYPE      : ACB(PSB)
NAME      : PSB@003
LIBRARY 1 : VOLUME=IMSVS   DSNAME=IMSVS.ACBLIB
LIBRARY 2 : VOLUME=IMSVS   DSNAME=IMSVS.TEST.ACBLIB

NUMBER OF DIFFERENT STATEMENTS
INSERTED  :      0
DELETED   :      2
CHANGED   :      2

    ACBGEN: 07/20/2018 14.48          | ACBGEN: 07/20/2018 14.48
    IMSREL: 1310                      | IMSREL: 1310

CHK LIBRARY 1 SOURCE LINES            | LIBRARY 2 SOURCE LINES
--- ----+----1----+----2----+----3--  | ----+----1----+----2----+----3--
         PCB                          |      PCB
           TYPE=DB,                   |        TYPE=DB,
           DBDNAME=DBD@S01A,          |        DBDNAME=DBD@S01A,
           PROCOPT=G,                 |        PROCOPT=G,
           KEYLEN=30                  |        KEYLEN=30
         SENSEG                       |      SENSEG
           NAME=S02SEG1,              |        NAME=S02SEG1,
           PARENT=0                   |        PARENT=0
C -      PCB                          |      PCB
           TYPE=DB,                   |        TYPE=DB,
  *        DBDNAME=DBD@M02A,         |        DBDNAME=DBD@M01A,
           PROCOPT=G,                 |        PROCOPT=G,
           KEYLEN=30                  |        KEYLEN=30
         SENSEG                       |      SENSEG
           NAME=M02SEG1,              |        NAME=M02SEG1,
           PARENT=0                   |        PARENT=0
D -      PCB                          |
           TYPE=DB,                   |
           DBDNAME=DBD@S03A,          |
           PROCOPT=G,                 |
           KEYLEN=30                  |
D -      SENSEG                       |
           NAME=S03SEG1,              |
           PARENT=0                   |
C -      PSBGEN                       |      PSBGEN
           PSBNAME=PSB@003,           |        PSBNAME=PSB@003,
           LANG=PL/I,                 |        LANG=PL/I,
           IOASIZE=600,               |        IOASIZE=600,
  *        SSASIZE=840,              |        SSASIZE=280,
           IOEROPN=(100,WTOR),        |        IOEROPN=(100,WTOR),
           MAXQ=10,                   |        MAXQ=10,
           OLIC=YES,                  |        OLIC=YES,
           CMPAT=YES                  |        CMPAT=YES
         END                          |      END
```

Figure 78. ACB source-level compare report (Sample 2)

Chapter 7. DBD/PSB/ACB Mapper utility

The DBD/PSB/ACB Mapper utility produces printed maps (pictures of the segment hierarchy) from DBDs, PSBs, and ACBs. The utility also produces detailed reports that describe DBDs, PSBs, and ACBs.

Topics:

- "DBD/PSB/ACB Mapper utility overview" on page 248
- "Restrictions for the DBD/PSB/ACB Mapper utility" on page 250
- "Printing hierarchical structure of databases" on page 251
- "JCL requirements for the DBD/PSB/ACB Mapper utility" on page 252
- "Control statements for the DBD/PSB/ACB Mapper utility" on page 254
- "JCL examples for the DBD/PSB/ACB Mapper utility" on page 257
- "Output from the DBD/PSB/ACB Mapper utility" on page 263

DBD/PSB/ACB Mapper utility overview

The DBD/PSB/ACB Mapper utility, a productivity aid, can produce and print a pictorial layout, called a map, that graphically represents the structure and characteristics of a physical and logical IMS database. The DBD/PSB/ACB Mapper utility can also print a detailed report describing the characteristics of each database description (DBD).

Subsections:

- "Function overview"
- "Program structure and job step"
- "Data flow" on page 249

Function overview

The utility provides the following functions:

DBD Map function
The DBD Map function reads one or more DBDs from DBD libraries and produces maps and reports for the DBDs.

PSB Map function
The PSB Map function reads one or more PSBs from PSB libraries and produces maps and reports for the PSBs.

ACB Map function
The ACB Map function reads one or more ACBs from ACB libraries and produces maps and reports for the ACBs.

The complete visual representation can be used as a recording medium to retain the historical and current status of the IMS databases. The maps can also be used as a reference in comparing and evaluating the database requirements of current and proposed applications.

DBD/PSB/ACB Mapper supports all the IMS access methods except the mapping support of GSAM.

DBD/PSB/ACB Mapper can be set to run each time an IMS database control block is changed. This procedure ensures that a current picture and description of the database are produced each time the structure is changed.

Related reading: The following topics provide JCL examples for creating a DBD or a PSB and generating a map:

- "Example: Creating a DBD and generating a DBD map" on page 261
- "Example: Creating a PSB and generating a PSB map" on page 262

Program structure and job step

DBD/PSB/ACB Mapper consists of one program, FABMMAIN. This program controls load modules FABMDMAP, FABMPMAP, and FABMAMAP. The FABMMAIN program builds and prints a report of IMS control blocks selected from a DBD, PSB, or ACB library, and prints maps of the physical and logical IMS database definitions.

FABMMAIN uses a simple input format that is specified in the SYSIN data set. The names of the DBDs, PSBs, or ACBs selected for mapping or reporting are specified

in the SYSIN data set control statements. The program attempts to find the DBD, PSB, or ACB in the data sets defined by the DD statement. If it cannot find them, it posts a notice on the activity log (SYSOUT DD statement). Processing then continues until all of the input control statements are processed.

Data flow

The general data flow for DBD/PSB/ACB Mapper (FABMMAIN) is shown in the following figure. Input consists of the SYSIN data set and the DBDLIB, PSBLIB, and ACBLIB data sets. Output consists of the DBD, PSB, and ACB reports, DBD, PSB, and ACB maps, and the activity log.

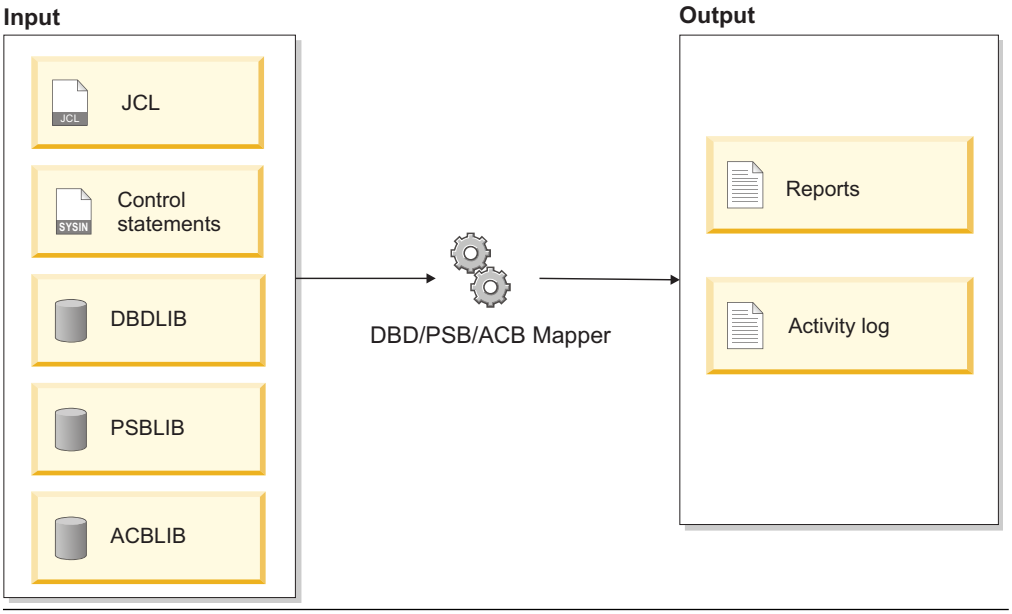


Figure 79. Data flow for DBD/PSB/ACB Mapper

Restrictions for the DBD/PSB/ACB Mapper utility

Certain restrictions apply when you use the DBD/PSB/ACB Mapper utility.

DBD/PSB/ACB Mapper can produce a map and a report for the DBD of any IMS database organization, except GSAM. Because GSAM has no segment, only a report can be prepared.

If the reports of IMS Library Integrity Utilities are printed on a 3800 printer, text fonts GT15 and ST15 used at 12 lines per inch (LPI) do not work. The reason is that the underscore (_) character, which is used to draw the horizontal lines for the DBD hierarchy, are not printed. Fonts GSC and GFC can be used. The GT15 and ST15 fonts can be used at 6 and 8 LPI.

When the parameter values added by certain versions and releases of IMS are the default values, the fields for those parameters are not printed in the report for DBD or PSB.

Printing hierarchical structure of databases

To generate reports and print hierarchical structure of databases by using the DBD/PSB/ACB Mapper utility, you must prepare JCL for the DBD/PSB/ACB Mapper utility and submit the job.

About this task

Sample JCL for the DBD/PSB/ACB Mapper utility is in the SHPSJCL0 library, member FABLIVP1. You can modify this sample JCL and then use it to run the utility.

Procedure

1. In the DBD/PSB/ACB Mapper JCL, code the EXEC statement and DD statements.

   See "JCL requirements for the DBD/PSB/ACB Mapper utility" on page 252.
2. In the SYSIN data set, code the control statements for the DBD/PSB/ACB Mapper utility.

   See "Control statements for the DBD/PSB/ACB Mapper utility" on page 254.
3. Submit the job.
4. Check the output data sets that are generated.

   See "Output from the DBD/PSB/ACB Mapper utility" on page 263.

Related reference:

"JCL examples for the DBD/PSB/ACB Mapper utility" on page 257

JCL requirements for the DBD/PSB/ACB Mapper utility

When you code the JCL to run the DBD/PSB/ACB Mapper utility, include the EXEC statement and appropriate DD statements.

Subsections:

- "JCL example"
- "EXEC statement"
- "DD statements"

JCL example

An example of the JCL that is required for DBD/PSB/ACB Mapper is shown in the following figure.

```
//stepname EXEC PGM=FABMMAIN,REGION=512K
//STEPLIB    DD DSN=HPS.SHPSLMD0,DISP=SHR
//DBDLIB     DD DSN=IMSVS.DBDLIB,DISP=SHR
//PSBLIB     DD DSN=IMSVS.PSBLIB,DISP=SHR
//ACBLIB     DD DSN=IMSVS.ACBLIB,DISP=SHR
//SYSOUT     DD SYSOUT=A
//SYSPRINT   DD SYSOUT=A
//SYSIN      DD *
   (control statements)
/*
```

Figure 80. Example of DBD/PSB/ACB Mapper JCL (FABMMAIN JCL)

EXEC statement

This statement must have the following format:

```
//stepname EXEC PGM=FABMMAIN
```

Note: FABMMAIN does not allow EXEC statement parameters.

DD statements

Code the following DD statements to identify the source of input and the placement of output information:

STEPLIB DD or JOBLIB DD
: This DD statement is required. This input DD statement defines the IMS Library Integrity Utilities load module library.

DBDLIB DD
: This DD statement is required for the DBD Map function and the PSB Map function. The DBDLIB DD input data set is the library that contains the DBDs for which reports or maps are created.

PSBLIB DD
: This DD statement is required for the PSB Map function. The PSBLIB DD input data set is the library that contains the PSBs for which reports are created.

ACBLIB DD

This DD statement is required for the ACB Map function. The ACBLIB DD input data set is the library that contains the ACBs for which reports are created.

SYSOUT DD

This DD statement is required. The SYSOUT DD output data set contains all activity messages and error messages. The record format is fixed-blocked and the logical record length is 133. The block size, if coded, must be a multiple of 133.

SYSPRINT DD

This DD statement is required. The SYSPRINT DD output data set contains the reports, maps, or both that are created by DBD/PSB/ACB Mapper. The reports are arranged in the order of DBD, PSB, and ACB, and the members in each group are sorted alphabetically. The record format is fixed-blocked and the logical record length is 133. The block size, if coded, must be a multiple of 133.

SYSIN DD

This DD statement is required. The SYSIN DD input data set contains the control statements for the DBD/PSB/ACB Mapper program. The record format is fixed-blocked and the logical record length is 80. The block size, if coded, must be a multiple of 80.

Up to 9999 control statements can be specified using the SYSIN DD statement. If there are more than 9999 control statements, the excess control statements are ignored.

Related reading: For the format of the control statements, see "Control statements for the DBD/PSB/ACB Mapper utility" on page 254.

Control statements for the DBD/PSB/ACB Mapper utility

The input to the DBD/PSB/ACB Mapper utility consists of control statements in the SYSIN data set. These control statements contain keywords that indicate the functions and the names of the DBDs, PSBs, or ACBs for which reports and maps are created.

This data set usually resides in the input data stream. However, it can be defined as a sequential data set or a member of a partitioned data set. It must contain one 80-byte fixed-length record for each DBD, PSB, and ACB processed. The block size, if coded, must be a multiple of 80.

The order in which the reports and maps are written to the data set is DBD, PSB, PSB-type ACB, and DBD-type ACB. The members in each group are ordered alphabetically.

Subsections:

- "Control statement example"
- "Syntax rules"
- "Control statement keywords" on page 255
- "Quick reference for control statements and DD statements" on page 256

Control statement example

The SYSIN data set can be coded as shown in the following figure.

```
//SYSIN DD *
    DBD=member
    DBD=member,X
    PSB=member
    PSB=member,X
    ACB=member
    ACB=member,X
    ACBDBD=member
    ACBDBD=member,X
/*
```

Figure 81. Examples of control statements for DBD/PSB/ACB Mapper

Syntax rules

The control statements for DBD/PSB/ACB Mapper must adhere to the following syntax rules:

- Control statements can be coded anywhere between columns 2 - 80.
- In the control statement field, keyword, equal sign, member name, comma, and *X* must not be separated by blanks. Because a blank serves as the delimiter, only a comment can be written after a blank.
- A statement with an asterisk (*) in column 1 is treated as a comment.
- The control statements can be specified in any order. For example, in the following order:

```
ACB=XXXXXXXX
PSB=XXXXXXXX
PSB=XXXXXXXX
ACB=XXXXXXXX
DBD=XXXXXXXX
ACBDBD=XXXXXXXX
```

Control statement keywords

The control statement formats are as follows:

DBD=*member*
: This control statement shows the format used for obtaining both the DBD map and the DBD report.

DBD=*member,X*
: This control statement is used for obtaining only a DBD map. The *member* is followed by a comma and a non-blank character.

PSB=*member*
: This control statement is used for obtaining the PSB Summary report, PSB Maps, and PSB reports of all DBDs relating to this PSB.

PSB=*member,X*
: This control statement is used for obtaining the PSB Summary report and the PSB maps of all associated DBDs. The *member* is followed by a comma and a non-blank character.

ACB=*member*
: This control statement is used to obtain the ACB (PSB) Summary report, ACB (PSB) Maps, and ACB (PSB) reports of all associated ACBs.

ACB=*member,X*
: This control statement is used to obtain the ACB (PSB) Summary report and the ACB (PSB) Maps of all associated DBDs. The *member* is followed by a comma and a non-blank character.

  Note: The ACB library member *member* following the ACB= keyword must be a PSB-type. Otherwise, an error message is issued and the processing of this member is skipped.

ACBDBD=*member*
: This control statement is used to obtain the ACB (DBD) Maps and the ACB (DBD) report.

ACBDBD=*member,X*

  This control statement is used to obtain only ACB (DBD) Maps. The member is followed by a comma and a non-blank character.

  Note: The ACB library member *member* following the ACBDBD= keyword must be a DBD-type. Otherwise, an error message is issued and the processing of this member is skipped.

Note: You can specify a wildcard at any position in a character string. The asterisk (*) and the percent sign (%) are supported as wildcard characters. An asterisk (*) represents 0 - 8 characters, and a percent sign (%) represents a single character. If two or more asterisks (*) are specified sequentially, only the first asterisk is recognized.

Quick reference for control statements and DD statements

The following table lists the DBD/PSB/ACB Mapper functions, control statements, and DD statements.

Table 19. DBD/PSB/ACB Mapper functions, control statements, and DD statements

Function	Control keyword	Required DD statements					
		SYSPRINT DD	SYSOUT DD	DBDLIB DD	PSBLIB DD	ACBLIB DD	SYSIN DD
DBD map	DBD=	Required	Required	Required			Required
PSB map	PSB=	Required	Required	Required	Required		Required
ACB map	ACB= ACBDBD=	Required	Required			Required	Required

JCL examples for the DBD/PSB/ACB Mapper utility

The following topics provide JCL examples for running the DBD/PSB/ACB Mapper utility to print maps of databases.

Example: Generating DBD maps

The following figure shows example JCL for running a job that generates maps of multiple DBDs.

If a dbdname is not followed by characters, both a map and report are produced for each DBD. If a dbdname is followed by `,X` or a comma and any other character, only a map is produced for the DBD; the report for it is omitted.

```
//DBDMAP  EXEC PGM=FABMMAIN
//STEPLIB   DD DSN=HPS.SHPSLMD0,DISP=SHR
//DBDLIB    DD DSN=IMSVS.DBDLIB,DISP=SHR
//SYSOUT    DD SYSOUT=A
//SYSPRINT  DD SYSOUT=A
//SYSIN     DD *
    DBD=BE1PARTS,X
    DBD=BE2LORDR
    DBD=BE2LPART,X
    DBD=BE2ORDER
    DBD=BE2ORDRX,X
    DBD=BE2PARTS
    DBD=BE2PCUST,X
    DBD=B00INP01
    DBD=B00OUT01,X
/*
```

Figure 82. Example of generating DBD maps

Example: Generating PSB maps

The following figure shows example JCL for running a job that generates maps of multiple PSBs.

Each psbname produces a PSB Summary report, a map, and a report for a database PCB in the PSB. A psbname followed by **,**X produces only a PSB Summary report for the PSB, and a map for each database PCB in that PSB. The X can be replaced by any other character.

```
//PSBMAP  EXEC PGM=FABMMAIN
//STEPLIB   DD DSN=HPS.SHPSLMD0,DISP=SHR
//DBDLIB    DD DSN=IMSVS.DBDLIB,DISP=SHR
//PSBLIB    DD DSN=IMSVS.PSBLIB,DISP=SHR
//SYSOUT    DD SYSOUT=A
//SYSPRINT  DD SYSOUT=A
//SYSIN     DD *
    PSB=PE1CPINV,X
    PSB=PE1CPPUR
    PSB=PE1PARTS,X
    PSB=PE1PPINV
    PSB=PE1PPPUR,X
    PSB=PE2CORDR
    PSB=PE2ORDER,X
    PSB=PLIPROCS
/*
```

Figure 83. Example of generating PSB maps

Example: Generating ACB maps

The following figure shows example JCL for running a job that generates maps of multiple ACBs.

Each PSB-type ACB member specified by ACB=, if followed by no characters, produces an ACB (PSB) Summary report and both an ACB (PSB) map and an ACB (PSB) report for each database PCB within the PSB-type ACB. A PSB-type acbname followed by `,X` produces only an ACB (PSB) Summary report and ACB (PSB) maps.

Each DBD-type ACB member specified by ACBDBD=, if followed by no characters, produces both an ACB (DBD) map and an ACB (DBD) report. A DBD-type acbname followed by `,X` produces only an ACB (DBD) map.

The X can be replaced by any character.

```
//ACBMAP  EXEC PGM=FABMMAIN
//STEPLIB   DD DSN=HPS.SHPSLMD0,DISP=SHR
//ACBLIB    DD DSN=IMSVS.ACBLIB,DISP=SHR
//SYSOUT    DD SYSOUT=A
//SYSPRINT  DD SYSOUT=A
//SYSIN     DD *
    ACB=PE1CPINV,X
    ACB=PE1CPPUR
    ACB=PE1PARTS,X
    ACB=PE1PPINV
    ACBDBD=DE1PPPUR,X
    ACBDBD=DE2CORDR
    ACBDBD=DE2ORDER,X
    ACBDBD=DLIPROCS
/*
```

Figure 84. Example of generating ACB maps

Example: Generating DBD, PSB, ACB maps

The following figure shows example JCL for running the function of DBD/PSB/ACB Mapper inner single job step

```
//MAPPER  EXEC PGM=FABMMAIN
//STEPLIB   DD DSN=HPS.SHPSLMD0,DISP=SHR
//DBDLIB    DD DSN=IMSVS.DBDLIB,DISP=SHR
//PSBLIB    DD DSN=IMSVS.PSBLIB,DISP=SHR
//ACBLIB    DD DSN=IMSVS.ACBLIB,DISP=SHR
//SYSOUT    DD SYSOUT=A
//SYSPRINT  DD SYSOUT=A
//SYSIN     DD *
    DBD=BE1PARTS,X
    PSB=PE1CPINV,X
    PSB=PE1PPINV
    ACB=PE1CPINV
    PSB=PE1PARTS
    ACB=PE1CPPUR
    DBD=BE2PCUST
    ACB=PE1PARTS
    ACB=PE1PPINV
    DBD=B00INP01,X
    DBD=B00OUT01
/*
```

Figure 85. Example of generating DBD, PSB, ACB maps

Example: Creating a DBD and generating a DBD map

The following figure shows example JCL for running a job that creates a DBD and generates a map of the DBD.

You can use this example JCL to create or change a DBD, and obtain a map and report on it.

```
//DBDGEN  PROC MBR=TEMPNAME,RGN=2048K
//C       EXEC PGM=IEV90,REGION=&RGN,PARM='OBJECT,NODECK'
//SYSLIB    DD DSN=IMSVS.MACLIB,DISP=SHR
//SYSLIN    DD UNIT=SYSDA,DISP=(,PASS),
//             SPACE=(80,(100,100),RLSE),
//             DCB=(BLKSIZE=80,RECFM=F,LRECL=80)
//SYSPRINT  DD SYSOUT=A,DCB=BLKSIZE=1089,
//             SPACE=(121,(300,300),RLSE,,ROUND)
//SYSUT1    DD UNIT=SYSDA,DISP=(,DELETE),
//             SPACE=(1700,(100,50))
//SYSUT2    DD UNIT=SYSDA,DISP=(,DELETE),
//             SPACE=(1700,(100,50))
//SYSUT3    DD UNIT=(SYSDA,SEP=(SYSLIB,SYSUT1,SYSUT2)),
//             SPACE=(1700,(100,50))
//SYSIN     DD DSNAME=DBT.SOURCE(&MBR),DISP=SHR
//L       EXEC PGM=IEWL,PARM='XREF,LIST',COND=(0,LT,C),REGION=120K
//SYSLIN    DD DSN=*.C.SYSLIN,DISP=(OLD,DELETE)
//SYSPRINT  DD SYSOUT=A,DCB=BLKSIZE=1089,
//             SPACE=(121,(90,90),RLSE)
//SYSLMOD   DD DSN=IMSVS.DBDLIB(&MBR),DISP=SHR
//SYSUT1    DD UNIT=(SYSDA,SEP=(SYSLMOD,SYSLIN)),
//             SPACE=(1024,(100,10),RLSE),DISP=(,DELETE)
//*
//DBDMAP  EXEC PGM=FABMDMAP,PARM=(&MBR)
//STEPLIB   DD DSN=HPS.SHPSLMD0,DISP=SHR
//DBDLIB    DD DSN=IMSVS.DBDLIB,DISP=SHR
//SYSOUT    DD SYSOUT=A
//SYSPRINT  DD SYSOUT=A
//       PEND
//*
```

Figure 86. Example of creating a DBD and generating a DBD map

Example: Creating a PSB and generating a PSB map

The following figure shows example JCL for running a job that creates a PSB and generates a map of the PSB.

You can use this example JCL to create or change a PSB, and obtain a map and report on it.

```
//PSBGEN  PROC MBR=TEMPNAME,RGN=2048K
//C       EXEC PGM=IEV90,REGION=&RGN,PARM='OBJECT,NODECK'
//SYSLIB    DD DSN=IMSVS.MACLIB,DISP=SHR
//SYSLIN    DD UNIT=SYSDA,DISP=(,PASS),
//             SPACE=(80,(100,100),RLSE),
//             DCB=(BLKSIZE=80,RECFM=F,LRECL=80)
//SYSPRINT  DD SYSOUT=A,DCB=BLKSIZE=1089,
//             SPACE=(121,(300,300),RLSE,,ROUND)
//SYSUT1    DD UNIT=SYSDA,DISP=(,DELETE),
//             SPACE=(1700,(100,50))
//SYSUT2    DD UNIT=SYSDA,DISP=(,DELETE),
//             SPACE=(1700,(100,50))
//SYSUT3    DD UNIT=(SYSDA,SEP=(SYSLIB,SYSUT1,SYSUT2)),
//             SPACE=(1700,(100,50))
//SYSIN     DD DSNAME=DBT.SOURCE(&MBR),DISP=SHR
//L       EXEC PGM=IEWL,PARM='XREF,LIST',COND=(0,LT,C),REGION=120K
//SYSLIN    DD DSN=*.C.SYSLIN,DISP=(OLD,DELETE)
//SYSPRINT  DD SYSOUT=A,DCB=BLKSIZE=1089,
//             SPACE=(121,(90,90),RLSE)
//SYSLMOD   DD DSN=IMSVS.PSBLIB(&MBR),DISP=SHR
//SYSUT1    DD UNIT=(SYSDA,SEP=(SYSLMOD,SYSLIN)),
//             SPACE=(1024,(100,10),RLSE),DISP=(,DELETE)
//*
//PSBMAP  EXEC PGM=FABMPMAP,PARM=(&MBR)
//STEPLIB   DD DSN=HPS.SHPSLMD0,DISP=SHR
//PSBLIB    DD DSN=IMSVS.PSBLIB,DISP=SHR
//DBDLIB    DD DSN=IMSVS.DBDLIB,DISP=SHR
//SYSOUT    DD SYSOUT=A
//SYSPRINT  DD SYSOUT=A
//          PEND
//*
```

Figure 87. Example of creating a PSB and generating a PSB map

Output from the DBD/PSB/ACB Mapper utility

Output from the DBD/PSB/ACB Mapper utility consists of the SYSOUT data set and the SYSPRINT data set.

SYSOUT data set

The SYSOUT data set (activity log) contains a list of SYSIN records followed by a message for each input dbdname, psbname, and acbname.

The messages state that the DBD, PSB, or ACB:
- Has been selected
- Has been selected with an extended report
- Has not been found in the respective library

This data set also contains all error messages.

The following figure shows messages that are generated in the SYSOUT data set.

```
IMS LIBRARY INTEGRITY UTILITIES - DBD/PSB/ACB MAPPER                "MESSAGES"                                PAGE :     1
5655-U08                                              DATE: 10/01/2018  TIME: 17.46.49                  FABMMAIN  - V2.R2
FABM0001I CONTROL CARD SUPPLIED IS:  DBD=TESTDB1
FABM0001I CONTROL CARD SUPPLIED IS:  PSB=TESTPSB1
FABM0001I CONTROL CARD SUPPLIED IS:  ACB=TESTDB1
FABM0001I CONTROL CARD SUPPLIED IS:  ACB=TESTPSB1
FABM0003I TESTDB1  SELECTED, EXTENDED REPORT
FABM0034I MEMBER TESTDB1  PROCESSED
FABM0003I TESTPSB1 SELECTED, EXTENDED REPORT
FABM0034I MEMBER TESTPSB1 PROCESSED
FABM0009I TESTDB1  SELECTED, EXTENDED REPORT
FABM0034I MEMBER TESTDB1  PROCESSED
FABM0009I TESTPSB1 SELECTED, EXTENDED REPORT
FABM0034I MEMBER TESTPSB1 PROCESSED
```

Figure 88. Messages in the SYSOUT data set

SYSPRINT data set

The SYSPRINT data set contains the DBD maps, PSB maps, ACB maps, and reports.

The SYSPRINT data set must contain fixed-length records of 133 bytes and a block size of 133 or a multiple of 133.

DBD Map function
The DBD Map function produces the DBD maps and the DBD reports. The DBD reports can be omitted.

PSB Map function
The PSB Map function produces a PSB Summary report for the PSB and PSB maps and PSB reports for database PCB that is defined in the PSB. The PSB reports can be omitted.

ACB Map function
For PSB-type ACB members, the ACB Map function produces an ACB (PSB) Summary report for the PSB-type ACB and ACB (PSB) maps, and ACB (PSB) reports for each database PCB that is defined in the ACB. For DBD-type ACB members, the ACB Map function produces an ACB (DBD) map and ACB (DBD) report.

ACB Map function does not give information about the control block in GSAM DBD and logical DBD, because those control blocks do not exist in the ACB library.

The ACB (PSB) reports and the ACB (DBD) reports can be omitted.

DBD, PSB, and ACB maps

DBD/PSB/ACB Mapper generates DBD, PSB, and ACB maps in the SYSPRINT data set.

DBD/PSB/ACB Mapper generates the maps as follows:

- A DBD map for each DBD.
- A PSB map for each database PCB within the PSB.
- An ACB (PSB) map for each database PCB within the PSB-type ACB.
- An ACB (DBD) map for each DBD-type ACB.

Subsections:

- "Format of the maps"
- "Differences among DBD, PSB, and ACB maps" on page 266
- "Example of a DBD map (single-page)" on page 267
- "Example of a DBD map (multiple-pages)" on page 267

Format of the maps

The maps produced by DBD/PSB/ACB Mapper depict the hierarchical structure of a database as described in a DBD. The map heading shows the DBD member name, volume serial number, and data set name of the library that contains the member. The creation date, time, and IMS version of the DBD are shown on the right of the data set name. It also shows the access method, or if it is a logical database LOGICAL, for the DBD currently being mapped. Both physical and logical relationships are shown. A map can be created for all full-function and Fast Path IMS database organizations except GSAM. A map cannot be created for a GSAM database, because it does not contain segments. However, a report can be created.

For physical relationships, each segment is represented by a box that contains the segment name and code. Each box (except for the root segment) is connected to its physical parent and siblings. The characters as shown in the following table are used to draw a box that shows the data set group that contains the segment. These characters are called *data set group characters*.

Table 20. Data set group characters

Character	Explanation
*	The first data set group
+	The second data set group
"	The third data set group
.	The fourth data set group
=	The fifth data set group
-	The sixth data set group
#	The seventh data set group
%	The eighth data set group
;	The ninth data set group
'	The 10th data set group
V	Virtual logical child
C	Pointer and parent segment concatenation

Data set group characters are used to express up to the maximum number of data set groups allowed for a database. A DEDB database can have up to 2048 areas. The area segments use the same characters as the data set groups. For more than 10 areas, the characters, are simply repeated; that is, 11 through 20 use the same characters as 1 through 10, 21 through 30 use the same characters as 1 through 10, and so on.

VAR in the top line of a box indicates a variable-length segment. SXD in the top line of a box indicates that the segment has secondary index fields. If the segment is a sequential dependent segment (SDEP), SDEP is shown in the upper-right corner of the box. The segment code is placed in the bottom line of each box.

MULT in the top line of a box indicates that the segment has multiple secondary indexes.

Logical relationships for the segment box are indicated by the segment name of the logical parent or logical child and, where necessary, the name of the database that contains that segment. Dependent logical segments are not connected as physical segments are; rather, they appear first under their associated segment in a vertical row, one under another.

If the map is too wide or long to fit on a single page, the map is split and printed on as many contiguous pages as needed.

Differences among DBD, PSB, and ACB maps

Although the format of the four types of maps is similar, certain elements are different. The following list summarizes the differences between the DBD map and other types of maps:

Differences in PSB maps

PSB maps are similar to the DBD maps that the DBD Map function generates. The following fields are different in DBD maps and PSB maps:

- DBDMAP OF *dbdname* in PSB-*psbname* is shown in the header.
- 2ND is shown in the upper-right corner of the box when the segment contains the secondary index specified in PROCSEQ of DB PCB in the PSB map.
- SXD is not shown in the PSB map.
- The processing options (PROCOPT values) used for the segment are shown at the lower-left corner of the box.

A special case is introduced, however, in which the list of segments included in the map is customized to include only those called for in the database PCB sensitive segment table. Also, if the sensitive segment table and the database PCB attributes call for inversion of the database because of a secondary index processing sequence, this is simulated before the map is prepared. The order of the segments in the map is the same as the order of the SENSEG statements in the PSB.

Differences in ACB (PSB) maps

ACB (PSB) maps are similar to the PSB maps that are generated by the PSB Map function. The following fields are different between PSB maps and ACB (PSB) maps:

- If the sensitive segment is a virtual child segment, information about this segment is not shown in the ACB (PSB) map.
- 2ND and SXD are not shown in the ACB (PSB) map.

Differences in ACB (DBD) maps

ACB (DBD) maps are similar to the DBD maps that are generated by the DBD Map function.

Example of a DBD map (single-page)

The following figure shows an example of the DBD map that fits in a single page.

```
IMS LIBRARY INTEGRITY UTILITIES - DBD/PSB/ACB MAPPER                "DBD MAP"                                        PAGE:     A
5655-U08                                              DATE: 10/01/2018  TIME: 14.20.21                          FABMDMAP - V2.R2
  DBDNAME=PHDAM04   VOLUME=IMSVS   DSNAME=IMSVS.DBDLIB                                    DBDGEN:08/10/2018 18.21     IMS V13.1
  DBDMAP OF PHDAM04                                                  ACCESS=PHDAM VSAM

          ALL SEGMENTS WITHIN A SINGLE DATA SET GROUP ARE DISPLAYED USING THE SAME CHARACTER FOR BOX DELIMITERS.


                                  **********
                                  *  ROOTA  *
                                  *******001*
                                 ._____|_____.
                                 |           |
                            ++++++++++  """""""""""
                            +  DEP1A  +  "  DEP1B  "
                            +++++++002+  """""""003"
```

Figure 89. DBD map (single-page)

Example of a DBD map (multiple-pages)

The following figure shows an example of the DBD map that spans across pages.

```
IMS LIBRARY INTEGRITY UTILITIES - DBD/PSB/ACB MAPPER                "DBD MAP"                                        PAGE:     A
5655-U08                                          DATE: 10/01/2018  TIME: 12.13.02                          FABMDMAP - V2.R2
  DBDNAME=SAMP01Z   VOLUME=IMSVS   DSNAME=IMSVS.DBDLIB                                DBDGEN:08/10/2018 18.21     IMS V13.1
  DBDMAP OF SAMP01                                                 ACCESS=HDAM VSAM

          ALL SEGMENTS WITHIN A SINGLE DATA SET GROUP ARE DISPLAYED USING THE SAME CHARACTER FOR BOX DELIMITERS.
```

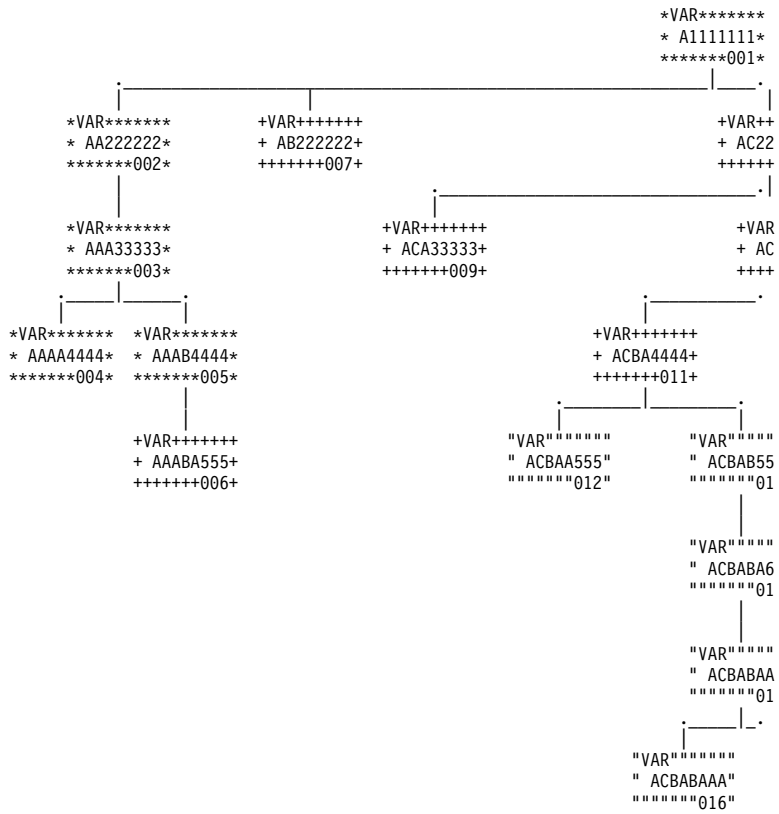


Figure 90. DBD map (multiple-pages) (Part 1 of 2)

```
IMS LIBRARY INTEGRITY UTILITIES - DBD/PSB/ACB MAPPER                "DBD MAP"                                        PAGE:     B
5655-U08                                                 DATE: 10/01/2018 TIME: 12.13.02                        FABMDMAP - V2.R2
  DBDNAME=SAMP01Z   VOLUME=IMSVS   DSNAME=IMSVS.DBDLIB                                DBDGEN:08/10/2018 18.21     IMS V13.1
  DBDMAP OF SAMP01                                                          ACCESS=HDAM VSAM

          ALL SEGMENTS WITHIN A SINGLE DATA SET GROUP ARE DISPLAYED USING THE SAME CHARACTER FOR BOX DELIMITERS.
```

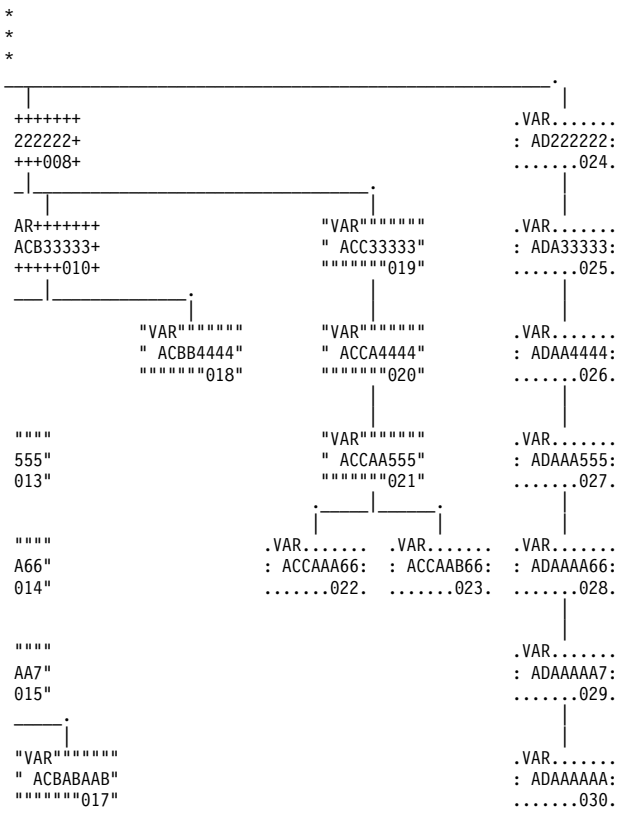


Figure 91. DBD map (multiple-pages) (Part 2 of 2)

PSB and ACB summary reports

The PSB Summary report and the ACB (PSB) Summary report provide overall information about the PSB or the PSB-type ACB, its attributes, and the PCBs it contains. These reports are generated in the SYSPRINT data set.

Up to 2500 PCBs can be printed on the PCB number column of the PSB Summary report.

The header of the PSB Summary report contains the following common items:

- PSB member name
- Volume serial number and data set name of the library containing the PSB member
- Date, time, and IMS version when the PSB was generated

Subsections:

- "Sample report" on page 270
- "Report field description" on page 271

Sample report

The following figures show an example of the PSB Summary report.

```
IMS LIBRARY INTEGRITY UTILITIES - DBD/PSB/ACB MAPPER            "PSB SUMMARY REPORT"                                  PAGE:     1
5655-U08                                                 DATE: 10/01/2018  TIME: 14.20.21                       FABMPMAP - V2.R2
  PSBNAME=PSBCRSIL   VOLUME=IMSVS  DSNAME=IMSVS.PSBLIB                                  PSBGEN:01/20/2018 11.12     IMS V13.1
  PSB REPORT OF PSBCRSIL



   PPPPPPPP          SSSS      BBBBBBBB          CCCC      RRRRRRRR          SSSS       IIIIIIIIII   LLLL
   PPPPPPPPPP      SSSSSSSS    BBBBBBBBBB      CCCCCCCC    RRRRRRRRRR      SSSSSSSS     IIIIIIIIII   LLLL
    PP     PPP    SSS    SSS    BB     BBB    CCC    CCC    RR     RRR    SSS    SSS        II        LL
    PP      PP    SS      SS    BB      BB    CC      CC    RR      RR    SS      SS        II        LL
    PP      PP    SS            BB      BB    CC     CCC    RR      RR    SS                II        LL
    PP      PP    SS            BB      BB    CC     CCC    RR      RR    SS                II        LL
    PP     PPP    SSS           BBBBBBBBB     CC            RR     RRR    SSS               II        LL
    PPPPPPPPP      SSSSS        BBBBBBB       CC            RRRRRRRRR      SSSSS            II        LL
    PPPPPPP           SSSSS     BBBBBBBBB     CC            RRRRRRR           SSSSS         II        LL
    PP                   SSS    BB      BB    CC     CCC    RR RRR               SSS        II        LL
    PP                    SS    BB      BB    CC     CCC    RR  RRR               SS        II        LL
    PP           SS       SS    BB      BB    CC      CC    RR   RRR      SS      SS        II        LL
    PP           SSS    SSS    BB     BBB    CCC    CCC    RR    RRR     SSS    SSS        II        LL      LL
   PPPP           SSSSSSSS    BBBBBBBBBB      CCCCCCCC    RRRR   RRRR     SSSSSSSS     IIIIIIIIII   LLLLLLLLLLL
   PPPP             SSSS      BBBBBBBB          CCCC      RRRR   RRRR       SSSS       IIIIIIIIII   LLLLLLLLLLL



               PSB PREFIX SUMMARY
                           0 BYTES NEEDED FOR I/O WORK AREA
                           0 BYTES NEEDED FOR SSA WORK AREA

                     ASSEMBLER/COBOL LANGUAGE OR NOT SPECIFIED

               TP PCB SUMMARY
                     SYSTEM ADDS AN I/O PCB IN MPP AND BMP EXECUTION REGIONS.
                     NO USER TP PCB.

               DB PCB SUMMARY
                     DB PCB #     1 DSCRSDVN

               GSAM PCB SUMMARY
                     NO GSAM PCBS


               TP PCB DETAIL
                     SYSTEM ADDS AN I/O PCB IN MPP AND BMP EXECUTION REGIONS.
                     NO USER TP PCB.


               DB PCB DETAIL
                     DB PCB #     1 DSCRSDVN
                              PROCESSING OPTION = L
                              SINGLE POSITIONING REQUESTED
                              LENGTH OF KEY FEEDBACK AREA =     50    (000032 HEX)
                              NUMBER OF SENSITIVE SEGMENTS =   7
```

Figure 92. PSB Summary report (Part 1 of 2)

```
IMS LIBRARY INTEGRITY UTILITIES - DBD/PSB/ACB MAPPER            "PSB SUMMARY REPORT"                                  PAGE:     2
5655-U08                                                  DATE: 10/01/2018 TIME: 14.20.21                         FABMPMAP - V2.R2
  PSBNAME=PSBCRSIL   VOLUME=IMSVS  DSNAME=IMSVS.PSBLIB                                PSBGEN:01/20/2018 11.12     IMS V13.1
  PSB REPORT OF PSBCRSIL


                                                        1   SSCRSP00  **ROOT**  L
                                                        2   SSCRSP12  SSCRSP00  L
                                                        3   SSCRSP21  SSCRSP12  L
                                                        4   SSCRSP22  SSCRSP12  L
                                                        5   SSCRSP23  SSCRSP12  L
                                                        6   SSCRSP13  SSCRSP00  L
                                                        7   SSCRSP14  SSCRSP00  L


                GSAM PCB DETAIL
                          NO GSAM PCBS
```

Figure 93. PSB Summary report (Part 2 of 2)

Report field description

This report has seven sections:

PSB Prefix Summary
A list of the PSB attributes, such as I/O area size and SSA size.

TP PCB Summary
A list of the associated I/O PCBs.

DB PCB Summary
A list of the associated database PCBs.

GSAM PCB Summary
A list of the associated GSAM PCBs.

TP PCB Detail
List of associated I/O PCBs, with the attributes of each of these PCBs. The PCB name and the LIST parameter option are printed, if they exist.

DB PCB Detail
List of associated database PCBs, with the attributes of each and a table of the sensitive segments for each. Sensitive field information is also displayed whenever it is contained in a DB PCB. If any subset pointers are defined in a PCB for a DEDB database, this information is printed on the report. The PCB name and the LIST parameter option are printed, if they exist.

For a PCB for a DEDB database, `MULTIPLE POSITIONING REQUESTED` is always printed regardless of the value specified for the POS parameter of the PCB statement.

GSAM PCB Detail
List of associated GSAM PCBs with the attributes of each of these PCBs.

Most of the fields in the PSB Summary report are self-explanatory. The sensitive segment fields contain:

- The segment name
- The name of the parent segment
- The processing options for the segment

For ACB (PSB) Summary reports, if the sensitive segment is a virtual logical child segment, VIRTUAL is shown on the right side of the segments processing option.

The sensitive field lines contain:

- The field name
- The starting position of the field within its segment
- Whether it can be altered during a replace call (shown by `REPLACE=YES` or `REPLACE=NO`)

DBD, PSB, and ACB reports

DBD/PSB/ACB Mapper generates DBD, PSB, and ACB reports in the SYSPRINT data set. Each report contains details about the DBD, PSB, PSB-type ACB, or DBD-type ACB.

DBD/PSB/ACB Mapper generates the reports as follows:

- If the control statement for a DBD contains only the *dbdname*, a DBD report is generated.
- If the control statement for a PSB contains only the *psbname*, a PSB report is generated for each database PCB within the PSB.
- If the control statement for a PSB-type ACB contains only the *acbname*, an ACB (PSB) report is generated for each database PCB within the PSB-type ACB.
- If the control statement for a DBD-type ACB contains only the *acbname*, an ACB (DBD) report is generated for the DBD-type ACB.

The DBD, PSB, ACB reports show the following information:

- Database information
- Data set group or DEDB area information
- Segment information
- Field information

Subsections:

- "Differences between DBD, PSB, and ACB reports"
- "Example of the DBD report" on page 273
- "Example of the PSB report" on page 275
- "Report field description for the database information part" on page 276
- "Report field description for the data set group or DEDB area information part" on page 278
- "Report field description for the segment information part" on page 278
- "Report field description for the field information part" on page 280

Differences between DBD, PSB, and ACB reports

Although the formats of the reports are similar between the four types of reports, certain fields are different. The following list summarizes the differences between the DBD report and other types of reports.

Differences in PSB reports

PSB reports are similar to the DBD reports that are generated by the DBD Map function.

A special case is introduced, however, in which the list of segments included in the report is customized to include only those called for in the database PCB sensitive segment table. Also, if the sensitive segment table and the database PCB attributes call for inversion of the database because of a secondary index processing sequence, this is simulated before the

report is prepared. The order of the segments in the report is the same as the order of the SENSEG statements in the PSB.

Differences in ACB (PSB) reports

ACB (PSB) reports are similar to the PSB reports that are generated by the PSB Map function. If the ACB control block does not contain information that is valid for the report field, N/A is printed in the field of the ACB (PSB) report. The following fields are different between PSB reports and ACB (PSB) reports:

- If the sensitive segment is a virtual child segment, information about this segment is not shown on the ACB (PSB) report.
- *INSENS* shown in the *SRCSEG* line means that the index source segment name cannot be obtained from the ACB because the segment is insensitive in the PSB.

Differences in ACB (DBD) reports

ACB (DBD) reports are similar to the DBD reports that are generated by the DBD Map function. If the ACB control block does not contain information that is valid for the report field, N/A is printed in the field of the ACB (DBD) report.

- When DBD/PSB/ACB Mapper cannot obtain complete segment name information from one or more ACBs, the name is shown in the ACB (DBD) map and the ACB (DBD) report as follows:

  $FABM*nnn* (*nnn* is the segment code in a DBD)
- Because DBD/PSB/ACB Mapper cannot obtain paired segment name information for virtually paired logical relationship, the name is not shown in the ACB (DBD) report.
- Because DBD/PSB/ACB Mapper cannot obtain segment name information and database name information of the SOURCE parameter for virtually paired logical relationship, these names are shown in the ACB (DBD) report as follows:
  - $SEGM*nnn* (*nnn* is a sequential number in a DBD)
  - $DBD*nnn*

  Then the program writes message FABM0043W to the SYSOUT data set.

Example of the DBD report

The following figures show an example of the DBD report.

```
IMS LIBRARY INTEGRITY UTILITIES - DBD/PSB/ACB MAPPER                "DBD REPORT"                                        PAGE:     1
5655-U08                                                 DATE: 10/01/2018  TIME: 18.22.34                          FABMDMAP - V2.R2
  DBDNAME=DSCRSDVN  VOLUME=IMSVS   DSNAME=IMSVS.DBDLIB                                  DBDGEN:08/10/2018 18.21     IMS V13.1
  DBDMAP OF DSCRSDVN                                                  ACCESS=HDAM VSAM


                                    DDDD   SSS   CCC  RRRR   SSS  DDDD  V   V N   N
                                    D   D S   S C   C R   R S   S D   D V   V N   N
                                    D   D S     C     R   R S     D   D V   V NN  N
                                    D   D  SSS  C     RRRR   SSS  D   D V   V N N N
                                    D   D     S C     R R       S D   D V   V N  NN
                                    D   D S   S C   C R  R  S   S D   D  V V  N   N
                                    DDDD   SSS   CCC  R   R  SSS  DDDD    V   N   N

                  VERSION=08/10/18  18.21
                  LEVELS=   3         SEGMENTS=   8       DATA SET GROUPS=   2
                  RANDOMIZING ROUTINE=DFSHDC40       ROOT ANCHOR POINTS=       2   MAX RBN=        20  BYTES= UNLIMITED
 ID=  1*  DSCRSDV0  PRIME DS LOG. RCD. LEN=   2041, BLOCKSIZE=   2048           SEGMENT LENGTH MAX=    80, MIN=    42
                  OFLW  DS LOG. RCD. LEN=   2041, BLOCKSIZE=   2048           KEY LENGTH MAX=        20, MIN=    20   NUMBSEG=   2
                                                                                                                      VIRTSEG=   1
 ID=  2+  DSCRSDV1  PRIME DS LOG. RCD. LEN=   2041, BLOCKSIZE=   2048           SEGMENT LENGTH MAX=    46, MIN=    20
                  OFLW  DS LOG. RCD. LEN=   2041, BLOCKSIZE=   2048           KEY LENGTH MAX=        20, MIN=     3   NUMBSEG=   5
                                     C P  P L  L P   P  P  L  L E  RULES  PHYS.       SEG-NAME  D-B-NAME  FORM  LOG CHLD
SEG-NAME  SC# LV PAR -LEN- ---FREQ--- T T  P T  P H   C  C  C  C P         N-SEQ          OR        OR     OR   INSRT
                                     R FB   FB   FB .F .L .F .L S  I D R  INSRT       FLD-NAME  LEN STRT  PNTR  RULES
SSCRSP00*   1  1   0    50       0.00 X X             3  1  1       L V V  LAST                            VAR LEN
                                                                                    *PFX*  LEN=  30 MAX=    50 PFX+MAX=     80
                                                                                                   MIN=    22 PFX+MIN=     52
                                                                                    *LC**  SSSCHP13  DSSCHHVN  SNGL  HERE
                                                                                    *LC**  SSCRSP13            NONE  LAST
                                                                                    *LC**  SSCRSP14            NONE  LAST
                                                                                    *FLD*  ECOURSE    20     3 CHARACTER   SEQ,UNIQUE
                                                                                    *FLD*  ECRSP0LE    2     1 CHARACTER
SSCRSV11V   2  2   1     0       0.00                                             *PR**  SSSCHP13  DSSCHHVN
                                                                                    *FLD*  ESCHOOLN   20     1 CHARACTER   SEQ,UNIQUE
                                                                                    *SRC*  SSSCHP13  DSSCHHVN  DATA
                                                                                  1 *PFX*  LEN=  26 MAX=    20 PFX+MAX=     46
                                                                                    *LP**  SSCRSP00  DSCRSDVN  PHYS  NONE
                                                                                    *FLD*  ECOURSEN   20     1 CHARACTER   SEQ,UNIQUE
SSCRSP12+   3  2   1    20       0.00 X    X      X                L V V  LAST                            VAR LEN
                                                                                    *PFX*  LEN=  14 MAX=    20 PFX+MAX=     34
```

Figure 94. DBD report (Part 1 of 2)

```
IMS LIBRARY INTEGRITY UTILITIES - DBD/PSB/ACB MAPPER                "DBD REPORT"                                        PAGE:     2
5655-U08                                                  DATE: 10/01/2018  TIME: 18.22.34                          FABMDMAP - V2.R2
  DBDNAME=DSCRSDVN  VOLUME=IMSVS   DSNAME=IMSVS.DBDLIB                                DBDGEN:08/10/2018 18.21     IMS V13.1
  DBDMAP OF DSCRSDVN                                                        ACCESS=HDAM VSAM

                                    C P  P L  L P   P  P  L  L E  RULES  PHYS.       SEG-NAME  D-B-NAME  FORM  LOG CHLD
SEG-NAME  SC# LV PAR -LEN- ---FREQ--- T T  P T  P H   C  C  C  C P         N-SEQ         OR        OR      OR   INSRT
                                    R FB   FB   FB .F .L .F .L S  I D R  INSRT       FLD-NAME  LEN STRT  PNTR  RULES
                                                                                              MIN=     8 PFX+MIN=     22
                                                                                *LC**  SSFACP13  DSFACHON  NONE  LAST
                                                                                *FLD*  ECLASSID    6     3 CHARACTER   SEQ,UNIQUE
                                                                                *FLD*  ECRSP12L    2     1 CHARACTER
SSCRSP21+   4  3   3     9       0.00   X  X X                    L V V  LAST                               FIX LEN
                                                                                *PFX*  LEN=  14 MAX=     9 PFX+MAX=     23
                                                                                *LP**  SSSTUP00  DSSTUIVN  PHYS  NONE
                                                                                *FLD*  EAPPLDAY    6     4 CHARACTER   SEQ,MULTIPLE
                                                                                *FLD*  ESTUDNUM    3     1 CHARACTER
SSCRSP22+   5  3   3     9       0.00   X  X    X                 L V V  LAST                               FIX LEN
                                                                                *PFX*  LEN=  14 MAX=     9 PFX+MAX=     23
                                                                                *PR**  SSFACP13  DSFACHON
                                                                                *LP**  SSFACP00  DSFACHON  VIRT  NONE
                                                                                *FLD*  EFROMDAT    6     4 CHARACTER   SEQ,MULTIPLE
                                                                                *FLD*  ETEACHNR    3     1 CHARACTER
SSCRSP23+   6  3   3     6       0.00   X  X X                    L V V  LAST                               FIX LEN
                                                                                *PFX*  LEN=  14 MAX=     6 PFX+MAX=     20
                                                                                *LP**  SSCLSP00  DSCLSDVN  PHYS  NONE
                                                                                *FLD*  ECLASSRO    3     4 CHARACTER   SEQ,UNIQUE
SSCRSP13*   7  2   1    20       0.00   XX X X  X                 L V V  LAST                               FIX LEN
                                                                                *PFX*  LEN=  22 MAX=    20 PFX+MAX=     42
                                                                                *LP**  SSCRSP00             PHYS  NONE
                                                                                *FLD*  EREQUCRS   20     1 CHARACTER   SEQ,UNIQUE
SSCRSP14+   8  2   1    20       0.00      X XX X XX               L V V  LAST                               FIX LEN
                                                                                *PFX*  LEN=  26 MAX=    20 PFX+MAX=     46
                                                                                *LP**  SSCRSP00             PHYS  NONE
                                                                                *FLD*  EREQBCRS   20     1 CHARACTER   SEQ,UNIQUE
```

Figure 95. DBD report (Part 2 of 2)

Example of the PSB report

The following figure shows an example of the PSB report.

```
IMS LIBRARY INTEGRITY UTILITIES - DBD/PSB/ACB MAPPER              "PSB REPORT"                                    PAGE:     1
5655-U08                                                 DATE: 10/01/2018  TIME: 18.22.34                        FABMPMAP - V2.R2
  PSBNAME=PSBCRSIL  VOLUME=IMSVS   DSNAME=IMSVS.PSBLIB                                PSBGEN:01/20/2018 11.12     IMS V13.1
  DBDNAME=DSCRSDVN  VOLUME=IMSVS   DSNAME=IMSVS.DBDLIB                                DBDGEN:08/10/2018 18.21     IMS V13.1
  DBDMAP OF DSCRSDVN IN PSB-PSBCRSIL                                        ACCESS=HDAM VSAM


  PPPP   SSS  BBBB   CCC  RRRR   SSS  IIIII L                     DDDD   SSS   CCC  RRRR   SSS  DDDD  V   V N   N
  P   P S   S B   B C   C R   R S   S   I   L                     D   D S   S C   C R   R S   S D   D V   V N   N
  P   P S     B   B C     R   R S       I   L          -----       D   D S     C     R   R S     D   D V   V NN  N
  PPPP   SSS  BBBB  C     RRRR   SSS    I   L          -----       D   D  SSS  C     RRRR   SSS  D   D V   V N N N
  P         S B   B C     R R       S   I   L          -----       D   D     S C     R R       S D   D V   V N  NN
  P     S   S B   B C   C R  R  S   S   I   L                     D   D S   S C   C R  R  S   S D   D  V V  N   N
  P      SSS  BBBB   CCC  R   R  SSS  IIIII LLLLL                 DDDD   SSS   CCC  R   R  SSS  DDDD    V   N   N

                  LEVELS=   3         SEGMENTS=   7       DATA SET GROUPS=   2
                  RANDOMIZING ROUTINE=DFSHDC40       ROOT ANCHOR POINTS=       2   MAX RBN=        20  BYTES= UNLIMITED
 ID=  1*  DSCRSDV0  PRIME DS LOG. RCD. LEN=   2041, BLOCKSIZE=   2048           SEGMENT LENGTH MAX=    80, MIN=    42
                  OFLW  DS LOG. RCD. LEN=   2041, BLOCKSIZE=   2048           KEY LENGTH MAX=        20, MIN=    20   NUMBSEG=   2
 ID=  2+  DSCRSDV1  PRIME DS LOG. RCD. LEN=   2041, BLOCKSIZE=   2048           SEGMENT LENGTH MAX=    46, MIN=    20
                  OFLW  DS LOG. RCD. LEN=   2041, BLOCKSIZE=   2048           KEY LENGTH MAX=        20, MIN=     3   NUMBSEG=   5
                                  C P  P L  L P   P  P  L  L E  RULES  PHYS.       SEG-NAME  D-B-NAME  FORM  LOG CHLD
SEG-NAME  SC# LV PAR -LEN- ---FREQ--- T T  P T  P H   C  C  C  C P         N-SEQ          OR        OR      OR   INSRT
                                  R FB   FB   FB .F .L .F .L S  I D R  INSRT       FLD-NAME  LEN STRT  PNTR  RULES
SSCRSP00*   1  1   0    50       0.00 X X            3  1  1       L V V  LAST                              VAR LEN
                                                                                  *PFX*  LEN=  30 MAX=    50 PFX+MAX=     80
                                                                                         MIN=    22 PFX+MIN=     52
                                                                                  *FLD*  ECOURSE    20     3 CHARACTER   SEQ,UNIQUE
                                                                                  *FLD*  ECRSP0LE    2     1 CHARACTER
SSCRSP12+   3  2   1    20       0.00 X    X      X                 L V V  LAST                              VAR LEN
                                                                                  *PFX*  LEN=  14 MAX=    20 PFX+MAX=     34
                                                                                         MIN=     8 PFX+MIN=     22
                                                                                  *FLD*  ECLASSID    6     3 CHARACTER   SEQ,UNIQUE
                                                                                  *FLD*  ECRSP12L    2     1 CHARACTER
SSCRSP21+   4  3   3     9       0.00   X  X X                    L V V  LAST                              FIX LEN
                                                                                  *PFX*  LEN=  14 MAX=     9 PFX+MAX=     23
                                                                                  *FLD*  EAPPLDAY    6     4 CHARACTER   SEQ,MULTIPLE
                                                                                  *FLD*  ESTUDNUM    3     1 CHARACTER
SSCRSP22+   5  3   3     9       0.00   X  X    X                 L V V  LAST                              FIX LEN
                                                                                  *PFX*  LEN=  14 MAX=     9 PFX+MAX=     23
                                                                                  *FLD*  EFROMDAT    6     4 CHARACTER   SEQ,MULTIPLE
                                                                                  *FLD*  ETEACHNR    3     1 CHARACTER
SSCRSP23+   6  3   3     6       0.00   X  X X                    L V V  LAST                              FIX LEN
                                                                                  *PFX*  LEN=  14 MAX=     6 PFX+MAX=     20
```

Figure 96. PSB report (Part 1 of 2)

```
IMS LIBRARY INTEGRITY UTILITIES - DBD/PSB/ACB MAPPER              "PSB REPORT"                                    PAGE:     2
5655-U08                                                 DATE: 10/01/2018  TIME: 18.22.34                        FABMPMAP - V2.R2
  PSBNAME=PSBCRSIL  VOLUME=IMSVS   DSNAME=IMSVS.PSBLIB                                PSBGEN:01/20/2018 11.12     IMS V13.1
  DBDNAME=DSCRSDVN  VOLUME=IMSVS   DSNAME=IMSVS.DBDLIB                                DBDGEN:08/10/2018 18.21     IMS V13.1
  DBDMAP OF DSCRSDVN IN PSB-PSBCRSIL                                        ACCESS=HDAM VSAM

                                  C P  P L  L P   P  P  L  L E  RULES  PHYS.       SEG-NAME  D-B-NAME  FORM  LOG CHLD
SEG-NAME  SC# LV PAR -LEN- ---FREQ--- T T  P T  P H   C  C  C  C P         N-SEQ          OR        OR      OR   INSRT
                                  R FB   FB   FB .F .L .F .L S  I D R  INSRT       FLD-NAME  LEN STRT  PNTR  RULES
                                                                                  *FLD*  ECLASSRO    3     4 CHARACTER   SEQ,UNIQUE
SSCRSP13*   7  2   1    20       0.00   XX X X  X                 L V V  LAST                              FIX LEN
                                                                                  *PFX*  LEN=  22 MAX=    20 PFX+MAX=     42
                                                                                  *FLD*  EREQUCRS   20     1 CHARACTER   SEQ,UNIQUE
SSCRSP14+   8  2   1    20       0.00      X XX X XX               L V V  LAST                              FIX LEN
                                                                                  *PFX*  LEN=  26 MAX=    20 PFX+MAX=     46
                                                                                  *FLD*  EREQBCRS   20     1 CHARACTER   SEQ,UNIQUE
```

Figure 97. PSB report (Part 2 of 2)

Report field description for the database information part

The database information part includes the following information:

- On the first two lines of the report (underneath the heading):
  - DBD member name

- Volume serial number and data set name of the library that contains the DBD member
- Date and time when the DBD was generated
- Database name
- The IMS database organization and access method, or for a logical database, LOGICAL

- The database name, in large letters, on the next several lines.
- Additional database information is printed on the next several lines:
  - `INDEX-SYS-DATA-PROTECTED` means that the database is a secondary index and is data-protected.

    `DOS INDEX COMPAT` means that the database is an index and was created by use of DLI/DOS.

    `PASSWORD-PROTECTED` means that the database is password-protected (VSAM only).
  - `USER EXIT DFSDBUX1 SPECIFIED` means that user exit DFSDBUX1 is called at the beginning and end of each database call.
  - The user-specified version information or time stamp value.
  - For a DBD-type ACB for a DEDB, this value is obtained from the PSB-type ACB that references the DBD. If a problem occurs when reading the PSB-type ACB, this field is blank.
  - The number of levels in the database.

    The number of segment types in the database.

    The number of data set groups, or DEDB areas.
- If the exit parameter is specified on the DBD statement, the following information is printed:
  - The exit name
  - `KEY` or `NOKEY`
  - `DATA` or `NODATA`
  - `PATH` or `NOPATH`
  - `CASCADE` or `NOCASCADE`
  - `LOG` or `NOLOG` or none
  - `DLET` or `NODLET` or none
  - `BEFORE` or `NOBEFORE` or none

  Note: If the exit parameter is specified on the DBD statement, it is applied to all segments within the physical database structure. To override the specification or to limit the specification to certain segments, the exit parameter is specified on the SEGM statement. So if the EXIT=NONE parameter is specified on all SEGM statements, the exit parameter on the DBD statement is not printed, because it has no meaning.

  If the CASCADE option is specified, the following information is printed next to the CASCADE:
  - `KEY` or `NOKEY`
  - `DATA` or `NODATA`
  - `PATH` or `NOPATH`
- If the database organization is HDAM or DEDB, the following information is printed:
  - The name of the randomizing routine
  - The number of root anchor points
  - For HDAM only, the maximum number of relative blocks

  - For HDAM only, the maximum number of bytes that can be placed in the root-addressable area
- If the database organization is GSAM, the organization and block information are printed on the line following the level, segments, and data set group information. The report is then terminated, because no further information is available for GSAM.
- If the database organization is MSDB, the terminal-related codes are printed.
- If there are shared index segments in the database, the names of the sharing databases are printed.

Report field description for the data set group or DEDB area information part

The following information is printed for each data set group or DEDB area in the database:

- The identification (ID) number.
  - For a data set group or a DEDB area, the identification (ID) number with the data set group character is printed.
- The data set group name.
- Information about the prime data set: the logical record length, block size, maximum and minimum segment lengths, and device type.
- Information about the overflow data set: logical record length and block size. Also shown on this line are the maximum and minimum key lengths used, the total number of segment types in the group, and the number of virtual segments, if any.
- For DEDB areas, the unit of work and the root numbers are printed.
- For HDAM, HIDAM, PHDAM, or PHIDAM databases, the free block frequency factor and the free space percentage factor numbers, if any, are printed.

Report field description for the segment information part

The next lines in the report consist of all data concerning each segment type and the fields within them.

- The segment name, with the data set group character. If the segment is virtual, a `V` is printed alongside the segment name. If the segment contains concatenated keys, a `C` is printed alongside the segment name.
- The segment code number.
- The database level the segment is in.
- The segment code of the segment's physical parent.
- The segment frequency number. If there is none, a zero (`0`) is printed.
- The types of pointers within the segment, if any, are specified by an `X` under each pointer ID:
  CTR counter field
  PTF physical twin forward pointer
  PTB physical twin backward pointer
  PP physical parent pointer
  LTF logical twin forward pointer
  LTB logical twin backward pointer
  LP logical parent pointer
  PHF hierarchical forward pointer
  PHB hierarchical backward pointer
  EPS extended pointer set

The following information shows the number of each type of child pointer (if any) for the segment:

PCF physical child first count
PCL physical child last count
LCF logical child first count
LCL logical child last count

- The next section under the heading RULES contains the rules used for inserting, deleting, and replacing occurrences of the segment type, as follows:

  P A physical path must be used to insert, delete, or replace.
  V A virtual path must be used to insert, delete, or replace.
  L A logical path must be used to insert, delete, or replace.
  B Used only for delete; means a bidirectional virtual path.

  If the report is for MSDB database, N/A is issued in this field on DBD report because RULES is not supported for MSDB.

- The next column, headed PHYS. N-SEQ INSRT, shows where the new segment occurrences are inserted into the physical database that establishes the physical twin sequence by FIRST, LAST, or HERE. The value is used only when segments are processed with no sequence field or with a non-unique sequence field.

  If the report is for an MSDB database, N/A is printed in this field on DBD report because RULES is not supported for MSDB.

  If the segment type has a field that is used for secondary indexing, SNDIXD is printed following INSERT RULES.

  If the segment is a sequential dependent segment (SDEP), SDEP is printed following INSERT RULES.

  The segment length type is the last item printed; either FIX LEN or VAR LEN.

If the segment has a compression routine, its name is printed. KEY-EP means that key compression is allowed. INIT-EP means that initialization and termination processing are required by the compression routine.

If the exit parameter is specified on the DBD statement or the SEGM statement, one of the following is printed next to the CHANGED DATA EXIT:

- SAME AS DBD means that there is no exit parameter on the SEGM statement and the exit parameter on the DBD statement will apply to this statement too.
- NONE means that the EXIT=NONE is specified on the SEGM statement and the exit parameter on the DBD statement will not apply to this statement.
- EXIT= means that the exit parameter on the DBD statement will be overridden by the exit parameter on this SEGM statement. The value can be the following operands:
  - The exit name
  - KEY or NOKEY
  - DATA or NODATA
  - PATH or NOPATH

  The following information is printed on the next line:

  - CASCADE or NOCASCADE

    If the CASCADE option is specified, the following information is printed next to the CASCADE:
    - KEY or NOKEY
    - DATA or NODATA
    - PATH or NOPATH
    - DLET or NODLET or none
    - BEFORE or NOBEFORE or none

and the following information is printed on the next line:

– LOG or NOLOG

For DEDB DBDs, the next line under the segment name shows how many subset pointers, if any, have been defined for this segment.

Report field description for the field information part

The next line on the right side describes the prefix information. This contains the following data:

- *PFX* identifies the line as prefix data.
- LEN shows the length of the data portion of the segment.
- PFX+MAX shows the total maximum length of the segment data and prefix.

  If the report is for a DEDB database, N/A is issued following *PFX* because DBD has no valid segment length information for the DEDB database.

For a variable-length segment, the following information is printed on the next line:

- MIN shows the smallest length of the data portion that is used by IMS.
- PFX+MIN shows the minimum length that is used by IMS for a segment.

The following lines for the segment specify segment type, segment field, or both:

- If the identification is for a segment, the lines contain:
  – The segment type:
  PR describes a paired segment
  LC describes a logical child
  LP describes a logical parent
  – The segment name
  – The name of the database that contains this segment

    If this segment has multiple secondary indexes, names of all the index databases are printed.
  – The type of pointer:
  INDX index pointer
  SNGL contains a physical child first pointer
  DBLE contains both a physical child first and a physical child last pointer
  NONE
  contains no pointer
  PHYS contains a physical parent pointer
  VIRT contains a virtual parent pointer
  – The next field that contains the type of insertion rule: FIRST, LAST, or HERE.
  – RKSIZE shows the length of the root key of the target segment.
- If the line is for a defined field of the segment, the line consists of:
  FLD specifies defined field
  Name field name
  Length
  field length
  Start starting position of field within segment
  Type defines the type of field:
  – CHARACTER
  – HEXADECIMAL
  – PACKED
  – HALFWORD

  - FULLWORD
- If the field is a sequence field for the segment, the following is printed:
  - SEQ denotes the field as a sequence field.
  - UNIQUE or MULTIPLE specifies whether the sequence field is to have different values in all occurrences of the segment, or can have duplicates of the same values.
- If the line is for an indexed field, the fields are:
  - *XFD* indexed field
  - Field name self-explanatory
  - SECONDARY INDEXED FIELD self-explanatory
- Following the XFD line could be the following:
  - SUBSEQUENCE shows that there are subsequence fields.
  - SYMBOLIC shows that the pointers are symbolic.
  - **SRCSEG** is printed along with the segment name. If the source segment is same as the target segment, **SAME** is printed.
  - CONSTANT=X'xx' is printed if a constant *xx* is specified in the definition of the XDFLD statement.
  - *NULLEXIT* is printed if a null value or an exit routine has been specified in the XDFLD statement:
    - The null value is printed as NULL=X'xx'.
    - The exit routine is printed as EXIT-*name*.
  - **PSELRTN** is printed if PSELRTN= is specified in the XDFLD statement. PSELOPT shows the partition selection option. The default value for PSELOPT is MULT.
  - For other index field types, the following is printed:
    - **SEARCH**
    - **SUBSEQ**
    - **SOURCE**
  - The field name, length, and start values. The field name shows */CK* if the SRCH= or SUBSEQ= parameter of the XDFLD statement specifies its operand in the following format: (/CK,*start_value*,*length_value*)
  - If there is a source segment name for the XDFLD, *FSRCSEG* and the segment name.
  - If there is a source segment for the index segment, the phrase *SRC* is printed along with the source segment name and the name of the database in which the source segment resides. Along with this, one of the following is printed, depending on what part of the source segment is used:
    - DATA
    - KEY
    - PATH

Chapter 8. DBD/PSB/ACB Reversal utility

The DBD/PSB/ACB Reversal utility converts the DBD, PSB, and ACB control blocks back into IMS DBDGEN or IMS PSBGEN utility control statements.

Topics:

- "DBD/PSB/ACB Reversal utility overview" on page 284
- "Restrictions for the DBD/PSB/ACB Reversal utility" on page 287
- "Converting IMS control blocks to control statements" on page 288
- "JCL requirements for the DBD/PSB/ACB Reversal utility" on page 289
- "Control statements for the DBD/PSB/ACB Reversal utility" on page 292
- "JCL examples for the DBD/PSB/ACB Reversal utility" on page 304
- "Output from the DBD/PSB/ACB Reversal utility" on page 308
- "DBD/PSB/ACB Reversal Site Default Generation utility" on page 330

DBD/PSB/ACB Reversal utility overview

The DBD/PSB/ACB Reversal utility converts DBD, PSB, and ACB control blocks back into IMS DBDGEN and IMS PSBGEN utility control statements.

Subsections:

- "Function overview"
- "Program structure" on page 285
- "Data flow" on page 285

Function overview

The utility provides the following functions:

DBD Reversal
: This function reads one or more DBDs from a DBD load library and converts them back to IMS DBDGEN utility control statements.

PSB Reversal
: This function reads one or more PSBs from a PSB load library and converts them back to IMS PSBGEN utility control statements.

ACB Reversal
: This function reads one or more ACBs from an ACB load library and converts them back to IMS PSBGEN and DBDGEN utility control statements. Depending on the specified operand, it processes both PSB-type and DBD-type ACBs, or only DBD-type ACBs.

Site Default Generation utility
: You can use the Reversal Site Default Generation utility to set your own default values for the Reversal SYSIN control statements.

The DBD/PSB/ACB Reversal program also generates the following reports. These reports represent the information about IMS DBD, PSB, and ACB libraries such as DBD/PSB/ACB organization, PCB PROCOPT, and relation among members.

- DBD Cross-Reference report
- ACB(DBD) Cross-Reference report
- ACB(PSB) Cross-Reference report
- PCB PROCOPT report
- PCB/ACB(PSB) PROCOPT report
- DBD to DBD cross-reference report
- PSB to DBD cross-reference report
- ACB(DBD) to ACB(DBD) cross-reference report
- ACB(PSB) to ACB(DBD) cross-reference report
- DBD cross-reference by DDname report
- ACB(DBD) cross-reference by DDname report
- DBD segment reference report
- PSB segment reference report
- PSB PROCOPT reference report
- ACB(PSB) PROCOPT reference report
- Unreferenced ACB(DBD) report
- DBD library member list report
- PSB library member list report

You can optionally request the DBD/PSB/ACB Reversal program to generate records suitable for the input to the DBD/PSB/ACB Mapper program by specifying the MAPOUT DD statement.

Related reading:

- For details about each report, see "SYSPRINT data set" on page 312.
- For details about creating the input for the DBD/PSB/ACB Mapper program, see the explanation of the MAPOUT DD statement in "JCL requirements for the DBD/PSB/ACB Reversal utility" on page 289.

Program structure

The DBD/PSB/ACB Reversal utility provides the following programs:

The FABNRVRS program
: This program controls other load modules and converts IMS control blocks (DBDs, PSBs, and ACBs) back into IMS DBDGEN/PSBGEN utility control statements. Based on the user specification, the program also generates various summary reports about IMS libraries. This module uses a simple input format that is specified in the SYSIN data set.

The FABNTGEN program
: This program is the Site Default Generation utility for DBD/PSB/ACB Reversal. The program creates a user site default table for the FABNRVRS SYSIN statement. It can also report values that are registered in the SYSIN site default table.

Data flow

The general data flow for the DBD/PSB/ACB Reversal utility (FABNRVRS) and the site default generation utility (FABNTGEN) is shown in the following figure. The input for the DBD/PSB/ACB Reversal utility is the SYSIN data set and the DBDLIB, PSBLIB, or ACBLIB for which sources are output and reports are created, and the output is DBDGEN/PSBGEN control statements and DBD/PSB/ACB Mapper control statements, reports, and activity log.

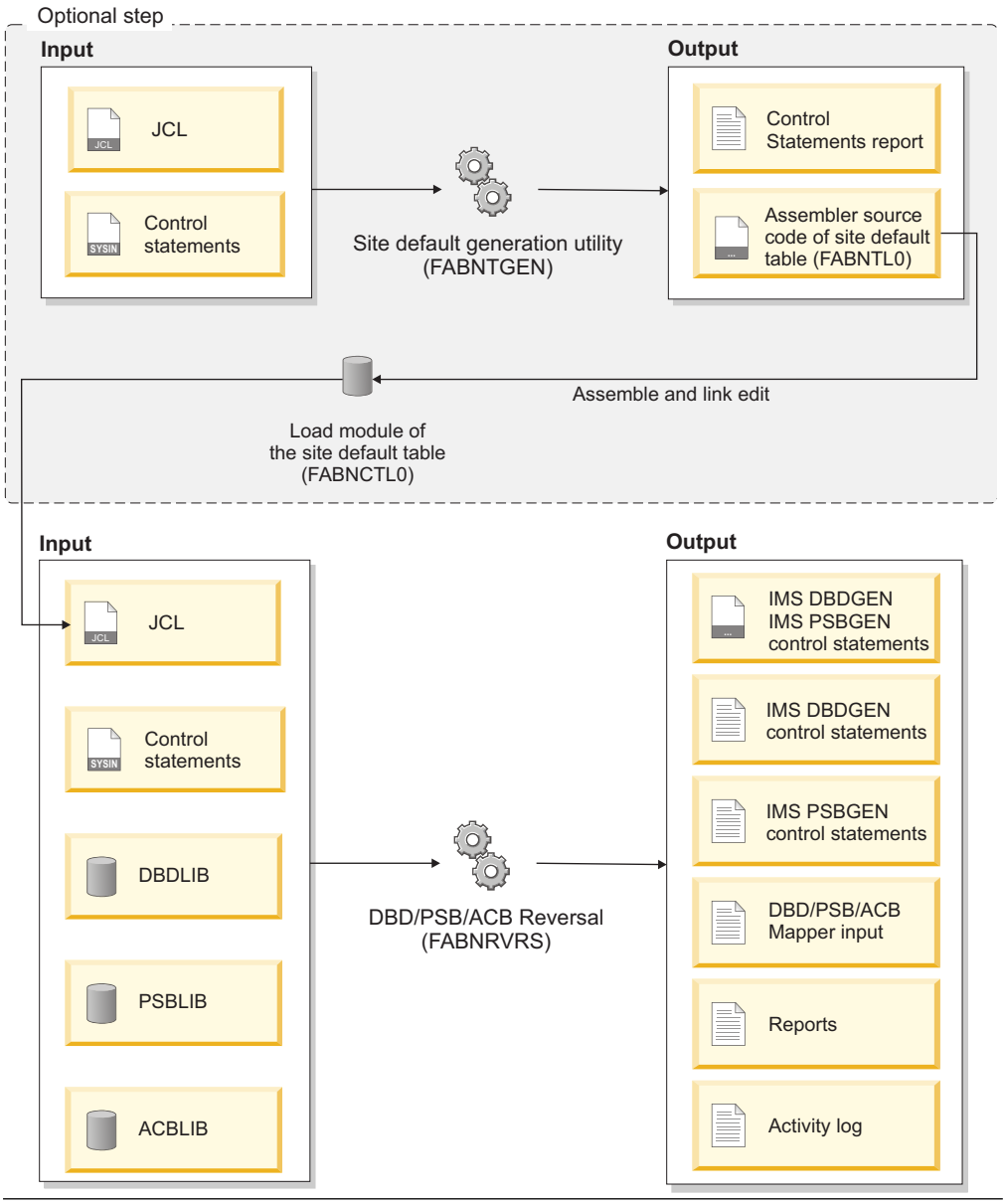


Figure 98. Data flow for DBD/PSB/ACB Reversal

Restrictions for the DBD/PSB/ACB Reversal utility

Certain restrictions apply when you use the DBD/PSB/ACB Reversal utility.

DBD/PSB/ACB Reversal re-creates the DBD/PSB source to be used for IMS of the same version and release by which the DBD/PSB were generated or for higher version of IMS. If a DBD/ACB member for HALDB is used as input data, the following reports are not generated, because the DBD/ACB library contains no information about the DD name:

- DBD XREF by DDname report
- ACB(DBD) XREF by DDname report

If the DBD member is specified to generate the reports, message FABN0054I is issued.

DBD/PSB/ACB Reversal cannot create reports if an alias name that is defined to the database is specified on the following control statements:

- XREF
- DDNAMES
- SEGREF

For the restrictions that apply to the generated control statements, see "Restrictions on the generated control statements" on page 310.

Converting IMS control blocks to control statements

To convert DBD/PSB/ACB control blocks back into IMS DBDGEN/PSBGEN utility control statements by using the DBD/PSB/ACB Reversal utility, you must prepare JCL for the DBD/PSB/ACB Reversal utility and submit the job.

About this task

Sample JCL for the DBD/PSB/ACB Reversal utility is in the SHPSJCL0 library, member FABLIVP1. You can modify this sample JCL and then use it to run the utility.

Procedure

1. In the DBD/PSB/ACB Reversal JCL, code the EXEC statement and DD statements.

   You can use the Reversal Site Default Generation utility to set your own default values for the SYSIN control statements.

   To create a DBD/PSB/ACB Mapper input, specify the MAPOUT DD statement.

   See the following topics for additional information:

   - For the format of the EXEC statement and the list of DD statements, see "JCL requirements for the DBD/PSB/ACB Reversal utility" on page 289.
   - For a description about the Reversal Site Default Generation utility, see "Reversal Site Default Generation utility overview" on page 330.
   - For an instruction to use the Reversal Site Default Generation utility, see "Setting site default values for the DBD/PSB/ACB Reversal utility" on page 330.
2. In the SYSIN data set, code the control statements for the DBD/PSB/ACB Reversal utility.

   See "Control statements for the DBD/PSB/ACB Reversal utility" on page 292.
3. Submit the job.
4. Check the output data sets that are generated.

   See "Output from the DBD/PSB/ACB Reversal utility" on page 308.

Related reference:

"JCL examples for the DBD/PSB/ACB Reversal utility" on page 304

JCL requirements for the DBD/PSB/ACB Reversal utility

When you code the JCL to run the DBD/PSB/ACB Reversal utility, include the EXEC statement and appropriate DD statements.

Subsections:

- "JCL example"
- "EXEC statement"
- "DD statements"

JCL example

An example of the JCL that is required for DBD/PSB/ACB Reversal is shown in the following figure.

```
//stepname EXEC PGM=FABNRVRS
//STEPLIB    DD DSN=HPS.SHPSLMD0,DISP=SHR
//DBDLIB     DD DSN=IMSVS.DBDLIB,DISP=SHR
//PSBLIB     DD DSN=IMSVS.PSBLIB,DISP=SHR
//ACBLIB     DD DSN=IMSVS.ACBLIB,DISP=SHR
//SYSOUT     DD SYSOUT=A
//SYSPRINT   DD SYSOUT=A
//SYSPUNCH   DD SYSOUT=B,FREE=CLOSE
//DBDSRC     DD DSN=PDS.DBDSRC,DISP=SHR
//PSBSRC     DD DSN=PDS.PSBSRC,DISP=SHR
//MAPOUT     DD SYSOUT=B,FREE=CLOSE
//SYSIN      DD *
    (control statements)
/*
```

Figure 99. Example of DBD/PSB/ACB Reversal JCL (FABNRVRS JCL)

EXEC statement

This statement must be in the following format:

```
//stepname EXEC PGM=FABNRVRS
```

DD statements

Code the following DD statements to identify the source of input and the placement of output information:

STEPLIB DD or JOBLIB DD
: This DD statement is required. This input DD statement defines the IMS Library Integrity Utilities load module library.

DBDLIB DD
: This statement is required when you process DBDs. This statement is also required when you specify the OPTION ACB_GSAM=YES option to process ACBs that have GSAM information.

  The DBDLIB DD input data set is the load library that contains the DBDs for which reports and control statements are created.

PSBLIB DD
: This statement is required when you process PSBs. This statement is also required when you specify the OPTION ACB_GSAM=YES option to process ACBs that have GSAM information.

The PSBLIB DD input data set is the load library that contains the PSBs for which reports and control statements are created.

ACBLIB DD

This statement is required when ACB operations are to be performed.

The ACBLIB DD input data set is the load library that contains the PSB-type ACBs and the DBD-type ACBs for which reports and control statements are created.

SYSOUT DD

This DD statement is required. The SYSOUT DD data set contains all activity messages and error messages.

The record format is fixed-blocked, and the logical record length is 133. The block size, if coded, must be a multiple of 133.

SYSPRINT DD

This DD statement is not required if only the DECODE keyword is specified in the SYSIN data set; otherwise it is required.

The SYSPRINT DD data set contains various reports that correspond to the SYSIN control statements. The record format is fixed-blocked, and the logical record length is 133. The block size, if coded, must be a multiple of 133.

SYSPUNCH DD

This optional data set contains the IMS DBDGEN/PSBGEN utility control statements re-created by DBD/PSB/ACB Reversal function.

The record format is fixed-blocked, and the logical record length is 80. The block size, if coded, must be a multiple of 80.

DBDSRC DD

This optional PDS or PDSE contains the IMS DBDGEN utility control statements re-created by DBD or ACB reversal function.

The record format is fixed-blocked, and the logical record length is 80. The block size, if coded, must be a multiple of 80.

PSBSRC DD

This optional PDS or PDSE contains the IMS PSBGEN utility control statements re-created by the PSB or ACB Reversal function.

The record format is fixed-blocked, and the logical record length is 80. The block size, if coded, must be a multiple of 80.

Note: If the keyword DECODE is specified, you must specify either of the following data sets as the output data set:

- SYSPUNCH DD
- DBDSRC DD, PSBSRC DD, or both

Related reading: For more information about the relation of DD statements and control statements, see Table 21 on page 302.

MAPOUT DD

This data set contains input to the DBD/PSB/ACB Mapper program. It is an optional output data set for the DBD/PSB/ACB Reversal function. If it is specified, the input to the DBD/PSB/ACB Mapper is generated.

The record format is fixed-blocked and the logical record length is 80. The block size, if coded, must be a multiple of 80.

SYSIN DD

This DD statement is required. The input data set, SYSIN DD, contains the control statements for DBD/PSB/ACB Reversal program.

The record format is fixed-blocked, and the logical record length is 80. The block size, if coded, must be a multiple of 80.

Related reading: For the format of the control statements, see "Control statements for the DBD/PSB/ACB Reversal utility" on page 292.

OPTPRT DD

This DD statement is optional. The OPTPRT DD data set contains the Run-time Option report. The record format is fixed-blocked, and the logical record length is 133. The block size, if coded, must be a multiple of 133.

Control statements for the DBD/PSB/ACB Reversal utility

The input for the DBD/PSB/ACB Reversal utility consists of control statements in the SYSIN data set. These control statements specify the functions to be performed and the runtime options.

The DBD/PSB/ACB Reversal utility supports two types of control statements:

Runtime option control statements
This type of statement specifies the runtime options. A runtime option control statement consists of a runtime option keyword and its associated options.

Function control statements
This type of statement specifies the function to be performed. A function control statement consists of a function keyword, a function keyword operand, and a function keyword option.

Subsections:

- "Control statement example"
- "Syntax rules" on page 294
- "Runtime option control statements" on page 294
- "Function control statements" on page 298
- "Function keyword operands" on page 299
- "Function keyword options" on page 299
- "Quick reference for control statements and DD statements" on page 302

Control statement example

The following figure shows an example of the control statements for DBD/PSB/ACB Reversal.

In this example:

- The first line specifies the SYSIN DD.
- The second and third lines specify runtime option control statements.
  - ACB_GSAM=YES is applied to all subsequent function control statements except the statements that contain a SEGREF function keyword.
  - PGM_COBOL=YES is applied to all subsequent function control statements that contain a DECODE or LIST function control keyword.
  - ACB_REFERENCED=YES is applied to all subsequent function control statements that contain a DECODE, LIST, DDNAMES, or XREF function control keyword.
  - COMMENT=YES, COMPRESS=YES, PCB_LABEL=YES, and SENSEG_PROCOPT=YES are applied to all subsequent function control statements that contain a DECODE function keyword.
- The fourth and subsequent lines specify function control statements.

