BMC Products and Solutions for DB2 Configuration Guide

Supporting

Administrative Assistant, ALTER, APPTUNE, CATALOG MANAGER, CHANGE MANAGER, CHECK PLUS, COPY PLUS, DASD MANAGER PLUS, Database Administration, Database Performance, EXTENDED BUFFER MANAGER, LOADPLUS, Log Master, OPERTUNE, PACLOG, Pool Advisor, R+/CHANGE ACCUM, RECOVER PLUS, Recovery Management, RECOVERY MANAGER, REORG PLUS, SNAPSHOT UPGRADE FEATURE, SQL Explorer, SQL Performance, System Performance, UNLOAD PLUS, BMC Workbench for DB2

and their technology components

June 2013
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United States and Canada

<table>
<thead>
<tr>
<th>Address</th>
<th>Telephone</th>
<th>Fax</th>
</tr>
</thead>
</table>
| BMC SOFTWARE INC  
2101 CITYWEST BLVD  
HOUSTON TX 77042-2827 USA | 1 713 918 8800  
or 1 800 841 2031 | 1 713 918 8000 |

Outside United States and Canada

<table>
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<th>Telephone</th>
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<tr>
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■ Search a database for problems similar to yours and possible solutions
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Before contacting BMC
Have the following information available so that Customer Support can begin working on your issue immediately:

■ Product information
  — Product name
  — Product version (release number)
  — License number and password (trial or permanent)
■ Operating system and environment information
  — Machine type
  — Operating system type, version, and service pack or other maintenance level such as PUT or PTF
  — System hardware configuration
  — Serial numbers
  — Related software (database, application, and communication) including type, version, and service pack or maintenance level
■ Sequence of events leading to the problem
■ Commands and options that you used
■ Messages received (and the time and date that you received them)
  — Product error messages
  — Messages from the operating system, such as file system full
  — Messages from related software
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About this book

This book contains detailed product information and is intended for system administrators and database administrators (DBAs).

Like most BMC documentation, this book is available in printed and online formats. To request printed books or to view online books and notices (such as release notes and technical bulletins), see the support website at http://www.bmc.com/support.

Note
Online books are formatted as PDF or HTML files. To view, print, or copy PDF books, use the free Adobe Reader from Adobe Systems. If your product installation does not install the reader, you can obtain the reader at http://www.adobe.com.

The software also offers online Help. To access Help, press F1 within any product or click the Help button in graphical user interfaces (GUIs).

Conventions

This document uses the following special conventions:

- All syntax, operating system terms, and literal examples are presented in this typeface.

- Variable text in path names, system messages, or syntax is displayed in italic text: testsys/instance/filename

- This document uses a symbol to show menu sequences. For example, Actions => Create Test instructs you to choose the Create Test command from the Actions menu.
This section provides a description of each of the BMC products and solutions for DB2.

BMC offers both products and solutions for DB2 to address specific areas of DB2 data management including:

- Backup and recovery
- Database administration
- Database performance
- SQL performance
- System performance

The BMC products for DB2 provide many features and functionality for working with DB2 data. Products are selected from the product and solution list in the Installation System and have their own passwords.

The BMC solutions for DB2 combine various BMC products and technologies. In a solution, the products are referred to as product components and the technologies are called technology components.

When you choose a solution from the product and solution list in the Installation System, all of the components of the solution are automatically installed. Solutions have their own passwords and often offer capabilities above those provided by the individual components of the solution.
Information about components and FMIDs is available in the release notes for the products and solutions. Additionally, a report listing version-specific information for the products and solutions and their technology components as well as FMID information is available on the BMC ESD site at ftp://epddownload.bmc.com/bmc/esd/ozi/ in the cxx_ozi_tape_product_list.txt file. (Related files for the other installation tapes are prefixed with bxx, mxx, and ixx.) You will need to contact Customer Support for a password to access this information. Similar information is located on File 5 on each of the product installation tapes.

**Administrative Assistant for DB2 solution overview**

The Administrative Assistant solution enables users of all experience levels to quickly navigate through the DB2 catalog and to easily manage a complex DB2 environment.

The Administrative Assistant solution provides the following features:

- analysis of the effects of changes to database structures
- automation of creating, altering, and dropping DB2 objects
- easy navigation and management of the DB2 catalog
- generation of object lists and display of object attributes
- execution of commands, and saving and retrieval of SQL
- aid for developing schema changes for application development and production maintenance

*Note*

These features are available when you have installed all of the components of the solution, regardless of whether you have a password for the solution.

Customers who acquire this solution benefit from the features of the following individual products:

- BMC ALTER for DB2
- BMC CATALOG MANAGER for DB2
ALTER for DB2 product overview

ALTER provides a powerful solution to the problems of managing your DB2 environment.

With ALTER you can quickly and accurately create and modify application data structures and migrate them to other DB2 subsystems. For more information about ALTER, see the following documents:

- ALTER and CHANGE MANAGER for DB2 User Guide, Volume 1
- ALTER and CHANGE MANAGER for DB2 User Guide, Volume 2
- ALTER and CHANGE MANAGER for DB2 Reference Manual

APPTUNE for DB2 product overview

The APPTUNE product is an application performance and resource analysis facility that gathers and displays data from a single SQL statement or a set of SQL statements.

The gathered data provides valuable information about the performance of and resource use by DB2 applications. APPTUNE collects all relevant performance measures in real time for every SQL statement executed in one or more DB2 subsystems. The collected data is then summarized and stored for analysis.

For more information about APPTUNE, see the APPTUNE for DB2 User Guide.

CATALOG MANAGER for DB2 product overview

CATALOG MANAGER facilitates the day-to-day tasks that are associated with administering a DB2 environment.

CATALOG MANAGER features highly productive methods for creating and managing your DB2 databases. CATALOG MANAGER also provides interactive access to catalog information through easy-to-use menus, dialog panels, and online Help. For more information about CATALOG MANAGER, see the CATALOG MANAGER for DB2 User Guide.
CHANGE MANAGER *for DB2* product overview

CHANGE MANAGER enables the DBA to deal effectively with the demands of a constantly changing environment that involves multiple DB2 subsystems.

CHANGE MANAGER provides all of the capability that ALTER provides, as well as functions that go beyond altering and migrating database objects. In addition to providing support within a subsystem, CHANGE MANAGER manages the change and migration of data structures, data, and changes to data structures across multiple DB2 subsystems. For more information about CHANGE MANAGER, see the following documents:

- *ALTER and CHANGE MANAGER for DB2 User Guide, Volume 1*
- *ALTER and CHANGE MANAGER for DB2 User Guide, Volume 2*
- *ALTER and CHANGE MANAGER for DB2 Reference Manual*

CHECK PLUS *for DB2* product overview

The CHECK PLUS product is a high-performance utility that provides a full range of integrity checking functions.

CHECK PLUS addresses the following types of integrity checking needed to fully support critical DB2 applications:

- Checking the structural integrity of the data sets that contain DB2 objects
- Verifying that indexes and the data to which they refer are consistent
- Verifying that data in DB2 tables does not violate referential integrity (RI) constraints or table check constraints

CHECK PLUS combines these integrity-checking functions, replacing functions provided by the CHECK option of the DSN1COPY stand-alone DB2 utility, and by the DB2 CHECK INDEX and CHECK DATA utilities. CHECK PLUS also provides the increased flexibility of allowing you to specify which of the checks you want to perform.

In addition to performing standard RI-checking functions, CHECK PLUS can check referential constraints that are not defined within the DB2 subsystem and perform column data verifications. This functionality gives you the advantage of checking business rules without paying the performance penalty of processing with referential constraints defined.
COPY PLUS for DB2 product overview

The COPY PLUS product is a fast, function-rich image copy utility for table spaces and indexes. Its many advanced features are needed to effectively prepare for a fast DB2 recovery.

COPY PLUS gives you the speed you need to compensate for a shrinking batch window and growing table spaces. This enables you to make frequent image copies so you can perform a faster recovery.

COPY PLUS provides a smarter way to back up your table spaces and indexes by automating much of the effort and by copying the minimum amount of necessary data, which increases data availability and performance.

For more information about COPY PLUS, see the COPY PLUS for DB2 Reference Manual.

DASD MANAGER PLUS for DB2 product overview

DASD MANAGER PLUS is a comprehensive DB2 database-management tool that automates utility generation and gathers comprehensive statistics.

In addition, DASD MANAGER PLUS performs the following functions:

- Monitors changes in the database
- Analyzes trends
- Estimates space requirements
- Facilitates deploying object definitions
- Enables you to perform maintenance based on the condition of the data instead of a rigid schedule

For more information about DASD MANAGER PLUS, see the DASD MANAGER PLUS for DB2 User Guide and the DASD MANAGER PLUS for DB2 Reference Manual.
Database Administration for DB2 solution overview

The Database Administration solution manages your DB2 databases quickly, efficiently, and effectively.

The following features are available only with the solution password:

- execute portions of the worklist concurrently, thus reducing the elapsed time required for executing a worklist that CHANGE MANAGER generates
- unload and load LOB data by using the LOB DATA MOVER program
- migrate an image copy or set of image copies within a DB2 subsystem or to another DB2 subsystem by using the Copy Migration feature

The following features are provided by the components of the Database Administration for DB2 solution:

- analyze the effects of changes to database structures
- automate creating, altering, and dropping DB2 objects
- provide easy navigation and management of the DB2 catalog
- aid in developing schema changes for application development and production maintenance
- increase application availability and optimizes resources by reducing the time that it takes to perform changes and to administer multiple DB2 environments
- maintain referential integrity and data integrity
- complete complex structure changes to databases quickly and accurately
- use the fastest, most efficient utilities available to copy, unload, and reload data
- unload and load large object (LOB) and XML data

Customers who acquire this solution benefit from the features of the following individual products:

- BMC CATALOG MANAGER for DB2
- BMC CHANGE MANAGER for DB2
- BMC COPY PLUS for DB2
The Database Performance for DB2 solution helps DBAs determine the maintenance tasks that are required on their DB2 objects and optionally automates the execution of those tasks.

The following features are available only with the solution password:

- Use of the value BMC on the CONDEXEC installation or command option. This option instructs REORG PLUS to use the DASD MANAGER PLUS exceptions table to determine whether an object should be reorganized.

- Use of the value BMCSTATS on the ANALYZE command option. This option enhances the performance of REORG PLUS by enabling REORG PLUS to use the statistics already gathered by BMCSTATS instead of gathering the statistics itself.

The components of the Database Performance for DB2 solution provide the following features:

- Automation to determine when an exception warrants corrective action

- Automation to determine when to perform a corrective action and to complete the action

- Comprehensive statistics gathering

- Database change monitoring

- Trend analysis and space requirements estimation

- Conditional reorganizations based on triggers and statistics

- Online reorganizations
EXTENDED BUFFER MANAGER for DB2 product overview

In today’s business environment, data availability is crucial as information processing capabilities evolve to better accommodate round-the-clock, global business operations. Organizations relying on mainframe applications need the ability to create backup copies of databases with minimal interruption of business critical application processing. Shrinking batch windows and growing batch workloads are becoming increasingly problematic for many users.

The EXTENDED BUFFER MANAGER (XBM) product and its associated SNAPSHOT UPGRADE FEATURE (SUF) technology work with selected BMC high-performance utilities to provide increased data availability. XBM also integrates with other BMC products to let you proactively manage system-wide performance and data availability.

For more information about XBM, see the EXTENDED BUFFER MANAGER and SNAPSHOT UPGRADE FEATURE User Guide.

LOADPLUS for DB2 product overview

The LOADPLUS product is a high-performance load utility that loads data from a variety of sources into DB2 tables.

LOADPLUS provides the following benefits over other load utilities:

- Shortened elapsed and CPU time and greater data availability. LOADPLUS provides these benefits by taking advantage of multiple processors, multitasking, and parallel and online processing.

- A robust set of functionality that eliminates the need to write special application code or to perform additional tasks before and after the load

Some of this enhanced functionality includes:

- A comprehensive set of data type conversions
- Optional preload verification
- Optional embedded sort and copy functionality
- Optional dynamic file allocation
■ Optional integration with other BMC products

For more information about LOADPLUS, see the LOADPLUS for DB2 Reference Manual.

Log Master for DB2 product overview

The Log Master product provides sophisticated log analysis that enables you to fully and easily use information contained in the database and transaction logs to locate and correct specific transaction errors without employing time-consuming and expensive programming resources. Log Master maintains business availability and minimizes revenue loss by ensuring fast application recoveries.

Log Master for DB2 allows you to analyze and back out problem transactions using reports and SQL statements generated from the information in your logs. You can migrate data from your production database to other databases for backup, historical use, or data warehousing. With Log Master, you can audit database activity for changes to key database structures.

High-speed Apply Engine (formerly Apply Plus) is packaged with Log Master to provide high-speed processing of SQL generated for transaction backouts.

For more information about Log Master, see the following documents:

■ Log Master for DB2 User Guide
■ Log Master for DB2 Reference Manual

MainView for DB2 product overview

MainView for DB2 provides real-time application performance analysis and monitoring for effective DB2 subsystem management. It comprises an easy-to-use, comprehensive set of services for database administrators, applications developers, and system programmers to track DB2 activity and status.

Users can easily access any number of DB2 subsystems on multiple OS/390 systems in local and remote locations from a single terminal session, which can run under TSO, TSO/ISPF, VTAM or batch with an EXCP-supported terminal. It provides the following features:

■ online performance analysis and exception monitoring
■ DB2 application tuning and workload analysis
The MainView for DB2 product includes the Data Collector feature that is used by the System Performance for DB2 solution. When installed, this feature provides additional functionality within the MainView for DB2 environment, as well as hyperlink integration to reports.

MainView for DB2 also includes the CATALOG MANAGER for DB2 (Browse) feature that is used by System Performance for DB2.

For more information about MainView for DB2, see the following documents:

- MainView for DB2 Customization Guide
- MainView for DB2 Getting Started
- MainView for DB2 Performance Reporter User Guide
- MainView for DB2 User Guide

OPERTUNE for DB2 product overview

The OPERTUNE product provides a variety of features that allow for the dynamic modification of DB2 subsystems and DB2 data sharing groups.

OPERTUNE has the following basic classes of features:

- Parameter elements provide for the modification of subsystem parameters (mostly ZPARMs), affecting items such as castout reverse threshold, dual archiving mode, and buffer pool configuration.

- Operational assists provide extra help with frequently encountered operational problems such as canceling threads and maintaining archives.

For more information about OPERTUNE, see the following documents:

- OPERTUNE for DB2 Reference Manual
- OPERTUNE for DB2 Reference Summary
PACLOG for DB2 product overview

The PACLOG product is a DB2 log management batch utility that provides substantial storage media savings while preserving the integrity of all archived log data that might be needed for recovery.

The product assists the database administrator (DBA) in determining what data is retained in archive log data sets and in choosing the archive log storage media. It also provides statistics useful in the management of archive log data sets.

For more information about PACLOG, see the PACLOG for DB2 Reference Manual.

Pool Advisor for DB2 product overview

The Pool Advisor product provides a fast, accurate means of monitoring DB2 storage resources to help you identify and resolve problems as they occur.

Pool Advisor enables you to monitor the performance of DB2 activities in real time and display data about the performance of the system in a readable, usable format.

Pool Advisor uses an advisor-driven system for retrieving pool-related data from DB2, reporting that data, detecting potential performance-related problems, and recommending actions to prevent those problems. Pool Advisor can operate under native TSO and ISPF.

For more information about Pool Advisor, see the Pool Advisor for DB2 User Guide.

R+ CHANGE ACCUM for DB2 product overview

The R+/CHANGE ACCUM product extracts and sorts updates from the DB2 log for a designated group of spaces and stores the updates in a file. This file, called a change accumulation file, provides an efficient alternative recovery resource for RECOVER PLUS to use instead of DB2 log data sets.

R+/CHANGE ACCUM is composed of an interactive ISPF interface and a batch utility. You can use the interface to define and create change accumulation groups. A change accumulation group can include any number of table spaces, partitions, or data sets, as long as you specify a sufficient amount of REGION on the EXEC statement. The R+/CHANGE ACCUM repository stores the group definitions.
can include the indexes that are associated with table spaces in the change accumulation processing for the group.

You use the R+/CHANGE ACCUM batch utility to generate change accumulation files routinely.

The R+/CHANGE ACCUM for DB2 product is installed as part of the installation of the RECOVER PLUS product. However, you need an R+/CHANGE ACCUM or Recovery Management for DB2 password to use R+/CHANGE ACCUM.

For more information about R+/CHANGE ACCUM, see the R+/CHANGE ACCUM for DB2 User Guide.

RECOVER PLUS for DB2 product overview

The RECOVER PLUS product is a batch utility that runs outside the DB2 subsystem and provides fast execution through advanced I/O techniques and the use of alternate recovery strategies.

RECOVER PLUS offers enhanced concurrency when accessing DB2 resources and provides additional options to improve processing efficiency. The ability of RECOVER PLUS to analyze and report planned recovery activity provides a high degree of confidence in the predictability of the recovery process.

The R+/CHANGE ACCUM for DB2 product is also installed as part of the installation of the RECOVER PLUS product. However, you need an R+/CHANGE ACCUM or Recovery Management for DB2 password to use R+/CHANGE ACCUM.

For more information about RECOVER PLUS, see the RECOVER PLUS for DB2 Reference Manual.

RECOVERY MANAGER for DB2 product overview

The RECOVERY MANAGER (RMGR) product automates and simplifies the recovery planning process for the DB2 environment, regardless of the size of table spaces, complexity of structures, or frequency of backups.

You can quickly and easily create recovery planning structures that group logically-related database objects according to any criteria that you specify. Then you can
perform recovery actions against these groups to simplify the process and improve the accuracy of recovery. Performing recoveries against these groups of DB2 structures can significantly decrease data loss and the amount of time spent performing recoveries.

For more information about RECOVER MANAGER, see the RECOVERY MANAGER for DB2 User Guide.

Recovery Management for DB2 solution overview

The Recovery Management for DB2 solution provides automation and recovery optimization. Using BMC recovery technology maximizes application availability, decreases costs, and ensures the fastest and most efficient recoveries possible.

The features and functionality of the Recovery Management for DB2 solution ensure that you will be able to meet your recovery goals.

The following features are available only with the solution password:

- Backout to forward recovery strategy (BACKOUT AUTO)
- Inflight resolution technology and timestamp recovery
- Disaster recovery data collection and reporting
- Recovery estimation
- Recovery simulation
- Automated five-level Hardware Mirroring support
- Full and incremental encrypted copies and their recovery
- Online consistent copies and their recovery

The following features are provided by the components of the Recovery Management for DB2 solution:

- Recovery automation and data collection functions
- Function-rich backup capabilities
- Backout recovery capabilities
- Instant Snapshot backup and recovery
- High-speed, online transaction level recovery
- High-speed apply capabilities
- Enhanced recovery point selection
- Recovery avoidance using changed object detection
- Recovery without outages to other DB2 applications
- Full disaster recovery support including recovery of DB2 subsystems
- Automated drop recovery
- Automatic index copies based on size threshold
- Automatic index recovery to rebuild
- Volume recovery
- Transforms that allow some changes to DB2 structures and data with little or no outage

Customers who acquire this solution benefit from the features of the following individual products:

- COPY PLUS for DB2
- Log Master for DB2 and its High-speed Apply Engine
- R+/CHANGE ACCUM for DB2
- RECOVER PLUS for DB2
- RECOVERY MANAGER for DB2
- SNAPSHOT UPGRADE FEATURE for DB2

For more information about Recovery Management, see the Recovery Management for DB2 User Guide, or any of the reference manuals or user guides for its product components.
REORG PLUS for DB2 product overview

The REORG PLUS product is a high-performance reorganization utility.

REORG PLUS offers the following significant benefits over other reorganization utilities:

- Shortened elapsed and CPU time and greater data availability. REORG PLUS provides these benefits by taking advantage of multiple processors, multitasking, and parallel and online processing.

- A robust set of functionality that eliminates the need to perform additional tasks before and after the reorganization.

Some of this enhanced functionality includes:

- Optional embedded sort and copy functionality

- Optional dynamic file allocation

- Optional conditional reorganization based on statistics

- The ability to alter limit keys during the reorganization

- Optional integration with other BMC products

- As part of the Database Performance for DB2 solution, automated reorganization

For more information about REORG PLUS, see the REORG PLUS for DB2 Reference Manual.

SNAPSHOT UPGRADE FEATURE for DB2 product overview

The SNAPSHOT UPGRADE FEATURE (SUF) product is a licensed component of the EXTENDED BUFFER MANAGER for DB2 product.

XBM increases data availability when used with supported BMC utilities to create snapshots. XBM increases data availability by using these methods:

- software snapshots

- hardware (SSI-assisted) snapshots
Instant Snapshots

Software and hardware snapshots are also called traditional snapshots. A traditional snapshot allows the supported utility to process data while the database remains available for updates. When the snapshot process starts, the database takes a brief outage to establish a point of consistency. At this point, XBM starts to provide data to the supported utility:

- For software snapshots, XBM monitors write requests to the database for the data objects that are being processed. When a record changes, XBM stores a preimage of the record in its software cache.

- For hardware snapshots, XBM uses intelligent storage to provide preimage records from a “frozen” copy of the database to the utility.

As the utility reads database records during its job, XBM satisfies the read request of the utility with the preimage from either the hardware device or software cache. In this manner the data read by the utility for that database is as it existed when the point of consistency was established, while the source database continues to be updated.

Instant Snapshots are significantly different from traditional snapshots. When processing an Instant Snapshot, XBM uses the appropriate intelligent storage interface to create (or snap) a copy of physical data on a storage device to a different location on the same device (or on another device within the same control unit or frame). A copy of the data remains on the storage device after the utility finishes processing the job. XBM can also snap, or reapply, this copied data back to the original location for recovery.

XBM works with supported BMC utilities to create this physical data copy and recover by using the copy. Instant Snapshots derive their name from the speed at which the copy and recovery occur: Instant Snapshots require no host I/O to copy the data set.

For more information about SNAPSHOT UPGRADE FEATURE, see the EXTENDED BUFFER MANAGER and SNAPSHOT UPGRADE FEATURE User Guide.

SQL Explorer for DB2 product overview

The SQL Explorer product is an SQL analysis tool that enables you to solve performance problems resulting from inefficient SQL statements.

You can tailor the expert rules used in SQL Explorer to your particular environment or technical audience. For example, you can modify rules to enforce installation
standards and to detect SQL statements that should be avoided in certain circumstances.

When writing SQL statements, application developers can use SQL Explorer to correct performance problems before they reach production. The product enables DBAs to identify and manage SQL performance impacts resulting from data structure changes, before those changes are implemented in production. Other SQL Explorer facilities act as powerful tools to help resolve problems already in production.

For more information about SQL Explorer, see the SQL Explorer for DB2 User Guide.

SQL Performance for DB2 solution overview

The SQL Performance for DB2 solution enables DBAs, application developers, and system programmers to identify and correct performance problems in DB2 applications that run in CICS, IMS, and OS/390 environments.

This solution provides application efficiency through a set of tools that allow an application to be fine-tuned from planning through growth to retirement.

The comprehensive index reporting function is available only with the solution password. The Index Component automatically collects and displays actual access counts for each unique SQL statement (table and index, and predicate usage frequencies). A What-If Index analysis lets you model changes to indexes. The Index Component provides on-demand, dynamic data collection of index dependencies and catalog statistics. Table and index reports provide quick access to listings of the most-used object based on getpage volume or ratio.

The following features are provided by the components of the SQL Performance for DB2 solution:

- complete SQL capture
- SQL-level statistics
- application groups and application profiles
- IN-SQL measurements
- intuitive interface
- explain function
- SQL error reporting
- display of the current status of DB2
- object reports
- analysis of dynamic SQL from trace data sets
- support for static and dynamic SQL
- specification of analysis criteria
- graphical data reporting option
- variable and fixed-length collection intervals
- historical analysis of data set archiving
- listing of all archived data sets and the IFCIDs they contain
- support for multiple DB2 subsystems
- fully functional administrative facility

For more information about SQL Performance, see the *SQL Performance User Guide* and the documentation associated with the product components for this solution.

**System Performance for DB2 solution overview**

The System Performance for DB2 solution helps you optimize and manage current DB2 performance by tuning your DB2 system dynamically and automatically as workloads change.

The following features are available only with the solution password:

- a common interface

You can access all System Performance components through a common interface, and you do not need to know which component to use to solve a problem. When the solution detects a problem, it guides you to the information you need to solve that problem, using the appropriate components to gather the information and make the needed changes.
a supplemental report set
The System Performance report set combines the reporting abilities of the MainView for DB2 and Pool Advisor components with a supplemental set of comprehensive reports on all aspects of DB2. From one central report, you can quickly hyperlink to other reports about specific data if an anomalous value is highlighted.

The following features are provided by the components of the System Performance for DB2 solution:

- advisor technology
- automatic detection and correction system problems
- tuning wizards
- customizable displays
- extended I/O analysis
- intelligent real-time management and tuning of DB2 system resources and parameters that can adversely affect performance

For more information about System Performance, see the documentation associated with its product components.

UNLOAD PLUS for DB2 product overview

The UNLOAD PLUS product is a flexible, high-performance unload utility that unloads data from a variety of sources to a variety of output types.

UNLOAD PLUS provides the following benefits over other unload utilities:

- Shortened elapsed and CPU time and greater data availability. UNLOAD PLUS provides these benefits by taking advantage of multiple processors, multitasking, and parallel and online processing.

- A robust set of functionality that eliminates the need to write special application code or to perform additional tasks before and after the unload

Some of this enhanced functionality includes:

- The ability to unload from a variety of sources

- A comprehensive set of data type conversions
■ Powerful, easy-to-use SELECT-like syntax for specifying the data to unload
■ Optional dynamic file allocation
■ The ability to unload data to a number of output formats
■ The ability to generate file definition statements or load control statements for a variety of products
■ Optional integration with other BMC products

For more information about UNLOAD PLUS, see the UNLOAD PLUS for DB2 Reference Manual.
Technology overview

The section contains descriptions of BMC technologies used by BMC products and solutions for DB2.

Most of the BMC products and solutions for DB2 include the use of technologies that are referred to as technology components. These technology components ensure the full functionality of the products and solutions in which they are included. In many cases, several products or solutions share the use of a technology component, which is then often referred to as a shared component.