```
//SYSIN DD *
        OPTION ACB_GSAM=YES,PGM_COBOL=YES,ACB_REFERENCED=YES
        DECOPT COMMENT=YES,COMPRESS=YES,PCB_LABEL=YES,SENSEG_PROCOPT=YES
      DECODE DBD ALL
      DECODE DBD INCLUDE=member,member,...
      DECODE DBD EXCLUDE=member,member,...
      DECODE PSB ALL
      DECODE PSB INCLUDE=member,member,...
      DECODE PSB EXCLUDE=member,member,...
      DECODE ACB ALL
      DECODE ACB INCLUDE=member,member,...
      DECODE ACB EXCLUDE=member,member,...
      DECODE ACBPSB ALL
      DECODE ACBPSB INCLUDE=member,member,...
      DECODE ACBPSB EXCLUDE=member,member,...
      DECODE ACBDBD ALL
      DECODE ACBDBD INCLUDE=member,member,...
      DECODE ACBDBD EXCLUDE=member,member,...
      LIST DBD ALL
      LIST DBD INCLUDE=member,member,...
      LIST DBD EXCLUDE=member,member,...
      LIST PSB ALL
      LIST PSB INCLUDE=member,member,...
      LIST PSB EXCLUDE=member,member,...
      LIST ACB ALL
      LIST ACB INCLUDE=member,member,...
      LIST ACB EXCLUDE=member,member,...
      DDNAMES DBD ALL
      DDNAMES DBD INCLUDE=member,member,...
      DDNAMES DBD EXCLUDE=member,member,...
      DDNAMES ACB ALL
      DDNAMES ACB INCLUDE=member,member,...
      DDNAMES ACB EXCLUDE=member,member,...
      PROCOPT PSB ALL
      PROCOPT PSB INCLUDE=member,member,...
      PROCOPT PSB EXCLUDE=member,member,...
      PROCOPT ACB ALL
      PROCOPT ACB INCLUDE=member,member,...
      PROCOPT ACB EXCLUDE=member,member,...
      XREF DBD ALL
      XREF DBD INCLUDE=member,member,...
      XREF DBD EXCLUDE=member,member,...
      XREF PSB ALL
      XREF PSB INCLUDE=member,member,...
      XREF PSB EXCLUDE=member,member,...
      XREF ACB ALL
      XREF ACB INCLUDE=member,member,...
      XREF ACB EXCLUDE=member,member,...
      XREF PSB ALL DBDNAME=member
      XREF ACB ALL DBDNAME=member
```

Figure 100. Control statements for DBD/PSB/ACB Reversal (Part 1 of 2)

```
      SEGREF DBD ALL SEGMENT=segname
      SEGREF DBD INCLUDE=member,member,... SEGMENT=segname
      SEGREF DBD EXCLUDE=member,member,... SEGMENT=segname
      SEGREF PSB ALL SEGMENT=segname
      SEGREF PSB INCLUDE=member,member,... SEGMENT=segname
      SEGREF PSB EXCLUDE=member,member,... SEGMENT=segname
      POPTREF PSB ALL SEARCHDBD=member SEARCHOPT=procopt
      POPTREF PSB INCLUDE=member,member,... SEARCHDBD=member SEARCHOPT=procopt
      POPTREF PSB EXCLUDE=member,member,... SEARCHDBD=member SEARCHOPT=procopt
      POPTREF ACB ALL SEARCHDBD=member SEARCHOPT=procopt
      POPTREF ACB INCLUDE=member,member,... SEARCHDBD=member SEARCHOPT=procopt
      POPTREF ACB EXCLUDE=member,member,... SEARCHDBD=member SEARCHOPT=procopt
      UNREF ACB
      LISTLIB DBD
      LISTLIB PSB
/*
```

Figure 101. Control statements for DBD/PSB/ACB Reversal (Part 2 of 2)

Syntax rules

The control statements must adhere to the following syntax rules:

- Control statements can start anywhere after the second column.
- A statement with an asterisk (*) in column 1 is treated as a comment.
- The comment line, which has an asterisk (*) in column 1, is allowable between continuous lines.
- Member names in a statement must be separated by commas and must end with a blank. If a comma is used instead of a blank, the processing is continued to the next line.

Runtime option control statements

Runtime option control statements control the behavior of the subsequent function control statements. When no function control statements follow a runtime option control statement, the runtime option control statement is not used.

The following keywords are available (the abbreviations that can be used are shown in parentheses):

OPTION

This keyword affects all subsequent function control statements. This keyword is optional. If specified, it must be placed before any other control statements (blank and comment lines can precede the OPTION keyword), and must be followed by the following keyword:

ACB_GSAM=

Specifies whether to obtain and use GSAM information when decoding or reporting ACBs.

YES DBD/PSB/ACB Reversal obtains GSAM information from the DBD and PSB libraries when processing ACBs, and uses the information to decode or to report the ACBs. ACB_GSAM=YES affects the following function control statements:

- DECODE ACB
- DECODE ACBPSB
- LIST ACB

- DDNAMES ACB
- PROCOPT ACB
- XREF ACB
- POPTREF ACB

To specify ACB_GSAM=YES, the following conditions must be met:

- ACBLIB DD, DBDLIB DD, and PSBLIB DD must be specified in the JCL.
- The DBD or the PSB must be consistent with the ACB.

NO DBD/PSB/ACB Reversal does not use GSAM information to process ACBs. ACB_GSAM=NO is the default value.

ACB_REFERENCED=

Specifies whether to process all DBD-type ACBs including those that are not referenced by any PSB-type ACBs.

When you specify ACB ALL, the utility processes all PSB-type ACBs and all DBD-type ACBs that the PSB-type ACBs refer to. If you also specify ACB_REFERENCED=NO, the utility expands the scope and additionally processes DBD-type ACBs that are not referred to by PSB-type ACBs.

YES Decodes or reports PSB-type ACBs and DBD-type ACBs that the PSB-type ACBs refer to. ACB_REFERENCED=YES is the default value.

NO Decodes or reports all PSB-type ACBs and DBD-type ACBs, including DBD-type ACBs that are not referred to by PSB-type ACBs.

ACB_REFERENCED affects the following function control statements:

- DECODE ACB ALL
- LIST ACB ALL
- DDNAMES ACB ALL
- XREF ACB ALL

PGM_COBOL=

Specifies whether to print LANG=COBOL or LANG=ASSEM in the decoded IMS PSBGEN utility control statements.

If a PSB is generated with LANG=COBOL or LANG=ASSEM, the DBD/PSB/ACB Reversal utility cannot identify the original LANG value because the PSB does not contain the original LANG value. Use the PGM_COBOL keyword to select the LANG value that meets your needs.

YES Prints LANG=COBOL in the IMS PSBGEN utility control statements. PGM_COBOL=YES affects the following function control statements:

- DECODE PSB
- DECODE ACB
- DECODE ACBPSB
- LIST PSB
- LIST ACB

In the PSB XREF BY TYPE - PSB Name Order report, COBOL is printed in the PSB LANGUAGE field.

NO Prints LANG=ASSEM in the IMS PSBGEN utility control statements. PGM_COBOL=NO is the default value.

In the PSB XREF BY TYPE - PSB Name Order report, ASSEMBLE/COBOL is printed in the PSB LANGUAGE field.

DECOPT (DO)

This keyword affects all subsequent DECODE statements. The following options can be specified:

CHECK_LEN=

Identifies the DEDB DBDs and PSBs that were not generated by the IMS DBDGEN or IMS PSBGEN utility.

If a DBD or PSB was generated by a non-IMS macro, the length of the control block does not conform to the standard IMS control block length. The CHECK_LEN option checks the control block length to identify such DEDB DBDs and PSBs. The CHECK_LEN option is effective only for DBD and PSB members, and is not effective for ACB members.

YES Checks the control block length of each member and identifies the DEDB DBDs and PSBs that were not generated by the IMS DBDGEN or IMS PSBGEN utility.

If the DBD/PSB/ACB Reversal utility finds members that were generated by a non-IMS macro, the utility decodes only the portions of the DBD or PSB that conform to the standard DBD or PSB format and sets the return code to 4. The utility also prints FABN0084W messages in the SYSOUT Messages report to notify you about the identified members. If you also specify DECOPT COMMENT=YES, the FABN0084W messages are also printed on the comment line in the decoded DBD or PSB source code.

NO Does not check the control block length of each member. CHECK_LEN=NO is the default value.

COMMENT= (C=)

Specifies whether this program prints the comment lines (the heading part of the DATASET, SEGM, or PCB statement) from the decoded DBD or PSB sources.

YES The comment lines are printed. COMMENT=YES is the default value.

NO The comment lines are not printed.

COMPRESS= (COMP=)

Specifies whether the decoded DBD or PSB sources are printed in compressed format.

Note: In the DBD/PSB/ACB Reversal utility of Library Management Utilities and other prior products, non-compressed format was used.

YES The decoded sources are printed in compressed format. COMPRESS=YES is the default value.

NO The decoded sources are printed in noncompressed format.

PCB_LABEL=

Specifies whether to print the PCB name in the PCB label or on the PCBNAME control statement.

YES Prints the PCB name in the PCB label.

NO Prints the PCB name on the PCBNAME control statement. PCB_LABEL=NO is the default value.

SENSEG_PROCOPT=

Specifies to print the SENSEG PROCOPT value even when the value is the same as the PCB PROCOPT value.

YES Prints the value.

NO Does not print the value if the SENSEG PROCOPT value is the same as the PCB PROCOPT value. SENSEG_PROCOPT=NO is the default value.

VERSION_GENDATE=

Specifies to write the DBDGEN date and time on the VERSION control statement in the decoded DBD source.

During DBDGEN, the user can provide a character string on the VERSION control statement. If a character string is not provided, the DBDGEN utility automatically adds a 13-character time stamp (GENDATE time stamp), which represents the date and time when the DBDGEN completed. If you specify the VERSION_GENDATE=YES option on the DBD/PSB/ACB Reversal utility SYSIN control statement, the utility writes the GENDATE time stamp on the VERSION control statement in the decoded DBD source. This option is effective for DBD library members, but is not effective for ACB library members.

YES Prints the GENDATE time stamp on the VERSION control statement in the decoded DBD source. The format is MM/DD/YYHH.MM.

NO Does not print the GENDATE time stamp on the VERSION control statement, but prints it as a comment beside the VERSION control statement. VERSION_GENDATE=NO is the default value.

If you specify VERSION_GENDATE=YES for the DBD/PSB/ACB Reversal utility and use the generated DBD source as the input for the DBDGEN utility, the DBDGEN utility treats the GENDATE time stamp not as a time stamp but as a text. Consequently, the DBDGEN utility does not update the GENDATE time stamp with the latest time stamp. If you want the DBDs to always hold the latest DBDGEN time stamp, do not specify VERSION_GENDATE=YES.

In the following example, the options specified on the DECOPT statement affect two DECODE statements:

```
DECOPT COMMENT=NO,COMPRESS=NO
DECODE DBD ALL
DECODE PSB ALL
```

Function control statements

Function control statements specify the functions to be performed. A function control statement consists of a function keyword, a function keyword operand, and a function keyword option. The following function keywords can be used (the abbreviations that can be used are shown in parentheses):

DECODE (D)
This keyword specifies that this program re-creates the control statements of the IMS DBDGEN/PSBGEN utility in the SYSPUNCH data set or the DBDSRC/PSBSRC data set, or both.

LIST (L)
This keyword specifies that this program generates the following reports in the SYSPRINT data set:

- DBD XREF by Access reports
- PSB XREF by Type reports
- ACB(DBD) XREF by Access reports
- ACB(PSB) XREF by Type reports

DDNAMES (DDN)
This keyword specifies that this program generates the following reports, which contain information about cross-reference between DBDs and DDNAMES, in the SYSPRINT data set:

- DBD XREF by DDNAME report
- ACB(DBD) XREF by DDNAME report

PROCOPT (P)
This keyword specifies that this program generates the following reports, which contain information about processing options (PROCOPT) defined in PSBs, in the SYSPRINT data set:

- PCB PROCOPT report
- PCB/ACB(PSB) PROCOPT report

XREF (X)
This keyword specifies that this program generates the following reports, which contain information about cross-reference between DBDs or between DBDs and PSBs, in the SYSPRINT data set:

- DBD to DBD XREF report
- PSB to DBD XREF report
- ACB(DBD) to ACB(DBD) XREF report
- ACB(PSB) to ACB(DBD) XREF report

Note: The DBDNAME option can be specified only for XREF PSB and XREF ACB. For details, see "Function keyword operands" on page 299.

SEGREF (S)
This keyword with the SEGMENT option specifies that this program is to produce either of the following in the SYSPRINT data set.

- DBD Segment Reference report
- PSB Segment Reference report

POPTREF
This keyword specifies the criteria for selecting PSBs. Information about the PSBs that match the criteria is written to the PSB PROCOPT Reference report or the ACB PROCOPT Reference report in the SYSPRINT data set.

Criteria are defined by the SEARCHDBD and SEARCHOPT options. The POPTREF keyword must be specified with those two options. The SEARCHDBD option defines the DBD name criteria that are used to identify the referenced DBDs. The SEARCHOPT option defines the processing option (PROCOPT) criteria that are used to identify PSBs. Only the PSBs that match the PROCOPT criteria and that refer to the DBDs that are identified by the DBD name criteria are written to the report.

UNREF
This keyword specifies to generate the Unreferenced ACB(DBD) report in the SYSPRINT data set. The only supported operand for this keyword is ACB. No function keyword options are supported for this keyword.

LISTLIB
This keyword specifies to generate the DBD or PSB library member list report in the SYSPRINT data set. The report includes the following information about the members in the data sets that are concatenated to DBDLIB DD or PSBLIB DD:

- IMS version that generated the DBD or PSB member
- Generation date and time
- Size of the member record

Function keyword operands

The following operands can be specified on the function control statements (the abbreviation that can be used is shown in parentheses):

DBD (D)
This operand specifies that the operation is to be performed on one or more DBDs.

PSB (P)
This operand specifies that the operation is to be performed on one or more PSBs.

ACB (A)
This operand specifies that the operation is to be performed on one or more PSB-type ACBs and on the DBD-type ACBs that those PSB-type ACBs refer to.

ACBPSB (AP)
This operand specifies that the operation is to be performed on one or more PSB-type ACBs. This operand is valid only for the DECODE keyword.

ACBDBD (AD)
This operand specifies that the operation is to be performed on one or more DBD-type ACBs. This operand is valid only for the DECODE keyword.

Function keyword options

The following options can be specified on the function control statements (the abbreviation that can be used is shown in parentheses):

ALL (A)
This option specifies that the operation is to be performed on all DBD, PSB, or ACB members of the library depending upon the operand specified in the control record. Specifying ALL (A) causes the DBD/PSB/ACB

Reversal to process all the members in the data sets that are concatenated to DBDLIB DD, PSBLIB DD, or ACBLIB DD.

If two or more data sets in the concatenation contain a member with the same name, DBD/PSB/ACB Reversal processes only the first one in the concatenation.

If the ACB operand is specified, the ACB reversal function processes all PSB-type ACBs and the DBD-type ACBs that those PSB-type ACBs refer to.

If the ACBPSB operand is specified, the ACB reversal function processes all PSB-type ACBs.

If the ACBDBD operand is specified, the ACB reversal function processes all DBD-type ACBs.

INCLUDE= (I=)

This option specifies that the operation is to be performed on the DBD, PSB, or ACB members specified after the equal sign (depending on the operand specified in the control record).

Note: You can specify a wildcard in any position of a character string. The asterisk (*) and the percent sign (%) are supported as wildcard characters. An asterisk represents 0 - 8 characters, and the percent sign (%) represents a single character. If two or more asterisks are specified sequentially, only the first asterisk is recognized.

When the ACB operand is specified, the specified ACBs must be of PSB type. The ACB reversal function processes the specified PSB-type ACBs and the DBD-type ACB members that those PSB-type ACBs refer to. If the specified ACB is not PSB type, an error message is issued and this member is skipped.

When the ACBPSB operand is specified, the specified ACBs must be of PSB type. The ACB reversal function processes the specified PSB-type ACBs. If the specified ACB is not of PSB type, an error message is issued and this member is skipped.

When the ACBDBD operand is specified, the specified ACBs must be of DBD type. The ACB reversal function processes the specified DBD-type ACBs. If the specified ACB is not of DBD type, an error message is issued and this member is skipped.

EXCLUDE= (E=)

This option specifies that the operation is to be performed on all DBD, PSB, or ACB members other than those specified after the equal sign (depending on the operand specified in the control record). If concatenated data sets are specified for the DBDLIB DD, PSBLIB DD, or ACBLIB DD statement, the DBD/PSB/ACB Reversal processes only the first data set. You can use wildcards for multiple character replacement. The method of using them is the same as for the INCLUDE (I) option.

If the ACB operand is specified, the specified ACBs must be of PSB type. The ACB reversal function processes the PSB-type ACBs that are not specified and the DBD-type ACBs that those PSB-type ACBs refer to.

If the ACBPSB operand is specified, the specified ACBs must be of PSB type. The ACB reversal function processes the PSB-type ACBs that are not specified.

If the ACBDBD operand is specified, the specified ACBs must be of DBD type. The ACB reversal function processes the DBD-type ACBs that are not specified.

SEGMENT= (S=)

This option specifies that the operation is to be performed on the segments specified after the equal sign. This option is valid only with the keyword SEGREF; if it is specified without the keyword SEGREF, it is ignored. You can specify only one segment name for the SEGMENT= option. However, a wildcard character can be specified as the segment name. Its use is the same as that of the INCLUDE (I) option.

DBDNAME= (D=)

This option is valid only in the XREF PSB control statement or the XREF ACB control statement. The PSB to DBD XREF report or the ACB(PSB) to ACB(DBD) XREF report has two parts: the *reference report* and the *referenced report*. If the DBDNAME= option is specified, only the referenced report part is printed for the specified DBDs. The DBD name can be specified with its exact name, or with the use of wildcards. If this option is accepted, message FABN0063I is issued.

PCBNAMEX= (P=)

This option specifies the prefix of the PCB names within 1 - 4 characters. This option is valid only with the keyword DECODE and operands PSB, ACB, or ACBPSB. The following is an example of the control card:

```
DECODE PSB INCLUDE=psbname PCBNAMEX=prfx
```

If this option is specified and there is one or more PCBs that are not named in the PSB, DBD/PSB/ACB Reversal assigns the PCB names on the PCBNAME parameters of PCB statements as PCBNAME=*prfxnnnn*, where *prfx* is the specified prefix and *nnnn* is the PCB number.

SEARCHDBD=

This option specifies the DBD name criteria to use to filter the referenced DBDs. This option is a required option for the POPTREF keyword. If this option is specified without the POPTREF keyword, it is ignored.

You can specify the name of a DBD member or use the asterisk (*) wildcard. An asterisk represents 0 - 8 characters. If two or more asterisks are specified sequentially, only the first asterisk is recognized.

This option can be specified on a new line.

SEARCHOPT=

This option specifies the processing option (PROCOPT) criteria, in 1 - 4 characters, to use to filter the PSBs. This option is a required option for the POPTREF keyword. The option must follow the SEARCHDBD option. If this option is specified without the POPTREF keyword, it is ignored.

You can specify the PROCOPT criteria by using the letters that correspond to the PROCOPT values and by using an asterisk (*) or percent sign (%) as a wildcard character. An asterisk represents 0 - 8 characters, and the percent sign represents a single character. If two or more asterisks are specified sequentially, only the first asterisk is recognized. An asterisk and a percent sign cannot be specified together.

You can specify the letters in any order because the order of the letters in the SEARCHOPT option is not considered. However, if you use both letters and wildcard characters, the letters must precede the wildcard characters.

This option can be specified on a new line.

The following table contains examples for specifying the PROCOPT criteria. In these examples, the following PROCOPT values are defined in the PSBs: G, GO, GP, GOP, GON, GHT, A, AP, and PA.

PROCOPT criteria	Matched PROCOPT values
SEARCHOPT=G	G
SEARCHOPT=GO	GO
SEARCHOPT=AP	AP, PA
SEARCHOPT=*	Any PROCOPT value
SEARCHOPT=G*	G, GO, GP, GOP, GON, GHT
SEARCHOPT=P*	GP, GOP, AP, PA
SEARCHOPT=%	G, A
SEARCHOPT=G%	GO, GP
SEARCHOPT=P%	GP, PA, AP
SEARCHOPT=GO%	GOP, GON
SEARCHOPT=G%%	GOP, GON, GHT

Quick reference for control statements and DD statements

The following table lists the DBD/PSB/ACB Reversal functions, control statements, and DD statements.

Table 21. DBD/PSB/ACB Reversal functions, control statements, and DD statements

Function	Control keyword	Control operand	Required and optional DD statements (O: Optional R: Required)										
			SYS PRINT	SYS OUT	SYS PUNCH	DBD SRC	PSB SRC	DBD LIB	PSB LIB	ACB LIB	MAP OUT	SYS IN	OPT PRT
DBD reversal	DECODE	DBD		R	O (see note 1)	O (see note 1)		R			O (see note 4)	R	O
PSB reversal	DECODE	PSB		R	O (see note 2)		O (see note 2)		R		O (see note 4)	R	O
ACB reversal	DECODE	ACB		R	O	O (see note 3)	O (see note 3)	O (see note 5)	O (see note 5)	R	O (see note 4)	R	O
ACB reversal (PSB-type only)	DECODE	ACBPSB		R	O (see note 2)		O (see note 2)		O (see note 5)	R	O (see note 4)	R	O
ACB reversal (DBD-type only)	DECODE	ACBDBD		R	O (see note 1)	O (see note 1)				R	O (see note 4)	R	O
DBD summary	LIST	DBD	R	R				R				R	O
PSB summary	LIST	PSB	R	R					R			R	O
ACB summary	LIST	ACB	R	R				O (see note 5)	O (see note 5)	R		R	O
PCB PROCOPT	PROCOPT	PSB	R	R					R			R	O
PCB/ACB (PSB) PROCOPT	PROCOPT	ACB	R	R					O (see note 5)	R		R	O
DBD-DBD XREF	XREF	DBD	R	R				R				R	O
PSB-DBD XREF	XREF	PSB	R	R					R			R	O
ACB(DBD)-ACB(DBD) XREF	XREF	ACB	R	R					O (see note 5)	R		R	O
ACB(PSB)-ACB(DBD) XREF	XREF	ACB	R	R					O (see note 5)	R		R	O
DDname XREF	DDNAMES	DBD	R	R				R				R	O
DDname XREF (ACB(DBD))	DDNAMES	ACB	R	R				O (see note 5)	O (see note 5)	R		R	O

Table 21. DBD/PSB/ACB Reversal functions, control statements, and DD statements (continued)

Function	Control keyword	Control operand	Required and optional DD statements (O: Optional R: Required)										
			SYS PRINT	SYS OUT	SYS PUNCH	DBD SRC	PSB SRC	DBD LIB	PSB LIB	ACB LIB	MAP OUT	SYS IN	OPT PRT
DBD SEGMENT reference	SEGREF	DBD	R	R				R			O (see note 4)	R	
PSB SEGMENT reference	SEGREF	PSB	R	R					R		O (see note 4)	R	
PSB PROCOPT reference	POPTREF	PSB	R	R					R			R	O
ACB(PSB) PROCOPT reference	POPTREF	ACB	R	R					O (see note 5)	R		R	O
UN-REFERENCED ACB(DBD)	UNREF	ACB	R	R						R		R	
DBD library member list	LISTLIB	DBD	R	R				R				R	
PSB library member list	LISTLIB	PSB	R	R					R			R	

Notes:

1. When the DBD reversal function or the ACB reversal function (DBD-type only) is run, either the SYSPUNCH data set or the DBDSRC data set must be specified.
2. When the PSB reversal function or the ACB reversal function (PSB-type only) is run, either the SYSPUNCH data set or the PSBSRC data set must be specified.
3. When the ACB reversal function is run, either the SYSPUNCH data set or the DBDSRC and PSBSRC data sets (both) must be specified.
4. When the DBD/PSB/ACB reversal function or the DBD/PSB Segment Reference report function is run, the mapper input generate function is also executed, and input control statements are written to the MAPOUT DD.
5. When the ACB reversal or the report function is run with OPTION ACB_GSAM=YES, the DD statement is required.

JCL examples for the DBD/PSB/ACB Reversal utility

The following topics provide JCL examples for running the DBD/PSB/ACB Reversal utility to re-create IMS DBDGEN and PSBGEN control statements.

Example: Re-creating the sources from DBDs and PSBs

The following figure shows example JCL for running a job that re-creates the IMS DBDGEN and PSBGEN control statements from the DBD and PSB libraries and adds members that contain each source to the partitioned data sets that are specified by the DBDSRC DD statement and the PSBSRC DD statement.

The first control statement specifies to re-create the sources for all DBDs in the DBD library. The second control statement specifies to re-create the sources for all PSBs in the PSB library.

All sources are printed in the SYSPUNCH data set.

```
//REVERS EXEC PGM=FABNRVRS
//STEPLIB  DD DSN=HPS.SHPSLMD0,DISP=SHR
//DBDLIB   DD DSN=IMSVS.DBDLIB,DISP=SHR
//PSBLIB   DD DSN=IMSVS.PSBLIB,DISP=SHR
//SYSOUT   DD SYSOUT=A
//SYSPUNCH DD SYSOUT=A
//DBDSRC   DD DSN=PDS.DBDSRC,DISP=SHR
//PSBSRC   DD DSN=PDS.PSBSRC,DISP=SHR
//SYSIN    DD *
       DECODE  DBD ALL
       DECODE  PSB ALL
/*
```

Figure 102. Example of re-creating the sources from DBDs and PSBs

Example: Re-creating the sources from ACBs

The following figure shows example JCL for running a job that re-creates the IMS DBDGEN and PSBGEN control statements from the specified ACB library and adds members that contain each source to the partitioned data sets that are specified by the DBDSRC DD statement and the PSBSRC DD statement.

The first control statement specifies to re-create the sources for all PSB-type ACBs and the DBD-type ACBs that those PSB-type ACBs refer to. The second control statement specifies to re-create a source for the named DBD-type ACB. The third control statement specifies to re-create a source for the named PSB-type ACB.

All sources are printed in the SYSPUNCH data set.

```
//REVERS EXEC PGM=FABNRVRS,REGION=0M
//STEPLIB  DD DSN=HPS.SHPSLMD0,DISP=SHR
//ACBLIB   DD DSN=IMSVS.ACBLIB,DISP=SHR
//SYSOUT   DD SYSOUT=A
//SYSPUNCH DD SYSOUT=A
//DBDSRC   DD DSN=PDS.DBDSRC,DISP=SHR
//PSBSRC   DD DSN=PDS.PSBSRC,DISP=SHR
//SYSIN    DD *
       DECODE  ACB ALL
       DECODE  ACBDBD INCLUDE=HDAM01
       DECODE  ACBPSB INCLUDE=PSB01A
/*
```

Figure 103. Example of re-creating the sources from ACBs

Example: Obtaining DBD library information

The following figure shows example JCL for running a job in which DBD library summary information is obtained by running three DBD/PSB/ACB Reversal utility functions.

The following information is obtained:
- DBD member access method information for each DBD member
- DBD member cross-reference
- DBD member and ddname cross-reference

```
//REVERS EXEC PGM=FABNRVRS
//STEPLIB  DD DSN=HPS.SHPSLMD0,DISP=SHR
//DBDLIB   DD DSN=IMSVS.DBDLIB,DISP=SHR
//SYSOUT   DD SYSOUT=A
//SYSPRINT DD SYSOUT=A
//SYSIN    DD *
       LIST    DBD ALL
       XREF    DBD ALL
       DDNAMES DBD ALL
/*
```

Figure 104. Example of obtaining DBD library information

Example: Obtaining PSB library information

The following figure shows example JCL for running a job in which PSB library summary information is obtained by running three DBD/PSB/ACB Reversal utility functions.

The following information is obtained:
- PSB-type and language information for each PSB member
- PCB-related information for each PSB (PCB-type, LTERM name referred to for TP PCB, or DBD name referred to for DB PCB and GSAM PCB)
- PSB member and DBD cross-reference

```
//REVERS EXEC PGM=FABNRVRS
//STEPLIB  DD DSN=HPS.SHPSLMD0,DISP=SHR
//PSBLIB   DD DSN=IMSVS.PSBLIB,DISP=SHR
//SYSOUT   DD SYSOUT=A
//SYSPRINT DD SYSOUT=A
//SYSIN    DD *
       LIST    PSB ALL
       PROCOPT PSB ALL
       XREF    PSB ALL
/*
```

Figure 105. Example of obtaining PSB library information

Example: Obtaining control statement source and Mapper input

The following figure shows example JCL for a procedure in which IMS DBDGEN and PSBGEN utility control statements are obtained and the DBD/PSB/ACB Mapper program is run.

The first step runs the reversal function with the MAPOUT data set specified, and the second step runs DBD/PSB/ACB Mapper. You must supply the DECODE statement with the target member name specified as the SYSIN control statement to the first step.

DBD/PSB/ACB Reversal outputs a list of member names to the MAPOUT data set. The names are used as SYSIN control statements to DBD/PSB/ACB Mapper.

By using DBD/PSB/ACB Reversal and DBD/PSB/ACB Mapper together, you can obtain the DBDGEN/PSBGEN source statements as well as a visual representation of the control blocks.

```
//REVERS PROC MBR=TEMPNAME,RGN=2048K
//R      EXEC PGM=FABNRVRS,REGION=&RGN
//STEPLIB  DD DSN=HPS.SHPSLMD0,DISP=SHR
//DBDLIB   DD DSN=IMSVS.DBDLIB,DISP=SHR
//PSBLIB   DD DSN=IMSVS.PSBLIB,DISP=SHR
//SYSOUT   DD SYSOUT=A
//SYSPRINT DD SYSOUT=A
//SYSPUNCH DD SYSOUT=B
//MAPOUT   DD UNIT=SYSDA,DISP=(,PASS),
//            SPACE=(80,(100,100),RLSE),
//            DCB=(BLKSIZE=80,RECFM=F,LRECL=80)
//SYSIN    DD DUMMY
//*
//M      EXEC PGM=FABMMAIN,REGION=&RGN
//STEPLIB  DD DSN=HPS.SHPSLMD0,DISP=SHR
//DBDLIB   DD DSN=IMSVS.DBDLIB,DISP=SHR
//PSBLIB   DD DSN=IMSVS.PSBLIB,DISP=SHR
//SYSOUT   DD SYSOUT=A
//SYSPRINT DD SYSOUT=A
//SYSIN    DD DSN=*.R.MAPOUT,DISP=(OLD,DELETE)
//*
//       PEND
//*
```

Figure 106. Example of input generation functions of Reversal and Mapper

Output from the DBD/PSB/ACB Reversal utility

Output from DBD/PSB/ACB Reversal consists of the SYSOUT data set, the SYSPUNCH data set, the DBDSRC data set, the PSBSRC data set, the SYSPRINT data set, the MAPOUT data set, and the OPTPRT data set.

SYSOUT data set

The SYSOUT data set contains activity log and error messages for all of the functions of the DBD/PSB/ACB Reversal program.

The following figure shows messages that are generated in the SYSOUT data set.

```
IMS LIBRARY INTEGRITY UTILITIES - DBD/PSB/ACB REVERSAL                "MESSAGES"                                    PAGE :     1
5655-U08                                              DATE: 06/30/2018  TIME: 17.46.50                      FABNDCOD  - V2.R2

FABN0024I CONTROL CARD SUPPLIED IS :   LIST    DBD ALL                                                    18070000
FABN0032I MEMBER TESTDB1  PROCESSED
FABN0024I CONTROL CARD SUPPLIED IS :   LIST    PSB ALL
FABN0032I MEMBER TESTPSB1 PROCESSED
FABN0024I CONTROL CARD SUPPLIED IS :   LIST    ACB ALL
FABN0032I MEMBER TESTDB1  PROCESSED
FABN0032I MEMBER TESTPSB1 PROCESSED
FABN0024I CONTROL CARD SUPPLIED IS :   PROCOPT PSB ALL
FABN0032I MEMBER TESTPSB1 PROCESSED
FABN0024I CONTROL CARD SUPPLIED IS :   PROCOPT ACB ALL
FABN0032I MEMBER TESTPSB1 PROCESSED
FABN0024I CONTROL CARD SUPPLIED IS :   XREF    DBD ALL
FABN0032I MEMBER TESTDB1  PROCESSED
FABN0024I CONTROL CARD SUPPLIED IS :   XREF    PSB ALL
FABN0032I MEMBER TESTPSB1 PROCESSED
FABN0024I CONTROL CARD SUPPLIED IS :   XREF    ACB ALL
FABN0032I MEMBER TESTDB1  PROCESSED
FABN0032I MEMBER TESTPSB1 PROCESSED
FABN0024I CONTROL CARD SUPPLIED IS :   DDNAMES DBD ALL
FABN0032I MEMBER TESTDB1  PROCESSED
FABN0024I CONTROL CARD SUPPLIED IS :   DDNAMES ACB ALL
FABN0032I MEMBER TESTDB1  PROCESSED
FABN0032I MEMBER TESTPSB1 PROCESSED
FABN0024I CONTROL CARD SUPPLIED IS :   SEGREF  DBD ALL SEGMENT=SEGM1
FABN0026I MAPOUT FUNCTION SELECTED
FABN0032I MEMBER TESTDB1  PROCESSED
FABN0052I SEGMENT NAME SEGM1    PROCESSED
FABN0024I CONTROL CARD SUPPLIED IS :   SEGREF  PSB ALL SEGMENT=SEGM1
FABN0026I MAPOUT FUNCTION SELECTED
FABN0032I MEMBER TESTPSB1 PROCESSED
FABN0052I SEGMENT NAME SEGM1    PROCESSED
FABN0024I CONTROL CARD SUPPLIED IS :   POPTREF PSB ALL SEARCHDBD=TESTDB1 SEARCHOPT=G
FABN0032I MEMBER TESTPSB1 PROCESSED
FABN0024I CONTROL CARD SUPPLIED IS :   POPTREF ACB ALL SEARCHDBD=TESTDB1 SEARCHOPT=G
FABN0032I MEMBER TESTPSB1 PROCESSED
FABN0024I CONTROL CARD SUPPLIED IS :   DECODE  DBD INCLUDE=TESTDB1
FABN0026I MAPOUT FUNCTION SELECTED
FABN0032I MEMBER TESTDB1  PROCESSED
FABN0024I CONTROL CARD SUPPLIED IS :   DECODE  PSB INCLUDE=TESTPSB1
FABN0026I MAPOUT FUNCTION SELECTED
FABN0032I MEMBER TESTDB1  PROCESSED
FABN0032I MEMBER TESTPSB1 PROCESSED
FABN0024I CONTROL CARD SUPPLIED IS :   DECODE  ACB INCLUDE=TESTPSB1
FABN0026I MAPOUT FUNCTION SELECTED
FABN0032I MEMBER TESTDB1  PROCESSED
FABN0032I MEMBER TESTPSB1 PROCESSED
FABN0024I CONTROL CARD SUPPLIED IS :   DECODE  ACBDBD INCLUDE=TESTDB1
FABN0026I MAPOUT FUNCTION SELECTED
FABN0032I MEMBER TESTDB1  PROCESSED
FABN0024I CONTROL CARD SUPPLIED IS :   DECODE  ACBPSB INCLUDE=TESTPSB1
FABN0026I MAPOUT FUNCTION SELECTED
FABN0032I MEMBER TESTPSB1 PROCESSED
```

Figure 107. Messages in the SYSOUT data set

SYSPUNCH data set

The SYSPUNCH data set contains the IMS DBDGEN or PSBGEN utility control statements if the SYSIN data set contains one or more DECODE DBD, DECODE PSB, DECODE ACB, DECODE ACBPSB, or DECODE ACBDBD control statements.

Subsections:

- "Re-created utility control statements"
- "Restrictions on the generated control statements" on page 310

Re-created utility control statements

The following figures show examples of the IMS DBDGEN and PSBGEN utility control statements created by DBD/PSB/ACB Reversal.

For the control statements not specified in the source, DBD/PSB/ACB Reversal always decodes the default value defined explicitly by IMS DBDGEN or PSBGEN utility.

Note: If you want to eliminate the comment lines, which are the heading of the DATASET, SEGM, or PCB statement, specify DECOPT COMMENT=NO in the first control statement of the SYSIN data set.

```
         TITLE   'ASSEMBLE OF DBDNAME=DSCLSDVN '
*        DSNAME=IMSVS.DBDLIB
*        VOL=IMSVS
*        DBDGEN DATE 11/22/2018 TIME 19.49
*        DECODE DATE 12/01/2018 TIME 10.18.54
*        IMS VERSION 13.1
       DBD     NAME=DSCLSDVN,ACCESS=(HDAM,VSAM),                      C
               RMNAME=(DFSHDC40,1,2,6),PASSWD=YES,                    C
               VERSION=             DATE 11/22/2018 TIME 19.49
************************************************************************
*        DATASET GROUP NUMBER 1                                        *
************************************************************************
DSG001 DATASET DD1=DSCLSDV0,SIZE=(2048),SCAN=3
************************************************************************
*        SEGMENT NUMBER 1                                              *
************************************************************************
       SEGM    NAME=SSCLSP00,PARENT=0,BYTES=(100,5),RULES=(LVV,LAST),  C
               PTR=(TWIN,,,,)
       FIELD   NAME=(ECLASSR,SEQ,U),START=3,BYTES=3,TYPE=C
       FIELD   NAME=(ECLSP0LE),START=1,BYTES=2,TYPE=C
       LCHILD  NAME=(SSCRSP23,DSCRSDVN),PTR=SNGL,PAIR=SSCLSV11,        C
               RULES=HERE
************************************************************************
*        SEGMENT NUMBER 2                                              *
************************************************************************
       SEGM    NAME=SSCLSV11,PARENT=((SSCLSP00,)),PTR=PAIRED,          C
               SOURCE=((SSCRSP23,DATA,DSCRSDVN))
       FIELD   NAME=(ECLASSNR,SEQ,U),START=21,BYTES=6,TYPE=C
       DBDGEN
       FINISH
       END
```

Figure 108. IMS DBDGEN utility control statements re-created by DBD/PSB/ACB Reversal

```
         TITLE   'ASSEMBLE OF PSBNAME=PSBSMUAL '
*        DSNAME=IMSVS.PSBLIB
*        VOL=IMSVS
*        PSBGEN DATE 11/22/2018 TIME 19.50
*        DECODE DATE 12/01/2018 TIME 10.23.54
*        IMS VERSION 13.1
*********************************************************************
*        PCB NUMBER 1      DB   NUMBER 1                            *
*********************************************************************
       PCB     TYPE=DB,DBDNAME=DSCLSDVN,PROCOPT=A,KEYLEN=29
       SENSEG  NAME=SSCLSP00,PARENT=0
       SENSEG  NAME=SSCLSV11,PARENT=SSCLSP00
*********************************************************************
*        PCB NUMBER 1      DB   NUMBER 2                            *
*********************************************************************
       PCB     TYPE=DB,DBDNAME=DSSCHHVN,PROCOPT=A,KEYLEN=40
       SENSEG  NAME=SSSCHP00,PARENT=0
       SENSEG  NAME=SSSCHP11,PARENT=SSSCHP00
       SENSEG  NAME=SSSCHP12,PARENT=SSSCHP00
       SENSEG  NAME=SSSCHP13,PARENT=SSSCHP00
       PSBGEN  PSBNAME=PSBSMUAL,LANG=ASSEM,CMPAT=NO
       END
```

Figure 109. IMS PSBGEN utility control statements re-created by DBD/PSB/ACB Reversal

Restrictions on the generated control statements

When the IMS DBDGEN utility processes the control statements issued by the DBD/PSB/ACB Reversal utility, the following restrictions apply:

- The order of the FIELD, LCHILD, and XDFLD statements that follow the SEGM statement is not the same as the user-required order in the DBD control statements. DBD/PSB/ACB Reversal generates all of the FIELD statements that belong to the segment following the SEGM statements, and then produces, if they exist, the LCHILD statements with paired XDFLD statements. This does not affect the database being accessed.
- If the VERSION parameter on the DBD statement has a time stamp value, DBD/PSB/ACB Reversal decodes the time stamp value as an Assembler comment statement.

When the IMS PSBGEN utility processes the control statements issued by the DBD/PSB/ACB Reversal, the following restrictions apply:

- The PCB label and the PCBNAME parameter in the PCB statement are mutually exclusive. Whether a PCB label or a PCBNAME parameter is used to decode a PCB name depends on the version of IMS that generated the PSB:
  - For PSBs that were generated by IMS Version 3 or higher, if the PCB_LABEL=YES option (uses the PCB label) is not specified, DBD/PSB/ACB Reversal uses the PCBNAME parameter to decode the PCB name.
  - For PSBs that were generated by IMS Version 2 Release 2, DBD/PSB/ACB Reversal uses the PCB label to decode the PCB name.
- If the PGM_COBOL=YES option (prints LANG=COBOL) is not specified, DBD/PSB/ACB Reversal always decodes the PSBGEN statement as PSBGEN LANG=ASSEM, even if the statement is defined as PSBGEN LANG=COBOL or PSBGEN LANG=, because there is no difference between the PSBs.

- DBD/PSB/ACB Reversal always decodes the TP PCB statement as PCB TYPE=TP,LTERM=*nnnnn*, even if it is defined as PCB TYPE=TP,NAME=*nnnnn*, because there is no difference between the two PSBs.

When the IMS DBDGEN utility processes the control statements issued by the ACB reversal function of DBD/PSB/ACB Reversal, the following restrictions apply:

- When DBD/PSB/ACB Reversal cannot obtain complete segment name information from one or more ACBs, the program decodes the segment name as follows:

  ```
  NAME=$FABNnnn (nnn is the segment code)
  ```

  Then the program writes FABN0039W message to both SYSOUT and SYSPUNCH data set.
- Because the ACB library contains no information on the SIZE parameter, the second RECORD parameter, or the DEVICE parameter of the DATASET statement, the DBD/PSB/ACB Reversal cannot decode these parameters.
- Because the ACB library contains no information on the FREQ parameter of the SEGM statement, the DBD/PSB/ACB Reversal cannot decode the FREQ parameter.
- Because DBD/PSB/ACB Reversal cannot obtain paired segment name information on the LCHILD statement for virtually paired logical relationship, the program cannot decode the PAIR parameter.
- Because DBD/PSB/ACB Reversal cannot obtain segment name information and database name information of the SOURCE parameter for virtually paired logical relationship, the program decodes these names as follows:

  ```
  SOURCE=(($SEGMnnn,DATA,$DBDnnn)) (nnn is a sequential number in a DBD)
  ```

  Then the program writes message FABN0065W to both the SYSOUT and the SYSPUNCH data set.
- Because the IMS ACBGEN does not generate any DBD-type ACB for logical DBD, DBD/PSB/ACB Reversal decodes the logical DBD by using information from the PSB-type ACB that refers to the logical DBD when specifying the PSB-type ACB with the ACB keyword. Therefore the SEGM statements are decoded only for the sensitive segments, and the order of the SEGM statements might be different from the user-required order.
- Because the ACB library contains no information on the GSAM database, DBD/PSB/ACB Reversal does not decode the DBD control statements for the GSAM database if ACB_GSAM=YES is not specified for the runtime option.
- When decoding a DBD-type ACB for a DEDB, a PSB-type ACB, which references the DBD, is also used to for obtaining the DBD VERSION= parameter value. If a problem occurs when reading the PSB-type ACB, the DBD VERSION= parameter value is not decoded.
- If the index target segment type is assumed to be the index source segment, DBD/PSB/ACB Reversal prints the XDFLD SEGMENT parameter without a value.

When IMS PSBGEN utility processes the control statements issued by the ACB reversal function of the DBD/PSB/ACB Reversal, the following restrictions apply:

- In a DEDB database, DBD/PSB/ACB Reversal always decodes the POS parameter of the PCB statement as POS=S.
- DBD/PSB/ACB Reversal decodes the INDICES parameter of the SENSEG statement into the following format:

  ```
  INDICES=($DBD0001,$DBD0002)
  ```

DBD/PSB/ACB Reversal provides the specified number of index DBDs, but it does not get the real DBD name from a PSB-type ACB. Therefore it assigns an alternative DBD name that contains a four-digit sequential number in a PSB. The program then writes message FABN0055W to the SYSOUT data set. Replace each DBD name that is assigned with the real index DBD name manually, to regenerate DBD/PSB and to build ACB from the sources generated by DBD/PSB/ACB Reversal.

- DBD/PSB/ACB Reversal always decodes the REPLACE parameter of the SENFLD statement as REPLACE=YES.
- DBD/PSB/ACB Reversal program does not decode the GSAM PCB in the ACB library if ACB_GSAM=YES is not specified for the runtime option.

DBDSRC data set

The DBD/PSB/ACB Reversal program creates the DBDGEN utility control statement in the PDS or PDSE specified in the DBDSRC DD statement. The DBDGEN utility control statement is the same as the one created in the SYSPUNCH data set.

If the specified data set is not a PDS nor a PDSE when the DBD or ACB reversal function is run, the program ends abnormally with an open error.

The following restrictions apply when a PDS or a PDSE is specified in the DBDSRC DD statement:

- If the member name specified exists in the PDS or PDSE specified, the program replaces the specified member name with a new member and the ALIAS member name.
- If the ALIAS member name is specified as a decoded member name in the DBDLIB library or the ACBLIB library, the program decodes the member with the real member name, not the ALIAS member name.

PSBSRC data set

The DBD/PSB/ACB Reversal program creates the PSBGEN utility control statement in the PDS or PDSE specified in the PSBSRC DD statement. The PSBGEN utility control statement is the same as the one created in the SYSPUNCH data set.

If the specified data set is not a PDS nor a PDSE when the PSB or ACB reversal function is run, the program ends abnormally with an open error.

The following restrictions apply when a PDS or a PDSE is specified in the PSBSRC DD statement:

- If the member name specified exists in the PDS or PDSE specified, the program replaces the specified member name with a new member and the ALIAS member name.
- If the ALIAS member name is specified as a decoded member name in the PSBLIB library or the ACBLIB library, the program decodes the member with the real member name, not the ALIAS member name.

SYSPRINT data set

The SYSPRINT data set contains the reports corresponding to the specified control statements in the SYSIN data set.

XREF by Access reports for DBD and ACB(DBD)

The XREF by Access reports for DBDs and DBD-type ACBs contain information about the specified DBDs or DBD-type ACBs and the DL/I access method defined in each DBD or DBD-type ACB.

If a LIST DBD control statement is specified, the following two cross-reference reports are generated:

- DBD XREF by Access - DBD Name Order report
- DBD XREF by Access - Access Order report

If a LIST ACB control statement is specified, the following two cross-reference reports are generated:

- ACB(DBD) XREF by Access - ACB(DBD) Name Order report
- ACB(DBD) XREF by Access - Access Order report

Sample report: DBD Name Order report

This report lists the specified DBD names and the DL/I access method defined in each DBD. It is ordered alphabetically by DBD name. For ALIAS-type members, the actual name is shown in parentheses. If the ALIAS-type member is specified by the INCLUDE option, the actual name is not shown.

The following figure shows an example of the DBD XREF by Access - DBD Name Order report.

```
IMS LIBRARY INTEGRITY UTILITIES - DBD/PSB/ACB REVERSAL      "DBD XREF BY ACCESS - DBD NAME ORDER"                    PAGE:     1
5655-U08                                                 DATE: 10/01/2018  TIME: 10.57.49                        FABNCODE - V2.R2

VOLUME=IMSVS   DSNAME=IMSVS.DBDLIB

  DBDNAME   ACCESS METHOD         DBDNAME   ACCESS METHOD         DBDNAME   ACCESS METHOD         DBDNAME   ACCESS METHOD
  --------  ------------------    --------  ------------------    --------  ------------------    --------  ------------------
  HDAM01    HDAM,VSAM
  HIDAM01   HIDAM,OSAM
  INDEXDB   INDEX,VSAM,SGL
  PHDAM01   PHDAM,OSAM
  PHDAM04   PHDAM,VSAM
  PHIDAM01  PHIDAM,OSAM
  PHIDAM04  PHIDAM,VSAM
  PSINDX04  PSINDEX,VSAM
  SINDX01   INDEX,VSAM,SGL
```

Figure 110. DBD XREF by Access - DBD Name Order report

Sample report: Access Order report

This report lists the DL/I access methods, the total number of the DBDs using each access method, and the DBD names.

The following figure shows an example of the DBD XREF by Access - Access Order report.

```
IMS LIBRARY INTEGRITY UTILITIES - DBD/PSB/ACB REVERSAL      "DBD XREF BY ACCESS - ACCESS ORDER"                    PAGE:     1
5655-U08                                                 DATE: 10/01/2018  TIME: 10.57.49                      FABNCODE - V2.R2

VOLUME=IMSVS   DSNAME=IMSVS.DBDLIB

  ACCESS          COUNT   DBDNAME
  --------------  ------  --------------------------------------------------------------------------------------------
  HIDAM,OSAM           1  HIDAM01
  INDEX,VSAM,SGL       2  INDEXDB  SINDX01
  HDAM,VSAM            1  HDAM01
  PHDAM,OSAM           1  PHDAM01
  PHIDAM,OSAM          1  PHIDAM01
  PHDAM,VSAM           1  PHDAM04
  PHIDAM,VSAM          1  PHIDAM04
  PSINDEX,VSAM         1  PSINDX04
```

Figure 111. DBD XREF by Access - Access Order report

XREF by Type reports for PSB and ACB(PSB)

The XREF by Type reports for PSBs and PSB-type ACBs contain information about the specified PSBs or PSB-type ACBs, the type, and the language information for each PSB or PSB-type ACB.

If a LIST PSB control statement is specified, the following two cross-reference reports are generated:

- PSB XREF by Type - PSB Name Order report
- PSB XREF by Type - Type Order report

If a LIST ACB control statement is specified, the following two cross-reference reports are generated:

- ACB(PSB) XREF by Type - ACB(PSB) Name Order report
- ACB(PSB) XREF by Type - Type Order report

Sample report: PSB Name Order report

This report lists the specified PSB names with the PSB type and language information about each PSB. For ALIAS-type members, the actual name is shown in parentheses. If the ALIAS-type member is specified by the INCLUDE option, the actual name is not shown.

Tip: The PSB LANGUAGE column indicates the language (LANG= value) in the decoded IMS PSBGEN utility control statement. You can use the PGM_COBOL option to change the LANG= value.

The following figure shows an example of the PSB XREF by Type - PSB Name Order report.

```
IMS LIBRARY INTEGRITY UTILITIES - DBD/PSB/ACB REVERSAL       "PSB XREF BY TYPE   - PSB NAME ORDER"                    PAGE:     1
5655-U08                                                  DATE: 10/01/2018  TIME: 13.35.1                          FABNCODE - V2.R2

VOLUME=IMSVS   DSNAME=IMSVS.PSBLIB

  PSBNAME   PSB TYPES             PSB LANGUAGE           PSBNAME   PSB TYPES             PSB LANGUAGE
  --------  --------------------  --------------         --------  --------------------  --------------
  ALBBPG0   TP DB                 ASSEMBLE/COBOL
  ALRFSEL0  TP DB                 ASSEMBLE/COBOL
  CBSLOAD0  TP DB GSAM            ASSEMBLE/COBOL
  DBACHQ01  TP DB                 ASSEMBLE/COBOL
  DBACHQ02  TP DB                 ASSEMBLE/COBOL
  DBAMAP02  TP DB                 ASSEMBLE/COBOL
  DBFSAMP2  DB                    ASSEMBLE/COBOL
  DBTMP301  TP DB                 ASSEMBLE/COBOL
  DBTMP302  TP DB                 PL/I
  DBTMP303  DB                    PL/I
  GSEDCTL0  TP DB GSAM            ASSEMBLE/COBOL
  KARENPSB  DB                    ASSEMBLE/COBOL
  MPRTCUS0  TP DB                 ASSEMBLE/COBOL
  NF2HA     TP DB                 ASSEMBLE/COBOL
  NHGSAM01  GSAM                  ASSEMBLE/COBOL
  NHGSAM02  GSAM                  PL/I
  NHGSAM03  TP DB GSAM            PL/I
  PSBCLSIL  DB                    PL/I
  PSBCRSIL  DB                    PL/I
  PSBP0010  TP DB GSAM            ASSEMBLE/COBOL
  PSBSMUAL  DB                    PL/I
  PSBSMURE  DB                    ASSEMBLE/COBOL
  PSBSMUUL  DB                    ASSEMBLE/COBOL
  PSBSTUIL  DB                    PL/I
  PSB01     TP DB GSAM            ASSEMBLE/COBOL
  PSB01A    TP                    ASSEMBLE/COBOL
  PSB02     TP DB GSAM            ASSEMBLE/COBOL
  X080015T  TP DB                 ASSEMBLE/COBOL
  ZDALK685  TP DB                 ASSEMBLE/COBOL
```

Figure 112. PSB XREF by Type - PSB Name Order report

Sample report: Type Order report

This report lists the PSB types and the total number of the PSBs for each type, and the PSB names.

The following figure shows an example of the PSB XREF by Type - Type Order report.

```
IMS LIBRARY INTEGRITY UTILITIES - DBD/PSB/ACB REVERSAL       "PSB XREF BYTYPE   - TYPE   ORDER"                    PAGE:     1
5655-U08                                                  DATE: 10/01/2018  TIME: 13.35.1                          FABNCODE - V2.R2

VOLUME=IMSVS   DSNAME=IMSVS.PSBLIB

  PSB TYPES             COUNT   PSBNAME
  --------------------  ------  ------------------------------------------------------------------------------------------------
  TP                         1  PSB01A
  DB                         9  DBFSAMP2  DBTMP303  KARENPSB  PSBCLSIL  PSBCRSIL  PSBSMUAL  PSBSMURE  PSBSMUUL  PSBSTUIL
  TP DB                     11  ALBBPG0   ALRFSEL0  DBACHQ01  DBACHQ02  DBAMAP02  DBTMP301  DBTMP302  MPRTCUS0  NF2HA     X080015T
                                ZDALK685
  GSAM                       2  NHGSAM01  NHGSAM02
  TP DB GSAM                 6  CBSLOAD0  GSEDCTL0  NHGSAM03  PSBP0010  PSB01     PSB02
```

Figure 113. PSB XREF by Type - Type Order report

XREF by DDname reports for DBD and ACB(DBD)

The XREF by DDname reports for DBDs and DBD-type ACBs contain information about the DBDs and the ddnames that each DBD or DBD-type ACB refers to, and ddnames and the DBDs or DBD-type ACBs that refer to each ddname.

If a DDNAMES DBD statement is specified, the following two XREF by DDname reports are generated:

- DBD XREF by DDname - reference report
- DBD XREF by DDname - referenced report

If a DDNAMES ACB statement is specified, the following two XREF by DDname reports are generated:

- ACB(DBD) XREF by DDname - reference report
- ACB(DBD) XREF by DDname - referenced report

Sample report: Reference report

This report lists the DBDs and the ddnames that each DBD refers to.

The following figure shows an example of the DBD XREF by DDname - reference report.

```
IMS LIBRARY INTEGRITY UTILITIES - DBD/PSB/ACB REVERSAL          "DBD XREF BY DDNAME REPORT"                          PAGE:     1
5655-U08                                                 DATE: 10/01/2018  TIME: 13.35.1                        FABNDDN0 - V2.R2

VOLUME=IMSVS   DSNAME=IMSVS.DBDLIB

  * REFERENCE  REPORT *

  DBDNAME     REFERENCES THE FOLLOWING DDNAMES
  --------    ------------------------------------------------------------------------------------------------------------------
  ACSPA       ACSPA
  BUDPA       BUDPA
  CCPDI010    CCPDI610
  CCPDP000    CCPDP500
  CCP1I020    CCP1I620
  CCP9P000    CCP9P500
  CCRPA       CCRPA
  CDGFGS01    CDGFGS01    CDGFGS01
  CDIMAP00    CDIMAP00
  CDPACT00    CDPACT00    CDPACT01    CDPACT02    CDPACT03
  CDPAUD00    CDPAUD00
  CDPCOL00    CDPCOL00
  CDPDCS00    CDPDCS00
  CDPHST00    CDPHST00
  CDPMAP00    CDPMAP00    CDPMAP01
  CDPTRN00    CDPTRN00
  CDSMNM00    CDSMNM00
  DBP1241     EP1241
  DEDBDD01    DD01AR0
  DEDB0001    XPCW1D01
  DEDB0003    XPHS1D01
  DSCLSDVN    DSCLSDV0
  DSCRSDVN    DSCRSDV0    DSCRSDV1
  DSFACHON    DSFACHO0
  DSFACXVN    DSFACXV0
  DSFDAXVN    DSFDAXV0    DSFDAXV1
  DSNAMXVN    DSNAMXV0    DSNAMXV1
  NHINDX01    DSNAMXV0    DSNAMXV1
  DSSCHHVN    DSSCHHV0
  DSSCHXIN    DSSCHXI0    DSSCHXI1
  DSSTUIVN    DSSTUIV0    DSSTUIV1
  EKTPA       EKTPA
  GSAM03      GSAM03IO    GSAM03IO
  HDAM2DSG    XPPR151E    XPPR152E
  IVYPA       IVYPA
  MNOPA       MNOPA
  VALI1       VALI1
  VALPA       VALPA
```

Figure 114. DBD XREF by DDname - reference report

Sample report: Referenced report

This report lists the ddnames and the DBDs that refer to each ddname.

The following figure shows an example of the DBD XREF by DDname - referenced report.

```
IMS LIBRARY INTEGRITY UTILITIES - DBD/PSB/ACB REVERSAL          "DBD XREF BY DDNAME REPORT"                          PAGE:     1
5655-U08                                                 DATE: 10/01/2018  TIME: 13.35.1                       FABNDDN0 - V2.R2

VOLUME=IMSVS   DSNAME=IMSVS.DBDLIB

  * REFERENCED REPORT *

  DDNAME      REFERENCED BY THE FOLLOWING DBDS
  --------    ------------------------------------------------------------------------------------------------------------------------
  ACSPA       ACSPA
  BUDPA       BUDPA
  CCPDI610    CCPDI010
  CCPDP500    CCPDP000
  CCP1I620    CCP1I020
  CCP9P500    CCP9P000
  CCRPA       CCRPA
  CDGFGS01    CDGFGS01    CDGFGS01
  CDIMAP00    CDIMAP00
  CDPACT00    CDPACT00
  CDPACT01    CDPACT00
  CDPACT02    CDPACT00
  CDPACT03    CDPACT00
  CDPAUD00    CDPAUD00
  CDPCOL00    CDPCOL00
  CDPDCS00    CDPDCS00
  CDPHST00    CDPHST00
  CDPMAP00    CDPMAP00
  CDPMAP01    CDPMAP00
  CDPTRN00    CDPTRN00
  CDSMNM00    CDSMNM00
  DD01AR0     DEDBDD01
  DSCLSDV0    DSCLSDVN
  DSCRSDV0    DSCRSDVN
  DSCRSDV1    DSCRSDVN
  DSFACHO0    DSFACHON
  DSFACXV0    DSFACXVN
  DSFDAXV0    DSFDAXVN
  DSFDAXV1    DSFDAXVN
  DSNAMXV0    DSNAMXVN    NHINDX01
  DSNAMXV1    DSNAMXVN    NHINDX01
  DSSCHHV0    DSSCHHVN
  DSSCHXI0    DSSCHXIN
  DSSCHXI1    DSSCHXIN
  DSSTUIV0    DSSTUIVN
  DSSTUIV1    DSSTUIVN
  EKTPA       EKTPA
  EP1241      DBP1241
  GSAM03IO    GSAM03      GSAM03
  IVYPA       IVYPA
  MNOPA       MNOPA
  VALI1       VALI1
  VALPA       VALPA
  XPCW1D01    DEDB0001
  XPHS1D01    DEDB0003
  XPPR151E    HDAM2DSG
  XPPR152E    HDAM2DSG
```

Figure 115. DBD XREF by DDname - referenced report

PCB PROCOPT reports for PSB and ACB(PSB)

If a PROCOPT PSB control statement is specified, a PCB PROCOPT report, which contains information about the PCB processing options (PROCOPT) in the PSB, is generated. If a PROCOPT ACB control statement is specified, a PCB/ACB(PSB) PROCOPT report, which contains information about the PCB processing options (PROCOPT) in the PSB-type ACB, is generated.

Sample report

The following figure shows an example of the PCB PROCOPT report.

```
IMS LIBRARY INTEGRITY UTILITIES - DBD/PSB/ACB REVERSAL            "PCB PROCOPT REPORT"                              PAGE:     1
5655-U08                                                 DATE: 10/01/2018  TIME: 13.35.1                    FABNPPCB - V2.R2

VOLUME=IMSVS   DSNAME=IMSVS.PSBLIB

            PCB        REF DBD                                                  PCB        REF DBD
 PSBNAME     NO  TYPE  / LTERM   PROCOPT  PROCSEQ(D)          PSBNAME     NO  TYPE  / LTERM   PROCOPT  PROCSEQ(D)
 --------  ----  ----  --------  -------  --------          --------  ----  ----  --------  -------  --------
 ALBBPG0      1  TP              N/A                        DBAMAP02    13  DB    CDPMJR10  A
              2  DB    CDPBMS00  GD                                    14  DB    CDPMAP00  GP
 ALRFSEL0     1  TP              N/A                                   15  DB    CDPMRQ00  AP
              2  DB    CDPRFP00  GOT                                   16  DB    CDSMTV00  G
 CBSLOAD0     1  TP              N/A                                   17  DB    CDPMTB00  GR
              2  DB    CDPDCS00  I                                     18  DB    CDPMAP00  GRP
              3  GSAM  CDGLOAD0  GS                                    19  DB    CDSMKR00  A
              4  GSAM  CDGLOAD1  LS                                    20  DB    CDPMCS00  A
 DBACHQ01     1  TP              N/A                                   21  DB    CDSMCS00  A
              2  DB    CDPCHQ00  AP                                    22  DB    CDSMCS10  A
              3  DB    CDPCHQ10  AP                                    23  DB    CDSMCS20  A
              4  DB    CDSCHQ00  G                                     24  DB    CDSMCS30  A
              5  DB    CDSCHQ10  G                                     25  DB    CDPMCS00  GR
              6  DB    CDSTRU00  G                                     26  DB    CDPMCS00  GR
              7  DB    CDSTRU10  G                                     27  DB    CDPMCS00  GR
              8  DB    CDSCSE00  G                                     28  DB    CDPMCS00  GR
              9  DB    CDSCSE10  G                           DBFSAMP2     1  DB    DBFSAMD3  A
             10  DB    CDSDOC00  G                           DBTMP301     1  TP    LTERMNAM  N/A
             11  DB    CDSDOC10  G                                        2  DB    DEDBDD01  GIRD
             12  DB    CDSMCH00  G                                        3  DB    DEDBDD02  A
             13  DB    CDSMCH10  G                           DBTMP302     1  TP              N/A
             14  DB    CDSCRS00  G                                        2  DB    DEDBDD01  AEP
             15  DB    CDSCRS10  G                           DBTMP303     1  DB    DBTDD303  A
 DBACHQ02     1  TP              N/A                         GSEDCTL0     1  TP              N/A
              2  DB    CDPCHQ00  GR                                       2  DB    CDPCCT00  G
              3  DB    CDPCHQ10  GR                                       3  GSAM  CDGFGS01  GS
              4  DB    CDPCHQ00  GR                                       4  GSAM  CDGFLS01  LS
              5  DB    CDPCHQ10  GR                                       5  GSAM  CDGFLS02  LS
              6  DB    CDPCHQ00  GR                          KARENPSB     1  DB    EKTPA     G
              7  DB    CDPCHQ10  GR                                       2  DB    GTLPA     G
              8  DB    CDPCHQ00  GR                                       3  DB    ACSPA     G
              9  DB    CDPCHQ10  GR                                       4  DB    ERRPA     G
             10  DB    CDPCHQ00  GR                                       5  DB    BUDPA     G
             11  DB    CDPCHQ10  GR                                       6  DB    IVMPA     G
             12  DB    CDPCHQ00  GR                                       7  DB    AUNPA     G
             13  DB    CDPCHQ10  GR                                       8  DB    CCRPA     G
 DBAMAP02     1  TP              N/A                                   9  DB    EMGPA     G
              2  DB    CDPMAP00  AP                                   10  DB    IVYPA     G
              3  DB    CDSMNM00  G                                    11  DB    LANPA     G
              4  DB    CDSPAR00  G                                    12  DB    MNOPA     G
              5  DB    CDSFIP00  G                                    13  DB    VALPA     G
              6  DB    CDPMAP00  GRP                         MPRTCUS0     1  TP              N/A
              7  DB    CDPMAP00  GRP                                      2  DB    CDPMCS00  GOT
              8  DB    CDPMAP00  GRP                                      3  DB    CDPMCS00  GOT
              9  DB    CDPMTB00  AP                                       4  DB    CDPMCS00  GOT
             10  DB    CDSMTB00  G                                        5  DB    CDPMCS00  GOT
             11  DB    CDPMTB00  GRP                                      6  DB    CDPMCS00  GOT
             12  DB    CDPMHP00  A                                        7  DB    CDPMAP00  GOTP
```

Figure 116. PCB PROCOPT report

Report field descriptions

The meaning of each column is as follows:

PCB NO
This field shows the sequential number assigned to the PCB in the PSB.

TYPE This field shows the PCB type.

REF DBD/LTERM
If the TYPE is DB PCB or GSAM PCB, this field shows the DBD name specified in the PCB. If the TYPE is TP PCB, this field shows the logical terminal names specified in the PCB.

PROCOPT
This field shows the Processing Options (PROCOPT) defined in each PCB.

PROCSEQ(D)
This field shows the secondary index DBD name that was specified in the PCB PROCSEQ= or PROCSEQD= statement of the PSBGEN utility.

XREF reports for DBD to DBD and ACB(DBD) to ACB(DBD)

The XREF reports for DBD to DBD or DBD-type ACB to DBD-type ACB contain cross-reference information between DBDs or DBD-type ACBs.

If an XREF DBD statement is specified, the following two XREF reports are generated:

- DBD to DBD XREF - reference report
- DBD to DBD XREF - referenced report

If an XREF ACB statement is specified, the following two XREF reports are generated:

- ACB(DBD) to ACB(DBD) XREF - reference report
- ACB(DBD) to ACB(DBD) XREF - referenced report

Sample report: Reference report

This report lists the DBDs and the other DBDs that each DBD refers to.

The following figure shows an example of the DBD to DBD XREF - reference report.

```
IMS LIBRARY INTEGRITY UTILITIES - DBD/PSB/ACB REVERSAL           "DBD TO DBD XREF REPORT"                          PAGE:     1
5655-U08                                                 DATE: 10/01/2018  TIME: 13.35.1                    FABNXREF - V2.R2

VOLUME=IMSVS   DSNAME=IMSVS.DBDLIB

  * REFERENCE  REPORT *

  DBDNAME     REFERENCES THE FOLLOWING DBDS
  --------    ------------------------------------------------------------------------------------------------------------------
  BUDPA       IVMPA
  CCPDI010    CCPDP000
  CCPDL010    CCPDP000
  CCPDP000    CCPDI010    CCPDI020
  CCP1I020    CCP1P000
  CCP1L010    CCP1P000    CCP9P000
  CCP9P000    CCP9I010    CCP1P000
  CCRPA       IVYPA
  CDIMAP00    CDPMAP00
  CDLACT00    CDPACT00    CDPCHQ00    CDPCHQ10
  CDLMAP00    CDPMAP00
  CDPACT00    CDIACT00    CDSRSP00    CDPCHQ00    CDPCHQ10    CDSSDT00    CDSMOV00
  CDPCOL00    CDSRAC00
  CDPDCS00    CDSOUT00    CDSPLT00    CDSLOS00
  CDPHST00    CDIHST00    CDSHST00    CDSHRP00
  CDPMAP00    CDIMAP00    CDSDLS00    CDSMNM00    CDSPAR00    CDSFIP00    CDSPST00    CDSMKR00    CDSSTA00    CDSADJ00
  CDPTRN00    CDSTRA00    CDSTRT00
  CDSMNM00    CDPMAP00
  DSCLSDVN    DSCRSDVN
  DSCRSDVN    DSSCHHVN    DSFACHON    DSSTUIVN    DSCLSDVN
  DSCRSLBN    DSCRSDVN    DSSCHHVN    DSFACHON    DSSTUIVN    DSCLSDVN
  DSFACHON    DSFACXVN    DSSCHHVN    DSCRSDVN    DSNMEXVN    DSFDAXVN
  DSFACLBN    DSFACHON    DSSCHHVN    DSCRSDVN    DSSTUIVN
  DSFACXVN    DSFACHON
  DSFDAXVN    DSFACHON
  DSNAMXVN    DSSTUIVN    DSFACHON
  DSNMEXVN    DSSTUIVN    DSFACHON
  DSSCHHVN    DSSCHXIN    DSFACHON    DSSTUIVN    DSCRSDVN
  DSSCHLBN    DSSCHHVN    DSFACHON    DSCRSDVN    DSSTUIVN
  DSSCHXIN    DSSCHHVN
  DSSTUIVN    DSSCHHVN    DSCRSDVN    DSNAMXVN
  DSSTULBN    DSSTUIVN    DSSCHHVN    DSCRSDVN    DSFACHON
  IVYPA       IVMPA       MNOPA       CCRPA       AUNPA
  LGCL0001    HDAM0003    HDAM0002
  MNOPA       IVYPA       MNOI1       EMGPA       MNOI2       MNOI3
  VALI1       VALPA
  VALPA       AUNPA       LANPA       VALI1
```

Figure 117. DBD to DBD XREF - reference report

Sample report: Referenced report

This report list the DBDs and the other DBDs that refer to each DBD.

The following figure shows an example of the DBD to DBD XREF - referenced report.

```
IMS LIBRARY INTEGRITY UTILITIES - DBD/PSB/ACB REVERSAL          "DBD TO DBD XREF REPORT"                          PAGE:     2
5655-U08                                                DATE: 10/01/2018  TIME: 13.35.1                    FABNXREF - V2.R2

VOLUME=IMSVS   DSNAME=IMSVS.DBDLIB

  * REFERENCED REPORT *

  DBDNAME     REFERENCED BY THE FOLLOWING DBDS
  --------    ------------------------------------------------------------------------------------------------------------------------
  CCPDI010    CCPDP000
  CCPDP000    CCPDI010    CCPDL010
  CCP9P000    CCP1L010
  CCRPA       IVYPA
  CDIMAP00    CDPMAP00
  CDPACT00    CDLACT00
  CDPMAP00    CDIMAP00    CDLMAP00    CDSMNM00
  CDSMNM00    CDPMAP00
  DSCLSDVN    DSCRSDVN    DSCRSLBN
  DSCRSDVN    DSCLSDVN    DSCRSLBN    DSFACHON    DSFACLBN    DSSCHHVN    DSSCHLBN    DSSTUIVN    DSSTULBN
  DSFACHON    DSCRSDVN    DSCRSLBN    DSFACLBN    DSFACXVN    DSFDAXVN    DSNAMXVN    DSNMEXVN    DSSCHHVN    DSSCHLBN    DSSTULBN
  DSFACXVN    DSFACHON
  DSFDAXVN    DSFACHON
  DSNAMXVN    DSSTUIVN
  DSNMEXVN    DSFACHON
  DSSCHHVN    DSCRSDVN    DSCRSLBN    DSFACHON    DSFACLBN    DSSCHLBN    DSSCHXIN    DSSTUIVN    DSSTULBN
  DSSCHXIN    DSSCHHVN
  DSSTUIVN    DSCRSDVN    DSCRSLBN    DSFACLBN    DSNAMXVN    DSNMEXVN    DSSCHHVN    DSSCHLBN    DSSTULBN
  IVYPA       CCRPA       MNOPA
  MNOPA       IVYPA
  VALI1       VALPA
  VALPA       VALI1
```

Figure 118. DBD to DBD XREF - referenced report

XREF reports for PSB to DBD and ACB(PSB) to ACB(DBD)

The XREF reports for PSB to DBD and PSB-type ACB to DBD-type ACB contain cross-reference information between DBDs and PSBs or PSB-type ACBs and DBD-type ACBs.

If an XREF PSB statement is specified, the following two XREF reports are generated:

- PSB to DBD XREF - reference report
- PSB to DBD XREF - referenced report

If an XREF ACB statement is specified, the following two XREF reports are generated:

- ACB(PSB) to ACB(DBD) XREF - reference report
- ACB(PSB) to ACB(DBD) XREF - referenced report

Tip: If you specify ACB_REFERENCED=NO and the utility finds a DBD-type ACB that is not referenced by any PSB-type ACBs, NONE is printed for the DBD-type ACB in the REFERENCED BY THE FOLLOWING PSBS column.

Sample report: Reference report

This report lists the PSBs and the DBDs that each PSB refers to.

The following figure shows an example of the PSB to DBD XREF - reference report.

```
IMS LIBRARY INTEGRITY UTILITIES - DBD/PSB/ACB REVERSAL          "PSB TO DBD XREF REPORT"                          PAGE:     1
5655-U08                                              DATE: 10/01/2018  TIME: 13.35.1                      FABNXREF - V2.R2

VOLUME=IMSVS   DSNAME=IMSVS.PSBLIB

  * REFERENCE  REPORT *

  PSBNAME     REFERENCES THE FOLLOWING DBDS
  --------    ------------------------------------------------------------------------------------------------------------------
  ALBBPG0     CDPBMS00
  ALRFSEL0    CDPRFP00
  CBSLOAD0    CDPDCS00    CDGLOAD0    CDGLOAD1
  DBACHQ01    CDPCHQ00    CDPCHQ10    CDSCHQ00    CDSCHQ10    CDSTRU00    CDSTRU10    CDSCSE00    CDSCSE10    CDSDOC00    CDSDOC10
              CDSMCH00    CDSMCH10    CDSCRS00    CDSCRS10
  DBACHQ02    CDPCHQ00    CDPCHQ10
  DBAMAP02    CDPMAP00    CDSMNM00    CDSPAR00    CDSFIP00    CDPMTB00    CDSMTB00    CDPMHP00    CDPMJR10    CDPMRQ00    CDSMTV00
              CDSMKR00    CDPMCS00    CDSMCS00    CDSMCS10    CDSMCS20    CDSMCS30
  DBFSAMP2    DBFSAMD3
  DBTMP301    DEDBDD01    DEDBDD02
  DBTMP302    DEDBDD01
  DBTMP303    DBTDD303
  GSEDCTL0    CDPCCT00    CDGFGS01    CDGFLS01    CDGFLS02
  KARENPSB    EKTPA       GTLPA       ACSPA       ERRPA       BUDPA       IVMPA       AUNPA       CCRPA       EMGPA       IVYPA
              LANPA       MNOPA       VALPA
  MPRTCUS0    CDPMCS00    CDPMAP00    CDPMRQ00
  NF2HA       CCPDL010    CCP1L010
  NHGSAM01    GSAM01      GSAM02
  NHGSAM02    GSAM01      GSAM02      GSAM03      GSAM04
  NHGSAM03    DBP1241     DBP1242     DBP1243     GSAM01      GSAM02      GSAM03
  PSBCLSIL    DSCLSDVN
  PSBCRSIL    DSCRSDVN
  PSBP0010    CDPBNK00    CDGBP101
  PSBSMUAL    DSSCHHVN    DSFACHON    DSSTUIVN    DSCRSDVN    DSCLSDVN    DSNAMXVN    DSNMEXVN    DSFDAXVN    DSSCHLBN    DSFACLBN
              DSSTULBN    DSCRSLBN
  PSBSMURE    DSSCHHVN    DSFACHON    DSSTUIVN    DSCRSDVN    DSCLSDVN
  PSBSMUUL    DSSCHHVN    DSFACHON    DSSTUIVN    DSCRSDVN    DSCLSDVN
  PSBSTUIL    DSSTUIVN
  PSB01       DBP1241     GSAM02      GSAM03
  PSB02       DBP1241     GSAM02      GSAM03
  X080015T    HDAM0001    DEDB0001    DEDB0002    LGCL0001    HDAM0004    HDAM2DSG    DEDB0003    DEDB0004    DEDB14AR
  ZDALK685    CDSCHQ00    CDSTRU00    CDSCHQ10    CDSTRU10    CDPACT00    CDPCHQ00    CDPCHQ10
```

Figure 119. PSB to DBD XREF - reference report

Sample report: Referenced report

This report lists the DBDs and the PSBs that refer to each DBD.

The following figure shows an example of the PSB to DBD XREF - referenced report.

```
IMS LIBRARY INTEGRITY UTILITIES - DBD/PSB/ACB REVERSAL           "PSB TO DBD XREF REPORT"                          PAGE:     2
5655-U08                                                 DATE: 10/01/2018  TIME: 13.35.1                    FABNXREF - V2.R2

VOLUME=IMSVS   DSNAME=IMSVS.PSBLIB

  * REFERENCED REPORT *

  DBDNAME     REFERENCED BY THE FOLLOWING PSBS
  --------    ------------------------------------------------------------------------------------------------------------------------
  ACSPA       KARENPSB
  AUNPA       KARENPSB
  BUDPA       KARENPSB
  CCPDL010    NF2HA
  CCP1L010    NF2HA
  CCRPA       KARENPSB
  CDGBP101    PSBP0010
  CDGFGS01    GSEDCTL0
  CDGFLS01    GSEDCTL0
  CDGFLS02    GSEDCTL0
  CDGLOAD0    CBSLOAD0
  CDGLOAD1    CBSLOAD0
  CDPACT00    ZDALK685
  CDPBMS00    ALBBPG0
  CDPBNK00    PSBP0010
  CDPCCT00    GSEDCTL0
  CDPCHQ00    DBACHQ01    DBACHQ02    ZDALK685
  CDPCHQ10    DBACHQ01    DBACHQ02    ZDALK685
  CDPDCS00    CBSLOAD0
  CDPMAP00    DBAMAP02    MPRTCUS0
  CDPMCS00    DBAMAP02    MPRTCUS0
  CDPMHP00    DBAMAP02
  CDPMJR10    DBAMAP02
  CDPMRQ00    DBAMAP02    MPRTCUS0
  CDPMTB00    DBAMAP02
  CDPRFP00    ALRFSEL0
  CDSCHQ00    DBACHQ01    ZDALK685
  CDSCHQ10    DBACHQ01    ZDALK685
  CDSCRS00    DBACHQ01
  CDSCRS10    DBACHQ01
  CDSCSE00    DBACHQ01
  CDSCSE10    DBACHQ01
  CDSDOC00    DBACHQ01
  CDSDOC10    DBACHQ01
  CDSFIP00    DBAMAP02
  CDSMCH00    DBACHQ01
  CDSMCH10    DBACHQ01
  CDSMCS00    DBAMAP02
  CDSMCS10    DBAMAP02
  CDSMCS20    DBAMAP02
  CDSMCS30    DBAMAP02
  CDSMKR00    DBAMAP02
  CDSMNM00    DBAMAP02
  CDSMTB00    DBAMAP02
  CDSMTV00    DBAMAP02
  CDSPAR00    DBAMAP02
  CDSTRU00    DBACHQ01    ZDALK685
```

Figure 120. PSB to DBD XREF - referenced report

Segment reference report for DBD

If a SEGREF DBD statement is specified, this report that summarizes the relationship between DBDs and the segment specified by the SEGMENT option is generated.

Subsections:

- "Sample report" on page 324
- "Report field descriptions" on page 324

Sample report

The following figure shows an example of the DBD Segment Reference report.

```
IMS LIBRARY INTEGRITY UTILITIES - DBD/PSB/ACB REVERSAL         "DBD SEGMENT REFERENCE REPORT"                        PAGE:     1
5655-U08                                                 DATE: 10/01/2018  TIME: 11.35.07                      FABNSREF - V2.R2

VOLUME=IMSVS   DSNAME=IMSVS.DBDLIB

  SEGMENT NAME : *

  ORIGINAL:           REFERENCE:
  SEGMENT   DBD       SEGMENT   DBD       ACCESS    STATEMENT       AS
  --------  --------  --------  --------  --------  --------------  --------------------
  PHIDAMD1  PHIDAM01  *         *         PHIDAM    SEGM NAME=      ORIGINAL

  PHIDAMD2  PHIDAM01  *         *         PHIDAM    SEGM NAME=      ORIGINAL
                      PHIDAMD3  *         *         SEGM PARENT=    PHYSICAL PARENT

  PHIDAMD3  PHIDAM01  *         *         PHIDAM    SEGM NAME=      ORIGINAL
                      PHIDAMD4  *         *         SEGM PARENT=    PHYSICAL PARENT

  PHIDAMD4  PHIDAM01  *         *         PHIDAM    SEGM NAME=      ORIGINAL

  PHIDAMRT  PHIDAM01  *         *         PHIDAM    SEGM NAME=      ORIGINAL
                      PHIDAMD1  *         *         SEGM PARENT=    PHYSICAL PARENT
                      PHIDAMD2  *         *         SEGM PARENT=    PHYSICAL PARENT

  SECDEP01  SECOND01  *         *         PHDAM     SEGM NAME=      ORIGINAL
                      SECDEP02  *         *         SEGM PARENT=    PHYSICAL PARENT
                      SECINDX   SECINDEX  PSINDEX   LCHILD NAME=    INDEX TARGET

  SECDEP02  SECOND01  *         *         PHDAM     SEGM NAME=      ORIGINAL
                      SECDEP01  *         *         XDFLD SEGMENT=  INDEX SOURCE

  SECDEP03  SECOND01  *         *         PHDAM     SEGM NAME=      ORIGINAL

  SECINDX   SECINDEX  *         *         PSINDEX   SEGM NAME=      ORIGINAL
                      SECDEP01  SECOND01  PHDAM     LCHILD NAME=    INDEX POINTER

  SECROOT   SECOND01  *         *         PHDAM     SEGM NAME=      ORIGINAL
                      SECDEP01  *         *         SEGM PARENT=    PHYSICAL PARENT
                      SECDEP03  *         *         SEGM PARENT=    PHYSICAL PARENT
```

Figure 121. DBD Segment Reference report

Report field descriptions

The meaning of each column is as follows:

ORIGINAL SEGMENT
This field shows the segment name that is specified by the SEGMENT option.

ORIGINAL DBD
This field shows the DBD name in which each ORIGINAL SEGMENT is defined by the SEGM NAME= statement of the DBDGEN utility.

REFERENCE SEGMENT
This field shows the segment name which is defined by the SEGM NAME= statement of the DBDGEN utility. It refers to each ORIGINAL SEGMENT in the succeeding DBDGEN control statement such as SEGM PARENT= or LCHILD NAME=.

Note: The asterisk (*) means that the name is the same name as the ORIGINAL SEGMENT.

REFERENCE DBD
This field shows the DBD name in which the REFERENCE SEGMENT is defined.

Note: The asterisk (*) means that the name is the same name as the ORIGINAL DBD.

ACCESS
This field shows the DL/I access method for ORIGINAL DBD or REFERENCE DBD.

STATEMENT
This field shows the DBDGEN utility control statement by which ORIGINAL SEGMENT is referred to.

Segment reference report for PSB

If a SEGREF PSB statement is specified, the PSB Segment Reference report is generated. This report summarizes the relationship between PSBs and the segment specified by the SEGMENT option.

Subsections:

- "Sample report"
- "Report field descriptions"

Sample report

The following figure shows an example of the PSB Segment Reference report.

```
IMS LIBRARY INTEGRITY UTILITIES - DBD/PSB/ACB REVERSAL         "PSB SEGMENT REFERENCE REPORT"                          PAGE:     1
5655-U08                                                    DATE: 10/01/2018  TIME: 10.00.34                       FABNSREF - V2.R2
VOLUME=IMSVS   DSNAME=IMSVS.PSBLIB
  SEGMENT NAME : *
                      PCB                                                  PCB
  SEGMENT   PSBNAME    NO  REF DBD   PROCOPT      SEGMENT   PSBNAME    NO  REF DBD   PROCOPT
  --------  --------  ---  --------  -------      --------  --------  ---  --------  -------
  HYS000A   HDAM02L     1  HDAM@02   L
  SGIDE0A   HDAM01L     1  HDAM@01   L
            IDX@01G     1  HDAM@01   G
  XHYS000A  HDAM01L     1  HDAM@01   L
            IDX@01G     1  HDAM@01   G
  XSGIDE0A  HDAM02L     1  HDAM@02   L
```

Figure 122. PSB Segment Reference report

Report field descriptions

The meaning of each column is as follows:

SEGMENT
This field shows the segment name specified by the SEGMENT option.

The following four columns are information about the DB PCB in which each SEGMENT is defined by the SENSEG NAME= statement of the PSBGEN utility.

PSBNAME
This field shows the PSB name which includes the DB PCB.

PCB NO
This field shows the sequential number assigned to the PCB in the PSB.

REF DBD
This field shows the DBD name that the DB PCB refers to by PCB DBDNAME= statement of the PSBGEN utility.

PROCOPT
This field shows the PCB PROCOPT that defined in the DB PCB.

PSB PROCOPT reference reports for PSB and ACB(PSB)

If a POPTREF control statement is specified, a PSB PROCOPT Reference report or an ACB(PSB) PROCOPT Reference report is generated. These reports contain information about the PSBs or PSB-type ACBs that match the criteria that is defined by the POPTREF control statement.

Subsections:

- "Sample report"
- "Report field descriptions"

Sample report

The following figure shows an example of the PSB PROCOPT Reference report.

```
IMS LIBRARY INTEGRITY UTILITIES - DBD/PSB/ACB REVERSAL         "PSB PROCOPT REFERENCE REPORT"                          PAGE:     1
5655-U08                                                    DATE: 06/30/2018  TIME: 19.34.25                       FABNPSEG - V2.R2
VOLUME=IMSVS   DSNAME=IMSVS.PSBLIB
DBD NAME=DI21PART  PROCOPT=G
           PCB                       PCB      SENSEG                 PCB                       PCB      SENSEG
PSBNAME     NO  REF DBD   SEGMENT   PROCOPT  PROCOPT      PSBNAME     NO  REF DBD   SEGMENT   PROCOPT  PROCOPT
--------  ----  --------  --------  ----     ----         --------  ----  --------  --------  ----     ----
DFHSAM05     1  DI21PART            G
                         PARTROOT            G
                         STANINFO            G
                         STOKSTAT            G
                         CYCCOUNT            G
                         BACKORDR            G
DFSSAM02     1  DI21PART            G
                         PARTROOT            G
                         STANINFO            G
DFSSAM03     1  DI21PART            G
                         PARTROOT            G
                         STANINFO            G
                         STOKSTAT            G
                         CYCCOUNT            G
                         BACKORDR            G
DFSSAM07     1  DI21PART            G
                         PARTROOT            G
                         STANINFO            G
                         STOKSTAT            G
                         CYCCOUNT            G
                         BACKORDR            G
DFSSAM08     1  DI21PART            G
                         PARTROOT            G
                         STANINFO            G
                         STOKSTAT            G
                         CYCCOUNT            G
                         BACKORDR            G
```

Figure 123. PSB PROCOPT Reference report

Report field descriptions

The meaning of each column is as follows:

PSBNAME
The name of the PSB that met the criteria that are defined by the POPTREF control statement.

PCB NO
The sequential number that is assigned to the PCB in the PSB.

REF DBD
The name of the DBD that is referenced by the PCB. This name is defined by the DBDNAME or the NAME parameter in the PCB statement of the PSBGEN utility.

The following columns show details about the PCB. Each row shows information from the PCB statement, the SENSEG statement, or both.

SEGMENT
The segment name in the DBD, which is referenced from the SENSEG statements of the PCB. This field is blank if the row is for a PCB statement.

PCB PROCOPT
The processing options (PROCOPT) that are defined in the PCB statement.

The PROCOPT values in the PCB statement are shown in the first row for each DBD regardless of whether the row is for a PCB statement or a SENSEG statement.

SENSEG PROCOPT
The processing options (PROCOPT) that are defined in the SENSEG statement.

This field is blank if the row is for a PCB statement.

Unreferenced ACB(DBD) report

If you specify the UNREF ACB control statement, the utility generates the Unreferenced ACB(DBD) report. This report contains information about DBD-type ACBs that are not referenced by any PSB-type ACBs in the ACBLIB.

Sample report

The following figure shows an example of the Unreferenced ACB(DBD) report. If all DBD-type ACBs are referenced by one or more PSB-type ACBs, NONE is printed.

```
IMS LIBRARY INTEGRITY UTILITIES - DBD/PSB/ACB REVERSAL                "UNREFERENCED ACB(DBD) REPORT"                PAGE:     1
5655-U08                                              DATE: 09/20/2018  TIME: 13.35.10                       FABNDCOD - V2.R2
VOLUME=IMSVS   DSNAME=IMSVS.ACBLIB
  DBDNAME
  ---------------------------------------------------------------------------------------------------------------------------
  CDGFGS01  CDIMAP00  CDPACT00  CDPAUD00  CDPDCS00  CDPHST00  CDPMAP00  CDPTRN00  CDSMNM00  DBP1241   DEDBDD01  DEDB0001  DEDB0003
  DSCLSDVN  DSCRSDVN  DSFACHON  DSFACXVN
```

Figure 124. Unreferenced ACB(DBD) report

Library member list report for DBD or PSB

The library member list report for DBD or PSB contains information about the members in the data sets that are concatenated to DBDLIB DD or PSBLIB DD. The information includes the IMS version that generated the DBD or PSB, generated date and time, and the size of the member record.

If a LISTLIB DBD control statement is specified, the DBD library member list report is generated. If a LISTLIB PSB control statement is specified, the PSB library member list report is generated.

Subsections:

- "Sample report: DBD library member list report" on page 328
- "Sample report: PSB library member list report" on page 328
- "Report field descriptions" on page 328

Sample report: DBD library member list report

The following figure shows an example of the DBD library member list report. This report provides information about the members in the data sets that are concatenated to DBDLIB DD. The DBDs are ordered alphabetically by DBD name.

```
IMS LIBRARY INTEGRITY UTILITIES - DBD/PSB/ACB REVERSAL            "DBD LIBRARY MEMBER LIST REPORT"                  PAGE:     1
5655-U08                                                 DATE: 01/20/2018  TIME: 20.34.05                       FABNDCOD - V2.R2
DS#=001  VOLUME=IMSVS01  DSNAME=IMSVS.DBDLIB1
DS#=002  VOLUME=IMSVS01  DSNAME=IMSVS.DBDLIB2
                  IMS     SIZE                                                          DBDGEN
MBRNAME    DS#   LVL   (BYTES)  COMMENTS                                              DATE     TIME
--------   ---  ----   -------  ------------------------------------------------  ----------  -----
CDFSFS01   001  14.1       384                                                    04/02/2018  15.58
CDIMAP00   001  14.1     2,112                                                    04/02/2018  15.58
CDPACT00   001  14.1       416                                                    04/02/2018  15.58
CDPAUD00   001  14.1     1,712                                                    04/02/2018  15.58
DSSCHHVN   002  15.1     2,096                                                    09/08/2018  15.34
HDAM1DSG   002  15.1     1,880                                                    09/08/2018  15.34
HDAM2DS    002  15.1       400                                                    09/08/2018  15.34
HDAM2DSA   002  15.1       400  ALIAS                                             09/08/2018  15.34
```

Figure 125. DBD library member list report

Sample report: PSB library member list report

The following figure shows an example of the PSB library member list report. This report provides information about the members in the data sets that are concatenated to PSBLIB DD. The PSBs are ordered alphabetically by PSB name.

```
IMS LIBRARY INTEGRITY UTILITIES - DBD/PSB/ACB REVERSAL            "PSB LIBRARY MEMBER LIST REPORT"                  PAGE:     1
5655-U08                                                 DATE: 01/20/2018  TIME: 20.40.11                       FABNDCOD - V2.R2
DS#=001  VOLUME=IMSVS01  DSNAME=IMSVS.PSBLIB1
DS#=002  VOLUME=IMSVS01  DSNAME=IMSVS.PSBLIB2
                  IMS     SIZE                                                          PSBGEN
MBRNAME    DS#   LVL   (BYTES)  COMMENTS                                              DATE     TIME
--------   ---  ----   -------  ------------------------------------------------  ----------  -----
PSBP000    002  15.1       328                                                    04/02/2018  15.36
PSBP010    002  15.1     1,328                                                    04/02/2018  15.36
PSBSMUUL   001  14.1       672                                                    09/08/2018  15.58
PSBSTUIL   001  14.1       272                                                    09/08/2018  15.58
PSBW01     002  14.1       152  NO DBDS REFERENCED                                09/08/2018  15.58
PSBW01A    002  14.1       152  ALIAS, NO DBDS REFERENCED                         09/08/2018  15.58
```

Figure 126. PSB library member list report

Report field descriptions

The meaning of each column is as follows:

DS# Each number indicates a DBD or PSB library that is specified in the DBDLIB DD or PSBLIB DD statement. The numbers are assigned by the utility.

IMS LVL
The IMS version that generated the DBD or PSB.

SIZE (BYTES)
The size of the member record.

COMMENTS
The following comments might be shown:

- ALIAS
- NO DBDS REFERENCED

- IMS 2.2 OR EARLIER

MAPOUT data set

If the SYSIN data set contains one or more DECODE or SEGREF control statements, the resulting MAPOUT data set contains the input to the DBD/PSB/ACB Mapper program.

The following figure shows an example of the input that is written to the MAPOUT data set.

```
  DBD=HDAM01
  DBD=HIDAM01
*
  PSB=PSB01
  PSB=PSB02
```

Figure 127. Input to the DBD/PSB/ACB Mapper program (MAPOUT data set)

OPTPRT data set

The OPTPRT data set contains the Run-time Option report, which shows the options that were applied at run time.

This report is printed when both of the following conditions are met:

- The OPTPRT DD statement is specified in JCL
- One or more function control statements (except for SEGREF control statements) are specified in the SYSIN data set.

The following figure shows an example of the Run-time Option report.

```
IMS LIBRARY INTEGRITY UTILITIES - DBD/PSB/ACB REVERSAL                "RUN-TIME OPTION REPORT"                      PAGE:     1
5655-U08                                                  DATE: 10/01/2018  TIME: 16.30.08                       FABNDCOD - V2.R2
FUNCTION  MEMBER     TYPE   KEYWORD   OPTION
--------  --------   ----   -------   ------------------------------------------------------------------------------------------
DECODE    DBD0001A   DBD    DECOPT    COMPRESS=NO  COMMENT=NO
DECODE    DBD0002A   DBD    DECOPT    COMPRESS=NO  COMMENT=NO
DECODE    DBD0003A   DBD    DECOPT    COMPRESS=NO  COMMENT=NO
DECODE    PSB0001A   PSB    DECOPT    COMPRESS=NO  COMMENT=NO
DECODE    PSB0002A   PSB    DECOPT    COMPRESS=YES COMMENT=NO
DECODE    DBD0004A   DBD    DECOPT    COMPRESS=YES COMMENT=NO
DECODE    DBD0005A   DBD    DECOPT    COMPRESS=YES COMMENT=NO
DECODE    ACB0001A   ACB    DECOPT    COMPRESS=YES COMMENT=YES
DECODE    ACB0002A   ACB    DECOPT    COMPRESS=YES COMMENT=YES
DECODE    ACB0003A   ACB    DECOPT    COMPRESS=YES COMMENT=YES
```

Figure 128. Run-time Option report

DBD/PSB/ACB Reversal Site Default Generation utility

Use the Site Default Generation utility for the DBD/PSB/ACB Reversal utility (Reversal Site Default Generation utility) to set your own default values for the SYSIN control statements. This utility runs as a batch job.

The following topics describe how to use the Reversal Site Default Generation utility to generate and report SYSIN site default table.

Reversal Site Default Generation utility overview

The Reversal Site Default Generation utility has two functions; generating the SYSIN site default table, and reporting the contents of the SYSIN site default table.

Subsections:

- "Generating the SYSIN site default table"
- "Reporting the SYSIN site default table "

Generating the SYSIN site default table

The Reversal Site Default Generation utility analyzes the SYSIN control statements and generates a source code for the SYSIN site default table.

When the FABNRVRS program finds the name FABNCTL0 (the SYSIN site default table) in the STEPLIB libraries, the DBD/PSB/ACB Reversal utility loads the table and uses it as the default values of the SYSIN statement.

Note: The SYSIN site default table for the DBD/PSB/ACB Reversal utility is available only when the utility runs as a stand-alone utility. It is not available when the DBD/PSB/ACB Reversal utility is called from other components.

Reporting the SYSIN site default table

The Reversal Site Default Generation utility can read the SYSIN site default table and print the site default values in the reports.

Setting site default values for the DBD/PSB/ACB Reversal utility

To generate a site default table by using the Reversal Site Default Generation utility, you must code the Reversal Site Default Generation utility JCL, run the job, assemble and link-edit the source code, and concatenate the load module library to the DBD/PSB/ACB Reversal JCL.

Procedure

1. Run the Reversal Site Default Generation utility (FABNTGEN) job step to create source code of the SYSIN site default table (FABNCTL0).

   You can use sample JCL to run the utility. Locate member FABNDFL1 in the SHPSSAMP library and modify the sample JCL. The FABNDFL1 sample JCL creates a source code and then assembles and link-edits the source code. Therefore, if you use FABNDFL1, you can omit Step 2 on page 331.

   See the following topics for additional information:

   - For the format of the EXEC statement and the list of DD statements, see "JCL requirements for the Reversal Site Default Generation utility" on page 333.

- For a description of the control statements, see "Control statements for the Reversal Site Default Generation utility" on page 334.

2. Assemble and link-edit the FABNCTL0 source code.

   To create the SYSIN site default table module FABNCTL0, assemble and link the SYSPUNCH data set that is generated by FABNTGEN.

   For SYSIN of the assemble job step, specify the SYSPUNCH data set that is generated in the FABNTGEN processing. In the link-edit job step, consider using AMODE=31 and RMODE=ANY instead of the default values (which are AMODE=24 and RMODE=24) by adding AMODE=31 and RMODE=ANY to the EXEC statement PARM list.

3. Concatenate the load module library in which FABNCTL0 resides to the STEPLIB of the DBD/PSB/ACB Reversal FABNRVRS JCL.

   To use the site default table, the library for the SYSIN site default table module (FABNCTL0) must be concatenated to the STEPLIB DD of FABNRVRS runtime JCL.

   Tip: If you specify a value in the SYSIN control statement in the DBD/PSB/ACB Reversal FABNRVRS JCL, you can override the site default value at run time.

Example

The following figure shows a sample for creating the SYSIN site default table module FABNCTL0.