Note
Information about components and FMIDs is available in the release notes for the products and solutions. Additionally, a report listing version-specific information for the products and solutions and their technology components as well as FMID information is available on the BMC ESD site at ftp://epddownload.bmc.com/bmc/esd/ozi/ in the cxx_ozi_tape_product_list.txt file. (Related files for the other installation tapes are prefixed with bxx, mxx, and ixx.) You will need to contact Customer Support for a password to access this information. Similar information is located on File 5 on each of the product installation tapes.

BMC Common Statistics technology overview

The BMC Common Statistics component is a technology that collects statistics and updates repository tables for DASD MANAGER PLUS.

The BMC Common Statistics component is automatically installed with the following solutions and products:

- DASD MANAGER PLUS for DB2
- Database Administration for DB2
- Database Performance for DB2
- LOADPLUS for DB2
- REORG PLUS for DB2

The FMID is ZATSxxx where xxx represents the release number information.

BMC Password Security System technology overview

The BMC Password Security System is a technology component that is used to verify and use product passwords.

This technology is automatically installed with all of the BMC products and solutions for DB2. There is no menu selection for this technology in the Installation System and no documentation specific to this technology. However, you can find more information about the *BMC Installation System User Guide*.

The FMID is BBAPWxx where xx represents release number information.

BMC Primary Subsystem and BMC Subsystem technology overview

The BMC Primary Subsystem and BMC Subsystem are technologies that are automatically installed when you install the PACLOG for DB2 product.

There is no documentation specific to these technologies.

The FMIDs are

- BBBBPxx for the BMC Primary Subsystem
- BBBCSxx for the BMC Subsystem

The xx represents release number information.
BMC Space Estimation Common Code technology overview

The BMC Space Estimation Common Code (ASH) is a set of technologies that uses statistics to provide space estimation for several products and solutions.

There is no documentation specific to this technology. BMC Space Estimation Common Code is automatically installed with the following solutions and products:

- Administrative Assistant for DB2
- ALTER for DB2
- CATALOG MANAGER for DB2
- CHANGE MANAGER for DB2
- DASD MANAGER PLUS for DB2
- Database Administration for DB2
- Database Performance for DB2

The FMID is ZASHxxx where xxx represents release number information.

BMCSORT technology overview

In addition to providing sort processing for the invoking product, BMCSORT can dynamically allocate the sort work files that it needs.

The sort work files that BMCSORT allocates are in addition to any that the invoking product allocates. By invoking BMCSORT rather than an external sort routine, the products that use BMCSORT gain the following benefits:

- Faster sort processing, resulting in better product performance
- Efficient sort processing and allocation of sort work files, resulting in better use of resources
- More control of the sort process, helping prevent memory-related problems

BMCSORT is installed automatically when you install the following products and solutions:
You can also install BMCSORT separately by choosing BMCSORT from the product and solution list in the Installation System.

The FMID is ZAUPxxx where xxx represents release number information.

For more information about how to use BMCSORT, see the product documentation for products that use this technology.

Common Explain technology overview

The Common Explain technology enables you to Explain dynamic and static SQL statements, providing both statistical and textual information about the access path, with suggestions on how to improve SQL statement performance.

This technology is automatically installed with the following solutions and products:

- BMC Workbench for DB2
- APPTUNE for DB2
- CATALOG MANAGER for DB2
Common Data Collector Infrastructure technology overview

The Common Data Collector Infrastructure technology supports report functions. There is no documentation specific to this technology.

This technology is automatically installed with the following solutions and products:

- APPTUNE for DB2
- MainView for DB2 Data Collector component
- Pool Advisor for DB2
- SQL Performance for DB2
- System Performance for DB2

The FMID is ZPSSxxx where xxx represents release number information.

Common SQL technology overview

The Common SQL (ACS) is a set of technologies that provide common SQL for the JCL Generation component.

Common SQL is automatically installed with the following solutions and products:

- Administrative Assistant for DB2
- ALTER for DB2
- CATALOG MANAGER for DB2
Cross-System Image Manager technology overview

The BMC Cross-System Image Manager (XIM) technology provides sysplex performance improvements by enabling the distribution and management of discrete units of work (UOWs) across one or more OS/390 or z/OS systems.

BMC products that exploit the Cross-System Image Manager technology can divide single, long-running tasks into multiple parallel tasks to be run across multiple machines in the sysplex, decreasing the overall elapsed time.

XIM is automatically installed when you install Database Administration for DB2. XIM is also selectable for installation from the list of products in the Installation System.

The FMID is BBYXMxx where xx represents release number information.

DATA ACCELERATOR Compression technology overview

The DATA ACCELERATOR Compression (DAC) technology provides advanced compression routines.

This technology is automatically installed with the PACLOG for DB2 product. DACs also selectable for installation from the list of products and solutions in the Installation System. The following documentation is available for this technology:

- DATA ACCELERATOR Compression Installation Guide
- DATA ACCELERATOR Compression Reference Manual
The FMID is ZDC2xxx where xxx represents release number information.

**DB2 Assist Services technology overview**

The DB2 Assist Services technology establishes exits in DB2.

There is no documentation specific to this technology. This technology is automatically installed with the following solutions and products:

- MainView for DB2 Data Collector component
- SQL Performance for DB2
- System Performance for DB2
- APPTUNE for DB2
- Pool Advisor for DB2

The FMID is ZDASxxx where xxx represents release number information.

**DB2 Component Services technology overview**

The DB2 Component Services (DBC) technology provides a persistent z/OS subsystem address space into which enabled BMC products can dynamically initialize their own product services.

The initialization can be done through the following techniques:

- Through an XML messaging protocol, DBC provides a non-authorized, loosely coupled, sysplex-enabled communication channel to product services.

- DBC hosts common services for DB2 subsystem discovery and command execution.

- DBC offers additional services that allow BMC products to define operator commands, and to subscribe to and publish user events dynamically.

All product services hosted within the DBC infrastructure inherit a Security Access Facility (SAF) interface to ensure compliance with the relevant site's security requirements.
This technology is automatically installed with the following solutions and products:

- APPTUNE for DB2
- MainView for DB2 Data Collector component
- MainView Transaction Analyzer
- PACLOG for DB2
- Pool Advisor for DB2
- Recovery Management for DB2
- RECOVERY MANAGER for DB2
- SQL Performance for DB2
- System Performance for DB2

The FMID is ZDBCxxx where xxx represents release number information.

DB2 Product Configuration technology overview

DB2 Product Configuration technology separates product (or solution) installation from configuration.

Through its online interface, DB2 Product Configuration simplifies configuration. You can accept the default option values or make changes to them, if needed.

DB2 Product Configuration panels simplify navigation by allowing you to expand or contract sections as needed. Also, you can link to DB2 Product Configuration from within your product or solution, thus maintaining a consistent look and feel, and retaining your changes from version to version.

DB2 Product Configuration operates as an agent (LGC) within the DBC subsystem. The LGC agent communicates with RTCS and uses the private RTCS datastore to contain option sets for many BMC products. The LGC agent communicates across the cross-coupling facility (XCF) to other LGC agents in the sysplex that are defined to the same DBC group. One LGC agent is the owner of the datastore at any one time, but another LGC agent in the same DBC group will assume ownership of the datastore if that agent is stopped.

DB2 Product Configuration is available with the following solutions and products:
DB2 Solution Common Code technology overview

DB2 Solution Common Code (SCC) is a set of technologies that provides common processes for many BMC products for DB2.

The SCC component is automatically installed when you install any of the BMC products or solutions for DB2 with the following exceptions:

- EXTENDED BUFFER MANAGER for DB2
- MainView for DB2
- OPERTUNE for DB2
- PACLOG for DB2

You can also install SCC separately by choosing DB2 Solution Common Code from the product and solution list in the Installation System.

There is no separate documentation for SCC.

The FMID is ZSCCxxx where xxx represents release number information.
DB2 Utilities Common Code technology overview

The DB2 Utilities Common Code (D2U) is a set of technologies that provides common processes.

The D2U component is automatically installed with the following products and solutions:

- Administrative Assistant for DB2
- CHECK PLUS for DB2
- DASD MANAGER PLUS for DB2
- Database Administration for DB2
- Database Performance for DB2
- LOADPLUS for DB2
- REORG PLUS for DB2
- UNLOAD PLUS for DB2

There is no separate documentation for the DB2 Utilities Common Code.

The FMID is ZD2Uxxx where xxx represents release number information.

Dignus C runtimes and C++ objects technology overview

The Dignus C runtimes and C++ objects are a collection of subroutines, called by C and C++ programs, for string manipulation, file access, dynamic allocation, time and date management, and other functions.

There is no menu selection for this technology in the Installation System and no documentation specific to this technology. Dignus support is automatically installed when you install any of the BMC products or solutions for DB2.

The FMID is ZDIGxxx. The xxx represents release number information.
High-speed Apply Engine technology overview

The High-speed Apply Engine is a component of the BMC Log Master *for DB2* product that provides high-speed processing of SQL generated for transaction backouts.

High-speed Apply Engine is automatically installed when you install the following solutions and products from BMC:

- Database Administration *for DB2*
- LOADPLUS *for DB2*
- Log Master *for DB2*
- Recovery Management *for DB2*

For more information, see the *High-speed Apply Engine Reference Manual*.

The FMID is ZAPTxxx where xxx represents release number information.

Install Execution Code technology overview

Install Execution Code (AIN) is technology that enables the Installation System to create objects for DB2. AIN is used during the customization phase of the installation.

There is no menu selection for this technology in the Installation System and no documentation specific to this technology. AIN is automatically installed when you install any of the BMC products and solutions for DB2 with the following exceptions:

- EXTENDED BUFFER MANAGER *for DB2*
- MainView *for DB2*
- OPERTUNE *for DB2*

The FMID is ZAINxxx where xxx represents release number information.
Internet Service Retrieval external routines overview

Internal Service Retrieval (ISR) external routines are used to download SMP/E maintenance for BMC products.

BMC ISR is available for all products that you install by using the Installation System.

BMC ISR simplifies ordering and retrieving service updates, either on demand or through your scheduler. You can use BMC ISR to inventory your target zones and generate a single request, or schedule a request on a recurring basis to retrieve maintenance updates.

For more information, see the *Installation System User Guide*.

JCL Generation and Execution technology overview

The JCL Generation technology creates JCL to run utilities or DB2 commands using the Execution Monitor program or stand-alone utilities. JCL Generation also creates either worklist or standard JCL format for the DASD MANAGER PLUS BMCTRIG program. The Execution technology processes DB2 commands, and runs BMC and IBM DB2 utilities.

There is no menu selection for this technology in the Installation System and no documentation specific to this technology. JCL Generation and Execution is automatically installed when you install the following BMC products and solutions for DB2:

- Administrative Assistant *for DB2*
- ALTER *for DB2*
- CATALOG MANAGER *for DB2*
- CHANGE MANAGER *for DB2*
- DASD MANAGER PLUS *for DB2*
- Database Administration *for DB2*
- Database Performance *for DB2*
Mainframe Host Services technology overview

The Mainframe DNA Host Services (DHS) component provides services in the User Interface Middleware Server that support other (mostly DB2) functions.

The DHS component is installed automatically with the Database Performance for DB2 solution.

You can also install DHS separately by choosing BMC Mainframe DNA (IMS/DB2 or DB2 Only) from the product and solution list in the Installation System.

The FMIDS are for Mainframe Host Services are

- ZDHSxxx for Mainframe DNA Host Services
- ZSMFxxx for Mainframe DNA

The xxx represents release number information.

Next Generation Logger technology overview

Next Generation Logger (NGL) is a technology that manages logging and retrieval functions including allocating, initializing, and managing log files. NGL minimizes the cost of logging and the potential for resource contention.

NGL is available with the following solutions and products:

- APPTUNE for DB2
- MainView for DB2 Data Collector component
- MainView Transaction Analyzer
- Pool Advisor for DB2
- SQL Performance for DB2
System Performance for DB2

The Next Generation Logger operates as agents (NGL and NGR) within the DBC subsystems. Multiple NGL instances can be active and are uniquely identified by a product instance identifier (PIID). For example, MainView Transaction Analyzer might be using a PIID of NGL1, while the System and SQL Performance products might use an NGL PIID of NGL2.

The FMID is ZNGLxxx where xxx represents release number information.

Option Value Migration technology overview

Option Value Migration is a technology that migrates the values of the installation options from the previous release of a product to the current release.

Option Value Migration is available with the following solutions and products:

- Administrative Assistant for DB2
- ALTER for DB2
- CATALOG MANAGER for DB2
- CHANGE MANAGER for DB2
- CHECK PLUS for DB2
- COPY PLUS for DB2
- DASD MANAGER PLUS for DB2
- Database Administration for DB2
- Database Performance for DB2
- High-speed Apply Engine
- LOADPLUS for DB2
- Log Master for DB2
- R+/CHANGE ACCUM for DB2
- RECOVER PLUS for DB2
- Recovery Management for DB2
Note
Before you can migrate your installation option values from a previous product version, you must run all of the $B-prefixed jobs prior to and including the $B76APLY job to unload the load modules into your HLQ.DBLINK library.

The FMID is ZZIOxxx where xxx represents release number information.

Rules Engine technology overview

The Rules Engine technology provides a general rules engine so that BMC products can provide sophisticated rules processing logic.

The Rules Engine is available with the following solutions and products:

- APPTUNE for DB2
- SQL Explorer for DB2
- CATALOG MANAGER for DB2
- MainView for DB2 Data Collector component
- SQL Performance for DB2
- System Performance for DB2

The FMID is ZMRExxx where xxx represents release number information.

There is no menu selection for this technology in the Installation System and no documentation specific to this technology. The Rules Engine is automatically installed with the products that use it.
Runtime Component System technology overview

The Runtime Component System (RTCS) is an infrastructure technology that uses the latest z/OS system facilities to take advantage of modern enterprise servers.

RTCS supports component-based programming, as well as traditional procedural programming. RTCS simplifies product installation and configuration. Other products can make use of the services and components made available by RTCS to support additional functions, replace or update functions, or extend existing functions.

- APPTUNE for DB2
- MainView for DB2 Data Collector component
- PACLOG for DB2
- Pool Advisor for DB2
- Recovery Management for DB2
- RECOVERY MANAGER for DB2
- SQL Performance for DB2
- System Performance for DB2

The FMIDs are ZOSZxxx and LOSZxxx where xxx represents release number information.

SAS Runtime Library Support technology overview

The SAS Runtime Library Support (resident and transient) is a collection of subroutines, called by C and C++ programs, for string manipulation, file access, dynamic allocation, time and date management, and other functions.

There is no menu selection for this technology in the Installation System and no documentation specific to this technology. SAS Runtime Library Support is automatically installed when you install any of the BMC products and solutions for DB2.
The FMIDS are

- ASARxxx for the resident version of SAS Runtime Library Support
- BBASCxx for the transient version of SAS Runtime Library Support

The xxx and xx represents release number information.

**System Performance component technology overview**

The System Performance component is installed with the System Performance for DB2 solution.

The FMID is ZSPDxxx where xxx represents release number information.

There is no menu selection for this component in the Installation System and no documentation specific to this technology.

**User Interface Middleware Common Services technology overview**

The User Interface Middleware Common Services (USC) technology has an XML parser.

The USC technology is installed automatically with the following products and solutions:

- APPTUNE for DB2
- Log Master for DB2
- MainView for DB2 Data Collector component
- PACLOG for DB2
- Pool Advisor for DB2
- Recovery Management for DB2
User Interface Middleware server technology overview

User Interface Middleware (UIM) server is a TCP/IP application that facilitates communication between distributed systems components and mainframe components, and between logical partitions (LPARs).

The UIM server component is installed automatically with the Database Performance for DB2 solution.

You can also install UIM separately by choosing BMC Mainframe DNA (IMS/DB2 or DB2 Only) from the product and solution list in the Installation System.

The FMID is ZUIMxxx where xxx represents release number information.
Configuring the Administrative Assistant solution

After you install and customize the components in the Administrative Assistant solution, you might need to perform several additional configuration tasks to complete and verify the installation. You perform these tasks outside the Installation System dialog panels.

Multiple-product configuration tasks

This topic describes configuration tasks that apply to several products or solution components.

Authorization verification

You can enter your BMC Authorization passwords when you install the products.

If you are a licensed user and have already received and entered the permanent BMC Authorization passwords, ensure that the appropriate authorization modules are saved and copied to the new library after you install the products. The authorization modules are created when you add the password.

Note

In earlier product versions, the Installation System placed passwords directly into the HLQ.LOAD library. The Installation System now places passwords in the HLQ.BMCMPSWD library and copies the passwords to the HLQ.BMCLINK library or to your APF-authorized library.

Alternatively, you can use the BMC Product Authorization utility to apply passwords and to change your CPU configuration.
You can choose not to input passwords during installation of the products. However, if you are installing the BMC UNLOAD PLUS or LOADPLUS utility and you are migrating data from an earlier release using UNLOAD PLUS or LOADPLUS, you must input passwords for these products before you run the migration jobs.

Setting the MEMLIMIT system parameter

Several BMC products require above-the-bar memory and might abend if sufficient memory is not available.

This requirement affects the BMC products and solutions listed in Table 1 on page 58

The default value for the System Management Facility (SMF) MEMLIMIT parameter is 2 GB. This value is set in member SMFPRMxx in SYS1.PARMLIB.

Before you begin

Determine whether you need to override the default MEMLIMIT value, based on the information in the following table:

<table>
<thead>
<tr>
<th>Product or solution</th>
<th>Recommendation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Administrative Assistant</td>
<td>If you are unable to specify REGION=0M:</td>
</tr>
<tr>
<td></td>
<td>■ Specify NOLIMIT to allow unlimited above-the-bar memory.</td>
</tr>
<tr>
<td></td>
<td>■ If you are unable to specify NOLIMIT, specify at least 4 GB; if you are operating on LOB or XML data, BMC recommends at least 32 GB.</td>
</tr>
<tr>
<td>ALTER</td>
<td>If you are unable to specify REGION=0M, specify at least 1 GB; if you are operating on LOB or XML data, BMC recommends at least 32 GB.</td>
</tr>
<tr>
<td>CATALOG MANAGER</td>
<td>If you are unable to specify REGION=0M, specify at least 1 GB; if you are operating on LOB or XML data, BMC recommends at least 32 GB.</td>
</tr>
<tr>
<td>Product or solution</td>
<td>Recommendation</td>
</tr>
<tr>
<td>-----------------------------</td>
<td>---------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>CHANGE MANAGER</td>
<td>If you are unable to specify REGION=0M, specify at least 1 GB; if you are operating on LOB or XML data, BMC recommends at least 32 GB.</td>
</tr>
<tr>
<td>CHECK PLUS</td>
<td>If you are unable to specify REGION=0M:</td>
</tr>
<tr>
<td></td>
<td>■ Specify NOLIMIT to allow unlimited above-the-bar memory.</td>
</tr>
<tr>
<td></td>
<td>■ If you are unable to specify NOLIMIT, specify at least 4 GB; if you are operating on LOB or XML data, BMC recommends at least 32 GB.</td>
</tr>
<tr>
<td>COPY PLUS</td>
<td>Specify at least 1 GB.</td>
</tr>
<tr>
<td>DASD MANAGER PLUS</td>
<td>If you are unable to specify REGION=0M:</td>
</tr>
<tr>
<td></td>
<td>■ Specify NOLIMIT to allow unlimited above-the-bar memory.</td>
</tr>
<tr>
<td></td>
<td>■ If you are unable to specify NOLIMIT and above-the-bar memory limits are inadequate, contact your z/OS system administrator.</td>
</tr>
<tr>
<td>Database Administration</td>
<td>If you are unable to specify REGION=0M:</td>
</tr>
<tr>
<td></td>
<td>■ Specify NOLIMIT to allow unlimited above-the-bar memory.</td>
</tr>
<tr>
<td></td>
<td>■ If you are unable to specify NOLIMIT, specify at least 4 GB; if you are operating on LOB or XML data, BMC recommends at least 32 GB.</td>
</tr>
<tr>
<td>Database Performance</td>
<td>If you are unable to specify REGION=0M:</td>
</tr>
<tr>
<td></td>
<td>■ Specify NOLIMIT to allow unlimited above-the-bar memory.</td>
</tr>
<tr>
<td></td>
<td>■ If you are unable to specify NOLIMIT:</td>
</tr>
<tr>
<td></td>
<td>— For DASD MANAGER, if above-the-bar memory limits are inadequate, contact your z/OS system administrator.</td>
</tr>
<tr>
<td></td>
<td>— For REORG PLUS, specify at least 4 GB; if you are operating on LOB or XML data, BMC recommends at least 32 GB.</td>
</tr>
<tr>
<td>Product or solution</td>
<td>Recommendation</td>
</tr>
<tr>
<td>-----------------------------</td>
<td>-----------------------------------------------------</td>
</tr>
<tr>
<td>High-speed Apply Engine</td>
<td>Specify at least 1 GB.</td>
</tr>
<tr>
<td>LOADPLUS</td>
<td>If you are unable to specify REGION=0M:</td>
</tr>
<tr>
<td></td>
<td>■ Specify NOLIMIT to allow unlimited above-the-bar memory.</td>
</tr>
<tr>
<td></td>
<td>■ If you are unable to specify NOLIMIT, specify at least 4 GB; if you are operating on LOB or XML data, BMC recommends at least 32 GB.</td>
</tr>
<tr>
<td>Log Master</td>
<td>Specify at least 1 GB.</td>
</tr>
<tr>
<td>RECOVER PLUS</td>
<td>Specify at least 1 GB.</td>
</tr>
<tr>
<td>RECOVERY MANAGER</td>
<td>Specify at least 1 GB.</td>
</tr>
<tr>
<td>Recovery Management</td>
<td>Specify at least 1 GB.</td>
</tr>
<tr>
<td>REORG PLUS</td>
<td>If you are unable to specify REGION=0M:</td>
</tr>
<tr>
<td></td>
<td>■ Specify NOLIMIT to allow unlimited above-the-bar memory.</td>
</tr>
<tr>
<td></td>
<td>■ If you are unable to specify NOLIMIT, specify at least 4 GB; if you are operating on LOB or XML data, BMC recommends at least 32 GB.</td>
</tr>
<tr>
<td>UNLOAD PLUS</td>
<td>If you are unable to specify REGION=0M:</td>
</tr>
<tr>
<td></td>
<td>■ Specify NOLIMIT to allow unlimited above-the-bar memory.</td>
</tr>
<tr>
<td></td>
<td>■ If you are unable to specify NOLIMIT, specify at least 4 GB; if you are operating on LOB or XML data, BMC recommends at least 32 GB.</td>
</tr>
</tbody>
</table>

**To override the default MEMLIMIT value**

1. Use one of the following methods to override the default MEMLIMIT value:
   - Specify the MEMLIMIT parameter in the JCL.
   - Specify REGION=0M in the JCL.
   - Use the SMF IEFUSI exit.
User authorizations

This section describes the authorizations that are required for some of the components.

Authorization verification mechanisms for Backup and Recovery products and Utility products

Many BMC products for DB2 use the same mechanisms to verify authorization.

If the DB2 DSNX@XAC authorization exit is available for your system, the product uses this exit to verify authorization for external access. The exit is available from the following sources:

- IBM provides a sample exit with DB2 for the IBM Resource Access Control Facility (RACF) component.
- CA Technologies provides the DSNX@XAC exit with CA-ACF2 and CA-Top Secret.

BMC recommends this mechanism for implementing external security. The access control authorization exit must be available in the STEPLIB, JOBLIB, linklist, or in the SYS3.DSN exit.

If the DSNX@XAC exit is not available, the product uses the standard DB2 method to check security.

RECOVER PLUS for DB2 user authorizations

The RECOVER PLUS for DB2 product requires certain user authorizations.

To use the RECOVER PLUS product, you must have the following DB2 authorizations:

- You must have EXECUTE authority on the RECOVER PLUS plan

  Note
  BMC recommends that you grant the EXECUTE privilege TO PUBLIC for the RECOVER PLUS main plan. This will allow all users to the RECOVER PLUS product.

- You must have one of the following authorizations:
  - INSTALL SYSADM, SYSADM, or SYSCTRL authority
  - DBADM or DBCTRL authority for the database containing the named spaces
  - RECOVERDB, DISPLAYDB, STARTDB, and STOPDB authority for the databases containing the named table spaces and index spaces
If you use RECOVER PLUS to make image copies (OUTCOPY option) from previous image copies, change accumulation files, and DB2 log records, you must have IMAGCOPY authority or an authority that implies IMAGCOPY.

**Note**
If the DB2 Access Control Authorization Exit is being invoked, DB2 authorizations must be granted using Resource Access Control Facility (RACF) or a similar system security package.

**APF authorizations for RECOVER PLUS for DB2**
RECOVER PLUS uses system services that require APF authorization.

All load modules loaded by these products must be authorized and must reside in APF-authorized libraries, as follows:

- system sort routine
- IDCAMS
- DSNUTILB

**RACF authorizations for RECOVER PLUS for DB2**
You must have the following RACF authorizations for RECOVER PLUS:

**Note**
These authorization requirements can also be fulfilled by using a system security package similar to RACF (for example, CA-ACF2 or CA-Top Secret from CA Technologies).

- If the underlying data sets of a table space or index space are protected, you must have CONTROL authority to access and to modify the data set.

**Note**
If you are using RACF and RECOVER PLUS was installed with option OPNDB2ID=YES, the CONTROL authority is not required to run RECOVER PLUS. However, if you are using any system security package other than RACF, CONTROL authority is still required, and the OPNDB2ID parameter is ignored.

If you are using RACF and RECOVER PLUS was installed with option OPNDB2ID=YES in a data sharing environment, you must ensure that the same RACF ID is shared by each DB2 subsystem in the data sharing group.

- If a table space or index space is STOGROUP-defined and the corresponding ICF catalog is protected, you must also have sufficient authority to access and update the MVS catalog.

- If the archive and active log data sets, the bootstrap data set (BSDS), and the DB2 directory are protected, users must have READ authority to access the data sets.
UNLOAD PLUS authorizations

UNLOAD PLUS does not run as part of the DB2 subsystem. Therefore, users must have system authorization that is equivalent to the authorization that DB2 requires.

Data set authorization requirements for UNLOAD PLUS

When using DIRECT YES, UNLOAD PLUS does not use DB2 to access data sets. Therefore, users must have system authorization that is equivalent to the authorization that DB2 requires.

You can obtain this authorization in one of the following ways:

- If you use RACF, specify OPNDB2ID=YES in your installation options.
- Establish authorization as described in “Requirements when OPNDB2ID=NO in UNLOAD PLUS” on page 63.

When using DIRECT NO, UNLOAD PLUS uses DB2 to access data sets. In this case, users do not need the authorization described in this topic.

Requirements when using RACF and OPNDB2ID=YES in UNLOAD PLUS

If you use RACF and OPNDB2ID=YES in UNLOAD PLUS, the user who is running UNLOAD PLUS is not required to have all of the authorizations that the following section describes. Because OPNDB2ID=YES tells UNLOAD PLUS to use the DB2 RACF ID instead of the user’s RACF ID, the DB2 RACF ID must have RACF (READ) authorization for these data sets.

Requirements when OPNDB2ID=NO in UNLOAD PLUS

Some sites use RACF or a similar system security package to protect underlying data sets and the Integrated Catalog Facility (ICF) catalog of a table or index space. In that case, users must have READ privileges for the following sources:

- DB2 VSAM data sets
- DB2 image copy data sets
- DSN1COPY data sets
- Inline copy data sets
- Instant Snapshot copy data sets
- Online consistent copy data sets
- Cabinet copy data sets
- VSAM FlashCopy data sets
- VSAM linear data sets
- Encrypted copy data sets that are created by COPY PLUS
- Key data sets for encrypted copies

**Using a security package other than RACF**

The following procedure illustrates one method for granting these data set authorizations when your site uses a system security package other than RACF:

1. Associate users with a security group.
2. Grant EXECUTE privileges on the UNLOAD PLUS product program (ADUUMAIN) to the security group.
3. Grant the data set authorizations that are described in the preceding section to ADUUMAIN.

**DB2 authorization requirements for UNLOAD PLUS**

To run UNLOAD PLUS, users must have certain DB2 authorizations.

For all unload jobs, users must have the following authorizations:

- Sufficient DB2 authority to execute the UNLOAD PLUS plan and all packages that the UNLOAD PLUS plan uses
- Authorization equivalent to the authorization that the IBM DB2 UNLOAD utility requires

**Note**

UNLOAD PLUS enforces row- and column-level security only when DIRECT NO is in effect.

**Additional authorizations for canceling threads**

If you plan to use the FORCE option to cancel DB2 threads that might prevent a successful drain during a load job, you must have DISPLAY privileges. DISPLAY privileges might be implicit in the authority that you have.
Interaction among the products

When you install the products or solutions, the Installation System can automatically enable the products or components to interact with other products or components.

If one of the following conditions exist, however, you must perform additional steps to enable the products to interact with each other:

- you installed the products at different times and you did not select to allow the products to interact with one another on the Install System Product to Product Interface Panel
- synonyms in the CATALOG MANAGER product do not point to the correct utility tables

Enabling interaction between ALTER or CHANGE MANAGER and BMC utilities

Perform this task if you installed ALTER or CHANGE MANAGER under either of the following circumstances:

- You installed ALTER or CHANGE MANAGER in a separate installation session before you installed the Utility products.
- You installed ALTER or CHANGE MANAGER either in the same installation session as the Utility products or in a separate installation session after you installed the Utility products, but you did not associate ALTER or CHANGE MANAGER with the Utility products on the Product to Product Interface panel.

To use a different utilities load library

If the Utility products are installed in a different load library than ALTER or CHANGE MANAGER, perform the following steps to use a different utilities load library:

1. In the HLQUDBCNTL library, find the member that has the same name as the ALTER or CHANGE MANAGER installation options module.
2. In the POFDS parameter of the member, note the name of the POF.
3. In the HLQUDBCNTL library, find the POF member.
4. In the POF member, update the following keywords to use the different utilities load library (such as the DBLINK library):
   - ADDLOAD1
5  If necessary, add any additional load libraries to SLIB member AJXSTEPU.

6  If you added load libraries in Step 5 on page 66, compile the SLIB member.

For sample compile JCL, refer to member AJXCOMPS in the $HLQ$.DBCNTL data set.

### Note

If you want to modify the JCL in member AJXCOMPS, copy the member from $HLQ$.DBCNTL to $HLQ$.UDBCNTL. Then, modify the JCL in $HLQ$.UDBCNTL(AJXCOMPS).

---

### Enabling interaction between CATALOG MANAGER and BMC utilities

CATALOG MANAGER can interact with the BMCUTIL, BMCHIST, and BMCSYNC tables to provide BMC utility control, status, and history information. Note that history information is not provided for the BMC RECOVER PLUS for DB2 product. CATALOG MANAGER accesses the utility tables during batch processing and when using online commands.

### Before you begin

Determine whether you need to perform this task and, if so, which parts of this task you need to perform:

- Perform this task under either of the following circumstances:
  - You installed CATALOG MANAGER in a separate installation session before you installed the Utility products (for example, BMC UNLOAD PLUS or LOADPLUS).
You installed CATALOG MANAGER either in the same installation session as the Utility products or in a separate installation session after you installed the Utility products, but you did not associate CATALOG MANAGER with the Utility products on the Product to Product Interface panel.

- Determine whether your current synonyms point to the correct tables. CATALOG MANAGER uses the following synonyms:
  - BMC_UTILITY for the BMCUTIL table
  - REORG_HISTORY for the BMCHIST table
  - BMC_UTIL_SYNC and BMC_UTIL_SYNC2 for the BMCSYNC table

- If your current synonyms do not point to the correct tables, use the task “To update synonyms” on page 67.

- If the Utility products are installed in a different load library than CATALOG MANAGER, use the task “To use a different load library” on page 68.

**To update synonyms**

The HLQ.UDBCNTL member T1S#ACTU provides an example of a worklist for this procedure.

1. Drop the CATALOG MANAGER utility synonyms.

2. Create new CATALOG MANAGER utility synonyms by using the same synonym names, but with the correct table names.

3. Bind the packages ACTCSQBU and ACTQLBH into the main collection ID for CATALOG MANAGER.

4. Bind the CATALOG MANAGER BMC Utility History Plan. Use the existing plan bind source to create this plan, and then change the name.

   BMC specifies this plan as ACTvrDH, where vr is the version and release.

5. In the HLQ.UDBCNTL library, edit the member that has the same name as the CATALOG MANAGER installation options module. Change the value of HPLAN to the plan that was created in Step 4 on page 67.

6. Submit this member to reassemble the installation options module.
To use a different load library

1. In the HLQ.UDBCNTL library, find the member that has the same name as the CATALOG MANAGER installation options module.

2. In the POFDS parameter of the member, note the name of the POF.

3. In the HLQ.UDBCNTL library, find the POF member.

4. Update the following keywords in the POF member to use the different utilities load library (such as the DBLINK library):
   - ADDLOAD1
   - ADDLOAD2
   - BMC_CHECK_LOAD
   - BMC_COPY_LOAD
   - BMC_LOAD_LOAD
   - BMC_RECOVER_LOAD
   - BMC_REORG_LOAD
   - BMC_UNLOAD_LOAD

5. If necessary, add any additional load libraries to SLIB member AJXSTEPU.

6. If you added load libraries in Step 5 on page 68, compile the SLIB member.

   For sample compile JCL, refer to member AJXCOMPS in the HLQ.DBCNTL data set.

   ---
   **Note**
   If you want to modify the JCL in member AJXCOMPS, copy the member from HLQ.DBCNTL to HLQ.UDBCNTL. Then, modify the JCL in HLQ.UDBCNTL(AJXCOMPS).
More ALTER and CATALOG MANAGER configuration tasks

In addition to the configuration tasks for multiple products, you need to perform other configuration tasks.

Using catalog indirection with ALTER, CATALOG MANAGER, and CHANGE MANAGER

After you install and customize your products, you can implement catalog indirection for ALTER, CATALOG MANAGER, or CHANGE MANAGER.

Catalog indirection is an optional method of implementing and maintaining these products. To accomplish catalog indirection, the products use synonyms that point either to a copy of the DB2 catalog or to user-created views of the catalog.

Catalog indirection allows products to query the DB2 catalog indirectly. Catalog indirection applies only to catalog queries. Any action that changes information in the catalog must operate on the actual catalog, not on a view of the catalog or a copy of the catalog. For example, when you issue a command through CATALOG MANAGER to update the catalog, the action affects the actual catalog. The Execution Monitor in ALTER and CHANGE MANAGER also executes a worklist against the actual catalog. In contrast, the Analysis component in ALTER and CHANGE MANAGER can use either the actual catalog or catalog indirection when creating worklists.

General points about catalog indirection are as follows:

- Catalog indirection requires DB2 Version 9 or later in new-function mode.
- The products are set up to access the DB2 catalog directly. After the installation, you can use the Installation System to implement and maintain catalog indirection.
- You should reuse the installation profile that you specified in the full installation path for catalog indirection.
- The synonyms that reference the DB2 catalog are hardcoded in the components. You direct the synonyms to the catalog, copy, or views during installation by providing information on the Installation System panels.
- You can use the same copy or view of the catalog for CATALOG MANAGER and CHANGE MANAGER, or you can implement catalog indirection through separate copies or views for each product.
Catalog indirection can provide the following benefits:

— Reduces contention for the DB2 catalog
— Provides an additional level of security for sensitive data in the catalog

**Note**
Although you can implement a view of a copy of the catalog and simultaneously reap both benefits of catalog indirection, this approach is extremely complex to maintain and is not recommended.

To install catalog indirection, see the *Installation System User Guide*.

**Implement and maintain catalog indirection**

Successful implementation of catalog indirection requires an in-depth understanding of the DB2 environment and its catalog structure, and experience in maintaining DB2 applications.

Each method of implementing catalog indirection should be managed as if catalog indirection were a DB2 application. Test the products fully without catalog indirection before you implement catalog indirection.

**Implement catalog indirection**

You can install catalog indirection for one or more of the products on one DB2 subsystem at a time. When you implement catalog indirection, the products use the existing product libraries and support the use of your own VSAM data sets. Optionally, the products can create a copy of the DB2 catalog by using the CREATE LIKE DDL syntax and create views of the DB2 catalog.

**Maintain catalog indirection**

You can apply maintenance to catalog indirection on one or more products on one DB2 subsystem at a time. You should perform maintenance if you have an existing copy or view of the DB2 catalog and have performed a new installation of the products.

**Specify the installation options module**

When a product runs, it uses its own installation options module that was built during installation. The BMCDB2 CLIST allocates the installation options module when you start the product.

When accessing the DB2 catalog with catalog indirection, the BMCDB2 CLIST allocates an indirect installation options module. This *indirect* installation options module must have a different name than the *direct* installation options module that was previously built.
The installation options module, the plan and collection IDs, and the synonym qualifier are all crucial for the implementation of catalog indirection. The qualifier of the plan and the packages is used to resolve synonyms that point to either a view of the DB2 catalog or a copy of the DB2 catalog, depending on the method of implementation. You should understand their use and interaction before you implement catalog indirection.

The installation options module uses the convention prdDOPyz. Table 2 on page 71 describes the variables for the installation options module.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Represents</th>
</tr>
</thead>
<tbody>
<tr>
<td>prd</td>
<td>Product code</td>
</tr>
<tr>
<td>y</td>
<td>Access type (D=direct, I=indirect)</td>
</tr>
<tr>
<td>z</td>
<td>SSID indicator</td>
</tr>
</tbody>
</table>

Table 3 on page 71 shows examples of installation options modules.

<table>
<thead>
<tr>
<th>Example</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACMDOPDT</td>
<td>ALTER direct access for a test DB2 subsystem</td>
</tr>
<tr>
<td>ACMDOPIT</td>
<td>ALTER indirect access for a test DB2 subsystem</td>
</tr>
</tbody>
</table>

Unlike ALTER and CHANGE MANAGER, CATALOG MANAGER is designed to use a single installation options module for both direct and indirect access. The BMCDB2 CLIST allocates the same installation options module and thus the same plan for direct access and indirect access. The plan that is accessed contains two distinct collection IDs that are used to access direct or indirect catalogs. To implement a single installation options module, the installation dialog panels must process the CATALOG MANAGER installation options module differently from the installation options module of ALTER and CHANGE MANAGER.

The processing differences for CATALOG MANAGER are as follows:

- During installation of catalog indirection, the installation dialog panel prompts you for the creator of the CATALOG MANAGER indirect synonyms, for the indirect collection ID, and for the name of the direct options module. All other installation options module information has been previously gathered.

- During the batch JCL assembly step, the installation options module assembly step disassembles the existing installation options module, applies the indirect synonym creator that you specified in the preceding step, and reassembles and links the installation options module using the same name. The step also resolves the indirect collection ID that is located in a subsequent BIND package step. Because the installation dialog panel does not prompt you for this information, it
must obtain the information from the existing installation options module by disassembling it.

**Note**
Do not regenerate the catalog indirect JCL for CATALOG MANAGER and then resume installation at a step *later* than the step that assembles the installation options module; doing so would cause the BINDs for the packages to fail because the value of the indirect collection ID would be unresolved. You must run the installation options module assembly step to resolve this value.

**Specify synonym qualifiers during maintenance**

If you are applying maintenance to catalog indirection, you must specify the synonym qualifier that is currently the owner of the products’ synonyms. This qualifier must be the qualifier that you supplied when you originally installed catalog indirection for the products.

The Installation System sets the qualifier status to USED/REUSE automatically. Maintenance for catalog indirection does not create any new DB2 objects, but it does re-create the existing synonyms. Because the Installation System sets the qualifier status to USED/REUSE automatically, the synonyms are dropped and then re-created.

The Installation System uses one of the following three- or four-character prefixes when creating the synonyms for ALTER and CHANGE MANAGER. Table 4 on page 72 describes the prefixes.

**Table 4: Synonym prefixes**

<table>
<thead>
<tr>
<th>Prefix</th>
<th>Use</th>
</tr>
</thead>
</table>
| CAT    | Used by the Specification component of ALTER and CHANGE MANAGER  
The synonyms are also used by the JCL Generation component’s data set sizing function. |
| CAT2   | Used by the Analysis component of ALTER and CHANGE MANAGER, and the CM/PILOT component of CHANGE MANAGER  
**WARNING:** CAT2 synonyms should not be redirected if the copy of the catalog has not been refreshed to match the DB2 catalog. |
| CAT3   | Used by the Import component of ALTER and CHANGE MANAGER, and the Baseline and Compare components of CHANGE MANAGER  
**WARNING:** CAT3 synonyms should not be redirected. |

**Note**
The Execution component always accesses the DB2 catalog directly and does not use synonyms.
Use a copy of the catalog

Maintaining a copy of the catalog uses additional DASD space. The amount of space that is required equals the size of your DB2 catalog and can vary greatly, depending on your DB2 system.

You need to update the copy of the catalog on a timely basis to keep it accurate. Running the copy job does not have a significant impact on catalog contention but does consume other system resources. How often you should run the job depends on the amount of catalog change activity in your DB2 system and the type of users who are restricted to accessing a copy. A high-activity data center might need to run the job several times a day.

In addition, the job that updates the catalog copy prevents users from accessing the current copy of the catalog while the job runs. This restriction might have a negative impact on the products if you must run the copy job during a high-activity period.

Note

The SEARCH command in CATALOG MANAGER uses dynamic structured query language (SQL). To enable the SEARCH command to work on the copy of the catalog that catalog indirection uses, either run GRANT SELECT ON TABLE statements or bind with Dynamic Rules (BIND) on the main plan.

Use a copy of the catalog to reduce catalog contention

Contention for the DB2 catalog can be a problem for data centers that have high DB2 transaction rates. Because the products require frequent access to the DB2 catalog, they can contribute to catalog contention.

To improve performance by reducing catalog contention, you can perform the following actions:

- Tune the copy of the catalog.
- Add your own indexes to the copy of the catalog.
- Reorganize the tables or table spaces of the copy of the catalog.
- Direct the information queries from specific groups of users to a recent copy of the DB2 catalog. The components also perform better because they do not have to compete with other applications for DB2 catalog information.

For catalog indirection to be effective, you must ensure that the copy of the catalog reflects the status of the actual catalog. The degree of accuracy that is required depends on the types of users who are involved and the purpose of their information queries. The job that updates the catalog copy temporarily halts all information queries made through the copy.
Use a view of the catalog

To control access to sensitive information in your catalog tables, you must design a view or a set of views on your system catalog that achieves the control that you need.

To define the view that a particular catalog indirection access method uses, you must edit the CREATE VIEW statements in the BMCCVIEW member that the Installation System generated. You must also add to the BMCCVIEW member the DML search criteria that limits access to selected rows of the catalog.

You must manage the authorizations to the groups of users who are allowed to access the DB2 catalog through a view or views. When a user attempts to access catalog information that a view filters out, an SQL error occurs.

Use a view of the catalog to control catalog access

Data centers with highly sensitive information might need to restrict how users access specific tables in the DB2 catalog.

To restrict catalog access, you can implement catalog indirection through one or more user-created views that filter out specified columns within the DB2 catalog tables. You can allow specific user groups to use the components in a limited fashion without compromising the security of the data or data structures that are defined in the catalog tables.

For example, assume that a user uses the components to perform an activity that changes information in the DB2 catalog. The user then completes a task that performs an information query against the copy of the catalog. In this case, it might seem that the first activity did not succeed. However, if you implement catalog indirection only for users who are already restricted to information-only queries, this problem might not occur. For example, you could implement catalog indirection for those users who are not allowed to run the Execution Monitor.

Using the appropriate CLIST

If multiple versions of the products are installed and the version and release numbers of the products on one DB2 subsystem are later than the version and release numbers of the products on another DB2 subsystem, use the CLIST for the later version and release of the products.

To use the CLIST

1. Ensure that a current copy of the appropriate CLIST is in the same SYSPROC concatenated library as your other CLISTS.
For example, if you installed version 9.3 of CATALOG MANAGER on DB2 subsystem DBDA and you installed version 10.1 of CATALOG MANAGER on DB2 subsystem DBDB, and you want to use one CLIST, use the CLIST for version 10.1 of CATALOG MANAGER on DBDB.

The Installation System generates the CLISTs for the Administrative products that are listed in the following table.

**Table 5: CLISTs for the Administrative products**

<table>
<thead>
<tr>
<th>CLIST</th>
<th>Description</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACTPSS</td>
<td>defines the integration of CATALOG MANAGER and SQL Explorer <em>for DB2</em></td>
<td>HLQ .UDBCLIB</td>
</tr>
<tr>
<td>AEXADMF1</td>
<td></td>
<td>HLQ .UDBCLIB</td>
</tr>
<tr>
<td>AEXADMF2</td>
<td>invokes Fast Path Navigation for the Administrative products</td>
<td>HLQ .UDBCLIB</td>
</tr>
<tr>
<td>ALUWLDDL</td>
<td>converts an ALTER or CHANGE MANAGER worklist to a DDL file</td>
<td>HLQ .DBCLIB</td>
</tr>
<tr>
<td>ALUXGRNT</td>
<td>creates an additional ALTER or CHANGE MANAGER worklist that contains -SETS and -SQL authorization commands only</td>
<td>HLQ .DBCLIB</td>
</tr>
<tr>
<td>BMCDB2</td>
<td>invokes the Administrative products</td>
<td>HLQ .UDBCLIB</td>
</tr>
<tr>
<td>BMCDRIVC</td>
<td>defines user libraries for the product driver panels</td>
<td>HLQ .UDBCLIB</td>
</tr>
<tr>
<td>CKSQNUM</td>
<td>enables you to verify SQL worklists sequencing for ALTER and CHANGE MANAGER</td>
<td>HLQ .UDBCLIB</td>
</tr>
<tr>
<td></td>
<td>To use the CKSQNUM CLIST, copy it from your installation library to a CLIST library from which you can run it.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>The CKSQNUM CLIST is used outside the Installation System.</td>
<td></td>
</tr>
<tr>
<td>FIXSQNUM</td>
<td>enables you to verify and fix SQL worklists sequencing for ALTER and CHANGE MANAGER</td>
<td>HLQ .UDBCLIB</td>
</tr>
<tr>
<td></td>
<td>To use the FIXSQNUM CLIST, copy it from your installation library to a CLIST library from which you can run it.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>The FIXSQNUM CLIST is used outside the Installation System.</td>
<td></td>
</tr>
<tr>
<td>POFRESET</td>
<td>for the Administrative products, enables you to reset all of the ISPF variables in the ISPF profile with the variables in the initial or user POF</td>
<td>HLQ.DBCLIB</td>
</tr>
<tr>
<td></td>
<td>The POFRESET CLIST is used outside the Installation System.</td>
<td></td>
</tr>
</tbody>
</table>
### CLISTs

<table>
<thead>
<tr>
<th>CLIST</th>
<th>Description</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>READREPO</td>
<td>enables you to review installation profiles</td>
<td>HLQ.INSTALL</td>
</tr>
<tr>
<td></td>
<td>To use the READREPO CLIST, copy it from your custom installation library to a CLIST library from which you can run it.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>The READREPO CLIST is used outside the Installation System.</td>
<td></td>
</tr>
<tr>
<td>RSTRIG</td>
<td>calls the DASD MANAGER PLUS BMCTRIG Restart program</td>
<td>HLQ.UDBCLIB</td>
</tr>
<tr>
<td>SHOWINFO</td>
<td>enables you to view the names of the profile data sets and JCL libraries</td>
<td>HLQ.INSTALL</td>
</tr>
<tr>
<td></td>
<td>If you are using OZI Customization to customize products to execute from runtime data sets, the SHOWINFO command also provides information such as the row ID of the RTE or TDS instance, the sysplex name, and the system name.</td>
<td></td>
</tr>
<tr>
<td>WHATSNEW</td>
<td>enables you to review newly supported features for the current version of the Installation System</td>
<td>HLQ.INSTALL</td>
</tr>
</tbody>
</table>

### Enabling the implicit execution of CLISTS

This procedure describes the steps that you must perform to enable the implicit execution of the CLISTs that are generated for ALTER, CATALOG MANAGER, CHANGE MANAGER, and DASD MANAGER PLUS.

**To enable the implicit execution**

1. Enable the BMCDRIVC CLIST.

   Copy the CLIST from the HLQ.JCL library or the HLQ.UDBCLIB library to a library in your SYSPROC concatenation.

2. *(ALTER or CHANGE MANAGER)* Perform one of the following tasks to enable the ALTER or CHANGE MANAGER CLISTs (ALUXGRNT, ALUWLDDL, FIXSQSUM, and CHKSQNUM) to be implicitly invoked from within a worklist:
   - Add the HLQ.DBCLIB (ALUXGRNT or ALUWLDDL) library or the HLQ.UDBCLIB (FIXSQSUM or CHKSQNUM) library to your SYSPROC concatenation.
   - Copy the CLISTs from the HLQ.DBCLIB (ALUXGRNT or ALUWLDDL) library or the HLQ.UDBCLIB (FIXSQSUM or CHKSQNUM) library to a library in your SYSPROC concatenation.
3 (DASD MANAGER PLUS) Perform one of the following tasks to enable the RSTRIG CLIST for DASD MANAGER PLUS to be implicitly invoked from within JCL:

- Add the HLQ.UDBCLIB library to your SYSPROC concatenation.
- Copy the CLISTs from the HLQ.UDBCLIB library to a library in your SYSPROC concatenation.

**Working with the BMCDB2 CLIST**

For the ALTER, CATALOG MANAGER, CHANGE MANAGER, and DASD MANAGER PLUS products, the Installation System generates an ISPF interface based on the options and components that you specify during installation. Products or components that are installed with different high-level qualifiers (for example, installed individually and residing in different libraries) can be accessed from the interface.

The interface consists of a CLIST (BMCDB2) and panels (BMCDB2PR, BMCDB2P2, BMCDB2TB, and BMCDB2H). You can use this combination without making changes to your TSO logon procedure. BMC recommends that new users use the supplied ISPF interface. The products or components require you to execute the CLIST from one of the ISPF dialog panels in your system.

The BMCDB2 CLIST uses the ISPF LIBDEF command to allocate all of the BMC product libraries. The Installation System customizes BMCDB2 and BMCDB2PR to include the data set names that you used when you installed the products or components. The Installation System specifies up to two DB2 load libraries and specifies the installation options module name for each product to support the DB2 subsystem where the component is installed.

If you install the products or components individually using the same target data sets, the BMCDB2 CLIST and BMCDB2PR panels are generated using the options only for the last product or component that was installed. Therefore, you might not be able to access the previously installed product or component unless you edit the BMCDB2 CLIST.

**Setting the variables in the BMCDB2 CLIST**

The BMCDB2 CLIST invokes the Administrative products.

You can edit several variables in the BMCDB2 CLIST to specify libraries and to use a generated permanent ISPF table. This procedure describes how to modify the variables.
Note
To turn off the PF key display, issue the PFShow OFF command.
When you edit variables in the BMCDB2 CLIST to specify libraries, do not change
the qualifier of the product data sets. Each of the data sets uses a designated qualifier
that varies, depending on whether you use runtime, SMP/E, or user libraries.

To set the variables in the CLIST

1 To invoke the BMCDB2 CLIST implicitly, copy the CLIST from the HLQ.JCL
library or the HLQ.UDBCLIB library to a library in your SYSPROC concatenation.

2 Edit the BMCDB2 CLIST.

3 If you copied the BMCDB2 CLIST from the HLQ.JCL library or the
HLQ.UDBCLIB library to a library in your SYSPROC concatenation, modify the
BMCDB2C variable in the BMCDB2 CLIST. Set this variable to the library in
which the BMCDB2 CLIST was copied.

4 If you copied the BMCDB2PR, BMCDB2P2, BMCDB2TB, and BMCDB2H panels
from the HLQ.JCL library or the HLQ.UDBPLIB library to another library, modify
the BMCDB2P variable in the BMCDB2 CLIST. Set this variable to the library in
which the panels were copied.