```
//*******************************************************************
//*  FABNTGEN - DBD/PSB/ACB REVERSAL SITE DEFAULT GENERATION UTILITY
//*  ( PARM='GEN' SAMPLE PROCEDURE )
//*******************************************************************
//RVRSTGEN PROC HLQ='HPS'
//*-------------------------------------------------------------------
//*  CREATE SOURCE CODE OF SITE DEFAULT TABLE
//*-------------------------------------------------------------------
//G        EXEC PGM=FABNTGEN,PARM='GEN'
//STEPLIB  DD   DISP=SHR,DSN=&HLQ..SHPSLMD0
//SYSPUNCH DD   DISP=(NEW,PASS,DELETE),DSN=&&SOURCE,
//              DCB=(RECFM=FB,BLKSIZE=800),SPACE=(TRK,(1,1)),UNIT=SYSDA
//SYSOUT   DD   SYSOUT=*
//SYSUDUMP DD   DUMMY
//*-------------------------------------------------------------------
//*  ASSEMBLE & LINK ==> SITE DEFAULT TABLE MODULE (FABNCTL0)
//*-------------------------------------------------------------------
//ASM      EXEC PGM=ASMA90,COND=(4,LT,G),
//              PARM='OBJECT,NODECK,LIST,XREF(SHORT)'
//SYSLIN   DD   DISP=(,PASS),UNIT=SYSDA,SPACE=(CYL,(5,5,0)),
//              DCB=(BLKSIZE=400),DSN=&&OBJECT
//SYSUT1   DD   DISP=(,DELETE),UNIT=SYSDA,SPACE=(CYL,(10,5))
//SYSPUNCH DD   DUMMY
//SYSPRINT DD   SYSOUT=*
//SYSIN    DD   DISP=(OLD,DELETE,DELETE),DSN=&&SOURCE
//*
//L        EXEC PGM=IEWL,COND=(4,LT,ASM),REGION=4096K,
//              PARM='LIST,REFR,REUS,AMODE=31,RMODE=ANY'
//SYSPRINT DD   SYSOUT=*
//SYSLIN   DD   DISP=(OLD,DELETE,DELETE),DSN=&OBJECT
//*
//         PEND
//*
//*-------------------------------------------------------------------*
//*  FABNTGEN (PARM='GEN') - DBD/PSB/ACB REVERSAL                     *
//*                          SITE DEFAULT GENERATION UTILITY          *
//*-------------------------------------------------------------------*
//GO       EXEC RVRSTGEN,HLQ=HPS
//*-----------------------------------*
//* SPECIFY SITE DEFAULT VALUES       *
//*-----------------------------------*
//G.SYSIN DD  *
  DECOPT COMPRESS=NO,COMMENT=NO
/*
//L.SYSLMOD DD  DISP=SHR,DSN=HPS.TABLELIB(FABNCTL0)
//*
//
//*-------------------------------------------------------------------*
//*  FABNTGEN (PARM='REPORT') - DBD/PSB/ACB REVERSAL                  *
//*                          SITE DEFAULT GENERATION UTILITY          *
//*-------------------------------------------------------------------*
//RVRSTGEN EXEC PGM=FABNTGEN,PARM='REPORT'
//STEPLIB  DD   DISP=SHR,DSN=HPS.TABLELIB
//         DD   DISP=SHR,DSN=HPS.SHPSLMD0
//SYSOUT   DD   SYSOUT=*
//SYSUDUMP DD   DUMMY
//
```

Figure 129. Sample JCL for creating the site default table module FABNCTL0

JCL requirements for the Reversal Site Default Generation utility

To run the Reversal Site Default Generation utility (FABNTGEN), supply an EXEC statement with the PARM parameters and appropriate DD statements.

Subsections:

- "EXEC statement"
- "DD statement summary"
- "DD statements"

EXEC statement

This statement must be in the following format:

```
//     EXEC PGM=FABNTGEN,PARM='parameter'
```

Specify GEN or REPORT for *parameter*.

GEN Specifies that the SYSIN site default table is generated. GEN is the default.

REPORT
Specifies that the site default values that are stored in the SYSIN site default table are printed.

Sample JCL streams that run the FABNTGEN program with PARM='GEN' and PARM='REPORT' are in the SHPSSAMP data set. The member names are FABNDFL1 and FABNDFL2.

DD statement summary

The following table summarizes the DD statements.

Table 22. FABNTGEN DD statements

DD name	Use	Format	EXEC PARM=	
			PARM='GEN'	PARM='REPORT'
STEPLIB	Input	PDS	Required	Required
SYSIN	Input	LRECL=80	Required	
SYSPUNCH	Output	LRECL=80	Required	
SYSOUT	Output	LRECL=133	Required	Required
SYSABEND or SYSUDUMP	Output	LRECL=133	Optional	Optional

DD statements

Code the following DD statements to identify the source of input and the placement of output information:

STEPLIB DD
This required input data set contains the IMS Library Integrity Utilities load module library. When PARM='REPORT' is specified in the EXEC statement, you must also specify the data set that includes the SYSIN site default table module member (FABNCTL0).

SYSIN DD
This data set is required when PARM='GEN' is specified in the EXEC statement. The format is the same as the FABNRVRS SYSIN statement. Specify this input data set to include your own default values for the SYSIN control statements.

SYSPUNCH DD
This output data set is required when PARM='GEN' is specified in the EXEC statement. An assembler source code of the SYSIN site default table is produced in this data set. The following DCB parameters must be specified:

- RECFM=F or FB
- LRECL=80
- BLKSIZE=80 or multiple of 80

SYSOUT DD
This output data set is required. The messages and the echo of the SYSIN control statements in the SYSIN data set, which are issued by the FABNTGEN, are printed in this data set. You can specify SYSOUT=* (or JES output class name) instead of a data set name.

SYSUDUMP DD (or SYSABEND)
This data set defines the output for the system ABEND dump routine. This DD statement is used only when a dump is required.

Control statements for the Reversal Site Default Generation utility

The SYSIN control statements are required to generate the SYSIN site default table. You can change some of the default values of the DBD/PSB/ACB Reversal utility to your site-specific values by specifying the appropriate options and operands.

The Reversal Site Default Generation utility analyzes the runtime option control statements and sets the site default values. Other control statement keywords, such as DECODE, are ignored. If the keywords are omitted, the DBD/PSB/ACB Reversal utility system default values will be used.

OPTION
This control statement keyword is required if no DECOPT statement is specified.

DECOPT
This control statement keyword is required if no OPTION statement is specified.

The following table shows the runtime options that are available for these control statement keywords.

Table 23. Options for the site default in the SYSIN control statement

Keyword	Option (abbreviations)	Operand
OPTION	ACB_GSAM	YES or NO
OPTION	ACB_REFERENCED	YES or NO
OPTION	PGM_COBOL	YES or NO
DECOPT	CHECK_LEN	YES or NO
DECOPT	COMMENT(C)	YES or NO
DECOPT	COMPRESS(COMP)	YES or NO

Table 23. Options for the site default in the SYSIN control statement (continued)

Keyword	Option (abbreviations)	Operand
DECOPT	PCB_LABEL	YES or NO
DECOPT	SENSEG_PROCOPT	YES or NO
DECOPT	VERSION_GENDATE	YES or NO

For descriptions of the keyword and the options, see "Control statements for the DBD/PSB/ACB Reversal utility" on page 292.

Output from the DBD/PSB/ACB Reversal Site Default Generation utility

The SYSOUT data set contains the output from the DBD/PSB/ACB Reversal Site Default Generation utility.

SYSOUT data set

The SYSOUT data set contains activity logs and error messages. When PARM='REPORT' is specified on the EXEC statement parameter, in addition to the activity logs and error messages, the site default values that are stored in the SYSIN site default table are printed in this data set.

The following figures show messages that are generated in the SYSOUT data set.

The following messages are printed when the EXEC PARM parameter is 'GEN'.

```
IMS LIBRARY INTEGRITY UTILITIES - DBD/PSB/ACB REVERSAL                "MESSAGES"                                PAGE:     1
5655-U08                                              DATE: 10/01/2018  TIME: 14.35.21                     FABNTGEN - V2.R2

FABN1021I CONTROL CARD SUPPLIED IS:   DECOPT  COMMENT=NO
FABN1023I DECOPT OPTION USED: COMMENT=NO
FABN1021I CONTROL CARD SUPPLIED IS:   DECOPT  COMPRESS=NO
FABN1023I DECOPT OPTION USED: COMPRESS=NO
FABN1020I THE SOURCE CODE FOR THE SITE DEFAULT TABLE IS GENERATED
FABN1000I FABNTGEN ENDED NORMALLY
```

Figure 130. Messages in the SYSOUT data set when PARM='GEN'

The following messages are printed when the EXEC PARM parameter is 'REPORT'.

```
IMS LIBRARY INTEGRITY UTILITIES - DBD/PSB/ACB REVERSAL                "MESSAGES"                                PAGE:     1
5655-U08                                              DATE: 10/01/2018  TIME: 14.35.21                     FABNTGEN - V2.R2

FABN1004I SITE DEFAULT OPTION USED: DECOPT COMMENT=YES
FABN1004I SITE DEFAULT OPTION USED: DECOPT COMPRESS=NO
FABN1030I SITE DEFAULT TABLE FABNCTL0 IS PRINTED
FABN1000I FABNTGEN ENDED NORMALLY
```

Figure 131. Messages in the SYSOUT data set when PARM='REPORT'

Chapter 9. MDA Reversal utility

The MDA Reversal utility converts DFSMDA members back into DFSMDA macros.

Topics:

- "MDA Reversal utility overview" on page 338
- "MDA Reversal utility restrictions" on page 340
- "Converting DFSMDA members back into DFSMDA macros" on page 341
- "JCL requirements for the MDA Reversal utility" on page 342
- "Control statements for the MDA Reversal utility" on page 344
- "JCL examples for the MDA Reversal utility" on page 347
- "Output from the MDA Reversal utility" on page 348

MDA Reversal utility overview

The MDA Reversal utility converts DFSMDA members back into DFSMDA macros. Also, the utility generates a report that lists DFSMDA members and their properties.

Subsections:

- "Function overview"
- "Converting DFSMDA members back into DFSMDA macros"
- "Generating a report that contains a list of DFSMDA members"
- "Program structure"
- "Data flow"

Function overview

The MDA Reversal utility provides the following functions:

- Converts DFSMDA members back into DFSMDA macros
- Generates a report that contains a list of DFSMDA members

Converting DFSMDA members back into DFSMDA macros

The utility converts DFSMDA members back into DFSMDA macros. This function reads one or more DFSMDA members from the specified library and converts them back into DFSMDA macros.

Generating a report that contains a list of DFSMDA members

The utility generates the Library Contents report, which contains a list of DFSMDA members found in the specified library. Detailed information about DFSMDA members, such as the name of the DD statement and the name of the data set, is shown for each DFSMDA member.

Program structure

The utility consists of one program, FABXMRVS, which controls other load modules and converts DFSMDA members back into DFSMDA macros. Based on the user specification, the program also generates reports about the specified library. This module uses a simple input format that is specified in the FABXMIN data set.

Data flow

The following figure shows the general data flow for the MDA Reversal utility.

The input for the MDA Reversal utility is the FABXMIN data set, the MDALIB data set, and the ACBLIB data set for which sources are output and reports are created, and the output is DFSMDA macros, reports, and an activity log.

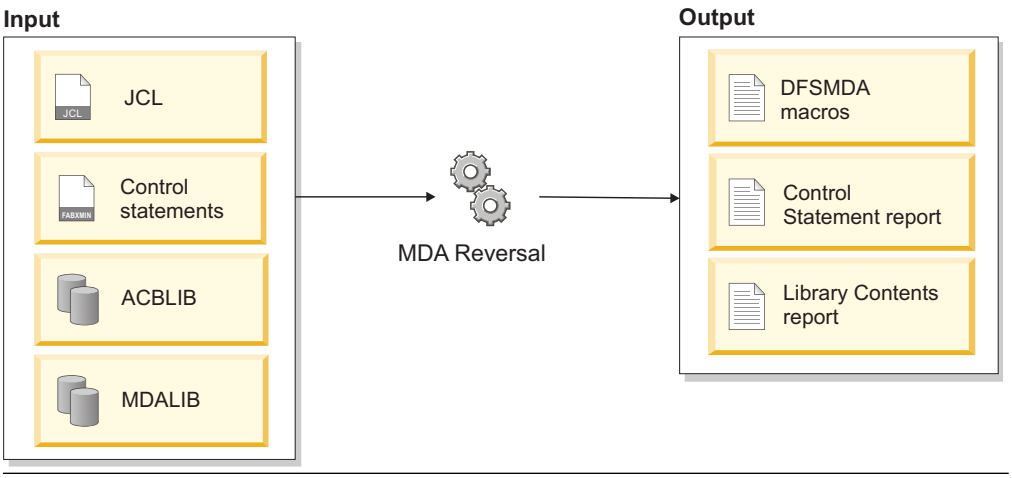


Figure 132. Data flow for the MDA Reversal utility

MDA Reversal utility restrictions

Certain restrictions apply when you use the MDA Reversal utility.

If the following conditions are true, the TYPE parameters of the decoded DFSMDA macros differ from the original DFSMDA macro TYPE parameters. This is because DFSMDA members contain the same binary data for the following TYPE parameters and the MDA Reversal utility cannot distinguish the value that was originally set for the TYPE parameter.

- If the original DFSMDA macro was DFSMDA TYP=FPDEDB, the decoded DFSMDA macro will show DFSMDA TYPE=DATABASE.
- If the original DFSMDA macro was DFSMDA TYPE=RECON with an alternate DD name and WAIT=NO parameters, the decoded DFSMDA macros will show DFSMDA TYPE=DATABASE.

However, even if the value of the TYPE parameter is different, you can regenerate an identical DFSMDA member from the decoded DFSMDA macros.

If you want the original TYPE parameter values printed in decoded DFSMDA macros, specify the following options for the MDA Reversal utility control statements:

- Specify OPTION FPDEDB_LIB to print DFSMDA TYPE=FPDEDB.
- Specify OPTION RECON_ALT_DD to print DFSMDA TYPE=RECON.

Converting DFSMDA members back into DFSMDA macros

To convert DFSMDA members back into DFSMDA macros, you must prepare JCL for the MDA Reversal utility and submit the job.

Before you begin

A sample JCL for the MDA Reversal utility is in the SHPSJCL0 library, member FABXMIVP. You can modify this sample JCL and then use it to run the utility.

Procedure

1. In the MDA Reversal JCL, code the EXEC statement and DD statements.
   See "JCL requirements for the MDA Reversal utility" on page 342.
2. In the FABXMIN data set, code the control statements for the MDA Reversal utility.
   See "Control statements for the MDA Reversal utility" on page 344.
3. Submit the job.
4. Check the output data sets that are generated.
   See "Output from the MDA Reversal utility" on page 348.

Related reference:

"JCL examples for the MDA Reversal utility" on page 347

JCL requirements for the MDA Reversal utility

When you code the JCL to run the MDA Reversal utility, include the EXEC statement and appropriate DD statements.

Subsections:

- "JCL example"
- "EXEC statement"
- "DD statements"

JCL example

An example of the JCL that is required for MDA Reversal is shown in the following figure.

```
//JOB
//STEP     EXEC PGM=FABXMRVS
//STEPLIB  DD DISP=SHR,DSN=HPS.SHPSLMD0
//ACBLIB   DD DISP=SHR,DSN=PROD.ACBLIB
//DFSMDA   DD DISP=SHR,DSN=PROD.MDALIB
//FABXMSRC DD SYSOUT=B,FREE=CLOSE
//FABXMOUT DD SYSOUT=A
//MDASRC   DD DISP=SHR,DSN=PDS.MDASRC
//FABXMRPT DD SYSOUT=A
//FABXMIN  DD *
  PROC FUNC=DECODE
  OPTION MDA_LIST=YES,
         FPDEDB_LIB=ACBLIB,
         RECON_ALT_DD=RECON*
  MDA NAME=*
  END
/*
```

Figure 133. Example of MDA Reversal JCL

EXEC statement

This statement must be in the following format:

```
//stepname EXEC PGM=FABXMRVS
```

DD statements

Code the following DD statements to identify the source of input and the placement of output information:

STEPLIB DD or JOBLIB DD
Required input data set. Specify the IMS Library Integrity Utilities load module library data set.

DFSMDA DD
Required input data set. Specify one or more libraries that contain the DFSMDA members for which DFSMDA macros and reports are created.

ACBLIB DD
Required input data set when you specify the FPDEDB_LIB=ACBLIB option for the OPTION statement to print the TYPE=FPDEDB parameter and DEDB database names.

FABXMIN DD

Required input data set. Specify the data set that contains the control statements for the MDA Reversal utility.

The DCB parameters must be RECFM=FB, LRECL=80, and BLKSIZE must be a multiple of 80.

FABXMOUT DD

Required output data set. Specify the data set for the Control Statement report.

The DCB parameters must be RECFM=FBA, LRECL=133, and BLKSIZE must be a multiple of 133.

FABXMSRC DD

Optional output data set when you use the utility to decode DFSMDA members. Specify the data set for printing DFSMDA macros converted from DFSMDA members.

In this data set, the utility generates all DFSMDA macros converted from all the DFSMDA members that the utility identified from the specifications in the control statement.

The DCB parameters must be RECFM=FB, LRECL=80, and BLKSIZE must be a multiple of 80.

MDASRC DD

Optional output data set when you use the utility to decode DFSMDA members. This data set must be a PDS or PDSE. The DFSMDA macros decoded in this data set are identical to those generated in the FABXMSRC data set, but in MDASRC data set, a data set member is created for each DFSMDA member.

The DCB parameters must be RECFM=FB, LRECL=80, and BLKSIZE must be a multiple of 80.

FABXMRPT DD

Optional output data set. However, if you specify PROC FUNC=MDA_LIST, which requests to create the Library Contents report without converting DFSMDA members to DFSMDA macros, this data set is a required data set. Specify the data set for the Library Contents report.

The DCB parameters must be RECFM=FBA, LRECL=133, and BLKSIZE must be a multiple of 133.

Control statements for the MDA Reversal utility

The input for the MDA Reversal utility consists of control statements in the FABXMIN data set.

Subsections:

- "Control statement example"
- "Syntax rules"
- "Statements and keywords"
- "Tips for using wildcard characters" on page 346

Control statement example

The following figure shows an example of the control statements for the MDA Reversal utility.

```
//FABXMIN DD *
  PROC FUNC=DECODE
  OPTION MDA_LIST=YES,
         FPDEDB_LIB=ACBLIB,
         RECON_ALT_DD=(RCN1,RCN2,
                       RCN3)
*
  MDA NAME=HDAMDB1
  MDA NAME=D*
  END
/*
```

Figure 134. Control statement example for MDA Reversal

Syntax rules

The control statements must adhere to the following syntax rules:

- Control statements can start anywhere after the second column.
- A statement with an asterisk (*) in column 1 is treated as a comment.
- Option keywords in a statement must be separated by commas and must end with a blank. If a comma is used instead of a blank, the processing is continued to the next line.
- Option values in brackets must be separated by commas and must end with a closing parenthesis. If a comma is used instead of a closing parenthesis, the processing is continued to the next line.

Statements and keywords

PROC statement

Required statement. This statement must be coded on the first line with the following keyword and parameter:

FUNC=DECODE

Converts DFSMDA members back into DFSMDA macros.

FUNC=MDA_LIST

Creates the Library Contents report without converting DFSMDA members to DFSMDA macros.

OPTION statement

Optional statement. Specify this statement with one or more of the following keywords:

FPDEDB_LIB=ACBLIB

This keyword is for DEDBs.

Prints FPDEDB for the DFSMDA TYPE parameter and the name of DEDB database in the output.

To specify this keyword, the following conditions must be met:

- The ACBLIB DD statement is specified in the JCL.
- The ACB library is consistent with the DFSMDA members.

When this keyword is specified, the utility obtains DEDB database names and DEDB area names from the ACB library. If the utility finds DEDB area names that match the names of DFSMDA members, it prints the following information:

- TYPE=FPDEDB in the DFSMDA macro statement.
- The name of the DEDB database (DBNAME=*dbname*) in the DFSMDA macro statement.
- The name of the DEDB database in the DBD column of the Library Contents report (if a Library Contents report is requested.)

RECON_ALT_DD=*ddname* | (*ddname1,ddname2,...*)

Specifies alternate DD names for the RECON data sets. This keyword is applicable only when the utility converts DFSMDA members to DFSMDA macros.

The utility identifies the DFSMDA member with the specified name and prints TYPE=RECON on the DFSMDA macro statement. You can specify up to nine DD names using brackets. You can also use wildcard characters to create a pattern-matching expression that specifies more than one DD names.

MDA_LIST=

Specifies whether to generate the Library Contents report. This keyword is applicable only when the utility converts DFSMDA members to DFSMDA macros.

YES The utility generates the Library Contents report. This is the default value.

NO The utility does not generate the Library Contents report.

MDA statement

Required statement. Use this statement to select specific DFSMDA members. You can specify multiple MDA statements. Specify this statement with the following keyword:

NAME=*resource_name*

Specify the name of a DFSMDA member. You can use wildcard characters to create a pattern-matching expression that specifies more than one DFSMDA members.

END statement

Optional statement. Use this statement to indicate the end of the control statements.

Tips for using wildcard characters

To specify multiple names, specify a wildcard in any position of a character string. The asterisk (*) and the percent sign (%) are supported as wildcard characters. An asterisk represents 0 - 8 characters, and a percent sign represents a single character. If two or more asterisks are specified sequentially, only the first asterisk is recognized.

For example, you can specify the wildcard characters in the following ways:

Purpose	Coding example
Select all DFSMDA members in the specified library	`MDA NAME=*`
Select DFSMDA members that have a name that begins with the letter D	`MDA NAME=D*`
Select DFSMDA members that begin with letters ABC, have any letter as the forth character, and contain 001 as the fifth to seventh characters	`MDA NAME=ABC%001`

JCL examples for the MDA Reversal utility

The following figure shows a JCL example for converting DFSMDA members to DFSMDA macros with the MDA Reversal utility.

```
//JOB
//STEP     EXEC PGM=FABXMRVS
//STEPLIB  DD DISP=SHR,DSN=HPS.SHPSLMD0
//ACBLIB   DD DISP=SHR,DSN=PROD.ACBLIB
//DFSMDA   DD DISP=SHR,DSN=PROD.MDALIB
//FABXMSRC DD SYSOUT=B,FREE=CLOSE
//FABXMOUT DD SYSOUT=A
//MDASRC   DD DISP=SHR,DSN=PDS.MDASRC
//FABXMRPT DD SYSOUT=A
//FABXMIN  DD *
  PROC FUNC=DECODE
  OPTION MDA_LIST=YES,
         FPDEDB_LIB=ACBLIB,
         RECON_ALT_DD=(RCN1,RCN2,RCN3)
  MDA NAME=HDAMDB1
  MDA NAME=D*
  END
/*
```

Figure 135. Example of converting DFSMDA members to DFSMDA macros

Output from the MDA Reversal utility

Output from the MDA Reversal utility consists of the FABXMSRC data set, MDASRC data set, FABXMOUT data set, and the FABXMRPT data set.

FABXMSRC data set

The FABXMSRC data set contains DFSMDA macros that are decoded from DFSMDA members.

Decoded DFSMDA macros

The following figure shows an example of DFSMDA macros that the MDA Reversal utility generates.

```
*        DSNAME=IMSVS.MDALIB1
*        DECODE DATE 10/01/2018 TIME 01.53.05
  DFSMDA    TYPE=INITIAL
  DFSMDA    TYPE=RECON,                                              -
               DDNAME=ALTRC1,                                        -
               WAIT=NO,                                              -
               DSNAME=IMSVS.ALTRC1
  DFSMDA    TYPE=RECON,                                              -
               DDNAME=ALTRC2,                                        -
               WAIT=YES,                                             -
               DSNAME=IMSVS.ALTRC2
  DFSMDA    TYPE=RECON,                                              -
               DDNAME=ALTRC3,                                        -
               WAIT=NO,                                              -
               DSNAME=IMSVS.ALTRC3
  DFSMDA    TYPE=CATDSHLQ,                                           -
               DDNAME=CAT1HLQ,                                       -
               SYSDSHLQ=IMSVS.CATDS11
  DFSMDA    TYPE=DFSDCMON,                                           -
               DDNAME=IMSMON,                                        -
               DISP=SHR,                                             -
               UNIT=DASD,                                            -
               BUFNO=9,                                              -
               BLKSIZE=16384,                                        -
               DSNAME=IMSVS.MONDS11
  DFSMDA    TYPE=CATDBDEF,                                           -
               DBNAME=DFSHDBSC,                                      -
               DSNAME=IMSVS.CATDB11
  DFSMDA    TYPE=OLDS,                                               -
               DDNAME=DFSOLP00,                                      -
               DSNAME=IMSVS.OLDSP00
  DFSMDA    TYPE=OLDS,                                               -
               DDNAME=DFSOLS00,                                      -
               DSNAME=IMSVS.OLDSS00
  DFSMDA    TYPE=TRACE,                                              -
               DDNAME=DFSTRA0T,                                      -
               UNIT=1234,                                            -
               BLKSIZE=16384,                                        -
               DSNAME=IMSVS.TRCTP1
  DFSMDA    TYPE=TRACE,                                              -
               DDNAME=DFSTRA01,                                      -
               DSNAME=IMSVS.TRCDS1
  DFSMDA    TYPE=TRACE,                                              -
               DDNAME=DFSTRA02,                                      -
               DSNAME=IMSVS.TRCDS2
  DFSMDA    TYPE=WADS,                                               -
               DDNAME=DFSWADS0,                                      -
               DSNAME=IMSVS.WADSN00
  DFSMDA    TYPE=WADS,                                               -
               DDNAME=DFSWADS1,                                      -
               DSNAME=IMSVS.WADSN01
               DSNAME=IMSVS.WADSN01
```

Figure 136. DFSMDA macros decoded by the MDA Reversal utility (Part 1 of 3)

```
DFSMDA    TYPE=IMSACB,                                          -
             DSNAME=IMSVS.IMSACB1
DFSMDA    TYPE=IMSACBA
DFSMDA    TYPE=DATASET,                                         -
             DDNAME=IMSACBA,                                    -
             DISP=SHR,                                          -
             DSNAME=IMSVS.IMSACBA1
DFSMDA    TYPE=DATASET,                                         -
             DDNAME=IMSACBA,                                    -
             DISP=SHR,                                          -
             DSNAME=IMSVS.IMSACBA2
DFSMDA    TYPE=IMSACBB
DFSMDA    TYPE=DATASET,                                         -
             DDNAME=IMSACBB,                                    -
             DISP=SHR,                                          -
             DSNAME=IMSVS.IMSACBB1
DFSMDA    TYPE=SLDS,                                            -
             DDNAME=IMSLOGR,                                    -
             UNIT=DASD
DFSMDA    TYPE=OLCSTAT,                                         -
             DSNAME=IMSVS.OLCSTA1
DFSMDA    TYPE=RECON,                                           -
             DDNAME=RECON1,                                     -
             WAIT=NO,                                           -
             DSNAME=IMSVS.RECON1
DFSMDA    TYPE=RECON,                                           -
             DDNAME=RECON2,                                     -
             WAIT=YES,                                          -
             DSNAME=IMSVS.RECON2
DFSMDA    TYPE=RECON,                                           -
             DDNAME=RECON3,                                     -
             WAIT=NO,                                           -
             DSNAME=IMSVS.RECON3
DFSMDA    TYPE=DATABASE,                                        -
             DBNAME=TST@D01A
DFSMDA    TYPE=DATASET,                                         -
             DDNAME=TSTD01AA,                                   -
             DISP=SHR,                                          -
             DSNAME=IMSVS.TSTD01AA
DFSMDA    TYPE=DATASET,                                         -
             DDNAME=TSTD01AB,                                   -
             DISP=OLD,                                          -
             DSNAME=IMSVS.TSTD01AB
DFSMDA    TYPE=DATASET,                                         -
             DDNAME=TSTD01AC,                                   -
             DISP=SHR,                                          -
             DSNAME=IMSVS.TSTD01AC
DFSMDA    TYPE=DATASET,                                         -
             DDNAME=TSTD01AD,                                   -
             DISP=OLD,                                          -
             DSNAME=IMSVS.TSTD01AD
```

Figure 137. DFSMDA macros decoded by the MDA Reversal utility (Part 2 of 3)

```
DFSMDA    TYPE=FPDEDB,                                          -
             DBNAME=TST@E01A
DFSMDA    TYPE=DATASET,                                         -
DFSMDA    TYPE=DATASET,                                         -
             DDNAME=TSTE01AA,                                   -
             DISP=SHR,                                          -
             DSNAME=IMSVS.TSTE01AA
DFSMDA    TYPE=FPDEDB,                                          -
             DBNAME=TST@E01A
DFSMDA    TYPE=DATASET,                                         -
             DDNAME=TSTE01AB,                                   -
             DISP=SHR,                                          -
             DSNAME=IMSVS.TSTE01AB
DFSMDA    TYPE=FPDEDB,                                          -
             DBNAME=TST@E01A
DFSMDA    TYPE=DATASET,                                         -
             DDNAME=TSTE01AC,                                   -
             DISP=SHR,                                          -
             DSNAME=IMSVS.TSTE01AC
DFSMDA    TYPE=FINAL
END
```

Figure 138. DFSMDA macros decoded by the MDA Reversal utility (Part 3 of 3)

Restrictions on the generated DFSMDA macros

For the restrictions that apply to the generated DFSMDA macros, see "MDA Reversal utility restrictions" on page 340.

MDASRC data set

The MDASRC data set contains PDS or PDSE members that each contains DFSMDA macros decoded from a DFSMDA member.

When the utility decodes certain DFSMDA members, the utility might generate a member named #NOTE in this data set. This member is generated to alert you about certain considerations that apply to the generated DFSMDA macros.

Decoded DFSMDA macros

The following figure shows an example of DFSMDA macros that the MDA Reversal utility generates.

```
*        DSNAME=IMSVS.MDALIB1
*        DECODE DATE 10/01/2018 TIME 01.32.34
  DFSMDA    TYPE=INITIAL
  DFSMDA    TYPE=DATABASE,                                          -
               DBNAME=TST@D01A
  DFSMDA    TYPE=DATASET,                                           -
               DDNAME=TSTD01AA,                                     -
               DISP=SHR,                                            -
               DSNAME=IMSVS.TSTD01AA
  DFSMDA    TYPE=DATASET,                                           -
               DDNAME=TSTD01AB,                                     -
               DISP=OLD,                                            -
               DSNAME=IMSVS.TSTD01AB
  DFSMDA    TYPE=DATASET,                                           -
               DDNAME=TSTD01AC,                                     -
               DISP=SHR,                                            -
               DSNAME=IMSVS.TSTD01AC
  DFSMDA    TYPE=DATASET,                                           -
               DDNAME=TSTD01AD,                                     -
               DISP=OLD,                                            -
               DSNAME=IMSVS.TSTD01AD
  DFSMDA    TYPE=FINAL
  END
```

Figure 139. DFSMDA macros decoded by the MDA Reversal utility

Restrictions on the generated DFSMDA macros

For the restrictions that apply to the generated DFSMDA macros, see "MDA Reversal utility restrictions" on page 340.

FABXMOUT data set

The FABXMOUT data set contains the Control Statement report, which shows the echo of the FABXMIN control statements and messages.

```
IMS LIBRARY INTEGRITY UTILITIES - MDA REVERSAL                    "CONTROL STATEMENT REPORT"                    PAGE:     1
5655-U08                                              DATE: 10/01/2018  TIME: 01.53.05                  FABXMRVS - V2.R2

"CONTROL STATEMENTS"

0........1.........2.........3.........4.........5.........6.........7.........8
12345678901234567890123456789012345678901234567890123456789012345678901234567890

  PROC FUNC=DECODE
  OPTION FPDEDB_LIB=ACBLIB,
         RECON_ALT_DD=ALTRC*
  MDA  NAME=*
  END

"MESSAGES"

FABX2010I 25 DFSMDA MEMBERS SELECTED. 25 DFSMDA MEMBERS PROCESSED.
```

Figure 140. Example of the Control Statement report

FABXMRPT data set

The FABXMRPT data set contains the Library Contents report. This report lists information about the DFSMDA members found in the specified library.

Subsections:

- "Sample report"
- "Report field descriptions"

Sample report

The following figure shows an example of the Library Contents report. DFSMDA DSN=*data_set_name* shows the library or libraries that contain the DFSMDA members listed in this report.

```
IMS LIBRARY INTEGRITY UTILITIES - MDA REVERSAL                    "LIBRARY CONTENTS REPORT"                    PAGE:     1
5655-U08                                                 DATE: 10/01/2018  TIME: 01.53.05                  FABXMRVS - V2.R2

DFSMDA DSN=IMSVS.MDALIB
-------------------------------------------------------------------------------
MDA MBR  DBD      DD/AREA  DISP DSNAME
-------- -------- -------- --- --------------------------------------------
ALTRC1   ALTRC1   ALTRC1   SHR IMSVS.ALTRC1
ALTRC2   ALTRC2   ALTRC2   SHR IMSVS.ALTRC2
ALTRC3   ALTRC3   ALTRC3   SHR IMSVS.ALTRC3
CAT1HLQ  CAT1HLQ  CAT1HLQ  SHR IMSVS.CATDS11.BSDS
DFSDCMON DFSDCMON IMSMON   SHR IMSVS.MONDS11
DFSHDBSC DFSHDBSC DFSHDBSC SHR IMSVS.CATDB11
DFSOLP00 DFSOLP00 DFSOLP00 SHR IMSVS.OLDSP00
DFSOLS00 DFSOLS00 DFSOLS00 SHR IMSVS.OLDSS00
DFSTRA0T DFSTRA0T DFSTRA0T SHR IMSVS.TRCTP1
DFSTRA01 DFSTRA01 DFSTRA01 SHR IMSVS.TRCDS1
DFSTRA02 DFSTRA02 DFSTRA02 SHR IMSVS.TRCDS2
DFSWADS0 DFSWADS0 DFSWADS0 SHR IMSVS.WADSN00
DFSWADS1 DFSWADS1 DFSWADS1 SHR IMSVS.WADSN01
IMSACB   IMSACB   IMSACB   SHR IMSVS.IMSACB1
IMSACBA  IMSACBA  IMSACBA  SHR IMSVS.IMSACBA1
         IMSACBA  IMSACBA  SHR IMSVS.IMSACBA2
IMSACBB  IMSACBB  IMSACBB  SHR IMSVS.IMSACBB1
IMSLOGR  IMSLOGR  IMSLOGR  SHR
OLCSTAT  OLCSTAT  OLCSTAT  SHR IMSVS.OLCSTA1
RECON1   RECON1   RECON1   SHR IMSVS.RECON1
RECON2   RECON2   RECON2   SHR IMSVS.RECON2
RECON3   RECON3   RECON3   SHR IMSVS.RECON3
TST@D01A TST@D01A TSTD01AA SHR IMSVS.TSTD01AA
         TST@D01A TSTD01AB OLD IMSVS.TSTD01AB
         TST@D01A TSTD01AC SHR IMSVS.TSTD01AC
         TST@D01A TSTD01AD OLD IMSVS.TSTD01AD
TSTE01AA TST@E01A TSTE01AA SHR IMSVS.TSTE01AA
TSTE01AB TST@E01A TSTE01AB SHR IMSVS.TSTE01AB
TSTE01AC TST@E01A TSTE01AC SHR IMSVS.TSTE01AC
```

Figure 141. Library Contents report in the FABXMRPT data set

Report field descriptions

The report contains the following fields:

MDA MBR
The DFSMDA member name.

DBD This field shows one of the following resource names:

- If the DFSMDA member was generated with DFSMDA TYPE=DATABASE, this field shows the name of the database whose data sets are to be dynamically allocated.
- If the DFSMDA member was generated with DFSMDA TYPE=FPDEDB, this field shows the name of the DEDB area whose data sets are to be dynamically allocated.

  If OPTION FPDEDB_LIB is specified, this field shows the name of the DEDB database whose data sets are to be dynamically allocated.
- If the DFSMDA member was generated with other TYPE parameters, this field shows the name of the DFSMDA member.

DD/AREA
The name of the DD statement that defines the data set. This is the value specified by the DDNAME parameter of the DFSMDA macro.

DISP Disposition of the allocated data set. This value was specified by the DISP parameter of the DFSMDA macro or was set as "SHR" when the DFSMDA member was generated.

DSNAME
The name of the data set specified by the DSNAME parameter of the DFSMDA macro. If the DFSMDA member was generated using a DFSMDA macro with the TYPE=CATDSHLQ parameter, this field shows the value specified by the SYSDSHLQ parameter with ".BSDS" added at the end.

Chapter 10. Catalog Manager utility

The Catalog Manager utility helps you to analyze the definitions of IMS control blocks — databases (DBD) and application program views (PSBs) — in the IMS catalog and the IMS directory.

Topics:

- "Catalog Manager utility overview" on page 356
- "Catalog Manager utility restrictions" on page 360
- "Validating IMS control blocks in the IMS catalog" on page 362
- "Comparing IMS control blocks" on page 363
- "Converting IMS control blocks to control statements" on page 364
- "JCL requirements for the Catalog Manager utility" on page 365
- "Control statements for the Catalog Manager utility" on page 370
- "JCL examples for the Catalog Manager utility" on page 379
- "Output from the Catalog Manager utility" on page 384

Catalog Manager utility overview

The Catalog Manager utility analyzes IMS control blocks — databases (DBDs) and application program views (PSBs) — in the IMS catalog and in the IMS directory. The utility provides three functions; validate and compare DBDs and PSBs, and convert DBDs and PSBs to IMS DBDGEN and PSBGEN control statements.

Subsections:

- "Function overview"
- "Validating IMS control blocks in the IMS catalog and the IMS directory" on page 357
- "Comparing IMS control blocks" on page 358
- "Converting IMS control blocks to control statements" on page 358
- "Program structure and job step" on page 358
- "Data flow" on page 358

Function overview

The Catalog Manager utility provides the following functions:

- Validating IMS control blocks in the IMS catalog and the IMS directory
- Comparing IMS control blocks
- Converting IMS control blocks to control statements

These functions help you analyze IMS control blocks, specifically definitions of databases (DBDs) and program specification blocks (PSBs), in the IMS catalog and in the IMS directory.

IMS stores DBDs and PSBs in multiple locations; the IMS catalog, the IMS directory, ACB (application control block) libraries, DBD libraries, and PSB libraries. It is extremely important that DBDs and PSBs are consistent among these locations. In addition, when data sharing is enabled, DBDs and PSBs must be consistent across multiple IMS systems.

In order to ensure that DBDs and PSBs are consistent, you need to analyze DBDs and PSBs. However, DBDs and PSBs are not human-readable and their formats are different depending on where they are stored. In ACB libraries and the IMS directory, DBDs and PSBs are stored as binary format IMS control blocks, referred to as DBD-type ACBs and PSB-type ACBs. In the IMS catalog, DBDs and PSBs are stored as database records. This makes it more difficult to analyze DBDs and PSBs across multiple locations. The Catalog Manager utility analyzes DBDs and PSBs in different formats and helps you ensure that your DBDs and PSBs are maintained correctly.

Example use cases:

- If the IMS management of ACBs is enabled and you are maintaining DBDs and PSBs by populating the IMS catalog, you must always ensure that the IMS catalog and the IMS directory are in sync with ACB libraries. The validate function of the Catalog Manager utility helps you do so. If you find out that they are out of sync, you must run the ACB Generation and Catalog Populate utility (DFS3UACB) or the IMS Catalog Populate utility (DFS3PU00) to update the IMS catalog.
- If you are migrating from ACB libraries to the IMS management of ACBs, you can use the compare function of the Catalog Manager utility to verify that the

definitions are correctly stored in the IMS catalog and the IMS directory. The compare function compares IMS control blocks in the IMS directory with those in the DBD, PSB, or ACB library, helping you ensure that the migration was done correctly.

- If data sharing is used, for instance, an IMS system (IMS-A) has the IMS management of ACBs enabled and the other IMS system (IMS-B) uses ACB libraries, you can use the compare function of the Catalog Manager utility to compare IMS control blocks between the IMS directory used by IMS-A and the ACB libraries used by IMS-B. If any differences are detected, you can identify the correct IMS control blocks from the compare reports, and also run the convert function to convert IMS control blocks to IMS DBDGEN or IMS PSBGEN control statements for further analysis. You can then run the DBDGEN, PSBGEN, or the ACBGEN utility and populate the IMS catalog by using the IMS Catalog Populate utility.

Validating IMS control blocks in the IMS catalog and the IMS directory

The utility checks the ACB generation time stamps of DBDs and PSBs in the IMS catalog, the IMS directory, and ACB libraries to ensure that DBDs and PSBs are consistent across those resources. The utility generates several reports, including the IMS Catalog Validation report, which contains the results of the validation process. From this report, you can easily identify DBDs and PSBs that are inconsistent.

The utility also checks the consistency of the following information:

- If database versioning is enabled, whether the database version number is the same for each DBD.
- If the IMS management of ACBs is enabled, whether the time stamps of DBDs and PSBs in the IMS catalog, the IMS directory, and ACB libraries (if present) are consistent.
- If the IMS management of ACBs is not enabled, that is, when ACBs in the ACB libraries are used, whether the time stamps of the most recent instance of DBDs and PSBs in the IMS catalog and ACB libraries are the same.

When the IMS catalog is populated with the information from the ACB library, information about DBDs and PSBs in the ACB library is replicated in the IMS catalog. If the IMS management of ACBs is enabled, ACBs can be added to the IMS catalog and the IMS directory with the IMS Catalog Population utility (DFS3PU00). Regardless of how ACBs were added, information about DBDs and PSBs stored in the IMS catalog, the IMS directory (active and staging data sets), and ACB libraries (if used) must be kept in sync and consistent.

The IMS catalog can contain more than one instance for each DBD and PSB. The instances that the utility checks depend on whether the IMS management of ACBs is enabled or not:

- If the IMS management of ACBs is enabled, the utility checks whether the instance that has the same ACB generation time stamp as the ACB found in the IMS directory exists in the IMS catalog. Also, it checks whether the time stamp is consistent among the resources found in the IMS directory, IMS catalog, and the ACB library.
- If the IMS management of ACBs is not enabled, the utility checks whether the time stamp of the most recent instances found in the IMS catalog and ACB libraries are the same.

By validating the time stamps and database version numbers with the Catalog Manager utility, you can ensure that the DBDs and PSBs that are stored in the IMS catalog and the IMS directory are maintained correctly.

Comparing IMS control blocks

The utility compares IMS control blocks — DBD-type ACBs (or DBDs) and PSB-type ACBs (or PSBs) — within the IMS directory, between the IMS directory and ACB libraries, and between the IMS directory and DBD libraries or PSB libraries. The utility generates several reports, including the Compare Listing, which reports differences (or similarities), the Compare Summary report, and the Error and Warning messages report.

The compare function is useful, for example, when you find inconsistencies in DBDs or PSBs with the validate function. You can use the compare function to identify the differences in IMS DBDGEN or IMS PSBGEN control statements by generating and reviewing the Compare Listing.

Converting IMS control blocks to control statements

The utility converts IMS control blocks — DBD-type ACBs and PSB-type ACBs — in the IMS directory back into IMS DBDGEN or PSBGEN control statements. You can understand the definitions of ACBs in the IMS directory with the format of IMS DBDGEN or PSBGEN control statements.

Program structure and job step

The Catalog Manager utility is provided as a z/OS batch utility program. The utility consists of one program, FABXCATM, which controls other load modules. This program uses an input format that is specified in the FABXCIN data set.

While the utility is running, WTO messages on the console show program processing status. Reports and error messages are written in the data sets that are defined by FABXCRP0, FABXCRP1, FABXCRP2, and FABXCSRC DD statements. To learn more about which data sets are used by each function, see “Output from the Catalog Manager utility” on page 384.

Data flow

The following figure shows the general data flow for the Catalog Manager utility.

The input consists of the FABXCIN control data set (contains the control statements), ACBLIB, DBDLIB, and PSBLIB data sets, the IMS catalog, and the IMS directory. The output consists of reports and messages.

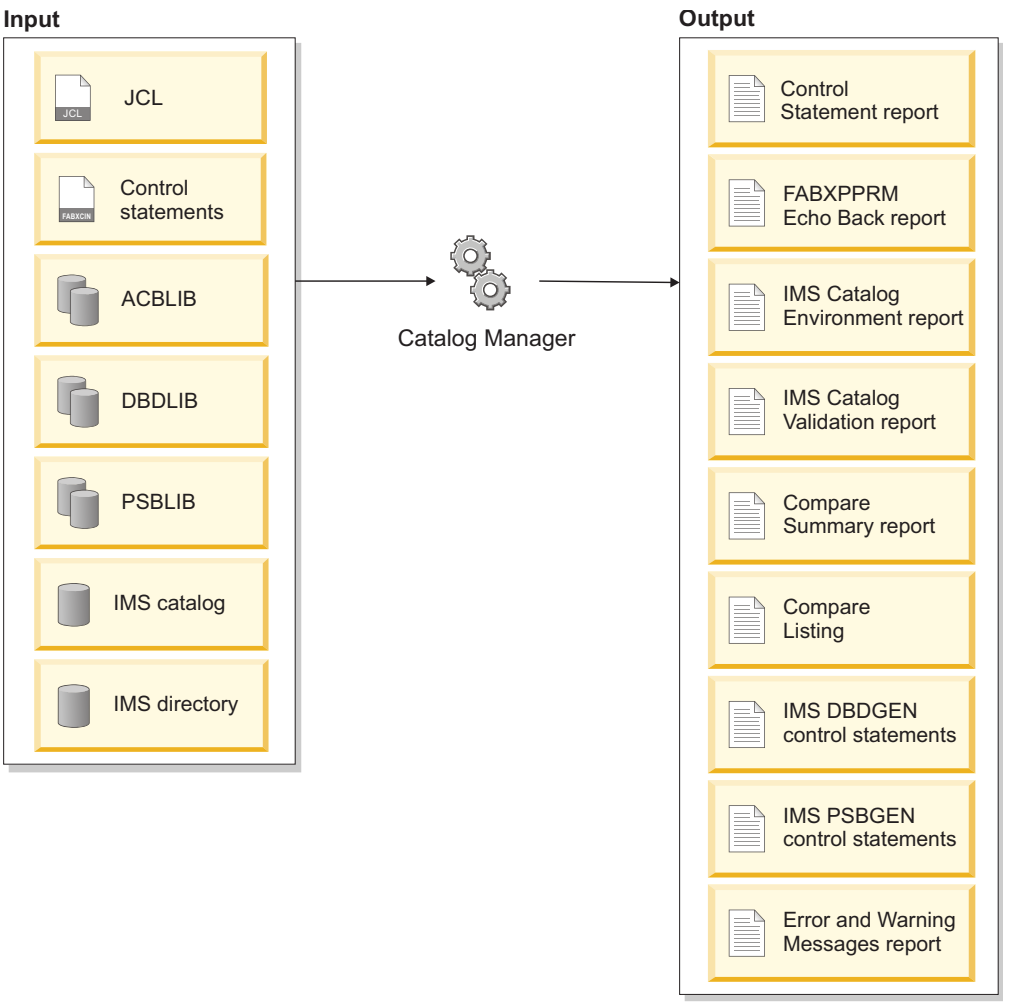


Figure 142. Data flow for the Catalog Manager utility

Catalog Manager utility restrictions

Certain restrictions apply when you use the Catalog Manager utility.

The Catalog Manager utility has the following restrictions:

Restrictions that apply to all the functions

IMS catalog was introduced with IMS Version 12. Therefore, the Catalog Manager utility supports IMS resources that are created by IMS Version 12 or later. However, the compare function supports DBDs and PSBs that were created by an earlier version of IMS and that are stored in DBD libraries or PSB libraries.

Restrictions for the validate function

- If the IMS management of ACBs is not enabled or if DBDs and PSBs were generated by IMS Version 13, the Catalog Manager utility checks only the DBDs and PSBs that are found in the ACB libraries.
- DBDs and PSBs that are found only in the IMS catalog are not checked or included in the IMS Catalog Validation report.
- If you are using IMS Version 12 or 13, depending on the maintenance level of IMS, the Catalog Manager utility cannot process PSBs that contain PCBs referring to a GSAM or a logical database. This is because no time stamp information is stored for such PSBs in the IMS catalog. To validate such PSBs, apply the following APAR fixes:
  - APAR PI27237 to IMS Version 13
  - APAR PI42886 to IMS Version 12

Restrictions for the compare function

- When the Catalog Manager utility compares DBD-type ACBs for DEDB, the utility also uses the PSB-type ACB that references the DBD to obtain DBD VERSION or EXIT parameter value. If a problem occurs when reading the PSB-type ACB, the DBD VERSION or EXIT parameter value is not compared.
- The Catalog Manager utility cannot process the following control blocks:
  - Control blocks for a logical database in the IMS directory because no control blocks for logical databases are stored in the IMS directory.
  - Control blocks for a GSAM or a logical database in the ACB library because no ACBs for GSAM or logical database are stored in the ACB library
  - Control blocks for a PSB that contains PCBs for a GSAM database in the ACB library because no PCBs for GSAM database are stored in the ACB library.
- The utility compares only the parameters that exist in the ACBs in ACB libraries. When the utility compares ACBs in the ACB library with those in the IMS directory, it ignores parameters that exist only in the ACBs in the IMS directory, such as GSAM PCBs.
- The reports generated by the compare function contain IMS DBDGEN and PSBGEN control statements. For the restrictions that apply to the generated control statements, see the following section.

Restrictions for generated IMS DBDGEN and IMS PSBGEN control statements

The following restrictions apply to IMS DBDGEN control statements that the Catalog Manager utility generates:

- The order of the FIELD, LCHILD, and XDFLD statements that follow the SEGM statement is not the same as the user-required order in DBD control statements. The utility generates all the FIELD statements that belong to the segment following the SEGM statements, and then produces, if they exist, the LCHILD statements with paired XDFLD statements. This does not affect the database being accessed.
- If the VERSION parameter on the DBD statement has a time stamp value, the utility converts the time stamp value to an Assembler comment statement.
- The utility cannot convert control blocks for a logical database in the IMS directory because no control blocks for a logical database are stored in the IMS directory.
- When the utility processes an ACB for DEDB, the utility also uses the PSB-type ACB that references the ACB to obtain the DBD VERSION or EXIT parameter value. If a problem occurs when reading the PSB-type ACB, the DBD VERSION or EXIT parameter value is not converted. This restriction also applies to ACBs for MSDB but only for the DBD VERSION parameter value.
- The utility cannot print the FREQ parameter because ACBs in the IMS directory contain no information about the FREQ parameter of the SEGM statement.
- The utility cannot print the SIZE parameter, the second RECORD parameter, and the DEVICE parameter of the DATASET statement because ACBs in the IMS directory contain no information about these parameters.

The following restrictions apply to IMS PSBGEN control statements that the Catalog Manager utility generates:

- The PCB label and the PCBNAME parameter in the PCB statement are mutually exclusive. If the utility finds a PCB label parameter, the utility prints the value as a PCBNAME parameter. If you want the PCB label parameter printed in the output, specify the PCB_LABEL=YES option for the FABXCIN control statement.
- If the PGM_COBOL=YES option is not specified in the FABXCIN control statement, the utility prints the PSBGEN statement as PSBGEN LANG=ASSEM even if the statement is defined as PSBGEN LANG=COBOL or PSB LANG=, because there is no difference between the PSBs.
- The utility always prints the TP PCB statement as PCB TYPE=TP,LTERM=*nnnn* even if it is defined as PCB TYPE=TP,NAME=*nnnn*, because there is no difference between the PSBs.
- For a DEDB database, the utility always prints the POS parameter of the PCB statement as POS=S.
- The utility always prints the REPLACE parameter of the SENFLD statement as REPLACE=YES.
- The utility always prints the LIST parameter of the GSAM PCB statement as LIST=NO because GSAM PCBs in the IMS directory contains no information about the parameter.

Validating IMS control blocks in the IMS catalog

To validate DBDs and PSBs in the IMS catalog by using the Catalog Manager utility, you must prepare JCL for the Catalog Manager utility and submit the job.

Procedure

1. Create JCL for the Catalog Manager utility. You can copy sample JCL in the SHPSJCL0 library, member FABXCIVP, and modify it or create one of your own.
2. In the Catalog Manager utility JCL, code the EXEC statement and DD statements.

   See "JCL requirements for the Catalog Manager utility" on page 365.
3. In the FABXCIN data set, code the control statements for the Catalog Manager utility.

   See "Control statements for the Catalog Manager utility" on page 370.
4. Submit the job.
5. Check the job-step return code, WTO messages, and output data sets that are generated. The validation result is in the IMS Catalog Validation report in the FABXCRP1 data set.

   See "Output from the validate function" on page 384.

What to do next

If inconsistencies were found by the validation process, run the ACB Generation and Catalog Populate utility (DFS3UACB) or the IMS Catalog Population utility (DFS3PU00) to populate the IMS catalog.

Related reference:

"Example: Validating DBDs and PSBs" on page 379

Comparing IMS control blocks

The utility compares IMS control blocks — DBD-type ACBs (or DBDs) and PSB-type ACBs (or PSBs) — within the IMS directory, between the IMS directory and ACB libraries, and between the IMS directory and DBD libraries or PSB libraries.

About this task

The compare function can compare active IMS control blocks in IMS directory data sets with staging IMS control blocks in a staging data set. It can also compare IMS directory with ACB, DBD, and PSB libraries. For example, you can use the compare function to:

- Identify which definitions will be changed by activating the staging IMS control block.
- Ensure that the IMS directory is in sync with ACB, DBD, PSB libraries. If differences are detected, you can correct them by running the IMS Catalog Populate utility (DFS3PU00).

To compare IMS control blocks, you must prepare JCL for the Catalog Manager utility and submit the job.

Procedure

1. Create JCL for the Catalog Manager utility. You can copy the JCL example in "Example: Comparing IMS control blocks" on page 379 and modify it or create one of your own.
2. In the Catalog Manager utility JCL, code the EXEC statement and DD statements.

   See "JCL requirements for the Catalog Manager utility" on page 365.
3. In the FABXCIN data set, code the control statements for the Catalog Manager utility.

   See "Control statements for the Catalog Manager utility" on page 370.
4. Submit the job.
5. Check the job-step return code, WTO messages, and output data sets that are generated.

   Refer to the Compare Summary report for a comparison summary. If any errors or warning messages were issued, see the Error and Warning messages report. These reports are generated in the FABXCRP1 data set.

   To see the details of the differences detected, refer to the Compare Listing generated in the FABXCRP2 data set.

   See "Output from the compare function" on page 391.

Related reference:

"Example: Comparing IMS control blocks" on page 379

Converting IMS control blocks to control statements

The Catalog Manager utility can convert runtime ACBs in the IMS directory to IMS DBDGEN control statements or to IMS PSBGEN control statements. To convert IMS control blocks, you must prepare JCL for the Catalog Manager utility and submit the job.

Procedure

1. Create JCL for the Catalog Manager utility. You can copy the JCL example in "Example: Converting IMS control blocks to control statements" on page 382 and modify it or create one of your own.
2. In the Catalog Manager utility JCL, code the EXEC statement and DD statements.

   See "JCL requirements for the Catalog Manager utility" on page 365.
3. In the FABXCIN data set, code the control statements for the Catalog Manager utility.

   See "Control statements for the Catalog Manager utility" on page 370.
4. Submit the job.
5. Check the job-step return code, WTO messages, and output data sets that are generated. The decoded source is generated in the FABXCSRC data set.

   See "Output from the convert function" on page 396.

Related reference:

"Example: Converting IMS control blocks to control statements" on page 382

JCL requirements for the Catalog Manager utility

When you code JCL for the Catalog Manager utility, include the EXEC statement and appropriate DD statements.

Subsections:

- "JCL example"
- "EXEC statement" on page 366
- "DD statements" on page 366

JCL example

The following figure shows a JCL example that you can use to run the Catalog Manager utility program.

```
//CATMANJ  JOB .....
//STEP     EXEC PGM=FABXCATM
//STEPLIB  DD DSN=HPS.SHPSLMD0,DISP=SHR
//         DD DSN=IMS13.SDFSRESL,DISP=SHR
//DFSRESLB DD DSN=IMS13.SDFSRESL,DISP=SHR
//IMS      DD DSN=PROD.PSBLIB,DISP=SHR
//         DD DSN=PROD.DBDLIB,DISP=SHR
//DFSVSAMP DD *
0512,9
1024,9
2048,9
4096,9
16384,9
32768,9
IOBF=(2048,4,N,N)
IOBF=(4096,4,N,N)
IOBF=(8192,4,N,N)
IOBF=(32000,4,N,N)
/*
//PROCLIB  DD DSN=IMS13.PROCLIB
//RECON1   DD DSN=PROD.RECON1,DISP=SHR
//RECON2   DD DSN=PROD.RECON2,DISP=SHR
//*
//ACBLIB   DD DSN=PROD.ACBLIB
//FABXPPRM DD *
DLI,FABXCATM,DFSCPL00,,,,,,,,,,Y,N,,,,,,,,,,,,DFSDF=CAT
//FABXCIN DD *
  PROC   FUNC=CHECK_GENTIME
  DBD NAME=*
  PSB NAME=*
  END
/*
```

Figure 143. Catalog Manager utility example JCL: validating DBDs and PSBs

In this example, it is assumed that the DFSDF*xxx* PROCLIB member and RECON data sets were used to configure the environment for the IMS catalog. When you code the JCL, add appropriate DD statements based on how you configured the IMS catalog environment. This applies, for example, if you used the Catalog Definition exit routine (DFS3CDX0) or the IMS catalog partition definition data set (DFSHDBSC) to configure the environment for the IMS catalog.

EXEC statement

The EXEC JCL statement must specify the FABXCATM program. No PARM operand is required.

```
//stepname EXEC PGM=FABXCATM
```

You can specify IMSPlex name and a group of DBRC instances to access the RECON data set. Here is an example of the statement:

```
//stepname EXEC PGM=FABXCATM,PARM='IMSPLEX=imsplex,DBRCGRP=dbrcgrp'
```

IMSPLEX=*imsplex*
A 1 - 5 character IMSplex name used for RECON data sets.

DBRCGRP=*dbrcgrp*
A 1 - 3 character identifier (ID) assigned to a group of DBRC instances that access the same RECON data set in an IMSplex.

DD statements

Code the following DD statements to identify the source of input and the placement of output information:

STEPLIB DD or JOBLIB DD
Required input data set. Specify the LIU load module library data set, which contains the Catalog Manager utility, and the IMS.SDFSRESL data set. To use the following functions, you must also specify the SGLXLOAD library of IMS Tools Base V1.6 or later:

- Compare function
- Convert function
- Validate function (SGLXLOAD library is required only if you want to check the resources in IMS directory data sets)

Optionally, specify the following resources:

- If you use the Catalog Definition exit routine (DFS3CDX0), specify the load module data set that contains the exit routine.
- If you want the RECON data sets, IMS bootstrap data set, or the DFSHDBSC data set to be dynamically allocated, specify the MDA library.
- If you use the SCI exit routine for your IMS environment, specify the load module data set that contains the exit routine.

DFSRESLB DD
Optional input data set. If you specify the DLI keyword in the FABXPPRM data set, you must specify this DD statement. Specify the IMS.SDFSRESL data set.

IMS DD
Optional input data set. If you specify the DLI keyword in the FABXPPRM data set, you must specify this DD statement. Specify the PSB and DBD libraries that contain the DBDs and PSBs for the IMS catalog.

DFSVSAMP DD
Optional input data set. If you specify the DLI keyword in the FABXPPRM data set, you must specify this DD statement. Specify the buffer pool parameters data set.

RECON1 DD
RECON2 DD

RECON3 DD

Optional input data sets. Specify the RECON data sets if the IMS catalog database is registered in the RECON data sets.

PROCLIB DD

Optional input data set. Specify the IMS.PROCLIB data set that contains the DFSDF*xxx* member if a DFSDF*xxx* member is used for the IMS catalog.

DFSHDBSC DD

Optional input data set. Specify the IMS catalog partition definition data set (DFSHDBSC) if the IMS catalog was defined with the IMS Catalog Partition Definition Data Set utility (DFS3UCD0).

ACBLIB DD

Required input data set when using the utility to perform either of the following functions:

- Validate the consistency of DBDs and PSBs in the IMS catalog with ACBs in ACB libraries. Specify one or more ACB libraries that contain the DBD and PSB members to validate.
- Compare ACBs in the IMS directory with those in ACB libraries. Specify one or more ACB libraries that contain the DBD or PSB members to compare.

DBDLIB DD

Required input data set when using the utility to compare ACBs in the IMS catalog with DBDs in DBD libraries. Specify one or more DBD libraries that contain the DBD members to compare with the IMS directory.

PSBLIB DD

Required input data set when using the utility to compare ACBs in the IMS catalog with PSBs in PSB libraries. Specify one or more PSB libraries that contain the PSB members to compare with the IMS directory.

FABXPPRM DD

Optional input statement. If you do not use the Catalog Definition exit routine (DFS3CDX0), you must specify this DD statement. Specify the parameters for the IMS region controller DFSRRC00.

Catalog Manager runs as a z/OS batch job, and it invokes DFSRRC00 to issue DL/I calls to the IMS catalog database. The parameters in FABXPPRM DD are given to DFSRRC00.

The format of the parameters is the same as the DFS3PPRM DD statement for the ACB Generation and Catalog Populate utility (DFS3UACB). You can reuse the parameters that you specify in the DFS3PPRM data set.

Related reading: For more information, see the topic "ACB Generation and Catalog Populate utility (DFS3UACB)" in *IMS System Utilities*.

DL/I

The parameters must include the name of the DFSDF*xxx* PROCLIB member that contains the processing options for the IMS catalog. Here is an example of the parameters:

```
//FABXPPRM DD *
DLI,FABXCATM,DFSCP000,,,,,,,,,,Y,N,,,,,,,,,,,DFSDF=CAT
/*
```

If you specify DLI and the IMS catalog is shared, you must specify IRLM support in the parameters. In the following example, the second Y and *irlmid* value indicate IRLM support:

```
//FABXPPRM DD *
DLI,DFS3PU00,DFSCP000,,,,,,,,,,Y,Y,irlmid,,,,,,,,,,'DFSDF=001'
/*
```

You can specify the IMSPlex name and the group of DBRC instances that access the RECON data set to the FABXPPRM DD statement. Here is an example of the parameters:

```
//FABXPPRM DD *
DLI,FABXCATM,DFSCP000,,,,,,,,,,Y,N,,,,,,,,,,imsplex,,DFSDF=CAT,DBRCGRP=dbrcgroup
/*
```

If you specify the IMSPlex name and the group of DBRC instances on both the EXEC statement and the FABXPPRM DD statement, the parameters on the FABXPPRM DD statement are used.

If the Catalog Definition exit routine (DFS3CDX0) is used, you can omit the FABXPPRM DD statement. If DFS3CDX0 is not used and you omit the FABXPPRM DD statement, the Catalog Manager utility uses the following statement as the default:

```
//FABXPPRM DD *
DLI,FABXCAPL,DFSCP000,,,,,,,,,,Y,N,,,,,,,,,,,DFSDF=CAT
/*
```

BMP

If the IMS control region is active on the same LPAR as the Catalog Manager utility job, you can specify the BMP keyword. Here is an example of the parameters:

```
//FABXPPRM DD *
BMP,FABXCATM,DFSCP000,,,,,,,,,,imsid,,,,,,
/*
```

When you specify the BMP keyword in the FABXPPRM data set, the Catalog Manager utility behaves as follows:

- Displays asterisks (***) for some fields (such as IMS ID, ALIAS OF CATALOG DB) in the IMS Catalog Environment report.
- If the IMS control region is inactive, issues message DFS690A.

For both DL/I and BMP, you can specify any value for the second and third positional parameters because the Catalog Manager utility uses the following values for these parameters:

- The name of an internal LIU program for the second parameter.
- DFSCP000 for the third parameter.

FABXCIN DD

Required input data set. Specify the data set that contains the control statements for the Catalog Manager utility. The DCB parameters must be RECFM=FB, LRECL=80, and BLKSIZE must be a multiple of 80.

Related reading: For information about the control statements of the Catalog Manager utility, see "Control statements for the Catalog Manager utility" on page 370.

FABXCRP0 DD
FABXCRP1 DD
FABXCRP2 DD

Optional output data sets. Specify these data sets for Catalog Manager utility reports. The DCB parameters must be RECFM=FBA, LRECL=133, and BLKSIZE must be a multiple of 133.

If the DD statements are not specified, the Catalog Manager utility allocates SYSOUT=* to the DD statements and generates the reports.

Related reading: For information about the reports that are generated by the Catalog Manager utility, see "Output from the Catalog Manager utility" on page 384.

FABXCSRC DD
Optional output data set. This data set is used only for the convert function. Specify the data set in which the utility generates IMS DBDGEN control statements and IMS PSBGEN control statements. The DCB parameters must be RECFM=FB, LRECL=80, and BLKSIZE must be a multiple of 80.

DBDSRC DD
PSBSRC DD
Optional output data sets. These data sets are used only for the convert function. Specify the data sets in which the utility generates IMS DBDGEN control statements and IMS PSBGEN control statements. DBDSRC DD is for DBD members and PSBSRC DD is for PSB members. These data sets should be PDS or PDSE. The record format is fixed-blocked, and the logical record length is 80. The block size, if coded, must be a multiple of 80.

IMS DBDGEN and IMS PSBGEN control statements generated in these data sets are identical to those generated in the FABXCSRC data set, but in DBDSRC and PSBSRC data sets, a data set member is created for each DBD or PSB.

SYSUDUMP DD
SYSABEND DD
SYSMDUMP DD
Optional output data sets. Define dump data sets.

Control statements for the Catalog Manager utility

The control statements for the Catalog Manager utility are defined in the FABXCIN data set.

Refer to the following topics for FABXCIN control statements:

- "Control statements for the validate function"
- "Control statements for the compare function" on page 372
- "Control statements for the convert function" on page 375

Control statements for the validate function

Use the following information to prepare control statements for the validate function of the Catalog Manager utility.

Subsections:

- "Syntax rules"
- "Control statement example"
- "Statements, keywords, and parameters"
- "Tips for using wildcard characters" on page 371

Syntax rules

The control statements for the Catalog Manager utility must adhere to the following syntax rules:

- Control statements can be coded on any columns in the range of 2 - 80.
- A statement with an asterisk (*) in column 1 is treated as a comment.
- Each statement consists of a statement type, a keyword, and a parameter as follows:

  statement-type keyword=parameter

Control statement example

The following figure shows an example of the FABXCIN control statements to validate DBD and PSBs.

```
//FABXCIN    DD  *
     PROC   FUNC=CHECK_GENTIME
     REPORT TIMESTAMP=FORMAT1
*
     DBD NAME=HDAMDB1
     PSB NAME=*
     END
/*
```

Figure 144. Control statement example (validate function)

Statements, keywords, and parameters

PROC statement

Required statement. This statement must be coded on the first line.

To invoke the validate function, specify: `FUNC=CHECK_GENTIME`

The utility validates DBD and PSB members by comparing the ACBGEN time stamp of each DBD and PSB member in the ACB libraries to the time stamp of the corresponding DBD and PSB resource in the IMS catalog or the IMS directory.

REPORT statement
Optional statement. Use this statement to specify the format of the time stamps printed in the Catalog Validation report.

TIMESTAMP=
Specify either of the following values:

FORMAT1
Time stamps are reported in the following format: *yyyy/mm/dd hh:mm:ss.th*. This is the default value.

FORMAT2
Time stamps are reported in the following format: *yydddhhmmssth*.

DBD statement
Optional statement. Use this statement to select specific DBDs. Specify this statement with the following keyword and parameter:

NAME=*resource_name*
Specify a DBD name. You can use wildcard characters to create a pattern-matching expression that specifies more than one DBD.

PSB statement
Optional statement. Use this statement to select specific PSBs. Specify this statement with the following keywords and parameters:

NAME=*resource_name*
Specify a PSB name. You can use wildcard characters to create a pattern-matching expression that specifies more than one PSB.

END statement
Optional statement. Use this statement to indicate the end of the control statements.

Tips for using wildcard characters

To specify multiple DBDs or PSBs, specify a wildcard in any position of a character string. The asterisk (*) and the percent sign (%) are supported as wildcard characters. An asterisk represents 0 - 8 characters, and a percent sign represents a single character. If two or more asterisks are specified sequentially, only the first asterisk is recognized.

For example, you can specify the wildcard characters in the following ways:

Purpose	Coding example
Validate all DBD members in the ACB libraries	`DBD NAME=*`
Validate DBDs that have a name that begins with the letter H	`DBD NAME=H*`
Validate PSBs that have a name that begins with the letters ABC, have any letter as the fourth character, and contain 001 as the fifth to seventh characters	`PSB NAME=ABC%001`

Control statements for the compare function

Use the following information to prepare control statements for the compare function of the Catalog Manager utility.

Subsections:

- "Syntax rules"
- "Control statement example"
- "Statements, keywords, and parameters"
- "Tips for using wildcard characters" on page 375

Syntax rules

The control statements for the Catalog Manager utility must adhere to the following syntax rules:

- Control statements can be coded on any columns in the range of 2 - 80.
- A statement with an asterisk (*) in column 1 is treated as a comment.
- Each statement consists of a statement type, a keyword, and a parameter as follows:

  statement-type keyword=parameter

Control statement example

The following figure shows an example of the FABXCIN control statements to compare ACBs.

```
//FABXCIN   DD *
     PROC    FUNC=COMPARE,INPUT1=DIRECTORY_ACTIVE,INPUT2=ACBLIB
*
     DBD NAME1=HDAMDB1,NAME2=HDAMDB0
     DBD NAME1=TESTDB1
     PSB NAME1=PSB*
     END
/*
```

Figure 145. Control statement example (compare function)

Statements, keywords, and parameters

PROC statement

Required statement. This statement must be coded on the first line.

To invoke the compare function, specify: `FUNC=COMPARE`

The utility compares ACBs that are stored in the IMS directory. Depending on the values that you specify for the INPUT*x* keywords, the utility can compare active ACBs with active ACBs, active ACBs with staging ACBs, and staging ACBs with staging ACBs.

The utility can also compare ACBs in the IMS directory with ACBs in the ACB library, DBDs in the DBD library, or with PSBs in the PSB library.

FUNC=COMPARE must be accompanied with the following keywords and parameters. The utility compares resources in the library specified by the INPUT1 keyword with the library specified by the INPUT2 keyword.

Note: Abbreviations are shown in parentheses.

INPUT1=

Specify either of the following values to indicate whether to use active ACBs or staging ACBs in the IMS directory.

DIRECTORY_ACTIVE (DIR_ACT)

Specifies to compare active ACBs in the IMS directory data sets.

DIRECTORY_STAGING (DIR_STG)

Specifies to compare staging ACBs in the staging data set.

INPUT2=

Specify one of the following values:

DIRECTORY_ACTIVE (DIR_ACT)

Specifies to compare active ACBs in the IMS directory data sets.

DIRECTORY_STAGING (DIR_STG)

Specifies to compare staging ACBs in the staging data set.

ACBLIB

Specifies to compare ACBs in the ACB library.

DBDLIB

Specifies to compare DBDs in the DBD library.

PSBLIB

Specifies to compare PSBs in the PSB library.

DBD statement

Optional statement. Use this statement to select specific DBDs. Specify this statement with the following keywords and parameters:

NAME1=*resource_name*
NAME2=*resource_name*

Specify a DBD name.

NAME1 specifies the resource name for the library that the INPUT1 statement specifies. NAME2 specifies the resource name for the library that the INPUT2 statement specifies. If NAME2 is omitted, the value you specify for NAME1 is used for NAME2.

For example, the following control statements are for comparing DBD DBDHDAM in the IMS directory active data sets with DBD DBDHDM2 in the ACB library.

```
PROC   FUNC=COMPARE,INPUT1=DIRECTORY_ACTIVE,INPUT2=ACBLIB
DBD    NAME1=DBDHDAM,NAME2=DBDHDM2
```

If you specify DBDLIB for the INPUT2 keyword, the resource names you specify for NAME1 and NAME2 keywords must be the same.

For both NAME1 and NAME2, you can use wildcard characters to create a pattern-matching expression that specifies more than one DBD. The following restrictions apply to using wildcard characters:

- For NAME1, you can use wildcard characters only when NAME2 keyword is omitted.
- For NAME2, you can use wildcard characters only when wildcard characters are not used for the NAME1 keyword value.

PSB statement

Optional statement. Use this statement to select specific PSBs. Specify this statement with the following keywords and parameters:

NAME1=*resource_name*
NAME2=*resource_name*

Specify a PSB name.

NAME1 specifies the resource name for the library that the INPUT1 statement specifies. NAME2 specifies the resource name for the library that the INPUT2 statement specifies. If NAME2 is omitted, the value you specify for NAME1 is used for NAME2.

For example, the following control statements are for comparing PSB PSB001 in the IMS directory active data set with PSB PSB002 in the ACB library.

```
PROC   FUNC=COMPARE,INPUT1=DIRECTORY_STAGING,INPUT2=ACBLIB
PSB    NAME1=PSB001,NAME2=PSB002
```

If you specify PSBLIB for the INPUT2 keyword, the resource names you specify for NAME1 and NAME2 keywords must be the same.

For both NAME1 and NAME2, you can use wildcard characters to create a pattern-matching expression that specifies more than one PSB. The following restrictions apply to using wildcard characters:

- For NAME1, you can use wildcard characters only when NAME2 keyword is omitted.
- For NAME2, you can use wildcard characters only when wildcard characters are not used for the NAME1 keyword value.

OPTION statement

Optional statement.

Use the following keywords to exclude certain DBDGEN or PSBGEN statements and parameters from the scope of comparison. The OPTION statement works the same as the NOCOMP control statement of the DBD/PSB/ACB Compare utility. For detailed information about statements that are not compared, see "Summary of NOCOMP keyword parameters for source-level compare" on page 217.

- AREA=
- COMPRTN=
- DBDNAME=
- IMSREL=
- KEYLEN=
- LANG=
- LIST=
- METADATA=
- PCBNAME=
- PROCOPT=
- PROCSEQ=
- PROCSEQD=
- PSB_ACCESS=
- PSB_PSELOPT=
- PSBNAME=

- RMNAME=
- VERSION=

YES The DBDGEN or PSBGEN statements and parameters are compared. The default value is YES.

NO The DBDGEN or PSBGEN statements and parameters are not compared.

REPORT statement
Optional statement.

COMPARE_LISTING=
Specifies whether to print the Compare Listing.

YES Prints the Compare Listing even if the utility detects no difference. This is the default value.

NO Does not print the Compare Listing even if the utility detects differences.

YES_ONLY_DIFF
Prints the Compare Listing only when the utility detects differences.

END statement
Optional statement. Use this statement to indicate the end of the control statements.

Tips for using wildcard characters

To specify multiple DBDs or PSBs, specify a wildcard in any position of a character string. The asterisk (*) and the percent sign (%) are supported as wildcard characters. An asterisk represents 0 - 8 characters, and a percent sign represents a single character. If two or more asterisks are specified sequentially, only the first asterisk is recognized.

For example, you can specify the wildcard characters in the following ways:

Purpose	Coding example
Compare all DBD-type ACBs in the IMS directory with those in the ACB libraries	`DBD NAME1=*,NAME2=*`
Compare DBD-type ACBs that have a name that begins with the letter H in the IMS directory with those in the ACB libraries	`DBD NAME1=H*,NAME2=H*`
Compare PSB-type ACBs that have a name that begins with the letters ABC, have any letters as the fourth character, and contain 001 as the fifth to seventh characters in the IMS directory with those in the ACB libraries	`PSB NAME1=ABC%001,NAME2=ABC%001`

Control statements for the convert function

Use the following information to prepare control statements for the convert function of the Catalog Manager utility.

Subsections:

- "Syntax rules" on page 376
- "Control statement example" on page 376

- "Statements, keywords, and parameters"
- "Tips for using wildcard characters" on page 378

Syntax rules

The control statements for the Catalog Manager utility must adhere to the following syntax rules:

- Control statements can be coded on any columns in the range of 2 - 80.
- A statement with an asterisk (*) in column 1 is treated as a comment.
- Each statement consists of a statement type, a keyword, and a parameter as follows:

  statement-type keyword=parameter

Control statement example

The following figure shows an example of the FABXCIN control statements to convert a DBD member and a PSB member in the IMS directory.

```
//FABXCIN   DD *
     PROC    FUNC=DECODE,INPUT=DIRECTORY_ACTIVE
*
     OPTION COMMENT=YES,COMPRESS=YES
     DBD NAME=DBD@001
     PSB NAME=PSB@00*
/*
```

Figure 146. Control statement example (convert function)

Statements, keywords, and parameters

PROC statement

Required statement. This statement must be coded on the first line.

To invoke the convert function, specify: `FUNC=DECODE`

The utility converts DBD and PSB control blocks in the IMS directory to IMS DBDGEN and IMS PSBGEN control statements.

Note: Abbreviations are shown in parentheses.

INPUT=

Specify either of the following values to indicate whether to use active ACBs or staging ACBs in the IMS directory.

DIRECTORY_ACTIVE (DIR_ACT)

Specifies to convert active ACBs in the IMS directory data sets.

DIRECTORY_STAGING (DIR_STG)

Specifies to convert staging ACBs in the staging data set.

DBD statement

Optional statement. Use this statement to select specific DBDs. Specify this statement with the following keyword and parameter:

NAME=*resource_name*

Specify a DBD name. You can use wildcard characters to create a pattern-matching expression that specifies more than one DBD.

PSB statement

Optional statement. Use this statement to select specific PSBs. Specify this statement with the following keywords and parameters:

NAME=*resource_name*

Specify a PSB name. You can use wildcard characters to create a pattern-matching expression that specifies more than one PSB.

PCBNAME_PREFIX=*prfx*

Specify, in 1-4 characters, the prefix to use when assigning names to PCBs.

If the utility finds one or more PCBs without PCB names, the utility assigns PCB names to them and uses those names for the PCBNAME parameters of the PCB statement. The naming format is *prfxnnnn*, where *prfx* is the 1-4 characters that the PCBNAME_PREFIX keyword specifies, and *nnnn* is the PCB number.

The following is an example of the control statement:

```
NAME=psbname,PCBNAME_PREFIX=prfx
```

OPTION statement

Optional statement. The following options can be specified for converting DBDs and PSBs in the IMS directory.

COMMENT=

Specifies whether the utility prints the comment lines (the heading part of the DATASET, SEGM, or PCB statement) from the decoded DBD or PSB sources.

YES The comment lines are printed. This is the default value.

NO The comment lines are not printed.

COMPRESS=

Specifies whether the decoded DBD or PSB sources are printed in compressed format.

YES The decoded sources are printed in compressed format. This is the default value.

NO The decoded sources are printed in noncompressed format.

PCB_LABEL=

Specifies whether to print the PCB name in the PCB label or on the PCBNAME control statement.

YES Prints the PCB name in the PCB label.

NO Prints the PCB name on the PCBNAME control statement. This is the default value.

PGM_COBOL=

Specifies whether to print LABG=COBOL or LABG=ASSEM in the decoded IMS PSBGEN control statements.

YES Prints LANG=COBOL in the IMS PSBGEN control statements.

NO Prints LANG=ASSEM in the IMS PSBGEN control statements. This is the default value.

SENSEG_PROCOPT=
Specifies to print the SENSEG PROCOPT value even when the value is the same as the PCB PROCOPT value.

YES Prints the value.

NO Does not print the value if the SENSEG PROCOPT value is the same as the PCB PROCOPT value. This is the default value.

END statement
Optional statement. Use this statement to indicate the end of the control statements.

Tips for using wildcard characters

To specify multiple DBDs or PSBs, specify a wildcard in any position of a character string. The asterisk (*) and the percent sign (%) are supported as wildcard characters. An asterisk represents 0 - 8 characters, and a percent sign represents a single character. If two or more asterisks are specified sequentially, only the first asterisk is recognized.

For example, you can specify the wildcard characters in the following ways:

Purpose	Coding example
Convert all DBD-type ACBs	`DBD NAME=*`
Convert DBD-type ACBs that have a name that begins with the letter H	`DBD NAME=H*`
Convert PSB-type ACBs that have a name that begins with the letters ABC, have any letter as the fourth characters, and contain 001 as the fifth to seventh characters	`PSB NAME=ABC%001`

JCL examples for the Catalog Manager utility

The following topics provide JCL examples for running the Catalog Manager utility.

Example: Validating DBDs and PSBs

The following figure shows a JCL example for validating DBDs and PSBs.

```
//CATMANJ  JOB .....
//STEP     EXEC PGM=FABXCATM
//STEPLIB  DD DSN=HPS.SHPSLMD0,DISP=SHR
//         DD DSN=IMS15.SDFSRESL,DISP=SHR
//         DD DSN=ITB.SGLXLOAD,DISP=SHR
//DFSRESLB DD DSN=IMS15.SDFSRESL,DISP=SHR
//IMS      DD DSN=PROD.PSBLIB,DISP=SHR
//         DD DSN=PROD.DBDLIB,DISP=SHR
//DFSVSAMP DD *
0512,9
1024,9
2048,9
4096,9
16384,9
32768,9
IOBF=(2048,4,N,N)
IOBF=(4096,4,N,N)
IOBF=(8192,4,N,N)
IOBF=(32000,4,N,N)
/*
//PROCLIB  DD DSN=IMS15.PROCLIB
//RECON1   DD DSN=PROD.RECON1,DISP=SHR
//RECON2   DD DSN=PROD.RECON2,DISP=SHR
//*
//ACBLIB   DD DSN=PROD.ACBLIB
//FABXPPRM DD *
DLI,FABXCATM,DFSCPL00,,,,,,,,,,Y,N,,,,,,,,,,,,DFSDF=CAT
//FABXCIN DD *
  PROC   FUNC=CHECK_GENTIME
  REPORT TIMESTAMP=FORMAT1
  DBD NAME=*
  PSB NAME=*
  END
/*
```

Figure 147. Example of validating DBDs and PSBs

Example: Comparing IMS control blocks

The following figures show JCL examples for the compare function.

The following example is for comparing an active ACB in the IMS directory with a staging ACB in the IMS directory staging data set.

```
//CATMANJ  JOB .....
//STEP     EXEC PGM=FABXCATM
//STEPLIB  DD DSN=HPS.SHPSLMD0,DISP=SHR
//         DD DSN=IMS15.SDFSRESL,DISP=SHR
//         DD DSN=ITB.SGLXLOAD,DISP=SHR
//DFSRESLB DD DSN=IMS15.SDFSRESL,DISP=SHR
//IMS      DD DSN=PROD.PSBLIB,DISP=SHR
//         DD DSN=PROD.DBDLIB,DISP=SHR
//DFSVSAMP DD *
0512,9
1024,9
2048,9
4096,9
16384,9
32768,9
IOBF=(2048,4,N,N)
IOBF=(4096,4,N,N)
IOBF=(8192,4,N,N)
IOBF=(32000,4,N,N)
/*
//PROCLIB  DD DSN=IMS15.PROCLIB
//RECON1   DD DSN=PROD.RECON1,DISP=SHR
//RECON2   DD DSN=PROD.RECON2,DISP=SHR
//*
//FABXCRP0 DD SYSOUT=*
//FABXCRP1 DD SYSOUT=*
//FABXCRP2 DD SYSOUT=*
//FABXPPRM DD *
DLI,FABXCATM,DFSCPL00,,,,,,,,,,Y,N,,,,,,,,,,,,DFSDF=CAT
//FABXCIN DD *
  PROC   FUNC=COMPARE,INPUT1=DIRECTORY_ACTIVE,INPUT2=DIRECTORY_STAGING
  OPTION METADATA=NO,VERSION=NO
  REPORT COMPARE_LISTING=YES
  DBD NAME1=DBDHDAM,NAME2=DBDHDM2
  PSB NAME1=*
  END
/*
```

Figure 148. Example of comparing an active ACB in the IMS directory with a staging ACB in the IMS directory staging data set

The following example is for comparing a DBD and multiple PSBs between the IMS directory and the ACB library.

```
//CATMANJ  JOB .....
//STEP     EXEC PGM=FABXCATM
//STEPLIB  DD DSN=HPS.SHPSLMD0,DISP=SHR
//         DD DSN=IMS15.SDFSRESL,DISP=SHR
//         DD DSN=ITB.SGLXLOAD,DISP=SHR
//DFSRESLB DD DSN=IMS15.SDFSRESL,DISP=SHR
//IMS      DD DSN=PROD.PSBLIB,DISP=SHR
//         DD DSN=PROD.DBDLIB,DISP=SHR
//DFSVSAMP DD *
0512,9
1024,9
2048,9
4096,9
16384,9
32768,9
IOBF=(2048,4,N,N)
IOBF=(4096,4,N,N)
IOBF=(8192,4,N,N)
IOBF=(32000,4,N,N)
/*
//PROCLIB  DD DSN=IMS15.PROCLIB
//RECON1   DD DSN=PROD.RECON1,DISP=SHR
//RECON2   DD DSN=PROD.RECON2,DISP=SHR
//*
//ACBLIB   DD DSN=PROD.ACBLIB
//FABXCRP0 DD SYSOUT=*
//FABXCRP1 DD SYSOUT=*
//FABXCRP2 DD SYSOUT=*
//FABXPPRM DD *
DLI,FABXCATM,DFSCPL00,,,,,,,,,,Y,N,,,,,,,,,,,,DFSDF=CAT
//FABXCIN DD *
  PROC   FUNC=COMPARE,INPUT1=DIRECTORY_ACTIVE,INPUT2=ACBLIB
  OPTION METADATA=NO
  REPORT COMPARE_LISTING=YES_ONLY_DIFF
  DBD NAME1=DBDHDAM,NAME2=DBDHDM2
  PSB NAME1=*
  END
/*
```

Figure 149. Example of comparing active ACBs in the IMS directory with those in the ACB library

The following example is for comparing a staging ACB in the IMS directory staging data set with a DBD in the DBD library.

```
//CATMANJ  JOB .....
//STEP     EXEC PGM=FABXCATM
//STEPLIB  DD DSN=HPS.SHPSLMD0,DISP=SHR
//         DD DSN=IMS15.SDFSRESL,DISP=SHR
//         DD DSN=ITB.SGLXLOAD,DISP=SHR
//DFSRESLB DD DSN=IMS15.SDFSRESL,DISP=SHR
//IMS      DD DSN=PROD.PSBLIB,DISP=SHR
//         DD DSN=PROD.DBDLIB,DISP=SHR
//DFSVSAMP DD *
0512,9
1024,9
2048,9
4096,9
16384,9
32768,9
IOBF=(2048,4,N,N)
IOBF=(4096,4,N,N)
IOBF=(8192,4,N,N)
IOBF=(32000,4,N,N)
/*
//PROCLIB  DD DSN=IMS15.PROCLIB
//RECON1   DD DSN=PROD.RECON1,DISP=SHR
//RECON2   DD DSN=PROD.RECON2,DISP=SHR
//*
//DBDLIB   DD DSN=PROD.DBDLIB
//FABXCRP0 DD SYSOUT=*
//FABXCRP1 DD SYSOUT=*
//FABXCRP2 DD SYSOUT=*
//FABXPPRM DD *
DLI,FABXCATM,DFSCPL00,,,,,,,,,,Y,N,,,,,,,,,,,,DFSDF=CAT
//FABXCIN DD *
  PROC   FUNC=COMPARE,INPUT1=DIRECTORY_STAGING,INPUT2=DBDLIB
  OPTION VERSION=NO,RMNAME=NO
  REPORT COMPARE_LISTING=YES_ONLY_DIFF
  DBD NAME1=DBDHDAM
  END
/*
```

Figure 150. Example of comparing a staging ACB in the IMS directory staging data set with a DBD in the DBD library

Example: Converting IMS control blocks to control statements

The following figure shows a JCL example for converting the runtime ACBs for databases and program views control blocks in the IMS directory to IMS DBDGEN and IMS PSBGEN control statements.

```
//CATMANJ  JOB .....
//STEP     EXEC PGM=FABXCATM
//STEPLIB  DD DSN=HPS.SHPSLMD0,DISP=SHR
//         DD DSN=IMS15.SDFSRESL,DISP=SHR
//         DD DSN=ITB.SGLXLOAD,DISP=SHR
//DFSRESLB DD DSN=IMS15.SDFSRESL,DISP=SHR
//IMS      DD DSN=PROD.PSBLIB,DISP=SHR
//         DD DSN=PROD.DBDLIB,DISP=SHR
//DFSVSAMP DD *
0512,9
1024,9
2048,9
4096,9
16384,9
32768,9
IOBF=(2048,4,N,N)
IOBF=(4096,4,N,N)
IOBF=(8192,4,N,N)
IOBF=(32000,4,N,N)
/*
//PROCLIB  DD DSN=IMS15.PROCLIB
//RECON1   DD DSN=PROD.RECON1,DISP=SHR
//RECON2   DD DSN=PROD.RECON2,DISP=SHR
//*
//FABXCRP0 DD SYSOUT=*
//FABXCRP1 DD SYSOUT=*
//FABXCSRC DD SYSOUT=*
//FABXPPRM DD *
DLI,FABXCATM,DFSCPL00,,,,,,,,,,Y,N,,,,,,,,,,,,DFSDF=CAT
//FABXCIN DD *
  PROC   FUNC=DECODE,INPUT=DIRCTORY_STAGING
  OPTION COMMENT=YES,COMPRESS=YES
  DBD NAME=*
  PSB NAME=*
  END
/*
```

Figure 151. Example of converting ACBs in the IMS directory staging data set

Output from the Catalog Manager utility

Output from the Catalog Manager utility consists of the FABXCRP0 data set, FABXCRP1 data set, FABXCRP2 data set, and FABXCSRC data set. The data sets used depend on the function.

Output from the validate function

Output from the Catalog Manager utility for validating DBDs or PSBs consists of the FABXCRP0 data set and the FABXCRP1 data set.

FABXCRP0 data set (Validate function)

The FABXCRP0 data set contains the Control Statement report, which shows the echo of the FABXCIN control statements and the selected runtime options.

```
IMS LIBRARY INTEGRITY UTILITIES - CATALOG MANAGER                    "CONTROL STATEMENT REPORT"                        PAGE:     1
5655-U08                                                  DATE: 04/05/2019  TIME: 20.04.44                       FABXCATM - V2.R2

"CONTROL STATEMENTS"
0........1.........2.........3.........4.........5.........6.........7.........8
12345678901234567890123456789012345678901234567890123456789012345678901234567890
  PROC   FUNC=CHECK_GENTIME
  REPORT TIMESTAMP=FORMAT1
* Check all DBD-type & PSB-type resources.
  DBD NAME=*
  PSB NAME=*
  END

"RUNTIME OPTIONS"

STATEMENT      KEYWORD     RUNTIME OPTIONS FOR THIS STEP
-----------    --------    ------------------------------------
PROC           FUNC        CHECK_GENTIME

OPTIONAL STATEMENTS

STATEMENT      KEYWORD     RUNTIME OPTIONS FOR THIS STEP
-----------    ---------   ------------------------------------
REPORT         TIMESTAMP   FORMAT1
```

Figure 152. Example of the Control Statement report

FABXCRP1 data set (Validate function)

The FABXCRP1 data set contains the FABXPPRM Echo Back report, the IMS Catalog Environment report, and the IMS Catalog Validation report.

Subsections:

- "FABXPPRM Echo Back report"
- "IMS Catalog Environment report" on page 385
- "IMS Catalog Validation report" on page 386

FABXPPRM Echo Back report

This report contains an echo of the FABXPPRM parameters.

```
IMS LIBRARY INTEGRITY UTILITIES - CATALOG MANAGER                    "FABXPPRM ECHO BACK"                        PAGE:     1
5655-U08                                                  DATE: 04/05/2019  TIME: 20.04.44                   FABXCATM - V2.R2

"FABXPPRM STATEMENT"

0........1.........2.........3.........4.........5.........6.........7.........8
12345678901234567890123456789012345678901234567890123456789012345678901234567890
DLI,FABXCAPL,DFSCP000,,,,,,,,,,N,N,,,,,,,,,,,DFSDF=RGN
```

Figure 153. Example of the FABXPPRM Echo Back report

IMS Catalog Environment report

This report contains environment information about the IMS system and the IMS catalog.

```
IMS LIBRARY INTEGRITY UTILITIES - CATALOG MANAGER            "IMS CATALOG ENVIRONMENT REPORT"                PAGE:     1
5655-U08                                                  DATE: 04/05/2019  TIME: 20.04.44                   FABXCATM - V2.R2

IMS ENVIRONMENT

IMS ID                     :  SYS1
IMS VERSION                :  15.01.00

IMS CATALOG ENVIRONMENT

DFSDF MEMBER NAME          :  DFSDFRGN
DFS3CDX0 ROUTINE           :  NO
ACB MANAGEMENT             :  ACBLIB

ALIAS OF CATALOG DB        :  DFSC
CATALOG HLQ                :  IMS.CATALOG
IMS DIRECTORY HLQ          :  IMS.CATALOG
```

Figure 154. Example of the IMS Catalog Environment report

This report contains the following fields:

IMS ID
IMS ID.

IMS VERSION
IMS version.

DFSDF MEMBER NAME
DFSDF PROCLIB member name. This field is blank if the DFS3CDX0 exit routine was used.

DFS3CDX0 ROUTINE
Whether the DFS3CDX0 exit routine was used. YES indicates that the DFS3CDX0 was used. Blank indicates that the DFSDF member was used.

ACB MANAGEMENT
The location from which the ACBs were loaded. The following locations are used:

CATALOG
ACBs were loaded from the IMS catalog.

ACBLIB
ACBs were loaded from the ACB libraries.

ALIAS OF CATALOG DB
The alias name of the IMS catalog database.

CATALOG HLQ
The high-level qualifier (HLQ) of the IMS catalog.

IMS DIRECTORY HLQ
The high-level qualifier of the IMS directory data sets. This field is blank if the IMS directory was not referred to in the job.

IMS Catalog Validation report

This report contains validation results for DBDs and PSBs. If ACBs were loaded from ACB libraries, the report contains validation results for the DBDs and PSBs in the ACB libraries and the IMS catalog. If ACBs were loaded from the IMS catalog, the report contains validation results for the DBDs and PSBs in the ACB libraries, the IMS catalog, and the IMS directory.

Report examples:

- Example of the IMS Catalog Validation report (ACB library and IMS catalog)
- Example of the IMS Catalog Validation report (IMS directory, IMS catalog, and ACB library)
- Example of the IMS Catalog Validation report (IMS directory and IMS catalog)

The following figure shows an example of the report when the IMS management of ACBs is not enabled.