5 To improve the performance of the invocation of the products from a large
control table in the BMCDB2 CLIST, set the GENTABLE variable in the BMCDDB2
CLIST to Y, as shown in the following table.

```
SET BMCDB2T = &STR(BMC_DB2ADMN.D91.UDBTLIB)  /* Control TABLE DATASET */
SET GENTABLE = Y    /* USE GENERATED PERMANENT TABLE (Y/N) */
/* FOR Control TABLE */
```

To place a control table in a permanent ISPF table in the HLQ.UDBTLIB data set,
invoke the BMCDB2 CLIST (see “Invoking the BMCDB2 CLIST” on page 78).

6 To not use the TSO ALTLIB command to dynamically add libraries to the
SYSPROC concatenation, set the ALTCLIST variable to N.

7 Press END to exit.

Invoking the BMCDB2 CLIST

This procedure describes the steps to invoke the BMCDB2 CLIST.

To invoke the BMCDB2 CLIST

1 Invoke the BMCDB2 CLIST by using one of the following commands:
Invoke BMCDB2 explicitly from your CLIST data set in the ISPF command shell or your ISPF dialog with the following command:

```
ex 'HLQ.UDBCLIB(BMCDB2)'
```

If the BMCDB2 CLIST is copied to a library in your SYSPROC concatenation, invoke BMCDB2 implicitly with the following command:

```
%BMCDB2
```

To specify various parameters with the BMCDB2 command, see “BMCDB2 command” on page 79.

2 On the BMC Administrative Products for DB2 (BMCDB2PR) panel, if the BMCDB2 CLIST supports multiple SSIDs, type ? for the DB2 SSID.

a On the BMCDB2 Subsystem Selection List (BMCDB2P2) panel, type S to select an SSID from the list of available SSIDs.

The SSID that you selected is displayed in the DB2 SSID field on the BMC Administrative Products for DB2 (BMCDB2PR) panel.

b Press Enter.

3 If one of the following conditions exist, on the BMC Administrative Products for DB2 (BMCDB2PR) panel, type GENERATE on the COMMAND line:

- you edited your BMCDB2 CLIST to use a generated permanent ISPF table for the control table by setting the GENTABLE variable to Y
- you modified the control table that was previously generated
- you want to specify the OPENTBL parameter in the BMCDB2 command

Issuing the GENERATE command places a control table in a permanent ISPF table in the HLQ.UDBTLIB data set, which improves the performance of the invocation of the products from a large control table referenced by the BMCDB2 CLIST. Refer to the BMCDB2T variable in the BMCDB2 CLIST for the location of the generated ISPF table.

4 Verify that all of the products appear on the BMCDB2PR panel that is displayed.

**BMCDB2 command**

This topic describes the parameters that you can specify with the BMCDB2 command.
You can specify various parameters with the BMCDB2 command to perform the following functions:

- Avoid the use of the ISPF LIBDEF facility to allocate the necessary ISPF data sets
- Use the ISPF LIBDEF facility to allocate all of the ISPF data sets, except the load data set
- Invoke the BMCDB2 CLIST implicitly
- Invoke a product implicitly
- Invoke ALTER, CATALOG MANAGER, CHANGE MANAGER, or DASD MANAGER PLUS directly, without displaying the BMC Administrative Products for DB2 (BMCDB2PR) panel (improves performance)

**BMCDB2 command syntax**

The syntax of the BMCDB2 command is shown in the following figure.

**Figure 1: BMCDB2 command**

The parameters specify the following information:

- **LIBDEF**—determines whether the BMCDB2 CLIST should use the ISPF LIBDEF facility to allocate all necessary ISPF data sets (YES or NO)

**Note**

By default the BMCDB2 CLIST uses the ISPF LIBDEF facility to allocate all necessary ISPF data sets. Thus, you might not need to modify your TSO logon procedure to allocate data sets. If ISPF 4.2 or later is available, the STACK keyword is added to all LIBDEF statements that are used in the BMCDB2 CLIST.
- LOADLDEF—when LIBDEF is YES, indicates whether the ISPF LIBDEF facility should be used to allocate the ISPLLIB (load) data set (YES or NO)

Use the LOADLDEF parameter if you have copied the load library for a product in your subsystem LINKLIST data sets or if you have previously added the load library to your STEPLIB concatenation.

- CLSTEXEC—indicates whether the BMCDB2 CLIST should be invoked explicitly (EXPLICIT) or implicitly (IMPLICIT)

— If the CLIST is invoked explicitly, you must use a fully-qualified data set name and member name.

— If the CLIST is invoked implicitly, you can use only the member name. In addition, the CLIST must reside in a library in your SYSPROC concatenation.

Note
In previous releases, the CLSTEXEC parameter controlled the invocation both the BMCDB2 CLIST and ALTER, CATALOG MANAGER, CHANGE MANAGER, or DASD MANAGER PLUS. The parameter now controls only the invocation of the BMCDB2 CLIST. To control the invocation of the products, use the LOADEXEC parameter.

- LOADEXEC - indicates whether the BMC products should be invoked explicitly (EXPLICIT) or implicitly (IMPLICIT)

The syntax of the BMCDB2 command display options is shown in the following figure.

Figure 2: BMCDB2 command--display options

The display option parameters specify the following information:

- PGM--specifies the name of the program, as listed in the following table

Table 6: Program names

<table>
<thead>
<tr>
<th>Product</th>
<th>program</th>
</tr>
</thead>
<tbody>
<tr>
<td>ALTER</td>
<td>ALUFROnt</td>
</tr>
</tbody>
</table>
PROD--specifies the three-character product code (prd)

CFUNC--specifies the CLIST function to perform (ALLOC)

SSID--names the DB2 subsystem that is used to invoke the product (ssid)

Note
The SSID must be a valid DB2 subsystem that is defined in the control table.

OPENTBL--specifies to issue an OPEN command against the control table (YES or NO)

Note
Before you can invoke a BMCDB2 command that specifies the OPENTBL(YES) option, you must first issue the GENERATE command from the BMC Administrative Products for DB2 (BMCDB2PR) panel.

BASEID--no longer used

SHRAPPL--indicates whether the products on a single SSID should use a shared ISPF profile (S) or use an individual profile (I)

ACCESS--specifies to access the DB2 catalog directly (DIRECT) or to use an indirect copy of the catalog (INDIRECT)

Examples

The following examples show how you can use the various parameters with the BMCDB2 command.

To avoid the use of the ISPF LIBDEF facility

To avoid the use of the ISPF LIBDEF facility to allocate the necessary ISPF data sets, use the following command:

```
%BMCDB2 LIBDEF(NO)
```
To use the ISPF LIBDEF facility for all data sets, except the load data set

To use the ISPF LIBDEF facility to allocate all of the necessary ISPF data sets, except for the load data set, use the following command:

```
%BMCDB2 LIBDEF(YES) LOADLDEF(NO)
```

To invoke the CLIST implicitly

To invoke the CLIST implicitly, use the following command:

```
%BMCDB2 CLSTEXEC(IMPLICIT)
```

To invoke ALTER, CATALOG MANAGER, CHANGE MANAGER, or DASD MANAGER PLUS implicitly

To invoke a product implicitly, use the following command:

```
%BMCDB2 LOADEXEC(IMPLICIT)
```

To invoke ALTER, CATALOG MANAGER, CHANGE MANAGER, or DASD MANAGER PLUS directly

To invoke a product directly, you use the display options of the BMCDB2 command. When you use these options, the BMC Administrative Products for DB2 (BMCDB2PR) panel is not displayed. For example, to invoke CATALOG MANAGER directly, use the following commands:

```
%BMCDB2
GENERATE (from the BMC Administrative Products for DB2 [BMCDB2PR] panel)
ex 'HLQ.UDBCLIB(BMCDB2)' 'PGM(ACTEMAIN) PROD(ACT) SSID(DEBA) CFUNC(ALLOC) OPENTBL(YES)'
```

Creating indexes to improve performance

To improve performance, BMC recommends that you create indexes on the DB2 catalog tables and on copies of the catalog tables (if you are using catalog indirection).
Note

BMC strongly recommends that you take the following actions:

- If you are running the products on a DB2 Version 9 or 10 subsystem in new-function mode, create the DB2 Version 9 or 10 indexes on the DB2 catalog.

- If you are running the products on a DB2 Version 10 subsystem in conversion mode or enabling-new-function mode, create the DB2 Version 9 indexes on the DB2 catalog.

To create indexes on the DB2 catalog tables

1. Follow the instructions in the appropriate member in the HLQ.UDBCNTL data set to create the indexes:
   - (DB2 Version 10) BMIDB2XA
   - (DB2 Version 9) BMIDB2X9

To create indexes on copies of the DB2 catalog tables

1. For DB2 Versions 8 and later, it is not necessary to create indexes when you are implementing catalog indirection. The indexes already exist.

Shared components

The ALTER, CATALOG MANAGER, CHANGE MANAGER, and DASD MANAGER PLUS products share several components.

The following components are shared:

- JCL Generation, which controls the JCL generation process
- Execution Monitor, which controls worklist processing by reading and performing worklist commands
- Common SQL, which provides access to the DB2 catalog

When you unload ALTER, CATALOG MANAGER, CHANGE MANAGER, or DASD MANAGER PLUS (or any solution that includes one or more of these products), these components are also unloaded. The Installation System copies these components to an APF-authorized load library that any of the products can share. If you install the products at different times or if you are applying maintenance and any of the products share the same APF-authorized load library, you must bind each product to the new level of the shared components.
Note
If you do not properly bind all of the products that share the common components, any attempts to generate JCL or to execute worklists can cause SQLCODES -805 and -818. The product that has not been bound or upgraded will not run.

You do not have to bind a product separately to the shared components if the following conditions exist:

- You are using the same APF-authorized load library, and you are upgrading all products that use the shared components at the same time. The binds take place during the upgrade.
- You are using separate APF-authorized load libraries for your products.

Note
A problem occurs if all of the following conditions exist:

- You install one of the products or a solution that has one of the products as a component, and the product or solution uses the current version of the JCL Generation and Execution components.
- You install another product or solution that uses an earlier version of the JCL Generation and Execution components.

In this case, the products or solutions cannot use the same APF-authorized load library. To prevent the problem from occurring, choose a different load library when installing the additional product or solution.

Binding a product to shared components

This procedure describes how to bind ALTER, CATALOG MANAGER, CHANGE MANAGER, or DASD MANAGER PLUS to the shared components.

To bind the products

1 Edit the BIND packages and plans for the product, which are in the HLQUDBCNTL data set.

The following table lists the member names for the jobs. The variable prd is the product or component code, and ssid is the DB2 subsystem ID.
### Table 7: Member names for jobs for BIND packages and plans

<table>
<thead>
<tr>
<th>Member name</th>
<th>Job</th>
</tr>
</thead>
<tbody>
<tr>
<td>prdssidP</td>
<td>package BIND jobs for direct access</td>
</tr>
<tr>
<td>prdssidB</td>
<td>plan BIND jobs (including CATALOG MANAGER plan BIND jobs for indirection)</td>
</tr>
<tr>
<td>prdssidZ</td>
<td>package and plan BIND jobs for indirection (except CATALOG MANAGER plan BIND jobs)</td>
</tr>
</tbody>
</table>

2. Concatenate the new `HLQ.DBDBRM` library ahead of the old `HLQ.DBDBRM` library in the DBRMLIB DD statement in these members.

3. Submit the BIND jobs.

4. Repeat for each product and for the ACS component, if applicable.

#### Generating environment-specific JCL

The JCL Generation component generates the JCL that is needed to execute all of the batch functions that use ISPF file tailoring.

You might need to change members of the BMC product skeleton library (SLIB) to generate environment-specific JCL. This procedure describes the steps you must perform to edit, test, and compile the SLIB.

#### To edit and compile SLIBs

1. Edit the appropriate SLIB members in `HLQ.UDBSLIB` to change the way the JCL is generated.

   **Note**
   Any customizations that you have made to the SLIB members for an earlier release are not included in your current installation.

   a. *(optional)* Edit the AJX#USRV member and change the EXEC REGION parameter.

      The EXEC REGION parameter is set by default to `REGION=0M` in the AJX#USRV member that resides in the SLIB. If you do not change the IBM-supplied default limits in the IEALIMIT or IEFUSI exit routine modules, this parameter requests that the job step get all of the available storage above and below the 16 MB line.

   b. Edit the AJX#DSNS member to generate JCL for GDGs.
2 Use JCL Generation to test the changes to the SLIB.

For more information about testing the SLIB members, refer to the following BMC books:

- ALTER and CHANGE MANAGER for DB2 User Guide Volume 2
- CATALOG MANAGER for DB2 User Guide
- DASD MANAGER PLUS for DB2 User Guide

3 Compile the SLIB members that you edited.

For a sample compile JCL, refer to member AJXCOMPS in the HLQ.DBCNTL data set. For more information about compiling the SLIB members, see the following BMC books:

- ALTER and CHANGE MANAGER for DB2 User Guide Volume 2
- CATALOG MANAGER for DB2 User Guide
- DASD MANAGER PLUS for DB2 User Guide

Note

If you want to modify the JCL in member AJXCOMPS, copy the member from HLQ.DBCNTL to HLQ.UDBCNTL. Then, modify the JCL in HLQ.UDBCNTL(AJXCOMPS).

Specifying generation data groups

You can specify generation data groups (GDGs) by adding a symbolic variable to the local and recovery primary and backup copy keywords. As a result, the data set names are resolved using the symbolic variables, and include the GDG.

To specify a GDG

1 In the HLQ.UDBCNTL library, find the member that has the same name as the product installation options module.

2 In the POFDS parameter of the member, note the name of the POF.

3 In the HLQ.UDBCNTL library, find the POF member.

4 Add the symbolic (&GDG) to the end of the following keywords in the POF member:
For example, set

```
PCPY1='&PREFIX..&OBNOD..P&PART(&GDG)'
```

## BMCDB2PR panel

The BMCDB2PR panel is part of the BMC-supplied ISPF interface that the Installation System generates.

This panel includes a product selection list from which you can select a product. It also includes a DB2 catalog access field, in which you can specify whether to use the DB2 catalog data directly or to use a copy or a view of the DB2 catalog (if applicable to the product or component).

You might need to add additional products to the selection list or modify the catalog access field after you install and customize ALTER, CATALOG MANAGER, CHANGE MANAGER, or DASD MANAGER PLUS.

### Adding products to the BMCDB2PR panel

The Installation System enables you to add products to the BMCDB2PR panel.

**Before you begin**

Determine the following information:

- location of the BMCDB2PR panel
- location of the product’s CLIST
- the three-character code for the product

The following table lists the BMC products that you can add to the BMCDB2PR panel.
Table 8: BMC products for BMCDB2PR panel

<table>
<thead>
<tr>
<th>Product</th>
<th>Product code</th>
</tr>
</thead>
<tbody>
<tr>
<td>APPTUNE for DB2</td>
<td>ASQ</td>
</tr>
<tr>
<td>CHANGE ACCUMULATION PLUS</td>
<td>CAP</td>
</tr>
<tr>
<td>COPY PLUS for DB2</td>
<td>ACP</td>
</tr>
<tr>
<td>EXTENDED BUFFER MANAGER for DB2</td>
<td>XBM</td>
</tr>
<tr>
<td>Log Master for DB2</td>
<td>ALP</td>
</tr>
<tr>
<td>OPERTUNE for DB2</td>
<td>DDT</td>
</tr>
<tr>
<td>PACLOG for DB2</td>
<td>ALM</td>
</tr>
<tr>
<td>RECOVERY MANAGER for DB2</td>
<td>ARM</td>
</tr>
</tbody>
</table>

- additional parameters, such as the SSID

**To add the products**

The UPDTBMC CLIST and the UPDTDB2 macro can be found in a customized installation library that the user creates while installing products from multiple tapes, or in the base installation library from a single product tape.

1. Copy the UPDTBMC CLIST from the HLQ.INSTALL library to a library in your SYSPROC concatenation.
2. Copy the UPDTDB2 macro from the HLQ.INSTALL library to a library in your SYSPROC concatenation.
3. To execute the CLIST, type TSO UPDTBMC on the COMMAND line.
4. In the Location of BMCDB2PR Panel? field, type the name of the library in which the panel resides.
5. In the Location of CLIST for Product Being Added? field, type the name of the library in which the CLIST resides.
6. In the Product Code for Product Being Added? field, type the three-character product code.

**Modifying and validating the DB2 catalog access option on the BMCDB2PR panel**

The BMCDB2PR panel might need slight customization before you run ALTER, CATALOG MANAGER, or CHANGE MANAGER with catalog indirection.
To modify and validate the option

1 Edit the BMCDB2PR panel in HLQ.UDBPLIB.

2 Add `Indirect`, as follows:

   + DB2 Catalog Access .......2 + (Direct,Indirect)

3 To validate the Indirect option, make the following changes:

   ```
   ver (&catopt,nb,list,'DIRECT','INDIRECT',D,I) -- Uncomment this line
   /**************************************************************************/
   /*ver ($catopt,nb,list,'DIRECT',D) */ -- Comment out this line
   ```

4 Press END to exit.

Control table

By modifying the control table, you can add a product, specify the location of libraries, enable access to data sharing members, specify different libraries for SSIDs, and specify shared installation options.

**Note**

The data in the control table, which begins with the identifier *DATA, is placed in specific positions, and every data row must have an asterisk in column 73. Comment lines contain an asterisk (*) in column 1. The data in the control table is column specific.

Modifying the control table

This task describes how to modify the control table.

To modify the control table

1 Edit the control table in the HLQ.CONTAB data set.

2 Press END to exit.

3 If either of the following conditions exists, type `GENERATE` on the `COMMAND` line of the BMCDB2PR panel:

   - you edited your BMCDB2 CLIST to use a generated permanent ISPF table for the control table (specified `GENTABLE=Y` in the BMCDB2 CLIST)
   - you modified the control table that was previously generated
This action rebuilds the ISPF control table in the \textit{HLQ.UDBTLIB} data set.

\section*{Adding a product to the control table}

This topic describes how to add a product to the control table.

\section*{To add a product to the control table}

1. Edit the control table in the \textit{HLQ.CONTAB} data set.

2. Add a line in the *PROD section for the product by using one of the following procedures:
   - If one product was installed into the same set of libraries as another product, add a line in the *PROD section for the product.
     
     The example in Figure 3 on page 91 shows the line that adds the CATALOG MANAGER product to the table. \textit{vr} represents the version and release of the product.

     \begin{center}
     \textbf{Figure 3: Adding CATALOG MANAGER to the control table}
     \end{center}

     *DATA
     *PROD SSID D/I DOPT   PLAN     APPL COLL_ID            NICKNAME
     *----|----|-|--------|--------|----|------------------|------------------------
     ACT DBAP D ACTDOPD1 ACTvrDG ACTA

   - If one product was installed into a different set of libraries than another product, add a line in the *PROD section that specifies the high-level qualifier (HLQ) of the product libraries.

     In the example in Figure 4 on page 91, the line indicates the location of the CATALOG MANAGER libraries, which were installed into a different set of runtime libraries than DASD MANAGER PLUS.

     \begin{center}
     \textbf{Figure 4: Specifying the location of CATALOG MANAGER libraries (runtime environment)}
     \end{center}

     *DATA
     *PROD SSID D/I DOPT   PLAN     APPL COLL_ID            NICKNAME
     *----|----|-|--------|--------|----|------------------|------------------------
     ACT DBAP H \textit{HLQ_for_ACT} *

     In the example in Figure 5 on page 91, the lines indicate the location of the CATALOG MANAGER SMP/E libraries.

     \begin{center}
     \textbf{Figure 5: Specifying the location of CATALOG MANAGER libraries (SMP/E environment)}
     \end{center}

     *DATA
     *PROD SSID D/I DOPT   PLAN     APPL COLL_ID            NICKNAME
     *----|----|-|--------|--------|----|------------------|------------------------
     ACT DBAP T \textit{HLQ_for_DB} *
     ACT DBAP B \textit{HLQ_for_BB} *
     ACT DBAP X \textit{HLQ_for_XX} *
     ACT DBAP P \textit{HLQ_for_password} *
If the APF load library uses a different HLQ from other product libraries and is different from the variable APFLIB value in the control table, specify the line shown in Figure 6 on page 92 in the *PROD section.

**Note**

You cannot add an APF-authorized library to SMP/E libraries; you must be using runtime libraries to add an APF-authorized library.

---

**Figure 6: Specifying the location of the APF load library (runtime environment)**

```
*DATA
*PROD SSID D/I DOPT PLAN APPL COLL_ID NICKNAME
*----|----|-|--------|--------|----|------------------|------------------------
ACT DBAP A ADDTNL.APFL.LOAD                                                   *
```

3 Press END to exit.

---

**Enabling access to data sharing members in the control table**

If you installed the DB2 products in a data sharing (sysplex) environment, you can enable access to all of the data sharing members or to the group attach name.

**To enable access**

1 Edit the control table in the *HLQ*CONTAB data set.

2 Duplicate the table rows of the existing DB2 subsystem name for each member or group attach name.

3 Substitute the member or group attach name for the SSID column.

The example in Figure 7 on page 92 uses the group attach name GRP1. The VCAT control table variable is used by ALTER, CATALOG MANAGER, CHANGE MANAGER, and DASD MANAGER PLUS to indicate the VSAM catalog alias that contains the data sets for the DB2 catalog (DBDBCAT).

---

**Figure 7: Enabling access to additional members**

```
*DATA
*PROD SSID D/I DOPT PLAN APPL COLL_ID NICKNAME
*----|----|-|--------|--------|----|------------------|------------------------
ASU DBDB D ASUDOPD1 ASUvrDC ASU7                                          *
ACT DBDB D ACTDOPD1 ACTvrDM ACT8 ACTvr_D_MAIN     DBDB                    *
ACM DBDB D ACMDOPO1 ACMvrDF ACM8                                          *
EXIT DBDB 'SYS3.DBDB.DSNEXIT'                                             *
LOAD DBDB 'SYS2.DB2V10M.DSNLOAD'                                          *
HLQ DBDB BMCADMN.Vrnr.D10                                                 *
VCAT DBDB DBDBCAT                                                         *
DDF DBDB DBDB                                                            *
```
4 Press END to exit.

**Specifying separate libraries in the control table**

This topic describes how to specify separate libraries in the control table.

**To specify separate libraries**

1 Edit the control table in the $HLQ$.CONTAB data set.

2 If your installation has more than one version of DB2, use separate libraries for each version. Refer to the following scenarios as examples for editing the control table:

- **Scenario 1**: CATALOG MANAGER is installed on SSID DB91. The product libraries have an HLQ of BMC.DB91.*. Add the table shown in Figure 8 on page 93 to the control table.

  ![Figure 8: Adding CATALOG MANAGER to subsystem DB91](image)

- **Scenario 2**: CATALOG MANAGER is installed on SSID DB10. The product libraries have an HLQ of BMC.DB10.*. Add the table shown in Figure 9 on page 93 to the control table.

  ![Figure 9: Adding CATALOG MANAGER to subsystem DB10](image)
Scenario 3: In a runtime environment, if the BMCDB2 CLIST in HLQ.JCL is used to invoke CATALOG MANAGER for both SSIDs, add the lines in Figure 10 on page 94 to the control table.

Figure 10: Running DB10 CATALOG MANAGER from the DB91 BMCDB2 CLIST (runtime environment)

```plaintext
*DATA
*PROD SSID D/I DOPT PLAN APPL COLL_ID NICKNAME
*----|----|--------|--------|----|------------------|-----------------------|
ACT DB10 D ACTDOPD1 ACTvrDG ACTB *
*LIB SSID Data Set Name
*----|----|-------------------------------|
EXIT DB10 'SYS3.DB10.DSNEXIT' *
LOAD DB10 'SYS2.DB2V10M.DSNLOAD' *
HLQ DB91 BMC.DB91 *
```

The HLQ in Figure 10 on page 94 instructs the BMCDB2 CLIST to use BMC.DB91 as the HLQ for products that are installed on SSID DB10. Figure 11 on page 94 shows the updated control table.

Figure 11: Updated control table (runtime environment)

```plaintext
*DATA
*PROD SSID D/I DOPT PLAN APPL COLL_ID NICKNAME
*----|----|--------|--------|----|------------------|-----------------------|
ACT DB91 D ACTDOPD1 ACTvrDG ACTA *
ACT DB10 D ACTDOPD1 ACTvrDG ACTB *
*LIB SSID Data Set Name
*----|----|-------------------------------|
EXIT DB91 'SYS3.DBAP.DSNEXIT' *
LOAD DB91 'SYS2.DB2V91M.DSNLOAD' *
HLQ DB91 BMC.DB91 *
EXIT DB10 'SYS3.DB10.DSNEXIT' *
LOAD DB10 'SYS2.DB2V10M.DSNLOAD' *
HLQ DB10 BMC.DB10 *
```

In an SMP/E environment, if the BMCDB2 CLIST in HLQ.JCL is used to invoke CATALOG MANAGER for both SSIDs, add the lines in Figure 12 on page 94 to the control table.

Figure 12: Running DB10 CATALOG MANAGER from the DB91 BMCDB2 CLIST (SMP/E environment)

```plaintext
*DATA
*PROD SSID D/I DOPT PLAN APPL COLL_ID NICKNAME
*----|----|--------|--------|----|------------------|-----------------------|
ACT DB10 D ACTDOPD1 ACTvrDG ACTB *
*LIB SSID Data Set Name
*----|----|-------------------------------|
EXIT DB10 'SYS3.DB10.DSNEXIT' *
LOAD DB10 'SYS2.DB2V10M.DSNLOAD' *
DB DB91 BMC.DB91.DBHLQ *
BB DB91 BMC.DB91.BBHLQ *
XX DB91 BMC.DB91.XXHLQ *
PSWD DB91 BMC.DB91.PSWDHLQ *
```

Figure 13 on page 94 shows the updated control table.

Figure 13: Updated control table (SMP/E environment)
3 Press END to exit.

**Specifying the same installation options module in the control table**

You can specify the same installation options module for ALTER, CATALOG MANAGER, CHANGE MANAGER, or DASD MANAGER PLUS to be shared between two or more DB2 subsystems.

**Before you begin**

The following requirements must be met:

- CATALOG MANAGER or DASD MANAGER PLUS must be at the same version and release level on each of the DB2 subsystems.

  The DB2 exit and load data sets, if different for each DB2 subsystem, will have to be removed from the installation options modules and put into a LINKLIST concatenation for use by foreground and batch processes.

- ALTER or CHANGE MANAGER must be at the same version and release level on all DB2 subsystems. In addition, the DB2 subsystems must be at the same version and release level.

  The DB2 exit and load data sets, if different for each DB2 subsystem, will have to be removed from the installation options modules and put into a LINKLIST concatenation for use by foreground and batch processes.

**To specify the same installation options module**

1 For each of the products, choose one installation options module to represent the product’s installation options for all relevant DB2 subsystems.

2 Verify that the control table contains distinct and correct values for the VCAT variable.
3. Change the control table installation options values specified for the product and SSID to the shared installation options module name.

**Application IDs in the control table**

The control table allocates the ISPF application ID based on DB2 subsystem access. During installation, the Installation System attempts to make each ISPF application ID unique across DB2 subsystems. By default, the first time that the Installation System generates the control table, individual application IDs prdA are specified, where prd is the three-character product code. The shared application ID ADMA is also specified.

If you use the SSID installation method to perform a second or subsequent installation, the Installation System attempts to scan the existing control table and allocate a unique application ID. For example, if CATALOG MANAGER is initially installed on DB2T, the application ID is ACTA. If CATALOG MANAGER is installed on DB2P, the Installation System scans the BMCDB2 CLIST and uses application ID ACTB because ACTA is already in use. The shared application ID for an SSID installation is ADMB.

When you access ALTER, CATALOG MANAGER, CHANGE MANAGER, or DASD MANAGER PLUS, you can specify to use a shared or individual application ID, and the control table establishes the ISPF application ID and allocates the installation options module name. The product that receives control either initializes or refreshes your options with the information from the installation options module and the POF that is allocated by the control table.

**Application IDs for multiple SSIDs**

In some situations, when you make changes in one environment, those changes appear in another environment.

This situation usually happens when the same ISPF application ID is being established for multiple SSIDs, and is probably unacceptable because the user-option changes are SSID specific.

For example, if both of the DB2T and DB2P individual application IDs for CATALOG MANAGER are established as ACTA, any changes to user options that are made for DB2T are also made for the DB2P user options. The same is true for a shared application ID of ADMA used by DB2T and DB2P.

To avoid accidentally overlaying user options, ensure that the ISPF application that is established for each DB2 SSID is unique. The Installation System attempts to make each application ID unique in a given control table. It does not, however, make each application ID unique across multiple control tables. For example, if you execute the
installation for DB2T and for DB2P, you have two control tables—one for each environment. The initial ISPF application ID for both SSIDs is xxxA, which results in an overlay.

If you are planning to execute multiple copies of the BMCDB2 CLIST and control table, change the ISPF application ID that the control table allocates so that each SSID user profile is unique across all control tables (see Figure 14 on page 97).

**Note**

If you do not change the application IDs, changing user options in one SSID might also change the same user options for a different SSID.

**Figure 14: Sample control table (runtime environment)**

```
*DATA
*PROD SSID D/I DOPT PLAN APPL COLL_ID NICKNAME
*----|----|-|--------|--------|----|------------------|------------------------
ALU xxxx D ACMDOPO1 ACMvrDF ALU# *                  
ASU xxxx D ASUDOP01 ASUvrrDJ ASU# *                  
ACT xxxx D ACCTDOPO1 ACTvr0M ACT# ACTvr_D_MAIN xxxx *  
ACM xxxx D ACMDOP01 ACMvrDF ACM# *                  
*LIB SSID Data Set Name
*----|----|-------------------------------|                  
EXIT xxxx 'DB2.DSNEXIT'                                 *                  
LOAD xxxx 'DB2.DSNLOAD'                                 *                  
HLQ xxxx BMCADMN.Vrvm.D81                             *                  
VCAT xxxx xxxx CAT                                    *                  
DFD xxxx xxxx                                         *                  
APPL xxxx ADMA#                                       *                  
```

In the sample shown in Figure 14 on page 97, the variable xxxx is the SSID name and # is a unique one-byte character (such as A for the first SSID, B for the second SSID, C for the third, and so on).

**Subsequent DB2 subsystems in the control table**

The Installation System generates member BMCDB2SS to support subsequent DB2 subsystems.

This member contains logic for the installation options module allocation. When you use this member to update the control table, consider the following points:

- If you have MVS/ESA and TSO/E version 2.1 or later, the Installation System prompts you for the location of the control table and automatically updates it with the information in the BMCDB2SS.

- If you do not have MVS/ESA and TSO/E version 2.1 or later, follow the directions in BMCDB2SS for updating the control table.

- If you are installing CATALOG MANAGER, follow the instructions for modifying the CATALOG MANAGER plan name.
Catalog indirection in the control table

Member BMCDB2CI is generated to support catalog indirection for ALTER, CATALOG MANAGER, or CHANGE MANAGER.

This member contains logic for the installation options module allocation for indirect access. When you use BMCDB2CI to update the control table, consider the following points:

- If you have MVS/ESA and TSO/E 2.1 or later, the Installation System automatically updates the control table with BMCDB2CI. The Installation System searches both the JCL output file and the installation file to apply the updates wherever a copy of the control table is found. The Installation System prompts you for the location of the control table.

- If you do not have MVS/ESA and TSO/E 2.1 or later, follow the directions in BMCDB2CI for updating the control table.

- If you are installing CATALOG MANAGER, follow the instructions for modifying the CATALOG MANAGER plan name.

Fast Path Navigation

For ALTER, CATALOG MANAGER, CHANGE MANAGER, and DASD MANAGER PLUS, the Installation System provides Fast Path Navigation, which enables you to switch from one product to another without leaving the current product.

To initiate Fast Path Navigation, on the Command line of the current product, enter the name of the product to which you want to switch. The following table provides a list of the products and commands.

<table>
<thead>
<tr>
<th>Product</th>
<th>Command</th>
</tr>
</thead>
<tbody>
<tr>
<td>ALTER</td>
<td>BMCALTER</td>
</tr>
<tr>
<td>CATALOG MANAGER</td>
<td>BMCCAT</td>
</tr>
<tr>
<td>CHANGE MANAGER</td>
<td>BMCCCHG</td>
</tr>
<tr>
<td>DASD MANAGER PLUS</td>
<td>BMCDASD</td>
</tr>
</tbody>
</table>

For example, if you are currently using DASD MANAGER PLUS and want to view an object description in CATALOG MANAGER, enter BMCCAT on the DASD MANAGER PLUS COMMAND line. When you initiate Fast Path Navigation, the main menu for the requested product is displayed. In this case, the DASD
MANAGER PLUS session is temporarily suspended and then resumed when you exit CATALOG MANAGER.

To use Fast Path Navigation, the following conditions must be met:

- You must install the products by using the Installation System.
- You must use the BMCDB2 CLIST during product invocation.
- The distributed CLISTs AEXADMF1 and AEXADMF2 must be in a data set that is either in the ALTLIB list of the BMCDB2 CLIST or in your SYSPROC concatenation.
- The product to which you are switching must be installed and reside in the same set of libraries as the product from which you are switching.
- For CATALOG MANAGER, you must enable the ELO (Editor Lock Options) command in the AEXADMF1 and AEXADMF2 CLISTs.

**Note**

You cannot use Fast Path Navigation to access a product that is currently suspended. For example, if you switch from ALTER to DASD MANAGER PLUS, you cannot use Fast Path to return to ALTER because it is currently suspended. Instead, you have to exit the DASD MANAGER PLUS session to resume the ALTER session.

---

**User profile values**

You can change the values in the installation options module or in the POF for a product on an individual basis by using the product’s user options.

These user options are saved and maintained in the user profile.

If you need to reset the values in the user profiles, you can use a refresh feature. This feature modifies one or more option values for all of the product’s users.

**Refreshing installation options values in the user profile**

To refresh an option value in all existing user profiles, enclose the option value in parentheses and include ,R after the value inside the parentheses.

The following example illustrates how to refresh the option value:

```
SSID=(DB2J,R), *
```
Note
Do not drop either the continuation comma after the closing parenthesis or the
continuation character in column 72.

This example refreshes the default DB2 subsystem ID for all users of the product.

For products other than CATALOG MANAGER, the \( ^{R} \) in the variable syntax
indicates that the value specified will refresh the existing value of the variable in the
user’s ISPF profile data set, if the time stamp of the installation options module is
later than that in the user’s ISPF profile member. However, the user can change the
override value in the user profile. In CATALOG MANAGER, the refresh occurs
every time that a user starts the product.

To troubleshoot refreshing installation options values

If you have problems refreshing your user options, complete the following steps:

1. Verify that the refresh option is coded on the correct macro listing keyword in the
   installation options assembly member.

2. Verify that the installation options assembly was completed successfully with a
   return code of 0.

   If you receive assembly errors, compare your installation options module listing
   with one that the installation process generated. Some common errors are as
   follows:

   ■ missing comma delimiter after keyword value
   ■ missing continuation character in column 72
   ■ incorrect symbol-variable substitution
   ■ missing or unbalanced single quotation marks

3. Verify that the assembled installation options member is the same installation
   options member that ALTER, CATALOG MANAGER, CHANGE MANAGER,
   and DASD MANAGER PLUS use.

   a. To verify, access the environment information for your product as follows:

      ■ In ALTER or CHANGE MANAGER, at the main menu, type ENV on the
        Command line.

      ■ In CATALOG MANAGER, on the Primary Menu panel or any list panel,
        type ENV on the Command line.
In DASD MANAGER PLUS, at the main menu, select User Options. Then select Current environment information.

b Compare the listed installation options module name with the name of the installation options module that you assembled and link-edited.

4 Verify that the installation options module assembly is updating the correct load library.

The SYSLMOD ddbname statement should refer to the load library where the products reside.

### Refreshing POF values in the user profile

You can specify a value to refresh the existing value of the variable in the user’s ISPF profile data set.

#### To refresh an option value

1 To refresh an option value, modify the value of the POF keyword in one of the following ways:

- Include , (R) after the option value, as in the following example:

  ```plaintext
  BMC_LOAD_OPTS=AMU$MMS,(R)
  ```

- Specify a blank and , (R), as in the following example:

  ```plaintext
  BMC_LOAD_OPTS= , (R)
  ```

These examples refresh the name of the LOADPLUS user options module.

**Note**

If the value for the POF keyword ends with a comma, as in the following example, include , (R) after the comma.

```plaintext
JOBCARD1=//JOBC JOB(&ZACCTNUM),"&PGMR",(R)
```

When the POFDATE parameter is later than the previous POFDATE that is stored in the user’s ISPF profile, the specified value refreshes the existing value of the variable in the user’s ISPF profile data set.

#### To troubleshoot refreshing POF values

If you have problems refreshing your user options, complete the following steps:

1 Verify that the refresh option is coded on the correct POF keyword.
2 Verify the date in the POFDATE parameter.

More CATALOG MANAGER configuration tasks

In addition to the configuration tasks for multiple components and for ALTER and CATALOG MANAGER, you need to perform tasks for CATALOG MANAGER.

Access to catalog information

CATALOG MANAGER uses dynamic SQL to access DB2 catalog tables or product log tables.

CATALOG MANAGER observes the privileges of the user who lists the tables.

CATALOG MANAGER does not bypass any DB2 security when it generates and executes SQL, DML, or DB2 commands. DB2 rejects any action requested by CATALOG MANAGER for which the user is not authorized by DB2.

DB2 requires that users have at least the SELECT privilege to access catalog tables or product log tables. The CATALOG MANAGER installation options settings cannot override the DB2 SELECT authorization requirement.

Prohibiting access to CATALOG MANAGER functions

The CATALOG MANAGER initial command restricts users from all CATALOG MANAGER functions except data editing.

When the initial command is enabled, CATALOG MANAGER starts at the Edit DB2 Table Options panel where users can set options for editing data, controlling the display of data, and processing SQL. Users can navigate through all data editing panels, but cannot access the Primary Menu panel or other function panels. When users press END from the Edit DB2 Table Options panel, CATALOG MANAGER closes.

WARNING

You cannot enable both the initial command and the entry panel command (see Specifying an entry panel on page 103) in the same BMCDB2 CLIST.
To enable the initial command

1. Edit the BMCDB2 CLIST.

2. Find the lines that are shown in Figure 15 on page 103.

Figure 15: BMCDB2 CLIST--CATALOG MANAGER initial command

```clist
WHEN(ACTEMAIN) DO /* CATALOG MANAGER
SET BMCFPCNT= 10100
IF (&ACCESS = INDIRECT) THEN +
SET CIACCESS = YES
SET APPLID  = &ACTAPPL
SET PARM    = &STR(S=&SSID,O=&ACTDOPT,D=&ASUDOPTD,+
M=BC,I=&CIACCESS,A=&ACMDOPT,+
DB2CAT=&DB2VCAT )
/* EDITOR LOCK OPTIONS (ELO) - ALLOWS USER TO IDENTIFY */
/* THE DEFAULT LOCKING OPTIONS FOR DATA EDITING. USER */
/* MAY CHOOSE ALL OR ANY COMBINATION OF THE THREE. */
/* T - TABLE LOCK, R - ROW LOCK, N - NO LOCKING */
   SET PARM = &STR(&PARM,ELO=TRN)
/* UNCOMMENT 'SET PARM' LINE BELOW TO ALLOW ACCESS ONLY */
/* TO DATA EDITINGFUNCTION. USERS CANNOT ACCESS OTHER */
/* CATALOG MANAGER FUNCTIONS. */
/* */
/* SET PARM = &STR(&PARM,E=EDIT) */
/* */
```

3. As directed in the CLIST, uncomment the following line:

```clist
/* SET PARM = &STR(&PARM,E=EDIT) */
```

4. Press END to exit.

Specifying an entry panel

You can optionally cause CATALOG MANAGER to display an entry panel other than the Primary Menu panel by adding an entry panel command to the BMCDB2 CLIST.

The entry panel command is a CATALOG MANAGER single command of 1 through 48 characters that is passed as a parameter to the CATALOG MANAGER product module ACTEMAIN from the BMCDB2 CLIST. Users have access to all functions of CATALOG MANAGER unless they have been restricted by other means, such as a customized session profile.

**WARNING**

You cannot enable both the entry panel command and the initial command in the same BMCDB2 CLIST.
To edit the BMCDB2 CLIST to enable a different entry panel

1 Edit the BMCDB2 CLIST.

2 Find the lines that are shown in Figure 16 on page 104.

Figure 16: BMCDB2 CLIST--CATALOG MANAGER entry panel

```
WHEN(ACTEMAIN) DO /* CATALOG MANAGER
SET BMCFPCNT= 10100
IF (&ACCESS = INDIRECT) THEN +
SET CIACCESS = YES
SET APPLID = &ACTAPPL
SET PARM = &STR(S=&SSID,O=&ACTDOPT,D=&ASUDOPTD,+
  M=BC,I=&CIACCESS,A=&ACMDOPT,+
  DB2CAT=&DB2VCAT )
/* EDITOR LOCK OPTIONS (ELO) - ALLOWS USER TO IDENTIFY */
/* THE DEFAULT LOCKING OPTIONS FOR DATA EDITING. USER */
/* MAY CHOOSE ALL OR ANY COMBINATION OF THE THREE. */
/* T - TABLE LOCK, R - ROW LOCK, N - NO LOCKING */
  SET PARM = &STR(&PARM,ELO=TRN)
/* UNCOMMENT 'SET PARM' LINE BELOW TO ALLOW ACCESS ONLY */
/* TO DATA EDITING FUNCTION. USERS CANNOT ACCESS OTHER */
/* CATALOG MANAGER FUNCTIONS. */
/*-----------------------------------------------*/
/* SET PARM = &STR(&PARM, E=EDIT) */
/*-----------------------------------------------*/
```

3 Replace the command E=EDIT with the entry panel command. The entry panel command syntax is C= command.

**Note**

If the CATALOG MANAGER command that you specify requires a function or object type and qualifier, you must include them when defining the entry panel command parameter.

4 Uncomment the line that includes the entry panel command.

The following example shows the edited line from the BMCDB2 CLIST to specify the CONNECT entry panel command.

```
SET PARM = &STR(&PARM, C=CONNECT)
```

5 Press END to exit.

Specifying locking options for editing data

CATALOG MANAGER offers three locking options for editing table data: shared table lock, row lock, and no lock.
To set the editor locking options for all users, you must enable the locking options command. The command is passed as a parameter to the CATALOG MANAGER product module ACTEMAIN from the BMCDB2 CLIST.

To enable the locking options command

1. Edit the BMCDB2 CLIST.
2. Find the lines shown in Figure 17 on page 105.

![Figure 17: BMCDB2 CLIST--CATALOG MANAGER entry panel for locking options](image)

3. Enable the CATALOG MANAGER locking options command.

The syntax for the locking options command is `ELO= option`.

As an example, Figure 17 on page 105 shows the locking option command ELO set to TRN. These options determine whether requests for edits from any user are allowed while a table is edited. For more information about the options for data editing, see the CATALOG MANAGER for DB2 User Guide.

4. Press END to exit.

---

**Note**

The CATALOG MANAGER data editing package ACTJTEQ is installed with the following values for two BIND PACKAGE options: an ISOLATION value of CS (cursor stability) and a CURRENTDATA value of YES. You can change these values by rebinding the data editing package with other values that are allowed by DB2. For BIND PACKAGE syntax and descriptions, see the IBM documentation.

5. If you plan to use Fast Path Navigation (see “Fast Path Navigation” on page 98), you must edit the AEXADMF1 and AEXADMF2 CLISTS and enable the CATALOG MANAGER locking options command as you did in Step 3 on page 105 for the BMCDB2 CLIST.
For example, if you set ELO to TRN, then add the following statement to the AEXADMF2 CLIST:

\[ \text{SET PARM} = \&\text{STR(\&PARM(ELO=TRN)} \]

### Setting the session profile

The CATALOG MANAGER session profile enables you to customize specific product displays and operations for specific users or groups of users.

To initially set the session profile for all user groups, you must invoke the session profile command. The CATALOG MANAGER session profile command (1 to 18 characters) that calls a set of user-customized features that is saved under a specific session profile name. The session profile command is passed as a parameter to the CATALOG MANAGER product module ACTEMAIN from the BMCDB2 CLIST.

#### To invoke the session profile command

1. Edit the BMCDB2 CLIST.
2. Find the lines that are shown in Figure 18 on page 106.

```
/*----------------------------------------------------------*/
/* EDITOR LOCK OPTIONS (ELO) - ALLOWS USER TO IDENTIFY THE */
/* DEFAULT LOCKING OPTIONS FOR DATA EDITING. USER MAY CHOOSE */
/* ALL OR ANY COMBINATION OF THE THREE. T - TABLE LOCK,     */
/* R - ROW LOCK, N - NO LOCKING.                            */
/*----------------------------------------------------------*/
SET PARM = &STR(\&PARM,ELO=TRN)
```

3. Add the following command after the ELO locking option command:

\[ \text{SET PARM} = \&\text{STR(\&PARM,PR=profileName)} \]

As an example, adding the following line in the CLIST causes CATALOG MANAGER to invoke the session profile that is named PROGRAMMERS:

\[ \text{SET PARM} = \&\text{STR(\&PARM,PR=PROGRAMMERS)} \]

4. Press END to exit.

### Editing the CONNECT command servers

The servers that the CATALOG MANAGER product uses in the CONNECT command are listed in the control table.
To edit the control table to change or enable the servers

1. Edit the control table.

2. To change the servers that are listed for the CONNECT command (see Figure 19 on page 107), you can add, delete, or modify the data rows.

Figure 19: CATALOG MANAGER CONNECT command servers

<table>
<thead>
<tr>
<th>PROD</th>
<th>SSID S</th>
<th>SERVER NAME</th>
<th>SSID COLL_ID</th>
<th>NICKNAME</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACT</td>
<td>DBBF S</td>
<td>DBBA</td>
<td>DBBA ACTvr_D_MAIN</td>
<td>DBBFDBBA *</td>
</tr>
<tr>
<td>ACT</td>
<td>DBBF S</td>
<td>DBDB</td>
<td>DBDB ACTvr_D_MAIN</td>
<td>DBBFDBDB *</td>
</tr>
</tbody>
</table>

3. Update the values for the Server Name, Server SSID, and the Server Nickname.

4. Complete the instructions in the comment block of Figure 20 on page 107 to enable the servers that were added by the MSSID installation. These server entries will be commented out. Some editing of the new server entries might be required.

Figure 20: Control table for multiple SSID installation

<table>
<thead>
<tr>
<th>PROD</th>
<th>SSID S</th>
<th>SERVER NAME</th>
<th>SSID COLL_ID</th>
<th>NICKNAME</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACT</td>
<td>DBBF S</td>
<td>DBBA</td>
<td>DBBA ACTvr_D_MAIN</td>
<td>DBBFDBBA *</td>
</tr>
<tr>
<td>ACT</td>
<td>DBBF S</td>
<td>DBDB</td>
<td>DBDB ACTvr_D_MAIN</td>
<td>DBBFDBDB *</td>
</tr>
<tr>
<td>ACT</td>
<td>DBBF S</td>
<td>DBDA</td>
<td>DBDA ACTvr_D_MAIN</td>
<td>DBBFDBDA *</td>
</tr>
<tr>
<td>*ACT</td>
<td>DBBA S</td>
<td>DBBA</td>
<td>DBBA ACTvr_D_MAIN</td>
<td>DBBFDBBA *</td>
</tr>
<tr>
<td>*ACT</td>
<td>DBBA S</td>
<td>DBDB</td>
<td>DBDB ACTvr_D_MAIN</td>
<td>DBBFDBDB *</td>
</tr>
<tr>
<td>*ACT</td>
<td>DBBA S</td>
<td>DBDA</td>
<td>DBDA ACTvr_D_MAIN</td>
<td>DBBFDBDA *</td>
</tr>
</tbody>
</table>

5. Press END to exit.

6. If either of the following conditions exists, type GENERATE on the COMMAND line:
   - You edited the BMCDB2 CLIST to use a generated permanent ISPF table for the control table (specified GENTABLE=Y in the BMCDB2 CLIST)
   - You modified the control table that was previously generated
     This action rebuilds the ISPF control table in the HLQ.UDBTLIB data set.

Adding ACTEMAIN and ACTDCL to the ISPF command table

System security can use a TSO command-limiting function to restrict an individual user or an entire site.
This function applies to TSO commands that are issued from the READY prompt or from ISPF.

**To add commands to the ISPF command table**

1. Edit the ISPF command table.

2. If command limiting is active, you must add the following commands to the list of commands that are allowed for CATALOG MANAGER:

   - ACTEMAIN—used to access CATALOG MANAGER
   - ACTDCL—used to create a DCLGEN in CATALOG MANAGER

Command limiting is activated in the following ways:

- for an individual, with the TSOCMDS field of the logon ID record
  TSOCMDS specifies the name of a module that contains a list of valid commands for a user. For a sample list, see the ACF$CMDS member of CAI.CAIMAC.

- for an entire site, with the CMDLIST field of the GSO record named TSO
  The ALLCMDS field indicates permission for a user to bypass command limiting. Use the character that is specified in the BYPASS field of the GSO TSO record as a prefix for the command name.

**Enabling the use of DDF**

CATALOG MANAGER and CHANGE MANAGER can access remote DB2 subsystems using the DB2 Distributed Data Facility (DDF).

If you did not enable the use of DDF during the installation of the products, perform the steps in this task.

**To enable the use of DDF**

1. Edit the $HLQ.UDBCNTL member T1S#CDBS:

   a. Change the following variables to the values that you used when you installed CATALOG MANAGER or CHANGE MANAGER. To review the values, see the prdINIT5 or prdINIT6 member in the $HLQ.JCL library (where prd is the product code). For CHANGE MANAGER, also review the values for Common SQL in the ACSINIT5 or ACSINIT6 member.

   - Replace **AUTHID with the value for the primary or secondary authorization ID.
Replace **SQLID with the value of the synonym qualifier.

Replace **COLLID with the value of the collection ID.

b (CHANGE MANAGER) For the synonyms that are prefixed with CAT2 and CAT3, uncomment the SQL statements and add a dash (-). (That is, change *SQL to -SQL.)

c (CHANGE MANAGER) If you are executing the worklist for only CHANGE MANAGER, comment out the BIND statements for the CATALOG MANAGER packages.

d In the last SQL statement, specify to grant EXECUTE authority to PUBLIC or to specific users.

e If you are executing the worklist for both CATALOG MANAGER and CHANGE MANAGER, repeat step Step 1.d on page 109.

2 Edit the $C40INST job to create a single step to execute the T1S#CDBS worklist for CATALOG MANAGER and for CHANGE MANAGER.

3 Edit the BMCDB2 CLIST:

a Edit the control table.

b Specify the servers to use with CATALOG MANAGER CONNECT.

The same release level of CATALOG MANAGER must be installed on the remote DB2 subsystems and the DB2 subsystem from which you want to connect. The example in Figure 21 on page 109 shows that when CATALOG MANAGER is invoked on the DB2P subsystem, it can connect with the DB2A, DB2B, and DB2C servers on remote DB2 subsystems. In this example, the unique nicknames combine the server name and SSID.

Figure 21: CATALOG MANAGER CONNECT command servers

<table>
<thead>
<tr>
<th>*PROD</th>
<th>SSID</th>
<th>SERVER NAME</th>
<th>SSID</th>
<th>COLL_ID</th>
<th>NICKNAME</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACT</td>
<td>DB2P</td>
<td>S DB2A</td>
<td>DB2A</td>
<td>ACTvr_D_MAIN</td>
<td>DB2PDB2A</td>
</tr>
<tr>
<td>ACT</td>
<td>DB2P</td>
<td>S DB2B</td>
<td>DB2B</td>
<td>ACTvr_D_MAIN</td>
<td>DB2PDB2B</td>
</tr>
<tr>
<td>ACT</td>
<td>DB2P</td>
<td>S DB2C</td>
<td>DB2C</td>
<td>ACTvr_D_MAIN</td>
<td>DB2PDB2C</td>
</tr>
</tbody>
</table>

c Press END to exit.
Enabling the use of SQL Explorer for DB2 within CATALOG MANAGER

Within CATALOG MANAGER, you can use commands to invoke the SQL Explorer for DB2 production.

To invoke SQL Explorer, CATALOG MANAGER uses the ACTPSS CLIST. To enable the use of SQL Explorer within CATALOG MANAGER, you must customize the ACTPSS CLIST in the HLQ.UDBCLIB data set. For more information about customizing the CLIST, see the Installation System User Guide.