```
IMS LIBRARY INTEGRITY UTILITIES - CATALOG MANAGER                "IMS CATALOG VALIDATION REPORT"                    PAGE:     1
5655-U08                                                  DATE: 06/13/2019  TIME: 01.25.31                       FABXCATM - V2.R2

DBD
---
                    |------------ ACBLIB -------------|------------ CATALOG ------------|
NAME     VALIDATION  DB VERSION ACBGEN TIMESTAMP       DB VERSION TIMESTAMP
         RESULT
-------- ----------- ---------- ---------------------- ---------- ----------------------
DBDXD70A VALID       0000000001 2019/03/03 20:59:27.31 0000000001 2019/03/03 20:59:27.31
DBDXE70A VALID       0000004321 2019/03/03 20:59:27.31 0000004321 2019/03/03 20:59:27.31
DBDXH70A VALID       0000000020 2019/03/03 20:59:27.31 0000000020 2019/03/03 20:59:27.31
DBDXI03A INVALID     0000000000 2019/03/05 10:21:00.05 0000000000 2019/03/03 20:59:27.31

IMS LIBRARY INTEGRITY UTILITIES - CATALOG MANAGER                "IMS CATALOG VALIDATION REPORT"                    PAGE:     2
5655-U08                                                  DATE: 06/13/2019  TIME: 01.25.31                       FABXCATM - V2.R2

PSB
---
                    |------------ ACBLIB -------------|------------ CATALOG ------------|
NAME     VALIDATION             ACBGEN TIMESTAMP                  TIMESTAMP
         RESULT
-------- -----------            ---------------------             ----------------------
PSBX010  VALID                  2019/03/03 20:59:27.31            2019/03/03 20:59:27.31
PSBX013  INVALID                2019/03/05 10:21:00.05            2019/03/03 20:59:27.31
PSBX020  VALID                  2019/03/03 20:59:27.31            2019/03/03 20:59:27.31
PSBX030  VALID                  2019/03/03 20:59:27.31            2019/03/03 20:59:27.31
```

Figure 155. Example of the IMS Catalog Validation report (ACB library and IMS catalog)

The following figure shows an example of the report when the IMS management of ACBs is enabled. This example contains result of validating DBDs and PSBs in ACB libraries, IMS catalog, and IMS directory.

```
IMS LIBRARY INTEGRITY UTILITIES - CATALOG MANAGER                "IMS CATALOG VALIDATION REPORT"                     PAGE:     1
5655-U08                                                  DATE: 06/19/2019  TIME: 03.48.39                       FABXCATM - V2.R2

DBD
---
                    |----------- DIRECTORY -----------|------------ CATALOG -------------|------------- ACBLIB -------------|
NAME     VALIDATION  STATUS     TIMESTAMP              DB VERSION  TIMESTAMP              DB VERSION  ACBGEN TIMESTAMP
         RESULT
-------- ----------- --------- ---------------------- ---------- ---------------------- ---------- ----------------------
DBD#D01A VALID
                     STAGING    2019/03/03 21:00:34.51 0000000000  2019/03/03 21:00:34.51 0000000000  2019/03/03 21:00:34.51
DBD#D03A INVALID
                     STAGING    2019/03/03 21:00:34.51 (DBD NOT EXIST)                    0000000000  2019/03/03 21:00:34.51
DBD#D60A INVALID
                     ACTIVE     2019/02/27 19:37:00.16 0000000000  2019/02/27 19:37:00.16
                     STAGING    2019/03/03 21:00:34.51 (INSTANCE NOT EXIST)               (DBD NOT EXIST)
DBD#D70A VALID
                     ACTIVE     2019/02/27 19:37:00.16 0000000001  2019/02/27 19:37:00.16
                     STAGING    2019/03/03 21:00:34.51 0000000001  2019/03/03 21:00:34.51 0000000001  2019/03/03 21:00:34.51
DBD#D80A INVALID
                     ACTIVE     2019/02/27 19:37:00.16 0000000000  2019/02/27 19:37:00.16
                     STAGING    2019/03/03 21:00:34.51 (INSTANCE NOT EXIST)               0000000000  2019/03/03 21:00:34.51
DBD#H01A INVALID
                     STAGING    2019/03/03 21:00:34.51 (INSTANCE NOT EXIST)               (DBD NOT EXIST)
DBD#H02A INVALID
                     STAGING    2019/03/03 21:00:34.51 (DBD NOT EXIST)                    (DBD NOT EXIST)
DBD#H60A INVALID
                     ACTIVE     2019/02/27 19:37:00.16 0000000000  2019/02/27 19:37:00.16
                     STAGING    2019/03/03 21:00:34.51 (INSTANCE NOT EXIST)               (DBD NOT EXIST)
DBD#H70A VALID
                     ACTIVE     2019/02/27 19:37:00.16 0000004096  2019/02/27 19:37:00.16
                     STAGING    2019/03/03 21:00:34.51 0000004096  2019/03/03 21:00:34.51 0000004096  2019/03/03 21:00:34.51
DBD#H80A INVALID
                     ACTIVE     2019/02/27 19:37:00.16 0000000000  2019/02/27 19:37:00.16
                     STAGING    2019/03/03 21:00:34.51 (INSTANCE NOT EXIST)               0000000000  2019/03/03 21:00:34.51
DBD#X01A VALID
                     ACTIVE     2019/02/27 19:37:00.16 0000000000  2019/02/27 19:37:00.16
                     STAGING    2019/03/03 21:00:34.51 0000000000  2019/03/03 21:00:34.51 0000000000  2019/03/03 21:00:34.51
DBD#X02A VALID
                     ACTIVE     2019/02/27 19:37:00.16 0000000000  2019/02/27 19:37:00.16
                     STAGING    2019/03/03 21:00:34.51 0000000000  2019/03/03 21:00:34.51 0000000000  2019/03/03 21:00:34.51
DBD@G20V INVALID
                     ACTIVE     2019/02/27 19:37:00.16 (INSTANCE NOT EXIST)
                     STAGING    2019/03/03 21:00:34.51 0000000000  2019/03/03 21:00:34.51 (GSAM)
DBD@X03A INVALID
                     ACTIVE     2019/02/27 19:37:00.16 (INSTANCE NOT EXIST)
                     STAGING    2019/03/03 21:00:34.51 (INSTANCE NOT EXIST)               0000000000 *2019/02/27 19:37:00.16
```

Figure 156. Example of the IMS Catalog Validation report (IMS directory, IMS catalog, and ACB library) (Part 1 of 2)

```
IMS LIBRARY INTEGRITY UTILITIES - CATALOG MANAGER              "IMS CATALOG VALIDATION REPORT"                    PAGE:     2
5655-U08                                                DATE: 06/19/2019  TIME: 03.48.39                      FABXCATM - V2.R2

PSB
---
                    |----------- DIRECTORY -----------|------------ CATALOG -------------|------------- ACBLIB -------------|
NAME     VALIDATION  STATUS     TIMESTAMP                          TIMESTAMP                          ACBGEN TIMESTAMP
         RESULT
-------- ----------- --------- ----------------------           ----------------------           ----------------------
DFSCPL00 VALID
                     ACTIVE     2019/02/27 19:37:01.86             2019/02/27 19:37:01.86             2019/02/27 19:37:01.86
DFSCP000 VALID
                     ACTIVE     2019/02/27 19:37:01.86             2019/02/27 19:37:01.86             2019/02/27 19:37:01.86
DFSCP001 VALID
                     ACTIVE     2019/02/27 19:37:01.86             2019/02/27 19:37:01.86             2019/02/27 19:37:01.86
MAXPSB01 VALID
                     ACTIVE     2019/02/27 19:37:00.16             2019/02/27 19:37:00.16
                     STAGING    2019/03/03 21:00:34.51             2019/03/03 21:00:34.51             2019/03/03 21:00:34.51
MAXPSB02 VALID
                     ACTIVE     2019/02/27 19:37:00.16             2019/02/27 19:37:00.16
                     STAGING    2019/03/03 21:00:34.51             2019/03/03 21:00:34.51             2019/03/03 21:00:34.51
PSB#001  INVALID
                     -         (PSB NOT EXIST)                     2019/03/03 21:00:34.51             2019/03/03 21:00:34.51
PSB#002  VALID
                     ACTIVE     2019/02/27 19:37:00.16             2019/02/27 19:37:00.16
                     STAGING    2019/03/03 21:00:34.51             2019/03/03 21:00:34.51             2019/03/03 21:00:34.51
PSB#009  VALID
                     ACTIVE     2019/02/27 19:37:00.16             2019/02/27 19:37:00.16
                     STAGING    2019/03/03 21:00:34.51             2019/03/03 21:00:34.51             2019/03/03 21:00:34.51
PSB#031  VALID
                     STAGING    2019/03/03 21:00:34.51             2019/03/03 21:00:34.51             2019/03/03 21:00:34.51
PSB#032  VALID
                     STAGING    2019/03/03 21:00:34.51             2019/03/03 21:00:34.51             2019/03/03 21:00:34.51
PSB#033  VALID
                     STAGING    2019/03/03 21:00:34.51             2019/03/03 21:00:34.51             2019/03/03 21:00:34.51
PSB#600  INVALID
                     STAGING    2019/03/03 21:00:34.51 (PSB NOT EXIST)                                2019/03/03 21:00:34.51
PSB#700  INVALID
                     STAGING    2019/03/03 21:00:34.51 (PSB NOT EXIST)                                2019/03/03 21:00:34.51
PSB#800  INVALID
                     STAGING    2019/03/03 21:00:34.51 (PSB NOT EXIST)                                2019/03/03 21:00:34.51
PSB0G10B INVALID
                     STAGING    2019/03/03 21:00:34.51 (PSB NOT EXIST)                   (PSB NOT EXIST)
PSB0G10V VALID
                     ACTIVE     2019/02/27 19:37:00.16             2019/02/27 19:37:00.16
                     STAGING    2019/03/03 21:00:34.51             2019/03/03 21:00:34.51             2019/03/03 21:00:34.51
PSB@600  INVALID
                     ACTIVE     2019/02/27 19:37:00.16 (INSTANCE NOT EXIST)
                     STAGING    2019/03/03 21:00:34.51 (INSTANCE NOT EXIST)                          *2019/02/27 19:37:00.16
```

Figure 157. Example of the IMS Catalog Validation report (IMS directory, IMS catalog, and ACB library) (Part 2 of 2)

The following figure shows an example of the report when the IMS management of ACBs is enabled. This example contains result of validating DBDs and PSBs in IMS catalog, and IMS directory.

```
IMS LIBRARY INTEGRITY UTILITIES - CATALOG MANAGER                "IMS CATALOG VALIDATION REPORT"                    PAGE:     1
5655-U08                                                  DATE: 06/15/2019  TIME: 02.09.27                       FABXCATM - V2.R2

DBD
---
                    |----------- DIRECTORY -----------|------------ CATALOG -------------|
NAME     VALIDATION  STATUS     TIMESTAMP              DB VERSION  TIMESTAMP
         RESULT
-------- ----------- --------- ----------------------- ---------- ----------------------
DBD#D22A VALID
                     ACTIVE     2019/03/05 01:01:33.65 0000000001  2019/03/05 01:01:33.65
                     STAGING    2019/03/09 21:00:34.51 0000000002  2019/03/09 21:00:34.51
DBD#H35A VALID
                     ACTIVE     2019/03/05 01:01:33.65 0000000020  2019/03/05 01:01:33.65
DBD#D85A INVALID
                     ACTIVE     2019/03/05 01:01:33.65 (INSTANCE NOT EXIST)
DBD@D11A VALID
                     ACTIVE     2019/03/05 01:01:33.65 0000001234  2019/03/05 01:01:33.65
                     STAGING    2019/03/09 21:00:34.51 0000001234  2019/03/09 21:00:34.51
DBD@E33A VALID
                     ACTIVE     2019/03/05 01:01:33.65 0000004321  2019/03/05 01:01:33.65
DBD@H60A INVALID
                     ACTIVE     2019/02/27 19:37:00.16 (INSTANCE NOT EXIST)
                     STAGING    2019/03/09 21:00:34.51 0000000000  2019/03/09 21:00:34.51
DBD@H90A VALID
                     ACTIVE     2019/03/05 01:01:33.65 0000011111  2019/03/05 01:01:33.65
IMS LIBRARY INTEGRITY UTILITIES - CATALOG MANAGER                "IMS CATALOG VALIDATION REPORT"                    PAGE:     2
5655-U08                                                  DATE: 06/15/2019  TIME: 02.09.27                       FABXCATM - V2.R2

PSB
---
                    |----------- DIRECTORY -----------|------------ CATALOG -------------|
NAME     VALIDATION  STATUS     TIMESTAMP                          TIMESTAMP
         RESULT
-------- ----------- --------- ----------------------- ---------- ----------------------
PSB@015  VALID
                     ACTIVE     2019/03/05 01:01:33.65             2019/03/05 01:01:33.65
                     STAGING    2019/03/09 21:00:34.51             2019/03/09 21:00:34.51
PSB@025  VALID
                     ACTIVE     2019/03/05 01:01:33.65             2019/03/05 01:01:33.65
PSB@035  VALID
                     ACTIVE     2019/03/05 01:01:33.65             2019/03/05 01:01:33.65
```

Figure 158. Example of the IMS Catalog Validation report (IMS directory and IMS catalog)

This report contains the following fields:

NAME
The resource name. Either the name of the DBD or PSB.

VALIDATION RESULT
The result of the validation. The following indicators are used:

VALID
When the IMS management of ACBs is enabled, the utility reports VALID if an instance in the IMS catalog has the same ACB generation time stamp as the ACB in the IMS directory.

If an ACB library is specified, the following conditions must also be true to be VALID:

- If the member exists in both the active and staging data sets of the IMS directory:
  - The time stamp is the same between the ACB library and the IMS directory staging data set, and an instance with the time stamp exists in the IMS catalog.
  - The database version number is the same between the ACB library and the IMS catalog.
  - An instance that has the same time stamp as the one in the IMS directory active data set exists in the IMS catalog.

- If the member exists in either the active or the staging data sets of the IMS directory:
  - The time stamp is the same between the ACB library and the IMS directory, and an instance with the same time stamp exists in the IMS catalog.
  - The database version number is the same between the ACB library and the IMS catalog.

When the IMS management of ACBs is not enabled, the utility reports the validation result as VALID if both of the following conditions are met:

- The most recent instance in the IMS catalog has the same ACB generation time stamp as the ACB in the ACB library.
- The database version number of the ACB in the ACB library matches the database version number of the instance in the IMS catalog.

INVALID
If the resources do not meet the VALID conditions, INVALID is printed.

When a member is reported as INVALID, identify the cause and run the ACB Generation and Catalog Populate utility (DFS3UACB) or the IMS Catalog Populate utility (DFS3PU00) to fix the condition.

DIRECTORY

STATUS

ACTIVE
DBD or PSB is in the active ACB data sets of the IMS directory.

STAGING
DBD or PSB is in the IMS directory staging data set.

TIMESTAMP
ACB generation time stamp of the DBD or PSB in the active ACB data sets of the IMS directory or the IMS directory staging data set.

When the DBD or PSB does not exist, `(DBD NOT EXIST)` or `(PSB NOT EXIST)` is printed.

CATALOG

DB VERSION
The database version number. When either of the following conditions is met, a string of zeros is shown as the database version number:

- Database versioning is enabled and this DBD is the first version of the database.
- Database versioning is not enabled.

TIMESTAMP
ACB generation time stamp of the DBD or PSB in the IMS catalog.

- When the IMS management of ACBs is enabled and the ACB exists in the IMS directory, this field shows the ACB generation time stamp of the DBD or PSB, which is the same as the ACB generation time stamp of the ACB in the IMS directory.

If an instance with the same time stamp does not exist in the IMS catalog, this field shows (INSTANCE NOT EXIST).

If the ACB does not exist in the IMS directory, this field shows the time stamp of the ACB in the ACB library.

- When the IMS management of ACBs is not enabled, it shows the time stamp of the most recent DBD or PSB in the IMS catalog.

(DBD NOT EXIST) or (PSB NOT EXIST) is printed if the utility finds no instance of the DBD or PSB in the IMS catalog.

ACBLIB

DB VERSION
The database version number. When either of the following conditions is met, a string of zeros is shown as the database version number:

- Database versioning is enabled and this DBD is the first version of the database.
- Database versioning is not enabled.

ACBGEN TIMESTAMP
ACB generation time stamp.

If the time stamp does not match with the time stamp of the ACB in the IMS directory, an asterisk (*) is printed before the time stamp.

(DBD NOT EXIST) or (PSB NOT EXIST) is printed if the utility finds no ACB in the ACB libraries.

Output from the compare function

Output from the Catalog Manager utility for comparing IMS control blocks consists of the FABXCRP0 data set, FABXCRP1 data set, and FABXCRP2 data set.

FABXCRP0 data set (Compare function)

The FABXCRP0 data set contains the Control Statement report, which shows the echo of the FABXCIN control statements and the selected runtime options.

```
IMS LIBRARY INTEGRITY UTILITIES - CATALOG MANAGER                  "CONTROL STATEMENT REPORT"                      PAGE:     1
5655-U08                                                 DATE: 04/05/2019  TIME: 20.04.44                    FABXCATM - V2.R2

"CONTROL STATEMENTS"

0........1.........2.........3.........4.........5.........6.........7.........8
12345678901234567890123456789012345678901234567890123456789012345678901234567890

   PROC FUNC=COMPARE,INPUT1=DIRECTORY_ACTIVE,INPUT2=ACBLIB
   DBD NAME1=DBD*
   PSB NAME1=PSB*
   END

"RUNTIME OPTIONS"

STATEMENT      KEYWORD     RUNTIME OPTIONS FOR THIS STEP
-----------    --------    ------------------------------------
PROC           FUNC        COMPARE


OPTIONAL STATEMENTS

STATEMENT      KEYWORD                 RUNTIME OPTIONS FOR THIS STEP
-----------    --------------------    ------------------------------------
OPTION         VERSION                 YES
               DBDNAME                 YES
               PSBNAME                 YES
               METADATA                YES
               AREA                    YES
               RMNAME                  YES
               COMPRTN                 YES
               PCBNAME                 YES
               KEYLEN                  YES
               IMSREL                  YES
               LANG                    YES
               LIST                    YES
               PROCOPT                 YES
               PROCSEQ                 YES
               PROCSEQD                YES
               PSB_ACCESS              YES
               PSB_PSELOPT             YES
REPORT         COMPARE_LISTING         YES
```

Figure 159. Example of the Control Statement report

FABXCRP1 data set (Compare function)

The FABXCRP1 data set contains the FABXPPRM Echo Back report, the IMS Catalog Environment report, the Compare Summary report, and, if errors or warning messages were issued, the Error and Warning Messages report.

Subsections:

- "FABXPPRM Echo Back report"
- "IMS Catalog Environment report" on page 393
- "Compare Summary report" on page 394
- "Error and Warning Messages report" on page 395

FABXPPRM Echo Back report

This report contains an echo of the FABXPPRM parameters.

```
IMS LIBRARY INTEGRITY UTILITIES - CATALOG MANAGER                    "FABXPPRM ECHO BACK"                        PAGE:     1
5655-U08                                                  DATE: 04/05/2019  TIME: 20.04.44                   FABXCATM - V2.R2

"FABXPPRM STATEMENT"

0........1.........2.........3.........4.........5.........6.........7.........8
12345678901234567890123456789012345678901234567890123456789012345678901234567890
DLI,FABXCAPL,DFSCP000,,,,,,,,,,N,N,,,,,,,,,,,DFSDF=RGN
```

Figure 160. Example of the FABXPPRM Echo Back report

IMS Catalog Environment report

This report contains environment information about the IMS system and the IMS catalog.

```
IMS LIBRARY INTEGRITY UTILITIES - CATALOG MANAGER            "IMS CATALOG ENVIRONMENT REPORT"                PAGE:     1
5655-U08                                                  DATE: 04/05/2019  TIME: 20.04.44                   FABXCATM - V2.R2

IMS ENVIRONMENT

IMS ID                     :  SYS1
IMS VERSION                :  15.01.00

IMS CATALOG ENVIRONMENT

DFSDF MEMBER NAME          :  DFSDFRGN
DFS3CDX0 ROUTINE           :  NO
ACB MANAGEMENT             :  ACBLIB

ALIAS OF CATALOG DB        :  DFSC
CATALOG HLQ                :  IMS.CATALOG
IMS DIRECTORY HLQ          :  IMS.CATALOG
```

Figure 161. Example of the IMS Catalog Environment report

This report contains the following fields:

IMS ID
IMS ID.

IMS VERSION
IMS version.

DFSDF MEMBER NAME
DFSDF PROCLIB member name. This field is blank if the DFS3CDX0 exit routine was used.

DFS3CDX0 ROUTINE
Whether the DFS3CDX0 exit routine was used. YES indicates that the DFS3CDX0 was used. Blank indicates that the DFSDF member was used.

ACB MANAGEMENT
The location from which the ACBs were loaded. The following locations are used:

CATALOG
ACBs were loaded from the IMS catalog.

ACBLIB
ACBs were loaded from the ACB libraries.

ALIAS OF CATALOG DB
The alias name of the IMS catalog database.

CATALOG HLQ
The high-level qualifier (HLQ) of the IMS catalog.

IMS DIRECTORY HLQ
The high-level qualifier of the IMS directory data sets. This field is blank if the IMS directory was not referred to in the job.

Compare Summary report

This report shows the comparison summary.

```
IMS LIBRARY INTEGRITY UTILITIES - CATALOG MANAGER                    "COMPARE SUMMARY REPORT"                      PAGE:     1
5655-U08                                                  DATE: 04/05/2019  TIME: 20.04.44                    FABXCATM - V2.R2

LIBRARY INFORMATION
-------------------
INPUT1
 IMS DIRECTORY HLQ : IMSVS.IMS15A.DFSCD000
 STATUS            : ACTIVE
INPUT2
 ACBLIB            : IMSVS.IMS15A.ACBLIB1

RESOURCE TYPE    RESOURCE NAME1    RESOURCE NAME2    RESULT
-------------    --------------    --------------    ----------------------
DBD              DBD#D01A          DBD#D03A          DIFFERENCE
DBD              DBD#H01A          DBD#H01A          SAME
DBD              DBD#X01A          DBD#X02A          DIFFERENCE
DBD              DBD@G01A          DBD@G01A          FAIL
PSB              PSB#600           PSB#001           DIFFERENCE
PSB              PSB#700           PSB#700           SAME
PSB              PSB#800           PSB#800           SAME
PSB              PSB@001           PSB@0001          FAIL
------------------------------------------------------------------------------
DBD TOTAL      4    SAME      1    DIFFERENCE      2    FAIL      1
PSB TOTAL      4    SAME      2    DIFFERENCE      1    FAIL      1
```

Figure 162. Example of the Compare Summary report

This report contains the following fields:

INPUT1
The library that is specified for the INPUT1 keyword of the PROC FUNC=COMPARE statement.

INPUT2
The library that is specified for the INPUT2 keyword of the PROC FUNC=COMPARE statement.

RESOURCE TYPE
The type of the resource compared. DBD or PSB.

RESOURCE NAME1
The name of the resource found in the library specified by the INPUT1 keyword.

RESOURCE NAME2
The name of the resource found in the library specified by the INPUT2 keyword.

RESULT

SAME No difference is found.

DIFFERENCE
Difference is found.

FAIL Member is not found in both or one of the specified libraries.

Error and Warning Messages report

This report contains error and warning messages. If error or warning messages were issued during the process, those messages are printed to the Error and Warning Messages report. If no error or warning messages were issued, this report contains "No message".

```
IMS LIBRARY INTEGRITY UTILITIES - CATALOG MANAGER                  "ERROR AND WARNING MESSAGES"                      PAGE:     1
5655-U08                                                 DATE: 04/05/2019  TIME: 20.04.44                        FABXCATM - V2.R2

FABX0557W DIFFERENCE FOUND DURING COMPARE ACB=DBD#D01A:DBD#D03A
FABX0557W DIFFERENCE FOUND DURING COMPARE ACB=DBD#X01A:DBD#X02A
FABL0047W GSAM DBD DBD@G01A IS NOT COMPARED
FABX0557W DIFFERENCE FOUND DURING COMPARE ACB=PSB#600 :PSB#001
FABL0005W NO MEMBER FOUND FOR PSB@001  IN IMS DIRECTORY
```

Figure 163. Example of the Error and Warning Messages report

FABXCRP2 data set (Compare function)

The FABXCRP2 data set contains the Compare Listing. This report contains details about the differences detected.

```
IMS LIBRARY INTEGRITY UTILITIES - CATALOG MANAGER                    "COMPARE LISTING"                               PAGE:     1
5655-U08                                                 DATE: 04/05/2019  TIME: 20.04.44                        FABXCATM - V2.R2
NUMBER OF DIFFERENT STATEMENTS
INSERTED  :      0
DELETED   :      0
CHANGED   :      4
    IMS DIRECTORY HLQ :                                          ACBLIB         :
        IMSVS.IMS15A.DFSCD000                                        IMSVS.IMS15A.ACBLIB1
     STATUS           : ACTIVE
    RESOURCE          : DBD#X01A                                 RESOURCE       : DBD#X02A
     GENERATED        : 03/18/2018 21.27                          ACBGEN        : 03/18/2018 21.27
     GENERATED IMS    : 1510                                      GENERATED IMS : 1510

CHK SOURCE LINES                                                 SOURCE LINES
--- ----+----1----+----2----+----3----+----4----+----5----+----6- ----+----1----+----2----+----3----+----4----+----5----+----6-
C -      DBD                                          00000001        DBD                                          00000001
  *        NAME=DBD#X01A,                             00000002          NAME=DBD#X02A,                             00000002
           ACCESS=(PSINDEX,VSAM,PROT,DOSCOMP),        00000003          ACCESS=(PSINDEX,VSAM,PROT,DOSCOMP),        00000003
           PASSWD=YES,                                00000004          PASSWD=YES,                                00000004
  *        VERSION='1XXXXXXX'                         00000005          VERSION=  03/05/18 23.33                   00000005
C -      SEGM                                         00000006        SEGM                                         00000006
  *        NAME=X01AS001,                             00000007          NAME=X02AS001,                             00000007
           PARENT=0,                                  00000008          PARENT=0,                                  00000008
           BYTES=64,                                  00000009          BYTES=64,                                  00000009
           RULES=(LLL,LAST),                          00000010          RULES=(LLL,LAST),                          00000010
           DSGROUP=A                                  00000011          DSGROUP=A                                  00000011
C -      FIELD                                        00000012        FIELD                                        00000012
  *        NAME=(X01AFLA,SEQ,U),                      00000013          NAME=(X02AFLA,SEQ,U),                      00000013
           START=1,                                   00000014          START=1,                                   00000014
  *        BYTES=18,                                  00000015          BYTES=10,                                  00000015
  *        TYPE=C                                     00000016          TYPE=X                                     00000016
C -      LCHILD                                       00000017        LCHILD                                       00000017
  *        NAME=(D01SEG2,DBD#D01A),                   00000018          NAME=(D01SEG31,DBD#D01A),                  00000018
  *        INDEX=XDF01D01,                            00000019          INDEX=XDF02D01,                            00000019
           RKSIZE=10                                  00000020          RKSIZE=10                                  00000020
         DBDGEN                                       00000021        DBDGEN                                       00000021
         FINISH                                       00000022        FINISH                                       00000022
         END                                          00000023        END                                          00000023
```

Figure 164. Example of the Compare Listing

This report contains the following fields:

NUMBER OF DIFFERENT STATEMENTS
This part contains the summary information about statements which were inserted, deleted, or changed.

INSERTED
The number of statements which were found only in the DBD or the PSB in the library specified by the INPUT2 keyword.

DELETED
The number of statements which were found only in the DBD or the PSB in the library specified by the INPUT1 keyword.

CHANGED
The number of statements that exist in both DBDs or PSBs but are different.

IMS DIRECTORY HLQ
The high-level qualifier HLQ of the IMS directory data sets.

STATUS
The status of the IMS directory. ACTIVE or STAGING.

ACBLIB
DBDLIB
PSBLIB
The library type. This value is determined from the INPUT2 keyword.

RESOURCE
The name of the member compared.

GENERATED
The date and time when the member in the IMS directory was generated.

ACBGEN
The date and time when the member in the ACB library, DBD library, or PSB library was generated.

GENERATED IMS
The IMS version and release when the member was generated.

CHK The following characters are used to indicate the difference:

I A statement is inserted into the DBD or the PSB in the library specified by the INPUT2 keyword.

D A statement is deleted from the DBD or the PSB in the library specified by INPUT1 keyword.

C A statement in the DBD or the PSB in the library specified by the INPUT1 keyword is different from that in the library specified by the INPUT2= keyword. An asterisk (*) is shown on the row of each data that is determined to be different.

SOURCE LINES
The IMS DBDGEN or PSBGEN control statements that were decoded from the DBD or the PSB. The left column shows control statements decoded from the resource found in the library that the INPUT1 keyword specifies, the right column shows control statements decoded from the resource found in the library that the INPUT2 keyword specifies.

Output from the convert function

Output from the Catalog Manager utility for converting DBDs or PSBs consists of the FABXCRP0 data set, FABXCRP1 data set, and FABXCSRC data set. If you specify the DBDSRC or the PSBSRC data set, the utility generates members containing IMS DBDGEN or PSBGEN control statements in those data sets.

FABXCRP0 data set (Convert function)

The FABXCRP0 data set contains the Control Statement report, which shows the echo of the FABXCIN control statements and the selected runtime options.

```
IMS LIBRARY INTEGRITY UTILITIES - CATALOG MANAGER                    "CONTROL STATEMENT REPORT"                    PAGE:     1
5655-U08                                                  DATE: 04/05/2019  TIME: 20.04.44                  FABXCATM - V2.R2

"CONTROL STATEMENTS"

0........1.........2.........3.........4.........5.........6.........7.........8
12345678901234567890123456789012345678901234567890123456789012345678901234567890

   PROC FUNC=DECODE,INPUT=DIRECTORY_ACTIVE
   DBD NAME=DBD@D03A
   PSB NAME=PSB@003
   END

"RUNTIME OPTIONS"

STATEMENT      KEYWORD     RUNTIME OPTIONS FOR THIS STEP
-----------    --------    ------------------------------------
PROC           FUNC        DECODE


OPTIONAL STATEMENTS

STATEMENT      KEYWORD                RUNTIME OPTIONS FOR THIS STEP
-----------    --------------------   ------------------------------------
OPTION         PGM_COBOL              NO
               COMMENT                YES
               COMPRESS               YES
               PCB_LABEL              NO
               SENSEG_PROCOPT         NO
```

Figure 165. Example of the Control Statement report

FABXCRP1 data set (Convert function)

The FABXCRP1 data set contains the FABXPPRM Echo Back report, the IMS Catalog Environment report, and, if errors or warning messages were issued, the Error and Warning Messages report.

Subsections:

- "FABXPPRM Echo Back report"
- "IMS Catalog Environment report" on page 398
- "Error and Warning Messages report" on page 398

FABXPPRM Echo Back report

This report contains an echo of the FABXPPRM parameters.

```
IMS LIBRARY INTEGRITY UTILITIES - CATALOG MANAGER                    "FABXPPRM ECHO BACK"                    PAGE:     1
5655-U08                                                  DATE: 04/05/2019  TIME: 20.04.44                  FABXCATM - V2.R2

"FABXPPRM STATEMENT"

0........1.........2.........3.........4.........5.........6.........7.........8
12345678901234567890123456789012345678901234567890123456789012345678901234567890
DLI,FABXCAPL,DFSCP000,,,,,,,,,,N,N,,,,,,,,,,,DFSDF=RGN
```

Figure 166. Example of the FABXPPRM Echo Back report

IMS Catalog Environment report

This report contains environment information about the IMS system and the IMS catalog.

```
IMS LIBRARY INTEGRITY UTILITIES - CATALOG MANAGER              "IMS CATALOG ENVIRONMENT REPORT"                  PAGE:     1
5655-U08                                              DATE: 04/05/2019  TIME: 20.04.44                      FABXCATM - V2.R2

IMS ENVIRONMENT

IMS ID                    :  SYS1
IMS VERSION               :  15.01.00

IMS CATALOG ENVIRONMENT

DFSDF MEMBER NAME         :  DFSDFRGN
DFS3CDX0 ROUTINE          :  NO
ACB MANAGEMENT            :  ACBLIB

ALIAS OF CATALOG DB       :  DFSC
CATALOG HLQ               :  IMS.CATALOG
IMS DIRECTORY HLQ         :  IMS.CATALOG
```

Figure 167. Example of the IMS Catalog Environment report

This report contains the following fields:

IMS ID
IMS ID.

IMS VERSION
IMS version.

DFSDF MEMBER NAME
DFSDF PROCLIB member name. This field is blank if the DFS3CDX0 exit routine was used.

DFS3CDX0 ROUTINE
Whether the DFS3CDX0 exit routine was used. YES indicates that the DFS3CDX0 was used. Blank indicates that the DFSDF member was used.

ACB MANAGEMENT
The location from which the ACBs were loaded. The following locations are used:

CATALOG
ACBs were loaded from the IMS catalog.

ACBLIB
ACBs were loaded from the ACB libraries.

ALIAS OF CATALOG DB
The alias name of the IMS catalog database.

CATALOG HLQ
The high-level qualifier (HLQ) of the IMS catalog.

IMS DIRECTORY HLQ
The high-level qualifier of the IMS directory data sets. This field is blank if the IMS directory was not referred to in the job.

Error and Warning Messages report

This report contains error and warning messages. If error or warning messages were issued during the process, those messages are printed to the Error and

Warning Messages report. If no error or warning messages were issued, this report contains "No message".

```
IMS LIBRARY INTEGRITY UTILITIES - CATALOG MANAGER                  "ERROR AND WARNING MESSAGES"                      PAGE:     1
5655-U08                                              DATE: 04/05/2019  TIME: 20.04.44                          FABXCATM - V2.R2

FABN0068W RDMVTAB CSECT IS CUSTOMIZED: MEMBER=DBD@CUST, TYPE=DBD TYPE ACB
FABN0077W VERSION PARAMETER DBD STATEMENT IS NOT DECODED. EXIT PARAMETERS OF DBD AND SEGM STATEMENTS ARE NOT DECODED
FABN0077W VERSION PARAMETER DBD STATEMENT IS NOT DECODED.
FABN0077W VERSION PARAMETER DBD STATEMENT IS NOT DECODED.
```

Figure 168. Example of the Error and Warning Messages report

FABXCSRC data set (Convert function)

The FABXCSRC data set contains decoded IMS DBDGEN or IMS PSBGEN control statements.

```
         TITLE   'ASSEMBLE OF DBDNAME=DBD@D63A '
*        IMS DIRECTORY - ACTIVE
*        HLQ=IMSVS.IMS15A.DFSCD000
*        GENERATION DATE 04/01/2019 TIME 21.27.09
*        DECODE DATE 04/05/2019 TIME 20.04.44
*        IMS VERSION 15.1
       DBD     NAME=DBD@D63A,ACCESS=(HDAM,OSAM),RMNAME=(RNM,2,500,800),C
               PASSWD=NO,                                              C
               VERSION=,            DATE 03/05/18 TIME 23.32           C
               ENCODING=CPDBD1,REMARKS='DBD_REMARKS_MAX256_123456789'
*********************************************************************
*        DATASET GROUP NUMBER 1                                     *
*********************************************************************
DSG001 DATASET DD1=DD@D63A,SIZE=(1690),SCAN=3,FRSPC=(2,3),SEARCHA=2,   C
               REMARKS='DBD@D03A_DD@D03A_REMARKS'
*********************************************************************
*        SEGMENT NUMBER 1                                           *
*********************************************************************
       SEGM    NAME=D03SEG1,PARENT=0,BYTES=100,RULES=(LLL,LAST),       C
               PTR=(TWIN,,,,)
       FIELD   NAME=(D03FLD1A,SEQ,U),START=1,BYTES=10,TYPE=C
*********************************************************************
*        SEGMENT NUMBER 2                                           *
*********************************************************************
       SEGM    NAME=D03SEG2,PARENT=((D03SEG1,)),BYTES=100,             C
               RULES=(LLL,LAST),PTR=(TWIN,,,,)
       FIELD   NAME=(D03FLD2A,SEQ,U),START=1,BYTES=10,TYPE=C
       DBDGEN
       FINISH
       END
```

Figure 169. Example of IMS DBDGEN control statements re-generated by the Catalog Manager utility

For restrictions that apply to generated control statements, see "Catalog Manager utility restrictions" on page 360.

DBDSRC and PSBSRC data sets (Convert function)

The Catalog Manager utility creates IMS DBDGEN or PSBGEN control statements in the PDS or PDSE specified for the DBDSRC DD statement or the PSBSRC DD statement. These IMS DBDGEN or PSBGEN control statements are identical to those created in the FABXCSRC data set.

If the specified data set is not a PDS or PDSE, the program ends abnormally with an open error.

Note: If the member specified already exists in the PDS or PDSE, the program overrides the member.

Chapter 11. Advanced Application Control Block Generator utility

The Advanced Application Control Block Generator utility (also referred to as Advanced ACBGEN utility) is a functional replacement for the IMS Application Control Blocks Maintenance utility with enhancements.

Topics:

- "Advanced ACBGEN utility overview" on page 402
- "Generating application control blocks" on page 403
- "Merging Advanced ACBGEN load modules into the IMS SDFSRESL library" on page 404
- "Using the Advanced ACBGEN utility in an ACB Generation and Catalog Populate utility job" on page 406
- "JCL requirements for the Advanced ACBGEN utility" on page 407
- "Control statements for the Advanced ACBGEN utility" on page 411
- "Output from the Advanced ACBGEN utility" on page 415

Advanced ACBGEN utility overview

Advanced ACBGEN utility is a replacement for the IMS ACBGEN utility (DFSUACB0), with enhancements. The Advanced ACBGEN utility can also replace the IMS ACBGEN utility used to generate ACB members within ACB Generation and Catalog Populate utility (DFS3UACB) jobs. It uses some of the modules provided by IMS, and replaces others. Additionally, several utilities are provided to display and audit the contents of an ACB library.

The current ACB generation process provided with IMS consists of three basic modules. Each set of basic modules consists of a primary module and a number of supporting modules. In this information, only the primary module is discussed.

- The first basic module is the IMS ACBGEN utility, DFSUACB0. Its primary function is to prepare the ACB library for processing, and build a list of PSB names, and pass them, one at a time, to the *Block Builder* module.
- The second basic module is the *Block Builder*, DFSDLBL0. Its primary function is to load a PSB and its referenced DBDs and build DLI control blocks. These control blocks are then passed to the *Block Mover* module.
- The third basic module is *Block Mover*, DFSUAMB0. Its primary function is to take the DLI control blocks passed to it and build a PSB and one or more DMBs. The PSB is then written into the ACB library. The DMBs might or might not be written into the ACB library.

The Advanced ACBGEN utility replaces the IMS provided DFSUACB0 module and the related supporting modules. However, the DFSDLBL0 Block Builder and DFSUAMB0 Block Mover modules are used to build the PSBs and DMBs.

The Advanced ACBGEN utility builds a list of PSBs. The names of these PSBs are passed to the Block Builder, DFSDLBL0, where they are processed. Statistics and IMS generated messages for each PSB and DMB built are captured. When the PSB list has been processed, several reports are generated that provide a summary list of the ACB library members that have been added, deleted, replaced, or not replaced.

An important feature of Advanced ACBGEN utility is its management and presentation of the DFS*nnnn* messages generated during the ACBGEN process. The utility presents PSB and DBD information in a concise tabular format rather than the prose format used by the utility provided in IMS. As more PSBs and DBDs are involved in the ACBGEN, the significance of this presentation method increases.

The elapsed time can be reduced by reducing both the number of DASD EXCPs and the CPU time. As more PSBs are generated, the time is reduced, especially when a 'BUILD PSB=ALL' ACB is generated.

Advanced ACBGEN utility JCL is compatible with the IMS utility. The use of Advanced ACBGEN utility, whether it is used alone or called within an ACB Generation and Catalog Populate utility job, can be enabled by adding the load module library that includes the Advanced ACBGEN load modules to the top of the STEPLIB DD concatenation. Additional optional DD statements can be added to request Advanced ACBGEN utility features. These additional DD statements are ignored if they are present when the IMS utility is used.

Generating application control blocks

To generate application control blocks by using the Advanced ACBGEN utility, you must prepare JCL for the Advanced ACBGEN utility and submit the job.

About this task

Sample JCL for the Advanced ACBGEN utility is in the SHPSJCL0 library, member FABQIVP. You can modify this sample JCL and then use it to run the utility.

Procedure

1. In the Advanced ACBGEN utility JCL, code the EXEC statement and DD statements.

   You can modify the JCL that is used for the IMS ACBGEN utility.

   For the format of the EXEC statement and the list of DD statements, see "JCL requirements for the Advanced ACBGEN utility" on page 407.
2. Code the control statements for Advanced ACBGEN utility in the SYSIN data set and optionally in the ACBSYSIN data set.

   See "Control statements for the Advanced ACBGEN utility" on page 411.
3. Submit the job.
4. Check the output data sets that are generated.

   See "Output from the Advanced ACBGEN utility" on page 415.

Merging Advanced ACBGEN load modules into the IMS SDFSRESL library

If you do not want to modify IMS ACBGEN utility JCL, an alternative is to merge the Advanced ACBGEN load modules (FABQ*) into the IMS SDFSRESL library. However, this method is not recommended because this method requires extra steps when you install PTFs.

About this task

Important: When you merge the modules by completing this task, extra steps are required when you install PTFs to IMS Library Integrity Utilities or to IMS. To prevent any accidents from happening during future PTF installation, consider modifying STEPLIB (as in step 1 in "Generating application control blocks" on page 403) instead of merging the modules.

To use Advanced ACBGEN utility instead of the IMS ACBGEN utility, the LIU load module must precede the IMS SDFSRESL library in the STEPLIB in IMS ACBGEN utility JCL. When specified so, because alias name DFSUACB0 (IMS ACBGEN utility module name) is assigned to program load module FABQMAIN (LIU load module), Advanced ACBGEN utility starts instead of the IMS ACBGEN utility.

Attention:

- Do not accept USERMOD provided by FABQUMD3. After USERMOD is applied successfully, the IMS ACBGEN utility cannot be invoked unless the USERMOD is restored.
- If you need to apply a SYSMOD to the IMS DFSRRA80 module, restore USERMOD in advance and apply it again after applying the IMS SYSMOD.
- Whenever you apply USERMOD, rewrite the prerequisite SYSMOD statements, which can be referred to by the FABQUMD2 job, on the PRE operand in the FABQUMD3 JCL statement.
- If you need to apply a SYSMOD to IMS Library Integrity Utilities, run the FABQUMD1 job and merge the members again.

Procedure

Run the following steps to merge Advanced ACBGEN load modules into the IMS SDFSRESL library. The jobs are provided in the SHPSJCL0 JCL library.

1. Run the FABQUMD1 job.

   This job deletes alias DFSUACB0 from the IMS LIU SHPSLMD0 library and the LMOD entry of IMS LIU SMP/E CSI.
2. Run the FABQUMD2 job.

   This job runs SMP/E LIST of the IMS DFSRRA80 source entry. This information is required for the following FABQUMD3 job.
3. Run the FABQUMD3 job.

   This job runs SMP/E RECEIVE/APPLY of USERMOD to modify the IMS DFSRRA80 module so that the module invokes the IMS LIU FABQMAIN module instead of DFSUACB0.
4. Merge Advanced ACBGEN load modules in the target library SHPSLMD0 into the IMS SDFSRESL library.

What to do next

After running all of the jobs and merging the modules, you can run the Advanced ACBGEN utility without modifying the JCL statements for the IMS ACBGEN utility. Only for this case, the DFSRESLB DD statement can be omitted.

Using the Advanced ACBGEN utility in an ACB Generation and Catalog Populate utility job

To generate ACB members by using the Advanced ACBGEN utility in an ACB Generation and Catalog Populate utility job, modify the ACB Generation and Catalog Populate utility JCL so that the Advanced ACBGEN utility is used, and submit the job.

Procedure

1. In the ACB Generation and Catalog Populate utility (DFS3UACB) JCL, modify the DD statements so that the Advanced ACBGEN utility is used to generate ACB members.

   See "JCL requirements for the Advanced ACBGEN utility" on page 407.
2. Code the control statement for the Advanced ACBGEN utility in the SYSIN data set and, optionally, in the ACBSYSIN data set.

   See "Control statements for the Advanced ACBGEN utility" on page 411.
3. Submit the job.
4. Check the output data sets that are generated.

   See "Output from the Advanced ACBGEN utility" on page 415.

JCL requirements for the Advanced ACBGEN utility

JCL for running the Advanced ACBGEN utility, whether the utility is used alone or called within an ACB Generation and Catalog Populate utility (DFS3UACB) job, must meet JCL requirements.

The Advanced ACBGEN utility is JCL-compatible with the IMS ACBGEN utility (DFSUACB0). The Advanced ACBGEN utility supports a few unique DD statements, but most of the DD statements are common between the utilities.

This topic describes only the DD statements that require special attention. For a complete information about the JCL requirements of IMS utilities, see the following topics in *IMS System Utilities*:

- For the JCL requirements for the IMS ACBGEN utility, see the topic "Application Control Blocks Maintenance utility".
- To generate ACB members by using the Advanced ACBGEN utility in an ACB Generation and Catalog Populate utility job, see the JCL requirements for that utility in the topic "ACB Generation and Catalog Populate utility (DFS3UACB)".

If you run the IMS ACBGEN utility with a JCL stream that contains the Advanced ACBGEN utility unique DD statements, such as ACBSYSIN and DFSPRINT, those DD statements are ignored.

Subsections:

- "EXEC statement"
- "Common DD statements that are used differently" on page 408
- "Common DD statements" on page 408
- "DD statements used in ACB Generation and Catalog Populate utility (DFS3UACB) jobs" on page 409
- "Unique DD statements for the Advanced ACBGEN utility" on page 409

EXEC statement

The EXEC JCL statement does not need to be changed. You can specify the same EXEC JCL statement as the IMS ACBGEN utility. The first part of the EXEC statement must be in the form:

```
PGM=DFSRRC00
```

The parameter field must be in the form:

```
PARM='UPB,PRECOMP,POSTCOMP'
```

UPB Indicates that the block maintenance utility is to receive control. This parameter is required.

PRECOMP
Requests the IMS.ACBLIB data set be compressed before blocks are built.

POSTCOMP
Requests compression after the blocks are built.

PRECOMP and POSTCOMP are optional and can be used in any combination.

The format of the EXEC JCL statement is the same when you use the Advanced ACBGEN utility in ACB Generation and Catalog Populate utility (DFS3UACB) jobs.

Common DD statements that are used differently

The following required DD statements are common to the Advanced ACBGEN utility, IMS ACBGEN utility, and the ACB Generation and Catalog Populate utility (DFS3UACB). However, these DD statements are used differently when they are specified for the Advanced ACBGEN utility.

STEPLIB DD
A STEPLIB DD statement or a JOBLIB DD statement must be provided. The data set name specified on this DD statement must be the name of the load module library that contains the Advanced ACBGEN utility.

The IMS RESLIB must be concatenated behind the DD statement that contains the Advanced ACBGEN utility.

DFSRESLB DD
This statement must be provided regardless of the APF-authorization of the STEPLIB DD. This statement points to the IMS RESLIB.

SYSPRINT DD
This statement must be provided. The data set contains reports of the Advanced ACBGEN utility.

The record format is fixed-blocked, and the logical record length is 121. The block size, if coded, must be a multiple of 121.

Common DD statements

The following DD statements are common to the Advanced ACBGEN utility, IMS ACBGEN utility, and the ACB Generation and Catalog Populate utility (DFS3UACB). These DD statements work the same in all three utilities.

IMS DD
This statement must be provided. It points to the IMS.PSBLIB and IMS.DBDLIB data sets.

IMSACB DD
This statement must be provided. The data set name specified in this DD statement must be the name of the ACB library. Do not use Linkage Editor to place the members in the data set.

SYSIN DD
This statement must be provided. The data set is used for specifying the input control statements.

The record format is fixed-blocked, and the logical record length is 80. The block size, if coded, must be a multiple of 80. During execution, this utility can process as many control statements as required.

For more information about SYSIN DD and SYSIN control statements, see the topic "Application Control Blocks Maintenance utility" in *IMS System Utilities*.

COMPCTL DD
This statement must be provided if either PRECOMP or POSTCOMP is specified on the EXEC statement. This statement contains the control input data set to be used by IEBCOPY.

If both PRECOMP and POSTCOMP are specified on the EXEC statement parameters, this data set must be capable of being closed with a reread option.

This data set must contain the following control statement of the form:

```
COPY  INDD=IMSACB,OUTDD=IMSACB
```

SYSUT3 DD
This statement must be provided if either PRECOMP or POSTCOMP is specified on the EXEC statement. This statement points to a work data set.

SYSUT4 DD
This statement works the same as SYSUT3.

ACBCATWK DD
This statement is optional. The Advanced ACBGEN utility generates a list of the ACB members that are written to the ACB library during ACB generation. This DD statement is the same as the ACBCATWK DD statement that is used for the IMS ACBGEN utility.

The output written to this data set by the Advanced ACBGEN utility is identical the output written by the IMS ACBGEN utility.

DD statements used in ACB Generation and Catalog Populate utility (DFS3UACB) jobs

Use the following DD statements when you generate ACB members with the Advanced ACBGEN utility in ACB Generation and Catalog Populate utility (DFS3UACB) jobs. For a complete list of DD statements, see the topic "ACB Generation and Catalog Populate utility (DFS3UACB)" in *IMS System Utilities*.

DFS3PPRM DD
This statement is optional. The DFS3PPRM DD statement specifies execution parameters for the IMS Catalog Populate utility (DFS3PU00).

Use this DD statement to override the default parameters of the DFS3PU00 utility, which is automatically executed after the ACB members are generated. With the default parameters, the DFS3PU00 utility runs in update mode with DBRC and without IRLM.

IMSACB01 DD
This statement is optional. This DD statement specifies the ACB library data set that contains the ACB members that are used by the DFS3PU00 utility to populate the IMS catalog.

This DD statement must specify the same data set defined in the IMSACB DD statement. To ensure that the same data set is referenced, code this DD statement with an asterisk as the high-level qualifier, as follows:

```
//IMSACB01 DD DSN=*.ACBLIB,DISP=OLD
```

PROCLIB DD
A PROCLIB DD statement must be provided. The PROCLIB DD statement specifies the IMS.PROCLIB data set that contains the DFSDF*xxx* member that defines various attributes of the IMS catalog that are required by the DFS3PU00 utility to populate the IMS catalog.

Unique DD statements for the Advanced ACBGEN utility

The following DD statements are used only by the Advanced ACBGEN utility.

ACBSYSIN DD
This statement is optional. The data set can be used to specify parameters used by the Advanced ACBGEN utility. If used, it must contain 80-character, fixed-length records.

Related reading: For the format of the control statements, see "ACBSYSIN control statements" on page 411.

DFSPRINT DD

This statement is optional. The data set, if provided, contains all of the DFS*nnnn* messages that the SYSPRINT data set would normally contain. Because the Advanced ACBGEN utility places all of its reports in the SYSPRINT data set, the DFSPRINT DD statement can be used to separate the DFS*nnnn* messages from the reports.

The reports generated by the Advanced ACBGEN utility contain all of the information found in the DFS*nnnn* messages that were issued during the process of generating ACB members and that would normally be written to the SYSPRINT data set. To isolate and suppress the printing of these verbose and voluminous DFS messages, specify a DFSPRINT DD DUMMY JCL statement.

Control statements for the Advanced ACBGEN utility

The IMS ACBGEN utility is controlled by control statements. There are two control data sets; the SYSIN data set (required) and the ACBSYSIN data set (optional).

The SYSIN data set contains the BUILD and DELETE statements that are required by the ACBGEN process, and the ACBSYSIN data set contains control statements that specify miscellaneous runtime parameters used by the Advanced ACBGEN utility.

These control statements have a fixed length of 80 characters. The control data set can be blocked or unblocked.

SYSIN control statements

One or more control statements must be specified in the SYSIN DD statement.

For a full description of these control statements, see the *IMS System Utilities*. The BUILD and DELETE statements in this control data set are processed in exactly the same way as the IMS ACBGEN utility would process them. However, the error messages generated during the parsing of these control statements might differ slightly.

Syntax rules

The syntax rules can be summarized as follows:

- Control statement records must be 80 bytes in length.
- Positions 1 - 71 are used, position 72 is used for continuation, and positions 73 - 80 are ignored.
- A statement consists of a label, an operation field, one or more operand fields, and a comment.
- The label is optional. If specified, it must start in position 1.
- The operation field is required and must be preceded and followed by one or more blanks.
- An operand field is required and must follow the operation field. It must be preceded and followed by one or more blanks.
- A comment can be written following the last operand. It must be separated from the operand by one or more blanks.
- Commas, parenthesis, equal signs, and blanks can be used only as delimiting characters.
- If a control statement does not fit within an 80-byte record, it can be continued from one 80-byte record to the next. A continuation is marked by placing a non-blank character in position 72 of the record being continued. The next 80-byte record in the control statement data set must be blank in positions 1 - 15, and the continued text must start in position 16.

ACBSYSIN control statements

A single control statement can be specified in the ACBSYSIN DD statement. The syntax rules are different from the syntax rules for the SYSIN control statements. If this DD statement is not present, the default values for the ACBGEN commands are used.

Subsections:

- "ACBSYSIN control statement example"
- "Syntax rules"
- "ACBGEN command" on page 413

ACBSYSIN control statement example

The following figure shows an example of the ACBSYSIN control statement.

```
ACBGEN  MONITOR=(PROGRESS=(YES,250))

ACBGEN  TYPERUN=PREVUE

ACBGEN  REPORTS=(SYSINLST=NO,PSBLIST=YES)
```

Figure 170. Examples of the ACBSYSIN control statement for the ACBGEN utility

Syntax rules

The control statements for ACBSYSIN must adhere to the following syntax rules:

Control statement content

- The statement text is contained within the first 72 positions of an 80-byte record. The last 8 bytes are ignored.
- A statement consists of the following fields:
  - Label (optional)
  - Command code (required)
  - Operands (optional)
  - Comment (optional)

  For example:

  ```
  LABEL  COMMAND  OPERAND=TEST    /* COMMENT */
  ```
- A complete statement can be as long as several 80-byte records.
- A control statement data set can contain any number of control statements.

Special characters

The following characters have special meaning within a control statement:

- Blank
- Comma
- Equal sign
- Parenthesis
- Single quotation mark
- Decimal point

Continuation characters

- Continuation characters must be used if a control statement does not fit within a single input record.
- A continuation character is either a plus (+) or a minus (-) sign.
- A continuation character must be the last character in the input record.

Literals

- A literal consists of one or more characters enclosed in single quotation marks.
- A single quotation mark within a literal must be represented by two consecutive quotation marks, as in `'ISN''T'`.

- Literals cannot be continued from one record to the next.

Labels

- A control statement can, optionally, have a label field.
- The label must start in the first position of the control statement.
- The label must consist of a period (.) and 1 - 7 alphanumeric characters, as in `.LABEL3`.
- The label must be followed by one or more blanks.

Command codes

- A command code consists of predefined words.
- A command code must follow a label (if one is present) and must precede the operands (if any are present).
- A command code must be followed by one or more blanks.

Keyword operands

- A keyword operand consists of a keyword immediately followed by an equal sign. The equal sign can be followed by either a suboperand or one or more optional data values. In REPORTS=(PSBLIST=YES), for example, PSBLIST= is a suboperand of the REPORTS= keyword operand, and YES is the data value for the PSBLIST= keyword operand.
- Keyword operands must be separated by a comma.
- Keyword operand data values can be enclosed in parentheses or quotation marks. For example:

```
TYPERUN=PREVUE
TYPERUN=(PREVUE)
TYPERUN='PREVUE'
```

- If a keyword operand has suboperands, they must be enclosed in parentheses. For example:

```
REPORTS=(PSBLIST=YES)
REPORTS=(PSBLIST=YES,SYSINLST=NO)
MONITOR=(PROGRESS=(YES,500))
```

Comments

- A comment must be enclosed within a `/* */` pair, such as:

```
/* THIS IS A COMMENT */
```

- A comment can appear only at the end of a control statement.

ACBGEN command

An ACBGEN command can be provided to specify the parameters that the Advanced ACBGEN utility is to use during the ACBGEN process. The ACBGEN command can contain the following operands:

PAGESIZE=

A one- to three-digit number that specifies the number of lines to a page for reports. The default is 60.

REPORTS=

Valid suboperands are SYSINLST=, PSBLIST=, and LOADSTAT=. Each of these suboperands must specify YES or NO.

SYSINLST=

The SYSINLST= suboperand controls whether the BUILD and DELETE lists in the SYSIN DD data set are to be listed. If the TYPERUN=PREVUE operand is specified, this suboperand is

ignored. This report might be of interest if the SYSIN data set is being generated through some automated procedure and you want to verify its content. The default is SYSINLST=YES.

PSBLIST=

The PSBLIST= suboperand controls whether you want a listing of the final list of PSBs generated. If the TYPERUN=PREVUE operand is specified, this suboperand is ignored. This list is constructed from the BUILD and DELETE lists in the SYSIN DD data set. This report might be of interest if you want to see the PSBs that were implicitly included because they refer to one of the DBDs in the BUILD list. The default is PSBLIST=NO.

LOADSTAT=

The LOADSTAT= suboperand controls whether you want to display the Load Module Mgmt Stats report. This report is included primarily to give the user some indication of why the ACBGEN process takes as long as it does. The default is LOADSTAT=NO.

TYPERUN= PREVUE

The *prevue* feature enables you to preview the list of PSB names that will be generated from your SYSIN control statement data set. Its use terminates the Advanced ACBGEN utility program after all SYSIN control statements have been processed, but before the block building begins. It produces the following reports:

- DBD/PSB Names Specified Via SYSIN report
- ACB Library Members Deleted Due to User Request report
- Final PSB Build List report

This feature is useful, when a DBD is changed in the DBD library and an ACBGEN is required. A BUILD DBD=(*dbdname*) in the SYSIN data set causes the ACBGEN process to scan the entire ACB library for PSBs that contain references to the specified DBD. Each PSB found is added to a *build* list. Unless you are familiar with the DBD and its use, you might not know whether there are 10, 100, or 1000 PSBs sensitive to that DBD. Without this information, you do not know whether the ACBGEN will take 1 minute or 1 hour. The PREVUE feature enables you to see the scale of the ACBGEN before scheduling it.

If only the TYPERUN=PREVUE operand is removed, the same JCL and SYSIN data set are used to perform the actual ACBGEN.

MONITOR=

This operand enables you to monitor the progress of the ACBGEN process. This option is especially useful during long-running ACBGEN jobs. Progress is measured by the number of PSBs processed. The valid suboperand is PROGRESS=.

PROGRESS=

The PROGRESS= suboperand specifies YES or NO and how often you want to be notified. For example, MONITOR=(PROGRESS=(YES,100)) would cause a notification message to be issued each time 100 PSBs are processed. The notification message is time-stamped and sent to the MVS console and the JES job listing. The default is PROGRESS=NO. The frequency value can be blank or a one- to seven-digit number. If PROGRESS=(YES) is specified but the frequency is not, the frequency default is 100.

Output from the Advanced ACBGEN utility

The Advanced ACBGEN utility generates a number of reports, some of which are optional. These reports provide all of the information provided by the utility. The information is in a more concise and organized format. Also, considerable information not previously available is generated.

The same set of reports is generated when the Advanced ACBGEN utility is used in the ACB Generation and Catalog Populate utility (DFS3UACB) job.

SYSPRINT data set

The SYSPRINT data set contains the reports generated by the Advanced ACBGEN utility.

Input Specifications report

This report identifies information to be used as input to this ACB generation execution. Each input parameter might affect the execution in some manner.

Subsections:

- "Sample report"
- "Report field descriptions" on page 416

Sample report

The following figure shows an example of the Input Specifications report.

```
IMS LIBRARY INTEGRITY UTILITIES - ADVANCED ACB GENERATOR              PAGE:    1
5655-U08              DATE: 10/01/2018  TIME: 16.19.45          FABQMAIN - V2.R2

                           +--------------------+
                           |INPUT SPECIFICATIONS|
                           +--------------------+


CONTENTS OF "ACBSYSIN" CONTROL STATEMENT DATASET:
================================================

----+----1----+----2----+----3----+----4----+----5----+----6----+----7--    RCD#
    ACBGEN REPORTS=(SYSINLST=YES,PSBLIST=YES)                               0001



CONTENTS OF "SYSIN   " CONTROL STATEMENT DATASET:
================================================

----+----1----+----2----+----3----+----4----+----5----+----6----+----7--    RCD#
  BUILD PSB=(PSB@001,PSB@002)                                             00001
  BUILD DBD=(DBD@M04A)                                                    00002
  DELETE DBD=(DBD@M03A)                                                   00003



CONTENTS OF EXEC STATEMENT PARM FIELD:
======================================

UPB



RUN-TIME PARAMETERS:
====================

IMS RELEASE LEVEL BEING USED.............15.1.0
TIMESTAMP USED...........................18.274 16:19:45
BUILD PSB=ALL SPECIFIED..................N
PRE-COMPRESSION..........................N
POST-COMPRESSION.........................N
OPTIONAL REPORTS REQUESTED:
   SYSIN BUILD AND DELETE LISTS..........Y
   FINAL PSB BUILD LIST..................Y
   LOAD MODULE MGMT STATS................Y
   DFSPRINT FOR DFS-TYPE MESSAGES........N
PROGRESS MONITOR REQUESTED...............N
```

Figure 171. Input Specifications report (Advanced ACBGEN utility)

Report field descriptions

CONTENTS OF "ACBSYSIN" CONTROL STATEMENT DATASET
: This section of the report lists the control statements found in the ACBSYSIN DD statement data set. The ACBSYSIN DD statement is optional. If none is provided, this subreport will not be present.

CONTENTS OF "SYSIN" CONTROL STATEMENT DATASET
: This section of the report lists the control statements found in the SYSIN DD statement data set. The SYSIN DD statement is required. It consists of one or more BUILD control statements, DELETE control statements, or

both. The DBD and PSB names specified here are listed in the optional DBD/PSB Names Specified via SYSIN report.

CONTENTS OF EXEC STATEMENT PARM FIELD
This section of the report simply lists the content of the PARM field in an EXEC JCL statement.

RUN-TIME PARAMETERS

This section of the report simply lists the parameters used by the Advanced ACBGEN utility. If any parameter was not specified, the default value is shown in this report. A description of each line follows:

IMS RELEASE LEVEL BEING USED
This value is obtained from the DFSVC000 member in your installation's IMS RESLIB. It is placed in the ACBLIB directory entry for each PSB and DBD added or replaced.

TIMESTAMP USED
This value is placed in the ACBLIB directory entry for each PSB and DBD added or replaced.

BUILD PSB=ALL SPECIFIED
If a BUILD PSB=ALL control statement was found in the SYSIN control data set, this value is set to Y. If this control statement is found, all other SYSIN control statements (if any) are ignored.

PRE-COMPRESSION
This parameter is specified in the PARM field of the EXEC JCL statement. If it is Y, the IEBCOPY utility is invoked to compress the ACB library after all DELETE requests have been processed but before the block building begins. However, if Build PSB=All is specified, pre-compression is not done.

POST-COMPRESSION
This parameter is specified in the PARM field of the EXEC JCL statement. If it is Y, the IEBCOPY utility is invoked to compress the ACB library after the block building process ends.

OPTIONAL REPORTS REQUESTED
The values shown here are the REPORTS=(SYSINLST=) and the REPORTS=(PSBLIST=) operand of the ACBGEN command in the ACBSYSIN control data set. Whether a DFSPRINT DD statement was provided is also shown.

PROGRESS MONITOR REQUESTED
This parameter specifies whether notification of the PSB build progress should be sent to the MVS console.

ACB/PSB/DBD Library Information report

This report shows the dsname of the ACB, PSB, and DBD libraries that were used during the ACBGEN process. The directory information for each library is also shown. For the ACB library, this information reflects the status of the library before processing began. A subsequent report reflects its content after the processing is completed.

The following figure shows an example of the ACB/PSB/DBD Library Information report.

```
IMS LIBRARY INTEGRITY UTILITIES - ADVANCED ACB GENERATOR             PAGE:    2
5655-U08             DATE: 10/01/2018  TIME: 15.50.12         FABQMAIN - V2.R2

                      +------------------------------+
                      |ACB/PSB/DBD LIBRARY INFORMATION|
                      +------------------------------+

                                                        NUMBER   DIR BLOCKS
DDNAME    DSNAME                                        MEMBRS   ALLOC   USED
--------  --------------------------------------------  -------  ------- -------
IMSACB    IMSVS.ACBLIB                                       5       10       1
IMS       IMSVS.PSBLIB                                      42       40       7
          IMSVS.DBDLIB                                      47       40       7
```

Figure 172. ACB/PSB/DBD Library Information report

DBD/PSB Names Specified via SYSIN report

This report contains a list of all the names (DBD or PSB) in the BUILD and DELETE statements in the SYSIN data set. This report is useful to view and verify the contents of your SYSIN data set, particularly if you are using some automated process to generate this list.

To generate this report, specify the REPORTS=(SYSINLST=YES) operand of the ACBGEN command in the ACBSYSIN data set.

An example of this report is shown in the following figure.

```
IMS LIBRARY INTEGRITY UTILITIES - ADVANCED ACB GENERATOR             PAGE:    3
5655-U08             DATE: 10/01/2018  TIME: 16.19.45         FABQMAIN - V2.R2

                     +--------------------------------+
                     |DBD/PSB NAMES SPECIFIED VIA SYSIN|
                     +--------------------------------+

                       BUILD LIST CONTENTS
                      ====================

                         NAME      TYPE
                         --------  ----
                         DBD@M04A  DBD
                         PSB@001   PSB
                         PSB@002   PSB


                       DELETE LIST CONTENTS
                      ======================

                         NAME      TYPE
                         --------  ----
                         DBD@M03A  DBD
```

Figure 173. DBD/PSB Names Specified via SYSIN report

ACB Library Members Deleted Due to User Request report

This report contains a list of all the DBDs and PSBs that were deleted from ACBLIB before the block building began. Each name listed also appears in a DFS0938 or a DFS0586 message.

To generate this report, request it by use of the REPORTS=(SYSINLST=YES) operand of the ACBGEN command in the ACBSYSIN data set.

PSB names that are not specified in a DELETE control statement in the SYSIN data set might appear in this list. Deleting a DBD by using DELETE also causes all PSBs that refer to the DBD to be deleted.

An example of this optional report is shown in the following figure.

```
IMS LIBRARY INTEGRITY UTILITIES - ADVANCED ACB GENERATOR             PAGE:    4
5655-U08             DATE: 10/01/2018  TIME: 16.19.45         FABQMAIN - V2.R2


              +-----------------------------------------------+
              |ACB LIBRARY MEMBERS DELETED DUE TO USER REQUEST|
              +-----------------------------------------------+

 DBD@M03A *PSB@006
          NOTE: AN ASTERISK (*) INDICATES NAME WAS INCLUDED IMPLICITLY
```

Figure 174. ACB Library Members Deleted Due to User Request report

Final PSB Build List report

This report contains the list of PSB names that are passed to Block Builder. Message DFS0587 or DFS0940 is subsequently issued for each name in this list.

To generate this report, request it by use of the REPORTS=(PSBLIST=YES) operand of the ACBGEN command in the ACBSYSIN data set.

A PSB name added implicitly to the list is preceded by an asterisk (*). Any PSB containing a reference to a DBD found in the input build list is said to be *implicit*.

The total number of the listed PSBs and DBDs are shown at bottom of this report. The DBDs counted are the dbdnames that are specified by a control statement in the SYSIN data set as BUILD DBD=(*dbdname*) and those dbdnames that are found in the ACB library. If a dbdname is not found in the ACB library, IMS message DFS0586 is issued, and it is not included in the count.

The following figure shows an example of this report.

```
IMS LIBRARY INTEGRITY UTILITIES - ADVANCED ACB GENERATOR             PAGE:    5
5655-U08             DATE: 10/01/2018  TIME: 16.19.45         FABQMAIN - V2.R2

                          +--------------------+
                          |FINAL PSB BUILD LIST|
                          +--------------------+

 PSB@001   PSB@002  *PSB@007

          NUMBER OF PSB = 3             NUMBER OF DBD = 1
        NOTE: AN ASTERISK (*) INDICATES NAME WAS INCLUDED IMPLICITLY
```

Figure 175. Final PSB Build List report

PSB Size Summary report

This report consolidates all the information provided in the DFS0940, DFS0941, DFS0589, and DFS0593 messages into one print line per PSB. The PSBs listed in the report are those added to the ACB library or replaced there.

Subsections:

- "Sample report"
- "Report field descriptions"

Sample report

The following figure contains an example of the PSB Size Summary report.

```
IMS LIBRARY INTEGRITY UTILITIES - ADVANCED ACB GENERATOR             PAGE:    7
5655-U08             DATE: 10/01/2018  TIME: 16.19.45         FABQMAIN - V2.R2

                          +----------------+
                          |PSB SIZE SUMMARY|
                          +----------------+

          TOTAL    PSB    PCB  WORK  <-----WORKAREA BREAKOUT----->    CSA    SAS
PSBNAME    SIZE   SIZE   SIZE  AREA    NDX   XIO   IOA   SEG   SSA   SIZE   SIZE
--------  -----  -----  ----- -----  ----- ----- ----- ----- -----  -----  -----
PSB0001   14528  12416   3040  2112    448   272  1000   152   200   2880   9280
PSB0002    7616   6016   1032  1600    264   272   600   152   280   1152   4736
PSB0007    1344    640    464   704     56     8   600     8     0    576      0

  MAX:    14528  12416   3040  2112    448   272  1000   152   280   2880   9280
  AVG:                                                              1536   4672

NOTE: THIS REPORT CONTAINS ALL OF THE DATA FOUND IN THE FOLLOWING DFS MESSAGES:
      0589, 0591, 0593, 0940, 0941, AND 0942.
```

Figure 176. PSB Size Summary report

Report field descriptions

The last two lines in the report, labeled MAX: and AVG: , contain the information from the DFS0591 and the DFS0942 messages. For the meaning of each column in this report, see *IMS Messages and Codes*.

PSBNAME
The PSB names shown here are displayed in DFS messages DFS0589, DFS0593, DFS0940, and DFS0941.

TOTAL SIZE
This data was extracted from message DFS0589.

PSB SIZE
This data was extracted from message DFS0589. It also appears in message DFS0940.

PCB SIZE
This data was extracted from message DFS0589.

WORK AREA
This data was extracted from message DFS0589.

WORKAREA BREAKOUT -- NDX
This data was extracted from message DFS0593.

WORKAREA BREAKOUT -- XIO
This data was extracted from message DFS0593.

WORKAREA BREAKOUT -- IOA
This data was extracted from message DFS0593.

WORKAREA BREAKOUT -- SEG
This data was extracted from message DFS0593.

WORKAREA BREAKOUT -- SSA
This data was extracted from message DFS0593.

CSA SIZE
This data was extracted from message DFS0941.

SAS SIZE
This data was extracted from message DFS0941.

MAX This data was extracted from messages DFS0591 and DFS0942.

AVERAGE
This data was extracted from message DFS0942.

PSB/DBD Change Summary report

This report consolidates all the information provided in the DFS0940 and DFS0960 messages into one print line per DBD or PSB, plus provide some information about those DBDs and PSBs. All DBDs are listed first followed by all PSBs in the ascending name sequence.

Subsections:

- "Sample report"
- "Report field descriptions" on page 422

Sample report

The following figure shows an example of the PSB/DBD Change Summary report.

```
IMS LIBRARY INTEGRITY UTILITIES - ADVANCED ACB GENERATOR             PAGE:    8
5655-U08             DATE: 10/01/2018  TIME: 16.19.45         FABQMAIN - V2.R2

                          +----------------------+
                          |PSB/DBD CHANGE SUMMARY|
                          +----------------------+

DBD/PSB         ACTION       OLD      NEW     OLD       NEW         #DMBS
NAME      TYPE  TAKEN       SIZE     SIZE   GEN DATE  GEN DATE   REFERENCED
--------  ----  --------  -------  -------  --------  --------   ----------
PSB@001   PSB   ADDED               12416             10/01/18           15
PSB@002   PSB   ADDED                6016             10/01/18            7
PSB@006   PSB   DELETED       512           10/01/18
PSB@007   PSB   REPLACED      640      640  10/01/18  10/01/18            1


DBD/PSB         ACTION       OLD      NEW     OLD       NEW
NAME      TYPE  TAKEN       SIZE     SIZE   GEN DATE  GEN DATE
--------  ----  --------  -------  -------  --------  --------
DBD@D01A  DBD   ADDED                 704             10/01/18
DBD@D03A  DBD   ADDED                1280             10/01/18
DBD@E01A  DBD   ADDED                1408             10/01/18
DBD@E02A  DBD   ADDED                2560             10/01/18
DBD@H01A  DBD   ADDED                 640             10/01/18
DBD@H02A  DBD   ADDED                1472             10/01/18
DBD@ISAM  DBD   ADDED                 640             10/01/18
DBD@I01A  DBD   ADDED                 768             10/01/18
DBD@I02A  DBD   ADDED                 448             10/01/18
DBD@I03A  DBD   ADDED                 960             10/01/18
DBD@M02A  DBD   ADDED                 256             10/01/18
DBD@M03A  DBD   DELETED       192           10/01/18
DBD@M04A  DBD   REPLACED      192      192  10/01/18  10/01/18
DBD@S02A  DBD   ADDED                 704             10/01/18
DBD@X01A  DBD   ADDED                 640             10/01/18
DBD@X02A  DBD   ADDED                 448             10/01/18
DBD@X03A  DBD   ADDED                 448             10/01/18
DBD@X04A  DBD   ADDED                 448             10/01/18
DBD@X05A  DBD   ADDED                 448             10/01/18
DBD@X06A  DBD   ADDED                 640             10/01/18
DBD@X07A  DBD   ADDED                 448             10/01/18
DBD@X08A  DBD   ADDED                 448             10/01/18

NOTE: THIS REPORT REFLECTS THE ACTION TAKEN IN THE FOLLOWING DFS MESSAGES:
      0587, 0938, 0940, AND 0960.
```

Figure 177. PSB/DBD Change Summary report

Report field descriptions

DBD/PSB NAME
Self-explanatory.

TYPE Self-explanatory.

ACTION TAKEN
The action taken for a DBD. This can be ADDED, REPLACED, NOT REPL, or DELETED.

The ADDED designation is generated if the DBD does not exist in ACBLIB at block building time and is reflected in a DFS0940 message. If the user has requested by issuing a DELETE DBD control statement, that the DBD be deleted from ACBLIB before block building begins, the DFS0940 message describes it as ADDED. However, the Advanced ACBGEN utility

reports this DBD as having been REPLACED, because logically that is what happened. Thus, the only DBDs that are shown as ADDED are those that do not appear in any DELETE or BUILD control statements, or that do not appear in ACBLIB.

The NOT REPL DBDs are those that already exist in ACBLIB and were not specified in a BUILD DBD control statement.

The REPLACED DBDs are those that were specified in a BUILD DBD control statement and subsequently referred to by one of the PSBs generated.

The DELETED DBDs are those that were deleted by means of a DELETE DBD control statement and have not been replaced.

If a BUILD PSB=ALL control statement was specified, the action taken can be ADDED, DELETED, or REPLACED. The old ACBLIB is used as the basis for setting the action taken.

SIZE The size shown is the size of the member written into the ACB library. The value shown appears in the ACB directory entry for that DBD or PSB. However, be aware that this value is rounded down before it is placed in the directory entry, because the directory entry uses a 2-byte field. PSB sizes shown in this report are divided by 16 and DBDs by 8 before being placed into a directory entry.

OLD GEN DATE
This field shows the previous ACBGEN date for the DBD or PSB. This date is extracted from the ACBLIB directory entry before the block building process begins. Any DBD or PSB marked as ADDED obviously does not have the date on which the DBD was generated.

NEW GEN DATE
This field shows the ACBGEN date that is now stored in the ACBLIB for a DBD or PSB that has been ADDED or REPLACED in the ACB library.

#DMBs REFERENCED
This column applies only to PSBs. It is a count of the number of unique DBD names referred to by this PSB.

Miscellaneous DFS Messages report

This report shows all the DFS-type messages generated that are not accounted for by the PSB Size Summary and PSB/DBD Change Summary reports. Any DFS*nnnn* messages which also set a nonzero return code are in this list.

The following figure shows an example of the Miscellaneous DFS Messages report.

```
IMS LIBRARY INTEGRITY UTILITIES - ADVANCED ACB GENERATOR             PAGE:    9
5655-U08             DATE: 10/01/2018  TIME: 10.57.09         FABQMAIN - V2.R2

                        +-------------------------+
                        |MISCELLANEOUS DFS MESSAGES|
                        +-------------------------+

NOTE: THIS REPORT INCLUDES ALL DFS MESSAGES EXCEPT FOR:
      0589, 0591, 0593, 0649, 0938, 0940, 0941, 0942, AND 0960

MESSAGE  MESSAGE
ID       TEXT
-------- ------------------------------------------------------------------------
DFS0586I DBD 'DTA1    ' REQUESTED IN DELETE OPERATION NOT FOUND IN ACBLIB - REQ
DFS0586I DBD 'DI21XXXX' REQUESTED IN BUILD  OPERATION NOT FOUND IN ACBLIB - REQ
DFS0586I DBD 'DTA1    ' REQUESTED IN BUILD  OPERATION NOT FOUND IN ACBLIB - REQ
DFS0929I BLDL FAILED FOR MEMBER --PSB1
DFS0587I ERROR BUILDING PSB=PSB1     - IT WILL BE DELETED FROM ACBLIB.   ******
DFS0929I BLDL FAILED FOR MEMBER --PSB2
DFS0587I ERROR BUILDING PSB=PSB2     - IT WILL BE DELETED FROM ACBLIB.   ******
DFS0929I BLDL FAILED FOR MEMBER --PSB3
DFS0587I ERROR BUILDING PSB=PSB3     - IT WILL BE DELETED FROM ACBLIB.   ******
DFS0962I DBD DI21XXXX NOT PROCESSED. NO ACBLIB PSB REFERENCES THE NAMED DBD.
DFS0590I END OF ACBLIB MAINTENANCE. HIGHEST CONDITION CODE WAS 00000016
```

Figure 178. Miscellaneous DFS Messages report

DFS Messages Summary report

This report consolidates the numerous DFS-type messages generated into a single, concise report.

The report contains a line for each unique DFS-type message number generated. The print line identifies the DFS message number, the quantity of those messages, and the message text. The message text has been paraphrased for ease of reading (and also to make it fit in the print line). The specific DBD or PSB is shown in the DFS Messages Detail report. Some of the DFS message number repeats, that is, two print lines with the same DFS message number. One of the two lines shows DBD counts and the other shows PSB counts.

If PSB build fails with message DFS0649W, which indicates that the storage is insufficient, Advanced ACBGEN resolves the storage shortage problem, issues an FABQ9993I message, and starts rebuilding the PSB. With the IMS ACBGEN utility (DFSUACB0), the PSB is deleted from ACBLIB when a PSB build fails with a DFS0649W message, but with Advanced ACBGEN, the PSB is not deleted from ACBLIB. A DFS0940I message is issued when PSB build succeeds.

The following figure shows an example of the DFS Messages Summary report.

```
IMS LIBRARY INTEGRITY UTILITIES - ADVANCED ACB GENERATOR             PAGE:   10
5655-U08             DATE: 10/01/2018  TIME: 15.50.12         FABQMAIN - V2.R2

                          +--------------------+
                          |DFS MESSAGES SUMMARY|
                          +--------------------+

MESSAGE          MESSAGE
ID       QTY     TEXT (PARAPHRASED)
-------- ------- ------------------------------------------------------------
DFS0589        3 PROCESSING COMPLETED FOR PSB
DFS0590        1 END OF ACBLIB MAINTENANCE
DFS0591        1 MAX SIZES OF PSB COMPONENTS
DFS0593        3 PSB WORKAREA BREAKOUT
DFS0938        1 DELETE PROCESSING COMPLETED FOR DBD
DFS0938        1 DELETE PROCESSING COMPLETED FOR PSB
DFS0940       21 DBD HAS BEEN ADDED/REPLACED IN ACBLIB
DFS0940        3 PSB HAS BEEN ADDED/REPLACED IN ACBLIB
DFS0941        3 PSB CSA AND SAS SIZES IF USING DL/I SEPARATE ADDRESS SPACE
DFS0942        1 MAX AND AVERAGE CSA AND SAS SIZES IF USING SEPARATE ADDR SPACE
```

Figure 179. DFS Messages Summary report

Run Summary report

This report provides a concise summary of the ACB/PSB/DBD library activity, and also shows the completion code that is passed back to the MVS job step termination routine.

Subsections:

- "Sample report"
- "Report field descriptions" on page 426

Sample report

The following figure shows an example of the Run Summary report.

```
IMS LIBRARY INTEGRITY UTILITIES - ADVANCED ACB GENERATOR             PAGE:   11
5655-U08             DATE: 10/01/2018  TIME: 15.50.12         FABQMAIN - V2.R2

                                +-----------+
                                |RUN SUMMARY|
                                +-----------+

NUMBER OF BUILD PSB FAILURES.................        0
NUMBER OF PSBS ADDED TO ACBLIB...............        2
NUMBER OF PSBS DELETED FROM ACBLIB...........        0
NUMBER OF PSBS REPLACED IN ACBLIB............        0

NUMBER OF DMBS ADDED TO ACBLIB...............       20
NUMBER OF DMBS DELETED FROM ACBLIB...........        1
NUMBER OF DMBS REPLACED IN ACBLIB............        1
NUMBER OF DMBS NOT REPLACED IN ACBLIB........        0

NUMBER OF LOAD PSBS ISSUED...................        3
NUMBER OF LOAD DBDS ISSUED...................       25

NUMBER OF ACBLIB MEMBERS.....................       25
NUMBER OF ACBLIB DIRECTORY BLKS USED.........        5
NUMBER OF ACBLIB DIRECTORY BLKS UNUSED......         5

START TIME.................................15:50:12
END TIME...................................15:50:45

COMPLETION CODE............................   0000
```

Figure 180. Run Summary report

Report field descriptions

NUMBER OF BUILD PSB FAILURES
The number of PSBs that were not added to or replaced in the ACB library because of some error condition. If the completion code is 8, this line indicates how many errors occurred. The PSB name and the error condition are given in the Miscellaneous DFS Messages report.

NUMBER OF PSBS ADDED TO ACBLIB
The number of PSBs that were added to the ACB library. The PSBs counted here are those that did not exist in the ACB library before this execution of the Advanced ACBGEN utility.

NUMBER OF PSBS DELETED FROM ACBLIB
The number of PSBs that were deleted from the ACB library and not replaced. The deletion could have been initiated explicitly from a DELETE PSB= control statement in the SYSIN data set, or implicitly because of some error during the building process. A DFS message is always issued for each PSB deleted.

NUMBER OF PSBS REPLACED IN ACBLIB
The number of PSBs that were replaced in the ACB library. Those PSBs which were explicitly deleted and then added to the ACB library are reflected here.

NUMBER OF DMBS ADDED TO ACBLIB
The number of DMBs that were added to the ACB library. The DMB did not exist in the ACB library before this execution of the Advanced ACBGEN utility.

NUMBER OF DMBS DELETED FROM ACBLIB
The number of DMBs that were deleted from the ACB library. The deletion could have been initiated explicitly from a DELETE DBD= control statement in the SYSIN data set, or implicitly because of some error during the building process. A DFS message is always issued for each DMB deleted.

NUMBER OF DMBS REPLACED IN ACBLIB
The number of DMBs that were replaced in the ACB library. DMBs that were explicitly deleted and then added to the ACB library are reflected here.

NUMBER OF DMBS NOT REPLACED IN ACBLIB
The number of DMBs that were not replaced in the ACB library. These are DMBs that were generated as part of the ACBGEN process but were not explicitly requested to be built with a BUILD DBD= control statement in the SYSIN data set. Each of these DMBs might be referenced more than once in a DFS0960 message.

NUMBER OF LOAD PSBS ISSUED
The number of PSBs that were loaded during the block building process. This number should be equal to the number of PSBs generated.

NUMBER OF LOAD DBDS ISSUED
The number of DBDs that were loaded during the block building process, which is the number of DBDs referred to by the PSBs being generated. This number is presented for information only; however, it obviously has an effect on how long the ACBGEN process takes.

NUMBER OF ACBLIB MEMBERS
The number of members (directory entries) that are in the ACB library at the completion of the ACBGEN process. The ACB/PSB/DBD Library Information subreport shows this information before the ACBGEN process.

NUMBER OF ACBLIB DIRECTORY BLKS USED
The number of ACB library directory blocks that were used at the completion of the ACBGEN process. The ACB/PSB/DBD Library Information subreport shows this information before the ACBGEN process.

NUMBER OF ACBLIB DIRECTORY BLKS UNUSED
The number of ACB library directory blocks that were allocated but not used at the completion of the ACBGEN process. The ACB/PSB/DBD Library Information subreport shows this information before the ACBGEN process. Because each directory block can hold six directory entries, this should enable you to calculate how many more DMB/PSBs can be added to the library.

START TIME
The time at which the ACBGEN process began. This time stamp is used in all ACB library directory entries that were replaced or added.

END TIME
The time at which the ACBGEN process ended.

COMPLETION CODE
The job step condition code. It is passed back to the MVS job step termination routine and is available for COND= testing in subsequent job steps within the same job. If the value is a nonzero value, a DFS message is issued to notify you of the warning or error condition. The highest return code encountered is the one reported here.

Load Module Management Status (Load Module Mgmt Stats) report

To reduce the elapsed time, the Advanced ACBGEN utility caches the loaded DBD members in the internal work storage (DBD hold area) and reduces I/O operations. This report provides statistics about the DBD hold area.

This report is printed more than once when PSB build is retried.

Subsections:

- "Sample report"
- "Report field descriptions"

Sample report

The following figure shows an example of the Load Module Management Status report.

```
IMS LIBRARY INTEGRITY UTILITIES - ADVANCED ACB GENERATOR              PAGE:   12
5655-U08              DATE: 10/01/2018  TIME: 16.19.45          FABQMAIN - V2.R2

                          +----------------------+
                          |LOAD MODULE MGMT STATS|
                          +----------------------+

     MAX ENTRYS FOR TOC=47
     TOC SIZE=940
     DBD HOLD AREA SIZE REQUESTED=48128
     DBD HOLD AREA SIZE OBTAINED=48128
     LOCATION OF HOLD AREA=ABOVE 16M
     SIZE OF LOAD MOD INPUT AREA=90000
     TOC ENTRYS USED=21
     DBD HOLD AREA USED=10416
     NBR DBDS IN HOLD AREA=21
     NBR OF DBD LOAD REQUESTS=25
     NBR LOAD REQS FOUND IN HOLD=4
     NBR OF DBD DELETE REQUESTS=25
     SIZE OF LARGEST USED LOAD MOD=1864
```

Figure 181. Load Module Management Status (Load Module Mgmt Stats) report

Report field descriptions

MAX ENTRIES FOR TOC
TOC stands for *Table of Contents*. The value shown in this field is the number of entries that are kept in the DBD hold area. This number is based on the DBD members found in the IMS DD statement concatenation.

TOC SIZE
The size of the table of contents area. This area manages the DBD hold area.

DBD HOLD AREA SIZE REQUESTED
The size of the DBD hold area that is requested internally.

DBD HOLD AREA SIZE OBTAINED
This value shows the amount of memory actually obtained for the DBD HOLD Area.

LOCATION HOLD AREA=ABOVE 16M
Currently, all memory obtained by the Library Management routine is above the 16 MB line.

TOC ENTRIES USED
This value is the number of Table of Contents entries that were actually used.

DBD HOLD AREA USED
This value is the actual amount of DBD Hold Area space that was actually used by the DBDs loaded.

NBR DBDS IN HOLD AREA
This value is the actual number of DBDs placed in the Hold Area.

NBR OF DBD LOAD REQUESTS
This value is the actual number of LOAD DBD requests.

NBR LOAD REQS FOUND IN HOLD
This value is the actual number of LOAD DBD requests. That is, this value is the number of LOAD macro requests that were avoided.

NBR OF DBD DELETE REQUESTS
This value is the actual number of DELETE DBD requests.

DFSPRINT data set

The DFSPRINT data set, which is an optional data set, contains the DFS*nnnn* messages.

The following figure shows messages that are generated in the DFSPRINT data set.

```
DFS0940I DBD DBDATA0  HAS BEEN ADDED    IN LIBRARY.     DMB SIZE = 00000576  BYTES
DFS0943I PSB PSBLIU01 REQUIRES MIN OF 00000000 AND MAX OF 00000028 BYTES OF STORAGE IN EPCB POOL IF USING FAST PATH.
DFS0940I PSB PSBLIU01 HAS BEEN ADDED    IN LIBRARY.     PSB SIZE = 00002752  BYTES
DFS0941I PSB PSBLIU01 IF USING DL/I SEPARATE ADDRESS SPACE, CSA SIZE = 00000320, SAS SIZE = 00002368.
DFS0589I PROCESS COMPLETE FOR PSB-PSBLIU01.  PCB = 0000296, PSB = 00002752, WORKAREA = 00001728, TOTAL SIZE = 00004480
DFS0593I PSB--PSBLIU01 WORKAREA BREAKOUT. NDX = 0000056, XIO = 0000272, IOA = 0000600, SEG = 000232,SSA = 000560

DFS0591I MAX PCB SIZE = 0000296, MAX PSB SIZE = 00002752, MAX WORKAREA SIZE = 00001728, MAX TOTAL SIZE = 00004480
DFS0942I IF USING DL/I SAS, MAX CSA = 00000320 MAX SAS = 00002368 AVERAGE CSA = 00000320 AVERAGE SAS = 00002368.
DFS0590I END OF ACBLIB MAINTENANCE. HIGHEST CONDITION CODE WAS 00000000
```

Figure 182. Messages in the DFSPRINT data set

MVS console and the JES job listing

When you request to display the progress of the ACBGEN process with the MONITOR=(PROGRESS=(YES,*value*)) option in the ACBSYSIN data set, notification messages are displayed on the MVS console and the JES job listing.

The following figure shows an example of the notification messages that are displayed on the MVS console and the JES job listing when MONITOR=(PROGRESS=(YES,1000)) is specified in the ACBSYSIN data set.

```
14.48.44 JOB07119  +FABQ9997I 0005000 PSBS TO BE PROCESSED BY ACBGEN
15.04.01 JOB07119  +FABQ9998I 0001000 OF 0005000 PSBS PROCESSED BY ACBGEN
15.04.55 JOB07119  +FABQ9998I 0002000 OF 0005000 PSBS PROCESSED BY ACBGEN
15.05.52 JOB07119  +FABQ9998I 0003000 OF 0005000 PSBS PROCESSED BY ACBGEN
15.06.50 JOB07119  +FABQ9998I 0004000 OF 0005000 PSBS PROCESSED BY ACBGEN
15.07.50 JOB07119  +FABQ9998I 0005000 OF 0005000 PSBS PROCESSED BY ACBGEN
15.07.51 JOB07119  +FABQ9999I 0005000 PSBS PROCESSED BY ACBGEN
```

Figure 183. Messages in the MVS console and the JES job listing

Chapter 12. ACBLIB Analyzer utility

The ACBLIB Analyzer utility analyzes the ACB libraries and generates several reports that provide detailed information about the ACB libraries.

Topics:

- "ACBLIB Analyzer utility overview" on page 432
- "Analyzing ACB libraries" on page 433
- "JCL requirements for the ACBLIB Analyzer utility" on page 434
- "ACBSYSIN control statements" on page 436
- "Output from the ACBLIB Analyzer utility" on page 438

ACBLIB Analyzer utility overview

The ACBLIB Analyzer utility provides an MVS batch utility program to analyze ACB libraries. It verifies that all ACB library members are at the same IMS version and release level, and that all of them were placed in the ACB library by the ACBGEN process; that is, the library was not inadvertently used during a DBDGEN or PSBGEN. Also, the utility program produces several reports.

Analyzing ACB libraries

To analyze the ACB libraries by using the ACBLIB Analyzer utility, you must prepare JCL for the ACBLIB Analyzer utility and submit the job.

About this task

Sample JCL for the ACBLIB Analyzer utility is in the SHPSJCL0 library, member FABQIVP. You can modify this sample JCL and then use it to run the utility.

Procedure

1. In the ACBLIB Analyzer JCL, code the EXEC statement and DD statements.
   See "JCL requirements for the ACBLIB Analyzer utility" on page 434.
2. Optionally, code the control statements for ACBLIB Analyzer in the ACBSYSIN data set.
   See "ACBSYSIN control statements" on page 436.
3. Submit the job.
4. Check the output data sets that are generated.
   See "Output from the ACBLIB Analyzer utility" on page 438.

JCL requirements for the ACBLIB Analyzer utility

The ACBLIB Analyzer utility provides a batch utility to analyze ACB libraries. When you code the JCL to run the ACBLIB Analyzer utility, include the EXEC statement and appropriate DD statements.

Subsections:

- "JCL examples"
- "EXEC statement"
- "DD statements"

JCL examples

The following JCL example reports on an ACB library.

```
//ANALYZE  EXEC PGM=FABQCHEK
//STEPLIB  DD  DSN=HPS.SHPSLMD0,DISP=SHR
//SYSPRINT DD  SYSOUT=*
//DBTSNAP  DD  SYSOUT=*
//IMSACB   DD  DISP=SHR,DSN=IMSVS.ACBLIB
//ACBSYSIN DD  *
    LISTLIB LIBTYPE=ACB,SNAP=(DIRENTRY=N,DIRRCD=N)
/*
```

Figure 184. ACBLIB Analyzer utility JCL example: obtain reports on an ACB library

The following JCL example reports on a DBD library. To use this example to report on a PSB library, replace `DBD` with `PSB`. For DBD and PSB libraries, ACBLIB Analyzer prints only two reports: Library Information report and Input Specifications report.