Installation verification

After you customize and configure the products, you must verify the installation of the products.

Verifying the Administrative products’ installation

This procedure describes the steps that you must complete to verify that ALTER, CATALOG MANAGER, CHANGE MANAGER, or DASD MANAGER PLUS have been installed correctly.

To verify the installation

1. Invoke the BMCDB2 CLIST.
2. On the COMMAND line, type CONTAB.
3. On the BMCDB2TB panel, verify that the correct partitioned data set (PDS) and member name are displayed in the library in which the BMCDB2 CLIST is located. The HLQ.CONTAB sequential file should also be displayed in the library.

   If the PDS and member name are not displayed, set the BMCDB2C variable in the BMCDB2 CLIST to the correct library.
4. Exit the CONTAB panel.
5. Select one of the products that you installed.
6. Access the environment information for the product that you have selected as follows:
In ALTER or CHANGE MANAGER, at the main menu, type ENV on the Command line.

In CATALOG MANAGER, on the Primary Menu panel, type ENV on the Command line.

In DASD MANAGER PLUS, at the main menu, select User Options. Then select Current environment information.

7 Review the environment panel to verify the displayed information.

Note
If you are installing CATALOG MANAGER and are using the DDF, enter CONNECT on the Command line of the CATALOG MANAGER Primary Menu panel. The CATALOG MANAGER Change Access panel is displayed. Then verify connections or attachments to other DB2 subsystems.

8 Exit the environment panel.

9 Repeat Step 5 on page 110 through Step 8 on page 111 for each product that you installed.

Verifying Backup and Recovery product and Utility product installation

The Installation System generates an installation verification procedure (IVP) job for each installed Backup and Recovery or Utility product.

To help ensure that a product installed properly, BMC strongly recommends that you run the corresponding IVP job.

For products that use the dynamic bind process, the IVP job initializes that process by binding the necessary packages. Running the IVP job helps prevent subsequent bind problems, such as authorization problems, during product execution.

Before you begin

Complete the following tasks before running an IVP job:

- Submit all installation and customization jobs except the IVP job ($C70IVP). For more information, see the Installation System User Guide.

- Apply the appropriate fixes for each product that you are installing. For instructions, see the Installation System User Guide.
Grant the appropriate authorizations. For more information, see the configuration information for the products that you have installed.

If you are not the person who installed the products but are submitting the IVP job, ensure that you have the authorizations that are required to execute each product that was installed.

Complete any additional configuration tasks for your installed products or components.

To verify installation

1. If your jobs use data sets that are managed by the Storage Management Subsystem (SMS), ensure that the SMS service routine load library (SYS1.CSSLIB) is APF-authorized.

   Complete this step regardless of whether SYS1.CSSLIB is in your system LNKLST or STEPLIB concatenation.

2. Use one of the following methods to edit either the EXEC statement in the product job step of the IVP job ($C70IVP) or your job card:

   ▪ Change the value of the REGION parameter to 0M.

   ▪ If not already addressed by your site SMF defaults, add the MEMLIMIT parameter with an appropriate value for your site and the products that you are installing.

3. Submit the IVP job ($C70IVP).

   The IVP job should complete with condition code 0 unless otherwise indicated by comments in the job.

---

**Note**

The following temporary objects exist only for the duration of the IVP job:

- Database BMCIVPDB
- Table space BMCIVPDB.BMCIVPTS
- Table BMC.BMCIVPTB
- Table BMC.BMCIVPT2
- Index BMC.BMCIVPIX1
Configuring the Administrative products for DB2

After you install and customize the Administrative products, you might need to perform several additional configuration tasks to complete and verify the installation. You perform these tasks outside the Installation System dialog panels.

Multiple-product configuration tasks

This topic describes configuration tasks that apply to several products or solution components.

Authorization verification

You can enter your BMC Authorization passwords when you install the products.

If you are a licensed user and have already received and entered the permanent BMC Authorization passwords, ensure that the appropriate authorization modules are saved and copied to the new library after you install the products. The authorization modules are created when you add the password.

**Note**

In earlier product versions, the Installation System placed passwords directly into the HLQ.LOAD library. The Installation System now places passwords in the HLQ.BMCPWD library and copies the passwords to the HLQ.BMCLINK library or to your APF-authorized library.

Alternatively, you can use the BMC Product Authorization utility to apply passwords and to change your CPU configuration.
Interaction among the products

When you install the products or solutions, the Installation System can automatically enable the products or components to interact with other products or components.

If one of the following conditions exist, however, you must perform additional steps to enable the products to interact with each other:

- you installed the products at different times and you did not select to allow the products to interact with one another on the Install System Product to Product Interface Panel
- synonyms in the CATALOG MANAGER product do not point to the correct utility tables

Enabling interaction between ALTER or CHANGE MANAGER and BMC utilities

Perform this task if you installed ALTER or CHANGE MANAGER under either of the following circumstances:

- You installed ALTER or CHANGE MANAGER in a separate installation session before you installed the Utility products.
- You installed ALTER or CHANGE MANAGER either in the same installation session as the Utility products or in a separate installation session after you installed the Utility products, but you did not associate ALTER or CHANGE MANAGER with the Utility products on the Product to Product Interface panel.

To use a different utilities load library

If the Utility products are installed in a different load library than ALTER or CHANGE MANAGER, perform the following steps to use a different utilities load library:

1. In the HLQ.UDBCNTL library, find the member that has the same name as the ALTER or CHANGE MANAGER installation options module.
2 In the POFDS parameter of the member, note the name of the POF.

3 In the HLQ.UDBCNTL library, find the POF member.

4 In the POF member, update the following keywords to use the different utilities load library (such as the DBLINK library):
   - ADDLOAD1
   - ADDLOAD2
   - BMC_CHECK_LOAD
   - BMC_COPY_LOAD
   - BMC_LOAD_LOAD
   - BMC_RECOVER_LOAD
   - BMC_REORG_LOAD
   - BMC_UNLOAD_LOAD

5 If necessary, add any additional load libraries to SLIB member AJXSTEPU.

6 If you added load libraries in Step 5 on page 66, compile the SLIB member.

   For sample compile JCL, refer to member AJXCOMPS in the HLQ.DBCNTL data set.

   **Note**

   If you want to modify the JCL in member AJXCOMPS, copy the member from HLQ.DBCNTL to HLQ.UDBCNTL. Then, modify the JCL in HLQ.UDBCNTL(AJXCOMPS).

**Enabling interaction between CATALOG MANAGER and BMC utilities**

CATALOG MANAGER can interact with the BMCUTIL, BMCHIST, and BMCSYNC tables to provide BMC utility control, status, and history information. Note that history information is not provided for the BMC RECOVER PLUS for DB2 product. CATALOG MANAGER accesses the utility tables during batch processing and when using online commands.
Before you begin

Determine whether you need to perform this task and, if so, which parts of this task you need to perform:

- Perform this task under either of the following circumstances:
  - You installed CATALOG MANAGER in a separate installation session before you installed the Utility products (for example, BMC UNLOAD PLUS or LOADPLUS).
  - You installed CATALOG MANAGER either in the same installation session as the Utility products or in a separate installation session after you installed the Utility products, but you did not associate CATALOG MANAGER with the Utility products on the Product to Product Interface panel.

- Determine whether your current synonyms point to the correct tables. CATALOG MANAGER uses the following synonyms:
  - BMC_UTILITY for the BMCUTIL table
  - REORG_HISTORY for the BMCHIST table
  - BMC_UTIL_SYNC and BMC_UTIL_SYNC2 for the BMCSYNC table

- If your current synonyms do not point to the correct tables, use the task “To update synonyms” on page 67.

- If the Utility products are installed in a different load library than CATALOG MANAGER, use the task “To use a different load library” on page 68.

To update synonyms

The HLQ.UDBCNTL member T1S#ACTU provides an example of a worklist for this procedure.

1. Drop the CATALOG MANAGER utility synonyms.

2. Create new CATALOG MANAGER utility synonyms by using the same synonym names, but with the correct table names.

3. Bind the packages ACTCSQBU and ACTQLBH into the main collection ID for CATALOG MANAGER.

4. Bind the CATALOG MANAGER BMC Utility History Plan. Use the existing plan bind source to create this plan, and then change the name.
BMC specifies this plan as ACT\(vr\)DH, where \(vr\) is the version and release.

5 In the HLQ.UDBCNTL library, edit the member that has the same name as the CATALOG MANAGER installation options module. Change the value of HPLAN to the plan that was created in Step 4 on page 67.

6 Submit this member to reassemble the installation options module.

**To use a different load library**

1 In the HLQ.UDBCNTL library, find the member that has the same name as the CATALOG MANAGER installation options module.

2 In the POFDS parameter of the member, note the name of the POF.

3 In the HLQ.UDBCNTL library, find the POF member.

4 Update the following keywords in the POF member to use the different utilities load library (such as the DBLINK library):
   - ADDLOAD1
   - ADDLOAD2
   - BMC_CHECK_LOAD
   - BMC_COPY_LOAD
   - BMC_LOAD_LOAD
   - BMC_RECOVER_LOAD
   - BMC_REORG_LOAD
   - BMC_UNLOAD_LOAD

5 If necessary, add any additional load libraries to SLIB member AJXSTEPU.

6 If you added load libraries in Step 5 on page 68, compile the SLIB member.

For sample compile JCL, refer to member AJXCOMPS in the HLQ.DBCNTL data set.

---

**Note**

If you want to modify the JCL in member AJXCOMPS, copy the member from HLQ.DBCNTL to HLQ.UDBCNTL. Then, modify the JCL in HLQ.UDBCNTL(AJXCOMPS).
Enabling interaction between DASD MANAGER PLUS and the BMC utilities

Perform this task if you installed DASD MANAGER PLUS in a separate installation session before you installed the Utility products.

To use a different load library

If the Utility products are installed in a different load library than DASD MANAGER PLUS, perform the following steps to use a different utilities load library:

1. In the HLQ.UDBCNTL library, find the DASD MANAGER PLUS member that has the same name as the installation options module.

2. In the member, locate the name of the POF in the POFDS parameter.

3. In the HLQ.UDBCNTL library, find the POF member.

4. Update the keywords in the POF member to use the different utilities load library (such as the DBLINK library):
   - ADDLOAD1
   - ADDLOAD2
   - BMC_COPY_LOAD
   - BMC_LOAD_LOAD
   - BMC_REORG_LOAD

5. If necessary, add any additional load libraries to SLIB member AJXSTEPU.

6. If you added load libraries in Step 5 on page 118, compile the SLIB member.

   For sample compile JCL, refer to member AJXCOMPS in the HLQ.DBCNTL data set.

   **Note**

   If you want to modify the JCL in member AJXCOMPS, copy the member from HLQ.DBCNTL to HLQ.UDBCNTL. Then, modify the JCL in HLQ.UDBCNTL(AJXCOMPS).
More Administrative product configuration tasks

In addition to the configuration tasks for multiple products, you need to perform other configuration tasks.

Using catalog indirection with ALTER, CATALOG MANAGER, and CHANGE MANAGER

After you install and customize your products, you can implement catalog indirection for ALTER, CATALOG MANAGER, or CHANGE MANAGER.

Catalog indirection is an optional method of implementing and maintaining these products. To accomplish catalog indirection, the products use synonyms that point either to a copy of the DB2 catalog or to user-created views of the catalog.

Catalog indirection allows products to query the DB2 catalog indirectly. Catalog indirection applies only to catalog queries. Any action that changes information in the catalog must operate on the actual catalog, not on a view of the catalog or a copy of the catalog. For example, when you issue a command through CATALOG MANAGER to update the catalog, the action affects the actual catalog. The Execution Monitor in ALTER and CHANGE MANAGER also executes a worklist against the actual catalog. In contrast, the Analysis component in ALTER and CHANGE MANAGER can use either the actual catalog or catalog indirection when creating worklists.

General points about catalog indirection are as follows:

- Catalog indirection requires DB2 Version 9 or later in new-function mode.
- The products are set up to access the DB2 catalog directly. After the installation, you can use the Installation System to implement and maintain catalog indirection.
- You should reuse the installation profile that you specified in the full installation path for catalog indirection.
- The synonyms that reference the DB2 catalog are hardcoded in the components. You direct the synonyms to the catalog, copy, or views during installation by providing information on the Installation System panels.
- You can use the same copy or view of the catalog for CATALOG MANAGER and CHANGE MANAGER, or you can implement catalog indirection through separate copies or views for each product.
Catalog indirection can provide the following benefits:

— Reduces contention for the DB2 catalog

— Provides an additional level of security for sensitive data in the catalog

**Note**

Although you can implement a view of a copy of the catalog and simultaneously reap both benefits of catalog indirection, this approach is extremely complex to maintain and is not recommended.

To install catalog indirection, see the *Installation System User Guide*.

**Implement and maintain catalog indirection**

Successful implementation of catalog indirection requires an in-depth understanding of the DB2 environment and its catalog structure, and experience in maintaining DB2 applications.

Each method of implementing catalog indirection should be managed as if catalog indirection were a DB2 application. Test the products fully without catalog indirection before you implement catalog indirection.

**Implement catalog indirection**

You can install catalog indirection for one or more of the products on one DB2 subsystem at a time. When you implement catalog indirection, the products use the existing product libraries and support the use of your own VSAM data sets. Optionally, the products can create a copy of the DB2 catalog by using the CREATE LIKE DDL syntax and create views of the DB2 catalog.

**Maintain catalog indirection**

You can apply maintenance to catalog indirection on one or more products on one DB2 subsystem at a time. You should perform maintenance if you have an existing copy or view of the DB2 catalog and have performed a new installation of the products.

**Specify the installation options module**

When a product runs, it uses its own installation options module that was built during installation. The BMCDB2 CLIST allocates the installation options module when you start the product.

When accessing the DB2 catalog with catalog indirection, the BMCDB2 CLIST allocates an indirect installation options module. This *indirect* installation options module must have a different name than the *direct* installation options module that was previously built.
The installation options module, the plan and collection IDs, and the synonym qualifier are all crucial for the implementation of catalog indirection. The qualifier of the plan and the packages is used to resolve synonyms that point to either a view of the DB2 catalog or a copy of the DB2 catalog, depending on the method of implementation. You should understand their use and interaction before you implement catalog indirection.

The installation options module uses the convention prdDOPyz. Table 2 on page 71 describes the variables for the installation options module.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Represents</th>
</tr>
</thead>
<tbody>
<tr>
<td>prd</td>
<td>Product code</td>
</tr>
<tr>
<td>y</td>
<td>Access type (D=direct, I=indirect)</td>
</tr>
<tr>
<td>z</td>
<td>SSID indicator</td>
</tr>
</tbody>
</table>

Table 3 on page 71 shows examples of installation options modules.

<table>
<thead>
<tr>
<th>Example</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACMDOPDT</td>
<td>ALTER direct access for a test DB2 subsystem</td>
</tr>
<tr>
<td>ACMDOPIT</td>
<td>ALTER indirect access for a test DB2 subsystem</td>
</tr>
</tbody>
</table>

Unlike ALTER and CHANGE MANAGER, CATALOG MANAGER is designed to use a single installation options module for both direct and indirect access. The BMCDB2 CLIST allocates the same installation options module and thus the same plan for direct access and indirect access. The plan that is accessed contains two distinct collection IDs that are used to access direct or indirect catalogs. To implement a single installation options module, the installation dialog panels must process the CATALOG MANAGER installation options module differently from the installation options module of ALTER and CHANGE MANAGER.

The processing differences for CATALOG MANAGER are as follows:

- During installation of catalog indirection, the installation dialog panel prompts you for the creator of the CATALOG MANAGER indirect synonyms, for the indirect collection ID, and for the name of the direct options module. All other installation options module information has been previously gathered.

- During the batch JCL assembly step, the installation options module assembly step disassembles the existing installation options module, applies the indirect synonym creator that you specified in the preceding step, and reassembles and links the installation options module using the same name. The step also resolves the indirect collection ID that is located in a subsequent BIND package step. Because the installation dialog panel does not prompt you for this information, it
must obtain the information from the existing installation options module by disassembling it.

**Note**
Do not regenerate the catalog indirect JCL for CATALOG MANAGER and then resume installation at a step later than the step that assembles the installation options module; doing so would cause the BINDs for the packages to fail because the value of the indirect collection ID would be unresolved. You must run the installation options module assembly step to resolve this value.

### Specify synonym qualifiers during maintenance

If you are applying maintenance to catalog indirection, you must specify the synonym qualifier that is currently the owner of the products’ synonyms. This qualifier must be the qualifier that you supplied when you originally installed catalog indirection for the products.

The Installation System sets the qualifier status to USED/REUSE automatically. Maintenance for catalog indirection does not create any new DB2 objects, but it does re-create the existing synonyms. Because the Installation System sets the qualifier status to USED/REUSE automatically, the synonyms are dropped and then re-created.

The Installation System uses one of the following three- or four-character prefixes when creating the synonyms for ALTER and CHANGE MANAGER. Table 4 on page 72 describes the prefixes.

<table>
<thead>
<tr>
<th>Prefix</th>
<th>Use</th>
</tr>
</thead>
</table>
| CAT    | Used by the Specification component of ALTER and CHANGE MANAGER  
         The synonyms are also used by the JCL Generation component’s data set sizing function. |
| CAT2   | Used by the Analysis component of ALTER and CHANGE MANAGER, and the CM/PILOT component of CHANGE MANAGER  
         **WARNING:** CAT2 synonyms should not be redirected if the copy of the catalog has not been refreshed to match the DB2 catalog. |
| CAT3   | Used by the Import component of ALTER and CHANGE MANAGER, and the Baseline and Compare components of CHANGE MANAGER  
         **WARNING:** CAT3 synonyms should not be redirected. |

**Note**
The Execution component always accesses the DB2 catalog directly and does not use synonyms.
**Use a copy of the catalog**

Maintaining a copy of the catalog uses additional DASD space. The amount of space that is required equals the size of your DB2 catalog and can vary greatly, depending on your DB2 system.

You need to update the copy of the catalog on a timely basis to keep it accurate. Running the copy job does not have a significant impact on catalog contention but does consume other system resources. How often you should run the job depends on the amount of catalog change activity in your DB2 system and the type of users who are restricted to accessing a copy. A high-activity data center might need to run the job several times a day.

In addition, the job that updates the catalog copy prevents users from accessing the current copy of the catalog while the job runs. This restriction might have a negative impact on the products if you must run the copy job during a high-activity period.

*Note*

The SEARCH command in CATALOG MANAGER uses dynamic structured query language (SQL). To enable the SEARCH command to work on the copy of the catalog that catalog indirection uses, either run GRANT SELECT ON TABLE statements or bind with Dynamic Rules (BIND) on the main plan.

**Use a copy of the catalog to reduce catalog contention**

Contention for the DB2 catalog can be a problem for data centers that have high DB2 transaction rates. Because the products require frequent access to the DB2 catalog, they can contribute to catalog contention.

To improve performance by reducing catalog contention, you can perform the following actions:

- Tune the copy of the catalog.
- Add your own indexes to the copy of the catalog.
- Reorganize the tables or table spaces of the copy of the catalog.
- Direct the information queries from specific groups of users to a recent copy of the DB2 catalog. The components also perform better because they do not have to compete with other applications for DB2 catalog information.

For catalog indirection to be effective, you must ensure that the copy of the catalog reflects the status of the actual catalog. The degree of accuracy that is required depends on the types of users who are involved and the purpose of their information queries. The job that updates the catalog copy temporarily halts all information queries made through the copy.
Use a view of the catalog

To control access to sensitive information in your catalog tables, you must design a view or a set of views on your system catalog that achieves the control that you need.

To define the view that a particular catalog indirection access method uses, you must edit the CREATE VIEW statements in the BMCCVIEW member that the Installation System generated. You must also add to the BMCCVIEW member the DML search criteria that limits access to selected rows of the catalog.

You must manage the authorizations to the groups of users who are allowed to access the DB2 catalog through a view or views. When a user attempts to access catalog information that a view filters out, an SQL error occurs.

Use a view of the catalog to control catalog access

Data centers with highly sensitive information might need to restrict how users access specific tables in the DB2 catalog.

To restrict catalog access, you can implement catalog indirection through one or more user-created views that filter out specified columns within the DB2 catalog tables. You can allow specific user groups to use the components in a limited fashion without compromising the security of the data or data structures that are defined in the catalog tables.

For example, assume that a user uses the components to perform an activity that changes information in the DB2 catalog. The user then completes a task that performs an information query against the copy of the catalog. In this case, it might seem that the first activity did not succeed. However, if you implement catalog indirection only for users who are already restricted to information-only queries, this problem might not occur. For example, you could implement catalog indirection for those users who are not allowed to run the Execution Monitor.

Using the appropriate CLIST

If multiple versions of the products are installed and the version and release numbers of the products on one DB2 subsystem are later than the version and release numbers of the products on another DB2 subsystem, use the CLIST for the later version and release of the products.

To use the CLIST

1 Ensure that a current copy of the appropriate CLIST is in the same SYSPROC concatenated library as your other CLISTs.
For example, if you installed version 9.3 of CATALOG MANAGER on DB2 subsystem DBDA and you installed version 10.1 of CATALOG MANAGER on DB2 subsystem DBDB, and you want to use one CLIST, use the CLIST for version 10.1 of CATALOG MANAGER on DBDB.

The Installation System generates the CLISTs for the Administrative products that are listed in the following table.

### Table 13: CLISTs for the Administrative products

<table>
<thead>
<tr>
<th>CLIST</th>
<th>Description</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACTPSS</td>
<td>defines the integration of CATALOG MANAGER and SQL Explorer for DB2</td>
<td>HLQ .UDBCLIB</td>
</tr>
<tr>
<td>AEXADMF1</td>
<td>invokes Fast Path Navigation for the Administrative products</td>
<td>HLQ .UDBCLIB</td>
</tr>
<tr>
<td>AEXADMF2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ALUWLDDL</td>
<td>converts an ALTER or CHANGE MANAGER worklist to a DDL file</td>
<td>HLQ .DBCLIB</td>
</tr>
<tr>
<td>ALUXGRNT</td>
<td>creates an additional ALTER or CHANGE MANAGER worklist that contains -SETS and -SQL authorization commands only</td>
<td>HLQ .DBCLIB</td>
</tr>
<tr>
<td>BMCDB2</td>
<td>invokes the Administrative products</td>
<td>HLQ .UDBCLIB</td>
</tr>
<tr>
<td>BMCDRIVC</td>
<td>defines user libraries for the product driver panels</td>
<td>HLQ .UDBCLIB</td>
</tr>
<tr>
<td>CKSQNUM</td>
<td>enables you to verify SQL worklists sequencing for ALTER and CHANGE MANAGER</td>
<td>HLQ .UDBCLIB</td>
</tr>
<tr>
<td></td>
<td>To use the CKSQNUM CLIST, copy it from your installation library to a CLIST library from which you can run it.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>The CKSQNUM CLIST is used outside the Installation System.</td>
<td></td>
</tr>
<tr>
<td>FIXSQNUM</td>
<td>enables you to verify and fix SQL worklists sequencing for ALTER and CHANGE MANAGER</td>
<td>HLQ .UDBCLIB</td>
</tr>
<tr>
<td></td>
<td>To use the FIXSQNUM CLIST, copy it from your installation library to a CLIST library from which you can run it.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>The FIXSQNUM CLIST is used outside the Installation System.</td>
<td></td>
</tr>
<tr>
<td>POFRESET</td>
<td>for the Administrative products, enables you to reset all of the ISPF variables in the ISPF profile with the variables in the initial or user POF</td>
<td>HLQ .DBCLIB</td>
</tr>
<tr>
<td></td>
<td>The POFRESET CLIST is used outside the Installation System.</td>
<td></td>
</tr>
<tr>
<td>CLIST</td>
<td>Description</td>
<td>Location</td>
</tr>
<tr>
<td>-----------</td>
<td>-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
<td>------------</td>
</tr>
<tr>
<td>READREPO</td>
<td>enables you to review installation profiles</td>
<td>HLQ.INSTALL</td>
</tr>
<tr>
<td></td>
<td>To use the READREPO CLIST, copy it from your custom installation library to a CLIST library from which you can run it.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>The READREPO CLIST is used outside the Installation System.</td>
<td></td>
</tr>
<tr>
<td>RSTRIG</td>
<td>calls the DASD MANAGER PLUS BMCTRIG Restart program</td>
<td>HLQ.UDBCLIB</td>
</tr>
<tr>
<td>SHOWINFO</td>
<td>enables you to view the names of the profile data sets and JCL libraries</td>
<td>HLQ.INSTALL</td>
</tr>
<tr>
<td></td>
<td>If you are using OZI Customization to customize products to execute from runtime data sets, the SHOWINFO command also provides information such as the row ID of the RTE or TDS instance, the sysplex name, and the system name.</td>
<td></td>
</tr>
<tr>
<td>WHATSNEW</td>
<td>enables you to review newly supported features for the current version of the Installation System</td>
<td>HLQ.INSTALL</td>
</tr>
</tbody>
</table>

### Enabling the implicit execution of CLISTs

This procedure describes the steps that you must perform to enable the implicit execution of the CLISTs that are generated for ALTER, CATALOG MANAGER, CHANGE MANAGER, and DASD MANAGER PLUS.

#### To enable the implicit execution

1. Enable the BMCDRIVC CLIST.

   Copy the CLIST from the HLQ.JCL library or the HLQ.UDBCLIB library to a library in your SYSPROC concatenation.

2. *(ALTER or CHANGE MANAGER)* Perform one of the following tasks to enable the ALTER or CHANGE MANAGER CLISTs (ALUXGRNT, ALUWLDDL, FIXSQSUM, and CHKSQNUM) to be implicitly invoked from within a worklist:

   - Add the HLQ.DBCLIB (ALUXGRNT or ALUWLDDL) library or the HLQ.UDBCLIB (FIXSQSUM or CHKSQNUM) library to your SYSPROC concatenation.

   - Copy the CLISTs from the HLQ.DBCLIB (ALUXGRNT or ALUWLDDL) library or the HLQ.UDBCLIB (FIXSQSUM or CHKSQNUM) library to a library in your SYSPROC concatenation.
Perform one of the following tasks to enable the RSTRIG CLIST for DASD MANAGER PLUS to be implicitly invoked from within JCL:

- Add the *HLQ.UDBCLIB* library to your SYSPROC concatenation.
- Copy the CLISTs from the *HLQ.UDBCLIB* library to a library in your SYSPROC concatenation.