```
//ANALYZE  EXEC PGM=FABQCHEK
//STEPLIB  DD  DSN=HPS.SHPSLMD0,DISP=SHR
//SYSPRINT DD  SYSOUT=*
//DBTSNAP  DD  SYSOUT=*
//IMSDBD   DD  DISP=SHR,DSN=IMSVS.DBDLIB
//ACBSYSIN DD  *
    LISTLIB LIBTYPE=DBD,INDD=IMSDBD
/*
```

Figure 185. ACBLIB Analyzer utility JCL example: obtain reports on a DBD library

EXEC statement

The EXEC JCL statement must specify a program name of FABQCHEK. No PARM operand is required.

DD statements

Code the following DD statements to identify the source of input and the placement of output information:

STEPLIB DD
A STEPLIB DD statement (or a JOBLIB DD) must be provided. The data set name specified in this DD statement must be the name of the load

module library containing the ACBLIB Analyzer utility. When the LISTLIB command parameter USESORT=YES in the ACBSYSIN control statement is specified, the suitable sort program library must always be added in a STEPLIB DD (or a JOBLIB DD) statement.

SYSPRINT DD

A SYSPRINT DD statement must be provided. This data set contains various reports that are generated by the ACBLIB Analyzer utility.

Related reading: For information about the reports generated by the ACBLIB Analyzer utility, see "Output from the ACBLIB Analyzer utility" on page 438.

FABQRPT DD

A FABQRPT DD statement can be provided. This output data set is used only when the GENDATE=YES operand is specified in the LISTLIB command in the ACBSYSIN control statement and the library type is ACB (LIBTYPE=ACB). When the GENDATE=YES operand is specified, this data set contains all of the reports except the Input Specifications report.

If the GENDATE=YES operand is specified in the LISTLIB command and the FABQRPT DD statement is not specified, the reports are routed to SYSOUT=*.

The record format is fixed block (FB). The logical record length is 121. If the block size is coded, the block size must be a multiple of 121.

IMSACB DD

An IMSACB DD statement must be provided. The DSN= operand must specify the ACB library you want to analyze. The data set is opened for input only, and is not modified by the job.

ACBSYSIN DD

An ACBSYSIN DD statement can be provided. The data set is used to specify parameters used by the program. It must contain 80-character, fixed-length records.

Related reading: For the content of these records, see "ACBSYSIN control statements" on page 436.

DBTSNAP DD

If you specify the SNAP= operand in the ACBSYSIN control statement data set, a DBTSNAP DD statement is required.

SORT DD

When the LISTLIB command parameter USESORT=YES in the ACBSYSIN control statement is specified and the user sort program requires some DD statements, the DD statements must be specified in the JCL.

ACBSYSIN control statements

You can specify a single control statement in the ACBSYSIN DD statement. The syntax rules are the same as those of the ACBSYSIN control statements for the Advanced ACBGEN utility program. If the ACBSYSIN DD statement is omitted, the default operand values for the LISTLIB command are used.

Subsections:

- "Control statement example"
- "Syntax rules"
- "LISTLIB command"

Control statement example

The following figures show examples of ACBSYSIN control statements.

```
LISTLIB
LISTLIB LIBTYPE=ACB,SNAP=(DIRENTRY=(Y,100),DIRRCD=N)
LISTLIB LIBTYPE=ACB,USESORT=YES
LISTLIB LIBTYPE=ACB,GENDATE=YES
```

Figure 186. ACBSYSIN control statement examples for the ACBLIB Analyzer utility: obtain reports on an ACB library

```
LISTLIB LIBTYPE=DBD,INDD=IMSDBD
LISTLIB LIBTYPE=PSB,INDD=IMSPSB
```

Figure 187. ACBSYSIN control statement examples for the ACBLIB Analyzer utility: obtain reports on a DBD or PSB library

For DBD and PSB libraries, ACBLIB Analyzer prints only two reports: Input Specifications report and Library Information report.

Syntax rules

The syntax rules for the ACBSYSIN control statement are the same as for the Advanced ACBGEN utility. See "Syntax rules" on page 412 for the syntax rules of the ACBSYSIN control statement.

LISTLIB command

You can provide a LISTLIB command to specify parameters used by ACBLIB Analyzer utility. The LISTLIB command can contain the following operands:

LIBTYPE=

Identifies the type of the library to process. The operand is DBD, PSB, or ACB. The default is ACB. You can specify only one type of library for one job step.

If you specify DBD or PSB, only two reports are generated: Input Specifications report and Library Information report.

SNAP=

The valid suboperands for the SNAP operand are DIRENTRY= and DIRRCD=. Each of these suboperands can specify YES or NO, and a number.

The SNAP operand is ignored if the library type is DBD or PSB (LIBTYPE=DBD or LIBTYPE=PSB).

DIRENTRY=

The DIRENTRY= suboperand specifies whether you want a hex dump of any of the library directory entries. If you specify YES, you can also specify a three-digit number which specifies the maximum number of entries to be displayed. The default is DIRENTRY=NO. The requested number of directory entries is displayed (in hexadecimal format) in the Library Contents report.

DIRRCD=

The DIRRCD= suboperand specifies whether you want a listing of any of the library directory records. The default is DIRRCD=NO. If you specify YES, you can also include a three-digit number specifying the maximum number of entries to be displayed. The hex dump is placed in the DBTSNAP DD statement.

USESORT=

Specifies whether the ACBLIB Analyzer utility is to use the SORT program of your location. The valid operands are YES and NO; the default is USESORT=NO.

If USESORT=YES is specified, the ACBLIB Analyzer utility links to a program named SORT. DFSORT (Data Facility Sort), which is a part of z/OS, or a functionally equivalent sort program is necessary. If the SORT program of your location requires a SYSOUT DD statement, you must specify it in your JCL.

If the ACB library being analyzed contains a large number such as over 1000 PSBs and DMBs, specify USESORT=YES to reduce the job-step elapse time and the CPU utilization time. (This depends on the user environment.)

The USESORT operand is ignored if the type of the library is DBD or PSB (LIBTYPE=DBD or LIBTYPE=PSB).

INDD=

Specifies the ddname of the DD statement that is used as input. The default ddname is IMSACB.

Specify the ddname that defines the data set name of the library to analyze. When an INDD operand is specified, the ACBLIB Analyzer utility analyzes the data set that is defined by the ddname.

GENDATE=

Specifies to include the date and time when the ACBLIB members were generated in the Library Contents report. The value can be YES or NO. The default is GENDATE=NO.

If GENDATE=YES is specified, all of the reports except the Input Specifications report are generated in the FABQRPT data set.

If GENDATE=YES is specified and the LIBTYPE=DBD or LIBTYPE=PSB operand is specified, the GENDATE=YES operand is ignored.

Output from the ACBLIB Analyzer utility

The ACBLIB Analyzer utility generates a number of reports, some of which are optional.

SYSPRINT data set

This data set contains the reports that were generated by the ACBLIB Analyzer utility. However, when GENDATE=YES is specified in the LISTLIB command, all of the reports except the Input Specifications report are generated in the FABQRPT data set instead of the SYSPRINT data set.

FABQRPT data set

When GENDATE=YES is specified in the LISTLIB command, this data set contains the following ACBLIB Analyzer utility reports.

- Library Information report
- Library Contents report
- Distribution of Member Sizes report
- Distribution of PSB Workarea Sizes report
- Chronological History of ACBGENs report
- Warning report

When these reports are generated in the FABQRPT data set, the width of the reports is wider than when they are generated in the SYSPRINT data set. In the FABQRPT data set, the Library Contents report includes date and time fields. The content of all of the reports except the Library Contents report are the same as the reports that are generated when GENDATE=YES is not specified.

Input Specifications report

This report contains the information that was specified as input to this execution of the ACBLIB Analyzer utility.

Subsections:

- "Sample report"
- "Report field descriptions" on page 439

Sample report

The following figure shows an example of the Input Specifications report.

```
IMS LIBRARY INTEGRITY UTILITIES - ADVANCED ACB GENERATOR             PAGE:    1
5655-U08             DATE: 10/01/2018  TIME: 16.19.45         FABQCHEK - V2.R2

                          +--------------------+
                          |INPUT SPECIFICATIONS|
                          +--------------------+


CONTENTS OF "ACBSYSIN" CONTROL STATEMENT DATASET:
================================================

----+----1----+----2----+----3----+----4----+----5----+----6----+----7--    RCD#
  LISTLIB LIBTYPE=ACB,SNAP=(DIRENTRY=N,DIRRCD=N)                            0001
```

Figure 188. Input Specifications report (ACBLIB Analyzer utility)

Report field descriptions

CONTENTS OF "ACBSYSIN" CONTROL STATEMENT DATESET
: This section of the report lists the control statements found in the ACBSYSIN DD statement data set. The ACBSYSIN DD statement is optional. If none is provided, this subreport is not present.

Library Information report

This report shows the library being used and information in the directory of that library.

This report is generated in the SYSPRINT data set. However, when GENDATE=YES is specified on the LISTLIB command, this report is generated in the FABQRPT data set instead of the SYSPRINT data set.

Subsections:

- "Sample report"
- "Report field descriptions" on page 440

Sample report

The following figure shows an example of the Library Information report.

```
IMS LIBRARY INTEGRITY UTILITIES - ADVANCED ACB GENERATOR             PAGE:    2
5655-U08             DATE: 10/01/2018  TIME: 17.07.07         FABQCHEK - V2.R2

                          +------------------+
                          |LIBRARY INFORMATION|
                          +------------------+

                             LIBRARIES USED
                            ================

DDNAME    LIB  DSNAME                                      VOLSER  HIGH-TTR
--------  ---  -----------------------------------------  ------  --------
IMSACB    ACB  DBT005.LARGE.ACBLIB                        DBT005  '000113'


                           DIRECTORY INFORMATION
                          =======================

          NUMBER   DIR BLOCKS       BLOCK  DIRECTORY   DIRECTORY
DDNAME    MEMBRS   ALLOC   USED     SIZE   ENTRY SIZE  ENTRYS/BLK
--------  -------  ------- -------  -----  ----------  ----------
IMSACB         25       10       5   6233       40          6
```

Figure 189. Library Information report

Report field descriptions

LIBRARIES USED

This section displays the name and volume serial number of the data set being used. The LIB field is obtained from the LIBTYPE= operand in the LISTLIB command in the ACBSYSIN data set. HIGH-TTR displays the largest DASD TTR found for a member. TTR stands for the relative track and record number used by the data set.

DIRECTORY INFORMATION

This section shows information found in the directory where library is located. The column headings are self-explanatory.

Library Contents report

This report lists information about the members found in the specified library. All DMBs are shown first followed by all PSBs.

This report is generated in the SYSPRINT data set. However, when GENDATE=YES is specified on the LISTLIB command, this report is generated in the FABQRPT data set instead of the SYSPRINT data set.

This report is generated only for ACB libraries. If the input for the utility is a DBD library or a PSB library (LIBTYPE=DBD or LIBTYPE=PSB), this report is not generated.

Subsections:

- "Sample report" on page 441
- "Report field descriptions" on page 443

Sample report

The following figure shows an example of the Library Contents report when GENDATE=YES is not specified in the LISTLIB command.

```
IMS LIBRARY INTEGRITY UTILITIES - ADVANCED ACB GENERATOR             PAGE:    3
5655-U08             DATE: 10/01/2018  TIME: 17.07.07         FABQCHEK - V2.R2

                          +----------------+
                          |LIBRARY CONTENTS|
                          +----------------+

                             DMB DETAIL
                            ============

                 IMS      SIZE     # DMBS    # PSBS
MBRNAME    TYPE  LVL    (BYTES)  REFERENCE REFERENCNG  COMMENTS
--------   ---  ----   -------  ---------  ---------  -------------------------
DBD@D01A   DMB  15.1       648                   1
DBD@D03A   DMB  15.1     1,192                   1
DBD@E01A   DMB  15.1     1,336                   1
DBD@E02A   DMB  15.1     2,504                   1
DBD@H01A   DMB  15.1       600                   1
DBD@H02A   DMB  15.1     1,344                   2
DBD@ISAM   DMB  15.1       560                   1
DBD@I01A   DMB  15.1       680                   1
DBD@I02A   DMB  15.1       392                   1
DBD@I03A   DMB  15.1       872                   1
DBD@M02A   DMB  15.1       200                   1
DBD@M04A   DMB  15.1       120                   1
DBD@S02A   DMB  15.1       616                   1
DBD@X01A   DMB  15.1       568                   2
DBD@X02A   DMB  15.1       416                   1
DBD@X03A   DMB  15.1       416                   1
DBD@X04A   DMB  15.1       416                   2
DBD@X05A   DMB  15.1       416                   1
DBD@X06A   DMB  15.1       568                   2  ALIAS
DBD@X07A   DMB  15.1       416                   1
DBD@X08A   DMB  15.1       416                   1
```

Figure 190. Library Contents report in the SYSPRINT data set (Part 1 of 2)

```
IMS LIBRARY INTEGRITY UTILITIES - ADVANCED ACB GENERATOR              PAGE:    4
5655-U08              DATE: 10/01/2018  TIME: 17.07.07          FABQCHEK - V2.R2

                              +----------------+
                              |LIBRARY CONTENTS|
                              +----------------+

                                 PSB DETAIL
                                ============

                    IMS      SIZE     # DMBS    # PSBS
MBRNAME    TYPE   LVL    (BYTES)  REFERENCE REFERENCNG  COMMENTS
--------   ---  ----   -------  ---------  ---------  -------------------------
PSB@001    PSB  15.1    10,944         16
PSB@002    PSB  15.1     4,944          8
PSB@005    PSB  15.1       288          0             NO DBDS REFERENCED
PSB@007    PSB  15.1       512          1


                                  SUMMARY
                                 =========


 TOTAL: DMBS = 21          PSBS = 4           #REF_DMBS = 25
```

Figure 191. Library Contents report in the SYSPRINT data set (Part 2 of 2)

The following figure shows an example of the Library Contents report when GENDATE=YES is specified in the LISTLIB command.

```
IMS LIBRARY INTEGRITY UTILITIES - ADVANCED ACB GENERATOR                                                PAGE:    2
5655-U08                                DATE: 10/01/2018  TIME: 13.39.39                          FABQCHEK - V2.R2

                          +----------------+
                          |LIBRARY CONTENTS|
                          +----------------+

                             DMB DETAIL
                            ============

                IMS      SIZE     # DMBS    # PSBS                                    ACBGEN
MBRNAME    TYPE  LVL    (BYTES)  REFERENCE REFERENCNG  COMMENTS                    DATE       TIME
--------   ---  ----   -------  ---------  ---------  -------------------------  ---------- -----------
DBD@D01A   DMB  15.1       648                   1                              09/13/2018 16:06:28.77
DBD@D03A   DMB  15.1     1,192                   1                              09/13/2018 16:06:28.77
DBD@E01A   DMB  15.1     1,336                   1                              09/13/2018 16:06:28.77
DBD@E02A   DMB  15.1     2,504                   1                              09/13/2018 16:06:28.77
DBD@H01A   DMB  15.1       600                   1                              09/13/2018 16:06:28.77
DBD@H02A   DMB  15.1     1,344                   2                              09/13/2018 16:06:28.77
DBD@ISAM   DMB  15.1       560                   1                              09/13/2018 16:06:28.77
DBD@I01A   DMB  15.1       680                   1                              09/13/2018 16:06:28.77
DBD@I02A   DMB  15.1       392                   1                              09/13/2018 16:06:28.77
DBD@I03A   DMB  15.1       872                   1                              09/13/2018 16:06:28.77
DBD@M02A   DMB  15.1       200                   1                              09/13/2018 16:06:28.77
DBD@M04A   DMB  15.1       120                   1                              09/13/2018 16:06:28.77
DBD@S02A   DMB  15.1       616                   1                              09/13/2018 16:06:28.77
DBD@X01A   DMB  15.1       568                   2                              09/13/2018 16:06:28.77
DBD@X02A   DMB  15.1       416                   1                              09/13/2018 16:06:28.77
DBD@X03A   DMB  15.1       416                   1                              09/13/2018 16:06:28.77
DBD@X04A   DMB  15.1       416                   2                              09/13/2018 16:06:28.77
DBD@X05A   DMB  15.1       416                   1                              09/13/2018 16:06:28.77
DBD@X06A   DMB  15.1       568                   2  ALIAS                       09/13/2018 16:06:28.77
DBD@X07A   DMB  15.1       416                   1                              09/13/2018 16:06:28.77
DBD@X08A   DMB  15.1       416                   1                              09/13/2018 16:06:28.77
```

Figure 192. Library Contents report in the FABQRPT data set (Part 1 of 2)

```
IMS LIBRARY INTEGRITY UTILITIES - ADVANCED ACB GENERATOR                                                    PAGE:    3
5655-U08                                    DATE: 10/01/2018  TIME: 13.39.39                          FABQCHEK - V2.R2

                              +----------------+
                              |LIBRARY CONTENTS|
                              +----------------+

                                  PSB DETAIL
                                 ============

                 IMS     SIZE     # DMBS    # PSBS                                        ACBGEN
MBRNAME    TYPE  LVL   (BYTES)  REFERENCE REFERENCNG  COMMENTS                    DATE       TIME
--------   ---  ----   -------  ---------  ---------  --------------------------  ---------- -----------
PSB0001    PSB  15.1    10,944         16                                        09/13/2018 16:06:28.77
PSB0002    PSB  15.1     4,944          8                                        09/13/2018 16:06:28.77
PSB0005    PSB  15.1       288          0             NO DBDS REFERENCED         09/13/2018 16:06:28.77
PSB0007    PSB  15.1       512          1                                        09/13/2018 16:06:28.77


                                   SUMMARY
                                  =========

 TOTAL: DMBS = 21          PSBS = 4           #REF_DMBS = 25
```

Figure 193. Library Contents report in the FABQRPT data set (Part 2 of 2)

Report field descriptions

The DETAIL section contains the following fields:

MBRNAME and TYPE
These columns give the name and type (DMB or PSB) of the member.

IMS LVL
This column shows the IMS version and release level that was used to generate this member.

SIZE This column shows the size of the member record in the ACB library. This value appeared in the DFS0940 message during the ACB generation.

 # DMBS REFERENCE
If the member is a PSB, this value is the number of DMBs that each PSB refers to.

 # PSBS REFERENCNG
If the member is a DMB, this value is the number of PSBs that contain references to it.

COMMENTS
The following comments might be shown:

- ALIAS
- PSB REFERS TO MISSING DMB
- NO DBDS REFERENCED
- PSB REFERS TO INVALID DMB
- DMB NOT REFERENCED BY PSB

When GENDATE=YES is specified in the LISTLIB command, the DETAIL section contains the following additional fields.

ACBGEN DATE
The column shows the date when the ACB member was generated.

ACBGEN TIME
The column shows the time when the ACB member was generated.

The SUMMARY section displays the count of DMBs and PSBs found in the specified library, and the number of references to DBDs by all PSBs.

Distribution of Member Sizes report

This report provides a frequency distribution of DMB and PSB sizes for all members found in the specified input library.

This report is generated in the SYSPRINT data set. However, when GENDATE=YES is specified on the LISTLIB command, this report is generated in the FABQRPT data set instead of the SYSPRINT data set.

This report is generated only for ACB libraries. If the input for the utility is a DBD library or a PSB library (LIBTYPE=DBD or LIBTYPE=PSB), this report is not generated.

The RANGE column specifies bytes.

An example of this report is shown in the following figure.

```
IMS LIBRARY INTEGRITY UTILITIES - ADVANCED ACB GENERATOR             PAGE:    5
5655-U08             DATE: 10/01/2018  TIME: 17.07.07         FABQCHEK - V2.R2

                      +----------------------------+
                      |DISTRIBUTION OF MEMBER SIZES|
                      +----------------------------+

                                 DMBS
                                ======

                        RANGE           COUNT
                    -----------------   ---------
                          0 - 511               9
                        512 - 1,023             8
                      1,024 - 1,535             3
                      2,048 - 2,559             1

                       TOTAL BYTES =     14,696


                                 PSBS
                                ======

                        RANGE           COUNT
                    -----------------   ---------
                          0 - 1,023             2
                      4,096 - 5,119             1
                     10,240 - 11,263            1

                       TOTAL BYTES =     16,688
```

Figure 194. Distribution of Member Sizes report

Distribution of PSB Workarea Sizes report

This report helps you in determining the size of the buffer pool that holds PSBs in the online environment. The distribution interval is in 1 K increments. The total bytes at the bottom of the report show the amount of memory required to hold all PSBs.

This report is generated in the SYSPRINT data set. However, when GENDATE=YES is specified on the LISTLIB command, this report is generated in the FABQRPT data set instead of the SYSPRINT data set.

This report is generated only for ACB libraries. If the input for the utility is a DBD library or a PSB library (LIBTYPE=DBD or LIBTYPE=PSB), this report is not generated.

The following figure shows an example of the Distribution of PSB Workarea Sizes report.

```
IMS LIBRARY INTEGRITY UTILITIES - ADVANCED ACB GENERATOR             PAGE:    6
5655-U08              DATE: 10/01/2018  TIME: 17.07.07         FABQCHEK - V2.R2

                     +---------------------------------+
                     |DISTRIBUTION OF PSB WORKAREA SIZES|
                     +---------------------------------+

                           RANGE           COUNT
                      -----------------   ---------
                           0 - 1,023             2
                         1,024 - 2,047             2

                           TOTAL BYTES =      4,080
```

Figure 195. Distribution of PSB Workarea Sizes report

Chronological History of ACBGENs report

This report provides a chronological history of the ACBGEN activity for all the members in the specified library. A summary for each unique time stamp found is presented.

This report is generated in the SYSPRINT data set. However, when GENDATE=YES is specified on the LISTLIB command, this report is generated in the FABQRPT data set instead of the SYSPRINT data set.

This report is generated only for ACB libraries. If the input for the utility is a DBD library or a PSB library (LIBTYPE=DBD or LIBTYPE=PSB), this report is not generated.

Subsections:

- "Sample report"
- "Report field descriptions" on page 446

Sample report

The following figure shows an example of the Chronological History of ACBGENs report.

```
IMS LIBRARY INTEGRITY UTILITIES - ADVANCED ACB GENERATOR             PAGE:    7
5655-U08             DATE: 10/01/2018  TIME: 17.07.07         FABQCHEK - V2.R2

                     +--------------------------------+
                     |CHRONOLOGICAL HISTORY OF ACBGENS|
                     +--------------------------------+


      DATE        DATE        TIME       #PSB'S      #DMB'S
     --------   ----------   --------   ---------   ---------
     2018.021   01/21/2018   17:29:55           1           0
     2018.025   01/25/2018   09:03:22           0           1
     2018.032   02/01/2018   11:45:42           1           0
     2018.079   03/20/2018   16:32:57       1,177           6
     2018.079   03/20/2018   19:29:34           0           1
     2018.082   03/23/2018   13:39:33           1           0
     2018.089   03/30/2018   10:27:19           6           0
     2018.090   03/31/2018   17:36:48           3           0
     2018.101   04/11/2018   10:23:03           1           0
     2018.101   04/11/2018   10:34:28           0           1
     2018.102   04/12/2018   13:27:51           0           1
     2018.103   04/13/2018   09:43:54           1           0
     2018.105   04/15/2018   07:07:41           0           1
     2018.108   04/18/2018   20:32:42           1           0
     2018.108   04/18/2018   20:38:53           1           0
     2018.108   04/18/2018   20:43:21           1           0
     2018.111   04/21/2018   15:18:03           1           0
     2018.111   04/21/2018   15:29:47           1           0
     2018.124   05/04/2018   13:19:57           1           0
     2018.124   05/04/2018   13:51:18           6           0


              Note: portions of this report omitted


     2018.188   07/07/2018   13:59:04           1           0
     2018.266   09/23/2018   15:26:58           0           6
     2018.267   09/24/2018   11:37:01           6           0


       NUMBER OF UNIQUE ACBGEN TIMESTAMPS = 140
```

Figure 196. Chronological History of ACBGENs report

Report field descriptions

DATE and TIME
: These columns show the time stamp used during the ACBGEN. It is applied to all DMBs and PSBs that were added to or replaced in the ACB library at that time.

#PSB and #DMB
: These columns show the number of PSBs and DMBs added to or replaced in the ACB library during the ACBGEN at the specified date and time.

Warning Messages report

This report provides all the warning messages that the ACBLIB Analyzer utility program issues.

This report is generated in the SYSPRINT data set. However, when GENDATE=YES is specified on the LISTLIB command, this report is generated in the FABQRPT data set instead of the SYSPRINT data set.

This report is generated only for ACB libraries. If the input for the utility is a DBD library or a PSB library (LIBTYPE=DBD or LIBTYPE=PSB), this report is not generated.

The following figure shows an example of the Warning Messages report.

```
                +----------------+
                |WARNING MESSAGES|
                +----------------+
FABQ1031W DMB 'BE4LORDR' REFERENCED BY PSB 'PE4YOINQ' IS NOT IN ACBLIB
FABQ1031W DMB 'BE4LPART' REFERENCED BY PSB 'PE4CPPUR' IS NOT IN ACBLIB
FABQ1031W DMB 'C330INVC' REFERENCED BY PSB 'C330READ' IS NOT IN ACBLIB
FABQ1031W DMB 'DLCDR01 ' REFERENCED BY PSB 'VS1CDRMS' IS NOT IN ACBLIB
```

Figure 197. Warning Messages report

Chapter 13. MFS Reversal utility

The MFS Reversal utility converts Message Format Services (MFS) control blocks back into IMS MFS utility control statements.

Topics:

- "MFS Reversal utility overview" on page 450
- "Restrictions and considerations for the MFS Reversal utility" on page 451
- "Converting MFS control blocks to control statements" on page 452
- "JCL requirements for the MFS Reversal utility" on page 453
- "Control statements for the MFS Reversal utility" on page 455
- "Output from the MFS Reversal utility" on page 459
- "Important notes about the generated source" on page 468

MFS Reversal utility overview

The MFS Reversal utility converts MFS MID, MOD, DIF, and DOF control blocks back into IMS MFS utility control statements. The MFS Reversal utility is helpful in cases where the MFS source files are lost or compromised.

Note: MID refers to Message Input Descriptor, MOD to Message Output Descriptor, DIF to Device Input Format, and DOF to Device Output Format.

Subsections:

- "Function overview"
- "Program structure"

Function overview

The MFS Reversal utility builds a list of the selected MIDs and MODs and generates a list of all DIFs and DOFs that are associated with them. It then builds the source for the selected MIDs and MODs and linked DIF and DOF MFS control blocks and saves them as members of a partitioned data set.

If the input to MFS Reversal contains a single name ALL, then the utility builds the source for all MID, MOD, DIF, and DOF MFS control blocks of the IMS MFS format library.

It also generates a summary report of the relationships between MIDs/MODs and DIFs/DOFs, and relationships between MIDs and MODs of the specified MFS format library.

The MFS Reversal utility also provides a function to copy the selected MFS control blocks (MIDs, MODs, DIFs, DOFs) and their associated control blocks from the IMS format library to a user-specified partitioned data set. The utility also generates a report that summarizes the results of the copy process. You can use this function to back up the MFS control blocks.

Program structure

The MFS Reversal program consists of two load modules. One of them, called FABVRVRS, is the actual utility program. The second is a Device Characteristics Table called DFSUDT0*x*. The suffix *x* has a default value of *A*, but you can select another suffix using a control statement of the MFS Reversal utility. This module is fetched from your IMS RESLIB. A default Device Characteristics Table called FABVDVCT is provided with MFS Reversal in case you do not have the DFSUDT0*x* module. The DFSUDT0*x* table describes the default characteristics of 3270-An devices.

Restrictions and considerations for the MFS Reversal utility

Certain restrictions and considerations apply when using the MFS Reversal utility.

Restrictions

The copy function of the MFS Reversal utility does not support alias members. When alias members exist in the FORMAT DD, the copy function skips these members and continues processing. When alias members exist in the COPYFMT DD, the copy function ends with an error message. Before you run the copy function, ensure that the partitioned data set that is specified by the COPYFMT DD does not contain alias members.

Considerations

The MFS Reversal utility can execute while IMS Online is active. However, during the execution of the utility, the status of the format library must not be changed through the use of the IMS Online MODIFY command. Also, the JCL of the IMS Control Region and that of the utility must allow sharing the IMS MFS format library.

The MFS Reversal utility makes certain assumptions when generating source. You might need to modify the generated source before you use the source as input to the MFS Language utility. See “Important notes about the generated source” on page 468 for information about the generated source.

Converting MFS control blocks to control statements

To convert MFS control blocks (MIDs, MODs, DIFs, and DOFs) back into the IMS MFS utility control statements or to copy MFS control blocks by using the MFS Reversal utility, you must prepare JCL for MFS Reversal and submit the job.

About this task

Sample JCL for the MFS Reversal utility is in the SHPSJCL0 library, member FABVIVP. You can modify this sample JCL and then use it to run the utility.

Procedure

1. In the MFS Reversal JCL, code the EXEC statement and DD statements.
   See "JCL requirements for the MFS Reversal utility" on page 453.
2. In the SYSIN data set, code the control statements for the MFS Reversal utility.
   See "Control statements for the MFS Reversal utility" on page 455.
3. Submit the job.
4. Check the output data sets that are generated.
   See "Output from the MFS Reversal utility" on page 459.

What to do next

The MFS Reversal utility makes certain assumptions when generating source. You might need to modify the generated source before you use the source as input to the MFS Language utility. See "Important notes about the generated source" on page 468 for information about the generated source.

JCL requirements for the MFS Reversal utility

When you code the JCL to run the MFS Reversal utility, include the EXEC statement and appropriate DD statements.

Subsections:

- "JCL example"
- "EXEC statement"
- "DD statements"

JCL example

An example of the JCL that is required for MFS Reversal is shown in the following figure.

```
//stepname EXEC  PGM=FABVRVRS
//STEPLIB  DD    DSN=HPS.SHPSLMD0,DISP=SHR
//         DD    DSN=IMSVS.SDFSRESL,DISP=SHR
//SYSPRINT DD    SYSOUT=*,DCB=BLKSIZE=133
//SYSOUT   DD    SYSOUT=*,DCB=BLKSIZE=133
//FORMAT   DD    DSN=ims.format,DISP=SHR
//MFSSRCE  DD    DSN=user.mfs.source,DISP=SHR
//SYSIN    DD    *
```

Figure 198. Example of MFS Reversal JCL (FABVRVRS JCL)

Modify the fields shown in lower case to reflect your operating environment.

EXEC statement

This statement invokes the MFS Reversal utility, FABVRVRS. The statement must be in the format shown:

```
//stepname   EXEC    PGM=FABVRVRS
```

DD statements

Code the following DD statements to identify the source of input and the placement of output information:

STEPLIB DD
: This library contains the FABVRVRS utility program in its executable form. Change the name HPS.SHPSLMD0 to reflect the name used at your site. Concatenate the IMS RESLIB as part of the STEPLIB. Change the name IMSVS.SDFSRESL to the name used at your site.

SYSPRINT DD
: This sequential data set contains the cross-reference report from the FABVRVRS program. The data set can be the JES spool data set or a standard sequential data set.

SYSOUT DD
: This is the sequential data set that contains activity logs and any errors encountered during the execution of FABVRVRS. The data set can be the JES spool data set or a standard sequential data set.

FORMAT DD

This library contains the IMS MFS formats for which the source is to be generated. Check the DISP= parameter if this library is also used in the IMS Online Control Region JCL.

If two or more data sets are concatenated to the FORMAT DD, MFS Reversal processes only the first data set.

MFSSRCE DD

This data set is a partitioned data set and contains the IMS MFS control block source statements generated by the utility. The LRECL of this data set must be 80. The block size can be any valid multiple of 80.

SYSIN DD

This is the control data set for this program.

The record format is fixed blocked, and the logical record length is 80. The block size, if coded, must be a multiple of 80. SYSIN contains the control statements for the MFS Reversal utility.

Related reading: For the format of the control statements, see "Control statements for the MFS Reversal utility" on page 455.

COPYFMT DD

This DD statement is required when the copy function is used. This partitioned data set contains the MFS control blocks that are copied by the copy function. Attributes of the data set must be same as the MFS format library. For information about the MFS format library, see the *IMS Installation*.

COPYPRT DD

This optional DD statement is used when the copy function is used. This data set, if provided, contains the copy report that summarizes the results of the copy process. The record format is fixed-blocked, and the logical record length is 133. The block size, if coded, must be a multiple of 133.

Control statements for the MFS Reversal utility

Control statements for the MFS Reversal utility specify the functions to be performed; they must be placed in the SYSIN data set.

Subsections:

- "Syntax rules"
- "Control statement keywords"

Syntax rules

The control statements for the MFS Reversal utility consist of keywords and operands arranged in a simple fixed format.

- Control statements can start anywhere after the second column.
- Statements with an asterisk (*) in column 1 are treated as comments.
- The comment statement is allowable between continuous statements.

Control statement keywords

The following control statement keywords can be used for the MFS Reversal utility:

DVCTBL

The optional DVCTBL statement specifies the suffix *x* to build the device table called DFSUDT0*x*. This table contains the device characteristics of symbolically referenced devices 3270-An. The default suffix is the character A. You can specify only one DVCTBL statement for each execution of the MFS Reversal program.

The operand for the DVCTBL statement is a single character.

The following example illustrates the specification of the DVCTBL statement.

```
DVCTBL L
```

OPTION

The optional OPTION statement specifies whether to create or suppress the optional MFS Reversal utility outputs. The following outputs are controlled by the OPTION statements:

- MFS utility program output statements
- Cross-reference report
- Copies of MFS control blocks and their associated control blocks

The OPTION statement supports three parameters. You can specify only one parameter for each OPTION statement. To specify multiple parameters, code multiple OPTION statements.

NORVRS

This option suppresses the creation of the MFS utility program output statements. However, a report of all formats used by the MIDs and MODs that are specified on the SELECT statement is produced.

NOXRPT

This option suppresses the creation and printing of the cross-reference report.

COPY=YES | NO

This option specifies whether the MFS Reversal utility copies the selected MFS control blocks and their associated control blocks from the IMS format library to the user-specified partitioned data set.

YES Specifies the use of the copy function. The MFS Reversal utility copies the control blocks to the user-specified partitioned data set that is specified in the COPYFMT DD. When YES is specified, you can specify the REPLACE option.

REPLACE=YES | NO

This option specifies whether the copy function replaces the existing MFS control blocks in the user-specified partitioned data set that is specified in the COPYFMT DD. Specify this option after the COPY=YES option, on the same line, separated by a comma (,). Blank characters are not permitted between the options.

YES Specifies that the copy function replaces the existing MFS control blocks.

Tip: When the partitioned data set contains many members to be replaced, specifying REPLACE=YES might degrade the performance and might also cause a shortage of data set space. If performance degradation or space shortage is a concern, remove the existing members and redefine the data set before you rerun the job.

NO Specifies that the copy function does not replace the existing MFS control blocks. When a member with the same name is found, the copy function skips copying that member and processes the next member. REPLACE=NO is the default.

NO Specifies that the copy function is not used. COPY=NO is the default.

The following examples illustrate the specification of the OPTION statement.

Example 1:

To suppress the creation of the MFS utility program output statements:

```
OPTION NORVRS
```

Example 2:

To suppress the creation and printing of the cross-reference report:

```
OPTION NOXRPT
```

Example 3:

To enable the copy function and replace the existing MFS control blocks:

```
OPTION COPY=YES,REPLACE=YES
```

Example 4:

To specify all the options:

```
OPTION NORVRS
OPTION NOXRPT
OPTION COPY=YES,REPLACE=YES
```

SELECT

The SELECT statement is a required statement that specifies that the MFS Reversal program re-create the control statements for the MFS utility from the control blocks named as operands on the SELECT statement.

When the copy function is enabled by the OPTION statement, the MFS control blocks that are named as operands on the SELECT statement and their associated MFS control blocks are copied to a partitioned data set that is specified in the COPYFMT DD. The copy function copies the following control blocks:

- MIDs and MODs that are referenced by the MIDs and MODs that are specified on the SELECT statement
- DIFs and DOFs that are associated with the MIDs and MODs that are specified on the SELECT statement
- MIDs and MODs that reference the DIFs and DOFs that are to be copied

You can specify only one SELECT statement for each execution of the MFS Reversal program.

Either of the following operands can be specified:

member_name

Specify the member names of the MID and MOD from which the source is to be generated. Only the names of the MID and MOD can be specified. The names of the DIF and DOF are not included in the list of names, as the MFS Reversal program gets these names from the corresponding MID and MOD control blocks.

At least one member must be selected. To specify multiple member names, the names must be separated by commas and must end with a blank. The list of names can be continued on the next line by placing a comma after the last name on the current line and continuing with names on the next line. If a comma is the last character on a line, it is assumed that the selection continues on the next line. A name must be contained on a single line.

ALL This option specifies all MIDs and MODs.

The following examples illustrate the specifications of the SELECT statement.

Example 1:

```
SELECT MID1,MID2,MOD1,MOD2
```

Example 2:

```
SELECT MID1,
    MID2,
    MOD1
```

Example 3:

```
SELECT ALL
```

EXCLUDE

The EXCLUDE statement works oppositely compared to the SELECT statement. The EXCLUDE statement specifies that the MFS Reversal

program *does not* re-create the control statements for the MFS utility from the control blocks that are named as operands on the EXCLUDE statement. The MFS Reversal utility skips processing for each member of a MID, MOD, DIF, and DOF that is specified on the EXCLUDE statements.

If a name is specified on the SELECT statement as well as on the EXCLUDE statement, the EXCLUDE statement has precedence.

When MIDs or MODs are specified on the EXCLUDE statement and OPTION NOXRPT is not specified, the NXT= columns for the MIDs or MODs are blank and the MIDs or MODs are not displayed in the REFERENCED BY columns in the MID/MOD XREF report. Similarly, these columns are blank for the MIDs and MODs that refer to the DIFs and DOFs that are specified by the EXCLUDE statement.

Any specification made to the EXCLUDE statement does not affect the behavior of the copy function.

Up to 511 EXCLUDE statements can be specified for each execution of the MFS Reversal program.

The operand for the EXCLUDE statement is a name of an MID, MOD, DIF, or DOF from which the source is not to be generated. The name must be 1 - 8 characters and must be specified after the EXCLUDE keyword with one blank between. Only one name is allowed per EXCLUDE statement. DIF and DOF names start with two non-alphabetical characters and can include lower case characters. To refer to a DIF/DOF, use the third to eighth character of the name, in uppercase only, and prefix the name with **.

The following example illustrates the specification of the EXCLUDE statement.

```
SELECT ALL
EXCLUDE ABCD          MID or MOD name
EXCLUDE **FBCUL       DIF or DOF name
```

Output from the MFS Reversal utility

Output from the MFS Reversal utility consists of the SYSOUT data set, the SYSPRINT data set, the MFSSRCE data sets, the COPYFMT data set, and the COPYPRT data set.

SYSOUT data set

The SYSOUT data set contains the messages issued by MFS Reversal.

The following figure shows messages that are generated in the SYSOUT data set.

```
IMS LIBRARY INTEGRITY UTILITIES - MFS REVERSAL/COMPARE              "MESSAGES"                                    PAGE:  00001
5655-U08                                                 DATE: 10/01/2018  TIME: 16.16.51                    FABVLOG - V2.R2

DSNAME: IMSVS.FORMAT

FABV0022W USING DEFAULT DEVICE CHARACTERISTICS TABLE FABVDVCT
FABV0044I SOURCE FOR MEMBER SAMFMX   BUILT
```

Figure 199. Messages in the SYSOUT data set

SYSPRINT data set

The SYSPRINT data set contains an MFS Reversal report that summarizes the cross-reference information between the message descriptors and the device format, and the cross-reference information between message descriptors.

This report includes the names of the MIDs and MODs that are specified on the SELECT statement, and the names of the DIFs and DOFs that are referenced by each MID and MOD. If ALL is specified on the SELECT statement, then all MID and MOD names in the format library and their referenced DIFs and DOFs are reported.

When the analysis of a format library member fails, information about the member is displayed before the MID/MOD XREF report.

Subsections:

- "Sample report"
- "Report field descriptions" on page 460

Sample report

The following figure shows an example of the MID/MOD XREF report.

```
IMS LIBRARY INTEGRITY UTILITIES - MFS REVERSAL              "MID/MOD XREF REPORT"                          PAGE:  00001
5655-U08                                              DATE: 10/01/2018  TIME: 19.04.05                 FABVRVRS - V2.R2

DSNAME: IMSVS.FORMAT

MSGNAME       SOR=    DCODE  DEVICE    FCODE  FEATURE                  NXT=      REFERENCED BY

MO3270B  (O)  F3270B  02     3270,2    7F     FEAT=IGNORE
MI3270K  (I)  F3270K  42     3270-A02  C7     FEAT=(CARD,PFK,PEN)      MO3270K   MO3270K
                                                                       MO3270J
MO3270K  (O)  F3270K  42     3270-A02  C7     FEAT=(CARD,PFK,PEN)      MI3270K   MI3270K
                                                                                 MI360B
MO3270J  (O)  F3270K  42     3270-A02  C7     FEAT=(CARD,PFK,PEN)               MI3270K
MI360B   (I)  FI360B  08     FIN       7F     FEAT=IGNORE              MO3270K
MI7108   (I)  DI7108  0C     SCS1      01     FEAT=1
MO3270C  (O)  F3270C  02     3270,2    7F     FEAT=IGNORE              MI3270C
WARNING:

THE FOLLOWING MSG FORMATS REFERENCE DEVICE FORMATS
FOR WHICH SOURCE WAS CREATED. HOWEVER THESE MSG
FORMAT NAMES WERE NOT INCLUDED ON THE UTILITY
SELECT STATEMENT AND THEREFORE SOURCE FOR THEM WAS
NOT GENERATED. ALSO THE CROSS REFERENCE INFORMATION
BETWEEN MID AND MOD ARE NOT PRINTED.
MI3270C  (I)  F3270C  02     3270,2    7F     FEAT=IGNORE
MOSCS1C  (O)  F3270C  02     3270,2    7F     FEAT=IGNORE
```

Figure 200. MID/MOD XREF report

Report field descriptions

The following explanations refer to some of the fields in the MID/MOD XREF report.

MSGNAME
This column shows the MID or MOD name.

(I) Input; indicates a MID

(O) Output; indicates a MOD

SOR= This column gives the format name referred to by the MID or MOD.

DCODE
This column shows the device code and is the first character in the DIF/DOF name.

FCODE
This column shows the feature code and is the second character in the DIF/DOF name.

FEATURE
This column shows the interpretation of the FCODE.

NXT= This column contains the names of other MIDs or MODs that this MID or MOD refers to. If this MID or MOD refers to no MIDs or MODs, this column is blank.

REFERENCED BY
This column contains the names of other MIDs or MODs that are specified on the SELECT statement and that refer to this MID or MOD. If no MIDs or MODs refer to this MID or MOD, this column is blank.

WARNING:
A warning message is given when a message member (MID or MOD) is selected for source generation and the program finds other members in the

format library that refer to the same format name as the selected member. The cross-reference information between MID and MOD is not shown in the warning messages.

In the sample report, member MO3270C was selected but the program found members MI3270C and MOSCS1C that also reference the same FMT named F3270C. For completeness, consider running the utility again to include these message names. In this subsequent run of the utility, only those message members need be selected that were incomplete along with the names in the warning list.

Notes:

1. When MIDs or MODs are specified on the EXCLUDE statement, the NXT= column is blank.
2. When MIDs or MODs are specified on the EXCLUDE statement, MIDs or MODs that are referenced by the specified MIDs or the MODs are not displayed in the REFERENCED BY column.
3. When DIFs and DOFs are specified on the EXCLUDE statement, the NXT= column and the REFERENCED BY column are blank for the MIDs and MODs that refer to these DIFs and DOFs.

MFSSRCE data set

This partitioned data set contains the IMS MFS control block source statements generated by the utility.

You can optionally modify these source statements and then use them as input to the IMS MFS Language utility. This utility creates MFS control blocks (MIDs, MODs, DIFs, and DOFs).

Subsections:

- "How the control blocks are converted to source code"
- "Naming conventions"
- "Example of created source" on page 463

How the control blocks are converted to source code

A brief discussion of how MFS Reversal converts the format names found in the control blocks back to source code follows:

A format is referenced by a MID or MOD by the 3rd through 8th character of the format name. Depending on the device characteristics and features of the device from where the message is received, IMS Message Formatting Services retrieves the correct format control block. The first character of the control block name refers to the device and the second to the feature. One or more formats may exist having the same 3rd through 8th characters of the format name. Source statements are created for each device/feature combination occurring in a format (FMT) as well as the source for the MID, MOD, or both that reference this format.

The following example illustrates this:

If TESTMOD is a selected modname for which the source is to be created, and TESTMOD references *xy*TSTFMT, where *x* is a device code and *y* is a feature code, then a member is created in the MFSSRCE output library with the name TSTFMT. This member will have the FORMAT definitions (various DEV, DIV, DPAGE, DFLD, and similar statements) for all possible *xy* occurrences with the TSTFMT name and the MOD definitions for TESTMOD.

Note: When building the source, a check is made of the time stamp that appears in the MID, MOD, DIF, and DOF control blocks. The time stamp in the MID and associated DIF must match. So must the time stamps in the MOD and DOF. If the time stamp check fails, the selected MID or MOD is not processed. An informational message is written to the SYSPRINT data set.

Naming conventions

The FORMATs and the MID/MODs that are created by the MFS Reversal utility generate their own names and labels whenever possible.

The naming conventions followed are:

DPAGE label

Each DPAGE label is in the form DPA*xxxxx*, where *xxxxx* is a number in the range of 1 - 99999. The number is incremented by 1 for each new DPAGE in the DEV definition.

DFLD label
Each DFLD label is in the form DL*nnnnnn*, where *nnnnnn* is the decimal equivalent of an internal offset.

CURSOR name
Each cursor name is of the form CS*nnnnnn*, where *nnnnnn* is the decimal equivalent of an internal offset.

MFLD label
Each MFLD label used in a conditional predicate on the LPAGE statement has the form COND*mmmm*, where *mmmm* is a number in the range of 1 - 9999. The number is incremented each time an MFLD label is created within MSG.

MFLD name
An MFLD name is generally the label of a DFLD statement. However, if a field is not known to the MID, it is given the name NN*xxxxxx*, where *xxxxxx* is a number in the range of 1 - 999999. The number is incremented by 1 for each new occurrence of an unknown field to the MID. If a field is not known to the MOD, it is given the name NN00OSSC.

PFK name
An MFLD name for PFKey input has the name PFK00001.

CARD name
An MFLD name for Magnetic Card Reader input has the name CRD00001.

PEN name
MFLD name for PEN input has the format PEN*xxxxx*, where *xxxxx* is a number in the range of 1 - 99999. The number is incremented by 1 for each new PEN name.

ACTVPID name
MFLD name for active PID. The name has the format ACTVPID*dd*, where *dd* is a number in the range of 1 - 99. The number is incremented each time such a name is created.

OPCTL TABLE label
Each OPCTL TABLE is given a name having the format OPCTL*zzz*, where *zzz* is a number in the range of 1 - 999. The number is incremented by 1 for each new TABLE statement.

IF label
Each IF statement has a label of the form IF*tttttt*, where *tttttt* is a number in the range of 1 - 999999. The number is incremented by 1 for each new IF statement creation.

Example of created source

The following figure illustrates source created for MO3270A and MI3270A. This output could have been created by submitting the following control cards to the MFS Reversal utility:

```
DVCTBL Q
SELECT MO3270A,MI3270A
```

In this example, the MFS Reversal utility encountered a member X'027F'F3270A in the format library. It then deconstructed this to create a format name of F3270A (which is the label on the FMT statement), a TYPE=(3270,2) and a FEAT=IGNORE.

The MFS Reversal utility combines all the members that have the same FORMAT name (suffix portion of *xy*F3270A) and creates a single member in MFSSRCE under the FORMAT name F3270A.

Related reading:

- See "Device and feature code tables" on page 588 to understand how the hex values X'02' and X'7F' in the format names are interpreted.
- See "Important notes about the generated source" on page 468 for additional information about the generated source.

The following figure shows an example of the source that is created by MFS Reversal.

```
F3270A     FMT
           DEV    TYPE=(3270,2),                                          X
                  FEAT=IGNORE,                                            X
                  DSCA=X'0230',                                           X
                  SYSMSG=DL000022
           DIV    TYPE=INOUT
DPA00001   DPAGE  FILL=NONE,                                              X
                  CURSOR=((5,17,CS000030))
           DFLD   'MFS SUN SPECIFICATIONS',                               X
                  POS=(2,28),                                             X
                  EATTR=(HBLINK,RED,PX'41'),                              X
                  ATTR=(PROT)

DL000006   DFLD   POS=(5,57),                                             X
                  LTH=15,                                                 X
                  EATTR=(VMFLD,HUL,RED,PX'42',RIGHT,OVER,LEFT),           X
                  ATTR=(NUM,MOD)
DL000022   DFLD   POS=(24,2),
                  LTH=79,                                                 X
                  ATTR=(PROT,NUM)
*---------------------------------------------*
           FMTEND
*---------------------------------------------*
MO3270A    MSG    TYPE=OUTPUT,                                            X
                  SOR=(F3270A,IGNORE),                                    X
                  OPT=2,                                                  X
                  NXT=MI3270A,                                            X
                  FILL=PT
           LPAGE  SOR=DPA00001,                                           X
                  COND=(COND0005,=,'CA'),                                 X
                  NXT=MI3270A
           SEG
           MFLD   DL000010,                                               X
                  LTH=30,                                                 X
                  ATTR=YES
COND0005   MFLD   DL000020,                                               X
                  LTH=2
           MSGEND
*---------------------------------------------*
MI3270A    MSG    TYPE=INPUT,                                             X
                  SOR=F3270A,                                             X
                  OPT=2
           LPAGE  SOR=DPA00001,                                           X
                  NXT=MO3270A
           SEG    EXIT=(127,0)
           MFLD   'SUNTRANA '
           MFLD   DL000012,                                               X
                  LTH=5
           MSGEND
*---------------------------------------------*
           END
```

Figure 201. Sample Source Created by MFS Reversal

COPYFMT data set

When the copy function is enabled by the OPTION statement, this partitioned data set contains the MFS control blocks that are specified on the SELECT statement and their associated MFS control blocks. These control blocks are copied from the IMS format library that is specified in the FORMAT DD.

When this partitioned data set contains alias members, which are not supported by the copy function, the program issues message FABV0065E and ends the copy process. When the copy process is ended for this reason, no MFS control blocks are copied to this partitioned data set.

COPYPRT data set

When the copy function is enabled by the OPTION statement, this data set contains a copy report, which summarizes the copy process.

Subsections:

- "Sample report: OPTION COPY=YES,REPLACE=NO"
- "Sample report: OPTION COPY=YES,REPLACE=YES" on page 467

Sample report: OPTION COPY=YES,REPLACE=NO

The following figure shows an example of the Copy report when OPTION COPY=YES,REPLACE=NO is specified.

```
IMS LIBRARY INTEGRITY UTILITIES - MFS REVERSAL                    "COPY REPORT"                                    PAGE:  00001
5655-U08                                                 DATE: 10/01/2018  TIME: 12.10.56                      FABVRVRS - V2.R2

COPY TO DSNAME: IMSVS.CPYFMT
NUMBER OF COPIED MEMBERS       =       16
NUMBER OF COPY SKIPPED MEMBERS =       12

THE FOLLOWING MEMBERS WERE COPIED
-------------------------------------------------------------------------------------------------------------------
""fMT100    ""fMT100    ""FMT762    ""FMT762    MIDA        MIDA2       MIDB        MIDB2       MIDC2       MIDD2
MODA        MODA2       MODB        MODB2       MODC2       MODD2

THE FOLLOWING MEMBERS WERE SKIPPED
-------------------------------------------------------------------------------------------------------------------
."fMT122    ."fMT123    ."FMT122    ."FMT123    MID1003     MID1004     MID1005     MID1006     MOD1003     MOD1004
MOD1005     MOD1006
```

Figure 202. Copy report (OPTION COPY=YES,REPLACE=NO)

The following explanations refer to the fields in the Copy report that is issued when OPTION COPY=YES,REPLACE=NO is specified.

NUMBER OF COPIED MEMBERS
The number of members that were copied.

NUMBER OF COPY SKIPPED MEMBERS
The number of members that were skipped.

THE FOLLOWING MEMBERS WERE COPIED
A list of the members that were copied.

THE FOLLOWING MEMBERS WERE SKIPPED
A list of the members that were skipped. Skipped members are shown when OPTION COPY=YES,REPLACE=NO is specified in the SYSIN DD and the members to be copied exist in the partitioned data set that is specified by the COPYFMT DD.

The following figure shows an example of the Copy report when one or more members could not be copied. When members that could not be copied are displayed in the report, identify the cause of errors from the messages that are recorded in the SYSOUT data set.

```
IMS LIBRARY INTEGRITY UTILITIES - MFS REVERSAL                    "COPY REPORT"                                    PAGE:  00001
5655-U08                                                  DATE: 10/01/2018  TIME: 12.10.56                     FABVRVRS - V2.R2

COPY TO DSNAME: IMSVS.CPYFMT
NUMBER OF COPIED MEMBERS       =       16
NUMBER OF COPY FAILED MEMBERS  =        8

THE FOLLOWING MEMBERS WERE COPIED
-------------------------------------------------------------------------------------------------------------------
""fMT100    ""fMT100    ""FMT762    ""FMT762    MIDA        MIDA2       MIDB        MIDB2       MIDC2       MIDD2
MODA        MODA2       MODB        MODB2       MODC2       MODD2


THE FOLLOWING MEMBERS COULD NOT BE COPIED
-------------------------------------------------------------------------------------------------------------------
."fMT210    ."fMT220    ."FMT210    ."FMT220    MID2001     MID2002     MOD2001     MOD2002
```

Figure 203. Copy report (when copy failed for some members)

The following explanations refer to some of the fields in the Copy report when copy failed for some members.

NUMBER OF COPY FAILED MEMBERS
The number of members that could not be copied.

THE FOLLOWING MEMBERS COULD NOT BE COPIED
A list of the members that could not be copied.

Sample report: OPTION COPY=YES,REPLACE=YES

The following figure shows an example of the Copy report when OPTION COPY=YES,REPLACE=YES is specified.

```
IMS LIBRARY INTEGRITY UTILITIES - MFS REVERSAL                    "COPY REPORT"                                    PAGE:  00001
5655-U08                                                  DATE: 10/01/2018  TIME: 12.20.21                     FABVRVRS - V2.R2

COPY TO DSNAME: IMSVS.CPYFMT
NUMBER OF COPIED MEMBERS       =       16
NUMBER OF REPLACED MEMBERS     =       12

THE FOLLOWING MEMBERS WERE COPIED
-------------------------------------------------------------------------------------------------------------------
""fMT100    ""fMT100    ""FMT762    ""FMT762    MIDA        MIDA2       MIDB        MIDB2       MIDC2       MIDD2
MODA        MODA2       MODB        MODB2       MODC2       MODD2

THE FOLLOWING MEMBERS WERE REPLACED
-------------------------------------------------------------------------------------------------------------------
."fMT122    ."fMT123    ."FMT122    ."FMT123    MID1003     MID1004     MID1005     MID1006     MOD1003     MOD1004
MOD1005     MOD1006
```

Figure 204. Copy report (OPTION COPY=YES,REPLACE=YES)

The following explanations refer to some of the fields in the Copy report that is issued when OPTION COPY=YES,REPLACE=YES is specified.

NUMBER OF REPLACED MEMBERS
The number of members that were replaced.

THE FOLLOWING MEMBERS WERE REPLACED
A list of the members that were replaced. Replaced members are shown when OPTION COPY=YES,REPLACE=YES is specified in the SYSIN DD and the members to be copied exist in the partitioned data set that is specified in the COPYFMT DD.

Important notes about the generated source

The MFS Reversal utility makes certain assumptions when generating source.

The MFS Reversal utility makes the following assumptions:

- If OPT=3, the LTH value is taken from the DIF/DOF; otherwise it is taken from the MID/MOD.
- If the MSG statement of a MID or MOD has the NXT keyword, it is propagated to each LPAGE statement in the MID/MOD.
- If OPT=3 and the MFLD is not known to the DOF, then the LTH value on the MFLD statement is also unknown.
- If any of the formats uses lower case characters, then an ALPHA statement must be included in the output of the Reversal utility for the specific format - if this output is to be processed by the MFS Language utility.

  Attention: The source generated by the MFS Reversal utility might need to be modified for subsequent processing by the IMS MFS Language utility.
- The DSCA value is taken from the DOF. This might not be the same as what the original source data for the DOF contained, because the MFS Language utility checks the value specified for the DSCA and, if necessary, modifies it.
- The WIDTH value for output devices is always the default value. You might need to change this value if the output of MFS Reversal is to be processed by the MFS Language utility.

  Attention: The source generated by the MFS Reversal utility might need to be modified for subsequent processing by the IMS MFS Language utility.
- OUTL'0E' is reported as RIGHT,OVER,LEFT.
- EGCS'xx' specification is reported in the form PX'xx'.
- If the EATTR has a value of PX'A', it is reported in hex form as PX'C1'.
- The LTH keyword is not shown on a literal DFLD.
- The page size value on the PAGE keyword of the DEV statement is always the default page size. You might need to change this value if the output of the Reversal utility is to be processed by the MFS Language utility.

  Attention: The source generated by the MFS Reversal utility might need to be modified for subsequent processing by the IMS MFS Language utility.
- Finance terminals 3600 and 36DS are reported as Device Type FIDS.
- Finance terminals 36DS3, 36DS4, 36DS7 are reported as Device Types FIDS3, FIDS4, and FIDS7, respectively.
- Finance terminals 36JP, 36FP, and 36BP are reported as FIJP, FIFP, and FIBP, respectively.
- For DPMA output, HDRCTL always has a length of 7.
- For DPMA devices, an RCD statement is implied after the first PPAGE statement. However subsequent PPAGE statements have RCD statements following each PPAGE statement.
- If RCDCTL was defined as RCDCTL=(,SPAN), but there were no fields that spanned a line, then the result is RCDCTL=(*xxx*,NOSPAN), where *xxx* is the maximum record length.
- If OPTIONS=SIM was defined in the format and there are no fields with simulated attributes, then the result is OPTIONS=NOSIM2.
- For DPMB devices, if OPTIONS=DPAGE is specified on the DIV statement and PPAGE statements are also present, then the PPAGE name in the FMH header is given to the DPAGE statement and all PPAGE statements are ignored.

- For SCS1 devices and TYPE=INPUT, the first DFLD of the DIF starts at position (1,1).
- If ENDMSG or (BGNMSG,ENDMSG) or (BGNPP,BGNMSG,ENDMSG) is the EJECT option, the ENDMSG is reported as ENDPP.
- The DEFN and SPACE options of the PAGE keyword for SCS1 devices cannot be resolved.
- SLDI is always reported in the SLDP form.
- If OPTIONS=MSG, any PPAGE definition is ignored.
- If a literal definition that includes Double Byte Character Set (DBCS) characters is continued over multiple lines, the first byte of the DBCS character could be in column 71 and the second byte of the character could be at the beginning of the next line. In this case, even the DBCS characters are not enclosed with SO and SI control characters, this line continuation format conforms to the continuation rules of MFS source, and therefore, the source can be processed by the IMS MFS Language utility without modification.

Chapter 14. MFS Compare utility

The MFS Compare utility compares IMS MFS control blocks that reside in two different MFS format libraries.

Topics:

- "MFS Compare utility overview" on page 472
- "Considerations for the MFS Compare utility" on page 474
- "Keywords used in comparisons" on page 475
- "Comparing MFS control blocks" on page 480
- "JCL requirements for the MFS Compare utility" on page 481
- "Control statements for the MFS Compare utility" on page 483
- "Output from the MFS Compare utility" on page 485

MFS Compare utility overview

The MFS Compare utility compares IMS MFS control blocks that reside in two different MFS format libraries. The utility first decodes two sets of IMS MFS control blocks into IMS MFS source statements, and then compares the two sets of source statements.

This function is useful when you want to validate that what you are running corresponds to what is in your source library. You would do this by first running the IMS MFS Language utility using your source statements as input to create a set of MFS control blocks that reside in a separate MFS format library. Then run the Compare utility to see if the two sets of control blocks match.

Subsections:

- "Function overview"
- "Program structure" on page 473

Function overview

The MFS Compare utility creates IMS MFS source statements from MFS control blocks that reside in two MFS format libraries. The utility uses the Message Input Descriptors (MIDs) and Message Output Descriptors (MODs) specified as input to build and store the source Formats (FMTs) as members of work partitioned data sets. If ALL is specified as input, then the utility builds the source for all MID, MOD, DIF, and DOF IMS MFS control blocks.

As part of this process, the utility first builds a list of the selected MIDs and MODs and generates a list of all DIFs and DOFs associated with the MIDs and MODs.

Then the source is generated and stored as members of two partitioned data sets. Each member represents an entire Format (FMT). The FMT consists of multiple Format Control Blocks (FCBs). An FCB can be an MSG, DEV, PDB, or TABLE control block.

Note: When generating the IMS MFS utility control statements, a check is made of the time stamp that appears in the MID, MOD, DIF, and DOF control blocks. The time stamp in the MID and associated DIF must match. So must the time stamps in the MOD and DOF. If the time stamp check fails, the selected MID or MOD is not processed. An informational message is written to the SYSPRINT data set.

When the source is generated and stored, the utility compares each format in the first partitioned data set with the corresponding format in the second partitioned data set and reports any differences. The comparison is performed FMT by FMT. Only FMTs having the same name in both the libraries are compared. FCBs within the format are compared if their names are the same. An informational message is issued when:

- an FMT exists in one library but not in the other
- an FCB exists in a format in one library but not in the other

Multiple DIV statements can exist in a format for the same DEV. If that is the case, the comparison is done at the DIV level.

The MFS Compare utility compares the FCB parameters even if they are unused for some IMS versions and releases.

Program structure

The MFS Compare utility consists of two load modules. One of them, called FABVCMPR, is the actual utility program. The second is a Device Characteristics Table called DFSUDT0*x*. The suffix *x* has a default value of *A*, but you can select another suffix using a control statement of MFS Compare. This module is fetched from your IMS RESLIB. A default Device Characteristics Table called FABVDVCT is provided with MFS Compare in case you do not have the DFSUDT0*x* module.

Considerations for the MFS Compare utility

Certain considerations apply when you use the MFS Compare utility.

The MFS Compare utility can execute while IMS Online is active. However, during the execution of the utility, the status of the format library must not be changed through the use of the IMS Online MODIFY command. Also, the JCL of the IMS Control Region and that of the utility must allow sharing the IMS MFS format libraries.

Keywords used in comparisons

The MFS Compare utility compares the keywords that are in the generated source statements.

The following keywords are compared for each format control block (MSG, DEV, PDB, and TABLE):

MSG

TYPE Indicates input (MID) or output (MOD)

SOR Names the corresponding DIF or DOF

OPT Represents the message option number

NXT Links this MID to the next MOD or this MOD to the next MID

PAGE Indicates whether operator logical paging is provided

FILL Indicates the fill character for output devices

LPAGE

SOR Links this logical page to the corresponding DPAGE in the device format (DIF or DOF)

COND
Describes a conditional text for editing of this logical page

NXT Links this MID to the next MOD or this MOD to the next MID if the logical page is processed

PROMPT
Defines a literal to be placed in a field when formatting the last logical page

PASSWORD
Defines a password segment of one or more Message fields

SEG

EXIT Describes the segment edit exit routine interface

GRAPHIC
Specifies whether uppercase translation is to occur

MFLD

DFLDNAME
Specifies the device field name from which data is extracted or into which data is placed

'LITERAL'
A value inserted in an input message

LTH Specifies the length of the field

JUST Specifies that the data field is to be left-aligned or right-aligned

ATTR Specifies whether the application program can modify the 3270 attributes and extended attributes

FILL Specifies the message field padding character

EXIT Describes the field edit exit routine interface

SCA Defines the system control area

DEV

TYPE Specifies the device type and model number of a device using this format description

FEAT Specifies the feature for this device or program group

MODE
Specifies the manner in which field scanning is to occur

FTAB Specifies the field tab character used to terminate an input field

LDEL Specifies the two characters used to determine if a record is to be discarded

PGE Specifies the characteristics of a physical page

DSCA Specifies the default system control area

PEN Defines an input field name to contain literal data when an immediate light pen detection of a field with a space or null designator character occurs

CARD
Defines the input field name to receive operator identification card data when that data is entered

SYSMSG
Specifies the label of the field in the DFLD statements that define the device field in which IMS system messages are to be displayed

PFK Defines an input field name to contain program function key literal data or control function data/action

SUB Specifies the character used by MFS to replace any X'3F' characters in the input data stream

PDB Specifies the name of the Partition Descriptor Block to describe the partition set

WIDTH
Specifies the maximum line width for this device type

FORMS
Specifies a literal included on the output message

HTAB Specifies the position where horizontal tab stops are placed

VT Specifies that MFS inserts tab control characters at the specified locations

VTAB Specifies the positions of top and bottom page margins

SLDI Specifies the line density for an output message in lines per inch

SLDP Specifies the line density for an output message in points per inch

VERSID
Specifies the version ID

DIV

TYPE Specifies the format type (INPUT, OUTPUT, or INOUT)

OPTIONS
Specifies the exit routine to map data

COMPR
Requests MFS to remove trailing blanks from short fields, fixed-length fields, or all fields presented by the application program

RCDTL
Specifies the maximum length of a transmission record

NULL Specifies whether MFS is to ignore, search, or replace trailing nulls in fields

HDRCTL
Specifies the characteristics of the output message header

RDPN Permits the suggested return destination process name to be supplied in the input message MFLD referenced

DPN Specifies the destination process name

PRN Specifies the primary resource name

RPRN Permits the suggested return primary resource name to be supplied in the input message MFLD referenced

OFTAB
Directs MFS to insert output field tab separators characters in the output data stream

DPAGE

COND
Specifies a conditional test to be performed on the first input record

FILL Specifies a fill character for output device fields

OFTAB
Directs MFS to insert the output field tab separator character specified on this DPAGE statement for the output data stream of the DPAGE being described

CURSOR
Specifies the position of the cursor on a physical page

MULT Specifies that multiple physical page input messages are allowed for this DPAGE

PD Specifies the name of the partition descriptor of the partition associated with the DPAGE statement

ACTVPID
Specifies the name of an output field in the message containing the partition identification number of the partition to be activated

ORIGIN
Specifies page positioning on the Finance display for each physical page defined

SELECT
Specifies carriage selection for a FIFP device with FEAT=DUAL specified in the previous DEV statement

PPAGE
Defines the beginning of a presentation page

RCD Can be used to influence the placement of DFLDs in records

DFLD

'LITERAL'
Specifies a literal character string to be presented to the device

G'LITERAL'
Specifies an EGCS literal character string to be presented to the device

POS Defines the first data position of this field in terms of line, column, and physical page of the display format

LTH Specifies the length of the field

ATTR Defines the display attributes of this field

OPCTL
Specifies the name of a table that is to be checked for operator control requests when this device field is received

SLDI Specifies the line density for an output message in lines per inch

SLDP Specifies the line density for an output message in points per inch

PASSWORD
Identifies this field as the location of the IMS password field for input messages

PEN Specifies a literal to be selected or an operator control function to be performed when this field is detected

EATTR
Defines the extended attributes of this field

PDB

LUSIZE
Describes the physical size of the Logical Unit display for which the PDB is defined

SYSMSG
Specifies the partition name for displaying system messages

PAGINGOP
Specifies the option number for the partition page presentation algorithm

LUDEFN
Indicates whether the LUSIZE parameter in the PDB statement and the VIEWLOC parameter in the PD statements are specified in rows and columns or in pels

PD

PID Specifies a partition identifier number for the partition

VIEWPORT
Specifies the size of the viewport for the partition

VIEWLOC
Specifies the location of the viewport on the display screen in terms of the distance offset from the upper-left of the screen

PRESPACE
Indicates the size of the presentation space buffer in row and columns

WINDOWF
Indicates the initial offset in rows of the top edge of the view window from the top of the presentation space

CELLSIZE
Indicates the number of horizontal and vertical pels in a character cell

SCROLLI
Indicates the number of rows that are scrolled when the scrolling function is used

TABLE

IF

DATA Specifies that the conditional operation be performed against the data received from the device for the field

LENGTH
Specifies that the conditional operation is testing the number of characters entered for the field

Comparing MFS control blocks

To compare IMS MFS control blocks that reside in two different MFS format libraries by using the MFS Compare utility, you must create a set of MFS control blocks from your source statements, prepare and submit the JCL for the MFS Compare utility, and check the differences in the MFS Compare report.

About this task

Sample JCL for the MFS Compare utility is in the SHPSJCL0 library, member FABVIVP. You can modify this sample JCL and then use it to run the utility.

Procedure

1. Use the IMS MFS Language utility (DFSUPAA0) to create a set of MFS control blocks from your source statements.

   For the instructions to use the MFS Language utility, see *IMS System Utilities*.
2. In the MFS Compare JCL, code the EXEC statement and DD statements.

   See "JCL requirements for the MFS Compare utility" on page 481.
3. In the SYSIN data set, code the control statements for the MFS Compare utility.

   See "Control statements for the MFS Compare utility" on page 483.
4. Submit the job.
5. Check the Compare report that is generated in the SYSPRINT data set.

   See "Output from the MFS Compare utility" on page 485.

What to do next

After checking the Compare report, you might become aware of some discrepancies in your format libraries.

It is up to you to decide which values are appropriate for your site. When you have determined the values to use, you can run the MFS Reversal utility, modify the MFSSRCE source file to reflect the new values, and then regenerate the control blocks by using the IMS MFS Language utility.

JCL requirements for the MFS Compare utility

When you code the JCL to run the MFS Compare utility, include the EXEC statement and appropriate DD statements.

Subsections:

- "JCL example"
- "EXEC statement"
- "DD statements"

JCL example

An example of the JCL that is required for MFS Compare is shown in the following figure.

```
//stepname EXEC  PGM=FABVCMPR
//STEPLIB  DD    DSN=HPS.SHPSLMD0,DISP=SHR
//         DD    DSN=IMSVS.SDFSRESL,DISP=SHR
//SYSPRINT DD    SYSOUT=*,DCB=BLKSIZE=133
//SYSOUT   DD    SYSOUT=*,DCB=BLKSIZE=133
//FORMAT   DD    DSN=ims.format1,DISP=SHR
//FORMAT2  DD    DSN=ims.format2,DISP=SHR
//MFSSRCE  DD    DSN=&&SOURCE1,DISP=(,DELETE),
//               SPACE=(CYL,(5,5,20))
//MFSSRCE2 DD    DSN=&&SOURCE2,DISP=(,DELETE),
//               SPACE=(CYL,(5,5,20))
//SYSIN    DD    *
```

Figure 205. Example of MFS Compare JCL (FABVCMPR JCL)

Modify the fields shown in lower case to reflect your operating environment.

EXEC statement

This statement invokes the MFS Compare utility, FABVCMPR. The statement must be in the following format:

```
//stepname   EXEC    PGM=FABVCMPR
```

DD statements

Code the following DD statements to identify the source of input and the placement of output information:

STEPLIB DD
: This library contains the FABVCMPR utility program in its executable form. Change the name HPS.SHPSLMD0 to reflect the name used at your site. Concatenate the IMS RESLIB as part of the STEPLIB. Change the name IMSVS.SDFSRESL to the name used at your site.

SYSPRINT DD
: This sequential data set lists the results of the compare procedure. The data set can be the JES spool data set or a standard sequential data set.

SYSYOUT DD
: This sequential data set contains activity logs and any errors encountered during the execution of the FABVCMPR program. The data set can be the JES spool data set or a standard sequential data set.

FORMAT DD

This library contains the first set of IMS MFS format control blocks for comparison. Change the name *ims.format1* to the name used at your site. Check the DISP= parameter if this library is also used in the IMS Online Control Region JCL.

If two or more data sets are concatenated to the FORMAT DD, MFS Compare processes only the first data set.

FORMAT2 DD

This library contains the second set of IMS MFS format control blocks for comparison. Change the name *ims.format2* to the name used at your site. Check the DISP= parameter if this library is also used in the IMS Online Control Region JCL.

If two or more data sets are concatenated to the FORMAT2 DD, MFS Compare processes only the first data set.

MFSSRCE DD

This data set is a partitioned data set and contains the MFS control block source statements generated by the MFS Compare utility from the FORMAT data set. The LRECL of this data set must be 80. The block size can be any valid multiple of 80.

A format is referenced by a MID or MOD by the 3rd through 8th character of the format name. Depending on the device characteristics and features of the device from where the message is received, IMS Message Formatting Services retrieve the correct format control block. The first character of the control block name refers to the device and the second to the feature. One or more formats might exist having the same 3rd through 8th characters of the format name. Source statements are created for each device/feature combination occurring in a format (FMT) as well as the source for the MID, MOD, or both that reference this format.

The following example illustrates this:

If TESTMOD is a selected modname for which the source is to be created, and TESTMOD references *xy*TSTFMT, where *x* is a device code and *y* is a feature code, then a member is created in the MFSSRCE output library with the name TSTFMT. This member will have the FORMAT definitions (various DEV, DIV, DPAGE, DFLD, and similar statements) for all possible *xy* occurrences with the TSTFMT name and the MOD definitions for TESTMOD.

MFSSRCE2 DD

This data set is a partitioned data set and contains the MFS control block source statements as generated by the utility using the FORMAT2 data set. The LRECL of this data set must be 80. The block size can be any valid multiple of 80.

SYSIN DD

This data set contains the control statements for this program.

The record format is fixed blocked, and the logical record length is 80. The block size, if coded, must be a multiple of 80. SYSIN contains the control statements for the MFS Compare utility.

Related reading: For the format of the control statements, see "Control statements for the MFS Compare utility" on page 483.

Control statements for the MFS Compare utility

Control statements for the MFS Compare utility specify the functions to be performed; they must be placed in the SYSIN data set.

Subsections:

- "Syntax rules"
- "Control statement keywords"

Syntax rules

The control statements for the MFS Compare utility consist of keywords and operands arranged in a simple fixed format.

- Control statements can start anywhere after the second column.
- Statements with an asterisk (*) in column 1 are treated as comments.
- The comment statement is allowable between continuous statements.

Control statement keywords

The following control statement keywords can be used for the MFS Compare utility:

DVCTBL

The optional DVCTBL statement specifies the suffix *x* to build the device table called DFSUDT0*x*. This table contains the device characteristics of symbolically referenced devices 3270-An. The default suffix is the character A. The table resides in the IMS RESLIB. You can specify only one DVCTBL statement for each execution of the MFS Compare utility.

The operand for the DVCTBL statement is a single character.

The following example illustrates the specification of the DVCTBL statement.

```
DVCTBL L
```

SELECT

The SELECT statement is a required statement that specifies that the MFS Compare program re-create and compare the sources of the members that are named as operands on the SELECT statement. You can specify only one SELECT statement for each execution of the MFS Compare utility.

Either of the following operands can be specified:

member_name

Specify the member names of the MID and MOD from which the source is to be generated. Only the names of the MID and MOD can be specified. The names of the DIF and DOF are not included in the list of names, as the MFS Compare program gets these names from the corresponding MID and MOD control blocks.

At least one member must be selected. To specify multiple member names, the names must be separated by commas and must end with a blank. The list of names can be continued on the next line by placing a comma after the last name on the current line and continuing with names on the next line. If a comma is the last character on a line, it is assumed that the selection continues on

the next line. If no line follows the current line, the comma signals the end of the statement. A name must be contained on a single line.

ALL This option specifies all MIDs and MODs.

The following examples illustrate the specifications of the SELECT statement.

Example 1:

```
SELECT MID1,MID2,MOD1,MOD2
```

Example 2:

```
SELECT MID1,
    MID2,
    MOD1
```

Example 3:

```
SELECT ALL
```

Output from the MFS Compare utility

Output from the MFS Compare utility consists of the SYSOUT data set and the SYSPRINT data set.

SYSOUT data set

The SYSOUT data set contains the messages issued by the MFS Compare utility.

In the SYSOUT data set, the MFS Compare utility writes its messages as follows:

- In the first page, the messages that are issued while processing the first set of IMS MFS format control blocks (specified by the FORMAT DD) are printed.
- In the second page, the messages that are issued while processing the second set of IMS MFS format control blocks (specified by the FORMAT2 DD) are printed.

The following figure shows messages that are generated in the SYSOUT data set.

```
IMS LIBRARY INTEGRITY UTILITIES - MFS REVERSAL/COMPARE               "MESSAGES"                                   PAGE:  00001
5655-U08                                                 DATE: 10/01/2018  TIME: 16.03.02                    FABVLOG - V2.R2

DSNAME: IMSVS.FORMAT1

FABV0022W USING DEFAULT DEVICE CHARACTERISTICS TABLE FABVDVCT
FABV0044I SOURCE FOR MEMBER SAMFMX   BUILT
IMS LIBRARY INTEGRITY UTILITIES - MFS REVERSAL/COMPARE               "MESSAGES"                                   PAGE:  00002
5655-U08                                                 DATE: 10/01/2018  TIME: 16.03.02                    FABVLOG - V2.R2

DSNAME: IMSVS.FORMAT2

FABV0022W USING DEFAULT DEVICE CHARACTERISTICS TABLE FABVDVCT
FABV0044I SOURCE FOR MEMBER SAMFMX   BUILT
```

Figure 206. Messages in the SYSOUT data set

SYSPRINT data set

The SYSPRINT data set contains the compare report that is generated by MFS Compare.

The SYSPRINT data set contains fixed-length records of 133 bytes and a block size of 133 or a multiple of 133.

Subsections:

- "Sample report"
- "Report field descriptions" on page 486

Sample report

The following figure shows an example of the MFS Compare report.

```
IMS LIBRARY INTEGRITY UTILITIES - MFS COMPARE                  "MFS COMPARE REPORT"                                  PAGE:  00001
5655-U08                                                DATE: 10/01/2018  TIME: 09.21.45                        FABVCMPR - V2.R2

1)                    FORMAT:  VNDR400.FORMAT                                 FORMAT2: VNDR400.FORMATC

2) LABEL     STATEMENT  KEYWORD                                  LABEL     STATEMENT  KEYWORD

3) ADDFMT    FMT                                                                      NOT IN LIBRARY
4) CDCPI1    FMT        ----- FORMAT COMPARE COMPLETED ---------
5) FISC1A    FMT
6) DEV0C7F    DEV
7) DIVIN       DIV
8) DPA00002     DPAGE
9)                                                               DL000034      DFLD   POS=(1,13)
10)                                                              DL000034      DFLD   LTH=5
11)MISC1A     MSG       ----- NOT IN FORMAT
12) -------------------------- FORMAT COMPARE COMPLETED ------------------------------------------------
13)FISC1B    FMT        NOT IN LIBRARY
14)FOSC1A    FMT
15)DEV0C7F    DEV       FORMS='SCS1A.OUT'                       DEV0C7F       DEV    FORMS='SCS1B.OUT'
16)DEV0C7F    DEV       XTAB=(OFFLINE,5,HT=(8,10,12))
17)                                                              DEV0C7F       DEV    HTAB=(OFFLINE,5,HT=(
18)                                                                                   8,10,12))
19)MOSC1A     MSG
20)            LPAGE
21)             SEG
22)              MFLD   NN001079                                                MFLD   NN001001
23)              MFLD   NN001080                                                MFLD   NN001002
24)            LPAGE
25)             SEG
26)              MFLD   NN001081                                                MFLD   NN001003
27) -------------------------- FORMAT COMPARE COMPLETED ------------------------------------------------
```

Figure 207. MFS Compare report

This report is for illustration purposes only. Because the source is generated by a program, invalid keywords do not occur in the actual reports.

Report field descriptions

The following explanations refer to the MFS Compare sample report.

Line 1 FORMAT is the DD name as required by the JCL. VNDR400.FORMAT is the data set name of the first format library whose members are to be compared.

FORMAT2 is the DD name as required by the JCL, and VNDR400.FORMAT2 is the data set name of the second format library whose members are to be compared.

Line 2 This header line specifies a LABEL STATEMENT and KEYWORD sequence for each format library.

On subsequent lines, if an FMT, FCB, field name, literal or keyword of a parameter is present under a library, it indicates that the parameter from that library

- is either in error, or
- is present, but the corresponding parameter from the other library is absent.

Line 3 The format named ADDFMT is in the first format library but not in the second.

Line 4 The format named CDCPI1 was compared and the compare was completed. Because no other keywords and parameters of this format are listed, the compare was successful.

Line 5 The format named FISC1A is being compared.

Line 6 The FDC DEV0C7F of the format FISC1A is being compared. The value 0C in the device name indicates that the device is an SCS1 type device and the value 7F indicates that the features of this device are to be ignored.

Related reading: For a complete description of device codes and feature codes, see "Device and feature code tables" on page 588.

Line 7 The device input format DIVIN is being compared. The characters IN in the device name indicate that it is an input device.

Line 8 The DPAGE DPA00002 of the above DIV (DIVIN) is being compared.

Lines 9 and 10
The DFLD DL000034 of the above DPAGE was found in the second library, but not in the first. This DFLD had the parameters POS=(1,13) and LTH=5.

Line 11
An MSG format control block named MISC1A was found in the FMT named FISC1A in the second library, but not in the first.

Line 12
This line indicates the completion of the compare for the FMT FISC1A.

Line 13
The FMT FISC1B is not in the first library, but was found in the second library.

Line 14
The FCB FOSC1A is being compared.

Line 15
The FCB DEV0C7F in the first library has a FORMS parameter that is different from the FORMS parameter of the same named FCB in the second library.

Line 16
The FCB DEV0C7F of the FCB named FOSC1A in the first library has a parameter keyword XTAB not found in the corresponding DEV in the second library.

Lines 17 and 18
The FCB DEV0C7F of the FCB named FOSC1A in the second library has a parameter keyword HTAB not found in the corresponding DEV in the first library.

Line 19
The FCB MOSC1A in the current FMT is being compared.

Line 20
The LPAGE of MOSC1A is being compared.

Line 21
The SEG of the current LPAGE is being compared.

Line 22
The MFLD references an unknown DFLD named NN001079 in the first library. The same MFLD from the second library references the unknown field NN001001.

Line 23
Similar to line 22.

Lines 24, 25 and 26
Similar to lines 20, 21 and 22.

Line 27

This line announces the completion of the compare for the FMT FOSC1A.

Chapter 15. Troubleshooting

The following topics provide you with technical references to help you troubleshoot and diagnose IMS Library Integrity Utilities problems.

Topics:

- "IMS Library Integrity Utilities return codes" on page 490
- "IMS Library Integrity Utilities abend codes" on page 496
- "IMS messages" on page 497
- "IMS Library Integrity Utilities messages" on page 498
- "How to look up message explanations" on page 579
- "Gathering diagnostic information" on page 580
- "Diagnostics Aid" on page 581

IMS Library Integrity Utilities return codes

IMS Library Integrity Utilities generates return codes to indicate the success or failure of a job.

The following topics describe how to read the return codes of each utility.

Integrity Checker and LICON utility return codes

This reference topic explains the return codes of the Integrity Checker utility and the LICON utility.

Because the DMB verification routine does not return directly to the OS dispatcher, there is no job step return code that is directly related to the DMB verification results.

The LICON utility returns four return codes as summarized in the following table.

Table 24. LICON utility return codes

Return code	Meaning
0	Successful completion. The program ended successfully.
4	Warning message. Warning messages were issued, but the requested operation was completed.
8	Error message. Error messages were issued, and requested operations for some (but not all) databases failed.
16	Error message. Error messages were issued. • No databases or RDEs were successfully processed. • A severe error occurred. The LICON utility ended immediately after the error condition detected. It skips processing any subsequent commands.

Consistency Checker return codes

This reference topic explains the return codes of the Consistency Checker utility.

Consistency Checker returns four return codes as summarized in the following table.

Table 25. Consistency Checker utility return codes

Return code	Meaning
0	Successful completion. The program ended successfully. If, for any reason, reports are not produced, there is an explanation in the activity log.
4	Warning message. Warning messages were issued, but the requested operation was completed.

Table 25. Consistency Checker utility return codes (continued)

Return code	Meaning
8	Error message. Error messages were issued, and some requested operations were skipped or ended unsuccessfully because severe errors were detected. When the consistency check of a DBD or a PSB fails, the program returns a code of 8 as the default. If other return code is specified with the FAILRC keyword in the SYSIN data set, the program returns the specified code.
12	Error message. Error messages were issued. The requested operations were not performed because the control statement errors were detected or the specified DFSRESLB IMS version was not supported.

Multiple Resource Checker return codes

This reference topic explains the return codes of the Multiple Resource Checker utility.

Multiple Resource Checker returns three return codes as summarized in the following table.

Table 26. Multiple Resource Checker utility return codes

Return code	Meaning
0	Successful completion. The program ended successfully. If, for any reason, reports are not produced, there is an explanation in the activity log.
4	Warning message. Warning messages were issued, but the requested operation was completed.
8	Error message. Error messages were issued, and some requested operations were skipped or ended unsuccessfully because severe errors were detected.

DBD/PSB/ACB Compare, Mapper, and Reversal return codes

This reference topic explains the return codes of the DBD/PSB/ACB Compare utility, the DBD/PSB/ACB Mapper utility, the DBD/PSB/ACB Reversal utility, and the Reversal Site Default Generation utility.

The DBD/PSB/ACB Compare, Mapper, Reversal, and Reversal Site Default Generation utilities return three return codes as summarized in the following table.

Table 27. DBD/PSB/ACB Compare, Mapper, and Reversal utility return codes

Return code	Meaning
0	Successful completion. The program was successfully executed. If, for any reason, maps and reports are not produced, there is an explanation in the activity log.

Table 27. DBD/PSB/ACB Compare, Mapper, and Reversal utility return codes (continued)

Return code	Meaning
4	Warning message. Warning messages were issued, but the requested operation was completed.
8	Unsuccessful execution. Some requested operations were skipped or executed unsuccessfully because severe errors were detected.
16	Error message. Error messages were issued. The requested operations were not performed because the control statement errors were detected.

MDA Reversal return codes

This reference topic explains the return codes of the MDA Reversal utility.

MDA Reversal returns one of the following three return codes.

Table 28. MDA Reversal return codes

Return code	Meaning
0	Successful completion. The program ended successfully.
4	Warning message. Warning messages were issued, but the requested operation was completed.
8	Error message. Error messages were issued, and some requested operations were skipped or ended unsuccessfully because severe errors were detected.

Catalog Manager return codes

This reference topic explains the return codes of the Catalog Manager utility.

The Catalog Manager utility returns one of the following three return codes.

Table 29. Catalog Manager utility return codes

Return code	Meaning
0	Successful completion. The program ended successfully.
4	Warning message. Warning messages were issued, but the requested operation was completed.
8	Error message. Error messages were issued, and some requested operations were skipped or ended unsuccessfully because severe errors were detected.

Advanced ACB Generator return codes

This reference topic explains the return codes of the Advanced ACB Generator utility.

Whenever an error condition is detected, an error message is issued and a return code is set. Advanced ACBGEN utility displays both IMS generated DFS*nnnn* messages and its own FABQ*nnnn* messages. It also honors and reports any return code set in conjunction with any DFS*nnnn* messages. Continuation of the ACBGEN process depends upon the error condition. The highest return code encountered is the return code that is passed back to the MVS job step termination routine and displayed as the job step completion code. It can be tested by including a COND= operand in the EXEC JCL statement of a later job step.

MFS Reversal return codes

This reference topic explains the return codes of the MFS Reversal utility.

The return codes of the MFS Reversal utility are summarized in the following table.

Table 30. MFS Reversal utility return codes

Return code	Meaning
0	Successful completion. The program ended successfully.
4	Warning message. Warning messages were issued, but the requested operation was completed.
8 or higher	Error message. Error messages were issued. The program ended unsuccessfully.

MFS Compare return codes

This reference topic explains the return codes of the MFS Compare utility.

The return codes of the MFS Compare utility are as summarized in the following table.

Table 31. MFS Compare utility return codes

Return code	Meaning
0	Successful completion. The program ended successfully.
8 or higher	Either of the following errors occurred: • The program found differences between MFS control blocks. • Error messages were issued. The program ended unsuccessfully.

IMS Library Integrity Utilities return codes under IMS Administration Tool

This reference topic explains the return codes of IMS Library Integrity Utilities when the utility is used under IMS Administration Tool.

IMS Library Integrity Utilities return codes under IMS Administration Tool

When IMS Library Integrity Utilities is used under IMS Administration Tool, IMS Library Integrity Utilities returns one of the return codes summarized in the following table.

Table 32. IMS Library Integrity Utilities return codes under IMS Administration Tool

Return code	Meaning
0	Successful completion. The program ended successfully.
2	Warning message. Warning messages were issued while the utility decoded the DBD or PSB source, but the requested operation completed. The warning messages are printed in the comment lines in the DBD or PSB source code.
4	Warning message. Warning messages were issued, but the requested operation completed. • One or more differences or mismatches were detected during the compare operation. • The specified PSB is not valid for IMS SQL. • The DBD or PSB resource was not found. • DBD instances with an old DB Version are not used because database versioning is not enabled.
8	Error message. Error messages were issued, and the requested operation failed.
12	Error message. Error messages were issued, and the requested operation failed. DBD library, PSB library, ACB library, or IMS catalog was not discovered.
16	Error message. Error messages were issued, and the requested operation failed. IMS ID is not registered.
99	Error message. Error messages were issued, and the requested operation failed. Unexpected error occurred.

FABXAEXP return codes (Export function)

The following table summarizes the return codes of the FABXAEXP program. This program is invoked by the JCL that is generated by the Catalog or ACBLIB export function of IMS Administration Tool.

Table 33. FABXAEXP return codes

Return code	Meaning
0	Successful completion. The program ended successfully.
2	Warning message. Warning messages were issued while decoding one ore more DBDs, PSBs, or both, but the requested operation completed. The warning messages are printed in the comment lines in the DBD or PSB sources. The DBD or PSB resource was not found.
4	Warning message. Warning messages were issued, but the requested operation completed. One or more DBD or PSB resources were not found.
8	Error message. Error messages were issued, and the requested operation failed.
12	Error message. Error messages were issued, and the requested operation failed. DBD library, PSB library, ACB library, or IMS Catalog was not discovered.
16	Error message. Error messages were issued, and the requested operation failed. IMS ID is not registered.
99	Error message. Error messages were issued, and the requested operation failed. Unexpected error occurred.

IMS Library Integrity Utilities abend codes

IMS Library Integrity Utilities issues abend codes when a utility terminates abnormally.

The following reference topics provide detailed information about IMS Library Integrity Utilities abend codes. Use this information to help you with troubleshooting.

Integrity Checker abend codes

Integrity Checker uses abend codes U3*xxx*. Before issuing the abend code, Integrity Checker always writes a message identifying the problem. The message number is the same as the abend code. If no message with the same number is found, check for error messages that describe the error conditions.

Consistency Checker abend codes

Consistency Checker uses abend codes U2030, U2032, U2035, U2042, U2045, U2050, U2051, and U2052. Before issuing any of these abend codes, Consistency Checker always writes a message identifying the problem. The message number is the same as the abend code.

Multiple Resource Checker abend codes

Multiple Resource Checker uses abend codes U3*xxx*. Before issuing the abend code, Multiple Resource Checker always writes a message identifying the problem. The message number is the same as the abend code.

DBD/PSB/ACB Compare abend codes

DBD/PSB/ACB Compare uses abend codes U0008, U0014, U0015, and U0016. Before issuing any of these abend codes, DBD/PSB/ACB Compare always writes a message identifying the problem. The message number is the same as the abend code.

DBD/PSB/ACB Mapper abend codes

The DBD/PSB/ACB Mapper utility uses abend codes U0021, U0022, U0026, U0027, and U0028. Before issuing any of these abend codes, DBD/PSB/ACB Mapper always writes a message identifying the problem. The message number is the same as the abend code.

DBD/PSB/ACB Reversal abend codes

The DBD/PSB/ACB Reversal utility uses abend codes U001, U002, U003, U004, and U005. The Reversal Site Default Generation utility uses abend codes U3001, U3002, and U3003. Before issuing any of these abend codes, the DBD/PSB/ACB Reversal utility or the Reversal Site Default Generation utility always writes a message identifying the problem. The message number is the same as the abend code.

MFS Reversal abend codes

The MFS Reversal utility uses abend codes U3*xxx*. Before issuing the abend code, the MFS Reversal utility always writes a message that identifies the problem. The message number is the same as the abend code.

IMS messages

Advanced ACB Generator displays both IMS generated DFS*nnnn* messages and its own FABQ*nnnn* messages.

The meanings of the DFS*nnnn* messages have not been changed; see *IMS Messages and Codes* for the meaning of the IMS messages. Certain error conditions might also cause an abend to be issued. These abend codes are also documented in the *IMS Messages and Codes*.

IMS Library Integrity Utilities messages

Use the information in these messages to help you diagnose and solve IMS Library Integrity Utilities problems.

IMS Library Integrity Utilities messages adhere to the following format:
FAB*xnnnny*

Where:

FAB*x* Indicates that the message was issued by IMS Library Integrity Utilities. *x* is one of L, M, N, Q, V, W, and X.

- **L** Indicates that the message was issued by the Integrity Checker utility, the LICON utility, the Consistency Checker utility, or the DBD/PSB/ACB Compare utility.
- **M** Indicates that the message was issued by the DBD/PSB/ACB Mapper utility.
- **N** Indicates that the message was issued by the DBD/PSB/ACB Reversal utility or the Reversal Site Default Generation utility.
- **Q** Indicates that the message was issued by the Advanced ACBGEN utility.
- **V** Indicates that the message was issued by the MFS Reversal utility or the MFS Compare utility.
- **W** Indicates that the message was issued by the Multiple Resource Checker utility.
- **X** Indicates that the message was issued by the Catalog Manager utility or issued while using the DBD/PSB Map Viewer.

nnnn Indicates the message identification number.

y Indicates the severity of the message.

- **E** Indicates that an error occurred, which might or might not require operator intervention.
- **I** Indicates that the message is informational only.
- **W** Indicates that the message is a warning to alert you to a possible error condition.

Each message also includes the following information:

Explanation:
The Explanation section explains what the message text means, why it occurred, and what its variables represent.

System action:
The System action section explains what the system will do in response to the event that triggered this message.

User response:
The User response section describes whether a response is necessary, what the appropriate response is, and how the response will affect the system or program.

Module:
The Module section indicates which module or modules are affected.

FABL messages

Messages that are issued by the Integrity Checker utility, the LICON utility, the Consistency Checker utility, and the DBD/PSB/ACB Compare utility begin with the prefix FABL.

FABL0001I CONTROL CARD SUPPLIED IS: *echo of control statement*

Explanation: This message is the echo of the SYSIN control statements that are checked by this utility.

System action: The DBD/PSB/ACB Compare utility continues processing.

User response: None. This message is informational.

FABL0002W INVALID STATEMENT IN SYSIN DATASET

Explanation: A control statement with invalid format was found in the SYSIN data set.

System action: The DBD/PSB/ACB Compare utility skips this control statement and continues processing.

User response: Correct the format of this control statement, and rerun the job.

FABL0003E LIBRARY MISSING FOR [DBD | PSB | ACB] COMPARE

Explanation: The specification of the libraries required to execute the function is missing or invalid.

System action: Skips the reporting process for this function.

User response: Determine whether the required libraries are specified in DD statements. Correct the DD statements for load module libraries, and rerun the job.

FABL0004I [DBD | PSB | ACB] TO BE PROCESSED [IS *member* **| ARE** *members***]**

Explanation: This message shows the name of the member or the members that are to be processed. Only one member name is printed when the names of the members that are specified in the control statement are the same.

System action: The DBD/PSB/ACB Compare utility continues processing.

User response: None. This message is informational.

FABL0005W NO MEMBER FOUND FOR *member* **IN [DBDLIB | DBDLIB2 | PSBLIB | PSBLIB2 | ACBLIB | ACBLIB2 | IMS DIRECTORY OF INPUT***x***]**

Explanation: The specified member, or one or more of the members specified by a wildcard, were not found in the DBD/PSB/ACB library or in the IMS directory. The *member* is the specified member name.

System action: The DBD/PSB/ACB Compare utility continues processing, not printing the report of the member.

User response: Determine whether the *member* is correct. If it is incorrect, search the library that has the member. Correct the problem, and rerun the job.

FABL0006I NO DIFFERENCE FOUND DURING COMPARE [DBD | PSB | ACB] = *members*

Explanation: The Compare function ran normally, and no difference was found between the members named *members* in the specified libraries. Only one member name is printed when the names of the members that are specified in the control statement are the same.

System action: The DBD/PSB/ACB Compare utility continues processing.

User response: None. This message is informational.

FABL0007W DIFFERENCE FOUND DURING COMPARE [DBD | PSB | ACB] = *members*

Explanation: The Compare function ran normally, and a difference was found between the members named *members* in the specified libraries. Only one member name is printed when the names of the members that are specified in the control statement are the same.

System action: The DBD/PSB/ACB Compare utility generates a compare report and continues processing.

User response: None.

FABL0008E GETMAIN FAILED

Explanation: The program could not obtain enough area with the GETMAIN macro.

System action: The DBD/PSB/ACB Compare utility ends abnormally.

User response: If the region size specified is too small, increase the REGION size in the JOB statement in the JCL, and rerun the utility.

FABL0009E ERROR READING ACB=*member* **IN** *acblib_ddname*

Explanation: An error occurred in the reading of an ACB member in the *acblib_ddname*.

System action: The DBD/PSB/ACB Compare utility

continues processing without reporting this ACB member.

User response: Determine the cause of failure, correct it, and rerun the utility.

FABL0010E BLDL FAILED FOR ACB DIRECTORY IN *acblib_ddname*

Explanation: An error occurred while a BLDL macro was being issued for the *acblib_ddname*.

System action: The DBD/PSB/ACB Compare utility skips the reporting process for ACB compare.

User response: Determine the cause of the BLDL macro failure, correct it, and rerun the utility.

FABL0011E UNSUPPORTED VERSION, ACB=*x.x*

Explanation: The ACB member generated by IMS version *x.x* is not supported.

System action: The DBD/PSB/ACB Compare utility continues processing without reporting for this ACB member.

User response: Check the ACB member and the ACB library version.

FABL0012W MAXIMUM SYSIN CARDS EXCEEDED

Explanation: The DBD/PSB/ACB Compare utility supports a maximum of 9999 control statements.

System action: Processes the first 9999 statements and ignores the rest.

User response: Rerun the ignored cards.

FABL0013E MEMBER TYPE IS DIFFERENT, ACB=*members*

Explanation: The DBD/PSB/ACB Compare utility detected a difference in the ACB member type: one is a PSB-type ACB and the other is not. Only one member name is printed when the names of the members that are specified in the control statement are the same.

System action: The DBD/PSB/ACB Compare utility continues processing without creating a compare report for these members.

User response: None.

FABL0014E SYSOUT DID NOT OPEN

Explanation: The SYSOUT data set could not be opened during initialization.

System action: The DBD/PSB/ACB Compare utility ends abnormally.

User response: Determine the cause of the failure.

FABL0015E SYSIN DID NOT OPEN

Explanation: The SYSIN data set could not be opened during initialization.

System action: The DBD/PSB/ACB Compare utility ends abnormally.

User response: Determine the cause of the failure.

FABL0016E SYSPRINT DID NOT OPEN

Explanation: The SYSPRINT data set could not be opened during initialization.

System action: The DBD/PSB/ACB Compare utility ends abnormally.

User response: Determine the cause of the failure.

FABL0017E MEMBER TYPE IS DIFFERENT, ACB=*members* **(ACB1=***member_type***, ACB2=***member_type***)**

Explanation: The utility detected a difference in the ACB member type. *member_type* is one of the types: DEDB, MSDB, or NOT FP. Only one member name is printed when the names of the members that are specified in the control statement are the same.

System action: The DBD/PSB/ACB Compare utility continues processing without creating a compare report for these members.

User response: None.

FABL0018E ERROR LOADING [DBD | PSB] NAMED *member* **IN** *library_ddname* **(ABEND CODE=***abend_code* **REASON CODE=***reason_code***)**

Explanation: An error occurred while loading DBD/PSB *member* in *library_ddname*. *abend_code* is the system abend code, and *reason_code* is the reason code.

System action: Skips this member and tries to load the next member if it exists.

User response: Determine the cause of the load error. Correct the problem, and rerun the utility.

FABL0019W [DBD | PSB] *member* **IS NOT A VALID [DBD | PSB] IN** *library_ddname***. ERROR IS DETECTED IN** *control_block_name*

Explanation: DBD/PSB *control_block_name* in *library_ddname* was loaded, but was found not to be valid. If the invalid block can be identified, the block name follows.

System action: Skips this member and tries to load the next member if there is one.

User response: Determine whether the member is a DBD or a PSB. If the member is a DBD or a PSB,

regenerate it. If it is not, ignore this message.

FABL0020E VERSION NOT MATCHED, ACB1=*x.x* ACB2=*y.y*

Explanation: The ACB in ACBLIB is generated by IMS version *x.x*, and the ACB in ACBLIB2 is generated by IMS version *y.y*. Block-level compare does not support comparing ACB members of different IMS releases.

System action: The DBD/PSB/ACB Compare utility continues processing without reporting for these ACB members.

User response: Check the ACB members and the ACB library version. If you want to compare the members of different IMS releases, generate the source-level compare report.

FABL0021W INVALID PARAMETER *parameter* IN [NOCOMP | REPORT] STATEMENT

Explanation: An incorrect parameter *parameter* was found in the NOCOMP or the REPORT statement of SYSIN data set.

System action: The DBD/PSB/ACB Compare utility skips this incorrect parameter and continues processing.

User response: Correct this parameter of the NOCOMP or the REPORT statement, and rerun the job.

FABL0022I COMPARE MODE IS [NOCOMP | REPORT] =*mode*

Explanation: The DBD/PSB/ACB Compare utility proceeds with NOCOMP mode *mode* or REPORT mode *mode*.

System action: Processing continues.

User response: None. This message is informational.

FABL0023I [MEMBER *member* | MEMBERS *members*] PROCESSED

Explanation: This message shows the name of the member or the members that were processed. When the names of the members are the same, the member name is printed only once.

System action: The DBD/PSB/ACB Compare utility continues processing.

User response: None. This message is informational.

FABL0024E READ ERROR ON [DBD | PSB | ACB] DIRECTORY

Explanation: A read error occurred in the reading of the directory.

System action: The DBD/PSB/ACB Compare utility skips this function and continues processing. However, return code 8 is issued.

User response: None.

FABL0025W NO DATA IN SYSIN

Explanation: No control statement is specified in the SYSIN data set.

System action: The DBD/PSB/ACB Compare utility ends without compare.

User response: Specify the control statement in the SYSIN data set, and rerun the job.

FABL0026W NO MEMBER NAME IS SPECIFIED *description*

Explanation: No member name is specified in the control statement. If you have specified a colon in the control statement, you must specify two member names in *member1*:*member2* format. When a colon is used in the control statement, *description* indicates the missing member.

System action: The DBD/PSB/ACB Compare utility skips this control statement and continues processing.

User response: Specify the member name in the control statement, and rerun the job.

FABL0027W INVALID MEMBER NAME IS SPECIFIED *description*

Explanation: An invalid member name was specified in the control statement. For example, a member name containing more than eight characters is specified. When different member names are specified in the *member1*:*member2* format and one of the member names is an invalid member name, *description* indicates the invalid member.

System action: The DBD/PSB/ACB Compare utility skips this control statement and continues processing.

User response: Specify the correct member name in the control statement, and rerun the job.

FABL0028E INCOMPATIBLE CONTROL BLOCK STRUCTURE, ACB=*members* VERSION=*x.x* SECTION=*section*

Explanation: The DBD/PSB/ACB Compare function failed, because the control block structures of the members are incompatible. Either member must be generated by the latest maintenance level of IMS version *x.x*. *section* is the section name (control block name).

System action: The DBD/PSB/ACB Compare utility continues processing without reporting these ACB members.

User response: Apply the latest PTF, and rerun the utility.

FABL0029E DECODE [DBD | PSB] PROCESSING FAILED WITH RC=*yy*

Explanation: The Reversal utility returned a nonzero return code. The return code is *yy*.

System action: The DBD/PSB/ACB Compare utility ends with a return code of 08.

User response: Check the preceding messages that explain the error conditions. Correct the error, and rerun the job.

FABL0030E UNSUPPORTED IMS VERSION (*x.x*) DETECTED FOR ACB SOURCE COMPARE. MEMBER: *member* ACBLIB: [ACBLIB | ACBLIB2]

Explanation: The ACB member generated by IMS Version *x.x* is not supported for ACB Source Compare.

System action: The ACB Compare function ends with a return code of 08.

User response: Check the ACB member and the ACB library version.

FABL0031W UNSUPPORTED DBD *member* IN [DBDLIB | DBDLIB2]

Explanation: The specified DBD *member* in the DBD library is not supported for the DBD/PSB/ACB Compare utility.

System action: The DBD/PSB/ACB Compare utility skips this member and continues processing.

User response: Check the DBD member.

FABL0032I DBD *dbdname* FOR GSAM OR LOGICAL IS NOT COMPARED

Explanation: The DBD/PSB/ACB Compare utility does not compare the GSAM or the logical DBD because there is no ACB for a GSAM or a logical database. *dbdname* is the DBD member name that was specified.

System action: The DBD/PSB/ACB Compare utility continues processing.

User response: None. This message is informational.

FABL0032W DBD *dbdname* FOR LOGICAL IS NOT COMPARED.

Explanation: The Catalog Manager utility does not compare the logical DBD because there are no ACBs for a logical database in the IMS directory.

System action: The Catalog Manager utility skips this member and continues processing.

User response: None.

FABL0033I GSAM PCB (NUM=*xxx*) IN PSB *psbname* IS NOT COMPARED

Explanation: The DBD/PSB/ACB Compare utility does not compare the GSAM PCBs because the ACB contains no information about GSAM PCBs. *psbname* is the PSB member name that was specified, and *xxx* is the number of GSAM PCBs in the PSB that was specified.

System action: The DBD/PSB/ACB Compare utility continues processing.

User response: None. This message is informational.

FABL0034W INCORRECT OPTION IN SYSIN

Explanation: There is an incorrect option in the SYSIN data set.

System action: The DBD/PSB/ACB Compare utility skips this control statement and continues processing.

User response: Correct the option, and rerun the job.

FABL0035W *acbname* WAS NOT [DBD | PSB] TYPE ACB MEMBER

Explanation: The specified member was not a DBD-type ACB member. The specified *acbname* is the member name that was specified in the SYSIN card.

System action: The DBD/PSB/ACB Compare utility skips this control statement and continues processing.

User response: None.

FABL0036W NO [DBD | PSB] TYPE ACB MEMBER FOUND FOR *acbname* IN [ACBLIB | IMS DIRECTORY]

Explanation: The DBD-type ACB members or the PSB-type ACB members that were specified by a wildcard, were not found in the ACB library or in the IMS directory. The *acbname* is the specified member name.

System action: The DBD/PSB/ACB Compare utility skips this control statement and continues processing.

User response: None.

FABL0037E *ddname* DID NOT OPEN

Explanation: The data set *ddname* could not be opened.

System action: The DBD/PSB/ACB Compare utility skips the process related to this DD statement.

User response: Determine the cause of the open failure. Correct the error, and rerun the utility.

FABL0038W WILD CARD CHARACTERS CANNOT BE USED TO SPECIFY THE SECOND MEMBER NAME. MEMBER NAMES ARE *member1*:*member2*

Explanation: Wildcard characters cannot be used to describe *member2*.

System action: The DBD/PSB/ACB Compare utility skips the control statement that contains the invalid member name and continues processing.

User response: None.

FABL0039W SECOND MEMBER NAME CANNOT BE SPECIFIED WHEN COMPARING DIFFERENT TYPES OF CONTROL BLOCKS.

Explanation: The second member name can be specified only when comparing control blocks that have different names but that are of the same type. The DBD/PSB/ACB Compare utility cannot compare control blocks that have different names and that are of different types.

System action: The DBD/PSB/ACB Compare utility skips this control statement that contains the invalid member name and continues processing.

User response: None.

FABL0040W RDMVTAB CSECT IS CUSTOMIZED: MEMBER=*member* **IN** *library_ddname***.**

Explanation: While processing *member* in *library_ddname*, the DBD/PSB/ACB Compare utility detected one or more customized fields in RDMVTAB CSECT (described by the DMBDACS DSECT) that contain the randomizing information. One or more of the following fields are detected as *customized* by the DBD/PSB/ACB Compare utility.

Detectable DBD type	Field	Description
DBD and DBD TYPE ACB	DMBDASZE	The size of RDMVTAB CSECT
DBD and DBD TYPE ACB	DMBDAKL	The executable key length of root
DBD	DMBDANME	The name of randomizer module
DBD	DMBDARAP	The number of root anchor points or blocks
DBD	DMBDABLK	The number of the highest blocks that are directly addressed
DBD	DMBDABYM	The maximum number of bytes

If the utility processes a block-level compare and detects one or more customized fields in RDMVTAB CSECT, only the detectable fields are compared, and other fields are not compared.

If the utility processes a source-level compare, all of the fields in RDMVTAB CSECT are not compared regardless of whether the RDMVTAB CSECT is customized.

System action: The DBD/PSB/ACB Compare utility continues processing.

User response: None.

FABL0041I COMPARED *number_of_control_blocks1* *resource1* **WITH** *resource2***. DETECTED** *number_of_control_blocks2* **IDENTICAL CONTROL BLOCKS AND** *number_of_control_blocks3* **MISMATCHED CONTROL BLOCKS.**

Explanation: This informational message summarizes the results of a compare operation that was done by the DBD/PSB/ACB Compare utility. A FABL0041I message is issued for each type of control block; therefore, multiple FABL0041I messages might be issued.

- *resource1* and *resource2* show the type of the compared members, which is DBD, PSB, or ACB.
- *number_of_control_blocks1* shows the total number of DBDs, PSBs, or ACBs that were compared.
- *number_of_control_blocks2* shows the number of DBDs, PSBs, or ACBs that are identical.
- *number_of_control_blocks3* shows the number of DBDs, PSBs, or ACBs that are different.

For example, assume that the DBD/PSB/ACB Compare utility compares the following control statements, and results:

Control statement	Result
`DBD=DBD@D01A:DBD@D02A`	Different
`DBD=DBD@D03A`	Match
`PSB=PSB@001A:PSB@002A`	Different
`ACB=DBD@D01A`	Different

In this case, the following FABL0041I messages are issued:

- COMPARED 2 DBD WITH DBD. DETECTED 1 IDENTICAL CONTROL BLOCKS AND 1 MISMATCHED CONTROL BLOCKS.
- COMPARED 1 PSB WITH PSB. DETECTED 0 IDENTICAL CONTROL BLOCKS AND 1 MISMATCHED CONTROL BLOCKS.
- COMPARED 1 ACB WITH ACB. DETECTED 0 IDENTICAL CONTROL BLOCKS AND 1 MISMATCHED CONTROL BLOCKS.

System action: The DBD/PSB/ACB Compare utility continues processing.

User response: None. This message is informational.

FABL0042I COMPARED *number_of_source1 resource1* **WITH** *resource2*. **DETECTED** *number_of_source2* **IDENTICAL SOURCES AND** *number_of_source3* **MISMATCHED SOURCES.**

Explanation: This informational message summarizes the results of a compare operation that was done by the DBD/PSB/ACB Compare utility. A FABL0042I message is issued for each type of comparison; therefore, multiple FABL0042I messages might be issued.

- *resource1* and *resource2* show the type of the compared members, which is DBD, PSB, or ACB.
- *number_of_source1* shows the total number of DBDs, PSBs, or ACBs that were compared at their source levels.
- *number_of_source2* shows the number of DBDs, PSBs, or ACBs that are identical at their source levels.
- *number_of_source3* shows the number of DBDs, PSBs, or ACBs that are different at their source levels.

For example, assume that the DBD/PSB/ACB Compare utility compared the following control statements, and results:

Control statement with REPORT=SOURCE	Result
`DBD=DBD@D01A:DBD@D02A`	Different
`DBD=DBD@D03A`	Match
`PSB=PSB@001A:PSB@002A`	Different
`ACB=DBD@D02A`	Different
`DBD=DBD@D01A,ACB`	Different
`PSB=PSB@001A,ACB`	Match
`ACB=DBD@D01A,DBD`	Different
`ACB=PSB@001A,PSB`	Match

In this case, the following FABL0042I messages are issued:

- COMPARED 2 DBD WITH DBD. DETECTED 1 IDENTICAL SOURCES AND 1 MISMATCHED SOURCES.
- COMPARED 1 PSB WITH PSB. DETECTED 0 IDENTICAL SOURCES AND 1 MISMATCHED SOURCES.
- COMPARED 1 ACB WITH ACB. DETECTED 0 IDENTICAL SOURCES AND 1 MISMATCHED SOURCES.
- COMPARED 1 DBD WITH ACB. DETECTED 0 IDENTICAL SOURCES AND 1 MISMATCHED SOURCES.
- COMPARED 1 PSB WITH ACB. DETECTED 1 IDENTICAL SOURCES AND 0 MISMATCHED SOURCES.
- COMPARED 1 ACB WITH DBD. DETECTED 0 IDENTICAL SOURCES AND 1 MISMATCHED SOURCES.
- COMPARED 1 PSB WITH PSB. DETECTED 1 IDENTICAL SOURCES AND 0 MISMATCHED SOURCES.

System action: The DBD/PSB/ACB Compare utility continues processing.

User response: None. This message is informational.

FABL0043W THE NODIFF PARAMETER IS INVALID WITHOUT THE SOURCE PARAMETER

Explanation: The NODIFF parameter is ignored. The NODIFF parameter is used only when the SOURCE parameter is specified in the REPORT statement.

System action: The DBD/PSB/ACB Compare utility skips the NODIFF parameter and continues processing.

User response: To generate a source-level compare report even when no difference is found, add REPORT=SOURCE to the control statement, and rerun the job.

FABL0044I CONTROL STATEMENT REPORT IS WRITTEN TO SYSPRINT

Explanation: The control statement report is written to the SYSPRINT data set.

System action: The DBD/PSB/ACB Compare utility continues processing.

User response: None. This message is informational.

FABL0045W DYNAMIC ALLOCATION FAILED FOR DSNAME=*data_set_name***. RETURN CODE=***return_code***, REASON CODE=***reason_code***

Explanation: An attempt to dynamically allocate the indicated data set failed. *return_code* is the hexadecimal return code, and *reason_code* is the hexadecimal reason code.

System action: The DBD/PSB/ACB Compare utility continues processing.

User response: This error is likely an internal system error. Collect the dump, and contact IBM Software Support.

FABL0046W THE CONTROL STATEMENT REPORT IS NOT PRINTED BECAUSE DYNAMIC ALLOCATION FAILED

Explanation: The control statement report is not written to the SYSPRINT data set because the dynamic allocation of a work data set failed.

System action: The DBD/PSB/ACB Compare utility continues processing.

User response: Locate the preceding message FABL0045W, which describes the error condition. Correct the error, and rerun the job.

FABL0047W GSAM DBD *dbdname* IS NOT COMPARED

Explanation: IMS Library Integrity Utilities does not compare the indicated GSAM DBD because it found no ACBs for the GSAM database in the ACB library. *dbdname* is the DBD member name that was specified.

System action: IMS Library Integrity Utilities continues processing.

User response: None. This message is informational.

FABL0048E ACCESS FAILED FOR *cataloghlq*. FUNC=*function*, RETURN CODE=*rc*, REASON CODE=*rsn*

Explanation: IMS Library Integrity Utilities detected an error while accessing the IMS catalog directory.

System action: IMS Library Integrity Utilities ends with a return code of 8.

User response: Locate the GEX3*xxx*E message that is issued before this message. For the meaning of the GEX3*xxx*E message, see the topic "IMS Tools Catalog Interface messages (GEX3)" in the *Tools Base IMS Tools Common Services V1.6 User's Guide*. If necessary, correct the error condition and rerun the job.

FABL0049I COMPARED *number_of_member1* MEMBERS FOUND IN *resource1* AND IMS CATALOG. DETECTED *number_of_member2* IDENTICAL MEMBERS AND *number_of_member3* MISMATCHED MEMBERS.

Explanation: This informational message summarizes the results of a compare operation that was done by IMS Library Integrity Utilities. A FABL0049I message is issued for each type of control block; therefore, multiple FABL0049I messages might be issued.

- *resource1* show the type of the compared members, which is ACB.
- *number_of_member1* shows the total number of members that were compared.
- *number_of_member2* shows the number of members that are identical.
- *number_of_member3* shows the number of members that are different.

System action: IMS Library Integrity Utilities continues processing.

User response: None. This message is informational.

FABL0050E NAME/TOKEN SERVICE *service* FAILED. NAME: *nametoken* RC=*rc*

Explanation: The process failed in the z/OS MVS Name/Token Service. *service* shows the service name. *rc* is the return code from the Name/Token service.

System action: IMS Library Integrity Utilities ends with a user abend code of U0050.

User response: Find the cause of the error. For the return code, see the *z/OS MVS Programming: Assembler Services Reference, Volume 2 (IARR2V-XCTLX)*. If necessary, correct the warning condition and rerun the job.

FABL0051W VERSION AND EXIT PARAMETERS ARE NOT COMPARED FOR DBD *dbdname*. NO PSB REFERS TO THIS DBD IN *resource*

Explanation: The following parameters are not compared because these parameters could not be obtained from the PSB member that refers the reported DBD member.

- The VERSION parameter of the DBD statement
- The EXIT parameter of the DBD and SEGM statements

System action: The DBD/PSB/ACB Compare utility continues processing.

User response: Check the DBD and PSB members to generate the expected result.

FABL0052E IMS DIRECTORY SPECIFIED IN INPUT*x* IS EMPTY.

Explanation: The Catalog Manager utility found that the IMS directory that is specified by the INPUT*x* keyword is empty. The IMS directory contains no members to compare.

System action: The Catalog Manager utility ends with a return code of 8.

User response: Ensure that the IMS directory specified on the INPUT*x* keyword is correct.

FABL0101I LIU INTEGRITY CHECKER NOW ACTIVE WITH LICON: *dsn*

Explanation: The Integrity Checker utility is now active with the LICON data set *dsn*.

System action: Processing continues.

User response: None. This message is informational.

FABL0102I LIU INTEGRITY CHECKER INITIALIZATION COMPLETED

Explanation: The Integrity Checker utility has been initialized.

System action: Processing continues.

User response: None. This message is informational.

FABL0104E LIU INTEGRITY CHECKER INITIALIZATION FAILED

Explanation: The initialization of the Integrity Checker utility failed with some error conditions.

System action: The IMS online subsystem or the IMS batch region ends abnormally.

User response: Check the preceding messages that explain the error conditions. Correct the error conditions. Restart the IMS online subsystem or rerun the batch job.

FABL0105I LIU INTEGRITY CHECKER TERMINATION COMPLETED

Explanation: The Integrity Checker utility has been terminated.

System action: Processing continues. The IMS online region or the IMS batch region ends normally.

User response: None. This message is informational.

FABL0107E LIU INTEGRITY CHECKER NOW INACTIVE. RSN=*ssss*

Explanation: The Integrity Checker processing ended with error condition *ssss*.

System action: The IMS online region continues processing without Integrity Checker.

User response: Check the preceding messages that explain the error conditions. Correct the error conditions and restart the IMS online subsystem. If no preceding message is found, contact IBM Software Support.

FABL0108E PUT FAILED FOR DDNAME: *ddname*

Explanation: The PUT macro that was issued to the data set whose DD name is *ddname* has failed.

System action: Processing continues without using the indicated data set.

User response: Check the status of data set *ddname*. Correct the error conditions and restart the IMS online subsystem.

FABL0109E LOAD FAILED FOR MODULE *module*

Explanation: The LOAD macro failed. *module* is either FABLRTS0 or FABLRTR*x* where *x* is 6, 7, 8, 9, A, B, C, D, E, or F.

System action: The job requesting database authorization ends abnormally.

User response: Check that the STEPLIB concatenation of the job or the DBRC cataloged procedure contains the correct load module library that contains the Integrity Checker load modules. Correct the error conditions. Restart the IMS online subsystem or rerun the job.

FABL0110W LIU INTEGRITY CHECKER STOPPED PROCESSING

Explanation: The Integrity Checker utility could not successfully complete its initialization. The Integrity Checker utility processing was stopped because INITERR=W was specified in the global option module.

System action: The IMS online subsystem or the IMS batch region continues processing without the Integrity Checker function.

User response: Check the preceding messages that explain the error conditions. If necessary, correct the error conditions and restart the IMS online subsystem or rerun the batch job.

FABL0111E UNSUPPORTED LEVEL OF IMS IS BEING USED

Explanation: The Integrity Checker utility is run under an unsupported version of IMS.

System action: The IMS online subsystem or the IMS batch region ends abnormally.

User response: Correct the error conditions. Restart the IMS online subsystem or rerun the batch job.

FABL0112W UNSUPPORTED LEVEL OF IMS IS BEING USED: *nn.n*

Explanation: The Integrity Checker utility was run under an unsupported version of IMS. *nn.n* shows the version and release of IMS that is being used.

System action: Processing continues; the database is not verified.

User response: Determine if the version of IMS is correct. Correct the error conditions and rerun the batch job.

FABL0114I LIU INTEGRITY CHECKER ACTIVATED. IMS VERSION IS *version*

Explanation: The Integrity Checker utility activated the DMB verification process. This message also indicates the version of IMS that is being used.

System action: Processing continues.

User response: None. This message is informational.

FABL0201I RDE CREATED FOR DBD: *dddddddd* **[AREA:** *aaaaaaaa***]**

Explanation: The registered DMB entry (RDE) has been successfully created for non-HALDB full-function database or HALDB partition *dddddddd*, or area *aaaaaaaa* of database *dddddddd*.

System action: Processing continues.

User response: None. This message is informational.

FABL0202W SIZE OF DMB INFORMATION HAS EXCEEDED MAXIMUM RECORD LENGTH OF RDE

Explanation: The size of the DMB information has exceeded the maximum record length of a registered DMB entry (RDE). This message might be issued for a DEDB with a large number of areas.

System action: Processing continues without storing the information about the DEDB areas after the area that caused this condition. For these DEDB areas, the Integrity Checker processes nothing.

User response: None.

FABL0203W DMB MISMATCH FOUND FOR DBD: *dddddddd* **[AREA:** *areaname***]**

Explanation: The Integrity Checker utility found a mismatch in the DMB information for the indicated resource while comparing the information in the RDE with the information in the ACB, DBD, or RECON. The resource (*dddddddd*) is either a non-HALDB full-function database, HALDB partition, or a DEDB with area name (*areaname*).

Multiple FABL0203W messages are issued. Subsequent FABL0203W messages indicate the DMB information where the mismatch was found, the value in the RDE (RDE VALUE), and the value in the ACB or DBD (DBD VALUE or ACB VALUE). The DBD VALUE and the ACB VALUE might show a value that is obtained from the RECON data sets.

System action: Processing continues. The Integrity Checker utility causes the RDE for which the mismatch was found to expire, and creates a new RDE with the information in the ACB, DBD, or RECON.

User response: If the mismatch is unexpected, check whether the DBD, ACB, or RECON that you are using is correct.

FABL0204E DMB MISMATCH FOUND FOR DBD: *dddddddd* **[AREA:** *areaname***]**

Explanation: The Integrity Checker utility found a mismatch in the DMB information for the indicated resource while comparing the information in the RDE with the information in the ACB, DBD, or RECON. The resource (*dddddddd*) is either a non-HALDB full-function database, HALDB partition, or a DEDB with area name (*areaname*).

Multiple FABL0204E messages are issued. Subsequent FABL0204E messages indicate the DMB information where the mismatch was found, the value in the RDE (RDE VALUE), and the value in the ACB or DBD (DBD VALUE or ACB VALUE). The DBD VALUE and the ACB VALUE might show a value that is obtained from the RECON data sets.

System action: Processing continues. The Integrity Checker utility skips the database, partition, or area to obtain the database authorization. The Integrity Checker utility returns a nonzero return code for the requester of the database authorization to make the request for the database failure with the reason code $$.

User response: If the mismatch is unexpected, check whether the DBD, ACB, or RECON that you are using is correct.

FABL0205E VERIFICATION PROCESS FOR *dddddddd* **[,** *aaaaaaaa***] HAS BEEN STOPPED**

Explanation: The Integrity Checker utility found a severe mismatch between RDE and either ACB or DBD and stopped the verification process for one of the following resources:

- Non-HALDB full-function database *dddddddd*
- HALDB partition *dddddddd*
- Area *aaaaaaaa* of database *dddddddd*

Multiple FABL0205E messages are issued. Other FABL0205E messages indicate the reason why the process was stopped.

System action: Processing continues without doing further verification for the database. If the verification option is 'W', the Integrity Checker utility causes the RDE for the mismatch found to expire, and creates a new RDE with the information in the DBD or ACB. If the verification option is 'D', the Integrity Checker utility skips the database, partition, or area to obtain the database authorization. The Integrity Checker utility returns a nonzero return code for the requester of the database authorization to make the request for the database failure.

User response: If the mismatch is unexpected, check whether the DBD or ACB you are using is correct.

FABL0206E NUMBER OF MESSAGES FOR *dddddddd* [, *aaaaaaaa*] HAS REACHED UPPER THRESHOLD

Explanation: The Integrity Checker utility has detected that the number of messages issued for DMB mismatch for non-HALDB full-function database or HALDB partition *dddddddd* or area *aaaaaaaa* of database *dddddddd* has reached the upper threshold value. The Integrity Checker utility stops issuing further mismatch messages for the database.

System action: Processing continues.

User response: If you need to change the upper threshold number for the mismatch messages, generate a new global option module specifying a larger value for the VERIFYLMT= parameter of the FABLPGIN statement. If you need an unlimited number of mismatch messages, use 99.

FABL0207E RDE CREATION FAILED FOR DATABASE: *dddddddd* [AREA: *aaaaaaaa*]

Explanation: The Integrity Checker utility failed to create an RDE for non-HALDB full-function database or HALDB partition *dddddddd* or area *aaaaaaaa* of database *dddddddd*.

System action: Processing continues without creating the RDE.

User response: Check whether there are any errors for the LICON data set. If you find errors, correct the errors in the LICON data set and restart the IMS online subsystem or rerun the batch job.

FABL0208W CHECKSUM MISMATCH FOUND FOR DBD: *dddddddd* [AREA: *aaaaaaaa*]

Explanation: The Integrity Checker utility found a mismatch in the checksum value of the exit routines between that stored in RDE for non-HALDB full-function database or HALDB partition *dddddddd* or area *aaaaaaaa* of database *dddddddd* and that Integrity Checker calculated from the exit routines defined in ACB or DBD for this database, partition, or area. Multiple FABL0208W messages are issued. Other FABL0208W messages indicate the exit routine in which the mismatch was found and the module name for the exit routine.

System action: Processing continues. The Integrity Checker utility causes the RDE for which the mismatch was found to expire, and creates a new RDE with a checksum value of the exit routine.

User response: If the mismatch is unexpected, check whether the exit routine you are using is correct.

FABL0209E CHECKSUM MISMATCH FOUND FOR DBD: *dddddddd* [AREA: *aaaaaaaa*]

Explanation: The Integrity Checker utility found a mismatch in the checksum value of the exit routines between that stored in RDE for non-HALDB full-function database or HALDB partition *dddddddd* or area *aaaaaaaa* of database *dddddddd* and that the Integrity Checker utility calculated from the exit routines defined in ACB or DBD for this database, partition, or area. Multiple FABL0209E messages are issued. Other FABL0209E messages indicate the exit routine in which the mismatch was found and the module name for the exit routine.

System action: Processing continues. The Integrity Checker utility skips this database, partition, or area to obtain the database authorization. The Integrity Checker utility returns a nonzero return code for the requester of the database authorization to make the request for the database failure with the reason code $$.

User response: If the mismatch is unexpected, check whether the exit routine you are using is correct.

FABL0210E MODULE NOT FOUND FOR *module*

Explanation: Module *module* was not found in the STEPLIB concatenation.

System action: The IMS online subsystem or the IMS batch job continues processing without computing the checksum value for the module. The LICON utility ends with a return code of 8.

User response: Check whether the module is provided for the STEPLIB concatenation of the job. Supply the module to the STEPLIB concatenation and rerun the job.

FABL0211E FIND FAILED FOR DDNAME: *ddname* MODULE: *module*. RC=*rr*

Explanation: The FIND macro failed for the indicated module in the data set that is indicated by *ddname*. The return code is *rr*.

System action: The IMS online subsystem or the IMS batch job continues processing without computing the checksum value for the module. The LICON utility ends with a return code of 8.

User response: Check whether the correct data set is specified on the DD statement. Correct the error and rerun the job.

FABL0212W CHECKSUM CALCULATION WAS SKIPPED FOR MODULE: *module* IN DBD: *dddddddd* [AREA: *aaaaaaaa*]

Explanation: The Integrity Checker utility cannot calculate the checksum value for module *module* that is specified in either ACB or DBD for non-HALDB full-function database or HALDB partition *dddddddd* or

area *aaaaaaaa* of database *ddddddd*.

System action: Processing continues without storing the checksum value for the module into RDE.

User response: Check the preceding messages that explain the warning conditions. If this message is issued in a Fast Path Advanced Tool job of IMS HP Fast Path Utilities, see the topic "Considerations on using the Integrity Checker utility" in the *IMS Fast Path Solution Pack: IMS HP Fast Path Utilities User's Guide* for the cause of this warning message.

FABL0213W CHECKSUM VALUE NOT FOUND FOR MODULE: *module* **IN RDE FOR DATABASE:** *ddddddd* **[AREA:** *aaaaaaaa***]**

Explanation: The Integrity Checker utility found no checksum value for module *module* in the RDE for non-HALDB full-function database or HALDB partition *ddddddd* or area *aaaaaaaa* of database *ddddddd*, because the RDE has been created without the checksum value.

System action: Processing continues without verifying the checksum value for the module. In the IMS online environment or in the batch environment, the Integrity Checker utility expires the RDE in which no checksum value was stored and creates a new RDE with the checksum value.

User response: None.

FABL0214W CHECKSUM VERIFICATION WAS SKIPPED FOR MODULE: *module* **IN DBD:** *ddddddd* **[AREA:** *aaaaaaaa***]**

Explanation: The Integrity Checker utility skips the verification process for the checksum value for module *module* that is specified in either ACB or DBD for non-HALDB full-function database or HALDB partition *ddddddd* or area *aaaaaaaa* of database *ddddddd*.

System action: Processing continues without verifying the checksum value for the module.

User response: Check the preceding messages that explain the warning conditions.

FABL0215E READ ERROR FOR DDNAME: *ddname* **MODULE:** *module*

Explanation: The READ macro failed for the indicated module in the data set that is indicated by *ddname*.

System action: The IMS online subsystem or the IMS batch job continues processing without computing the checksum value for the module. The LICON utility ends with a return code of 8.

User response: Check whether the correct data set is specified on the DD statement. Correct the error and rerun the job.

FABL0216W NAME/TOKEN SERVICE *service* **FAILED. NAME:** *nametoken* **RC=***nn*

Explanation: The process failed in the z/OS MVS Name/Token Service. *service* shows the service name. *nn* is the return code of the Name/Token service.

System action: Processing continues even if a database is reloaded from unload data sets in a compressed format.

User response: Find the cause of the error. For the return code, see *z/OS MVS Programming: Assembler Services Reference, Volume 2 (IARR2V-XCTLX)*. If necessary, correct the warning condition and rerun the job.

FABL0217I VERIFICATION OF COMPRESSION ROUTINE CHANGE IS NOT ENABLED

Explanation: Because IMS HP Load is not in the required maintenance level, the Integrity Checker utility could not verify the following changes of the segment edit/compression exit routines during the reorganization:

- Changes in the COMPRTN= parameters in the DBD definitions
- Changes in the logic of segment edit/compression exit routines

System action: Processing continues.

User response: If you want to validate the changes of the segment edit/compression exit routines, apply the corresponding PTF of APAR PK61325 to IMS High Performance Load and rerun the IMS High Performance Load job.

FABL0219I RDE FORMAT LEVEL WILL BE UPGRADED AUTOMATICALLY FOR DBD: *ddddddd* **[AREA:** *aaaaaaaa***]**

Explanation: The format level of the RDE for the indicated resource is outdated. When verification of the RDE completes, the Integrity Checker utility upgrades the format level of the RDE by resetting the reserved areas, and then issues an FABL0201I message. However, if the verification is done by using the VERIFY.DB command of the LICON utility, the Integrity Checker utility will not upgrade the RDE.

Until the Integrity Checker utility upgrades the RDE and message FABL0201I is issued, the following functions are disabled:

- Verification of logic changes in the randomizer, the compression routine, and the partition selection exit
- Verification of the CRTE section of the indexed DEDB
- Restoration of RDEs during database recovery jobs

System action: Processing continues.

User response: None. This message is informational.

FABL0301E LICON DATA SET IS EMPTY

Explanation: The LICON data set is empty. You need to initialize it before you use it.

System action: The IMS online subsystem or the IMS batch job ends abnormally. The LICON utility ends with a return code of 16.

User response: Check whether you are using the correct LICON data set. Initialize the LICON data set and restart the IMS online subsystem or rerun the batch job.

FABL0302E LICON DATA SET IS NOT EMPTY

Explanation: You are attempting to initialize the LICON data set with the INIT.LICON command, but the LICON data set is not empty.

System action: The LICON utility ends with a return code of 16.

User response: Check whether you are using the correct LICON data set. Delete then define the LICON data set before initializing it. Rerun the LICON utility job requesting the INIT.LICON command.

FABL0303E SNAP FAILED FOR DDNAME: *ddname*

Explanation: The SNAP macro issued to data set whose DD name is *ddname* failed.

System action: Processing continues without using the indicated data set.

User response: Check the status of the data set *ddname*. Correct the error conditions, and restart the IMS online subsystem.

FABL0400I LICON UTILITY COMMAND PROCESSING COMPLETE. HIGHEST RC = 00

Explanation: The LICON utility command processing has been completed successfully.

System action: The LICON utility ends normally.

User response: None. This message is informational.

FABL0401W LICON UTILITY COMMAND PROCESSING ENDED WITH WARNINGS. HIGHEST RC = 04

Explanation: The LICON utility command processing has ended with warning messages.

System action: The LICON utility ends with a return code of 4.

User response: For details, check the warning message issued during command processing. Correct the warning condition. If necessary, rerun the LICON utility job.

FABL0402E LICON UTILITY COMMAND PROCESSING ENDED WITH ERRORS. HIGHEST RC = 08

Explanation: The LICON utility command processing has ended with error messages.

System action: The LICON utility ends with a return code of 8.

User response: Find the error message that was issued during command processing. Correct the error, and rerun the LICON utility job.

FABL0403E SEVERE ERROR. LICON UTILITY COMMAND PROCESSING ABORTED. RC = 16

Explanation: The LICON utility command processing has been canceled because a severe error occurred.

System action: The LICON utility ends with a return code of 16.

User response: Find the error message that was issued during command processing. Correct the error, and rerun the LICON utility job.

FABL0405E INCORRECT EXEC PARM KEYWORD: *text*

Explanation: An incorrect keyword is specified for the EXEC parameter of the LICON utility job.

System action: The LICON utility ends immediately with a return code of 16. Processing is canceled.

User response: Check whether the EXEC parameter string is correct. Correct the error, and rerun the LICON utility job.

FABL0406E DD NOT FOUND FOR *dddddddd*

Explanation: The required DD statement *dddddddd* was not found in the JCL of the LICON utility.

System action: The LICON utility ends immediately with a return code of 16. Processing is canceled.

User response: Check the JCL. Correct the error, and rerun the LICON utility job.

FABL0407E DUMMY SPECIFIED FOR *dddddddd*

Explanation: DUMMY DD is specified for the required *dddddddd* DD statement.

System action: The LICON utility ends immediately with a return code of 16. Processing is canceled.

User response: Check the DD statement in the JCL. Correct the error, and rerun the LICON utility job.

FABL0408E READ ERROR FOR TTRC X'*ttttrrcc*' RC=*rr*

Explanation: During the ACB member processing, a read error was detected for the ACB member whose TTRC is x'*ttttrrcc*'. *rr* is the return code of the READ macro.

System action: Processing continues by skipping the ACB member for which the read error was detected.

User response: Check whether the correct ACBLIB data set is used. Correct the error, and rerun the LICON utility job.

FABL0409E UNSUPPORTED LEVEL OF IMS IS BEING USED: *xx.x*

Explanation: The utility is run under an unsupported version of IMS. *xx.x* is the version and release of IMS.

System action: The LICON utility ends immediately with a return code of 16.

User response: Check whether the version of IMS is correct. Correct the error, and rerun the LICON utility job.

FABL0410I COMMAND COMPLETED WITH RC = 00

Explanation: The LICON utility has processed the requested command successfully.

System action: Processing continues.

User response: None. This message is informational.

FABL0411W COMMAND COMPLETED WITH RC = 04

Explanation: The LICON utility has processed the requested command with warnings. Warning messages were issued for some of the databases for which processing was requested.

System action: Processing continues. A job step return code of 04 is set if a higher code has not been set.

User response: Find the associated warning messages. Correct the warning condition. If necessary, rerun the job.

FABL0412E COMMAND COMPLETED WITH RC = 08

Explanation: The LICON utility has processed the requested command with errors. Error messages were issued and processing failed for some of the databases for which processing was requested.

System action: Processing continues. A job step return code of 08 is set if a higher code has not been set.

User response: Find the associated error messages. Correct the error, and rerun the job.

FABL0413E COMMAND COMPLETED WITH RC = 16

Explanation: The LICON utility processing was canceled by a severe error. Error messages were issued and processing failed for some or all of the databases for which processing was requested.

System action: The LICON utility ends immediately with a job step return code of 16.

User response: Find the associated error messages. Correct the error, and rerun the job.

FABL0414I THE FOLLOWING STATEMENTS SKIPPED:

Explanation: This message shows the input statements that were skipped when the LICON utility processing was canceled by a severe error. The echo of the skipped control statements follows.

System action: The cancel processing continues. The job step return code 16 has already been set.

User response: None. This message is informational.

FABL0420E INPUT STREAM END-OF-FILE FOUND BEFORE END OF COMMAND

Explanation: An unexpected end-of-file was detected by the LICON utility for the input stream.

System action: The LICON utility ends with a job step return code of 8.

User response: Check whether correct input control statements are supplied. Check whether the statement continuation is correctly completed. Correct the error, and rerun the LICON utility job.

FABL0421E REQUIRED OPTION NOT SPECIFIED

Explanation: A required option keyword is not specified in the control statement.

System action: The LICON utility ends immediately with a job step return code of 16.

User response: Check whether the correct input control statements are supplied. Correct the error, and rerun the LICON utility job.

FABL0422E INPUT STREAM SYNTAX ERROR

Explanation: A syntax error was detected in the input stream.

System action: The LICON utility ends immediately with a job step return code of 16.

User response: Check whether the correct input control statements are supplied. Correct the error, and

rerun the LICON utility job.

FABL0423E INCORRECT COMMAND NAME SPECIFIED

Explanation: An incorrect command name was detected in the input stream.

System action: The LICON utility ends immediately with a job step return code of 16.

User response: Check whether the correct input control statements are supplied. Correct the error, and rerun the LICON utility job.

FABL0424E INCORRECT OPTION SPECIFIED

Explanation: An incorrect option was detected in the input stream.

System action: The LICON utility ends immediately with a job step return code of 16.

User response: Check whether the correct input control statements are supplied. Correct the error, and rerun the LICON utility job.

FABL0425E DUPLICATE OPTION SPECIFIED

Explanation: Duplicate option specification was detected in the input stream.

System action: The LICON utility ends immediately with a job step return code of 16.

User response: Check whether the correct input control statements are supplied. Correct the error, and rerun the LICON utility job.

FABL0426E PARENTHESIS MISSING

Explanation: The required parenthesis was not found for the input stream.

System action: The LICON utility ends immediately with a job step return code of 16.

User response: Check whether the correct input control statements are supplied. Correct the error, and rerun the LICON utility job.

FABL0427E VALUE *value* EXCEEDS LENGTH LIMIT

Explanation: The specified value *value* exceeds its length limit.

System action: The LICON utility ends immediately with a job step return code of 16.

User response: Check whether the correct input control statements are supplied. Correct the error, and rerun the LICON utility job.

FABL0428E VALUE *value* CONTAINS INCORRECT CHARACTER

Explanation: The specified value *value* contains an incorrect character.

System action: The LICON utility ends immediately with a job step return code of 16.

User response: Check whether the correct input control statements are supplied. Correct the error, and rerun the LICON utility job.

FABL0429E VALUE *value* INCORRECT

Explanation: The specified value *value* is incorrect.

System action: The LICON utility ends immediately with a job step return code of 16.

User response: Check whether the correct input control statements are supplied. Correct the error, and rerun the LICON utility job.

FABL0430E INCORRECT TIMESTAMP SPECIFIED: *ttttttttttttttt*

Explanation: The specified time stamp value *ttttttttttttttt* is incorrect. The correct format is *YYYYDDDHHMMSSTT*, which identifies one of the expired RDEs.

System action: The LICON utility ends immediately with a job step return code of 16.

User response: Check whether the correct input control statements are supplied. Correct the error, and rerun the LICON utility job.

FABL0431E NO OPTION VALUE FOUND

Explanation: No option value is supplied in the parenthesis.

System action: The LICON utility ends immediately with a job step return code of 16.

User response: Check whether the correct input control statements are supplied. Correct the error, and rerun the LICON utility job.

FABL0440I DATABASE: *dddddddd* [AREA: *aaaaaaaa*] SUCCESSFULLY PROCESSED

Explanation: This message shows that non-HALDB full-function database or HALDB partition *dddddddd* or area *aaaaaaaa* of database *dddddddd* has been successfully processed by the LICON utility command.

System action: Processing continues.

User response: None. This message is informational.

FABL0441I DATABASE: *dddddddd* **[AREA:** *aaaaaaaa***] TIMESTMP:** *ttttttttttttt* **SUCCESSFULLY PROCESSED**

Explanation: The message shows that the RDE for non-HALDB full-function database or HALDB partition *dddddddd* or area *aaaaaaaa* of database *dddddddd* and the time stamp *ttttttttttttt* has been successfully processed by the LICON utility command.

System action: Processing continues.

User response: None. This message is informational.

FABL0442E CURRENT RDE FOR DATABASE: *dddddddd* **[AREA:** *aaaaaaaa***] NOT REPLACED BECAUSE NO REPLACE OPTION SPECIFIED**

Explanation: The INIT.DB command was requested but failed. The current RDE for non-HALDB full-function database or HALDB partition *dddddddd* or area *aaaaaaaa* of database *dddddddd* was not replaced, because no REPLACE option was specified in the INIT.DB command control statement. If you already have the current RDE for this database or area, and are going to create one with the INIT.DB command, you need to specify the REPLACE option.

System action: The utility skips processing this database or area and tries to process the next member if there is one. A job step return code of 8 is set.

User response: Check whether the REPLACE option is correctly supplied. Specify the REPLACE option if you had intended to do so. Rerun the LICON utility job.

FABL0443E ACB/DBD IN ERROR FOR DATABASE: *dddddddd*

Explanation: The ACB or DBD member for database *dddddddd* is in error. It cannot be processed.

System action: The utility skips processing database *dddddddd* and tries to process the next member if there is one. A job step return code of 8 is set.

User response: Check whether the correct ACB or DBD member is used for the job. Correct the error, and rerun the job.

FABL0444E DATABASE: *dddddddd* **[AREA:** *aaaaaaaa***] VERIFICATION FAILED**

Explanation: The VERIFY.DB command detects data mismatch between the RDE and the specified DBD (or ACB). The detail of the mismatch is explained by the messages that precede message FABL0204E for non-HALDB full-function database or HALDB partition *dddddddd*, or area *aaaaaaaa* of database *dddddddd*.

System action: The utility tries to process the next member if there is one. A job step return code of 8 is set.

User response: Check whether the correct ACB or DBD member is used for the job. Correct the error, and rerun the utility job.

FABL0447E RDE CREATION FAILED FOR DATABASE: *dddddddd* **[AREA:** *aaaaaaaa***]**

Explanation: The INIT.DB command failed to create the RDE for non-HALDB full-function database or HALDB partition *dddddddd* or area *aaaaaaaa* of database *dddddddd*.

System action: The utility skips processing this database or area and tries to process the next member if there is one. A job step return code of 8 is set.

User response: Find associated FABL messages that show why the RDE creation failed. Correct the error, and rerun the utility job.

FABL0448E NONE OF DATABASES SUCCESSFULLY PROCESSED

Explanation: At the end of processing a LICON utility command, it turned out that none of the databases had been successfully processed.

System action: The LICON utility ends immediately with a job step return code of 16. The commands following the current one are all skipped.

User response: Find associated FABL messages that show the reason for the processing errors. Correct the error, and rerun the utility job.

FABL0449E NEITHER ACBLIB NOR DBDLIB AVAILABLE

Explanation: Neither an ACBLIB DD statement nor a DBDLIB DD one is supplied for the LICON utility JCL. At least one of them is required for this command processing.

System action: The LICON utility ends immediately with a job step return code of 16. The commands following the current one are all skipped.

User response: Check whether ACBLIB or DBDLIB DD statement is correctly specified. Correct the error, and rerun the utility job.

FABL0450E NO ACB/DBD MEMBER MATCHED FOR SPECIFIED DB NAME PATTERN: *pattern*

Explanation: No ACB or DBD member matched the specified database name pattern *pattern*. Thus no ACB or DBD member is processed for database *pattern* or HALDB partition *pattern*.

System action: The LICON utility ends immediately with a job step return code of 16. The commands following the current one are all skipped.

User response: Check whether the database name pattern supplied is correct. Correct the error, and rerun the utility job.

FABL0451E ACB/DBD MEMBER NOT FOUND FOR DATABASE: *dddddddd*

Explanation: The ACB or DBD member is not found for the specified database or HALDB partition *dddddddd*.

System action: The LICON utility ends immediately with a job step return code of 16. The commands following the current one are all skipped.

User response: Check whether the ACB or DBD member exists in the specified ACBLIB or DBDLIB data set. Correct the error, and rerun the utility job.

FABL0452E ACBLIB/DBDLIB IS EMPTY

Explanation: The ACBLIB or DBDLIB specified contains no member.

System action: The LICON utility ends immediately with a job step return code of 16. The commands following the current one are all skipped.

User response: Check whether the correct ACBLIB or DBDLIB DD statement is supplied. Correct the error, and rerun the utility job.

FABL0453I DATABASE: *dddddddd* **NOT PROCESSED. REASON:** *text*

Explanation: Database *dddddddd* was not processed. The reason is shown in *text*.

text description

LOGICAL DBD
DMB verification is not needed for logical DBD.

MSDB DBD
MSDB DBD is not supported.

GSAM DBD
GSAM DBD is not supported.

HALDB WITHOUT RECON
HALDB DBD requires RECON*x* DD statements or the DFSMDA dynamic allocation members, but they are not specified.

ISAM ACCESS METHOD
ISAM access method is used. It is not supported.

INCOMPAT DMB
Incompatible level of ACB member.

SHR INDEX NOT 1ST
DMB verification is needed only for the first shared index.

System action: The utility skips processing database *dddddddd* and tries to process the next member if there is one.

User response: If INCOMPAT DMB is shown, ensure that the correct ACBLIB is used for the run.

FABL0460E NO RDE FOUND FOR SPECIFIED [DB NAME PATTERN: *pattern* **| DB NAME:** *dddddddd* **AREA NAME PATTERN:** *pattern***]**

Explanation: No RDE whose database name matches the specified database name pattern *pattern* or whose area name of database matches the specified area name pattern *pattern* was found.

System action: The LICON utility ends immediately with a job step return code of 16. The commands following the current one are all skipped.

User response: Check whether the correct database name pattern is supplied. Correct the error, and rerun the utility job.

FABL0461E NO RDE FOUND FOR SPECIFIED [DB NAME PATTERN: *pattern* **| DB NAME:** *dbname* **AREA NAME PATTERN:** *pattern***] AND TIMESTMP:** *ttttttttttttt*

Explanation: No RDE that has time stamp *ttttttttttttt* (or CURRENT) and whose database name matches the specified database name pattern *pattern* or whose area name of database matches the specified area name pattern *pattern* was found.

System action: The LICON utility ends immediately with a job step return code of 16. The commands following the current one are all skipped.

User response: Check whether the correct database name pattern is supplied. Correct the error, and rerun the utility job.

FABL0462E NO RDE FOUND FOR DATABASE: *dddddddd* **[AREA:** *aaaaaaaa***]**

Explanation: No RDE was found for non-HALDB full-function database or HALDB partition *dddddddd* or area *aaaaaaaa* of database *dddddddd*.

System action: The LICON utility ends immediately with a job step return code of 16. The commands following the current one are all skipped.

User response: Check whether the correct database name is supplied. Correct the error, and rerun the utility job.

FABL0463E NO RDE FOUND FOR DATABASE: *dddddddd* **[AREA:** *aaaaaaaa***] AND TIMESTMP:** *ttttttttttttt*

Explanation: No RDE was found for non-HALDB full-function database or HALDB partition *dddddddd* or

area *aaaaaaaa* of database *dbname* and time stamp *ttttttttttttt*.

System action: The LICON utility ends immediately with a job step return code of 16. The commands following the current one are all skipped.

User response: Check whether the correct database name is supplied. Correct the error, and rerun the utility job.

FABL0470I START PROCESSING WITH ACBLIB/DBDLIB

Explanation: This message shows that the LICON utility started processing with ACBLIB or DBDLIB.

System action: Processing continues.

User response: None. This message is informational.

FABL0480E DBRC COMMAND FAILED

Explanation: An error occurred when the DBRC utility DSPURXRT was called.

System action: The LICON utility writes the messages of the DBRC utility in the FABLPRNT data set, and ends immediately with a job step return code of 16.

User response: Check the messages of the DBRC utility printed in the FABLPRNT data set. Correct the error, and rerun the job.

FABL0481E NO DATABASE *dddddddd* FOUND IN RECON

Explanation: The LICON utility attempted to obtain names of the partitions associated with database *dddddddd* from the RECON data sets. However, the specified database was not found in RECON data sets.

System action: The LICON utility ends immediately with a job step return code of 16.

User response: Check whether the correct RECON data sets are used. Correct the error, and rerun the job. If the correct RECON data sets are used, specify the HALDB partition name as the DBD parameter, and rerun the job.

FABL0482E NO PARTITIONS REGISTERED FOR THE DATABASE *dddddddd* IN RECON

Explanation: The LICON utility attempted to obtain names of the partitions associated with database *dddddddd* from the RECON data sets. However, there were no information about the partitions related to the specified database in the RECON data sets.

System action: The LICON utility ends immediately with a job step return code of 16.

User response: Check whether the correct RECON data sets are used. Correct the error, and rerun the job. If the correct RECON data sets are used, specify the HALDB partition name as the DBD parameter, and rerun the job.

FABL0483E A MISMATCH TYPE FOUND BETWEEN DBD/ACB *mmmmmmmm* AND RECON

Explanation: A mismatch of the database type was found between the DBD or the ACB *mmmmmmmm* and the RECON record. The database type was defined as a HALDB in the DBD or the ACB. However, in the RECON data sets, it was defined as a non-HALDB.

System action: The LICON utility ends immediately with a job step return code of 16.

User response: Check whether the correct DBDLIB, ACBLIB, or RECON data sets are used. Correct the error, and rerun the job.

FABL0484E NO AREA *aaaaaaaa* IS DEFINED FOR DATABASE *dddddddd*

Explanation: The LICON utility attempted to process area *aaaaaaaa*, which is associated with database *dddddddd*. However, the specified area was not found in the specified database.

System action: The LICON utility ends immediately with a job step return code of 16.

User response: Check whether the correct DBD or ACB is supplied in DBDLIB or ACBLIB. Correct the error, and rerun the LICON utility job.

FABL0485E NO AREA NAME MATCHED THE SPECIFIED AREA NAME PATTERN: *pattern* IN DATABASE *dddddddd*

Explanation: No area name that matches the specified area name pattern *pattern* was found in the specified database *dddddddd*.

System action: The LICON utility ends immediately with a job step return code of 16.

User response: Check whether the correct DBD or ACB is supplied in DBDLIB or ACBLIB. Correct the error, and rerun the LICON utility job.

FABL0486E THE SPECIFIED DATABASE *dddddddd* IS AN INCORRECT DATABASE ORGANIZATION

Explanation: The specified database *dddddddd* is not a DEDB although the AREA option is specified.

System action: The LICON utility ends immediately with a job step return code of 16.

User response: Check whether the DBD name is correct. Correct the error, and rerun the LICON utility job.

FABL0487E THE INPUT LICON DATA SET IS INCORRECT

Explanation: The LICON data set has records of unsupported format. The records might be in the V1 format.

System action: The LICON utility ends immediately with a job step return code of 16.

User response: Check whether the LICON data set has V1 format records. If the data set has V1 format records, delete the LICON data set, re-create the LICON data set, and rerun the job.

FABL0600E UNSUPPORTED LEVEL OF IMS IS BEING USED: *xx.x*

Explanation: The Integrity Checker utility is run under an unsupported version of IMS. *xx.x* is the version and release of IMS.

System action: The Integrity Checker utility returns a nonzero return code to the requester of the IMS Library Integrity Utilities service.

User response: Check whether the version of IMS is correct. Correct the error, and rerun the batch job.

FABL0601I NO RDE IS FOUND FOR DATABASE: *dddddddd* **[AREA:** *aaaaaaaa***] TIMESTAMP:** *yyyy.ddd hh:mm:ss.thmiju*

Explanation: The Integrity Checker utility searched for the valid RDE for the DMB verification of non-HALDB full-function database or HALDB partition *dddddddd* or area *aaaaaaaa* of database *dddddddd* at UTC time stamp *yyyy.ddd hh:mm:ss.thmiju*, but could not find it.

System action: Processing continues. The Integrity Checker utility causes the current RDE to expire if the RDE exists, and creates a new RDE with the information in the DBD.

User response: None. This message is informational.

FABL0602I RDE IS FOUND FOR DATABASE: *dddddddd* **[AREA:** *aaaaaaaa***] TIMESTAMP:** *yyyy.ddd hh:mm:ss.thmiju*

Explanation: The Integrity Checker utility found the valid RDE for the DMB verification of non-HALDB full-function database or HALDB partition *dddddddd* or area *aaaaaaaa* of database *dddddddd* at UTC time stamp *yyyy.ddd hh:mm:ss.thmiju*.

System action: Processing continues. The Integrity Checker utility will use the RDE to do the DMB verification from now on.

User response: None. This message is informational.

FABL0603E AN INPUT PARAMETER OF *api* **IS NOT CORRECT (PARM:** *parameter***/FUNC=***xxxxxx***)**

Explanation: An incorrect input parameter is specified.

System action: The Integrity Checker utility returns a nonzero return code to the IMS Library Integrity Utilities service requester.

User response: None.

FABL0604E RDE CREATION FAILED FOR DATABASE: *dddddddd* **[AREA:** *aaaaaaaa***]**

Explanation: The Integrity Checker utility failed to create an RDE for non-HALDB full-function database or HALDB partition *dddddddd* or area *aaaaaaaa* of database *dddddddd*.

System action: The Integrity Checker utility returns a nonzero return code to the requester of the IMS Library Integrity Utilities service.

User response: None.

FABL0605I RDE IS NOT CREATED BECAUSE DMB MISMATCH IS FOUND FOR DBD: *dbdname* **[AREA:** *areaname***]**

Explanation: The Integrity Checker utility was requested to create an RDE for the indicated database by the requester of the IMS Library Integrity Utilities service. However, the requester of the service does not change the DBD definition and specifies that an RDE is not created when a DMB mismatch is found. This message indicates that a DMB mismatch was found between the RDE and either ACB or DBD, and that RDE was not created. When the indicated DBD is for a DEDB, the name of the area is also shown in the message.

System action: Processing continues. The Integrity Checker utility returns return code 0 and reason code 4 to the requester of the IMS Library Integrity Utilities service.

User response: If the mismatch is unexpected, check whether the DBD or ACB that you are using is correct.

FABL0606E NAME/TOKEN SERVICE *service* **FAILED. NAME:** *nametoken* **RC=***rc*

Explanation: The process failed in the z/OS MVS Name/Token Service. *service* shows the service name. *rc* shows the return code of the Name/Token service.

System action: The Integrity Checker utility returns a nonzero return code to the requester of the IMS Library Integrity Utilities service.

User response: Find the cause of the error. For the explanation of the return code, see *z/OS MVS*

Programming: Assembler Services Reference, Volume 2 (IARR2V-XCTLX). If necessary, correct the error and rerun the job.

FABL0651E GETMAIN FAILED FOR SIZE=*size*

Explanation: The GETMAIN macro for storage (size=*size*) failed.

System action:

- The Integrity Checker utility returns a nonzero return code to the requester of the IMS Library Integrity Utilities service.
- The LICON utility ends immediately with a job step return code of 16.

User response: Determine if the REGION parameter for the JOB or the EXEC statement is large enough. Increase the region size and rerun the batch job or the utility job.

FABL0652E DEVTYPE FAILED FOR DDNAME: *ddname* **(RC=***rc***)**

Explanation: After a DEVTYPE macro was issued to get information about the device that is associated with *ddname*, the return code indicated that the attempt to do so was unsuccessful.

System action:

- The Integrity Checker utility returns a nonzero return code to the requester of the IMS Library Integrity Utilities service.
- The LICON utility ends immediately with a job step return code of 16.

User response: Determine if the *ddname* in the DD statement specifies the correct data set. Correct the error, and rerun the batch job or the utility job.

FABL0653E VSAM *macro* **FAILED FOR DDNAME:** *ddname* **RC=***rc* **RSN=***reason_code*

Explanation: The VSAM macro *macro* failed for the data set whose DD name is *ddname*. The return code is *rc*, and the reason code is *reason_code*.

System action:

- The Integrity Checker utility returns a nonzero return code to the requester of the IMS Library Integrity Utilities service.
- The LICON utility ends immediately with a job step return code of 16.

User response: Determine if the correct VSAM data set is being used. For the return code and the reason code, see *z/OS DFSMS Macro Instructions for Data Sets*. Correct the error, and rerun the batch job or the utility job.

FABL0654E RDJFCB FAILED FOR DDNAME: *ddname* **(RC=***rc***)**

Explanation: The RDJFCB macro failed for the DD name *ddname*. The return code is *rc*.

System action:

- The Integrity Checker utility returns a nonzero return code to the requester of the IMS Library Integrity Utilities service.
- The LICON utility ends immediately with a job step return code of 16.

User response: This error is likely an internal system error. Contact IBM Software Support.

FABL0655E INCORRECT IMS RELEASE LEVEL RECON DATA SET IS USED FOR DDNAME: *ddname*

Explanation: The data set that was used for the DD name *ddname* has an incorrect IMS release level of the RECON data set.

System action:

- The Integrity Checker utility returns a nonzero return code to the requester of the IMS Library Integrity Utilities service.
- The LICON utility ends immediately with a job step return code of 16.

User response: Specify the correct IMS release level of the RECON data set, and rerun the batch job or the utility job.

FABL0656E NO RECON HEADER RECORD IS FOUND IN RECON DATA SET: *ddname*

Explanation: The data set that was used for the DD name *ddname* is not a RECON data set.

System action:

- The Integrity Checker utility returns a nonzero return code to the requester of the IMS Library Integrity Utilities service.
- The LICON utility ends immediately with a job step return code of 16.

User response: Specify the correct RECON data set, and rerun the batch job or the utility job.

FABL0657E NO RECON HEADER EXTENSION RECORD IS FOUND IN RECON DATA SET: *ddname*

Explanation: The data set that was used for the DD name *ddname* is not a RECON data set or has an incorrect IMS release level of the RECON data set.

System action:

- The Integrity Checker utility returns a nonzero return code to the requester of the IMS Library Integrity Utilities service.
- The LICON utility ends immediately with a job step return code of 16.

User response: Specify the correct IMS release level of the RECON data set, and rerun the batch job or the utility job.

FABL0658E TWO VALID RECON DATA SETS ARE NOT PROVIDED

Explanation: The two IMS release levels of RECON data sets are not correct.

System action:

- The Integrity Checker utility returns a nonzero return code to the requester of the IMS Library Integrity Utilities service.
- The LICON utility ends immediately with a job step return code of 16.

User response: Specify two correct IMS release levels of the RECON data sets, and rerun the batch job or the utility job.

FABL0659E MINVERS IS DEFINED INCORRECTLY IN RECON DATA SET: *ddname*

Explanation: The RECON data set has incorrect MINVERS information.

System action:

- The Integrity Checker utility returns a nonzero return code to the requester of the IMS Library Integrity Utilities service.
- The LICON utility ends immediately with a job step return code of 16.

User response: Specify the correct MINVERS for the RECON data set when initializing RECON, and rerun the batch job or the utility job.

FABL1001E INCORRECT FUNCTION CODE (*xx***) IN PARAMETER**

Explanation: An incorrect function code was specified in the parameter. *xx* is the hexadecimal function code.

System action: IMS Library Integrity Utilities Interface returns return code 16 to the caller.

User response: This error is probably an internal error. Collect the dump, and contact IBM Software Support.

FABL1021E LIBRARY MISSING: *ddname* **DD**

Explanation: Data set *ddname* could not be opened during initialization. The *ddname* is the DD name of the DBDLIB/PSBLIB/ACBLIB data set.

System action: IMS Library Integrity Utilities Interface returns return code 16 to the caller.

User response: Determine whether the required libraries are specified in DD statements. Correct the problem, and rerun the program.

FABL1022E DYNAMIC [ALLOCATION | DEALLOCATION] FAILED FOR *ddname***: RETURN CODE=***xxxx***, REASON CODE=***yyyy***

Explanation: An attempt to dynamically allocate or deallocate the *ddname* data set failed. *xxxx* is the hexadecimal return code, and *yyyy* is the hexadecimal reason code.

System action: IMS Library Integrity Utilities Interface returns return code 16 to the caller.

User response: This error is probably an internal system error. Collect the dump, and contact IBM Software Support.

FABL1023E *ddname* **DID NOT OPEN**

Explanation: The *ddname* data set that was allocated dynamically could not be opened during initialization.

System action: IMS Library Integrity Utilities Interface returns return code 16 to the caller.

User response: This error is probably an internal system error. Collect the job log and the dump, and contact IBM Software Support.

FABL1024E ERROR LOADING MODULE *module***: ABEND CODE=***nnnn* **REASON CODE=***mmmm*

Explanation: An error occurred while load module *module* was being loaded. *nnnn* is the hexadecimal system abend code, and *mmmm* is the hexadecimal reason code.

System action: IMS Library Integrity Utilities Interface returns return code 16 to the caller.

User response: Determine the cause of the load error. Correct the problem, and rerun the program.

FABL1041E NO DATA IN *ddname1* **[OR** *ddname2***]**

Explanation: A utility of IMS Library Integrity Utilities detected some errors in the DBD or PSB member. The utility does not generate any data in SYSPRINT or SYSPUNCH data set. *ddname1* is the DD name of the SYSPRINT data set, and *ddname2* is the DD name of the SYSPUNCH data set.

System action: IMS Library Integrity Utilities continues processing. If one or more DBD or PSB members are decoded, the utility sets the return code to

4. If no DBD or PSB members are decoded, the utility sets the return code to 8.

User response: Check the messages issued by the utility.

FABL1061E ERROR OCCURRED IN *module* [USER | SYSTEM] COMPLETION CODE=*uuuu*(/*sss*)

Explanation: An error occurred in module *module*. *uuuu* is the user completion code, and *sss* is the hexadecimal system completion code.

System action: IMS Library Integrity Utilities Interface returns return code 16 to the caller.

User response: Determine the cause of the error. Correct the problem, and rerun the program.

FABL2001I [DBD | PSB] TO BE PROCESSED IS *member*

Explanation: The name of the DBD or PSB member *member* specified for processing.

System action: The Consistency Checker utility continues processing.

User response: None. This message is informational.

FABL2002I CONSISTENCY CHECK WAS SUCCESSFUL FOR *member*

Explanation: The Check function ended successfully, and no inconsistency between the DBD or the PSB definition and the other IMS definitions for *member* was found.

System action: The Consistency Checker utility continues processing.

User response: None. This message is informational.

FABL2003E CONSISTENCY CHECK FAILED FOR *member*

Explanation: The Check function ended successfully and inconsistency between the DBD or the PSB definition and the other IMS definitions for *member* was found.

System action: The Consistency Checker utility creates a check report and continues processing.

User response: None.

FABL2004I CONSISTENCY CHECK WAS SKIPPED FOR *dbdname*

Explanation: The Check function is not done for *dbdname*, because its database organization is specified in the NOCHKORG parameter.

System action: The Consistency Checker utility does not create a check report and continues processing.

User response: None. This message is informational.

FABL2005E THE NUMBER OF INCONSISTENT PCBS IN *member* HAS EXCEEDED THE THRESHOLD

Explanation: The number of the inconsistent PCBs in the PSB *member* has exceeded the threshold value specified in the PCBERRLMT parameter. The Consistency Checker utility stops checking and printing further PCBs in the PSB.

System action: The Consistency Checker utility continues processing.

User response: None.

FABL2006I *ddname* DATA SET IS [SPECIFIED | NOT SPECIFIED]

Explanation: The *ddname* data set is either specified or not specified. *ddname* is the DD name of the ACBLIB, DFSMDA, MODBLKS, SYSRDDS, or the NSYSRDDS data set.

System action: The Consistency Checker utility continues processing.

User response: None. This message is informational.

FABL2007I PARAMETER USED IS: *keyword=value*

Explanation: The Consistency Checker utility proceeds with *keyword=value*.

System action: The Consistency Checker utility continues processing.

User response: None. This message is informational.

FABL2009I *ddname* DATA SET IS NOT USED BECAUSE DRD=*parameter* IS SPECIFIED

Explanation: The indicated data set was not used because DRD= parameter is specified.

System action: Processing continues.

User response: None. This message is informational.

FABL2010I CONTROL CARD SUPPLIED IS: *echo of control statement*

Explanation: This message is the echo of the SYSIN control statement that is verified by this program.

System action: The Consistency Checker utility continues processing.

User response: None. This message is informational.

FABL2011E INCORRECT STATEMENT IN SYSIN DATASET

Explanation: A control statement with an incorrect format was found in the SYSIN data set.

System action: The Consistency Checker utility ends with a return code of 12.

User response: Correct the format of the control statement, and rerun the job.

FABL2012E INCORRECT MEMBER NAME IS SPECIFIED

Explanation: The member name specified in the control statement was incorrect. For example, the member name contained more than eight characters.

System action: The Consistency Checker utility ends with a return code of 12.

User response: Correct the member name in the control statement, and rerun the job.

FABL2013E INCORRECT PARAMETER IS SPECIFIED

Explanation: An incorrect parameter was found in the control statement of the SYSIN data set.

System action: The Consistency Checker utility ends with a return code of 12.

User response: Correct the parameter of the statement, and rerun the job.

FABL2014E DUPLICATE STATEMENT IS SPECIFIED

Explanation: Two or more identical control statements were found in the SYSIN data set.

System action: The Consistency Checker utility ends with a return code of 12.

User response: Remove the duplicate statement, and rerun the job.

FABL2015E NO DATA IN SYSIN

Explanation: No control statement is found in the SYSIN data set.

System action: The Consistency Checker utility ends with a return code of 12.

User response: Specify the control statements in the SYSIN data set, and rerun the job.

FABL2016E MAXIMUM SYSIN CARDS EXCEEDED

Explanation: The number of control statements has exceeded the maximum value of 9999.

System action: The Consistency Checker utility ends with a return code of 12.

User response: Rerun the ignored cards.

FABL2017E UNSUPPORTED CONTROL STATEMENT *statement* IS SPECIFIED UNDER IMS VERSION *x.x*

Explanation: The indicated control statement is not supported under IMS Version *x.x*.

System action: The Consistency Checker utility ends with a return code of 12.

User response: Check the IMS version of DFSRESLB.

FABL2019E *ddname* DATA SET IS NOT USED BECAUSE IT DOES NOT CONTAIN ALL THE RESOURCE DEFINITIONS

Explanation: The specified data set cannot be used because it does not contain all the resource definitions.

System action: Consistency Checker ends abnormally.

User response: Ensure that the data sets specified on the indicated DD statement are correct. If necessary, correct the data sets and rerun the job.

FABL2020E NO MEMBER FOUND FOR *member* IN [DBDLIB | PSBLIB]

Explanation: The specified member *member*, or all of the members specified by a wildcard, were not found in the DBD or the PSB library.

System action: The Consistency Checker utility continues processing without reporting for this DBD or PSB member.

User response: Check whether *member* is correct. Correct the problem, and rerun the job.

FABL2021E *member* IS NOT A CORRECT [DBD | PSB]: ERROR IS DETECTED IN *block*

Explanation: DBD or PSB *member* was loaded, but was found not to be a valid DBD or PSB. If the incorrect block can be identified, the block name is shown in the message.

System action: The Consistency Checker utility continues processing without reporting for this DBD or PSB member.

User response: Check whether the member is a DBD or a PSB. If the member is a DBD or a PSB, regenerate it.

FABL2022E *member* **WAS NOT [DBD | PSB] TYPE ACB MEMBER**

Explanation: The specified member was not a DBD-type or a PSB-type ACB member.

System action: The Consistency Checker utility creates a check report and continues processing.

User response: None.

FABL2023E IMS VERSION INCONSISTENT BETWEEN ACB *x.x* **AND DFSRESLB** *y.y*

Explanation: ACB *x.x*. and DFSRESLB *y.y* use different versions of IMS.

System action: The Consistency Checker utility creates a check report and continues processing.

User response: Check the IMS version used for ACB and DFSRESLB.

FABL2024E DUPLICATE MEMBER FOUND FOR *member* **IN [DBDLIB | PSBLIB] +***nnn*

Explanation: Duplicate member was found in DBDLIB or PSBLIB. The *member* is the specified member name. *+nnn* is the relative position of a data set within a concatenation of data sets.

System action: The Consistency Checker utility continues processing without checking this DBD or PSB member.

User response: Check the duplicate DBD or PSB member.

FABL2025E RDJFCB MACRO FAILED FOR *ddname***: RETURN CODE=***rrrr*

Explanation: The RDJFCB macro attempted for the indicated DD, but failed.

System action: Consistency Checker ends abnormally.

User response: Ensure that the data sets specified on the indicated DD statement are correct. If necessary, correct the data sets and rerun the job.

FABL2026I THE DATA SET THAT IS SPECIFIED BY NSYSRDDS DD IS A SYSTEM RDDS

Explanation: The RDDS specified on the NSYSRDDS DD is a system RDDS.

System action: Consistency Checker continues processing.

User response: None. This message is informational.

FABL2030E *ddname* **DID NOT OPEN**

Explanation: The data set *ddname* could not be opened during initialization.

System action: The Consistency Checker utility ends abnormally.

User response: Check the cause of this failure.

FABL2031E UNSUPPORTED IMS VERSION: *x.x*

Explanation: DFSRESLB IMS version *x.x* is not supported.

System action: The Consistency Checker utility ends with a return code of 12.

User response: Check the IMS version of DFSRESLB.

FABL2032E INCORRECT [DFSDDIR*x* **| DFSPDIR***x***] IN MODBLKS**

Explanation: The online database definition DFSDDIR*x*, the online application program definition DFSPDIR*x* is incorrect, or the IMS version used for it is not the same as the one used for DFSRESLB.

System action: The Consistency Checker utility ends abnormally.

User response: Check the cause of the error. Correct the problem, and rerun the program.

FABL2033E UNKNOWN RECON LISTING FOUND

Explanation: To obtain DBRC information, the Consistency Checker utility linked internally to the DBRC utility DSPURXRT. However, an unknown RECON listing was found.

System action: The Consistency Checker utility ends abnormally.

User response: Check the cause of the error. Correct the problem, and rerun the program.

FABL2034E UNSUPPORTED IMS VERSION: *x.x* **for PSB CHECK PROCESS**

Explanation: DFSRESLB IMS version *x.x* is not supported for the consistency check of PSBs.

System action: The Consistency Checker utility ends with a return code of 12.

User response: Check the IMS version of DFSRESLB.

FABL2035E GETMAIN FAILED

Explanation: The program could not obtain enough area with the GETMAIN macro.

System action: The Consistency Checker utility ends abnormally.

User response: If the specified region size is too small, increase the REGION size in the JOB statement in the JCL, and rerun the program.

FABL2040E ERROR LOADING [DBDLIB | PSBLIB] *member*: (ABEND CODE=*nnnn* REASON CODE=*mmmm*)

Explanation: An error has occurred during DBD or PSB *member* load. *nnnn* is the hexadecimal system abend code, and *mmmm* is the hexadecimal reason code.

System action: The Consistency Checker utility continues processing without reporting for this DBD or PSB member.

User response: Check the cause of this load error. Correct the problem, and rerun the program.

FABL2041E ERROR LOADING *ddname member*: (ABEND CODE=*nnnn* REASON CODE=*mmmm*)

Explanation: An error occurred during *ddname member* load. *nnnn* is the hexadecimal system abend code, and *mmmm* is the hexadecimal reason code.

System action: The Consistency Checker utility creates a check report and continues processing.

User response: Check the cause of load error. Correct the problem, and rerun the program.

FABL2042E ERROR LOADING *ddname member*: (ABEND CODE=*nnnn* REASON CODE=*mmmm*)

Explanation: An error occurred during *ddname member* load. *nnnn* is the hexadecimal system abend code, and *mmmm* is the hexadecimal reason code.

System action: The Consistency Checker utility ends abnormally.

User response: Check the cause of the load error. Correct the problem, and rerun the program.

FABL2045E READ ERROR ON [DBD | PSB] DIRECTORY

Explanation: A read error occurred while the DBD or the PSB directory was being read.

System action: The Consistency Checker utility ends abnormally.

User response: Check the cause of the read error. Correct the problem, and rerun the program.

FABL2046E BLDL FAILED FOR ACB=*member*

Explanation: An error occurred while a BLDL macro for an ACB member was being issued.

System action: The Consistency Checker utility creates a check report and continues processing.

User response: Check the cause of the BLDL macro failure, correct it, and rerun the program.

FABL2047E ERROR READING ACB=*member*

Explanation: An error occurred while an ACB member was being read.

System action: The Consistency Checker utility creates a check report and continues processing.

User response: Check the cause of the failure, correct it, and rerun the program.

FABL2050E DYNAMIC [ALLOCATION | DEALLOCATION | CONCATENATE] FAILED FOR *ddname*: RETURN CODE=*xxxx*, REASON CODE=*yyyy*

Explanation: An attempt to dynamically allocate, deallocate, or concatenate the *ddname* data set failed. *xxxx* is the hexadecimal return code, and *yyyy* is the hexadecimal reason code.

System action: The Consistency Checker utility ends abnormally.

User response: This error is probably an internal system error. Collect the dump, and contact IBM Software Support.

FABL2051E *ddname* DID NOT OPEN

Explanation: The *ddname* data set that was allocated dynamically could not be opened during initialization.

System action: The Consistency Checker utility ends abnormally.

User response: This error is probably an internal system error. Collect the job log and the dump, and contact IBM Software Support.

FABL2052E DBRC COMMAND FAILED: RETURN CODE=*nnnn*

Explanation: The Consistency Checker utility internally linked DBRC utility DSPURXRT to obtain DBRC information. *nnnn* is the hexadecimal return code. See the *IMS Messages and Codes, Volume 4: IMS Component Codes*.

System action: The Consistency Checker utility writes the messages of the DBRC utility in the SYSOUT data set, and ends abnormally.

User response: Check the cause of the error. Correct

the problem, and rerun the program.

FABL2053W UNSUPPORTED DBD *member* IN DBDLIB

Explanation: The specified DBD *member* in the DBD library is not supported for the Consistency Checker utility.

System action: The Consistency Checker utility skips this member and continues processing.

User response: Check the DBD member.

FABL2054E EITHER *ddname1* DD OR *ddname2* DD MUST BE SPECIFIED

Explanation: DRD=YES is specified, but SYSRDDS DD or NSYSRDDS DD is not specified.

System action: Consistency Checker ends abnormally.

User response: Specify either SYSRDDS DD or NSYSRDDS DD, and rerun the program.

FABL2055E A READ ERROR OCCURRED WHILE READING THE RDDS THAT WAS SPECIFIED BY *ddname* DD

Explanation: An error occurred when the RDDS data set was read.

System action: Consistency Checker ends abnormally.

User response: Correct the problem, and rerun the program.

FABL2056E THE DATA SET THAT IS SPECIFIED BY *ddname* DD IS NOT A VALID RDDS

Explanation: The data set that is specified on the indicated DD statement is not in a valid RDDS format.

System action: Consistency Checker ends abnormally.

User response: Ensure that the data set specified on the DD statement is correct, and rerun the job.

FABL2057E THE DATA SET THAT IS SPECIFIED BY SYSRDDS DD IS NOT A SYSTEM RDDS

Explanation: The RDDS that is specified on the SYSRDDS DD is not a system RDDS.

System action: Consistency Checker ends abnormally.

User response: Ensure that the data sets that are specified on the DD statement are correct, and rerun the job.

FABL3000E DYNALLOC FAILED FOR DDNAME: *ddname* DSNAME: *dsn* RC=*rr* RSN=*ssss*

Explanation: A dynamic allocation request for DDNAME *ddname* DSNAME *dsn* failed. The return code is *rr*, and the reason code is *ssss*.

System action: The IMS online subsystem that has a BPE-based DBRC region continues processing with Integrity Checker deactivated. The IMS online subsystem that has a non-BPE-based DBRC region or the IMS batch job ends abnormally. The LICON utility ends abnormally.

User response: Find the reason for the dynamic allocation request failure. For the return code and the reason code, see the *z/OS MVS Programming: Authorized Assembler Services Guide*. Correct the error, and restart the IMS online subsystem or rerun the batch job. For the IMS online subsystem that has a BPE-based DBRC region, do not issue the BPE USEREXIT command until you restart the subsystem.

FABL3001E LOAD FAILED FOR MODULE: *module* CODE=*cccc* RSN=*ssss*

Explanation: Load failed for module *module*. The return code is *cccc*, and the reason code is *ssss*.

System action: The IMS online subsystem that has a BPE-based DBRC region continues processing with Integrity Checker deactivated. The IMS online subsystem that has a non-BPE-based DBRC region or the IMS batch job ends abnormally. The LICON utility ends immediately with a job step return code of 16.

User response: Find the reason for the load failure. For the return code and the reason code, see *z/OS MVS Programming: Assembler Services Reference, Volume 2 (IARR2V-XCTLX)*. Check whether the correct program libraries are concatenated to the STEPLIB DD statement. Correct the error, and restart the IMS online subsystem or rerun the batch job. For the IMS online subsystem that has a BPE-based DBRC region, do not issue the BPE USEREXIT command until you restart the subsystem.

FABL3002E NO LICON DATA SET NAME GIVEN

Explanation: No LICON data set name is given by the IMS Library Integrity Utilities global option modules. You need to specify it at either the subsystem level (LIU@*imsid* or LIUG*imsid*) or the installation level (LIU@INST or LIUGINST) of the IMS Library Integrity Utilities global option modules.

System action: The IMS online subsystem that has a BPE-based DBRC region continues processing with Integrity Checker deactivated. The IMS online subsystem that has a non-BPE-based DBRC region or the IMS batch job ends abnormally. The LICON utility ends immediately with a job step return code of 16.

User response: Check whether the correct global

option modules are used for the run. Check whether the data set name of the LICON data set is correctly supplied when the global option modules are defined. Correct the error, and restart IMS online subsystem or rerun the batch job. For the IMS online subsystem that has a BPE-based DBRC region, do not issue the BPE USEREXIT command until you restart the subsystem.

FABL3003E INCORRECT LICON DATA SET NAME: *dsn*

Explanation: The data set name of the LICON data set is incorrect.

System action: The IMS online subsystem that has a BPE-based DBRC region continues processing with Integrity Checker deactivated. The IMS online subsystem that has a non-BPE-based DBRC region or the IMS batch job ends abnormally. The LICON utility ends immediately with a job step return code of 16.

User response: Check whether the data set name of the LICON data set was correctly supplied when the global option modules are defined. Correct the error, and restart the IMS online subsystem or rerun the batch job. For the IMS online subsystem that has a BPE-based DBRC region, do not issue the BPE USEREXIT command until you restart the subsystem.

FABL3004E NO GLOBAL OPTION MODULES FOUND

Explanation: No global option modules are found in the STEPLIB DD concatenation.

System action: The LICON utility ends immediately with a job step return code of 16.

User response: The library that contains the global option module must be concatenated to the STEPLIB DD. Check whether the program libraries are correctly concatenated to the STEPLIB DD. Correct the error, and rerun the LICON utility job.

FABL3005E GLOBAL OPTION MODULE NOT FOUND: LIU@*imsid*

Explanation: The indicated global option module (or the global option module named LIUG*imsid*) is not found in the STEPLIB DD concatenation.

System action: The LICON utility ends immediately with a job step return code of 16.

User response: The library that contains the global option module must be concatenated to the STEPLIB DD. Determine if the program libraries are correctly concatenated to the STEPLIB DD. Correct the error, and rerun the LICON utility job.

FABL3006E VSAM OPEN FAILED FOR DDNAME: *ddname* **RC=***rr* **RSN=***ssss*

Explanation: The OPEN macro for the VSAM data set *ddname* failed. The return code is *rr*, and the reason code is *ssss*.

System action: The IMS online subsystem or the IMS batch job ends abnormally.

User response: Check whether the correct data set is used for the DD name. For the return code and the reason code of the OPEN macro, see *z/OS DFSMS Macro Instructions for Data Sets*. Correct the error, and restart the IMS online subsystem or rerun the batch job.

FABL3007E DATA SET OPEN FAILED FOR DDNAME: *ddname* **RC=***rr*

Explanation: The OPEN macro for the data set *ddname* failed. The return code was *rr*.

System action: The IMS online subsystem that has a BPE-based DBRC region continues processing with Integrity Checker deactivated. The IMS online subsystem that has a non-BPE-based DBRC region or the IMS batch job ends abnormally.

User response: Check whether the correct data set is used for the DD name. For the return code of the OPEN macro, see the *z/OS DFSMS Macro Instructions for Data Sets*. Correct the error, and restart the IMS online subsystem or rerun the batch job. For the IMS online subsystem that has a BPE-based DBRC region, do not issue the BPE USEREXIT command until you restart the subsystem.

FABL3008E GETMAIN FAILED FOR SIZE=*size* **RC=***rr*

Explanation: The GETMAIN macro for storage (size=*size*) failed. The return code was *rr*.

System action: The IMS online subsystem that has a BPE-based DBRC region continues processing with Integrity Checker deactivated. The IMS online subsystem that has a non-BPE-based DBRC region or the IMS batch job ends abnormally.

User response: Ensure that the REGION parameter for the JOB or EXEC statement is large enough. Increase the region size, and restart the IMS online subsystem or rerun the job. For the IMS online subsystem that has a BPE-based DBRC region, do not issue the BPE USEREXIT command until you restart the subsystem.

FABL3009E MODULE NOT FOUND FOR *module* **IN DDNAME:** *ddname*

Explanation: The *module* module was not found in the *ddname* concatenation.

System action: The IMS batch job ends abnormally.

User response: Determine if the module is provided for the *ddname* concatenation of the batch job. Supply the module to the *ddname* concatenation and rerun the batch job.

FABL3010E THE BPE CONFIGURATION MEMBER IS INCORRECT FOR LIU INTEGRITY CHECKER

Explanation: The BPE configuration parameter member or the user exit list member that is specified on the EXITMBR statement is incorrect for Integrity Checker. The Integrity Checker module is not specified as a DBRC user exit routine.

System action: The IMS online subsystem continues processing with Integrity Checker deactivated.

User response: Verify that the EXITMBR statement for the DBRC user exit list member is in the BPE configuration parameter member, and that the FABLBIN0 module is specified only in the DBRC user exit list member that is specified by the EXITMBR statement. Correct the BPE configuration parameter member or the user exit list member, and restart the IMS online subsystem. For instructions for configuring IMS PROCLIB, see "Configuring for a BPE-based DBRC environment" on page 67. Do not issue the BPE USEREXIT command until you restart the subsystem.

FABL3011E THE DBRC USER EXIT LIST IS INCORRECT FOR LIU INTEGRITY CHECKER

Explanation: The DBRC user exit list member of the IMS PROCLIB data set is incorrect for the Integrity Checker utility. The Integrity Checker utility is not specified as a DBRC request user exit.

System action: The IMS online subsystem continues processing with the Integrity Checker utility deactivated.

User response: Verify that the FABLBIN0 module is specified by using the EXITDEF statement of the DBRC user exit list member in the IMS PROCLIB data set. Also verify that the module is specified as a DBRC request user exit. Correct the DBRC user exit list member and restart the IMS online subsystem. For instructions for configuring IMS PROCLIB, see "Configuring for a BPE-based DBRC environment" on page 67. Do not issue the BPE USEREXIT command until you restart the subsystem.

FABL3012E ESTAEX FAILED RC=*rc* RSN=*rsn* ID: *id*

Explanation: The ESTAEX macro failed. The return code is *rc*, and the reason code is *rsn*. *id* is an identifier that is associated with the internal location where the ESTAEX macro is issued.

System action: The IMS online subsystem continues processing with Integrity Checker deactivated.

User response: For the meaning of the return code and the reason code, see *z/OS MVS Programming: Authorized Assembler Services Reference, Volume 2 (EDTINFO-IXGWRITE)*. Collect the dump and contact IBM Software Support. Do not issue the BPE USEREXIT command.

FABL3013E UNSUPPORTED LEVEL OF IMS IS BEING USED: *nn.n*

Explanation: The Integrity Checker utility was run on an unsupported version of IMS. *nn.n* is the version and release of IMS.

System action: The IMS online subsystem continues processing with the Integrity Checker utility deactivated.

User response: Correct the error conditions and restart the IMS online subsystem. Do not issue the BPE USEREXIT command until you restart the subsystem.

FABL3014E NAME/TOKEN SERVICE *service* FAILED. NAME: *nametoken* RC=*rc*

Explanation: The process failed in the z/OS MVS Name/Token Service. *service* shows the service name. *rc* is the return code of the Name/Token service.

System action: The IMS online subsystem continues processing with the Integrity Checker utility deactivated.

User response: Identify the cause of the error. For the return code, see *z/OS MVS Programming: Assembler Services Reference, Volume 2 (IARR2V-XCTLX)*. Collect the dump, and contact IBM Software Support. Do not issue the BPE USEREXIT command.

FABL3015E ENQ FOR NAME/TOKEN SERVICE AND ALL RETRIES FAILED. RC=*rr*

Explanation: The ENQ macro for the Name/Token service failed and the retry limit has been reached. *rr* is the ENQ macro return code from the last attempt.

System action: The IMS batch job ends abnormally.

User response: See the *z/OS MVS Programming: Assembler Services Reference, Volume 1 (ABEND-HSPSERV)* for the return code and identify the cause of the ENQ failure. Correct the error, and rerun the batch job.

FABL3016E LOAD FAILED FOR MODULE DFSVC000 AND DFSBSCD0. RC=*cccc* RSN=*ssss*

Explanation: The LOAD macro failed to load the DFSVC000 module and the macro returned a return code of 0A06. Then the macro attempted to load the DFSBSCD0 module, but it failed with the return code and the reason code that are indicated in the message.

System action: The IMS batch job ends abnormally.

User response: See the *z/OS MVS Programming: Assembler Services Reference, Volume 2 (IARR2V-XCTLX)* for the return code and identify the cause of the LOAD failure. Also, ensure that the correct program libraries are concatenated to the STEPLIB DD statement. Correct the error, and rerun the batch job.

FABL3106E LOAD FAILED FOR MODULE: *module* **CODE=***cccc* **RSN=***ssss*

Explanation: Load of the indicated module has failed. The return code is *cccc*, and the reason code is *ssss*.

System action: The IMS online subsystem that has a BPE-based DBRC region continues processing with Integrity Checker deactivated. The IMS online subsystem that has a non-BPE-based DBRC region or the IMS batch job ends abnormally.

User response: Find the reason for the load failure. For the return code and the reason code, see *z/OS MVS Programming: Assembler Services Reference, Volume 2 (IARR2V-XCTLX)*. Check whether the correct program libraries are concatenated to the STEPLIB DD statement. Correct the error, and restart the IMS online subsystem or rerun the batch job. For the IMS online subsystem that has a BPE-based DBRC region, do not issue the BPE USEREXIT command until you restart the subsystem.

FABL3301E VSAM *macro* **FAILED FOR DDNAME:** *ddname* **RC=***rr* **RSN=***ssss*

Explanation: The VSAM macro *macro* failed for the data set whose DD name is *ddname*. The return code is *rr*, and the reason code is *ssss*. FABL3301E is issued for the failure of VSAM macros requested for ACBs.

System action: The IMS online subsystem continues processing with the Integrity Checker function deactivated. The IMS batch job or the LICON utility job ends abnormally.

User response: Check whether the correct VSAM data set is used. Ensure that enough space is allocated for the VSAM data set. For the return code and the reason code, see *z/OS DFSMS Macro Instructions for Data Sets*. Correct the error, and rerun the batch job. If necessary, restart the IMS subsystem.

FABL3302E VSAM *macro* **FAILED FOR DDNAME:** *ddname* **RC=***rr* **RSN=***ssss*

Explanation: The VSAM macro *macro* failed for the data set whose DD name is *ddname*. The return code is *rr*, and the reason code is *ssss*. FABL3302E is issued for the failure of VSAM macros requested for RPLs.

System action: The IMS online subsystem continues processing with the Integrity Checker function deactivated. The IMS batch job or the LICON utility job ends abnormally.

User response: Check whether the correct VSAM data set is used. Ensure that enough space is allocated for the VSAM data set. For the return code and the reason code, see *z/OS DFSMS Macro Instructions for Data Sets*. Correct the error, and rerun the batch job. If necessary, restart the IMS subsystem.

FABL3303E VSAM SHOWCB FAILED FOR DDNAME: *ddname* **RC=***rr* **RSN=***ssss*

Explanation: The VSAM SHOWCB macro failed for the data set whose DD name is *ddname*. The return code is *rr*, and the reason code is *ssss*.

System action: The IMS online subsystem continues processing with the Integrity Checker function deactivated. The IMS batch job or the LICON utility job ends abnormally.

User response: Check whether the correct VSAM data set is used. For the return code and the reason code, see *z/OS DFSMS Macro Instructions for Data Sets*. Correct the error, and rerun the batch job. If necessary, restart the IMS subsystem.

FABL3304E ENQ FAILED FOR LICON DATA SET. RC=*rr*

Explanation: The ENQ macro for the LICON data set failed. The return code is *rr*.

System action: The IMS online subsystem continues processing with the Integrity Checker function deactivated. The IMS batch job or the LICON utility job ends abnormally.

User response: Check whether the correct LICON data set is used. For the return code, see *z/OS MVS Programming: Assembler Services Reference, Volume 1 (ABEND-HSPSERV)*. Correct the error, and rerun the batch job. If necessary, restart the IMS subsystem.

FABL3305E LICON DATA SET IS IN AN OLDER FORMAT

Explanation: The LICON data set might not be converted to the latest format.

System action: The IMS online subsystem that has a BPE-based DBRC region continues processing with the Integrity Checker utility deactivated. The IMS online subsystem that has a non-BPE-based DBRC region, the IMS batch job, or the LICON utility ends abnormally.

User response: Check whether the LICON data set has been converted to the latest format. If not, convert the LICON data set, and restart IMS online subsystem or rerun the job. For the IMS online subsystem that has a BPE-based DBRC region, do not issue the BPE USEREXIT command until you restart the subsystem.

FABL3400E OPEN FAILED FOR DDNAME: *ddname*

Explanation: The OPEN macro for DD name *ddname* failed.

System action: The LICON utility job ends abnormally.

User response: Check whether the correct data set is specified to the DD statement. Correct the error, and rerun the LICON utility job.

FABL3401E CLOSE FAILED FOR DDNAME: *ddname*

Explanation: The CLOSE macro for DD name *ddname* failed.

System action: The LICON utility job ends abnormally.

User response: Check whether the correct data set is specified to the DD statement. Correct the error, and rerun the LICON utility job.

FABL3404E MODULE NOT FOUND FOR *module*

Explanation: Module *module* was not found in the STEPLIB concatenation.

System action: The LICON utility job ends abnormally.

User response: Check whether the correct program libraries are concatenated to the STEPLIB DD statement. Correct the error, and rerun the job.

FABL3405E LOAD FAILED FOR MODULE: *module*

Explanation: The LOAD macro for the indicated module has failed.

System action: The LICON utility job ends abnormally.

User response: Check whether the correct load module is contained in the program libraries concatenated to the STEPLIB DD statement. Correct the error, and rerun the job.

FABL3406E GETMAIN FAILED FOR SIZE=*size* **RC=***rr*

Explanation: The GETMAIN macro for storage (size=*size*) failed. The return code is *rr*.

System action: The LICON utility job ends abnormally.

User response: Ensure that the REGION parameter for the JOB or EXEC statement is reasonably large enough. If the region size is small, increase the size, and rerun the job.

FABL3407E READ ERROR FOR PDS DIRECTORY OF [ACBLIB | DBDLIB]

Explanation: The READ macro to read the PDS directory of the ACBLIB DD or the DBDLIB DD failed.

System action: The LICON utility job ends abnormally.

User response: Check whether the correct data set is specified to the ACBLIB DD or the DBDLIB DD. Correct the error, and rerun the LICON utility job.

FABL3408E FIND FAILED FOR ACBLIB. RC=*rr*

Explanation: The FIND macro issued for the ACBLIB DD failed. The return code is *rr*.

System action: The LICON utility job ends abnormally.

User response: The PDS directory of the ACBLIB might be corrupted. Check whether the correct data set is specified to the ACBLIB DD. Correct the error, and rerun the LICON utility job.

FABL3409E VSAM SHOWCB FAILED FOR DDNAME: *ddname* **RC=***rr* **RSN=***ssss*

Explanation: The VSAM SHOWCB macro failed for the data set whose DD name is *ddname*. The return code is *rr*, and the reason code is *ssss*.

System action: The IMS batch job or the LICON utility job ends abnormally.

User response: Check whether the correct VSAM data set is used. For the return code and the reason code, see *z/OS DFSMS Macro Instructions for Data Sets*. Correct the error, and rerun the batch job. If necessary, restart the IMS subsystem.

FABL3410E VSAM MODCB FAILED FOR DDNAME: *ddname* **RC=***rr* **RSN=***ssss*

Explanation: The VSAM MODCB macro failed for the data set whose DD name is *ddname*. The return code is *rr*, and the reason code is *ssss*.

System action: The LICON utility job ends abnormally.

User response: Check whether the correct VSAM data set is used. For the return code and the reason code, see *z/OS DFSMS Macro Instructions for Data Sets*. Correct the error, and rerun the LICON utility job.

FABL3411E GET FAILED FOR DDNAME: *ddname*

Explanation: The GET macro failed for the data set whose DD name is *ddname*.

System action: The LICON utility job ends abnormally.

User response: Check whether the correct data set is specified. Correct the error, and rerun the LICON utility job.

FABL3412E PUT FAILED FOR DDNAME: *ddname*

Explanation: The PUT macro failed for the data set whose DD name is *ddname*.

System action: The LICON utility job ends abnormally.

User response: Check whether the correct data set is specified. Ensure that enough space is allocated to the data set. Correct the error, and rerun the LICON utility job.

FABL3413E BLDL FOR ACB MEMBER *member* **FAILED**

Explanation: The BLDL macro for the indicated ACB member has failed.

System action: The LICON utility job ends abnormally.

User response: Check whether the correct data set is specified. The PDS directory of the ACBLIB might be corrupted. Correct the error, and rerun the LICON utility job.

FABL3414E DYNALLOC FAILED FOR DDNAME: *ddname* **RC=***rr* **RSN=***ssss*

Explanation: A dynamic allocation request for the indicated DD name has failed. The return code is *rr*, and the reason code is *ssss*.

System action: The LICON utility ends abnormally.

User response: Find the reason for the dynamic allocation request failure. For the return code and the reason code, see the *z/OS MVS Programming: Authorized Assembler Services Guide*. Correct the error, and rerun the job.

FABL3415E LOAD FAILED FOR DBD MEMBER: *member*

Explanation: The LOAD macro for the DBD member *member* failed.

System action: The LICON utility job ends abnormally.

User response: Check whether the correct DBD member is contained in the DBDLIB DD statement. Correct the error, and rerun the job.

FABL3800E THE INPUT LICON DATA SET IS INCORRECT

Explanation: The input LICON data set is of an incorrect version.

System action: The LICON data set migration utility ends abnormally.

User response: Check whether the input LICON data set is of a correct version. Correct the error, and rerun the job.

FABL3900E RECON ACCESS FAILED. *text*

Explanation: An error was detected in the RECON access processing.

text provides additional information about the error:

- FUNC=*function* RETURN CODE=*return_code* REASON CODE=*reason_code* KEYS: DBD=*dbdname* DDN=*ddname* KEYTYPE=*keytype accesstype*
- DBRC LIST COMMAND IS NOT COMPLETED. RC=*return_code*
- SYSPRINT DD FOR DBRC LIST COMMAND IS SPECIFIED AS DUMMY
- INTERNAL ERROR OCCURRED

System action: The IMS batch job ends abnormally.

User response: Correct the error, and rerun the batch job.

FABL3901E NAME/TOKEN SERVICE *service* **FAILED:** *nametoken* **RC=***rc*

Explanation: The process failed in the z/OS MVS Name/Token service. *service* shows the service name. *rc* shows the return code of the Name/Token service.

System action: The batch job ends abnormally.

User response: See the *z/OS MVS Programming: Assembler Services Reference, Volume 2 (IARR2V-XCTLX)* for the return code and identify the cause of the failure. If necessary, correct the error and rerun the job.

FABL3902E GETMAIN FAILED FOR SIZE=*size* **RC=***rc*

Explanation: The GETMAIN macro for storage (size=*size*) failed. The return code is *rc*.

System action: The batch job ends abnormally.

User response: See the *z/OS MVS Programming: Assembler Services Reference, Volume 1 (ABEND-HSPSERV)* and identify the cause of the GETMAIN error.

If the region size specified by the REGION parameter on the JOB or EXEC statement is not large enough, increase the size, and rerun the job.

FABM messages

Messages that are issued by the DBD/PSB/ACB Mapper utility begin with the prefix FABM.

FABM0001I CONTROL CARD SUPPLIED IS: *echo of control statement*

Explanation: This message is the echo of the SYSIN control statements that this utility checks.

System action: The DBD/PSB/ACB Mapper utility continues processing.

User response: None. This message is informational.

FABM0002I *dbdname* **SELECTED**

Explanation: The DBD *dbdname* has been found in the DBD library, and a map has been created.

System action: The DBD/PSB/ACB Mapper utility continues processing.

User response: None. This message is informational.

FABM0003I *dbdname* **SELECTED, EXTENDED REPORT**

Explanation: The DBD *dbdname* has been found in the DBD library, and both a map and detailed descriptive report have been created.

System action: The DBD/PSB/ACB Mapper utility continues processing.

User response: None. This message is informational.

FABM0004W NO MEMBER FOUND FOR *dbdname* **IN DBDLIB**

Explanation: The members, specified either specifically or by a wildcard, were not found in the DBD library. The indicated *dbdname* is the specified DBD member name or the applicable DBD member name specified by a wildcard.

System action: The DBD/PSB/ACB Mapper utility continues processing without printing the report for the member.

User response: Determine whether the specified *dbdname* is correct. If it is, search the library that has a member to be processed. Correct the problem, and rerun the job.

FABM0005I *dbdname* **DATA BASE HAS NO SEGMENTS**

Explanation: The current DBD has no defined segments. No map is produced, and the report, if any, contains only database and data set group information.

System action: The DBD/PSB/ACB Mapper utility continues processing.

User response: None. This message is informational.

FABM0006E *dbdname segname* **SEGMENT NOT IN DATA BASE**

Explanation: The indicated segment is described as a source found segment in the current DBD. However, it could not be found within its own DBD (*dbdname*).

System action: The DBD/PSB/ACB Mapper utility continues processing.

User response: Determine whether *segname* or *dbdname* is correct, and correct the problem. If the segment is described incorrectly in the current DBD, change the SEGM statement. Rerun the job.

FABM0008I *psbname* **SELECTED**

Explanation: The PSB *psbname* has been found in the PSBLIB library. A PSB summary report and PSB maps (of DBDs specified in PCB statements) have been created.

System action: The DBD/PSB/ACB Mapper utility continues processing.

User response: None. This message is informational.

FABM0009I *psbname* **SELECTED, EXTENDED REPORT**

Explanation: The PSB *psbname* has been found in the PSB library. A PSB summary report, PSB maps, and PSB reports have been created.

System action: The DBD/PSB/ACB Mapper utility continues processing.

User response: None. This message is informational.

FABM0010W NO MEMBER FOUND FOR *psbname* **IN PSBLIB**

Explanation: The members, specified either specifically or by a wildcard, were not found in the PSB library. The indicated *psbname* is the specified PSB member name or the applicable PSB member name specified by a wildcard.

System action: The DBD/PSB/ACB Mapper utility continues processing without printing the report for the member.

User response: Determine whether the specified *psbname* is correct. If it is, search the library that has a member to be processed. Correct the problem, and rerun the job.

FABM0011E *dbdname* **PCB ADDRESS PROBLEM**

Explanation: The PSB has a PCB for the database *dbdname* that has an invalid address.

System action: Processing stops on this PSB and continues with the next PSB.

User response: The PSB is probably in error. Correct, reassemble, and link-edit the PSB; rerun the job.

FABM0012I NO DB PCB FOUND IN PSB *psbname*

Explanation: There was no database-type PCB in the current PSB *psbname*.

System action: The DBD/PSB/ACB Mapper utility continues processing.

User response: None. This message is informational.

FABM0013E *dbdname* **DATA BASE HAS NO SEGMENTS**

Explanation: The indicated DBD that the current PCB points to has no segments.

System action: Processing continues with the next PCB in the current PSB.

User response: Determine whether the error is in the DBD or in the current PSB. Correct the problem, and rerun the job.

FABM0014E *dbdname segname* **SEGMENT NOT IN DBD**

Explanation: The indicated segment is described as a source segment in the database DBD that the current PCB points to. However, it could not be found in the DBD (*dbdname*).

System action: The DBD/PSB/ACB Mapper utility continues processing.

User response: Determine whether the error is in the database *dbdname* or in the current PCB. Correct the problem, and rerun the job.

FABM0015I *dbdname* **COMPACTION ERROR**

Explanation: An error occurred in eliminating nonsensitive segments from the DBD *dbdname*. Processing was ended for the current PCB and continues to the next.

System action: The DBD/PSB/ACB Mapper utility continues processing.

User response: The DBD *dbdname* probably has an error. Correct, reassemble, and link-edit the DBD; rerun the job.

FABM0016W INVALID STATEMENT IN SYSIN DATASET

Explanation: A control statement with an invalid format was found in the SYSIN data set.

System action: The DBD/PSB/ACB Mapper utility skips this control statement and continues processing.

User response: Correct the format of this control statement, and rerun the job.

FABM0017E LIBRARY MISSING

Explanation: The specifications of the libraries that are required to execute the function are missing or invalid.

System action: The DBD/PSB/ACB Mapper utility skips the reporting process for this function.

User response: Determine whether the required libraries are specified in the DD statements. Correct the DD statements for load module libraries, and rerun the job.

FABM0018I *acbname* **SELECTED, EXTENDED REPORT**

Explanation: The PSB-type or DBD-type ACB *acbname* has been found in the ACB library. If it is a PSB-type, an ACB (PSB) summary report, ACB (PSB) maps, and ACB (PSB) reports have been created; otherwise an ACB (DBD) map and ACB (DBD) report have been created.

System action: The DBD/PSB/ACB Mapper utility continues processing.

User response: None. This message is informational.

FABM0019W NO MEMBER FOUND FOR *acbname* **IN ACBLIB**

Explanation: The members, specified either specifically or by a wildcard, were not found in the ACB library. The indicated *acbname* is the specified ACB member name or an applicable ACB member name specified by a wildcard.

System action: The DBD/PSB/ACB Mapper utility continues processing without printing the report of the member.

User response: Determine whether the specified *acbname* is correct. If it is, search the library that has a member to be processed. Correct the problem, and rerun the job.

FABM0020W *member* **WAS NOT PSB TYPE ACB MEMBER**

Explanation: The member specified is not a PSB-type ACB member. *member* is the member name that was specified in the SYSIN card or specified by a wildcard.

System action: The DBD/PSB/ACB Mapper utility skips this control statement and continues processing.

User response: None.

FABM0021E GETMAIN FAILED

Explanation: The program could not obtain sufficient area with the GETMAIN macro.

System action: The DBD/PSB/ACB Mapper utility ends abnormally.

User response: If the region is too small, increase it in the JOB statement in the JCL, and rerun the utility.

FABM0022E LINK FAILED FOR [DBD | PSB | ACB] MAP, RC=*nnn*

Explanation: An error occurred while a LINK macro was being issued during the DBD, PSB, or ACB map process. *nnn* is the system abend code.

System action: The DBD/PSB/ACB Mapper utility ends abnormally.

User response: Check the OS return code and determine the cause of the LINK macro failure, correct it, and rerun the utility.

FABM0023E ERROR READING ACB=*member*

Explanation: An error occurred while an ACB member was being read.

System action: The DBD/PSB/ACB Mapper utility continues processing without reporting this ACB.

User response: Determine the cause of the read error, correct it, and rerun the utility.

FABM0024E BLDL FAILED FOR ACB DIRECTORY

Explanation: An error occurred while a BLDL macro was being issued.

System action: The DBD/PSB/ACB Mapper utility skips the reporting process for the ACB Map function.

User response: Determine the cause of the BLDL macro failure, correct it, and rerun the utility.

FABM0025E UNSUPPORTED VERSION, ACB=*x.x*

Explanation: The ACB member generated by IMS version *x.x* is not supported.

System action: The DBD/PSB/ACB Mapper utility continues processing without reporting for this ACB member.

User response: Check the ACB members and the ACB library version.

FABM0026E SYSOUT DID NOT OPEN

Explanation: The SYSOUT data set could not be opened during initialization.

System action: The DBD/PSB/ACB Mapper utility ends abnormally.

User response: Determine the cause of the open failure.

FABM0027E SYSIN DID NOT OPEN

Explanation: The SYSIN data set could not be opened during initialization.

System action: The DBD/PSB/ACB Mapper utility ends abnormally.

User response: Determine the cause of the open failure.

FABM0028E SYSPRINT DID NOT OPEN

Explanation: The SYSPRINT data set could not be opened during initialization.

System action: The DBD/PSB/ACB Mapper utility ends abnormally.

User response: Determine the cause of the open failure.

FABM0029W MAXIMUM SYSIN CARDS EXCEEDED

Explanation: The number of control statements has reached the maximum value of 9999.

System action: Processes the first 9999 statements and ignores the rest.

User response: Rerun the ignored card.

FABM0030E ERROR LOADING [DBD | PSB] NAMED *member* **(ABEND CODE=***nnnn* **REASON CODE=***mmmm***)**

Explanation: An error occurred while the DBD or the PSB *member* was being loaded. *nnnn* is the system abend code, and *mmmm* is its reason code.

System action: Skips this member and tries to load the next member if there is one.

User response: Determine the cause of load error. Correct the problem, and rerun the utility.

FABM0031W [DBD | PSB] *member* **IS NOT A VALID [DBD | PSB]. ERROR IS DETECTED IN** *xxxxxxxx*

Explanation: DBD/PSB *xxxxxxxx* was loaded, but was found not to be valid. If the invalid block can be identified, the block name follows.

System action: Skips this member and tries to load

the next member if there is one.

User response: Determine whether the member is a DBD or a PSB. If the member is a DBD or a PSB, regenerate the DBD or the PSB. If the member is not a DBD or a PSB, ignore this message.

FABM0032E CONFLICT OF IMS VERSION DETECTED IN ACBLIB. ACB *pppppppp* **IS IMS** *x.x*, **ACB** *dddddddd* **IS IMS** *x.x*

Explanation: PSB-type ACB *pppppppp* is generated by IMS version *x.x*, but the DBD-type ACB *dddddddd* referred to by *pppppppp* is generated by IMS version *y.y*. Both ACBs must be generated by the same version and release of IMS.

System action: The DBD/PSB/ACB Mapper utility continues processing without reporting for this ACB member.

User response: Check the ACB members and the ACB library version.

FABM0033W *fieldname* **IS NOT SPECIFIED AS SYSTEM RELATED FIELD IN [DBD** *dbdname* **| ACB** *acbname*]

Explanation: /CK and /SX are system-related field names. But the XDFLD statement that refers to *fieldname* was not found in DBD *dbdname* or in ACB *acbname*.

System action: The DBD/PSB/ACB Mapper utility continues processing.

User response: None.

FABM0034I MEMBER *member* **PROCESSED**

Explanation: This message is the echo of the member to be processed. *member* is the name of the member to be processed.

System action: The DBD/PSB/ACB Mapper utility continues processing.

User response: None. This message is informational.

FABM0035E READ ERROR ON *xxx* **DIRECTORY**

Explanation: A read error occurred while the directory was being read. *xxx* is one of DBD, PSB, or ACB.

System action: The DBD/PSB/ACB Mapper utility skips this function, issues return code 8, and continues processing.

User response: None.

FABM0036W NO DATA IN SYSIN

Explanation: There is no valid record in the SYSIN data set.

System action: The DBD/PSB/ACB Mapper utility ends without producing a map or a report.

User response: Specify a valid control record in the SYSIN data set, and rerun the utility.

FABM0037W NO MEMBER NAME IS SPECIFIED

Explanation: No member name is specified in the control statement.

System action: The DBD/PSB/ACB Mapper utility skips this control statement and continues processing.

User response: Specify a valid member name, and rerun the utility.

FABM0038W INVALID MEMBER NAME IS SPECIFIED

Explanation: The member name specified in the control statement is incorrect. For example, the name is longer than eight characters.

System action: The DBD/PSB/ACB Mapper utility skips this control record and continues processing.

User response: Specify a valid member name, and rerun the utility.

FABM0039I *acbname* **SELECTED**

Explanation: The PSB-type or DBD-type ACB *acbname* has been found in the ACB library. If it is of PSB-type, an ACB (PSB) summary report and ACB (PSB) maps have been created; otherwise an ACB (DBD) map has been created.

System action: The DBD/PSB/ACB Mapper utility continues processing.

User response: None. This message is informational.

FABM0040W *acbname* **WAS NOT DBD TYPE ACB MEMBER**

Explanation: The members, specified either specifically or by a wildcard, were not DBD-type ACB members. The indicated *acbname* is the specified member name or applicable member name specified by a wildcard.

System action: The DBD/PSB/ACB Mapper utility skips this control statement and continues processing.

User response: None.

FABM0041W SEGMENT $FABM*nnn* ON DBD *dbdname* IS NAMED BY DBD/PSB/ACB MAPPER AUTOMATICALLY

Explanation: DBD segment name was assigned by the DBD/PSB/ACB Mapper utility automatically because the name could not be obtained from any ACB members. $FABM*nnn* is the name assigned; *nnn* shows the segment code; and *dbdname* is the DBD name that was decoded.

System action: The DBD/PSB/ACB Mapper utility continues processing.

User response: None.

FABM0042E SEGMENT *1st-segname* ON DBD *dbdname* IS DEFINED AS SEGMENT *2nd-segname* ON PSB *psbname*

Explanation: A mismatch of segment names between DBD *dbdname* and PSB *psbname* was found while processing the DBD-type ACB member. *1st-segname* is the correct segment name on the DBD *dbdname*, however, the PSB-type ACB *psbname*, which was decoded before the DBD, referred to the segment by *2nd-segname*.

System action: The DBD/PSB/ACB Mapper utility continues processing.

User response: None.

FABM0043W REAL LOGICAL CHILD SEGMENT $SEGM*nnn* AND DBD NAME $DBD*nnn* ON DBD *dbdname* ARE NAMED BY DBD/PSB/ACB MAPPER AUTOMATICALLY

Explanation: Real logical child segment name $SEGM*nnn* and DBD name $DBD*nnn* in which the segment resides were assigned by the DBD/PSB/ACB Mapper utility automatically, because the names could not be obtained from the specified ACB member. *nnn* is a sequential number in a DBD, and *dbdname* is the name of the DBD that was processed.

System action: The DBD/PSB/ACB Mapper utility continues processing.

User response: None.

FABM0044W UNSUPPORTED DBD *member* IN DBDLIB

Explanation: The specified DBD *member* in the DBD library is not supported for the DBD/PSB/ACB Mapper utility.

System action: The DBD/PSB/ACB Mapper utility skips this member and continues processing.

User response: Check the DBD member.

FABN messages

Messages that are issued by the DBD/PSB/ACB Reversal utility and the Reversal Site Default Generation utility begin with the prefix FABN.

FABN0001E SYSIN DID NOT OPEN

Explanation: The SYSIN data set could not be opened during initialization.

System action: The DBD/PSB/ACB Reversal utility ends abnormally.

User response: Determine the cause of the open failure. Correct the problem, and rerun the program.

FABN0003E SYSOUT DID NOT OPEN

Explanation: The SYSOUT data set could not be opened during initialization.

System action: The DBD/PSB/ACB Reversal utility ends abnormally.

User response: Determine the cause of the open failure. Correct the problem, and rerun the program.

FABN0004E FABNRVRS MAXIMUM SAVEAREA COUNT EXCEEDED

Explanation: The save area count exceeds the maximum count for this utility.

System action: The DBD/PSB/ACB Reversal utility ends abnormally.

User response: Determine the cause of the error. Correct the problem, and rerun the program.

FABN0005E FABNRVRS NO MORE VIRTUAL STORAGE AVAILABLE

Explanation: The program could not obtain sufficient area with the GETMAIN macro.

System action: The DBD/PSB/ACB Reversal utility ends abnormally.

User response: Increase the region size in the JOB statement in the JCL, and rerun the utility.

FABN0006I BLANK RECORD IN SYSIN

Explanation: There is a blank record in the SYSIN data set.

System action: The DBD/PSB/ACB Reversal utility continues processing.

User response: None. This message is informational.

FABN0007E UNKNOWN KEYWORD IN SYSIN

Explanation: An unknown keyword is found in the SYSIN data set.

System action: The DBD/PSB/ACB Reversal utility ends with a return code of 16.

User response: Correct the keyword, and rerun the utility.

FABN0008W UNKNOWN OPERAND IN SYSIN

Explanation: There is an unknown operand in the SYSIN data set.

System action: The DBD/PSB/ACB Reversal utility skips this record and continues processing.

User response: Correct the operand, and rerun the utility.

FABN0009W UNKNOWN OPTION IN SYSIN

Explanation: There is an unknown option in the SYSIN data set.

System action: The DBD/PSB/ACB Reversal utility skips this record and continues processing.

User response: Correct the option, and rerun the utility.

FABN0010W INVALID RECORD IN SYSIN

Explanation: There is a record with an invalid format in the SYSIN data set.

System action: The DBD/PSB/ACB Reversal utility skips this record and continues processing.

User response: Correct the SYSIN record, and rerun the utility.

FABN0011W NO DATA IN SYSIN

Explanation: There is no valid record in the SYSIN data set.