### Working with the BMCDB2 CLIST

For the ALTER, CATALOG MANAGER, CHANGE MANAGER, and DASD MANAGER PLUS products, the Installation System generates an ISPF interface based on the options and components that you specify during installation. Products or components that are installed with different high-level qualifiers (for example, installed individually and residing in different libraries) can be accessed from the interface.

The interface consists of a CLIST (BMCDB2) and panels (BMCDB2PR, BMCDB2P2, BMCDB2TB, and BMCDB2H). You can use this combination without making changes to your TSO logon procedure. BMC recommends that new users use the supplied ISPF interface. The products or components require you to execute the CLIST from one of the ISPF dialog panels in your system.

The BMCDB2 CLIST uses the ISPF LIBDEF command to allocate all of the BMC product libraries. The Installation System customizes BMCDB2 and BMCDB2PR to include the data set names that you used when you installed the products or components. The Installation System specifies up to two DB2 load libraries and specifies the installation options module name for each product to support the DB2 subsystem where the component is installed.

If you install the products or components individually using the same target data sets, the BMCDB2 CLIST and BMCDB2PR panels are generated using the options only for the last product or component that was installed. Therefore, you might not be able to access the previously installed product or component unless you edit the BMCDB2 CLIST.

### Setting the variables in the BMCDB2 CLIST

The BMCDB2 CLIST invokes the Administrative products.

You can edit several variables in the BMCDB2 CLIST to specify libraries and to use a generated permanent ISPF table. This procedure describes how to modify the variables.
Note
To turn off the PF key display, issue the PFSHOW OFF command.
When you edit variables in the BMCDB2 CLIST to specify libraries, do not change
the qualifier of the product data sets. Each of the data sets uses a designated qualifier
that varies, depending on whether you use runtime, SMP/E, or user libraries.

To set the variables in the CLIST

1 To invoke the BMCDB2 CLIST implicitly, copy the CLIST from the HLQ.JCL
   library or the HLQ.UDBCLIB library to a library in your SYSPROC concatenation.

2 Edit the BMCDB2 CLIST.

3 If you copied the BMCDB2 CLIST from the HLQ.JCL library or the
   HLQ.UDBCLIB library to a library in your SYSPROC concatenation, modify the
   BMCDB2C variable in the BMCDB2 CLIST. Set this variable to the library in
   which the BMCDB2 CLIST was copied.

4 If you copied the BMCDB2PR, BMCDB2P2, BMCDB2TB, and BMCDB2H panels
   from the HLQ.JCL library or the HLQ.UDBPLIB library to another library, modify
   the BMCDB2P variable in the BMCDB2 CLIST. Set this variable to the library in
   which the panels were copied.

5 To improve the performance of the invocation of the products from a large
   control table in the BMCDB2 CLIST, set the GENTABLE variable in the BMCDB2
   CLIST to Y, as shown in the following table.

   SET BMCDB2T = &STR(BMC.DB2ADMN.D91.UDBTLIB) /* Control TABLE DATASET */
   SET GENTABLE = Y /* USE GENERATED PERMANENT TABLE (Y/N) */
   /* FOR Control TABLE */

   To place a control table in a permanent ISPF table in the HLQ.UDBTLIB data set,
   invoke the BMCDB2 CLIST (see “Invoking the BMCDB2 CLIST” on page 78).

6 To not use the TSO ALTLIB command to dynamically add libraries to the
   SYSPROC concatenation, set the ALTCLIST variable to N.

7 Press END to exit.

Invoking the BMCDB2 CLIST

This procedure describes the steps to invoke the BMCDB2 CLIST.

To invoke the BMCDB2 CLIST

1 Invoke the BMCDB2 CLIST by using one of the following commands:
Invoke BMCDB2 explicitly from your CLIST data set in the ISPF command shell or your ISPF dialog with the following command:

```ex 'HLQ.UDBCLIB(BMCDB2)'
```

If the BMCDB2 CLIST is copied to a library in your SYSPROC concatenation, invoke BMCDB2 implicitly with the following command:

```%BMCDB2```

To specify various parameters with the BMCDB2 command, see “BMCDB2 command” on page 79.

2 On the BMC Administrative Products for DB2 (BMCDB2PR) panel, if the BMCDB2 CLIST supports multiple SSIDs, type ? for the DB2 SSID.

   a On the BMCDB2 Subsystem Selection List (BMCDB2P2) panel, type S to select an SSID from the list of available SSIDs.

      The SSID that you selected is displayed in the DB2 SSID field on the BMC Administrative Products for DB2 (BMCDB2PR) panel.

   b Press Enter.

3 If one of the following conditions exist, on the BMC Administrative Products for DB2 (BMCDB2PR) panel, type GENERATE on the COMMAND line:

   ■ you edited your BMCDB2 CLIST to use a generated permanent ISPF table for the control table by setting the GENTABLE variable to Y

   ■ you modified the control table that was previously generated

   ■ you want to specify the OPENTBL parameter in the BMCDB2 command

   Issuing the GENERATE command places a control table in a permanent ISPF table in the HLQ.UDBTLIB data set, which improves the performance of the invocation of the products from a large control table referenced by the BMCDB2 CLIST. Refer to the BMCDB2T variable in the BMCDB2 CLIST for the location of the generated ISPF table.

4 Verify that all of the products appear on the BMCDB2PR panel that is displayed.

**BMCDB2 command**

This topic describes the parameters that you can specify with the BMCDB2 command.
You can specify various parameters with the BMCDB2 command to perform the following functions:

- Avoid the use of the ISPF LIBDEF facility to allocate the necessary ISPF data sets
- Use the ISPF LIBDEF facility to allocate all of the ISPF data sets, except the load data set
- Invoke the BMCDB2 CLIST implicitly
- Invoke a product implicitly
- Invoke ALTER, CATALOG MANAGER, CHANGE MANAGER, or DASD MANAGER PLUS directly, without displaying the BMC Administrative Products for DB2 (BMCDB2PR) panel (improves performance)

**BMCDB2 command syntax**

The syntax of the BMCDB2 command is shown in the following figure.

**Figure 22: BMCDB2 command**

The parameters specify the following information:

- **LIBDEF**—determines whether the BMCDB2 CLIST should use the ISPF LIBDEF facility to allocate all necessary ISPF data sets (YES or NO)

---

**Note**

By default the BMCDB2 CLIST uses the ISPF LIBDEF facility to allocate all necessary ISPF data sets. Thus, you might not need to modify your TSO logon procedure to allocate data sets. If ISPF 4.2 or later is available, the STACK keyword is added to all LIBDEF statements that are used in the BMCDB2 CLIST.
- **LOADLDEF**—when LIBDEF is YES, indicates whether the ISPF LIBDEF facility should be used to allocate the ISPLLIB (load) data set (YES or NO)

  Use the LOADLDEF parameter if you have copied the load library for a product in your subsystem LINKLIST data sets or if you have previously added the load library to your STEPLIB concatenation.

- **CLSTEXEC**—indicates whether the BMCDB2 CLIST should be invoked explicitly (EXPLICIT) or implicitly (IMPLICIT)

  — If the CLIST is invoked explicitly, you must use a fully-qualified data set name and member name.

  — If the CLIST is invoked implicitly, you can use only the member name. In addition, the CLIST must reside in a library in your SYSPROC concatenation.

  **Note**

  In previous releases, the CLSTEXEC parameter controlled the invocation both the BMCDB2 CLIST and ALTER, CATALOG MANAGER, CHANGE MANAGER, or DASD MANAGER PLUS. The parameter now controls only the invocation of the BMCDB2 CLIST. To control the invocation of the products, use the LOADEXEC parameter.

- **LOADEXEC** - indicates whether the BMC products should be invoked explicitly (EXPLICIT) or implicitly (IMPLICIT)

  The syntax of the BMCDB2 command display options is shown in the following figure.

  **Figure 23: BMCDB2 command--display options**

  ![Diagram showing the syntax of BMCDB2 command display options]

  The display option parameters specify the following information:

  - **PGM**—specifies the name of the program, as listed in the following table

  **Table 14: Program names**

<table>
<thead>
<tr>
<th>Product</th>
<th>program</th>
</tr>
</thead>
<tbody>
<tr>
<td>ALTER</td>
<td>ALUFROINTER</td>
</tr>
</tbody>
</table>
- **PROD**—specifies the three-character product code (prd)
- **CFUNC**—specifies the CLIST function to perform (ALLOC)
- **SSID**—names the DB2 subsystem that is used to invoke the product (ssid)

  **Note**
  The SSID must be a valid DB2 subsystem that is defined in the control table.

- **OPENTBL**—specifies to issue an OPEN command against the control table (YES or NO)

  **Note**
  Before you can invoke a BMCDB2 command that specifies the OPENTBL(YES) option, you must first issue the GENERATE command from the BMC Administrative Products for DB2 (BMCDB2PR) panel.

- **BASEID**—no longer used
- **SHRAPPL**—indicates whether the products on a single SSID should use a shared ISPF profile (S) or use an individual profile (I)
- **ACCESS**—specifies to access the DB2 catalog directly (DIRECT) or to use an indirect copy of the catalog (INDIRECT)

**Examples**

The following examples show how you can use the various parameters with the BMCDB2 command.

**To avoid the use of the ISPF LIBDEF facility**

To avoid the use of the ISPF LIBDEF facility to allocate the necessary ISPF data sets, use the following command:

```
$BMCDB2 LIBDEF(NO)
```
To use the ISPF LIBDEF facility for all data sets, except the load data set

To use the ISPF LIBDEF facility to allocate all of the necessary ISPF data sets, except for the load data set, use the following command:

```
%BMCDB2 LIBDEF(YES) LOADLDEF(NO)
```

To invoke the CLIST implicitly

To invoke the CLIST implicitly, use the following command:

```
%BMCDB2 CLSTEXEC(IMPLICIT)
```

To invoke ALTER, CATALOG MANAGER, CHANGE MANAGER, or DASD MANAGER PLUS implicitly

To invoke a product implicitly, use the following command:

```
%BMCDB2 LOADEXEC(IMPLICIT)
```

To invoke ALTER, CATALOG MANAGER, CHANGE MANAGER, or DASD MANAGER PLUS directly

To invoke a product directly, you use the display options of the BMCDB2 command. When you use these options, the BMC Administrative Products for DB2 (BMCDB2PR) panel is not displayed. For example, to invoke CATALOG MANAGER directly, use the following commands:

```
%BMCDB2 GENERATE
   (from the BMC Administrative Products for DB2 [BMCDB2PR] panel)
   ex 'HLQ.UDBCLIB(BMCDB2)' 'PGM(ACTEMAIN) PROD(ACT) SSID(DEBA) CFUNC(ALLOC) OPENTBL(YES)'
```

Creating indexes to improve performance

To improve performance, BMC recommends that you create indexes on the DB2 catalog tables and on copies of the catalog tables (if you are using catalog indirection).
BMC strongly recommends that you take the following actions:

- If you are running the products on a DB2 Version 9 or 10 subsystem in new-function mode, create the DB2 Version 9 or 10 indexes on the DB2 catalog.

- If you are running the products on a DB2 Version 10 subsystem in conversion mode or enabling-new-function mode, create the DB2 Version 9 indexes on the DB2 catalog.

To create indexes on the DB2 catalog tables

1. Follow the instructions in the appropriate member in the `HLQUDBCNTL` data set to create the indexes:

   - (DB2 Version 10) BMIDB2XA
   - (DB2 Version 9) BMIDB2X9

To create indexes on copies of the DB2 catalog tables

1. For DB2 Versions 8 and later, it is not necessary to create indexes when you are implementing catalog indirection. The indexes already exist.

Shared components

The ALTER, CATALOG MANAGER, CHANGE MANAGER, and DASD MANAGER PLUS products share several components.

The following components are shared:

- JCL Generation, which controls the JCL generation process

- Execution Monitor, which controls worklist processing by reading and performing worklist commands

- Common SQL, which provides access to the DB2 catalog

When you unload ALTER, CATALOG MANAGER, CHANGE MANAGER, or DASD MANAGER PLUS (or any solution that includes one or more of these products), these components are also unloaded. The Installation System copies these components to an APF-authorized load library that any of the products can share. If you install the products at different times or if you are applying maintenance and any of the products share the same APF-authorized load library, you must bind each product to the new level of the shared components.
**Note**
If you do not properly bind all of the products that share the common components, any attempts to generate JCL or to execute worklists can cause SQLCODES -805 and -818. The product that has not been bound or upgraded will not run.

You do not have to bind a product separately to the shared components if the following conditions exist:

- You are using the same APF-authorized load library, and you are upgrading all products that use the shared components at the same time. The binds take place during the upgrade.

- You are using separate APF-authorized load libraries for your products.

**Note**
A problem occurs if all of the following conditions exist:

- You install one of the products or a solution that has one of the products as a component, and the product or solution uses the current version of the JCL Generation and Execution components.

- You install another product or solution that uses an earlier version of the JCL Generation and Execution components.

In this case, the products or solutions cannot use the same APF-authorized load library. To prevent the problem from occurring, choose a different load library when installing the additional product or solution.

**Binding a product to shared components**

This procedure describes how to bind ALTER, CATALOG MANAGER, CHANGE MANAGER, or DASD MANAGER PLUS to the shared components.

**To bind the products**

1. Edit the BIND packages and plans for the product, which are in the `HLQ.UDBCNTL` data set.

   The following table lists the member names for the jobs. The variable `prd` is the product or component code, and `ssid` is the DB2 subsystem ID.
Table 15: Member names for jobs for BIND packages and plans

<table>
<thead>
<tr>
<th>Member name</th>
<th>Job</th>
</tr>
</thead>
<tbody>
<tr>
<td>prdssidP</td>
<td>package BIND jobs for direct access</td>
</tr>
<tr>
<td>prdssidB</td>
<td>plan BIND jobs (including CATALOG MANAGER plan BIND jobs for indirection)</td>
</tr>
<tr>
<td>prdssidZ</td>
<td>package and plan BIND jobs for indirection (except CATALOG MANAGER plan BIND jobs)</td>
</tr>
</tbody>
</table>

2. Concatenate the new HLQ.DBDBRM library ahead of the old HLQ.DBDBRM library in the DBRMLIB DD statement in these members.

3. Submit the BIND jobs.

4. Repeat for each product and for the ACS component, if applicable.

**Generating environment-specific JCL**

The JCL Generation component generates the JCL that is needed to execute all of the batch functions that use ISPF file tailoring.

You might need to change members of the BMC product skeleton library (SLIB) to generate environment-specific JCL. This procedure describes the steps you must perform to edit, test, and compile the SLIB.

**To edit and compile SLIBs**

1. Edit the appropriate SLIB members in HLQ.UDBSLIB to change the way the JCL is generated.

   **Note**
   
   Any customizations that you have made to the SLIB members for an earlier release are not included in your current installation.

   a. *(optional)* Edit the AJX#USRV member and change the EXEC REGION parameter.

      The EXEC REGION parameter is set by default to REGION=0M in the AJX#USRV member that resides in the SLIB. If you do not change the IBM-supplied default limits in the IEALIMIT or IEFUSI exit routine modules, this parameter requests that the job step get all of the available storage above and below the 16 MB line.

   b. Edit the AJX#DSNS member to generate JCL for GDGs.
2 Use JCL Generation to test the changes to the SLIB.

For more information about testing the SLIB members, refer to the following BMC books:

- *ALTER and CHANGE MANAGER for DB2 User Guide Volume 2*
- *CATALOG MANAGER for DB2 User Guide*
- *DASD MANAGER PLUS for DB2 User Guide*

3 Compile the SLIB members that you edited.

For a sample compile JCL, refer to member AJXCOMPS in the *HLQ.DBCNTL* data set. For more information about compiling the SLIB members, see the following BMC books:

- *ALTER and CHANGE MANAGER for DB2 User Guide Volume 2*
- *CATALOG MANAGER for DB2 User Guide*
- *DASD MANAGER PLUS for DB2 User Guide*

**Note**
If you want to modify the JCL in member AJXCOMPS, copy the member from *HLQ.DBCNTL* to *HLQ.UDBCNTL*. Then, modify the JCL in *HLQ.UDBCNTL(AJXCOMPS)*.

### Specifying generation data groups

You can specify generation data groups (GDGs) by adding a symbolic variable to the local and recovery primary and backup copy keywords. As a result, the data set names are resolved using the symbolic variables, and include the GDG.

**To specify a GDG**

1 In the *HLQ.UDBCNTL* library, find the member that has the same name as the product installation options module.

2 In the POFDS parameter of the member, note the name of the POF.

3 In the *HLQ.UDBCNTL* library, find the POF member.

4 Add the symbolic (&GDG) to the end of the following keywords in the POF member:
For example, set

```
PCPY1='&PREFIX..&OBNOD..P&PART(&GDG)'```

### BMCDB2PR panel

The BMCDB2PR panel is part of the BMC-supplied ISPF interface that the Installation System generates.

This panel includes a product selection list from which you can select a product. It also includes a DB2 catalog access field, in which you can specify whether to use the DB2 catalog data directly or to use a copy or a view of the DB2 catalog (if applicable to the product or component).

You might need to add additional products to the selection list or modify the catalog access field after you install and customize ALTER, CATALOG MANAGER, CHANGE MANAGER, or DASD MANAGER PLUS.

### Adding products to the BMCDB2PR panel

The Installation System enables you to add products to the BMCDB2PR panel.

**Before you begin**

Determine the following information:

- location of the BMCDB2PR panel
- location of the product’s CLIST
- the three-character code for the product

The following table lists the BMC products that you can add to the BMCDB2PR panel.
Table 16: BMC products for BMCDB2PR panel

<table>
<thead>
<tr>
<th>Product</th>
<th>Product code</th>
</tr>
</thead>
<tbody>
<tr>
<td>APPTUNE for DB2</td>
<td>ASQ</td>
</tr>
<tr>
<td>CHANGE ACCUMULATION PLUS</td>
<td>CAP</td>
</tr>
<tr>
<td>COPY PLUS for DB2</td>
<td>ACP</td>
</tr>
<tr>
<td>EXTENDED BUFFER MANAGER for DB2</td>
<td>XBM</td>
</tr>
<tr>
<td>Log Master for DB2</td>
<td>ALP</td>
</tr>
<tr>
<td>OPERTUNE for DB2</td>
<td>DDT</td>
</tr>
<tr>
<td>PACLOG for DB2</td>
<td>ALM</td>
</tr>
<tr>
<td>RECOVERY MANAGER for DB2</td>
<td>ARM</td>
</tr>
</tbody>
</table>

- additional parameters, such as the SSID

**To add the products**

The UPDTBMC CLIST and the UPDTDB2 macro can be found in a customized installation library that the user creates while installing products from multiple tapes, or in the base installation library from a single product tape.

1. Copy the UPDTBMC CLIST from the HLQ.INSTALL library to a library in your SYSPROC concatenation.

2. Copy the UPDTDB2 macro from the HLQ.INSTALL library to a library in your SYSPROC concatenation.

3. To execute the CLIST, type TSO UPDTBMC on the COMMAND line.

4. In the **Location of BMCDB2PR Panel?** field, type the name of the library in which the panel resides.

5. In the **Location of CLIST for Product Being Added?** field, type the name of the library in which the CLIST resides.

6. In the **Product Code for Product Being Added?** field, type the three-character product code.

**Modifying and validating the DB2 catalog access option on the BMCDB2PR panel**

The BMCDB2PR panel might need slight customization before you run ALTER, CATALOG MANAGER, or CHANGE MANAGER with catalog indirection.
To modify and validate the option

1. Edit the BMCDB2PR panel in HLQ.UDBPLIB.

2. Add **Indirect**, as follows:
   
   ```
   +  DB2 Catalog Access . . . . . . . _Z  +(Direct,Indirect)
   ```

3. To validate the Indirect option, make the following changes:
   
   ```
   ver (&catopt.nb.list,'DIRECT','INDIRECT',D,I) -- Uncomment this line
   ********************************************
   /*ver ($catopt.nb.list,'DIRECT',D) */         -- Comment out this line
   ```

4. Press END to exit.

**Changing ALTER to CHANGE MANAGER on the BMCDB2PR panel**

When you upgrade to CHANGE MANAGER from ALTER, you will need to modify the BMCDB2PR panel.

This procedure describes how to change the commands in the panel.

**To change ALTER to CHANGE MANAGER**

1. Edit the BMCDB2PR panel in HLQ.UDBPLIB.

2. Change the product selection text.
   
   a. Find the following line:
      
      ```
      +_Z%1 ALTER for DB2            +- Change or migrate DB2 objects/structures
      ```
   
   b. Replace the line with the following text:
      
      ```
      +_Z%1 CHANGE MANAGER for DB2      +- Manage changes to DB2 objects/structures
      ```

3. Change the program name and product code.
   
   a. Find the following commands:
      
      ```
      1.'CMD(&BMCDB2M +
      PGM(ALUFRON) CFUNC(ALLOC) +
      &tvdebug ssid(&ssidnm) libdef(&libdefflg) +
      shrappl(&shrappl) access(&catopt) +
      PROD(ALU) BASEID(&baseid) CLSTEXEC(IMPLICIT) +
      LOADEXEC(IMPLICIT) LOADLDEF(YES) ) +
      newappl passlib'
      ```

      ```
      1.'CMD( &BMCDB2C' +
      PGM(ALUFRON) CFUNC(ALLOC) +
      &tvdebug ssid(&ssidnm) libdef(&libdefflg) +
      ```
b Change PGM(ALUFRONT) *(version 8.3 or later)* or PGM(ALTFRONT) *(version 8.2 or earlier)* to PGM(ACMFRONT).

c Change PROD(ALU) to PROD(ACM).

4 Press END to exit.

## Control table

By modifying the control table, you can add a product, specify the location of libraries, enable access to data sharing members, specify different libraries for SSIDs, and specify shared installation options.

**Note**
The data in the control table, which begins with the identifier *DATA, is placed in specific positions, and every data row must have an asterisk in column 73. Comment lines contain an asterisk (*) in column 1. The data in the control table is column specific.

## Modifying the control table

This task describes how to modify the control table.

**To modify the control table**

1 Edit the control table in the *HLQ.CONTAB* data set.

2 Press END to exit.

3 If either of the following conditions exists, type **GENERATE** on the **COMMAND** line of the BMCDB2PR panel:

   - you edited your BMCDB2 CLIST to use a generated permanent ISPF table for the control table (specified **GENTABLE=Y** in the BMCDB2 CLIST)

   - you modified the control table that was previously generated

This action rebuilds the ISPF control table in the *HLQUDBTLIB* data set.
Adding a product to the control table

This topic describes how to add a product to the control table.

To add a product to the control table

1. Edit the control table in the HLQ.CONTAB data set.

2. Add a line in the *PROD section for the product by using one of the following procedures:

   ■ If one product was installed into the same set of libraries as another product, add a line in the *PROD section for the product.
   
   The example in Figure 3 on page 91 shows the line that adds the CATALOG MANAGER product to the table. \( vr \) represents the version and release of the product.

   Figure 24: Adding CATALOG MANAGER to the control table

   ```plaintext
   *DATA
   *PROD SSID D/I DOPT PLAN APPL COLL_ID NICKNAME
   ACT DBAP D ACTDOPD1 ACTvrDG ACTA
   ```

   ■ If one product was installed into a different set of libraries than another product, add a line in the *PROD section that specifies the high-level qualifier (HLQ) of the product libraries.
   
   In the example in Figure 4 on page 91, the line indicates the location of the CATALOG MANAGER libraries, which were installed into a different set of runtime libraries than DASD MANAGER PLUS.

   Figure 25: Specifying the location of CATALOG MANAGER libraries (runtime environment)

   ```plaintext
   *DATA
   *PROD SSID D/I DOPT PLAN APPL COLL_ID NICKNAME
   ACT DBAP H HLQ_for_ACT
   ```

   In the example in Figure 5 on page 91, the lines indicate the location of the CATALOG MANAGER SMP/E libraries.

   Figure 26: Specifying the location of CATALOG MANAGER libraries (SMP/E environment)

   ```plaintext
   *DATA
   *PROD SSID D/I DOPT PLAN APPL COLL_ID NICKNAME
   ACT DBAP T HLQ_for_DB
   ACT DBAP B HLQ_for_BB
   ACT DBAP X HLQ_for_XX
   ACT DBAP P HLQ_for_password
   ```
If the APF load library uses a different HLQ from other product libraries and is different from the variable APFLIB value in the control table, specify the line shown in Figure 6 on page 92 in the *PROD section.

**Note**

You cannot add an APF-authorized library to SMP/E libraries; you must be using runtime libraries to add an APF-authorized library.

---

**Figure 27: Specifying the location of the APF load library (runtime environment)**

```
*DATA
*PROD SSID D/I DOPT PLAN APPL COLL_ID NICKNAME
*----|----|-|--------|--------|----|------------------|------------------------
ACT  DBAP A ADDTNL.APF.LOAD                                                  *
```

3 Press END to exit.

### Enabling access to data sharing members in the control table

If you installed the DB2 products in a data sharing (sysplex) environment, you can enable access to all of the data sharing members or to the group attach name.

**To enable access**

1 Edit the control table in the HLQ.CONTAB data set.
2 Duplicate the table rows of the existing DB2 subsystem name for each member or group attach name.
3 Substitute the member or group attach name for the SSID column.

The example in Figure 7 on page 92 uses the group attach name GRP1. The VCAT control table variable is used by ALTER, CATALOG MANAGER, CHANGE MANAGER, and DASD MANAGER PLUS to indicate the VSAM catalog alias that contains the data sets for the DB2 catalog (DBDBCAT).

---

**Figure 28: Enabling access to additional members**

```
*DATA
*PROD SSID D/I DOPT PLAN APPL COLL_ID NICKNAME
*----|----|-|--------|--------|----|------------------|------------------------
 ASU  DBDB D ASUDOPD1 ASUvrDC ASU7                                                                 *
 ACT  DBDB D ACTDOPD1 ACTvrDM ACT8 ACTvr_D_MAIN       DBDB                                      *
 ACM  DBDB D ACMDOPD1 ACMvrDF ACM8                                                                 *
 EXIT DBDB 'SYS3.DBDB.DSNEXIT'                     *                                            *
 LOAD DBDB 'SYS2.DB2V10M.DSNLOAD'                  *                                            *
 HLQ  DBDB BMGADMN.Vvrm.DIO                                                                            *
 VCAT DBDB DBDBCAT                                                                                    *
 DDF  DBDB DBDB                                                                              *                                          
```
Specifying separate libraries in the control table

This topic describes how to specify separate libraries in the control table.