System action: The DBD/PSB/ACB Reversal utility ends without producing reports or source codes.

User response: Specify valid control records in the SYSIN data set, and rerun the utility.

FABN0012E DBD NAMED [*dbdname* | *acbname*] HAS UNKNOWN ACCESS CODE - HEX *nn*

Explanation: The loaded DBD (or DBD-type ACB) *dbdname* has an unknown access method code. *nn* is the unknown code, in hexadecimal.

System action: Ends the reversal process for this DBD and issues an error message with dump of this module to the SYSOUT data set. Then continues processing with the next module.

User response: Correct the DBD having the unknown access code, and rerun the utility.

FABN0013E [DBD | PSB] NAMED *member* IS MARKED NOT EXECUTABLE; CANNOT BE LOADED

Explanation: The member *member* in the DBD/PSB load library was marked 'not executable' before it was loaded.

System action: Skips loading this member and tries to load the next member if it exists.

User response: Correct the error of this module, and generate this member (DBDGEN/PSBGEN) again. Then rerun the utility.

FABN0014E ERROR LOADING [DBD | PSB] NAMED *member* (ABEND CODE=*nnnn* REASON CODE=*mmmm*)

Explanation: An error occurred during *DBD/PSB member* load. *nnnn* is the system abend code, and *mmmm* is its reason code.

System action: Skips this member and tries to load the next member if it exists.

User response: Determine the cause of the load error. Correct the problem, and rerun the utility.

FABN0015W NO MEMBER FOUND FOR *member* IN [DBDLIB | PSBLIB | ACBLIB]

Explanation: The member specified by the EXCLUDE= or INCLUDE= option or by a wildcard was not found in the DBD/PSB/ACB library. The *member* is the member name or member names specified by a wildcard.

System action: If a member is specified in the INCLUDE= option, the DBD/PSB/ACB Reversal utility skips processing this member. If a member is specified in the EXCLUDE= option, the DBD/PSB/ACB Reversal utility attempts to process all members in the library.

User response: Determine if *member* is correct. If it is, search the library that contains it. After determining the cause of the failure, rerun the utility.

FABN0016E UNABLE TO LOCATE [DBD | PSB] NAMED *member*

Explanation: The member specified by the INCLUDE= option was not found in the DBD/PSB load library.

System action: Skips this member and then tries to load the next member if it exists.

User response: Correct the member name, and rerun the utility, if necessary.

FABN0017E UNKNOWN TYPE OPTION X'*nn*' FOR FIELD *fieldname* IN SEGMENT *segname* IN DBD [*dbdname* | *acbname*]

Explanation: The DBD has an unknown type option in the FIELD statement. X'*nn*' is the unknown type option in hexadecimal, *fieldname* is the FIELD name, *segname* is the SEGMENT name, and *dbdname* is the DBD name.

System action: Stops processing this module and writes an error message with dump for this module in the SYSOUT data set. Then continues processing the next module.

User response: Correct the type option, and rerun the utility, if necessary.

FABN0018E INVALID TYPE OPTION - SEQ - IN SEGMENT *segname* IN DBD [*dbdname* | *acbname*]

Explanation: The segment type option TYPE=SEQ is invalid in a DEDB database. It must be the first dependent segment type, and only one such segment type is allowed for the DEDB database. *segment* is the name of the segment that has an incorrect SEQ-type option, and *dbdname* is the DEDB database name.

System action: Stops processing this DBD, and outputs an error message with dump of this DBD to the SYSOUT data set. Then continues processing the next DBD.

User response: Correct the segment type option and, if necessary, rerun the utility.

FABN0019E MEMBER NAME (*xxxxxxxx*) AND [DBD | PSB] NAME (*yyyyyyyy*) MISMATCH

Explanation: The member name of the DBD does not match the DBD/PSB name in which it is defined. *xxxxxxxx* is the DBD/PSB with a mismatched member name, and *yyyyyyyy* is the DBD/PSB name.

System action: Stops processing this DBD, outputs an error message with partial dump of this DBD to the SYSOUT data set, and continues processing the next module.

User response: Correct the member name or DBD/PSB name so that they match, and rerun the utility.

FABN0020W NO MEMBER NAME IS SPECIFIED

Explanation: No member name is specified for the INCLUDE or the EXCLUDE option.

System action: The DBD/PSB/ACB Reversal utility skips this control statement and continues processing.

User response: Specify a valid member name, and rerun the utility.

FABN0021W INVALID MEMBER NAME IS SPECIFIED

Explanation: The member name specified for the INCLUDE or the EXCLUDE option is incorrect. For example, the name contains more than eight characters, or is delimited by more than one comma.

System action: The DBD/PSB/ACB Reversal utility skips this control record and continues processing.

User response: Specify a valid member name, and rerun the utility.

FABN0022E NO DATASET GROUP FOUND FOR SEGMENT *segname* IN DBD [*dbdname* | *acbname*] DSID *id*

Explanation: The data set name that is specified in the SEGMENT statement is not found in the DATASET statement in this DBD. *segname* is the name of the SEGMENT that has an incorrect data set group ID, *dbdname* is the DBD name, and *id* is the invalid data set ID.

System action: Stops processing this DBD and outputs an error message with partition dump of this DBD to the SYSOUT data set. Then continues processing the next DBD.

User response: Correct the data set group ID, and rerun the utility if necessary.

FABN0023E DD STATEMENT *xxxxxxxx* DID NOT OPEN

Explanation: The DD statement could not be opened. *xxxxxxxx* is the DD statement name.

System action: The DBD/PSB/ACB Reversal utility skips the process related to this DD statement.

User response: Determine the cause of the open error. Correct the error, and rerun the utility.

FABN0024I CONTROL CARD SUPPLIED IS: *echo of control statement*

Explanation: This message is the echo of control statements in the SYSIN data set.

System action: The DBD/PSB/ACB Reversal utility continues processing.

User response: None. This message is informational.

FABN0025E READ ERROR ON [DBD | PSB | ACB | DBDSRC | PSBSRC] DIRECTORY

Explanation: An error occurred while the directory was being read.

System action: The DBD/PSB/ACB Reversal utility skips this function.

User response: Determine the cause of READ error. Correct the problem, and rerun the utility.

FABN0026I MAPOUT FUNCTION [SELECTED | NOT SELECTED]

Explanation: This message tells whether the Mapper input generation function has been selected. When the MAPOUT data set is successfully opened, this utility issues a Mapper input generation function as a subfunction of the DBD/PSB/ACB Reversal function or the DBD/PSB SEGMENT reference report function. If the MAPOUT data set is not specified in the JCL or cannot be opened, this utility assumes that the mapper input generation function has not been selected.

System action: The DBD/PSB/ACB Reversal utility continues processing.

User response: None. This message is informational.

FABN0027I NO DBD TO [DBD | DBD TYPE ACB] TO [DBD | DBD TYPE ACB] REFERENCE FOUND

Explanation: DBD is specified on the XREF control statement, but no DBD references to other DBDs are found. Neither the Reference report nor the Referenced report of the DBD to DBD Xref report (or the ACB(DBD) to ACB(DBD) Xref report) is printed.

System action: The DBD/PSB/ACB Reversal utility continues processing.

User response: None. This message is informational.

FABN0028I NO PSB TO [DBD | PSB TYPE ACB] TO [DBD | DBD TYPE ACB] REFERENCE FOUND

Explanation: PSB is specified on the XREF control statement, but no DBD references to DB/GSAM PCBs are found. Neither the Reference report nor the Referenced report of the DBD to DBD Xref report (or the ACB(DBD) to ACB(DBD) Xref report) is printed.

System action: The DBD/PSB/ACB Reversal utility continues processing.

User response: None. This message is informational.

FABN0029I NO REFERENCED [DBD | DBD TYPE ACB] FOUND

Explanation: No DBD is referred to in other DBDs in the DBDLIB (or ACBLIB). The Referenced report of the DBD to DBD Xref report (or the ACB(DBD) to ACB(DBD) Xref report) is not printed.

System action: The DBD/PSB/ACB Reversal utility continues processing.

User response: None. This message is informational.

FABN0030W MACRO OPERAND EXCEEDS ASSEMBLER LIMITATION - *member*, LINE=*nnn*

Explanation: The MACRO operand length decoded by the DBD/PSB/ACB Reversal utility exceeds the Assembler limitation. If the user runs the IMS DBDGEN or the PSBGEN utility with the decoded MACRO source statements as input, an Assembler error will occur. *member* is the DBD or the PSB name, and *nnn* is the line number on which the output operand length exceeds the limitation.

System action: The DBD/PSB/ACB Reversal utility continues processing.

User response: The DBD/PSB/ACB Reversal utility decodes the MACRO source and generates source statements with full operands explicitly coded. Delete the default operand values from the source statements to reduce the operand length, if necessary, and run the IMS DBDGEN/PSBGEN utility, using the modified source statements.

FABN0031W [DBD | PSB] *member* IS NOT A VALID [DBD | PSB]. ERROR IS DETECTED IN *xxxxxxxx*

Explanation: DBD/PSB *xxxxxxxx* was loaded, but was found not to be valid. If the invalid block can be identified, the block name follows.

System action: Skips this member and tries to load the next member if it exists.

User response: Determine if the member is a DBD or a PSB. If the member is a DBD or a PSB, regenerate the member. If it is not, ignore this message.

FABN0032I MEMBER *member* PROCESSED

Explanation: The member *member* has been processed.

System action: The DBD/PSB/ACB Reversal utility continues processing.

User response: None. This message is informational.

FABN0033W NO MEMBER TO BE PROCESSED FOR CONTROL CARD

Explanation: No member specified in the EXCLUDE= option has been processed.

System action: None.

User response: Determine whether the control statement is correct. If the control statement is correct, search the library that has a member to be processed. Determine the cause, and rerun.

FABN0034E GETMAIN FAILED

Explanation: The program could not obtain enough area with GETMAIN macro.

System action: The DBD/PSB/ACB Reversal utility ends abnormally.

User response: If the specified region size is too small, increase the REGION size in the JOB statement in the JCL, and rerun the utility.

FABN0035E ERROR READING ACB NAMED *acbname* (ABEND CODE=*nnnn* REASON CODE=*mmmm*)

Explanation: An error occurred while an ACB member was being read. *nnnn* is the system abend code, and *mmmm* is its reason code.

System action: The DBD/PSB/ACB Reversal utility skips this control statement and continues processing.

User response: Check the system abend code and its reason code. Determine the cause of the read error, correct it, and rerun the utility.

FABN0036E BLDL FAILED FOR [ACB | PSB] DIRECTORY

Explanation: An error occurred while a BLDL macro was being issued for the ACB or the PSB directory.

System action: The DBD/PSB/ACB Reversal utility skips this control statement and continues processing.

User response: Determine the cause of the BLDL macro failure, correct it, and rerun the utility.

FABN0037W *member* WAS NOT PSB TYPE ACB MEMBER

Explanation: The member specified is not a PSB-type ACB member. *member* is the member name that was specified in the SYSIN card or specified by a wildcard.

System action: The DBD/PSB/ACB Reversal utility skips this control statement and continues processing.

User response: None.

FABN0038E ACB(DBD) *member* REFERRED BY *acbname* NOT FOUND IN ACBLIB

Explanation: The DBD-type ACB member referred to by the PSB-type ACB member specified in the SYSIN card was not found in the ACB load library. *member* is the DBD-type ACB member name, and *acbname* is the PSB-type ACB member name specified in the SYSIN card.

System action: The DBD/PSB/ACB Reversal utility skips this control statement and continues processing.

User response: None.

FABN0039W SEGMENT NAME $FABN*nnn* ON DBD *dbdname* IS NAMED BY DBD/PSB/ACB REVERSAL AUTOMATICALLY

Explanation: DBD segment name was assigned by the DBD/PSB/ACB Reversal utility automatically, because the name could not be obtained from any ACB members. $FABN*nnn* is the name assigned, *nnn* shows the segment code, and *dbdname* is the name of the DBD that was decoded.

System action: The DBD/PSB/ACB Reversal utility continues processing.

User response: None.

FABN0040E SEGMENT *1st-segname* ON DBD *dbdname* IS DEFINED AS SEGMENT *2nd-segname* ON PSB *psbname*

Explanation: A mismatch of segment names between DBD *dbdname* and PSB *psbname* was found while processing the DBD-type ACB member. *1st-segname* is the correct segment name on the DBD *dbdname*, however, the PSB-type ACB *psbname*, which was decoded before the DBD, referred to the segment by *2nd-segname*.

System action: The DBD/PSB/ACB Reversal utility continues processing.

User response: None.

FABN0041E UNSUPPORTED VERSION, ACB=*x.x*

Explanation: This message is issued if the IMS version of PSB-type ACB member in the ACB library is not supported. ACB=*xx* is the IMS version of PSB-type ACB member in the ACB library.

System action: The DBD/PSB/ACB Reversal utility skips this control statement and continues processing.

User response: Check the ACB member and the ACB library version.

FABN0042E CONFLICT OF IMS VERSION DETECTED IN ACBLIB. ACB *member1* IS IMS *x.x*, ACB *member2* IS IMS *y.y*

Explanation: PSB-type ACB or DBD-type ACB (*member1*) is generated by IMS version *x.x*, but the DBD-type ACB (*member2*) referred to by the PSB-type ACB or DBD-type ACB (*member1*) is generated by IMS version *y.y*. Both ACBs must be generated by the same version and release of IMS.

System action: The DBD/PSB/ACB Reversal utility skips this control statement and continues processing.

User response: Check the ACB members and the ACB library version.

FABN0043I DECODED MEMBER *member* WRITTEN TO [DBDSRC | PSBSRC]

Explanation: An IMS DBDGEN/PSBGEN utility control statement of a decoded member was written to PDS or PDSE data set.

System action: The DBD/PSB/ACB Reversal utility continues processing.

User response: None. This message is informational.

FABN0044I *member* IN [DBDSRC | PSBSRC] REPLACED

Explanation: An IMS DBDGEN/PSBGEN utility control statement was written to the PDS or PDSE data set by replacing it with a new member, *member*, because the same member name already exists.

System action: The DBD/PSB/ACB Reversal utility continues processing.

User response: None. This message is informational.

FABN0045E WRITE ERROR ON [DBDSRC | PSBSRC], DECODED MEMBER = *member*

Explanation: An error occurred while a decoded IMS DBDGEN/PSBGEN utility control statement was being written. *member* is the name of the member that was being written.

System action: The DBD/PSB/ACB Reversal utility continues processing.

User response: Correct the problem, and rerun the job.

FABN0046E STOW ERROR ON [DBDSRC | PSBSRC] DIRECTORY, DECODED MEMBER = *member* (RETURN CODE = *nnnn* REASON CODE = *mmmm*)

Explanation: An error occurred while a PDS or PDSE directory entry of member *member* was being added, updated, or deleted in the DBDSRC or the PSBSRC data set. *nnnn* is the system abend code, and *mmmm* is the reason code.

System action: The DBD/PSB/ACB Reversal utility ends abnormally.

User response: Determine the cause of the error. For the return codes and the reason codes, see the topic "STOW completion codes" in *z/OS DFSMS Macro Instructions for Data Sets*. Correct the problem, and rerun the job.

FABN0047E *member* **IN [DBDSRC | PSBSRC] NOT FOUND**

Explanation: The member name *member* was not found when the DBD/PSB/ACB Reversal utility deleted or updated a member in the PDS/PDSE data set.

System action: The DBD/PSB/ACB Reversal utility does not delete or update the *member*. The DBD/PSB/ACB Reversal utility continues processing.

User response: None.

FABN0048W GSAM PCB (NUM=*nnn*) IS NOT DECODED IN PSB *acbname*

Explanation: The DBD/PSB/ACB Reversal program did not decode the GSAM PCB. *acbname* is the PSB-type ACB member name that was specified, and *nnn* is the number of GSAM PCB that were specified. If NUM=N/A is shown, it indicates that the DBD/PSB/ACB Reversal program could get no information about the number of GSAM PCBs.

System action: The DBD/PSB/ACB Reversal utility continues processing.

User response: None.

FABN0049I NO DB PCB FOUND IN PSB *acbname*

Explanation: There was no DB PCB in the current PSB-type ACB *acbname*.

System action: The DBD/PSB/ACB Reversal utility continues processing.

User response: None. This message is informational.

FABN0050W NO SEGMENT NAME IS SPECIFIED

Explanation: No segment name is specified for the SEGMENT option.

System action: The DBD/PSB/ACB Reversal utility skips this control statement and continues processing.

User response: Specify a valid segment name, and rerun the utility.

FABN0051W INVALID SEGMENT NAME IS SPECIFIED

Explanation: The segment name has an invalid format. For example, the name is longer than eight characters, or the first character of the segment name in the SYSIN data set is a comma.

System action: The DBD/PSB/ACB Reversal utility skips this control statement and continues processing.

User response: Specify a valid segment name, and rerun the utility.

FABN0052I SEGMENT NAME *segname* **PROCESSED**

Explanation: The segment name *segname* is processed.

System action: The DBD/PSB/ACB Reversal utility continues processing.

User response: None. This message is informational.

FABN0053W NO SEGMENT NAME FOUND FOR SPECIFIED *segname* **IN SEARCHED MEMBER(S) IN** *xxx* **LIB**

Explanation: The segment name specified by the SEGNAME=*segname* or by a wildcard was not found in searched *members* in the DBD/PSB library. *segname* is the segment name or the segment name specified by a wildcard, and *xxx* is DBD or PSB.

System action: The DBD/PSB/ACB Reversal utility continues processing.

User response: Correct the segment name and, if necessary, rerun the utility.

FABN0054I MEMBER *member* **HAS NO DDNAME**

Explanation: A DBD *member* of HALDB was specified for the DDNAMES keyword. The DBD/PSB/ACB Reversal program skips this record, because the DBD has no DD name.

System action: The DBD/PSB/ACB Reversal utility skips this record and continues processing.

User response: None. This message is informational.

FABN0055W DBD NAME $DBD*nnnn* ON PSB *psbname* **IS NAMED BY DBD/PSB/ACB REVERSAL AUTOMATICALLY**

Explanation: PSB *psbname* was decoded, and a DBD name was assigned by the DBD/PSB/ACB Reversal utility automatically, because the name could not be obtained from a PSB-type ACB member. $DBD*nnnn* is the name assigned; *nnnn* is the sequence number in a PSB.

System action: The DBD/PSB/ACB Reversal utility continues processing.

User response: None.

FABN0056E A SEGMENT REFERRED TO BY [DBD | PSB] *member* **IS NOT FOUND IN DBD** *dbdname***. DBD/PSB/ACB REVERSAL NAMED IT $FABN*nnn* AUTOMATICALLY**

Explanation: DBD/PSB *member* referred to a segment in DBD *dbdname*, but the segment was not found in the DBD. The segment name was assigned by the DBD/PSB/ACB Reversal utility automatically in DBD/PSB *member*, because the name could not be

obtained from any ACB members. $FABN*nnn* is the name assigned; *nnn* shows the segment code.

System action: The DBD/PSB/ACB Reversal utility continues processing.

User response: None.

FABN0057W *acbname* **WAS NOT DBD TYPE ACB MEMBER**

Explanation: The specified member was not a DBD-type ACB member. The specified *acbname* is the member name that was specified in the SYSIN card or specified by a wildcard.

System action: The DBD/PSB/ACB Reversal utility skips this control statement and continues processing.

User response: None.

FABN0058W NO PCBNAME PREFIX IS SPECIFIED

Explanation: Prefixes for PCB names are not specified for the PCBNAMEX option.

System action: The DBD/PSB/ACB Reversal utility skips this control statement and continues processing.

User response: Specify an appropriate prefix for the PCB names, and rerun the utility.

FABN0059W INCORRECT PCBNAME PREFIX IS SPECIFIED

Explanation: The PCBNAME prefix specified for the PCBNAMEX option has an incorrect format. For example, the prefix is longer than four characters.

System action: The DBD/PSB/ACB Reversal utility skips this control statement and continues processing.

User response: Specify an appropriate PCBNAME prefix, and rerun the utility.

FABN0060I PCBNAMEX=*prfx* **OPTION IS USED**

Explanation: The DBD/PSB/ACB Reversal utility proceeds with the specified PCBNAMEX option. If one or more PCBs that are not named in the PSB are found, the DBD/PSB/ACB Reversal utility gives the names to the PCBs by using the specified prefix *prfx*.

System action: The DBD/PSB/ACB Reversal utility continues processing.

User response: None. This message is informational.

FABN0061I PCBNAME *prfxnnnn* **ON PSB** *psbname* **IS NAMED BY DBD/PSB/ACB REVERSAL AUTOMATICALLY**

Explanation: PSB *psbname* was decoded and the PCB name *prfxnnnn* was assigned by the DBD/PSB/ACB Reversal utility automatically, because the PCB name had not been defined and the PCBNAMEX option with the DECODE keyword was specified for the PSB. *prfx* is the prefix specified by the PCBNAMEX= option and *nnnn* is the sequence number for the PCB in the PSB, which is equal to the PCB number.

System action: The DBD/PSB/ACB Reversal utility continues processing.

User response: None. This message is informational.

FABN0062I *keyword* **USED IS:** *xxxxxxxxxxx*

Explanation: The DBD/PSB/ACB Reversal utility proceeds with the indicated runtime option.

System action: The DBD/PSB/ACB Reversal utility continues processing.

User response: None. This message is informational.

FABN0063I DBDNAME=*xxxxxxxx* **OPTION IS USED**

Explanation: The DBD/PSB/ACB Reversal utility proceeds with the specified DBDNAME option.

System action: The DBD/PSB/ACB Reversal utility continues processing.

User response: None. This message is informational.

FABN0064W NO PSB REFERRING TO *dbdname* **IS FOUND IN** *xxx***LIB**

Explanation: There is no PSB or PSB-type ACB that refers to the DBD *dbdname* specified by the DBDNAME option in the PSBLIB or ACBLIB. The *dbdname* can be specified with its exact name or with the use of wildcards.

System action: The DBD/PSB/ACB Reversal utility continues processing.

User response: Correct the *dbdname*, and rerun the utility if necessary.

FABN0065W REAL LOGICAL CHILD SEGMENT $SEGM*nnn* **AND DBD NAME $DBD***nnn* **ON DBD** *dbdname* **ARE NAMED BY DBD/PSB/ACB REVERSAL AUTOMATICALLY**

Explanation: Real logical child segment name $SEGM*nnn* and DBD name $DBD*nnn* in which the segment resides were assigned by the DBD/PSB/ACB Reversal utility automatically, because the names could not be obtained from the specified ACB member. *nnn* is a sequential number in a DBD, and *dbdname* is the name of the DBD that was decoded.

System action: The DBD/PSB/ACB Reversal utility continues processing.

User response: None.

FABN0066W UNSUPPORTED DBD *member* IN [DBDLIB | ACBLIB]

Explanation: The specified DBD *member* in the DBD or ACB library is not supported by the DBD/PSB/ACB Reversal utility.

System action: The DBD/PSB/ACB Reversal utility ignores this member and continues processing.

User response: Check the DBD member in the DBD or ACB library.

FABN0068W RDMVTAB CSECT IS CUSTOMIZED: MEMBER=*member*, TYPE=[DBD | DBD TYPE ACB]

Explanation: While processing *member*, the DBD/PSB/ACB Reversal utility detected one or more customized fields in RDMVTAB CSECT (described by the DMBDACS DSECT) that contain the randomizing information. One or more of the following fields are detected as *customized* by the DBD/PSB/ACB Reversal utility.

Detectable DBD type	Field	Description
DBD and DBD TYPE ACB	DMBDASZE	The size of RDMVTAB CSECT
DBD and DBD TYPE ACB	DMBDAKL	The executable key length of root
DBD	DMBDANME	The name of randomizer module
DBD	DMBDARAP	The number of root anchor points or blocks
DBD	DMBDABLK	The number of the highest blocks that are directly addressed
DBD	DMBDABYM	The maximum number of bytes

System action: The DBD/PSB/ACB Reversal utility continues processing.

User response: Check the randomizing information in the generated source and make sure that the randomizing information is appropriate for use.

FABN0070I SITE DEFAULT TABLE FABNCTL0 IS USED

Explanation: The site default table module FABNCTL0 is used by the DBD/PSB/ACB Reversal utility.

System action: The DBD/PSB/ACB Reversal utility receives the options that are specified in the site default table and uses them as the default values for the SYSIN control card.

User response: None. This message is informational.

FABN0071I SITE DEFAULT OPTION USED: *option*

Explanation: The option indicated by *option* is registered in the site default table.

System action: The DBD/PSB/ACB Reversal utility continues processing.

User response: None. This message is informational.

FABN0072E SITE DEFAULT TABLE FABNCTL0 IS CORRUPTED

Explanation: The site default table module (FABNCTL0) is corrupted and site default values are not used.

System action: The FABNRVRS program of the DBD/PSB/ACB Reversal utility ends with a return code of 8.

User response: Specify the correct FABNCTL0 module and ensure that the first 8 bytes of the site default table shows FABNCTL0. If the module is damaged, re-create another site default table module and store it in the STEPLIB data set.

FABN0073E LOAD FAILED FOR DDNAME *ddname* MODULE *module*

Explanation: After a LOAD macro was issued to load the *module* module from the library that is specified by the *ddname* DD, register 15 contained a nonzero return code.

System action: The FABNRVRS program of the DBD/PSB/ACB Reversal utility ends with a return code of 8.

User response: Ensure that the DD statement specifies the appropriate data set. Correct the error and rerun the job. If the problem persists, save the entire run listing (including the dump, JCL, and all reports from the DBD/PSB/ACB Reversal utility), and contact IBM Software Support.

FABN0074I THE INFORMATION ABOUT GSAM [DBD | PCB] IS RETRIEVED FROM *membername*

Explanation: The DBD/PSB/ACB Reversal utility is attempting to obtain GSAM DBD information from a DBD member in the DBDLIB or GSAM PCB information from a PSB member in the PSBLIB.

System action: The DBD/PSB/ACB Reversal utility continues processing.

User response: None. This message is informational.

FABN0075E *membername* **IS NOT CONSISTENT BETWEEN ACBLIB AND [DBDLIB | PSBLIB]**

Explanation: The member in the ACBLIB is not consistent with the member that has the same name in the DBDLIB or PSBLIB.

System action: The DBD/PSB/ACB Reversal utility skips the member in the ACBLIB, and continues processing.

User response: Determine if the correct DBDLIB or PSBLIB is specified on the DD statement. If necessary, rerun the utility.

FABN0076E **THE** *keyword* **STATEMENT IS INCORRECT**

Explanation: Either the option that is specified for the indicated keyword is incorrect or the order of the keywords in the SYSIN data set is incorrect.

System action: The DBD/PSB/ACB Reversal utility ends with a return code of 16.

User response: Ensure that the option specified for the indicated keyword is correct. If an OPTION statement is specified, ensure that the statement is located at the top of the SYSIN data set. Rerun the utility.

FABN0077W **VERSION PARAMETER DBD STATEMENT IS NOT DECODED. [EXIT PARAMETERS OF DBD AND SEGM STATEMENTS ARE NOT DECODED]**

Explanation: The following parameters are not decoded because these parameters could not be obtained from the DBD member:

- The VERSION parameter of the DBD statement
- The EXIT parameter of the DBD and SEGM statements

System action: The DBD/PSB/ACB Reversal utility continues processing.

User response: None.

FABN0078W **PSB THAT REFERS TO DBD** *dbdname* **WITH PROCOPT** *procopt* **IS NOT FOUND IN THE [PSBLIB | ACBLIB]**

Explanation: In the specified PSB library or ACB library, no PSBs match the processing option criteria and the DBD name criteria that were defined for the POPTREF keyword. The processing option criteria are specified by the SEARCHOPT option, and the DBD name criteria are specified by the SEARCHDBD option.

System action: The DBD/PSB/ACB Reversal utility continues processing.

User response: If necessary, update the criteria by modifying the SEARCHOPT and SEARCHDBD options, and then rerun the utility.

FABN0079W **THE SEARCHOPT PARAMETER CONTAINS INVALID CHARACTERS:** *characters*

Explanation: The value that is specified for the SEARCHOPT option is incorrect. The value might be incorrect because it contains letters that do not correspond to processing options (PROCOPT), the same letter is specified more than once, or wildcard characters are specified before letters.

System action: The DBD/PSB/ACB Reversal utility skips this control record and continues processing.

User response: For a list of the letters that can be specified as processing options (PROCOPT), see the topic "Full-function or Fast Path database PCB statement" in *IMS System Utilities*. Correct the value for the SEARCHOPT option and rerun the utility.

FABN0080W **THE [SEARCHDBD | SEARCHOPT] PARAMETER CONTAINS AN INVALID VALUE.**

Explanation: The DBD name that is specified by the SEARCHDBD option is longer than eight characters, or the list of processing options (PROCOPT) that is specified by the SEARCHOPT option is more than four characters.

System action: The DBD/PSB/ACB Reversal utility skips this control record and continues processing.

User response: Correct the value that is specified for the SEARCHDBD option or the SEARCHOPT option, and rerun the utility.

FABN0081W **ONE OR MORE REQUIRED OPTIONS ARE MISSING OR THE ORDER IS INCORRECT.**

Explanation: The required options are missing, or the order of the options is incorrect.

System action: The DBD/PSB/ACB Reversal utility skips this control record and continues processing.

User response: See “Control statements for the DBD/PSB/ACB Reversal utility” on page 292 and specify the required options or correct the order of the options, and then rerun the utility.

FABN0082I **DBD TYPE ACB MEMBER** *dbdname* **IS NOT REFERRED BY ANY PSB TYPE ACB MEMBERS**

Explanation: The DBD/PSB/ACB Reversal utility found a DBD-type ACB member that is not referenced by any PSB-type ACB member in the ACBLIB.

System action: The DBD/PSB/ACB Reversal utility continues processing.

User response: None. This message is informational.

FABN0083W NO OPTIONS ALLOWED FOR *control_statement*

Explanation: Function keyword options, such as ALL, INCLUDE=, EXCLUDE=, and so on, are not supported for the UNREF ACB, LISTLIB DBD, and LISTLIB PSB statements.

System action: The DBD/PSB/ACB Reversal utility ignores the UNREF ACB, LISTLIB DBD, or LISTLIB PSB control statement and continues processing.

User response: Remove the function keyword options from the UNREF ACB, LISTLIB DBD, or LISTLIB PSB statement, and rerun the utility.

FABN0084W MEMBER *member* **WAS NOT GENERATED BY THE IMS STANDARD DBD OR PSB GENERATION MACRO**

Explanation: The indicated DBD or PSB member has a control block length that does not conform to the control block length of a DBD or PSB that is generated by the IMS DBDGEN or IMS PSBGEN utility. This member is assumed to be generated or modified by using a non-IMS macro.

System action: The DBD/PSB/ACB Reversal utility continues processing and ends with a return code of 04.

User response: None. This message is informational.

FABN0085E ACCESS FAILED FOR *cataloghlq*. **FUNC=***function*, **RETURN CODE=***rc*, **REASON CODE=***rsn*

Explanation: IMS Library Integrity Utilities detected an error while accessing the IMS catalog directory.

System action: IMS Library Integrity Utilities ends with a return code of 8.

User response: Locate the GEX3*xxx*E message that is issued before this message. For the meaning of the GEX3*xxx*E message, see the topic "IMS Tools Catalog Interface messages (GEX3)" in the *Tools Base IMS Tools Common Services V1.6 User's Guide*. If necessary, correct the error condition and rerun the job.

FABN0086W GSAM DBD *dbdname* **IN IMS CATALOG IS NOT VALID.**

Explanation: The indicated GSAM DBD is found in the IMS catalog directory but it is not in a valid format.

System action: Skips this member and tries to load the next member if it exists.

User response: To correct the DBD, run the DBD, PSB, and ACB generation utilities and then use the IMS Catalog Populate utility (DFS3PU00) to populate the IMS catalog. You can also use the ACB Generation and Catalog Populate utility (DFS3UACB) to generate and populate ACBs.

FABN0088I VERSION PARAMETER OF DBD STATEMENT IS DECODED FROM THE ACTIVE ACB DATA SETS OF THE IMS DIRECTORY. [EXIT PARAMETERS OF DBD AND SEGM STATEMENTS ARE DECODED FROM THE ACTIVE ACB DATA SETS OF THE IMS DIRECTORY.]

Explanation: The following parameters were decoded from an active ACB in the IMS directory.

- The VERSION parameter of the DBD statement
- The EXIT parameter of the DBD and SEGM statements

This happens when the utility tries to decode DBDs in the IMS directory staging data set and the PSB that refers to the DBD does not exist in the IMS directory staging data set.

When the utility decodes a DBD and it detects missing parameters, it looks for the PSB that refers to the DBD to supplement the missing parameters. Because a staging data set does not store all the PSBs – it stores modified PSBs only – if the utility cannot find the relevant PSB in the staging data set, it looks for the PSB in the active ACB data sets of the IMS directory and uses the information in the active ACB to supplement the missing parameters.

Note: VERSION and EXIT parameters are supplemented only if the organization of the database is DEDB or MSDB.

System action: The Catalog Manager utility continues processing.

User response: None. This message is informational.

FABN0089I SENSEG STATEMENT IS DECODED FROM THE ACTIVE ACB DATA SETS OF THE IMS DIRECTORY.

Explanation: The SENSEG statement is decoded from an active ACB in the IMS directory. This happens when the utility tries to decode DBDs in the IMS directory staging data set and the PSB that refers to the DBD does not exist in the IMS directory staging data set.

When the utility decodes a PSB and it detects a missing SENSEG statement, it looks for the DBD that the PSB refers to to supplement the missing statement. Because a staging data set does not store all the DBDs – it stores modified DBDs only – if the utility cannot find the relevant DBD in the staging data set, it looks for the

DBD in the active ACB data sets of the IMS directory and uses the information in the active ACB to supplement the missing SENSEG statement.

Note: The SENSEG statement is supplemented only when the PSB has a DB PCB for an MSDB.

System action: The Catalog Manager utility continues processing.

User response: None. This message is informational.

FABN1000I FABNTGEN ENDED NORMALLY

Explanation: The site default generation utility ended normally.

System action: The site default generation utility ends with a return code of 0.

User response: None. This message is informational.

FABN1004I SITE DEFAULT OPTION USED: *option*

Explanation: The option indicated by *option* is registered in the site default table.

System action: The site default generation utility continues processing.

User response: None. This message is informational.

FABN1006I BLANK RECORD IN SYSIN

Explanation: There is a blank record in the SYSIN data set.

System action: The site default generation utility continues processing.

User response: None. This message is informational.

FABN1020I THE SOURCE CODE FOR THE SITE DEFAULT TABLE IS GENERATED

Explanation: The source code for the site default table is generated by the FABNTGEN program.

System action: The site default generation utility continues processing.

User response: None. This message is informational.

FABN1021I CONTROL CARD SUPPLIED IS: *control_statement*

Explanation: This message shows the echo of control statements that are specified in the SYSIN data set.

System action: The site default generation utility continues processing.

User response: None. This message is informational.

FABN1022I KEYWORD *keyword* **IS IGNORED**

Explanation: The keyword indicated by *keyword* is ignored.

System action: The site default generation utility continues processing.

User response: None. This message is informational.

FABN1023I *keyword* **OPTION USED:** *option*

Explanation: The site default generation utility proceeds with the runtime option.

System action: The site default generation utility continues processing.

User response: None. This message is informational.

FABN1030I SITE DEFAULT TABLE FABNCTL0 IS PRINTED

Explanation: The specification in the site default table is reported by the FABNTGEN program.

System action: The site default generation utility continues processing.

User response: None. This message is informational.

FABN1100W FABNTGEN ENDED WITH WARNINGS

Explanation: The site default generation utility ended with warning conditions.

System action: The site default generation utility ends with a return code of 4.

User response: Check the preceding messages that explain the warning conditions. If necessary, correct the warning conditions and rerun the utility.

FABN1107E UNKNOWN KEYWORD IN SYSIN: *keyword*

Explanation: *keyword*, which is specified in the SYSIN data set, is not a valid keyword.

System action: The site default generation utility ends with a return code of 16.

User response: Determine if the correct input control statement for site default is supplied. If necessary, correct the keyword and rerun the utility.

FABN1109E UNKNOWN OPTION IN SYSIN: *option*

Explanation: *option*, which is specified in the SYSIN data set, is not a valid option.

System action: The site default generation utility ends with a return code of 16.

User response: Determine if the correct input control

statement for site default is supplied. If necessary, correct the option and rerun the utility.

FABN1110W INVALID RECORD IN SYSIN

Explanation: A record in an invalid format is in the SYSIN data set.

System action: The site default generation utility skips this record and continues processing.

User response: Determine if the correct input control statement for site default is supplied. If necessary, correct the record and rerun the utility.

FABN1111E THE *keyword* STATEMENT IS INCORRECT

Explanation: Either the option that is specified for the indicated keyword is incorrect or the order of the keywords in the SYSIN data set is incorrect.

System action: The site default generation utility ends with a return code of 16.

User response: Ensure that the option specified for the indicated keyword is correct. If an OPTION statement is specified, ensure that the statement is located at the top of the SYSIN data set. Rerun the utility.

FABN1200E FABNTGEN ENDED WITH ERRORS

Explanation: The site default generation utility ended with errors.

System action: The site default generation utility ends with a return code of 8.

User response: Check the preceding messages that explain the error conditions. Correct the error conditions and rerun the utility.

FABN1201E SITE DEFAULT TABLE FABNCTL0 IS CORRUPTED

Explanation: The site default table module (FABNCTL0) is corrupted and site default values are not reported.

System action: The site default generation utility ends with a return code of 8.

User response: Specify the correct FABNCTL0 module and ensure that the first 8 bytes of the site default table shows FABNCTL0. If the module is damaged, re-create another site default table module and store it in the STEPLIB data set.

FABN1203E SITE DEFAULT TABLE FABNCTL0 IS NOT FOUND

Explanation: The site default values were not reported because the site default table module (FABNCTL0) is not in the STEPLIB data sets.

System action: The site default generation utility ends with a return code of 8.

User response: Specify the data set that includes the site default table module (FABNCTL0) member to the STEPLIB statement.

FABN1204E *parameter_value* IS NOT VALID FOR THE PARM PARAMETER OF THE EXEC STATEMENT

Explanation: An incorrect parameter is specified on the PARM= of the EXEC statement.

System action: The site default generation utility ends with a return code of 8.

User response: Specify either GEN or REPORT on the PARM parameter.

FABN1205E NO VALID SITE DEFAULT CONTROL CARD IN SYSIN

Explanation: A control card that specifies the correct default option was not found in the SYSIN data set. The source code for the site default table is not created.

System action: The site default generation utility ends with a return code of 8.

User response: Specify correct control cards in the SYSIN data set.

FABN1250E LOAD FAILED FOR DDNAME *ddname* MODULE *module*

Explanation: After a LOAD macro was issued to load the *module* module from the library that is specified by the *ddname* DD, register 15 contained a nonzero return code.

System action: The site default generation utility ends with a return code of 8.

User response: Ensure that the DD statement specifies the appropriate data set. Correct the error and rerun the job. If the problem persists, save the entire run listing (including the dump, JCL, and all reports from the site default generation utility), and contact IBM Software Support.

FABN3001E UNABLE TO OPEN SYSIN DATA SET

Explanation: The SYSIN data set could not be opened during initialization.

System action: The site default generation utility ends abnormally.

User response: Determine the cause of the open failure. Correct the problem, and rerun the program.

FABN3002E UNABLE TO OPEN SYSPUNCH DATA SET

Explanation: The SYSPUNCH data set could not be opened during initialization.

System action: The site default generation utility ends abnormally.

User response: Determine the cause of the open failure. Correct the problem, and rerun the program.

FABN3003E UNABLE TO OPEN SYSOUT DATA SET

Explanation: The SYSOUT data set could not be opened during initialization.

System action: The site default generation utility ends abnormally.

User response: Determine the cause of the open failure. Correct the problem, and rerun the program.

FABQ messages

Messages that are issued by the Advanced ACBGEN utility begin with the prefix FABQ.

FABQ0001E UNABLE TO OPEN SYSPRINT -- JOB TERMINATED

Explanation: Either the SYSPRINT DD statement is missing or OPEN processing failed for the data set that was specified.

System action: Processing ends with an abend code of 949.

User response: Ensure that the SYSPRINT DD exists, and that it specifies valid DD parameters. Correct any errors, and rerun the job.

FABQ0002E UNABLE TO OPEN DDNAME=*ddname*

Explanation: The data set in the specified DD JCL statement could not be opened.

System action: Processing ends with a return code of 16.

User response: Ensure that the specified DD statement contains valid DD parameters. Correct any errors, and rerun the job.

FABQ0003E DDNAME=*ddname* NOT FOUND IN JCL

Explanation: The specified DD statement could not be found in the JCL of the job step.

System action: Processing ends with a return code of 16.

User response: Ensure that the specified DD statement exists, and rerun the job.

FABQ0004W DDNAME=*ddname* DATASET EMPTY

Explanation: This message is an informational message.

System action: Processing continues, but the return code is set to 4.

User response: None.

FABQ0005I OTHER REPORTS ARE PRINTED IN THE FABQRPT DATA SET BECAUSE GENDATE=YES

Explanation: Because GENDATE=YES is specified in the LISTLIB command in the ACBSYSIN control statement, all of the reports except the Input Specifications report are in the FABQRPT data set.

System action: Processing continues.

User response: View other reports in the FABQRPT data set. If you did not specify the FABQRPT DD statement, the reports are printed to SYSOUT.

FABQ0006E DYNALLOC MACRO FAILED TO ALLOCATE *ddname* RC=*rr* RSN=*ssss*

Explanation: The *ddname* data set was not dynamically allocated. *rr* is the hexadecimal return code, and *ssss* is the hexadecimal reason code of the DYNALLOC macro.

If this message is issued for the FABQRPT data set, the message implies that the dynamic allocation took place because GENDATE=YES is specified in the LISTLIB command in the ACBSYSIN control statement, but the FABQRPT DD statement is not specified.

System action: Processing ends with a return code of 16.

User response: Find the reason for the dynamic allocation request failure. Use the information about the return codes and the reason codes in the *z/OS MVS Programming: Authorized Assembler Services Guide* to identify the cause of the error.

FABQ0007E DUMMY SPECIFIED FOR THE *ddname* DD STATEMENT

Explanation: The reports are not generated because DUMMY is specified for the indicated DD statement.

System action: Processing ends with a return code of 16.

User response: Correct the DD statement so that it does not specify DUMMY, and then rerun the job.

FABQ0104E UNABLE TO LOAD NAME=*module*

Explanation: An unsuccessful attempt was made to load the specified module. Standard MVS facilities were used to attempt the loading of the specified module.

System action: Processing ends with a return code of 16.

User response: Verify that the library containing the module is included in the STEPLIB DD JCL or in your MVS system's link list.

FABQ0108E IMS '*x.x.x*' NOT SUPPORTED

Explanation: This version/release of IMS is not supported.

System action: Processing ends with a return code of 16.

User response: Ensure that your DFSRESLB DD statement contains the correct IMS load module library.

If the error persists, verify that the indicated version and release of IMS is supported by IMS Library Integrity Utilities. If the error persists, contact IBM Software Support.

FABQ0109E IMS VERSION/RELEASE INCOMPATIBILITY

Explanation: Several of the loaded IMS modules are from different versions and releases of IMS.

System action: Processing ends with a return code of 16.

User response: Ensure that the following IMS provided modules are all at the same IMS version/release level: DFSUACB0, DFSUAMB0, DFSDLBL0, and DFSVC000. If the error persists, contact IBM Software Support.

FABQ0111E GETMAIN FAILED -- INSUFFICIENT MEMORY

Explanation: A GETMAIN failed because of insufficient main memory.

System action: The job step ends with a user code of 16.

User response: Increase the MVS region size, and resubmit the job.

FABQ0200I JOB TERMINATED DUE TO CONTROL STATEMENT ERRORS

Explanation: This message is an informational message. The specific error is identified in a previous message.

System action: Processing ends with a return code of 16.

User response: Fix the problem reported in the previous FABQ02*nn* message, and rerun the job.

FABQ0201W '*ddname*' DOES NOT CONTAIN ANY COMMANDS

Explanation: The specified DDname contained some data but no commands.

System action: Processing continues, but the return code is set to 4.

User response: Verify whether this condition is a valid condition. If not, correct the error, and rerun the job. If the error persists, contact IBM Software Support.

FABQ0203E TOO MANY RECORDS IN THE CONTROL STATEMENT DATASET

Explanation: The entire ACBSYSIN control data set is stored in memory while it is being processed. The anticipated maximum size was exceeded.

System action: Processing ends with a return code of 16.

User response: Verify that the correct data set is being used. If the error persists, contact IBM Software Support.

FABQ0204E A CONTROL STATEMENT INDICATED CONTINUATION BUT NONE FOUND

Explanation: The last record in the control data set indicated continuation; however, no continuation record was found.

System action: Processing ends with a return code of 16.

User response: See “Syntax rules” on page 436 for a description of the ACBSYSIN syntax rules. Correct the error, and rerun the job. If the error persists, contact IBM Software Support.

FABQ0205E INCOMPLETE COMMENT -- NO ENDING CHARACTERS FOUND

Explanation: A control statement in the ACBSYSIN data set contained the beginning of a comment, but no comment-ending characters could be found.

System action: Processing ends with a return code of 16.

User response: See “Syntax rules” on page 436 for a description of the ACBSYSIN syntax rules. Correct the error, and rerun the job. If the error persists, contact IBM Software Support.

FABQ0210E NO COMMAND CODE PRESENT

Explanation: A control statement in the ACBSYSIN data set contained a label field but did not contain a command code.

System action: Processing ends with a return code of 16.

User response: See “Syntax rules” on page 436 for a description of the ACBSYSIN syntax rules. Correct the error, and rerun the job. If the error persists, contact IBM Software Support.

FABQ0211E '*label*' COMMAND LABEL IS INVALID

Explanation: A control statement in the ACBSYSIN data set contains an incorrect label. The label field can contain no more than eight characters.

System action: Processing ends with a return code of 16.

User response: See “Syntax rules” on page 436 for a description of the ACBSYSIN syntax rules. Correct the error, and rerun the job. If the error persists, contact IBM Software Support.

FABQ0212E '*command*' COMMAND CODE IS INVALID

Explanation: A control statement in the ACBSYSIN data set contains an unrecognizable command code.

System action: Processing ends with a return code of 16.

User response: See "ACBSYSIN control statements" on page 436 for a description of the valid command codes. Correct the error, and rerun the job. If the error persists, contact IBM Software Support.

FABQ0220E '*keyword*' KEYWORD IS INVALID

Explanation: A control statement in the ACBSYSIN data set contains an unrecognizable keyword operand.

System action: Processing ends with a return code of 16.

User response: See "ACBSYSIN control statements" on page 436 for a description of the valid keyword operands. Correct the error, and rerun the job. If the error persists, contact IBM Software Support.

FABQ0221E '*keyword*' KEYWORD DATA IS TOO LARGE

Explanation: A control statement in the ACBSYSIN data set contains a keyword operand whose data value is larger than allowed.

System action: Processing ends with a return code of 16.

User response: See "ACBSYSIN control statements" on page 436 for a description of the valid keyword operand data values. Correct the error, and rerun the job. If the error persists, contact IBM Software Support.

FABQ0222E '*keyword*' KEYWORD HAS MISSING RIGHT PAREN

Explanation: A control statement in the ACBSYSIN data set contains a keyword operand name whose data value is preceded by a left parenthesis, but there is no corresponding right parenthesis.

System action: Processing ends with a return code of 16.

User response: See "Syntax rules" on page 436 for a description of the ACBSYSIN syntax rules. Correct the error, and rerun the job. If the error persists, contact IBM Software Support.

FABQ0223E '*keyword*' KEYWORD HAS MISSING RIGHT QUOTE

Explanation: A control statement in the ACBSYSIN data set contains a keyword operand name whose data value is preceded by a left quotation mark but no corresponding right quotation mark.

System action: Processing ends with a return code of 16.

User response: See "Syntax rules" on page 436 for a description of the ACBSYSIN syntax rules. Correct the error, and rerun the job. If the error persists, contact IBM Software Support.

FABQ0224E '*keyword*' KEYWORD REQUIRES PARENS AROUND LIST OF SUBPARMS

Explanation: A control statement in the ACBSYSIN data set contains a keyword operand name whose data value is more than one subparameter. Multiple subparameters for a given keyword operand must be enclosed in parenthesis.

System action: Processing ends with a return code of 16.

User response: See "ACBSYSIN control statements" on page 436 for a description of the syntax rules. Correct the error, and rerun the job. If the error persists, contact IBM Software Support.

FABQ0225E '*keyword*' KEYWORD HAS INVALID CONTINUATION CHARACTER

Explanation: A control statement in the ACBSYSIN data set contains a keyword operand whose data value is not terminated with either a blank or comma.

System action: Processing ends with a return code of 16.

User response: See "Syntax rules" on page 436 for a description of the ACBSYSIN syntax rules. Correct the error, and rerun the job. If the error persists, contact IBM Software Support.

FABQ0226E '*keyword*' KEYWORD IS REQUIRED

Explanation: A control statement in the ACBSYSIN data set does not contain a required keyword operand.

System action: Processing ends with a return code of 16.

User response: See "ACBSYSIN control statements" on page 436 for a description of the syntax rules. Correct the error, and rerun the job. If the error persists, contact IBM Software Support.

FABQ0229E KEYWORD OPERAND EXPECTED -- NONE FOUND

Explanation: A control statement in the ACBSYSIN data set showed that another keyword operand was present, but none was found.

System action: Processing ends with a return code of 16.

User response: See "Syntax rules" on page 436 for a description of the ACBSYSIN syntax rules. Correct the error, and rerun the job. If the error persists, contact IBM Software Support.

FABQ0231E '*keyword*' KEYWORD IS MUTUALLY EXCLUSIVE WITH A PREVIOUS KEYWORD

Explanation: A control statement in the ACBSYSIN data set contains two keyword operands that are mutually exclusive.

System action: Processing ends with a return code of 16.

User response: See "ACBSYSIN control statements" on page 436 for a description of the syntax rules. Correct the error, and rerun the job. If the error persists, contact IBM Software Support.

FABQ0232E '*keyword*' KEYWORD SPECIFIED MORE THAN ONCE

Explanation: A control statement in the ACBSYSIN data set contains the same keyword operand more than once.

System action: Processing ends with a return code of 16.

User response: Correct the error, and rerun the job. If the error persists, contact IBM Software Support.

FABQ0234E '*keyword*' KEYWORD HAS TOO MANY PARAMETERS

Explanation: A control statement in the ACBSYSIN data set contains a keyword operand that has too many data values.

System action: Processing ends with a return code of 16.

User response: See "ACBSYSIN control statements" on page 436 for a description of the syntax rules. Correct the error, and rerun the job. If the error persists, contact IBM Software Support.

FABQ0235E '*keyword*' KEYWORD HAS INVALID DATA

Explanation: A control statement in the ACBSYSIN data set contains a keyword operand that has incorrect data.

System action: Processing ends with a return code of 16.

User response: See "ACBSYSIN control statements" on page 436 for a description of the syntax rules. Correct the error, and rerun the job. If the error persists, contact IBM Software Support.

FABQ0300E SORT PROGRAM TERMINATED WITH RC=*xx*

Explanation: The sort program that was called by FABQCHEK returned an RC=*xx*, where *xx* is the return code of the sort program.

System action: Processing continues, but the nonzero sort return code will be the condition code of the job step.

User response: Check the condition and determine whether if any action must be taken.

FABQ1000I ABOVE ERROR OCCURRED IN RCD #*nnn*, AT OR NEAR POSITION *nn*

Explanation: This message is an informational message that describes where the error occurred for the preceding message.

System action: Processing continues.

User response: Fix the problem reported in the preceding FABQ*nnnn* message, and rerun the job.

FABQ1001E LABEL NAME TOO LONG

Explanation: The label field in a SYSIN control statement contains more than eight characters. The label field, if present, must consist of a period (.) followed by 1 - 7 alphanumeric characters.

System action: Processing continues with the next control statement.

User response: For a description of the syntax rules, see *IMS System Utilities*. Correct the error, and rerun the job. If the error persists, contact IBM Software Support.

FABQ1002E INVALID LABEL NAME

Explanation: The label field in a SYSIN control statement contained an incorrect character. The label field, if present, must consist of a period (.) followed by 1 - 7 alphanumeric characters.

System action: Processing continues with the next control statement.

User response: For a description of the syntax rules, see *IMS System Utilities*. Correct the error, and rerun the job. If the error persists, contact IBM Software Support.

FABQ1003E NO OPERATION NAME FOUND

Explanation: No operation field was found in a SYSIN control statement.

System action: Processing continues with the next control statement.

User response: For a description of the syntax rules, see *IMS System Utilities*. Correct the error, and rerun the job. If the error persists, contact IBM Software Support.

FABQ1004E INVALID OPERATION NAME

Explanation: The operation field in a SYSIN control statement contains an unrecognizable command.

System action: Processing continues with the next control statement.

User response: For a description of the syntax rules, see *IMS System Utilities*. Correct the error, and rerun the job. If the error persists, contact IBM Software Support.

FABQ1005E EXPECTED OPERAND NOT FOUND

Explanation: An operand in a SYSIN control statement was terminated with a continuation character but no further operands were found in the statement.

System action: Processing continues with the next control statement.

User response: For a description of the syntax rules, see *IMS System Utilities*. Correct the error, and rerun the job. If the error persists, contact IBM Software Support.

FABQ1006E OPERAND NAME TOO LONG

Explanation: An operand name in a SYSIN control statement contains more than eight characters.

System action: Processing continues with the next control statement.

User response: For a description of the syntax rules, see *IMS System Utilities*. Correct the error, and rerun the job. If the error persists, contact IBM Software Support.

FABQ1007E OPERAND NAME NOT TERMINATED WITH AN "=" CHAR

Explanation: An operand name in a SYSIN control statement was not immediately followed by an equal sign (=).

System action: Processing continues with the next control statement.

User response: For a description of the syntax rules, see *IMS System Utilities*. Correct the error, and rerun the job. If the error persists, contact IBM Software Support.

FABQ1008E INVALID OPERAND NAME

Explanation: An operand name in a SYSIN control statement is unrecognizable.

System action: Processing continues with the next control statement.

User response: For a description of the syntax rules, see *IMS System Utilities*. Correct the error, and rerun the job. If the error persists, contact IBM Software Support.

FABQ1009E OPERAND HAS NO DATA

Explanation: An operand name in a SYSIN control statement has no data.

System action: Processing continues with the next control statement.

User response: For a description of the syntax rules, see *IMS System Utilities*. Correct the error, and rerun the job. If the error persists, contact IBM Software Support.

FABQ1010E INVALID OPERAND DATA

Explanation: The data in an operand in a SYSIN control statement contains incorrect data.

System action: Processing continues with the next control statement.

User response: For a description of the syntax rules, see *IMS System Utilities*. Correct the error, and rerun the job. If the error persists, contact IBM Software Support.

FABQ1011E OPERAND HAS MISSING RIGHT PAREN

Explanation: The data in an operand in a SYSIN control statement is not enclosed in a balanced pair of parentheses.

System action: Processing continues with the next control statement.

User response: For a description of the syntax rules, see *IMS System Utilities*. Correct the error, and rerun the job. If the error persists, contact IBM Software Support.

FABQ1012E MULTIPLE OPERAND VALUES MUST BE ENCLOSED IN PARENS

Explanation: If there is more than one value present, the data in an operand in a SYSIN control statement must be enclosed in a balanced pair of parentheses.

System action: Processing continues with the next control statement.

User response: For a description of the syntax rules, see *IMS System Utilities*. Correct the error, and rerun the job. If the error persists, contact IBM Software Support.

FABQ1013E MORE OPERAND DATA EXPECTED -- NONE FOUND

Explanation: A data value in an operand in a SYSIN control statement was terminated with a continuation character; however, no more data was found.

System action: Processing continues with the next control statement.

User response: For a description of the syntax rules, see *IMS System Utilities*. Correct the error, and rerun the job. If the error persists, contact IBM Software Support.

FABQ1014E 1ST 15 POSITIONS OF CONTINUATION MUST BE BLANK

Explanation: A continuation record in a SYSIN control statement must be blank in the first 15 positions.

System action: Processing continues with the next control statement.

User response: For a description of the syntax rules, see *IMS System Utilities*. Correct the error, and rerun the job. If the error persists, contact IBM Software Support.

FABQ1015E POSITION 16 OF CONTINUATION MUST NOT BE BLANK

Explanation: A continuation record in a SYSIN control statement must start in position 16.

System action: Processing continues with the next control statement.

User response: For a description of the syntax rules, see *IMS System Utilities*. Correct the error, and rerun the job. If the error persists, contact IBM Software Support.

FABQ1016E INVALID DELIMITING CHARACTER

Explanation: An operand name in a SYSIN control statement must be followed by an equal sign (=), and the operand data must be terminated with a blank or a comma.

System action: Processing continues with the next control statement.

User response: For a description of the syntax rules, see *IMS System Utilities*. Correct the error, and rerun the job. If the error persists, contact IBM Software Support.

FABQ1025W DBD/PSB '*member*' REFERENCED MORE THAN ONCE

Explanation: The PSB or DBD name appears more than once in either BUILD statements or DELETE statements. The same name can appear in both a BUILD and DELETE statement, but not more than once per BUILD or DELETE list.

System action: The second and later occurrences are discarded, and processing continues, but generates a return code of 4.

User response: None.

FABQ1030W DMB '*dmbname*' IN ACBLIB IS NOT REFERENCED BY ANY PSB

Explanation: The specified DMB was found in the ACB library but was not referred to by any PSBs found in the same ACB library.

System action: Processing continues.

User response: Check the condition, and determine whether any action must be taken.

FABQ1031W DMB '*dmbname*' REFERENCED BY PSB '*psbname*' IS NOT IN ACBLIB

Explanation: The specified PSB referred to the specified DMB, but the DMB was not found in the ACB library.

System action: Processing continues, but the return code is set to 8.

User response: Check the condition and determine if any action must be taken.

FABQ1032W PSB '*psbname*' REFERS TO '*dmbname*' BUT IT IS NOT A DMB

Explanation: The specified PSB refers to the specified DMB, but the directory entry for the DMB shows that it is not a DMB.

System action: Processing continues, but the return code is set to 8.

User response: Check the condition and determine whether any action must be taken.

FABQ1033W DIRECTORY ENTRY '*mbrname*' HAS DIFFERENT IMS LEVEL

Explanation: The IMS release and level found in the first ACB library directory entry is used to compare against all other directory entries. The specified entry differs from the first entry.

System action: Processing continues, but the return code is set to 4.

User response: Check the condition and determine if any action must be taken.

FABQ1034W DIRECTORY ENTRY '*mbrname*' HAS A BAD SIZE

Explanation: All directory entries in the library specified in the INDD=operand are checked for valid size. The directory entry size for a DBD/PSB library is different from the directory entry size for the ACB library.

System action: Processing continues, but the return code is set to 8. The member identified in the message is skipped and therefore is not reflected in the reports.

User response: Verify that the INDD= and LIBTYPE= operands in the LISTLIB command are consistent. For example, if LIBTYPE=ACB was specified, verify that the INDD= operand specifies the ddname of an ACB library.

FABQ1036W HI-KEY DIRECTORY ENTRY NOT LAST IN DIRECTORY RECORD

Explanation: An incorrect directory block was encountered. An X'FF' directory entry was encountered, but the length field in the directory block showed that there were more directory entries.

System action: Processing continues, but the return code is set to 8.

User response: Check the condition and determine whether any action must be taken.

FABQ1037W EMPTY DIRECTORY RECORD ENCOUNTERED BEFORE HI-KEY ENTRY

Explanation: An incorrect directory block was encountered. Empty directory blocks can appear only after the block containing the X'FF' hi-key entry.

System action: Processing continues, but the return code is set to 8.

User response: Check the condition and determine whether any action must be taken.

FABQ1038W NO DIRECTORY RECORDS FOUND

Explanation: The input library is probably not a valid partitioned data set, because directory records (blocks) are created when the PDS is allocated.

System action: Processing continues, but the return code is set to 8.

User response: Check the condition and determine whether any action must be taken.

FABQ1039W NO HI-KEY DIRECTORY ENTRY FOUND

Explanation: The input library did not contain an X'FF' hi-key directory entry.

System action: Processing continues, but the return code is set to 8.

User response: Check the condition and determine whether any action must be taken.

FABQ1040W INVALID DIRECTORY KEY FOUND

Explanation: The input library contains a directory entry whose first byte in the key contains X'FF', but the rest is not X'FF'.

System action: Processing continues, but the return code is set to 8.

User response: Check the condition and determine whether any action must be taken.

FABQ1041E DD CONCATENATION NOT SUPPORTED -- DDNAME=*ddname*

Explanation: Concatenation is not supported for the specified DD statement.

System action: Processing ends with a return code of 16.

User response: Correct the JCL, and rerun the job.

FABQ1042W ACBGEN SUBTASK UNABLE TO LOAD ITS OWN COPY OF DFSDLBL0

Explanation: Concatenation of the input library being analyzed is not supported.

System action: Processing continues, but the second and subsequent DD statements in the concatenation are ignored.

User response: If you want to analyze multiple libraries, it must be done one per job step.

FABQ9900E SYSPRINT PERMANENT I/O ERROR

Explanation: The SYSPRINT data set had a permanent I/O error.

System action: ACBGEN ends abnormally with a user code of 0948.

User response: Check LOGREC to determine the cause of the error, and resubmit the job.

FABQ9901E DFSPRINT PERMANENT I/O ERROR

Explanation: The DFSPRINT data set had a permanent I/O error.

System action: ACBGEN ends abnormally with a user code of 0948.

User response: Check LOGREC to determine the cause of the error, and resubmit the job.

FABQ9908E INVALID DFS-TYPE MESSAGE ENCOUNTERED

Explanation: A message ID was not found in the DFSUMGT0 message text module.

System action: ACBGEN ends abnormally with a user code of 0944.

User response: Resubmit the job, using the IMS ACBGEN utility. If you get an IMS 0944 abend, the problem is in the DFSUMGT0 module. If the IMS ACBGEN utility does not abend, there is a logic error in IMS Library Integrity Utilities and you must contact IBM Software Support.

FABQ9909E TOO FEW UERR VARIABLES

Explanation: An incorrect number of parameters were passed to the message formatter module by the UERR macro.

System action: ACBGEN ends abnormally with a user code of 0945.

User response: Resubmit the job, using the IMS ACBGEN utility. If you get an IMS 0945 abend, the problem is in an IMS module. If the IMS ACBGEN utility does not abend, there is a logic error in IMS Library Integrity Utilities. Contact IBM Software Support.

FABQ9910E FABQDRIV LOGIC ERROR

Explanation: An internal logic error.

System action: ACBGEN ends abnormally with a user code of 1000.

User response: Contact IBM Software Support.

FABQ9911E UNABLE TO HOOK DFSUACB0

Explanation: FABQHUK1 was unable to *hook* the DFSUACB0 load module.

System action: ACBGEN ends abnormally with a user code of 1001 through 1007.

User response: Verify that the DFSRESLB DD statement is specified and that you are using the appropriate IMS RESLIB. If the problem persists, add a 'DBTSNAP DD SYSOUT=a' DD statement, and resubmit the job; then contact IBM Software Support.

FABQ9912E UNABLE TO HOOK DFSDLBL0

Explanation: FABQHUK2 was unable to *hook* the DFSDLBL0 load module.

System action: ACBGEN ends abnormally with a user code of 1011 through 1016.

User response: Verify that you are using the appropriate IMS RESLIB. If the problem persists, add a 'DBTSNAP DD SYSOUT=a' DD statement, and resubmit the job; then contact IBM Software Support.

FABQ9913W NO DMB FOUND FOR DFS0960 MESSAGE

Explanation: An internal logic error occurred in FABQRPT2.

System action: Processing continues.

User response: Check your output thoroughly. Contact IBM Software Support and report this message.

FABQ9914W ACBGEN DIRECTORY SYNC ERROR#1

Explanation: An internal logic error occurred in FABQTASK.

System action: Processing continues.

User response: Check your output thoroughly. Contact IBM Software Support and report this message.

FABQ9915W ACBGEN DIRECTORY SYNC ERROR#2

Explanation: An internal logic error occurred in FABQTASK.

System action: Processing continues.

User response: Check your output thoroughly. Contact IBM Software Support and report this message.

FABQ9916W ACBGEN DIRECTORY SYNC ERROR#3

Explanation: An internal logic error occurred in FABQDRIV.

System action: Processing continues.

User response: Check your output thoroughly. Contact IBM Software Support and report this message.

FABQ9917E RDJFCB FAILED FOR DDNAME *ddname*

Explanation: The READJFCB failed for a DDNAME *ddname* data set.

System action: ACBGEN ends abnormally with a system code of 0C3.

User response: Contact IBM Software Support.

FABQ9920E EOF ENCOUNTERED READING PSB DIRECTORY BLOCKS

Explanation: An internal logic error occurred in FABQPLST.

System action: ACBGEN ends abnormally with a system code of 0C3.

User response: Contact IBM Software Support.

FABQ9921E EOF ENCOUNTERED READING ACB DIRECTORY BLOCKS

Explanation: An internal logic error occurred in FABQPLST.

System action: ACBGEN ends abnormally with a system code of 0C3.

User response: Contact IBM Software Support.

FABQ9922E ACBGEN STOW ERROR IN-MEMORY DIRECTORY

Explanation: An internal logic error occurred in FABQPLST.

System action: ACBGEN ends abnormally with a system code of 0C3.

User response: Contact IBM Software Support.

FABQ9923E ACBGEN BLDL ERROR

Explanation: An internal logic error occurred in FABQPLST.

System action: ACBGEN ends abnormally with a system code of 0C3.

User response: Contact IBM Software Support.

FABQ9924E ACBGEN BLDL ERROR

Explanation: An internal logic error occurred in FABQPLST.

System action: ACBGEN ends abnormally with a system code of 0C3.

User response: Contact IBM Software Support.

FABQ9925E ACBGEN STOW ERROR

Explanation: An internal logic error occurred in FABQPLST.

System action: ACBGEN ends abnormally with a system code of 0C3.

User response: Contact IBM Software Support.

FABQ9926E ACBGEN ENCOUNTERED EMPTY DIRECTORY BLOCK

Explanation: An internal logic error occurred in FABQPLST.

System action: ACBGEN ends abnormally with a system code of 0C3.

User response: Contact IBM Software Support.

FABQ9927E ACBGEN PDS READ ERROR

Explanation: An internal logic error occurred in FABQPLST.

System action: ACBGEN ends abnormally with a system code of 0C3.

User response: Contact IBM Software Support.

FABQ9928E ACBGEN FOUND 2 SEQ LIST TTRS WITH SAME VALUE

Explanation: An internal logic error occurred in FABQPLST.

System action: ACBGEN ends abnormally with a system code of 0C3.

User response: Contact IBM Software Support.

FABQ9929E ACBGEN UNABLE TO INSERT INTO DELETE LIST

Explanation: An internal logic error occurred in FABQPLST.

System action: ACBGEN ends abnormally with a system code of 0C3.

User response: Contact IBM Software Support.

FABQ9937E PUT FAILED FOR DDNAME: *ddname*

Explanation: The PUT macro failed for the indicated data set.

System action: ACBGEN ends abnormally with a user code of 1027.

User response: Check the status of the indicated data set, and by referring to the MVS system message and its programmer response, correct the error. Rerun the job.

FABQ9990I ACBGEN SUBTASK UNABLE TO LOAD ITS OWN COPY OF DFSDLBL0

Explanation: This message is issued whenever the MAXTASKS= operand specifies a value greater than 1 and the DFSDLBL0 module in the IMS RESLIB does not have the nonreusable link-edit attribute.

System action: The subtask that issued this MVS console message ends, but processing continues.

User response: If MVS subtasking is wanted, the DFSDLBL0 module in the IMS RESLIB must be link-edited as nonreusable.

FABQ9991W An ACBGEN SUBTASK ABENDED WITH SYSTEM CODE OF "*xxx*" FOR PSB=*psbname*

Explanation: This message is issued whenever a subtask abends. The abend code is displayed in the message. The PSB it was processing is also shown in the message.

System action: The subtask which issued this MVS console message ends but processing continues in the other subtasks.

User response: Correct the problem that caused the abend, and either rerun the job or resubmit an

ACBGEN job to generate the PSB that failed.

FABQ9992I NEW ACB LIBRARY DIRECTORY INCOMPLETE

Explanation: This message is issued during termination processing. The reporting modules encountered an incomplete directory in the ACB library. The typical cause for this condition is an ACB library that did not have sufficient space to hold all DMBs, PSBs, or both.

System action: The reporting process continues. Any previously generated return codes are honored.

User response: Check the SYSPRINT data set for any DFS-type messages that suggest what might have caused this condition.

FABQ9993I BUILD PROCESS FOR PSB *psbname* IS RESTARTING

Explanation: This message indicates that Advanced ACBGEN resolved the storage shortage problem (notified by a DFS0649W message) and the build process is restarted for the indicated PSB.

System action: The build PSB process restarts.

User response: None. This message is informational.

FABQ9997I *nnnnnnn* PSBS TO BE PROCESSED BY ACBGEN

Explanation: This message is issued when the MONITOR=(PROGRESS=(Y,*frequency_value*)) operand is specified in the ACBSYSIN data set. *nnnnnnn* is the number of the members that were specified either explicitly or implicitly in the SYSIN data set and that will be processed by the ACBGEN utility.

If BUILD DBD=*dbdname*,BLDPSB=NO is specified and if PSBs reference the DBDs for Fast Path DEDBs or shared secondary index databases that do not change the physical structure of database, the ACBGEN utility skips rebuilding such PSBs during the PSB process. In this case, the number of members that are processed will be fewer than *nnnnnnn*.

System action: This message is issued to the MVS console when the ACBGEN process begins.

User response: None. This message is informational.

FABQ9998I *mmmmmmm* OF *nnnnnnn* PSBS PROCESSED BY ACBGEN

Explanation: This message is issued when the MONITOR=(PROGRESS=(Y,*frequency_value*)) operand is specified in the ACBSYSIN data set. *mmmmmmm* is the number of the members that were just processed, and *nnnnnnn* is the total number to be processed.

If BUILD DBD=*dbdname*,BLDPSB=NO is specified and if PSBs reference the DBDs for Fast Path DEDBs or shared secondary index databases that do not change the physical structure of database, the ACBGEN utility skips rebuilding such PSBs during the PSB process. In this case, the number of members that are processed will be fewer than *nnnnnnn*.

System action: This message is issued to the MVS console during the ACBGEN process.

User response: None. This message is informational.

FABQ9999I *nnnnnnn* PSBS PROCESSED BY ACBGEN

Explanation: This message is issued when the MONITOR=(PROGRESS=(Y,*frequency_value*)) operand is specified in the ACBSYSIN data set. *nnnnnnn* is the number that was actually processed.

System action: This message is issued to the MVS console when the ACBGEN process ends.

User response: None. This message is informational.

FABV messages

Messages that are issued by the MFS Reversal utility and the MFS Compare utility begin with the prefix FABV.

FABV0000E INVALID ERROR MESSAGE NUMBER PASSED

Explanation: An internal error has occurred.

System action: Processing continues with the current control block. The name of the control block is indicated in a subsequent message FABV0044I. The source generated for this control block might be in error.

User response: Contact IBM Software Support for assistance in determining whether the source was or was not built for the current control block.

Module: FABVLOG

FABV0001E OPEN FAILED FOR DDNAME=*ddname*.

Explanation: The specified data set could not be opened.

System action: Processing terminates.

User response: Check that the data set defined by the DD name *ddname* is allocated and that the DSORG of the data set conforms to the program requirements.

Module: FABVCNTL

FABV0004E BLDL FAILED FOR MBR=*member*.

Explanation: The indicated member was not found in the format library.

System action: The utility is terminated.

User response: Try running the utility again. If the problem persists, contact IBM Software Support for assistance.

Module: FABVBLDC, FABVCOMP

FABV0005E FIND FAILED FOR MBR=*member*.

Explanation: The indicated member was not found in the format library.

System action: The utility is terminated.

User response: Try running the utility again. If the problem persists, contact IBM Software Support.

Module: FABVBLDC, FABVCOMP

FABV0006E READ ERROR WHILE READING MBR=*member*.

Explanation: A READ error occurred while reading the indicated member. This error could be due to a number of reasons.

System action: The utility terminates.

User response: Try running the utility again. If the problem persists, contact IBM Software Support for assistance.

Module: FABVBLDC, FABVCOMP

FABV0007E WRITE ERROR TO DD=MFSSRCE R0=*reasoncode* R15=*returncode*

Explanation: A WRITE error occurred while writing to data set MFSSRCE. The return code and reason codes are indicated.

System action: The utility terminates.

User response: Check the return and reason codes in *z/OS DFSMS Macro Instructions for Data Sets* to identify the cause of the failure.

Module: FABVBLDS

FABV0008E STOW FAILED FOR MBR=*member*. R0=*reasoncode* R15=*returncode*

Explanation: A STOW error occurred for the specified member. The return code and reason codes are indicated.

System action: The utility terminates.

User response: Check the return and reason codes in *z/OS DFSMS Macro Instructions for Data Sets* to identify the cause of the failure.

Module: FABVBLDC

FABV0009E DIF/DOF DATA ERROR, BYPASSED MBR=*member*

Explanation: This member is unrecognizable by the MFS Reversal utility. The member was bypassed.

System action: The utility continues with the next format library member. When the MFS Reversal utility is run without the OPTION NOXRPT statement, the utility stops to analyze and report the cross-reference information between the MIDs and MODs that are referenced by the member and continues with the next format.

User response: None.

Module: FABVBLDC, FABVDIRC, FABV3270

FABV0010E READ ERROR FROM DD=SYSIN R0=*reasoncode*, R15=*returncode*

Explanation: A READ error occurred for the specified

member. The return code and reason codes are indicated.

System action: The utility terminates.

User response: Check the return and reason codes in *z/OS DFSMS Macro Instructions for Data Sets* to identify the cause of the failure.

Module: FABVANL

FABV0011E INVALID DEVICE TYPE *devicetype* **FOR MEMBER** *member*

Explanation: An invalid device type was encountered.

System action: The source build for the current DIF/DOF cannot proceed, and so it is terminated. The utility continues processing with the next DIF/DOF. When the MFS Reversal utility is run without the OPTION NOXRPT statement, the utility stops to analyze and report the cross-reference information between the MIDs and MODs that are referenced by the member and continues with the next format.

User response: The cross-reference list written to SYSPRINT indicates the device with an invalid (unknown) device type. Either delete the format so that this error does not occur in the future, or ignore this message.

Module: FABVFIDO, FABVFINI, FABVBLDC, FABVDMAI, FABVDMAO, FABVDMBI, FABVDMBO, FABVFIO

FABV0016W DUPLICATE MEMBER *member* **SPECIFIED ON SELECT.**

Explanation: A SELECT statement was processed, but it contained duplicate member names.

System action: The second appearance of the name is ignored and processing continues.

User response: None.

Module: FABVANL

FABV0017W MEMBER *member* **SPECIFIED ON SELECT IS NOT IN DIRECTORY.**

Explanation: A SELECT statement was processed which contained a *member* that is not found in the directory of the format library.

System action: The indicated member is ignored and processing continues.

User response: Check the specification of the member name to make sure that it is correct.

Module: FABVANL

FABV0018E INVALID FEATURE CODE *feature***.**

Explanation: An invalid feature was detected in the specification.

System action: The source build for the current DIF/DOF cannot proceed, and so it is terminated. The utility continues processing with the next DIF/DOF. When the MFS Reversal utility is run without the OPTION NOXRPT statement, the utility stops to analyze and report the cross-reference information between the MIDs and MODs that are referenced by the member and continues with the next format.

User response: The cross-reference list written to SYSPRINT indicates the device with an invalid (unknown) feature. Either delete the format so that this error does not occur in the future, or ignore this message.

Module: FABVFIDO, FABVFINI, FABVBLDC, FABVDMAI, FABVDMAO, FABVDMBI, FABVDMBO, FABVFIO

FABV0020W INVALID KEYWORD *keyword* **IN UTILITY CONTROL STATEMENT.**

Explanation: An invalid keyword was specified on the control statement.

System action: The control statement containing the invalid keyword is ignored and processing continues with the next control statement.

User response: Correct the specification of the keyword and rerun the utility.

Module: FABVANL

FABV0021E CANNOT RESOLVE BUFFER ADDRESS: MSG=*member* **FMT=***format* **DEV=***device*

Explanation: The number of lines for the display device for which the source is being built is 0. The buffer address of a field could not be resolved.

System action: The source build for the current DIF/DOF cannot proceed, and so it is terminated. The utility continues processing with the next DIF/DOF.

User response: The cross-reference list written to SYSPRINT lists the devices referenced by the selected MID/MOD. Check if a device of the type 3270-An is reported. Ensure that the Device Characteristics Table DFSUDT0*x* or the default table FABVDVCT has all the definitions of 3270-A*x* listed. Try running the utility again with the correct Device Characteristics Table.

Module: FABVTRBB

FABV0022W USING DEFAULT DEVICE CHARACTERISTICS TABLE FABVDVCT

Explanation: The module DFSUDT0*x* could not be loaded, *x* having either the default value of A or the value specified on the DVCTBL utility input statement.

System action: Processing continues using the default Device Characteristics Table.

User response: If your system does not have 3270-An type devices, this message is of no significance. If your system does have 3270-An type devices, verify the existence of the DFSUDT0*x* module and specify the current suffix on the DVCTBL utility input statement.

Module: FABVCNL

FABV0030W MID/DIF TIMESTAMPS NOT THE SAME FOR MBR *member*

Explanation: The time stamp that indicates when the MID was generated differs from the time stamp of the DIF that is referenced by this MID. *member* shows the name of the MID.

System action: The utility does not build the source for the format that is referenced by the MID and the message descriptors that are associated with the format. The utility continues processing. When the MFS Reversal utility is run without the OPTION NOXRPT statement, the utility stops to analyze and report the cross-reference information of the MID and continues with the next format.

User response: The difference between the time stamps indicates that the MFS control blocks might be inconsistent. Consider regenerating the format that is referenced by the MID and the message descriptors that are associated with the format.

Module: FABVBLDC

FABV0031W MOD/DOF TIMESTAMPS NOT THE SAME FOR MBR *member*

Explanation: The time stamp that indicates when the MOD was generated differs from the time stamp of the DOF that is referenced by this MOD. *member* shows the name of the MOD.

System action: The utility does not build the source for the format that is referenced by the MOD and the message descriptors that are associated with the format. The utility continues processing. When the MFS Reversal utility is run without the OPTION NOXRPT statement, the utility stops to analyze and report the cross-reference information of the MOD and continues with the next format.

User response: The difference between the time stamps indicates that the MFS control blocks might be inconsistent. Consider regenerating the format that is referenced by the MOD and the message descriptors that are associated with the format.

Module: FABVBLDC

FABV0044I SOURCE FOR MEMBER *member* **BUILT.**

Explanation: MFS Reversal has successfully generated source code for the specified member. This message is an informational message.

System action: The utility continues with the source build for the next MID/MOD specified on the SELECT statement.

User response: None. This message is informational.

Module: FABVBLDC

FABV0045E NON-ZERO RETURN CODE FROM DYNALLOC.

Explanation: The MVS macro DYNALLOC, which is used for determining file characteristics, returned a non-zero return code.

System action: Processing terminates.

User response: Try running the utility again. If the problem persists, contact IBM Software Support for assistance.

Module: FABVQRY

FABV0046E NO SELECTED MEMBER FOUND IN FORMAT LIBRARY.

Explanation: None of the selected members was found in the format library.

System action: Processing terminates.

User response: Check the names of the MIDs and MODs on the SELECT statement. Also check that the format library is correctly specified.

Module: FABVANL

FABV0047E EMPTY SELECT STATEMENT

Explanation: No member name is specified in the SELECT statement.

System action: Processing terminates.

User response: None.

Module: FABVANL

FABV0054E FORMAT LIB HAS NO MEMBERS

Explanation: The library specified with FORMAT DD contains no member.

System action: Processing terminates.

User response: None.

Module: FABVCNTL

FABV0060I COPY PROCESS STARTED

Explanation: The copy process started.

System action: The copy process continues.

User response: None. This message is informational.

Module: FABVCOPY

FABV0061I COPY PROCESS COMPLETED

Explanation: The copy process completed.

System action: The copy process ends and the utility continues processing.

User response: None. This message is informational.

Module: FABVCOPY

FABV0062W COPY PROCESS COMPLETED, BUT SOME WARNINGS WERE DETECTED

Explanation: The copy process completed with warning conditions.

System action: The copy process ends and the utility continues processing.

User response: Check the preceding warning messages. If necessary, correct the warning conditions and rerun the utility.

Module: FABVCOPY

FABV0063E COPY PROCESS COMPLETED, BUT SOME ERRORS WERE DETECTED

Explanation: The copy process completed, but one or more errors were detected.

System action: The copy process ends and the utility continues processing.

User response: Check the preceding error messages. If necessary, correct the error conditions and rerun the utility.

Tip: Incomplete members might be created in the partitioned data set that is specified by the COPYFMT DD statement. The presence of these members might lead to poor performance or shortage of space when rerunning the copy function. If performance degradation or space shortage is a concern, remove the existing members and redefine the data set before you rerun the job.

Module: FABVCOPY

FABV0064E COPY PROCESS ENDED BECAUSE ERRORS WERE DETECTED

Explanation: The copy process ended abnormally with one or more errors. The COPYPRT DD statement was specified for the job, but a copy report is not generated.

System action: The copy process ends abnormally. The utility does not generate a copy report.

User response: Check the preceding error messages. Correct the error conditions and rerun the utility.

Tip: Incomplete members might be created in the partitioned data set that is specified by the COPYFMT DD statement. The presence of these members might lead to poor performance or shortage of space when rerunning the copy function. If performance degradation or space shortage is a concern, remove the existing members and redefine the data set before you rerun the job.

Module: FABVCOPY

FABV0065E COPY PROCESS ENDED BECAUSE COPYFMT LIBRARY CONTAINED SOME ALIAS MEMBERS

Explanation: The copy process ended abnormally because some alias members, which are not supported by the copy function, were detected in the partitioned data set that is specified in the COPYFMT DD statement. No MFS control blocks are copied to the partitioned data set. The COPYPRT DD statement was specified for the job, but a copy report is not generated.

System action: The copy process ends abnormally.

User response: Check the partitioned data set that is specified in the COPYFMT DD statement. If necessary, delete the alias members and rerun the utility.

Module: FABVCOPY

FABV0070I COPY COMPLETED FOR MBR=*member*

Explanation: The indicated member was copied to the partitioned data set that is specified by the COPYFMT DD statement.

System action: The utility continues processing.

User response: None. This message is informational.

Module: FABVCOPY

FABV0071I SUCCESSFULLY REPLACED MBR=*member*

Explanation: The indicated member, which resides in the partitioned data set that is specified by the COPYFMT DD statement, is replaced.

System action: The utility continues processing.

User response: None. This message is informational.

Module: FABVCOPY

FABV0072I COPY SKIPPED FOR MBR=*member*, THE MEMBER ALREADY EXISTS

Explanation: The indicated member exists in the partitioned data set that is specified by the COPYFMT DD statement. Because the REPLACE=YES option is not specified in the SYSIN DD, the copy process skipped this member.

System action: The utility continues processing.

User response: None. This message is informational.

Module: FABVCOPY

FABV0073W COPY SKIPPED FOR MBR=*member*, THE MEMBER TYPE IS ALIAS

Explanation: The indicated member, which resides in the format library that is specified by the FORMAT DD statement, is an alias member. The copy process skipped this member because the copy function does not support alias members.

System action: The utility continues processing.

User response: If you want to copy the alias member, re-create the alias member manually.

Module: FABVCOPY

FABV0074W MBR=*member1* THAT IS REFERENCED BY MBR=*member2* DOES NOT EXIST IN DD=FORMAT

Explanation: Member *member1* that is referenced by member *member2* does not exist in the format library that is specified by the FORMAT DD statement.

System action: The utility continues processing.

User response: Check the format library and, if necessary, re-create the member.

Module: FABVCOPY

FABV0080E BLDL ERROR WHILE COPYING MBR=*member* IN DD=[FORMAT | COPYFMT] RSN=*reason_code* RC=*return_code*

Explanation: An error occurred while the BLDL macro was retrieving the directory information about member *member* that resides in the format library that is specified by the FORMAT DD statement or the partitioned data set that is specified by the COPYFMT DD statement. *reason_code* shows the reason code, and *return_code* shows the return code from the macro.

System action: The utility continues with the next format library member.

User response: See the topic "BLDL completion codes" in *z/OS DFSMS Macro Instructions for Data Sets* to determine the cause of the BLDL macro failure. Correct the error, and rerun the utility. If the problem persists, contact IBM Software Support.

Module: FABVCOPY

FABV0081E READ ERROR WHILE COPYING MBR=*member* IN DD=FORMAT

Explanation: An error occurred while the READ macro was reading member *member* that resides in the format library that is specified by the FORMAT DD statement.

System action: The utility continues with the next format library member.

User response: Determine the cause of the READ macro failure, correct the error, and rerun the utility. If the problem persists, contact IBM Software Support.

Module: FABVCOPY

FABV0082E WRITE ERROR WHILE COPYING MBR=*member* TO DD=COPYFMT

Explanation: An error occurred while a WRITE macro was copying member *member* to the partitioned data set that is specified by the COPYFMT DD statement.

System action: The utility ends abnormally.

User response: Determine the cause of the WRITE macro failure, correct the error, and rerun the utility. If the problem persists, contact IBM Software Support.

Module: FABVCOPY

FABV0083E STOW ERROR WHILE COPYING MBR=*member* TO DD=COPYFMT RSN=*reason_code* RC=*return_code* ID=*id*

Explanation: An error occurred in the STOW macro that was issued while the copy process was copying member *member* to the partitioned data set that is specified in the COPYFMT DD statement. *reason_code* shows the reason code, and *return_code* shows the return code from the macro. *id* is an identifier that is associated with the internal location where the STOW macro was issued.

System action: The utility ends abnormally.

User response: See the topic "STOW completion codes" in *z/OS DFSMS Macro Instructions for Data Sets* to determine the cause of the STOW macro failure. Correct the error, and rerun the utility. If the problem persists, contact IBM Software Support.

Module: FABVCOPY

FABV0084E READ ERROR WHILE COPYING IN DD=COPYFMT

Explanation: An error occurred while the READ macro was reading the directory entry of the

partitioned data set that is specified by COPYFMT DD statement.

System action: The utility ends abnormally.

User response: Determine the cause of the READ macro failure, correct the error, and rerun the utility. If the problem persists, contact IBM Software Support.

Module: FABVCOPY

FABV0099E INVALID PROGRAM INVOCATION

Explanation: An attempt was made to invoke the Reversal or Compare utility incorrectly.

System action: Processing terminates.

User response: Correct the JCL used to invoke the utility and try running the utility again.

Module: FABVCNTL

FABV3000E GETMAIN FAILED

Explanation: The program could not obtain sufficient area with the GETMAIN macro.

System action: The MFS Reversal utility ends abnormally.

User response: Increase the region size on the JOB or the EXEC statement in the JCL, and rerun the utility.

Module: FABVCNTL, FABVMREF

FABV9000I EXCLUDED MEMBER=*member*

Explanation: The utility skips processing the member *member* of a MID, MOD, DIF, or DOF that is specified in the EXCLUDE statement.

System action: Processing continues.

User response: None. This message is informational.

Module: FABVBLDC

FABW messages

Messages that are issued by the Multiple Resource Checker utility begin with the prefix FABW.

FABW0001I CONTROL STATEMENT SUPPLIED IS: *control statement*

Explanation: This message is the echo of the FABWCTL control statements that are processed by the Multiple Resource Checker utility.

System action: The Multiple Resource Checker utility continues processing.

User response: None. This message is informational.

FABW0002I PARAMETER USED IS: *parameter*

Explanation: The Multiple Resource Checker utility proceeds with the indicated parameter.

System action: The Multiple Resource Checker utility continues processing.

User response: None. This message is informational.

FABW0003I NO DIFFERENCE IN THE RECON DATA SETS

Explanation: The Multiple Resource Checker utility found no difference in the RECON data sets. This message is printed in the FABWRRPT data set.

System action: The Multiple Resource Checker utility continues processing.

User response: None. This message is informational.

FABW0011W DB TYPES ARE INCONSISTENT. MEMBER *member* **IS NOT COMPARED**

Explanation: The Multiple Resource Checker utility did not check the indicated member because the database type, which is defined on the TYPE parameter of the RECON record, did not match. This message is printed in the FABWRRPT data set when the utility compares RECON data sets.

System action: The Multiple Resource Checker utility continues processing.

User response: None.

FABW0012W ACB *member* **IN ACBLIB***xx* **IS NOT COMPARED BECAUSE IT WAS GENERATED BY AN UNSUPPORTED IMS VERSION**

Explanation: The indicated ACB member, which was found in the indicated ACB library, was generated by an IMS release that is not supported by the Multiple Resource Checker utility. The RESULT field in the Resource Check Summary report shows DIFF for this ACB member.

System action: The Multiple Resource Checker utility skips this member and continues processing.

User response: None.

FABW0013W RECON*xxn* **DD STATEMENT MISSING**

Explanation: The Multiple Resource Checker utility detected an invalid specification for the indicated DD statement.

System action: The Multiple Resource Checker utility continues processing without the indicated DD statement.

User response: Correct the indicated DD statement and rerun the job.

FABW1001E DUPLICATE CONTROL STATEMENT FOUND

Explanation: Two or more identical control statements were found in the FABWCTL data set.

System action: The Multiple Resource Checker utility ends with a return code of 8.

User response: Remove the duplicate statement and rerun the job.

FABW1002E INCORRECT PARAMETER FOUND ON THE CONTROL STATEMENT

Explanation: The Multiple Resource Checker utility detected an incorrect parameter in the control statements that are specified in the FABWCTL data set.

System action: The Multiple Resource Checker utility ends with a return code of 8.

User response: Correct the parameter in the control statement and rerun the job.

FABW1003E INCORRECT MEMBER NAME IS SPECIFIED ON THE CONTROL STATEMENT

Explanation: The member name that is specified on the control statement is incorrect. For example, the member name contained more than 8 characters.

System action: The Multiple Resource Checker utility ends with a return code of 8.

User response: Correct the member name in the control statement and rerun the job.

FABW1004E INCORRECT CONTROL STATEMENT FOUND

Explanation: A control statement with incorrect format was found in the FABWCTL data set.

System action: The Multiple Resource Checker utility ends with a return code of 8.

User response: Correct the format of the control statement and rerun the job.

FABW1005E CANNOT ACCESS THE RECON DATA SET SPECIFIED BY RECON*xxn* DD

Explanation: The Multiple Resource Checker utility could not access the RECON data sets because IMS RESLIB is missing or invalid RECON data set is specified.

System action: The Multiple Resource Checker utility ends with a return code of 8.

User response: Ensure that the required libraries are provided with DD statements. Correct the DD statements and rerun the job.

FABW1006E DD STATEMENT FOR *resource* IS NOT SPECIFIED

Explanation: The DD statement for the indicated resource, which is required to run the function, is missing. One of the following resource names is shown:

- DBD
- PSB
- ACB
- RECON
- IMSV*nn*
- FABWRRPT

System action: The Multiple Resource Checker utility ends with a return code of 8.

User response: Determine whether the required libraries are supplied with DD statements. Correct the DD statements and rerun the job.

FABW1007E THE NUMBER OF CONTROL STATEMENTS EXCEEDED THE MAXIMUM ALLOWABLE NUMBER

Explanation: The number of control statements in the FABWCTL data set exceeded the maximum value of 9999.

System action: The Multiple Resource Checker utility ends with a return code of 8.

User response: Correct the error and rerun the job.

FABW1008E INCORRECT VERSION OF IMS RESLIB IS SPECIFIED FOR *ddname* DD

Explanation: The IMS release level of IMS RESLIB is not consistent with the indicated DD.

System action: The Multiple Resource Checker utility ends with a return code of 8.

User response: Correct the error and rerun the job.

FABW1010E NO MEMBERS ARE PROCESSED

Explanation: The Multiple Resource Checker utility could not find the members to process.

System action: The Multiple Resource Checker utility job ends with the return code 8.

User response: Specify the correct libraries or the correct DBD= or PSB= control statement, and rerun the job.

FABW3001E GETMAIN FAILED

Explanation: The GETMAIN macro for storage failed.

System action: The Multiple Resource Checker utility job ends abnormally.

User response: Ensure that the REGION parameter for the JOB or EXEC statement is reasonably large enough. If the region size is small, increase the size, and rerun the job.

FABW3002E OPEN FAILED FOR DDNAME: *ddname*

Explanation: The OPEN macro for the indicated DD failed.

System action: The Multiple Resource Checker utility job ends abnormally.

User response: Check whether the correct data set is specified to the DD statement. Correct the error and rerun the job.

FABW3003E LOAD FAILED FOR MODULE: *module*

Explanation: The LOAD macro for the indicated module failed.

System action: The Multiple Resource Checker utility job ends abnormally.

User response: Check whether the correct load module is contained in the program libraries that are concatenated to the STEPLIB DD statement. Correct the error and rerun the job.

FABW3004E RECON ACCESS FAILED. *text*

Explanation: An error was detected in the RECON access processing. *text* provides additional information about the error:

- FUNC=*function*
- RETURN CODE=*return_code*
- REASON CODE=*reason_code*

System action: The Multiple Resource Checker utility job ends abnormally.

User response: Correct the error and rerun the job.

FABW3005E ATTACH FAILED FOR MODULE: *module-name* **(RC=***xx***)**

Explanation: The ATTACH macro for the indicated module failed.

System action: The Multiple Resource Checker utility job ends abnormally.

User response: Check the return code from ATTACH macro shown in the message, correct the error, and rerun the job.

FABW3006E *nnn* **DIRECTORY READ ERROR**

Explanation: A read error occurred when reading the directory. *nnn* is DBD, PSB or ACB.

System action: The Multiple Resource Checker utility job ends abnormally.

User response: Determine the cause of the READ macro failure, correct the error, and rerun the utility. If the problem persists, contact IBM Software Support.

FABW3007E [RECON | DBD | PSB | ACB(DBD) | ACB(PSB) | CROSS(DBD) | CROSS(PSB) | RECON(DBD)] COMPARE THREAD ENDS ABNORMALLY

Explanation: The Multiple Resource Checker detected an abnormal thread termination.

System action: The Multiple Resource Checker utility job ends abnormally.

User response: Determine the cause of the thread failure, correct the error, and rerun the utility. If the problem persists, contact IBM Software Support.

FABX messages

Messages that are issued by the Catalog Manager utility begin with the prefix FABX. Also, some messages that are issued when you use the DBD/PSB Map Viewer also begin with the prefix FABX.

FABX0001I CATALOG MANAGER ENDED NORMALLY.

Explanation: The Catalog Manager utility ended successfully.

System action: The Catalog Manager utility ends with a return code of 0.

User response: See the results in the Catalog Manager utility reports.

FABX0002W CATALOG MANAGER ENDED WITH WARNINGS.

Explanation: The Catalog Manager utility detected warning conditions.

System action: The Catalog Manager utility ends with a return code of 4.

User response: For more information about the warning conditions, see other FABX messages and DFS messages that are issued by WTO or messages in the Catalog Manager utility reports.

FABX0003E CATALOG MANAGER ENDED WITH ERRORS.

Explanation: The Catalog Manager utility detected errors.

System action: The Catalog Manager utility ends with a return code of 8.

User response: For more information about the errors, see other FABX messages and DFS messages that are issued by WTO or messages in the Catalog Manager utility reports.

FABX0004W ONE OR MORE INVALID DBD OR PSB RESOURCES FOUND DURING THE ACBGEN TIMESTAMP CHECK PROCESS.

Explanation: The Catalog Manager utility detected inconsistent time stamps between the DBDs and PSBs in the ACB libraries and the DBDs and PSBs in the IMS catalog.

System action: The Catalog Manager utility continues processing.

User response: In the IMS Catalog Validation report, find the DBDs and PSBs that have the INVALID indicator.

To synchronize the DBDs and PSBs in the IMS catalog with the DBD and PSB members in the ACB libraries, run the ACB Generation and Catalog Populate utility (DFS3UACB) or the IMS Catalog Populate utility (DFS3PU00).

FABX0005W VALIDATION FAILED BECAUSE ONE OR MORE DBD OR PSB RESOURCES HAVE NO TIMESTAMP INFORMATION.

Explanation: The time stamps of some resources in the IMS catalog were not found or are invalid. The Catalog Manager utility could not validate some resources.

System action: The Catalog Manager utility continues processing.

User response: In the IMS Catalog Validation report, find the DBDs and PSBs that have the FAILED indicator.

If the failed resource is a PSB that contains PCBs that refer to GSAM databases or logical databases, the Catalog Manager utility does not support the time stamp validation for the PSB because the PSB in the IMS catalog does not have a time stamp.

For other resources, the DBD or PSB resources in the IMS catalog might be corrupted. To correct them, run the ACB Generation and Catalog Populate utility (DFS3UACB) or the IMS Catalog Populate utility (DFS3PU00).

FABX0006W ONE OR MORE DBD OR PSB RESOURCES INCONSISTENT BETWEEN IMS CATALOG AND IMS DIRECTORY.

Explanation: The Catalog Manager utility detected inconsistent time stamps between the DBDs and PSBs in the IMS catalog database and the DBDs and PSBs in the IMS directory data sets. The time stamps of DBDs and PSBs in the IMS catalog database and the IMS directory data sets should always match. The IMS catalog database is corrupted.

System action: The Catalog Manager utility continues processing.

User response: In the IMS Catalog Validation report, find the DBDs and PSBs that have the INVALID indicator.

To repair the IMS catalog, run the ACB Generation and Catalog Populate utility (DFS3UACB) or the IMS Catalog Populate utility (DFS3PU00).

FABX0007W ONE OR MORE INVALID DBD OR PSB RESOURCES FOUND DURING THE DECODE PROCESS.

Explanation: One or more warning messages were issued.

System action: IMS Library Integrity Utilities ends with a return code of 4.

User response: None.

FABX0008W THE PROGRAM VIEW (PSB) IS NOT VALID FOR IMS SQL BECAUSE [DB SCHEMA (DB PCB) IS NOT DEFINED | SCHEMA NAME (PCB NAME) IS NOT DEFINED TO THE DB SCHEMA (DB PCB)]

Explanation: DB Schema (DB PCB) list was not generated because the specified PSB does not have a DB PCB that is effective for IMS SQL.

System action: IMS Library Integrity Utilities ends with a return code of 4.

User response: None.

FABX0009W DBD INSTANCES WITH AN OLD DB VERSION ARE NOT USED BECAUSE DATABASE VERSIONING IS NOT ENABLED.

Explanation: One or more DBDs have multiple DBD instances each with different DB Version (DBVER=). DBD instances with an old DB Version are not used by IMS because database versioning is not enabled in the specified IMS subsystem.

System action: IMS Library Integrity Utilities ends with a return code of 4.

User response: None.

FABX0010I THE CATALOG [VALIDATION | COMPARE] PROCESS IS IN PROGRESS. *xxx.x* % COMPLETE.

Explanation: This message shows the progress of the validation or the compare process.

System action: IMS Library Integrity Utilities continues processing.

User response: None. This message is informational.

FABX0011W A WARNING MESSAGE IS PRINTED IN THE [DBD | PSB] *resource* SOURCE.

Explanation: The DBD or PSB macro source was generated from the indicated resource in the IMS catalog directory. However, a warning was issued. The warning message is printed in the comment line of the DBD or PSB macro source code.

System action: IMS Library Integrity Utilities continues processing.

User response: Locate the warning message in the DBD or PSB macro source code and, if necessary, take necessary steps to resolve the issue.

FABX0012W EXPORT ENDED WITH WARNINGS.

Explanation: IMS Library Integrity Utilities detected warning conditions in export processing.

System action: IMS Library Integrity Utilities ends with a return code of 2.

User response: For more information about the warning conditions, see other FABX messages and DFS messages that are issued by WTO or messages in the Catalog Manager utility reports.

FABX0013I THE DECODED SOURCE CONTAINS STATEMENTS THAT WERE SUPPLEMENTED FROM THE ACTIVE ACB DATA SETS OF THE IMS DIRECTORY.

Explanation: The following parameters and statements were decoded from active ACBs in the IMS directory:

- The VERSION parameter of the DBD statement
- The EXIT parameter of the DBD and SEGM statements
- The SENSEG statement

This happens when the utility tries to decode a DBD or PSB in the IMS directory staging data set and the PSB that refers to the DBD or the DBD that the PSB refers to does not exist in the IMS directory staging data set.

When the utility decodes a DBD or PSB and it detects missing parameters, it looks for the PSB that refers to the DBD or the DBD that the PSB refers to to supplement the missing parameters. Because a staging data set does not store all the DBDs and PSBs – it stores modified DBDs and PSBs only – if the utility cannot find the relevant DBD or PSB in the staging data set, it looks for the DBD or PSB in the active ACB data sets of the IMS directory and uses the information in the active ACB to supplement the missing parameters.

System action: The Catalog Manager utility continues processing.

User response: None. This message is informational.

FABX0501E UNSUPPORTED LEVEL OF IMS IS BEING USED: *xx.x*.

Explanation: The version of the IMS.SDFSRESL data set in the STEPLIB is not supported by the Catalog Manager utility.

System action: The Catalog Manager utility ends with a return code of 8.

User response: Specify the IMS.SDFSRESL data set of a supported IMS version and rerun the job.

FABX0502E ACCESS TO THE IMS CATALOG FAILED.

Explanation: The Catalog Manager utility could not access the IMS catalog database.

System action: The Catalog Manager utility ends with a return code of 8.

User response: Use the DFS messages that were issued during the Catalog Manager utility job step to identify the cause of the error.

FABX0503E GETMAIN FAILED WITH RC=*rc* **(SIZE=***size***).**

Explanation: The Catalog Manager utility could not obtain enough area when it used the GETMAIN macro.

System action: The Catalog Manager utility ends with a return code of 8.

User response: Increase the value of the REGION= parameter in the JCL. For more information about increasing the value of the JCL REGION parameter, see the topic "REGION parameter" in the *z/OS MVS JCL Reference*.

FABX0504E ATTACH FAILED WITH RC=*rc***. MEMBER** *member* **IN** *ddname* **DD.**

Explanation: The Catalog Manager utility could not attach a subtask.

System action: The Catalog Manager utility ends with a return code of 8.

User response: Ensure that the member or *ddname* DD data sets are correct and that the data set is not damaged. If the member and the data sets are correct, increase the value of the REGION= parameter in the JCL. For more information about increasing the value of the JCL REGION parameter, see the topic "REGION parameter" in the *z/OS MVS JCL Reference*.

FABX0505E OPEN FAILED FOR THE *ddname* **DATA SET. RC=***return_code*

Explanation: The Catalog Manager utility could not open the indicated data set. The return code from the OPEN macro is shown in the message.

System action: The Catalog Manager utility ends with a return code of 8.

User response: Ensure that the format of the data sets is correct and that the data sets are not damaged. The return code that is shown in the message is the return code from the OPEN macro. Use the information about the return codes in the topic "OPEN return codes" in *z/OS DFSMS Macro Instructions for Data Sets* to identify the cause of the error.

FABX0506E LOAD FAILED WITH SYSTEM COMPLETION CODE=*sc* **AND RSN=***rsn***. MEMBER** *member* **IN** *ddname* **DD.**

Explanation: The load module member could not be loaded from the indicated data set. The data set might be missing the member, the data set or the load module member might be damaged, or there might be other error causes.

System action: The Catalog Manager utility ends with a return code of 8.

User response: Use the information about the system completion codes in the topic "System completion codes" in *z/OS MVS System Codes* to identify the cause of the error.

FABX0507E DYNALLOC FAILED FOR THE *ddname* **DD WITH RC=***rc* **AND RSN=***rsn***. DSN=***dsname*

Explanation: The data set could not be allocated dynamically.

System action: The Catalog Manager utility ends with a return code 8.

User response: The return code and reason code in the message are from the DYNALLOC macro. Use the information about the return codes and reason codes in the topic "Interpreting error reason codes from DYNALLOC" in the *z/OS MVS Programming: Authorized Assembler Services Guide* to identify the cause of the error.

FABX0508E DESERV FAILED WITH RC=*rc* **AND RSN=***rsn***. DD=***ddname*

Explanation: The DESERV macro for the indicated DD failed.

System action: The Catalog Manager utility ends with a return code 8.

User response: Ensure that the format of the data sets is correct and that the data sets are not damaged. The return code and reason code in the message are from the DESERV macro. Use the information about return codes and reason codes in the topic "DESERV completion codes" in *z/OS DFSMS Macro Instructions for Data Sets* to identify the cause of the error.

FABX0509E *ddname* **DD IS MISSING.**

Explanation: The indicated DD is not allocated.

System action: The Catalog Manager utility ends with a return code 8.

User response: See "Control statements for the Catalog Manager utility" on page 370 and specify the indicated DD statement in the JCL.

FABX0510E ERROR OCCURRED IN DFSRRC00. COMPLETION CODE IS [USER | SYSTEM] *compcode***.**

Explanation: Error occurred in the IMS DFSRRC00 processing.

System action: IMS Library Integrity Utilities ends with a return code of 8.

User response: If a user completion code is displayed, see the topic "IMS abend codes" in *IMS Messages and Codes* and correct the error. If a system completion code is displayed, contact IBM Software Support.

FABX0511E AN ERROR OCCURRED WHILE READING ACB MEMBER *member***.**

Explanation: The indicated member could not be read from the ACB library.

System action: The Catalog Manager utility skips the member and continues processing other members. When all of the other members are processed, the Catalog Manager utility ends with a return code of 8.

User response: Ensure that the member or the data set directory is not damaged.

FABX0512E THERE ARE NO DBD OR PSB RESOURCES IN IMS DIRECTORY *ims_directory_data_set***.**

Explanation: This message indicates that the IMS directory data sets are empty.

ims_directory_data_set shows either of the following texts:

ACTIVE
The IMS directory data sets for storing active resources are empty.

STAGING
The IMS directory staging data set is empty.

System action: IMS Library Integrity Utilities ends with a return code of 8.

User response: If this message is issued for active resources, IMS catalog might not contain correct data. Run the ACB Generation and Catalog Populate utility (DFS3UACB) to correct the IMS catalog. If this message is issued for pending resources, select active resources.

FABX0513E BLDL FOR THE *ddname* **DD FAILED WITH RC=***rc***.**

Explanation: The BLDL macro for the indicated DD failed.

System action: The Catalog Manager utility ends with a return code of 8.

User response: Ensure that the format of the data sets is correct and that the data sets are not damaged.

FABX0514E *parameter* **CANNOT BE SPECIFIED FOR THE** *keyword* **KEYWORD.**

Explanation: An invalid parameter is specified for the keyword.

System action: The Catalog Manager utility ends with a return code of 8.

User response: Correct the keyword parameter and rerun the job. For the supported combinations of keywords and parameters, see "Control statements for the Catalog Manager utility" on page 370.

FABX0516E ERROR IN THE FABXCIN CONTROL STATEMENT.

Explanation: The Catalog Manager utility detected a control statement error in the FABXCIN control statements.

System action: The Catalog Manager utility ends with a return code of 8.

User response: Use other messages with the prefix FABX to identify the error. The messages might be printed in the Catalog Manager utility reports. Correct the error and rerun the job.

FABX0517E *statement* **STATEMENT MUST NOT BE SPECIFIED MORE THAN ONCE.**

Explanation: The indicated statement cannot be specified more than once.

System action: The Catalog Manager utility ends with a return code of 8.

User response: Correct the error and rerun the job.

FABX0519E PROC STATEMENT MUST BE SPECIFIED BEFORE THE *statement* **STATEMENT.**

Explanation: The PROC statement is not specified on the first line of the FABXCIN control statements.

System action: The Catalog Manager utility ends with a return code of 8.

User response: Specify the PROC statement on the first line in the FABXCIN data set, and then rerun the job.

FABX0520E *statement* **STATEMENT MUST BE SPECIFIED.**

Explanation: The indicated statement is not specified in the FABXCIN control statements.

System action: The Catalog Manager utility ends with a return code of 8.

User response: See "Control statements for the Catalog Manager utility" on page 370 and specify the indicated statement. Then, rerun the job.

FABX0521E SYNTAX ERROR IN THE CONTROL STATEMENT.

Explanation: The Catalog Manager utility detected a syntax error in the FABXCIN control statements.

System action: The Catalog Manager utility ends with a return code of 8.

User response: See "Control statements for the Catalog Manager utility" on page 370 and ensure that the control statement conforms to the syntax rules. Then, rerun the job.

FABX0522E UNRECOGNIZED STATEMENT SPECIFIED. STATEMENT: *statement*

Explanation: The indicated statement is not a valid statement for the Catalog Manager utility.

System action: The Catalog Manager utility ends with a return code of 8.

User response: See "Control statements for the Catalog Manager utility" on page 370 and correct the indicated statement. Then, rerun the job.

FABX0523E *keyword* **KEYWORD CANNOT BE SPECIFIED FOR THE** *statement* **STATEMENT.**

Explanation: The indicated keyword is not supported for the indicated statement.

System action: The Catalog Manager utility ends with a return code of 8.

User response: See "Control statements for the Catalog Manager utility" on page 370 and correct the control statement. Then, rerun the job.

FABX0524E THE NUMBER OF *keyword* **KEYWORDS EXCEEDED THE LIMIT. MAX IS** *num***.**

Explanation: The number of keywords that are specified in the FABXCIN data set exceeds the maximum number of keywords that can be specified.

System action: The Catalog Manager utility ends with a return code of 8.

User response: Specify fewer keywords, and then rerun the job.

FABX0525E *keyword* **KEYWORD MUST BE SPECIFIED FOR THE** *statement* **STATEMENT.**

Explanation: The indicated keyword must be specified for the indicated statement.

System action: The Catalog Manager utility ends with a return code of 8.

User response: Add the keyword to the indicated statement, and then rerun the job.

FABX0526E THE NUMBER OF PARAMETERS SPECIFIED IN *keyword* **KEYWORD EXCEEDED THE LIMIT. MAX IS** *num***.**

Explanation: The number of parameters that are specified for the indicated keyword exceeds the maximum number of parameters that can be specified.

System action: The Catalog Manager utility ends with a return code of 8.

User response: Specify fewer parameters, and then rerun the job.

FABX0527E THE *n***TH PARAMETER ON THE** *keyword* **KEYWORD HAS INCORRECT LENGTH.**

Explanation: The length of the indicated parameter that is specified for the indicated keyword is invalid.

System action: The Catalog Manager utility ends with a return code of 8.

User response: See "Control statements for the Catalog Manager utility" on page 370 and correct the length of the indicated parameter. Then, rerun the job.

FABX0528E THE PARAMETER FOR *keyword* **MUST CONSIST ONLY OF ALPHANUMERIC CHARACTERS, $, #, @, %, AND *.**

Explanation: The parameter specified for the indicated keyword contains one or more unsupported characters.

System action: The Catalog Manager utility ends with a return code of 8.

User response: Correct the parameter and rerun the job.

FABX0531E MEMBER *member* **WAS GENERATED BY IMS** *version* **OR EARLIER.**

Explanation: DBD and PSB members in the ACB library cannot be processed because they were generated by an unsupported version of IMS.

System action: IMS Library Integrity Utilities ends with a return code of 8.

User response: Run the ACB Generation and Catalog Populate utility (DFS3UACB) that is provided by a supported version of IMS.

FABX0532E THE RESOURCE *resource* IN THE [ACBLIB | IMS CATALOG | IMS DIRECTORY] IS NOT [DBD | PSB].

Explanation: The resource identified by the resource name does not match the specified resource type.

System action: IMS Library Integrity Utilities ends with a return code of 8.

User response: Specify the correct resource name and resource type.

FABX0533W THE SPECIFIED [DBD | PSB] RESOURCE *resource* DOES NOT EXIST IN THE [ACBLIB | IMS CATALOG | IMS DIRECTORY].

Explanation: The specified DBD or PSB resource was not found in the ACBLIB, IMS catalog, or IMS directory.

System action: IMS Library Integrity Utilities ends with a return code of 2 or 4.

User response: Specify the correct resource name.

FABX0535E ACCESS TO THE IMS DIRECTORY FAILED WITH RC=*rc* AND RSN=*rsn*. FUNCTION=*func*

Explanation: The Catalog Manager utility cannot access the IMS catalog. This message is issued when IMS loads ACBs from the IMS catalog instead of from the ACB libraries and the Catalog Manager utility fails to access the IMS catalog.

System action: The Catalog Manager utility ends with a return code of 8.

User response: Ensure that the following IMS catalog parameters are specified correctly, and then rerun the job:

- DFSDF*xxx* member name.
- Parameters in the FABXPPRM DD data set.
- If you use the Catalog Definition exit routine (DFS3CDX0), the exit routine exists in the STEPLIB concatenation.

If the problem persists, contact IBM Software Support.

FABX0536E IMS CATALOG IS NOT ENABLED.

Explanation: The IMS catalog is not enabled in the IMS system.

System action: The Catalog Manager utility ends with a return code of 8.

User response: Enable the IMS catalog in one of the following ways:

- By the IMS catalog section of the DFSDF*xxx* member that is specified in the FABXPPRM DD data set in the Catalog Manager utility JCL.
- By the IMS Catalog Definition user exit routine (DFS3CDX0) in the STEPLIB DD data set in the Catalog Manager utility JCL.

FABX0537E IMS CATALOG IS NOT DEFINED TO THE IMS.
THE IMS MANAGEMENT OF ACBS IS NOT ENABLED. IMS DIRECTORY IS NOT DEFINED TO THE IMS.
[ACBLIB | DBDLIB] IS NOT DEFINED TO THE IMS.

Explanation: The requested function requires the IMS catalog, IMS directory, DBD library, or ACB library. However, none of these were found in the specified IMS subsystem.

System action: IMS Library Integrity Utilities ends with a return code of 12.

User response: Select the correct IMS ID.

FABX0538E IMS TOOLS BASE V1.6 OR LATER IS REQUIRED TO ENABLE THE FUNC KEYWORD PARAMETERS

Explanation: The requested IMS Library Integrity Utilities function requires IBM IMS Tools Base for z/OS Version 1.6 or later, however the load module library of IBM IMS Tools Base V1.6 or later is not found in the STEPLIB DD concatenation.

System action: IMS Library Integrity Utilities ends with a return code of 8.

User response: Specify the load module library of IBM IMS Tools Base for z/OS V1.6 or later to the STEPLIB DD concatenation.

If you received this message while using Management Console or the ISPF interface of IMS Administration Tool, add the IBM IMS Tools Base SGLXLOAD library to the STEPLIB DD concatenation of the SOT procedure of Distributed Access Infrastructure.

FABX0539E CATALOG IS EMPTY.

Explanation: No DBDs or PSBs are found in the IMS catalog.

System action: IMS Library Integrity Utilities ends with a return code of 8.

User response: Ensure that the IMS catalog is correctly defined to the specified IMS.

FABX0541E IMS ADMINISTRATION TOOL MODULE IS NOT FOUND IN STEPLIB.

Explanation: The product load module library of IMS Administration Tool is not found in the STEPLIB DD concatenation.

System action: IMS Library Integrity Utilities ends with a return code of 99.

User response: Specify the load module library of IMS Administration Tool to the STEPLIB DD concatenation.

If you received this message while using Management Console or the ISPF interface of IMS Administration Tool, add the product load module library of IMS Administration Tool to the STEPLIB DD concatenation of the SOT procedure of Distributed Access Infrastructure.

FABX0542E IMS WAS NOT DISCOVERED. THE IMS MIGHT NOT BE REGISTERED CORRECTLY.

Explanation: The specified IMS was not found. The IMS might not be registered to the IMS Tools Knowledge Base repositories.

System action: IMS Library Integrity Utilities ends with a return code of 16.

User response: Register the IMS ID from the Setup and Administration menu in Management Console or the IMS Administration Tool ISPF dialog.

FABX0543E NAME/TOKEN SERVICE FAILED. NAME: *name* **RC=***rc***.**

Explanation: Internal error. Name/Token service processing failed.

System action: IMS Library Integrity Utilities ends with a return code of 8.

User response: Contact IBM Software Support.

FABX0544E IMS CATALOG ANALYSIS CANNOT BE PERFORMED FOR NON DATA SHARING IMS SYSTEMS.

Explanation: IMS catalog analysis cannot be performed because a data sharing group is not defined to the Administration Tool.

IMS catalog analysis issues DL/I calls to the IMS catalog database. Therefore, to run IMS catalog analysis, data sharing must be configured for the IMS systems so that they can communicate with the LPAR where the IMS Tools Base Distributed Access Infrastructure (DAI) server is running.

System action: IMS Library Integrity Utilities ends with a return code of 99.

User response: Use the IRLM to configure data sharing for the IMS systems. Then create an IMS data sharing group of IMS Administration Tool and register the IMS systems to the group. The IRLM of one of the IMS systems in the group must be defined to the LPAR where the DAI server is running.

FABX0545E CATALOG SEARCH INTERFACE PROCESS FOR *dsname* **DATA SET FAILED WITH RC=***rc***.**

Explanation: DFSMS Catalog Search Interface (CSI) processing failed.

System action: IMS Library Integrity Utilities ends with a return code of 8.

User response: Ensure that the IMS catalog is correctly defined.

FABX0546E IMS CATALOG DATABASE IS NOT OSAM. DSNAME: *dsname*

Explanation: IMS catalog database data sets must be OSAM data sets. The indicated data set is not an OSAM data set.

System action: IMS Library Integrity Utilities ends with a return code of 8.

User response: Ensure that the IMS catalog is correctly defined.

FABX0547E UCBSCAN FOR *dsname* **DATA SET FAILED WITH RC=***rc***.**

Explanation: UCBSCAN processing failed.

System action: IMS Library Integrity Utilities ends with a return code of 8.

User response: Ensure that the IMS catalog is correctly defined.

FABX0548E OBTAIN FOR *dsname* **DATA SET FAILED WITH RC=***rc* **AND DSCB=***dscb***.**

Explanation: OBTAIN processing failed.

System action: IMS Library Integrity Utilities ends with a return code of 8.

User response: Ensure that the IMS catalog is correctly defined.

FABX0549E TRKCALC FOR *dsname* **DATA SET FAILED WITH RC=***rc***.**

Explanation: Internal error. TRKCALC processing failed.

System action: IMS Library Integrity Utilities ends with a return code of 8.

User response: Contact IBM Software Support.

FABX0550W THERE ARE NO DBD OR PSB RESOURCES IN IMS DIRECTORY *ims_directory_data_set*.

Explanation: IMS Library Integrity Utilities did not export any DBD or PSB resources because the indicated IMS directory data set is empty.

ims_directory_data_set shows either of the following texts:

ACTIVE
The IMS directory data sets for storing active resources are empty.

STAGING
The IMS directory staging data set is empty.

System action: IMS Library Integrity Utilities ends with a return code of 2.

User response: None.

FABX0551E THERE ARE NO DBD OR PSB RESOURCES IN THE ACB LIBRARY.

Explanation: The ACB library data set is empty.

System action: IMS Library Integrity Utilities ends with a return code of 8.

User response: Run the Application Control Block Maintenance utility (DFSUACB0) to store ACBs in the ACB library.

FABX0552E IMS CATALOG ANALYSIS CANNOT BE PERFORMED FOR IMS SYSTEMS RUNNING IN A DIFFERENT LPAR.

Explanation: IMS catalog analysis cannot be performed for an IMS control region that is active in an LPAR where the IMS Tools Base Distributed Access Infrastructure (DAI) server is not running. To perform IMS catalog analysis, the PTF for APAR PI90085 must be applied to IMS Administration Tool.

System action: IMS Library Integrity Utilities ends with a return code of 99.

User response: Complete the following steps:

1. Apply the PTF for APAR PI90085 to IMS Administration Tool.
2. Use the IRLM to configure data sharing for the IMS systems.
3. Create an IMS data sharing group of IMS Administration Tool and register the IMS systems to the group. The IRLM of one of the IMS systems in the group must be defined to the LPAR where the DAI server is running.

FABX0553E SECOND MEMBER NAME CANNOT BE SPECIFIED WHEN COMPARING MEMBERS WITH DBDLIB OR PSBLIB.

Explanation: When comparing ACBs in the IMS directory with DBDs or PSBs in DBD or PSB libraries, the Catalog Manager utility does not accept a second member name in the FABXCIN control statement.

System action: The Catalog Manager utility ends with a return code of 8.

User response: If NAME1 and NAME2 keywords specify different member names, delete the NAME2 keyword or specify the same member name for both NAME1 and NAME2 keywords.

FABX0554E IMS DIRECTORIES MUST BE SPECIFIED WITH THE SAME IMSID.

Explanation: IMS Library Integrity Utilities is being used through IMS Administration Tool. IMS Library Integrity Utilities ended with an error because the input parameter provided is incorrect.

System action: IMS Library Integrity Utilities ends with a return code of 8.

User response: None.

FABX0555E MAINTENANCE LEVEL TOO LOW. APPLY MAINTENANCE TO IMS LIBRARY INTEGRITY UTILITIES TO USE THE IMS ADMINISTRATION TOOL CLIENT.

Explanation: The maintenance level of IMS Library Integrity Utilities is too low to use the IMS Administration Tool client.

System action: IMS Library Integrity Utilities ends with a return code of 99.

User response: Apply maintenance to IMS Library Integrity Utilities to use the IMS Administration Tool client.

FABX0556E WILD CARD CHARACTERS CANNOT BE SPECIFIED FOR NAME1= WHEN NAME2= IS SPECIFIED.

Explanation: Wildcard characters cannot be used to describe NAME1= when NAME2= is specified. You can use wildcard characters for NAME1= if NAME2= is not specified.

System action: The Catalog Manager utility ends with a return code of 8.

User response: Correct the keyword parameter and rerun the job.

FABX0557W DIFFERENCE FOUND DURING COMPARE ACB=*members*

Explanation: The compare function ran normally, and a difference was found between the members in the specified libraries. Only one member name is printed when the names of the members that are specified in the control statement are the same.

System action: The Catalog Manager utility generates a compare report and continues processing.

User response: None.

FABX0558E *member* IS AN INTERNAL MEMBER USED BY IMS. THE UTILITY CANNOT PROCESS THIS MEMBER.

Explanation: The indicated member cannot be processed because it is an internal member used by IMS and it is not a DBD or PSB member.

System action: The Catalog Manager utility ends with a return code of 8.

User response: Remove this member from the control statements and rerun the job.

FABX2001I MDA REVERSAL ENDED NORMALLY.

Explanation: The MDA Reversal utility ended successfully.

System action: The MDA Reversal utility ends with a return code of 0.

User response: None. This message is informational.

FABX2002W MDA REVERSAL ENDED WITH WARNINGS.

Explanation: The MDA Reversal utility ended with warning conditions.

System action: The MDA Reversal utility ends with a return code of 4.

User response: Locate other FABX messages and identify the cause.

FABX2003E MDA REVERSAL ENDED WITH ERRORS.

Explanation: The MDA Reversal utility ended with errors.

System action: The MDA Reversal utility ends with a return code of 8.

User response: Locate other FABX messages and identify the cause.

FABX2010I *nnnn* DFSMDA MEMBERS SELECTED. *mmmm* DFSMDA MEMBERS PROCESSED.

Explanation: This message shows the number of DFSMDA members selected (*nnnn*) and the number of DFSMDA members processed (*mmmm*).

System action: Processing continues.

User response: None. This message is informational.

FABX2020I DFSMDA TYPE=FPDEDB IS DECODED AS TYPE=DATABASE BECAUSE OPTION FPDEDB_LIB IS NOT SPECIFIED.

Explanation: Because OPTION FPDEDB_LIB is not specified, the DFSMDA macro that originally had DFSMDA TYPE=FPDEDB is printed as DFSMDA TYPE=DATABASE. This message is issued even if DSFMDA TYPE=FPDEDB was not used to generate the original DFSMDA members.

System action: The MDA Reversal utility continues processing.

User response: Even if the TYPE parameter value is different, you can regenerate an identical DFSMDA member from the decoded DFSMDA macros. However, if you want the original TYPE parameter values printed in decoded DFSMDA macros, specify OPTION FPDEDB_LIB for the MDA Reversal utility control statements and rerun the job.

FABX2021I DFSMDA TYPE=RECON WITH ALTERNATE DDNAME IS DECODED AS TYPE=DATABASE BECAUSE OPTION RECON_ALT_DD IS NOT SPECIFIED.

Explanation: Because OPTION RECON_ALT_DD is not specified, the DFSMDA macro that originally had DFSMDA TYPE=RECON, an alternate DD name, and WAIT=NO parameter is printed as DFSMDA TYPE=DATABASE. This message is issued even if DSFMDA TYPE=RECON was not used to generate the original DFSMDA members.

System action: The MDA Reversal utility continues processing.

User response: Even if the TYPE parameter value is different, you can regenerate an identical DFSMDA member from the decoded DFSMDA macros. However, if you want the original TYPE parameter values printed in decoded DFSMDA macros, specify OPTION RECON_ALT_DD for the MDA Reversal utility control statements and rerun the job.

FABX2103E GETMAIN FAILED WITH RC=*rc* (SIZE=*size*).

Explanation: The GETMAIN macro failed.

System action: The MDA Reversal utility ends with a return code of 8.

User response: Ensure that the REGION parameter for the JOB or EXEC statement is reasonably large enough. If the region size is small, increase the size and rerun the job.

FABX2105E OPEN FAILED FOR THE *ddname* DATA SET. RC=*rc*.

Explanation: The OPEN macro failed for the indicated DD.

System action: The MDA Reversal utility ends with a return code of 8.

User response: Check whether the correct data set is specified to the DD statement. Correct the error and rerun the job.

FABX2106E LOAD FAILED WITH SYSTEM COMPLETION CODE=*sc* AND RSN=*rsn*. MEMBER *member* IN *ddname* DD.

Explanation: The LOAD macro failed for a member in the indicated DD.

System action: The MDA Reversal utility ends with a return code of 8.

User response: Ensure that the correct member exists and rerun the job.

FABX2108E DESERV FAILED WITH RC=*rc* AND RSN=*rsn*. DD=*ddname*

Explanation: The DESERV macro failed for the indicated DD.

System action: The MDA Reversal utility ends with a return code of 8.

User response: Ensure that the format of the data sets is correct and that the data sets are not damaged. The return code and reason code in the message are from the DESERV macro. Use the information about return codes and reason codes in the topic "DESERV completion codes" in *z/OS DFSMS Macro Instructions for Data Sets* to identify the cause of the error.

FABX2109E *ddname* DD IS MISSING.

Explanation: The indicated DD is not allocated.

System action: The MDA Reversal utility ends with a return code of 8.

User response: See "Control statements for the MDA Reversal utility" on page 344 and specify the indicated DD statement in the JCL.

FABX2114E *parameter* CANNOT BE SPECIFIED FOR THE *keyword* KEYWORD.

Explanation: An invalid parameter is specified for the indicated keyword.

System action: The MDA Reversal utility ends with a return code of 8.

User response: Correct the keyword parameter and rerun the job. For the supported combinations of keywords and parameters, see "Control statements for the MDA Reversal utility" on page 344.

FABX2116E ERROR IN THE FABXMIN CONTROL STATEMENT.

Explanation: The MDA Reversal utility detected a control statement error in the FABXMIN control statement.

System action: The MDA Reversal utility ends with a return code of 8.

User response: Locate other WTO messages or refer to reports to identify the cause of the error. Then correct the error and rerun the job.

FABX2117E *statement* STATEMENT MUST NOT BE SPECIFIED MORE THAN ONCE.

Explanation: The indicated statement cannot be specified more than once.

System action: The MDA Reversal utility ends with a return code of 8.

User response: Correct the error and rerun the job.

FABX2119E PROC STATEMENT MUST BE SPECIFIED BEFORE THE *statement* STATEMENT.

Explanation: The PROC statement is not specified on the first line of the FABXMIN control statements.

System action: The MDA Reversal utility ends with a return code of 8.

User response: Specify the PROC statement on the first line in the FABXMIN data set, and then rerun the job.

FABX2120E *statement* STATEMENT MUST BE SPECIFIED.

Explanation: The indicated statement is not specified in the FABXMIN control statements.

System action: The MDA Reversal utility ends with a return code of 8.

User response: See "Control statements for the MDA Reversal utility" on page 344 and specify the indicated statement. Then, rerun the job.

FABX2121E SYNTAX ERROR IN THE CONTROL STATEMENT.

Explanation: The MDA Reversal utility detected a syntax error in the FABXMIN control statements.

System action: The MDA Reversal utility ends with a return code of 8.

User response: See "Control statements for the MDA Reversal utility" on page 344 and ensure that the control statement conforms to the syntax rules. Then, rerun the job.

FABX2122E UNRECOGNIZED STATEMENT SPECIFIED. STATEMENT: *statement*

Explanation: The indicated statement is not a valid statement for the MDA Reversal utility.

System action: The MDA Reversal utility ends with a return code of 8.

User response: See "Control statements for the MDA Reversal utility" on page 344 and correct the indicated statement. Then, rerun the job.

FABX2123E *keyword* **KEYWORD CANNOT BE SPECIFIED FOR THE** *statement* **STATEMENT.**

Explanation: The indicated keyword is not supported for the indicated statement.

System action: The MDA Reversal utility ends with a return code of 8.

User response: See "Control statements for the MDA Reversal utility" on page 344 and correct the control statement. Then, rerun the job.

FABX2124E THE NUMBER OF *keyword* **KEYWORDS EXCEEDED THE LIMIT. MAX IS** *num***.**

Explanation: The number of keywords that are specified in the FABXMIN data set exceeds the maximum number of keywords that can be specified.

System action: The MDA Reversal utility ends with a return code of 8.

User response: Specify fewer keywords, and then rerun the job.

FABX2125E *keyword* **KEYWORD MUST BE SPECIFIED FOR THE** *statement* **STATEMENT.**

Explanation: The indicated keyword must be specified for the indicated statement.

System action: The MDA Reversal utility ends with a return code of 8.

User response: Add the keyword to the indicated statement, and then rerun the job.

FABX2126E THE NUMBER OF PARAMETERS SPECIFIED IN *keyword* **KEYWORD EXCEEDED THE LIMIT. MAX IS** *num***.**

Explanation: The number of parameters that are specified for the indicated keyword exceeds the maximum number of parameters that can be specified.

System action: The MDA Reversal utility ends with a return code of 8.

User response: Specify fewer parameters, and then rerun the job.

FABX2127E THE *n***TH PARAMETER ON THE** *keyword* **KEYWORD HAS INCORRECT LENGTH.**

Explanation: The length of the indicated parameter that is specified for the indicated keyword is invalid.

System action: The MDA Reversal utility ends with a return code of 8.

User response: See "Control statements for the MDA Reversal utility" on page 344 and correct the length of the indicated parameter. Then, rerun the job.

FABX2133W THE SPECIFIED DFSMDA MEMBER *member* **DOES NOT EXIST IN THE LIBRARY.**

Explanation: The indicated DFSMDA member was not found in the library of DFSMDA members.

System action: The MDA Reversal utility skips the indicated member, sets the return code to 4, and continues processing.

User response: Ensure that the indicated DFSMDA member is generated correctly and exists in the library. Then, rerun the job.

FABX2150W NO DFSMDA MEMBERS FOUND IN THE LIBRARY.

Explanation: The library is empty.

System action: The MDA Reversal utility ends with a return code of 4.

User response: Ensure that the MDA library is generated correctly and DFSMDA members exist in the library. Then, rerun the job.

FABX2151W DFSMDA MEMBER *mdaname* IS NOT A VALID DFSMDA MEMBER.

Explanation: The layout of the indicated DFSMDA member is invalid.

System action: The MDA Reversal utility skips the indicated member, sets the return code to 4, and continues processing.

User response: Ensure that the indicated DFSMDA member is generated correctly. Then, rerun the job.

FABX2152W LOAD FAILED WITH SYSTEM COMPLETION CODE=*sc* AND RSN=*rsn*. MEMBER *member* IN *ddname* DD.

Explanation: The MDA Reversal utility failed to load the indicated member.

System action: The MDA Reversal utility skips the indicated member, sets the return code to 4, and continues processing.

User response: Ensure that the indicated DFSMDA member is generated correctly. Then, rerun the job.

FABX2153W BLDL FAILED WITH RC=*rc*. MEMBER *member* IN *ddname* DD.

Explanation: The BLDL macro failed for a member in the indicated DD.

System action: The MDA Reversal utility skips the indicated member, sets the return code to 4, and continues processing.

User response: Ensure that the indicated DFSMDA member is generated correctly. Then, rerun the job.

FABX2160E WRITE FAILED. MEMBER *member* IN *ddname* DD.

Explanation: The WRITE macro failed for a member in the indicated DD.

System action: The MDA Reversal utility ends with a return code of 8.

User response: Determine the cause of the WRITE macro failure, correct the error, and rerun the job.

FABX2161E STOW FAILED WITH RETURN CODE=*rtn* AND RSN=*rsn*. MEMBER *member* IN *ddname* DD.

Explanation: The STOW macro failed for a member in the indicated DD.

System action: The MDA Reversal utility ends with a return code of 8.

User response: Determine the cause of the STOW macro failure. For the return code and the reason code, see the topic "STOW completion codes" in *z/OS DFSMS Macro Instructions for Data Sets*. Correct the problem, and rerun the job.

FABX2170W DFSMDA TYPE=FPDEDB IS DECODED AS TYPE=DATABASE BECAUSE ERRORS OCCURRED WHILE OBTAINING THE NAMES OF DEDB AREAS FROM THE ACBLIB.

Explanation: Errors occurred while obtaining the names of DEDB areas from the ACB library.

System action: The MDA Reversal utility sets the return code to 4 and continues processing.

User response: Although FPDEDB=ACBLIB option is specified on the OPTION statement, all or some DFSMDA members that were generated with DFSMDA TYPE=FPDEDB might be decoded as DFSMDA TYPE=DATABASE. If you want those members decoded as DFSMDA TYPE=FPDEDB, locate message FABX2171W and follow the user response for that message.

FABX2171W REASON: *message_id message_text*

Explanation: This message accompanies message FABX2170W and indicates the reason of the errors that occurred while obtaining DEDB area names from the ACB library. The message ID (*message_id*) indicates the error message issued by the ACB Reversal utility, which was called by the MDA Reversal utility.

System action: The MDA Reversal utility sets the return code to 4 and continues processing.

User response: See the explanation for the indicated ACB Reversal utility message and follow the user response for that message.

FABX3901E OPEN FAILED FOR DATA SET DD: *ddname* RC=*return_code*

Explanation: The specified data set could not be opened.

System action: Processing terminates with a user abend code of U3901.

User response: Ensure that the format of the data set is correct and that the data set is not damaged.

The return code shown in the message is the return code from the OPEN macro. See the return code in the topic "OPEN return codes" in *z/OS DFSMS Macro Instructions for Data Sets* and correct the error.

FABX3902E LOAD FAILED WITH SYSTEM COMPLETION CODE *sc* AND RSN *rsn* (DD: *ddname* MEMBER: *member*)

Explanation: The load module member could not be loaded from the indicated data set.

System action: Processing terminates with a user abend code of U3902.

User response: If the indicated member name is BBES0000 or FABAGVT0, the load module data set of IMS Database Solution Pack, IMS Database Utility Solution, or IMS Fast Path Solution Pack is not specified to the STEPLIB. To use the DBD/PSB Map Viewer in Management Console, IMS Library Integrity Utilities must be installed either from IMS Database Solution Pack, IMS Database Utility Solution, or IMS Fast Path Solution Pack.

If the member name is not BBES0000 or FABAGVT0, the data set might be missing the member, the data set or the load module member might be damaged, or there might be other error causes. Use the information about the system completion codes in the topic "System completion codes" in *z/OS MVS System Codes* to identify the cause of the error.

FABX3903E GETMAIN FAILED WITH RC *rc* (SIZE: *size*)

Explanation: GETMAIN macro failed.

System action: Processing terminates with a user abend code of U3903.

User response: Increase the value of the REGION= parameter in the SOT (Subordinate Tools Access Server) JCL in a system PROCLIB. SOT is the started task in the IMS Tools Base Distributed Access Infrastructure (DAI).

For more information about SOT, see the topic "Configuring Distributed Access Infrastructure" in the *Tools Base Configuration Guide for IMS*.

For more information about increasing the JCL REGION parameter, see the topic "REGION parameter" in the *z/OS MVS JCL Reference*.

FABX3904E *ddname* DD IS MISSING

Explanation: The indicated DD data set is not specified.

System action: Processing terminates with a user abend code of U3904.

User response: The installation and customization of Management Console or Distributed Access Infrastructure might be incomplete. See *IMS Database Solution Pack: Overview and Customization* or *IMS Fast Path Solution Pack: Overview and Customization* and complete the steps to enable the DBD/PSB Map Viewer.

FABX3906E THE DATABASE ORGANIZATION (*organization*) OF DATABASE *dbdname* IS NOT SUPPORTED

Explanation: The indicated database organization type is not supported by the DBD/PSB Map Viewer.

System action: Processing terminates with job return code 8.

User response: None.

FABX3907E THE LEVEL OF [DB | FP] SOLUTION PACK IS TOO LOW TO DISPLAY THE DBD MAP

Explanation: The version or the release level of IMS Database Solution Pack, IMS Database Utility Solution, or IMS Fast Path Solution Pack is lower than the level that is required by the DBD/PSB Map Viewer.

System action: Processing terminates with a user abend code of U3907.

User response: Ensure that the correct STEPLIB load module data sets are specified. To display the load module data sets, in Management Console, click **Set Up** > **Environments**, and then check the IMS Library Integrity Utilities row in the **Components** table. If needed, specify the correct load module data set names.

How to look up message explanations

You can use several methods to search for messages and codes.

Searching for messages on the web

You can use any of the popular search engines that are available on the web to search for message explanations. When you type the specific message number or code into the search engine, you will be presented with links to the message information in IBM Knowledge Center.

Gathering diagnostic information

Before you report a problem with IMS Library Integrity Utilities to IBM Software Support, you need to gather the appropriate diagnostic information.

Procedure

Provide the following information for all IMS Library Integrity Utilities problems:

- A clear description of the problem and the steps that are required to re-create the problem
- A complete log of the job
- A Load Module/Macro APAR Status report

  For information about creating a Load Module/Macro APAR Status report, see "Diagnostics Aid" on page 581.
- The version of IMS that you are using and the version of the operating system that you are using

Diagnostics Aid

If you have a problem that you think is not a user error, use the Diagnostics Aid to collect the necessary information before you contact IBM Software Support.

1. Run Diagnostics Aid (FABLDIAG) and obtain the IMS Library Integrity Utilities Load Module APAR Status report.
2. Attach the report to the other diagnostic documents (such as job dump list or I/O of the utility).
3. Report the error to IBM with the following information:
   - A clear description of the problem and the steps that are required to re-create the problem
   - The version of IMS that you are using and the version of the operating system that you are using
   - A complete log of the job

The Diagnostics Aid generates a Load Module/Macro APAR Status report. This report shows the latest APAR fixes applied to each module and macro.

The Diagnostics Aid is not applicable for any other versions or releases.

How to run Diagnostics Aid with JCL

To run the Diagnostics Aid (FABLDIAG), supply an EXEC statement and DD statements to define input and output data sets.

Use the following JCL example to run the Diagnostics Aid.

```
//stepname EXEC PGM=FABLDIAG
//STEPLIB    DD HPS.SHPSLMD0,DISP=SHR
//SHPSLMD    DD HPS.SHPSLMD0,DISP=SHR
//SHPSMAC    DD HPS.SHPSMAC0,DISP=SHR
//SYSPRINT   DD SYSOUT=A
```

EXEC This statement must have the following form:

```
//stepname  EXEC PGM=FABLDIAG
```

JOBLIB or STEPLIB DD

A JOBLIB DD statement or a STEPLIB DD statement must be provided. This statement defines the library containing the FABLDIAG program (usually HPS.SHPSLMD0).

SHPSLMD DD

This statement defines the library containing the load modules (usually HPS.SHPSLMD0) with which you have a problem.

If this DD statement is not provided, or if DD DUMMY is specified, the Load Module APAR Status report is not generated.

It is recommended that you always specify this DD statement.

SHPSMAC DD

This statement defines the library containing the provided macros (usually HPS.SHPSMAC0) for which you have a problem.

If this DD statement is not provided, or if DD DUMMY is specified, the Macro APAR Status report is not generated.

SYSPRINT DD

This output data set contains the Load Module/Macro APAR Status report. The data set contains 133-byte, fixed-length records. It can reside on a tape,

a direct-access device, or a printer; or it can be routed through the output stream. If BLKSIZE is coded in the DD statement, it must be a multiple of 133. However, it is recommended that you use:

```
//SYSPRINT  DD SYSOUT=A
```

Load Module/Macro APAR Status report

The diagnostics aid generates the Load Module APAR Status report and the Macro APAR Status report. The reports also show the APAR applied to each module and macro most recently.

Load Module APAR Status report

The IMS Library Integrity Utilities Load Module APAR Status report contains information about the modules and their applied APARs.

This report contains the following information:

MODULE LIBRARY
This field includes the data set names specified in the SHPSLMD DD statement. If more than 30 data sets are concatenated, only the first 30 data sets are listed.

MODULE NAME
This field shows the name of the load module member or the alias.

ALIAS-OF
This field shows the name of the original member of the alias. If the module name is not an alias, this field is left blank.

CSECT NAME
This field shows the name of the included CSECT in the module. The CSECT names are reported in the included order in the module.

APAR NUMBER
This field shows the latest APAR number applied to the module represented by the CSECT name. If no APAR is applied, NONE is shown.

APAR FIX-DATE
This field shows the date on which the modification was prepared for the module represented by the CSECT name. If no APAR is applied, N/A is shown.

Notes:

1. If the CSECT name does not start with FAB or HPS, or if the program structure of the CSECT does not conform to IMS Library Integrity Utilities module standard to identify the APAR number and the APAR fixed date, the fields APAR NUMBER and APAR FIX-DATE are filled with asterisks (*).
2. If the load module is a member of the PDSE library, the following statement is shown on the report line, and the job finishes with a return code of 4.

   ```
   ** IT CAN NOT BE ANALYZED DUE TO PDSE LIBRARY MEMBER **
   ```

3. If the load macro fails for a utility member, the following statement is shown on the report line and the job completes with a return code of 8.

   ```
   ** IT CAN NOT BE ANALYZED DUE TO LOAD FAILED MEMBER  **
   ```

Macro APAR Status report

The IMS Library Integrity Utilities Macro APAR Status report contains information about macros and their applied APARs.

This report contains the following information:

MACRO LIBRARY
This field includes the data set names specified in the SHPSMAC DD statement. If more than 30 are concatenated, only the first 30 are listed.

MACRO NAME
This field shows the name of the macro member or the alias.

ALIAS-OF
This field shows the name of the original member of the alias. If the macro name is not an alias, this field is left blank.

APAR NUMBER
This field shows the latest APAR number applied to the macro. If no APAR is applied, NONE is shown.

APAR FIX-DATE
This field shows the date when the modification was prepared for the macro. If no APAR is applied, N/A is shown.

Note: If the macro source statement structure does not conform to IMS Library Integrity Utilities macro standard to identify the APAR number and the APAR fixed date, the fields APAR NUMBER and APAR FIX-DATE are filled with asterisks (*).

Diagnostic Aid messages and codes

The following topics describe the messages and codes that are issued by the Diagnostics Aid.

Return codes

FABLDIAG contains the following return codes:

0 The running of the program has been successfully completed.

4 Warning messages were issued, but the requested operation was completed.

8 Error messages were issued, but the requested operation was completed.

Abend codes

All 36*xx* abend codes are accompanied by an FABU36*xx* message. Check the appropriate message for problem determination.

Messages of the Diagnostics Aid

The FABU messages are issued by the IMS Library Integrity Utilities Diagnostics Aid.

FABU1001I DIAG ENDED NORMALLY

Explanation: This message is generated when Diagnostic Aid has been completed successfully.

System action: Diagnostic Aid completes the job successfully with a return code of 0.

User response: None. This message is informational.

FABU1002W DIAG ENDED WITH WARNINGS

Explanation: This message is generated when Diagnostic Aid encounters trivial error conditions.

System action: Diagnostic Aid ends with a return code of 4.

User response: Check other messages generated by Diagnostic Aid to determine the nature and the cause of the detected errors. Correct the problem, and rerun the job.

FABU1003E DIAG ENDED WITH ERRORS

Explanation: This message is generated when Diagnostic Aid encounters severe error conditions.

System action: Diagnostic Aid ends with a return code of 8.

User response: Check other messages generated by Diagnostic Aid to determine the nature and the cause of the errors detected. Correct the problem, and rerun the job.

FABU1005W [SHPSLMD | SHPSMAC] DD STATEMENT NOT FOUND

Explanation: Diagnostic Aid could not find the SHPSLMD/SHPSMAC DD statement.

System action: Diagnostic Aid sets an end-of-job return code of 4 and continues processing. Diagnostic Aid does not generate a report for the load module or the macro.

User response: If you intended to specify the indicated DD statement, correct the error, and rerun the job.

FABU1006W DUPLICATE *member* **IN LIBRARY DDNAME** *ddname*

Explanation: Diagnostic Aid found a duplicated member in the concatenated libraries.

System action: Diagnostic Aid uses the member that is first found in the concatenated libraries. Diagnostic Aid sets an end-of-job return code of 4 and continues processing.

User response: Determine which libraries have the correct module or macro libraries. Correct the error, and if necessary, rerun the job.

FABU1007W DUMMY SPECIFIED FOR [SHPSLMD | SHPSMAC] DD STATEMENT

Explanation: DUMMY was specified for the SHPSLMD/SHPSMAC DD statement.

System action: Diagnostic Aid sets an end-of-job return code of 4 and continues processing. Diagnostic Aid does not generate a report for the load module or the macro.

User response: If you did not intend to specify the dummy DD statement, correct the error, and rerun the job.

FABU1008W NO [MODULE | MACRO] MEMBERS FOUND IN DDNAME [SHPSLMD | SHPSMAC]

Explanation: Diagnostic Aid could not find any utility module or macro members from the DD ddname data set.

System action: Diagnostic Aid sets an end-of-job return code of 4 and continues processing.

User response: Ensure that the libraries have correct utility module or macro libraries. Correct the error, and rerun the job.

FABU2001E LOAD FAILED FOR DDNAME *ddname* **MODULE** *member*

Explanation: Diagnostic Aid could not load a *member* from *ddname*.

System action: Diagnostic Aid sets an end-of-job return code of 8 and continues processing.

User response: Ensure that the member indicated exists in the data set specified for the indicated *ddname*. Correct the error, and rerun the job.

FABU3600E OPEN FAILED FOR DDNAME *ddname*

Explanation: The named DCB could not be opened.

System action: Diagnostic Aid ends with an abend code of U3600.

User response: Ensure that a *ddname* DD statement exist, and that it specifies the correct DD parameter. Correct any errors, and rerun the job.

FABU3601E GET FAILED FOR DDNAME *ddname*

Explanation: The GET failed for a directory from the DD *ddname* data set.

System action: Diagnostic Aid ends with an abend code of U3601.

User response: See the MVS system message and its programmer response. Correct the error, and rerun Diagnostic Aid. If the error persists, contact IBM Software Support.

FABU3602E READ FAILED FOR DDNAME *ddname* **MEMBER** *member*

Explanation: The READ failed for a *member* from the DD *ddname* data set.

System action: Diagnostic Aid ends with an abend code of U3602.

User response: See the MVS system message and its programmer response. Correct the error, and rerun Diagnostic Aid. If the error persists, contact IBM Software Support.

FABU3603E BLDL FAILED FOR DDNAME *ddname* **MEMBER** *member*

Explanation: The *member* was not found when the BLDL macro searched the PDS directory for the *ddname*.

System action: Diagnostic Aid ends with an abend code of U3603.

User response: Ensure that the member indicated exists in the data set specified for the indicated

ddname. Correct the error, and rerun the job. If the error persists, contact IBM Software Support.

FABU3604E LOAD FAILED FOR DDNAME *ddname* **MODULE** *member*

Explanation: Diagnostic Aid could not load *member name* from the *ddname*.

System action: Diagnostic Aid ends with an abend code of U3604.

User response: See the MVS system message and its programmer response. Correct the error, and rerun Diagnostic Aid. If the error persists, contact IBM Software Support.

FABU3605E DELETE FAILED FOR MODULE *member*

Explanation: Diagnostic Aid could not delete a *member name*.

System action: Diagnostic Aid ends with an abend code of U3605.

User response: Contact IBM Software Support.

FABU3606E PUT FAILED FOR SYSPRINT

Explanation: Diagnostic Aid could not put report data in SYSPRINT.

System action: Diagnostic Aid ends with an abend code of U3606.

User response: See the MVS system message and its programmer response. Correct the error, and rerun Diagnostic Aid. If the error persists, contact IBM Software Support.

FABU3607E OPEN FAILED FOR SYSPRINT

Explanation: SYSPRINT DCB could not be opened.

System action: Diagnostic Aid ends with an abend code of U3607.

User response: Ensure that a *ddname* SYSPRINT DD statement exists, and that it specifies the correct DD parameter. Correct any errors, and rerun the job.

FABU3608E FIND FAILED FOR DDNAME *ddname* **MEMBER** *member*

Explanation: The FIND failed for a *member* from DDNAME *ddname* data set.

System action: Diagnostic Aid ends with an abend code of U3608.

User response: Ensure that the member indicated exists in the data set specified for the indicated ddname. Correct the error, and rerun the job. If the error persists, contact IBM Software Support.

FABU3609E DEVTYPE FAILED FOR DDNAME *ddname*

Explanation: The DEVTYPE failed for a DDNAME *ddname* data set.

System action: Diagnostic Aid ends with an abend code of U3609.

User response: Contact IBM Software Support.

FABU3610E RDJFCB FAILED FOR DDNAME *ddname*

Explanation: The READJFCB failed for a DDNAME *ddname* data set.

System action: Diagnostic Aid ends with an abend code of U3610.

User response: Contact IBM Software Support.

FABU3611E GETMAIN FAILED. INSUFFICIENT STORAGE TO RUN THE JOB

Explanation: Work space for Diagnostic Aid could not be obtained.

System action: Diagnostic Aid ends with an abend code of U3611.

User response: Increase the region size, and rerun the job.

FABU3612E TOO MANY [MODULE | MACRO] MEMBERS DETECTED IN DDNAME [SFABMOD | SHPSMAC]

Explanation: There are too many utility members in the SFABMOD data set or in the SHPSMAC DD data set.

System action: Diagnostic Aid ends with an abend code of U3612.

User response: Specify the correct data set for the indicated DD statement, and rerun the job.

Chapter 16. References

The following reference topics provide technical reference information for using IMS Library Integrity Utilities.

Topics:

- "Device and feature code tables" on page 588
- "Sample library members" on page 590
- "How to read syntax diagrams" on page 592

Device and feature code tables

The following tables list the device codes and the feature codes that are associated with various devices.

Device code table

Table 34. Device code table

Device code	Device	Device code	Device
00	3270,1	21	DPM-B01
01	3270P,1	22	DPM-B02
02	3270,2	23	DPM-B03
03	3270P,2	24	DPM-B04
04	274X	25	DPM-B05
05	FIDS	26	DPM-B06
06	FIDS3	27	DPM-B07
07	FIDS4	28	DPM-B08
08	FIN	29	DPM-B09
09	FIJP	2A	DPM-B10
0A	FIPB	2B	DPM-B11
0B	FIFP	2C	DPM-B12
0C	SCS1	2D	DPM-B13
0D	SCS2	2E	DPM-B14
0E	FIDS7	2F	DPM-B15
11	DPM-A01	41	3270-A01
12	DPM-A02	42	3270-A02
13	DPM-A03	43	3270-A03
14	DPM-A04	44	3270-A04
15	DPM-A05	45	3270-A05
16	DPM-A06	46	3270-A06
17	DPM-A07	47	3270-A07
18	DPM-A08	48	3270-A08
19	DPM-A09	49	3270-A09
1A	DPM-A10	4A	3270-A10
1B	DPM-A11	4B	3270-A11
1C	DPM-A12	4C	3270-A12
1D	DPM-A13	4D	3270-A13
1E	DPM-A14	4E	3270-A14
1F	DPM-A15	4F	3270-A15

Feature code table

Table 35. Feature code table

Feature code	Feature
01	FEAT=1
02	FEAT=2
03	FEAT=3
04	FEAT=4
05	FEAT=5
06	FEAT=6
07	FEAT=7
08	FEAT=8
09	FEAT=9
0A	FEAT=10
40	FEAT=120
4A	FEAT=(NOCD,DEKYBD,PEN)
4B	FEAT=(CARD,DEKYBD,PEN)
50	FEAT=126
60	FEAT=132
7F	FEAT=IGNORE
C1	FEAT=(CARD,NOPFK,NOPEN)
C2	FEAT=(NOCD,NOPFK,PEN)
C3	FEAT=(CARD,NOPFK,PEN)
C4	FEAT=(NOCD,PFK,NOPEN)
C5	FEAT=(NOCD,PFK,NOPEN)
C6	FEAT=(NOCD,PFK,PEN)
C7	FEAT=(CARD,PFK,PEN)
C8	FEAT=(NOCD,DEKYBD,NOPEN)
C9	FEAT=(CARD,DEKYBD,NOPEN)

Sample library members

The sample libraries (SHPSJCL0 and SHPSSAMP) that are supplied with IMS Library Integrity Utilities contains JCL that you can use as a model to create your own jobs.

The following table summarizes the members in the SHPSJCL0 library.

Table 36. Sample JCL in the SHPSJCL0 library

Utility	Member	Description
All utilities	FABLLINK	Link-edits the IMS Library Integrity Utilities load modules.
Integrity Checker	FABLIVP3	Runs the Integrity Checker utility in the IMS batch environment to create an RDE. Before running this JCL, make sure that Integrity Checker is activated.
	FABLALSC	Creates alias name DSPCRTR0 for the FABLRTR0 module.
	FABLALSD	Deletes the alias name DSPCRTR0 from the FABLRTR0 module.
	FABLINIT	Initializes the Integrity Checker utility by creating a LICON data set, initializing the LICON data set, and creating a global option module.
	FABLUMD1	Runs SMP/E RECEIVE/APPLY of USERMOD to install the FABLRTR0 module into the IMS SDFSRESL library.
Consistency Checker	FABLIVP2	Runs the Consistency Checker utility.
Multiple Resource Checker	FABWIVP	Runs the Multiple Resource Checker utility.
DBD/PSB/ ACB Compare, Mapper, Reversal	FABLIVP1	Runs the DBD/PSB/ACB Compare, Mapper, and Reversal utilities.
MDA Reversal	FABXMIVP	Runs the MDA Reversal utility.
Catalog Manager	FABXCIVP	Runs the Catalog Manager utility.
Advanced ACBGEN and ACBLIB Analyzer	FABQIVP	Runs the Advanced ACBGEN utility and the ACBLIB Analyzer utility.
	FABLQUMD1	Deletes alias DFSUACB0 from the SHPSLMD0 library of IMS Library Integrity Utilities and the LMOD entry of IMS Library Integrity Utilities SMP/E CSI.
	FABLQUMD2	Runs SMP/E LIST for the IMS DFSRRA80 source entry.
	FABLQUMD3	Runs SMP/E RECEIVE/APPLY of USERMOD to modify the IMS DFSRRA80 module so that the module invokes the FABQMAIN module of IMS Library Integrity Utilities instead of DFSUACB0.
MFS Reversal and Compare	FABVIVP	Runs the MFS Reversal utility and the MFS Compare utility.

The following tables summarize the members in the SHPSSAMP library.

Table 37. Sample JCL in the SHPSSAMP library

Utility	Member	Description
Integrity Checker	FABLCNV2	Migrates the LICON data set that is used in IMS Library Integrity Utilities Version 1 Release 1.
DBD/PSB/ACB Reversal	FABNDFL1	Runs the DBD/PSB/ACB Reversal Site Default Generation utility to generate a SYSIN site default table.
	FABNDFL2	Runs the DBD/PSB/ACB Reversal Site Default Generation utility to report on the SYSIN site default table.
IMS Administration Tool	FAB$TL01	Used for the Run IMS Utilities feature (JCL generation) of IMS Administration Tool to generate JCL for the Consistency Checker utility.
	FAB$TL02	Used for the Run IMS Utilities feature (JCL generation) of IMS Administration Tool to generate JCL for the DBD/PSB Mapper utility.
	FAB$TL03	Used for the Run IMS Utilities feature (JCL generation) of IMS Administration Tool to generate JCL for the ACB Mapper utility.

Table 38. Sample procedure in the SHPSSAMP library

Utility	Member	Description
Integrity Checker	FABLPGEN	This member contains the procedure for creating a global option module for the Integrity Checker utility.

How to read syntax diagrams

The following rules apply to the syntax diagrams that are used in this information:

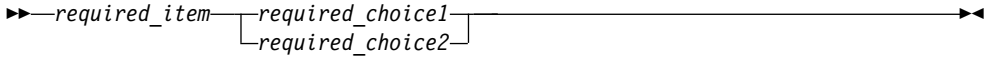
- Read the syntax diagrams from left to right, from top to bottom, following the path of the line. The following conventions are used:
  - The >>--- symbol indicates the beginning of a syntax diagram.
  - The ---> symbol indicates that the syntax diagram is continued on the next line.
  - The >--- symbol indicates that a syntax diagram is continued from the previous line.
  - The --->< symbol indicates the end of a syntax diagram.
- Required items appear on the horizontal line (the main path).

- Optional items appear below the main path.

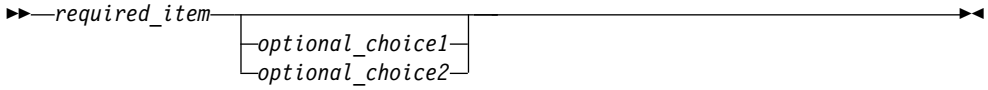
  If an optional item appears above the main path, that item has no effect on the execution of the syntax element and is used only for readability.

- If you can choose from two or more items, they appear vertically, in a stack.

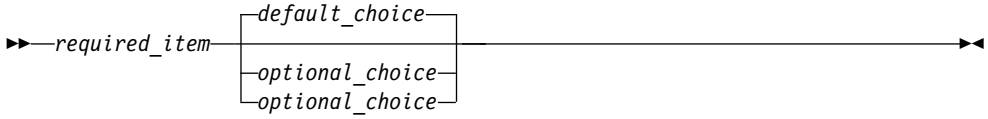
  If you *must* choose one of the items, one item of the stack appears on the main path.



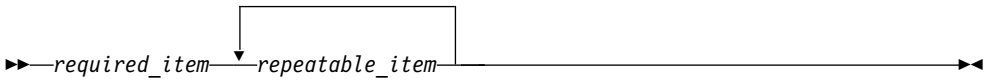
  If choosing one of the items is optional, the entire stack appears below the main path.



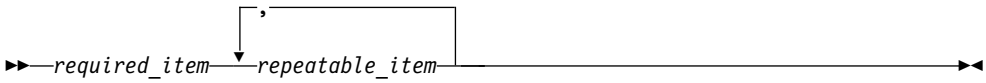
  If one of the items is the default, it appears above the main path, and the remaining choices are shown below.



- An arrow returning to the left, above the main line, indicates an item that can be repeated.



If the repeat arrow contains a comma, you must separate repeated items with a comma.



A repeat arrow above a stack indicates that you can repeat the items in the stack.

- Keywords, and their minimum abbreviations if applicable, appear in uppercase. They must be spelled exactly as shown. Variables appear in all lowercase italic letters (for example, *column-name*). They represent user-supplied names or values.
- Separate keywords and parameters by at least one space if no intervening punctuation is shown in the diagram.
- Enter punctuation marks, parentheses, arithmetic operators, and other symbols exactly as shown in the diagram.
- Footnotes are shown by a number in parentheses; for example, (1).

Notices

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