To specify separate libraries

1. Edit the control table in the HLQ.CONTAB data set.

2. If your installation has more than one version of DB2, use separate libraries for each version. Refer to the following scenarios as examples for editing the control table:

   - **Scenario 1**: CATALOG MANAGER is installed on SSID DB91. The product libraries have an HLQ of BMC.DB91.*. Add the table shown in Figure 8 on page 93 to the control table.

     Figure 29: Adding CATALOG MANAGER to subsystem DB91

     ```
     *DATA
     *PROD SSID D/I DOPT PLAN APPL COLL_ID NICKNAME
     *----|----|-|--------|--------|----|------------------|-----------------------
     ACT DB91 D ACTDOPD1 ACTvrg ACTA   *     
     *LIB SSID Data Set Name
     *----|-------------------------------|
     EXIT DB91 'SYS3.DB91.DSNEXIT'     *
     LOAD DB91 'SYS2.DB2V91M.DSNLOAD'   *
     ```

   - **Scenario 2**: CATALOG MANAGER is installed on SSID DB10. The product libraries have an HLQ of BMC.DB10.*. Add the table shown in Figure 9 on page 93 to the control table.

     Figure 30: Adding CATALOG MANAGER to subsystem DB10

     ```
     *DATA
     *PROD SSID D/I DOPT PLAN APPL COLL_ID NICKNAME
     *----|----|-|--------|--------|----|------------------|-----------------------
     ACT DB10 D ACTDOPD1 ACTvrg ACTB   *     
     *LIB SSID Data Set Name
     *----|-------------------------------|
     EXIT DB10 'SYS3.DB10.DSNEXIT'     *
     LOAD DB10 'SYS2.DB2V10M.DSNLOAD'   *
     ```

4. Press END to exit.
Scenario 3: In a runtime environment, if the BMCDB2 CLIST in HLQ.JCL is used to invoke CATALOG MANAGER for both SSIDs, add the lines in Figure 10 on page 94 to the control table.

Figure 31: Running DB10 CATALOG MANAGER from the DB91 BMCDB2 CLIST (runtime environment)

```plaintext
*DATA
*PROD SSID D/I DOPT PLAN APPL COLL_ID NICKNAME
*----|----|--------|--------|----|------------------|-----------------------
ACT DB10 D ACTDOPD1 ACTDOPD2 ACTB
*LIB SSID Data Set Name
*----|----|------------------|-----------------------
EXIT DB10 'SYS3.DB10.DSNEXIT'
LOAD DB10 'SYS2.DB2V10M.DSNLOAD'
HLQ DB91 BMC.DB91
```

The HLQ in Figure 10 on page 94 instructs the BMCDB2 CLIST to use BMC.DB91 as the HLQ for products that are installed on SSID DB10. Figure 11 on page 94 shows the updated control table.

Figure 32: Updated control table (runtime environment)

```plaintext
*DATA
*PROD SSID D/I DOPT PLAN APPL COLL_ID NICKNAME
*----|----|--------|--------|----|------------------|-----------------------
ACT DB91 D ACTDOPD1 ACTDOPD2 ACTA
ACT DB10 D ACTDOPD1 ACTDOPD2 ACTB
*LIB SSID Data Set Name
*----|----|------------------|-----------------------
EXIT DB91 'SYS3.DBAP.DSNEXIT'
LOAD DB91 'SYS2.DB2V91M.DSNLOAD'
HLQ DB91 BMC.DB91
EXIT DB10 'SYS3.DB10.DSNEXIT'
LOAD DB10 'SYS2.DB2V10M.DSNLOAD'
HLQ DB10 BMC.DB10
```

In an SMP/E environment, if the BMCDB2 CLIST in HLQ.JCL is used to invoke CATALOG MANAGER for both SSIDs, add the lines in Figure 12 on page 94 to the control table.

Figure 33: Running DB10 CATALOG MANAGER from the DB91 BMCDB2 CLIST (SMP/E environment)

```plaintext
*DATA
*PROD SSID D/I DOPT PLAN APPL COLL_ID NICKNAME
*----|----|--------|--------|----|------------------|-----------------------
ACT DB10 D ACTDOPD1 ACTDOPD2 ACTB
*LIB SSID Data Set Name
*----|----|------------------|-----------------------
EXIT DB10 'SYS3.DB10.DSNEXIT'
DB  DB91 BMC.DB91.DBHLQ
BB  DB91 BMC.DB91.BBHLQ
XX  DB91 BMC.DB91.XXHLQ
PSWD DB91 BMC.DB91.PSWDHLQ
```

Figure 13 on page 94 shows the updated control table.

Figure 34: Updated control table (SMP/E environment)
3 Press END to exit.

**Specifying the same installation options module in the control table**

You can specify the same installation options module for ALTER, CATALOG MANAGER, CHANGE MANAGER, or DASD MANAGER PLUS to be shared between two or more DB2 subsystems.

**Before you begin**

The following requirements must be met:

- CATALOG MANAGER or DASD MANAGER PLUS must be at the same version and release level on each of the DB2 subsystems.

  The DB2 exit and load data sets, if different for each DB2 subsystem, will have to be removed from the installation options modules and put into a LINKLIST concatenation for use by foreground and batch processes.

- ALTER or CHANGE MANAGER must be at the same version and release level on all DB2 subsystems. In addition, the DB2 subsystems must be at the same version and release level.

  The DB2 exit and load data sets, if different for each DB2 subsystem, will have to be removed from the installation options modules and put into a LINKLIST concatenation for use by foreground and batch processes.

**To specify the same installation options module**

1. For each of the products, choose one installation options module to represent the product’s installation options for all relevant DB2 subsystems.

2. Verify that the control table contains distinct and correct values for the VCAT variable.
3. Change the control table installation options values specified for the product and SSID to the shared installation options module name.

**Application IDs in the control table**

The control table allocates the ISPF application ID based on DB2 subsystem access.

During installation, the Installation System attempts to make each ISPF application ID unique across DB2 subsystems.

By default, the first time that the Installation System generates the control table, individual application IDs `prdA` are specified, where `prd` is the three-character product code. The shared application ID ADMA is also specified.

If you use the SSID installation method to perform a second or subsequent installation, the Installation System attempts to scan the existing control table and to allocate a unique application ID. For example, if CATALOG MANAGER is initially installed on DB2T, the application ID is ACTA. If CATALOG MANAGER is installed on DB2P, the Installation System scans the BMCDB2 CLIST and uses application ID ACTB because ACTA is already in use. The shared application ID for an SSID installation is ADMB.

When you access ALTER, CATALOG MANAGER, CHANGE MANAGER, or DASD MANAGER PLUS, you can specify to use a shared or individual application ID, and the control table establishes the ISPF application ID and allocates the installation options module name. The product that receives control either initializes or refreshes your options with the information from the installation options module and the POF that is allocated by the control table.

**Application IDs for multiple SSIDs**

In some situations, when you make changes in one environment, those changes appear in another environment.

This situation usually happens when the same ISPF application ID is being established for multiple SSIDs, and is probably unacceptable because the user-option changes are SSID specific.

For example, if both of the DB2T and DB2P individual application IDs for CATALOG MANAGER are established as ACTA, any changes to user options that are made for DB2T are also made for the DB2P user options. The same is true for a shared application ID of ADMA used by DB2T and DB2P.

To avoid accidentally overlaying user options, ensure that the ISPF application that is established for each DB2 SSID is unique. The Installation System attempts to make each application ID unique in a given control table. It does not, however, make each application ID unique across multiple control tables. For example, if you execute the
installation for DB2T and for DB2P, you have two control tables—one for each
environment. The initial ISPF application ID for both SSIDs is xxxA, which results in
an overlay.

If you are planning to execute multiple copies of the BMCDB2 CLIST and control
table, change the ISPF application ID that the control table allocates so that each SSID
user profile is unique across all control tables (see Figure 14 on page 97).

**Note**

If you do not change the application IDs, changing user options in one SSID might
also change the same user options for a different SSID.

![Figure 35: Sample control table (runtime environment)](image)

In the sample shown in Figure 14 on page 97, the variable xxxx is the SSID name and
# is a unique one-byte character (such as A for the first SSID, B for the second SSID,
C for the third, and so on).

**Subsequent DB2 subsystems in the control table**

The Installation System generates member BMCDB2SS to support subsequent DB2
subsystems.

This member contains logic for the installation options module allocation. When you
use this member to update the control table, consider the following points:

- If you have MVS/ESA and TSO/E version 2.1 or later, the Installation System
  prompts you for the location of the control table and automatically updates it with
  the information in the BMCDB2SS.

- If you do not have MVS/ESA and TSO/E version 2.1 or later, follow the
directions in BMCDB2SS for updating the control table.

- If you are installing CATALOG MANAGER, follow the instructions for modifying
  the CATALOG MANAGER plan name.
Catalog indirection in the control table

Member BMCDB2CI is generated to support catalog indirection for ALTER, CATALOG MANAGER, or CHANGE MANAGER.

This member contains logic for the installation options module allocation for indirect access. When you use BMCDB2CI to update the control table, consider the following points:

- If you have MVS/ESA and TSO/E 2.1 or later, the Installation System automatically updates the control table with BMCDB2CI. The Installation System searches both the JCL output file and the installation file to apply the updates wherever a copy of the control table is found. The Installation System prompts you for the location of the control table.

- If you do not have MVS/ESA and TSO/E 2.1 or later, follow the directions in BMCDB2CI for updating the control table.

- If you are installing CATALOG MANAGER, follow the instructions for modifying the CATALOG MANAGER plan name.

Fast Path Navigation

For ALTER, CATALOG MANAGER, CHANGE MANAGER, and DASD MANAGER PLUS, the Installation System provides Fast Path Navigation, which enables you to switch from one product to another without leaving the current product.

To initiate Fast Path Navigation, on the Command line of the current product, enter the name of the product to which you want to switch. The following table provides a list of the products and commands.

Table 17: Fast Path Navigation commands

<table>
<thead>
<tr>
<th>Product</th>
<th>Command</th>
</tr>
</thead>
<tbody>
<tr>
<td>ALTER</td>
<td>BMCALTER</td>
</tr>
<tr>
<td>CATALOG MANAGER</td>
<td>BMCCAT</td>
</tr>
<tr>
<td>CHANGE MANAGER</td>
<td>BMCCCHG</td>
</tr>
<tr>
<td>DASD MANAGER PLUS</td>
<td>BMCDASD</td>
</tr>
</tbody>
</table>

For example, if you are currently using DASD MANAGER PLUS and want to view an object description in CATALOG MANAGER, enter BMCCAT on the DASD MANAGER PLUS Command line. When you initiate Fast Path Navigation, the main menu for the requested product is displayed. In this case, the DASD
MANAGER PLUS session is temporarily suspended and then resumed when you exit CATALOG MANAGER.

To use Fast Path Navigation, the following conditions must be met:

- You must install the products by using the Installation System.
- You must use the BMCDB2 CLIST during product invocation.
- The distributed CLISTs AEXADMF1 and AEXADMF2 must be in a data set that is either in the ALTLIB list of the BMCDB2 CLIST or in your SYSPROC concatenation.
- The product to which you are switching must be installed and reside in the same set of libraries as the product from which you are switching.
- For CATALOG MANAGER, you must enable the ELO (Editor Lock Options) command in the AEXADMF1 and AEXADMF2 CLISTs.

**Note**

You cannot use Fast Path Navigation to access a product that is currently suspended. For example, if you switch from ALTER to DASD MANAGER PLUS, you cannot use Fast Path to return to ALTER because it is currently suspended. Instead, you have to exit the DASD MANAGER PLUS session to resume the ALTER session.

---

**User profile values**

You can change the values in the installation options module or in the POF for a product on an individual basis by using the product’s user options.

These user options are saved and maintained in the user profile.

If you need to reset the values in the user profiles, you can use a refresh feature. This feature modifies one or more option values for all of the product’s users.

**Refreshing installation options values in the user profile**

To refresh an option value in all existing user profiles, enclose the option value in parentheses and include ,R after the value inside the parentheses.

The following example illustrates how to refresh the option value:

```
$SSID=(DB2J,R),                                              *
```
Note
Do not drop either the continuation comma after the closing parenthesis or the continuation character in column 72.

This example refreshes the default DB2 subsystem ID for all users of the product.

For products other than CATALOG MANAGER, the ,R in the variable syntax indicates that the value specified will refresh the existing value of the variable in the user’s ISPF profile data set, if the time stamp of the installation options module is later than that in the user’s ISPF profile member. However, the user can change the override value in the user profile. In CATALOG MANAGER, the refresh occurs every time that a user starts the product.

To troubleshoot refreshing installation options values

If you have problems refreshing your user options, complete the following steps:

1 Verify that the refresh option is coded on the correct macro listing keyword in the installation options assembly member.

2 Verify that the installation options assembly was completed successfully with a return code of 0.

   If you receive assembly errors, compare your installation options module listing with one that the installation process generated. Some common errors are as follows:

   ■ missing comma delimiter after keyword value
   ■ missing continuation character in column 72
   ■ incorrect symbol-variable substitution
   ■ missing or unbalanced single quotation marks

3 Verify that the assembled installation options member is the same installation options member that ALTER, CATALOG MANAGER, CHANGE MANAGER, and DASD MANAGER PLUS use.

   a To verify, access the environment information for your product as follows:

      ■ In ALTER or CHANGE MANAGER, at the main menu, type ENVI on the Command line.
      ■ In CATALOG MANAGER, on the Primary Menu panel or any list panel, type ENVI on the Command line.
In DASD MANAGER PLUS, at the main menu, select **User Options**. Then select **Current environment information**.

- Compare the listed installation options module name with the name of the installation options module that you assembled and link-edited.

4 Verify that the installation options module assembly is updating the correct load library.

The **SYSLMOD** ddname statement should refer to the load library where the products reside.

### Refreshing POF values in the user profile

You can specify a value to refresh the existing value of the variable in the user’s ISPF profile data set.

**To refresh an option value**

1 To refresh an option value, modify the value of the POF keyword in one of the following ways:

- include ,\( (R) \) after the option value, as in the following example:
  
  \[
  \text{BMC\_LOAD\_OPTS=AMUS\_MMS},(R) 
  \]

- specify a blank and ,\( (R) \), as in the following example:
  
  \[
  \text{BMC\_LOAD\_OPTS=} ,(R) 
  \]

These examples refresh the name of the LOADPLUS user options module.

**Note**

If the value for the POF keyword ends with a comma, as in the following example, include ,\( (R) \) after the comma.

\[
\text{JOBCARDI=//JOBC JOB(&ZACCTNUM),"PGMR",}(R) 
\]

When the POFDATE parameter is later than the previous POFDATE that is stored in the user’s ISPF profile, the specified value refreshes the existing value of the variable in the user’s ISPF profile data set.

**To troubleshoot refreshing POF values**

If you have problems refreshing your user options, complete the following steps:

1 Verify that the refresh option is coded on the correct POF keyword.
2 Verify the date in the POFDATE parameter.

**Enabling the use of DDF**

CATALOG MANAGER and CHANGE MANAGER can access remote DB2 subsystems using the DB2 Distributed Data Facility (DDF).

If you did not enable the use of DDF during the installation of the products, perform the steps in this task.

**To enable the use of DDF**

1 Edit the HLQ.UDBCNTL member T1S#CDBS:
   a Change the following variables to the values that you used when you installed CATALOG MANAGER or CHANGE MANAGER. To review the values, see the prdINIT5 or prdINIT6 member in the HLQ.JCL library (where prd is the product code). For CHANGE MANAGER, also review the values for Common SQL in the ACSINIT5 or ACSINIT6 member.
      ■ Replace **AUTHID with the value for the primary or secondary authorization ID.
      ■ Replace **SQLID with the value of the synonym qualifier.
      ■ Replace **COLLID with the value of the collection ID.
   b (CHANGE MANAGER) For the synonyms that are prefixed with CAT2 and CAT3, uncomment the SQL statements and add a dash (-). (That is, change *SQL to -SQL.)
   c (CHANGE MANAGER) If you are executing the worklist for only CHANGE MANAGER, comment out the BIND statements for the CATALOG MANAGER packages.
   d In the last SQL statement, specify to grant EXECUTE authority to PUBLIC or to specific users.
   e If you are executing the worklist for both CATALOG MANAGER and CHANGE MANAGER, repeat step Step 1.d on page 109.

2 Edit the $C40INST job to create a single step to execute the T1S#CDBS worklist for CATALOG MANAGER and for CHANGE MANAGER.

3 Edit the BMCDB2 CLIST:
a. Edit the control table.

b. Specify the servers to use with CATALOG MANAGER CONNECT.

The same release level of CATALOG MANAGER must be installed on the remote DB2 subsystems and the DB2 subsystem from which you want to connect. The example in Figure 21 on page 109 shows that when CATALOG MANAGER is invoked on the DB2P subsystem, it can connect with the DB2A, DB2B, and DB2C servers on remote DB2 subsystems. In this example, the unique nicknames combine the server name and SSID.

Figure 36: CATALOG MANAGER CONNECT command servers

<table>
<thead>
<tr>
<th>*PROD</th>
<th>SSID</th>
<th>S SERVER NAME</th>
<th>SSID COLL_ID</th>
<th>NICKNAME</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACT</td>
<td>DB2P</td>
<td>S DB2A</td>
<td>DB2A ACTvr_D_MAIN</td>
<td>DB2PDB2A</td>
</tr>
<tr>
<td>ACT</td>
<td>DB2P</td>
<td>S DB2B</td>
<td>DB2B ACTvr_D_MAIN</td>
<td>DB2PDB2B</td>
</tr>
<tr>
<td>ACT</td>
<td>DB2P</td>
<td>S DB2C</td>
<td>DB2C ACTvr_D_MAIN</td>
<td>DB2PDB2C</td>
</tr>
</tbody>
</table>

c. Press END to exit.

More CATALOG MANAGER configuration tasks

In addition to the configuration tasks for multiple components, you will need to perform tasks for CATALOG MANAGER.

Access to catalog information

CATALOG MANAGER uses dynamic SQL to access DB2 catalog tables or product log tables.

CATALOG MANAGER observes the privileges of the user who lists the tables.

CATALOG MANAGER does not bypass any DB2 security when it generates and executes SQL, DML, or DB2 commands. DB2 rejects any action requested by CATALOG MANAGER for which the user is not authorized by DB2.

DB2 requires that users have at least the SELECT privilege to access catalog tables or product log tables. The CATALOG MANAGER installation options settings cannot override the DB2 SELECT authorization requirement.
Prohibiting access to CATALOG MANAGER functions

The CATALOG MANAGER initial command restricts users from all CATALOG MANAGER functions except data editing.

When the initial command is enabled, CATALOG MANAGER starts at the Edit DB2 Table Options panel where users can set options for editing data, controlling the display of data, and processing SQL. Users can navigate through all data editing panels, but cannot access the Primary Menu panel or other function panels. When users press END from the Edit DB2 Table Options panel, CATALOG MANAGER closes.

**WARNING**

You cannot enable both the initial command and the entry panel command (see Specifying an entry panel on page 103) in the same BMCDB2 CLIST.

To enable the initial command

1. Edit the BMCDB2 CLIST.
2. Find the lines that are shown in Figure 15 on page 103.

   **Figure 37: BMCDB2 CLIST--CATALOG MANAGER initial command**

   ```clist
   WHEN(ACTEMAIN) DO /* CATALOG MANAGER
   SET BMCFPCNT= 10100
   IF (&ACCESS = INDIRECT) THEN +
   SET CIACCESS = YES
   SET APPLID  = &ACTAPPL
   SET PARM    = &STR(S=&SSID,O=&ACTDOPT,D=&ASUDOPTD,+   
   M=BC,1=&CIACCESS,A=&ACMDOPT,+
   DB2CAT=&DB2VCAT )
   /* EDITOR LOCK OPTIONS (ELO) - ALLOWS USER TO IDENTIFY                       */
   /* THE DEFAULT LOCKING OPTIONS FOR DATA EDITING. USER                        */
   /* MAY CHOOSE ALL OR ANY COMBINATION OF THE THREE.                           */
   /* T - TABLE LOCK, R - ROW LOCK, N - NO LOCKING                              */
   SET PARM = &STR(&PARM,ELO=TRN)
   /* UNCOMMENT 'SET PARM' LINE BELOW TO ALLOW ACCESS ONLY                      */
   /* TO DATA EDITING FUNCTION. USERS CANNOT ACCESS OTHER                       */
   /* CATALOG MANAGER FUNCTIONS.                                                */
   /*---------------------------------------------------------------------------*/
   /* SET PARM = &STR(&PARM,E=EDIT) */
   /*---------------------------------------------------------------------------*/
   
   3 As directed in the CLIST, uncomment the following line:
   /* SET PARM = &STR(&PARM,E=EDIT) */
   
   4 Press END to exit.
   ```
Specifying an entry panel

You can optionally cause CATALOG MANAGER to display an entry panel other than the Primary Menu panel by adding an entry panel command to the BMCDB2 CLIST.

The entry panel command is a CATALOG MANAGER single command of 1 through 48 characters that is passed as a parameter to the CATALOG MANAGER product module ACTEMAIN from the BMCDB2 CLIST. Users have access to all functions of CATALOG MANAGER unless they have been restricted by other means, such as a customized session profile.

**WARNING**

You cannot enable both the entry panel command and the initial command in the same BMCDB2 CLIST.

**To edit the BMCDB2 CLIST to enable a different entry panel**

1. Edit the BMCDB2 CLIST.
2. Find the lines that are shown in Figure 16 on page 104.
   
   **Figure 38: BMCDB2 CLIST--CATALOG MANAGER entry panel**

   ```
   WHEN(ACTEMAIN) DO /* CATALOG MANAGER
   SET BMCFPCNT=10100
   IF (&ACCESS = INDIRECT) THEN +
   SET CIACCESS = YES
   SET APPLID  = &ACTAPPL
   SET PARM    = &STR(S=&SSID,O=&ACTDOPT,O=&ASUDOPTD,+
   M=&BC,1=&CIACCESS,A=&ACMDOPT,+
   DB2CAT=&DB2VCAT )
   /* EDITOR LOCK OPTIONS (ELO) - ALLOWS USER TO IDENTIFY                       */
   /* THE DEFAULT LOCKING OPTIONS FOR DATA EDITING. USER                        */
   /* T - TABLE LOCK, R - ROW LOCK, N - NO LOCKING                              */
   SET PARM = &STR(&PARM,ELO=TRN)
   /* UNCOMMENT 'SET PARM' LINE BELOW TO ALLOW ACCESS ONLY                      */
   /* TO DATA EDITINGFUNCTION. USERS CANNOT ACCESS OTHER                       */
   /* CATALOG MANAGER FUNCTIONS.                                               */
   /*--------------------------------------------------------------------------------*/
   /*  SET PARM = &STR(&PARM, E=EDIT) */
   /*--------------------------------------------------------------------------------*/
   /* stdout */
   /*--------------------------------------------------------------------------------*/
   /* END */
   /*--------------------------------------------------------------------------------*/
   ```

3. Replace the command `E=EDIT` with the entry panel command. The entry panel command syntax is `C=command`.

**Note**

If the CATALOG MANAGER command that you specify requires a function or object type and qualifier, you must include them when defining the entry panel command parameter.

4. Uncomment the line that includes the entry panel command.
The following example shows the edited line from the BMCDB2 CLIST to specify the CONNECT entry panel command.

```
SET PARM = &STR(&PARM,C=CONNECT)
```

5 Press END to exit.

**Specifying locking options for editing data**

CATALOG MANAGER offers three locking options for editing table data: shared table lock, row lock, and no lock.

To set the editor locking options for all users, you must enable the locking options command. The command is passed as a parameter to the CATALOG MANAGER product module ACTMAIN from the BMCDB2 CLIST.

**To enable the locking options command**

1 Edit the BMCDB2 CLIST.

2 Find the lines shown in Figure 17 on page 105.

```
Figure 39: BMCDB2 CLIST--CATALOG MANAGER entry panel for locking options
```

3 Enable the CATALOG MANAGER locking options command.

The syntax for the locking options command is `ELO= option`.

As an example, Figure 17 on page 105 shows the locking option command ELO set to TRN. These options determine whether requests for edits from any user are allowed while a table is edited. For more information about the options for data editing, see the *CATALOG MANAGER for DB2 User Guide*.

4 Press END to exit.
Note
The CATALOG MANAGER data editing package ACTJTEQ is installed with the following values for two BIND PACKAGE options: an ISOLATION value of CS (cursor stability) and a CURRENTDATA value of YES. You can change these values by rebinding the data editing package with other values that are allowed by DB2. For BIND PACKAGE syntax and descriptions, see the IBM documentation.

5 If you plan to use Fast Path Navigation (see “Fast Path Navigation” on page 98), you must edit the AEXADMF1 and AEXADMF2 CLISTs and enable the CATALOG MANAGER locking options command as you did in Step 3 on page 105 for the BMCDB2 CLIST.

For example, if you set ELO to TRN, then add the following statement to the AEXADMF2 CLIST:

```
SET PARM = &STR(&PARM,ELO=TRN)
```

Setting the session profile

The CATALOG MANAGER session profile enables you to customize specific product displays and operations for specific users or groups of users.

To initially set the session profile for all user groups, you must invoke the session profile command. The CATALOG MANAGER session profile command (1 to 18 characters) that calls a set of user-customized features that is saved under a specific session profile name. The session profile command is passed as a parameter to the CATALOG MANAGER product module ACTEMAIN from the BMCDB2 CLIST.

To invoke the session profile command

1 Edit the BMCDB2 CLIST.

2 Find the lines that are shown in Figure 18 on page 106.

```
/*----------------------------------------------------------*/
/* EDITOR LOCK OPTIONS (ELO) - ALLOWS USER TO IDENTIFY THE */
/* DEFAULT LOCKING OPTIONS FOR DATA EDITING. USER MAY CHOOSE */
/* ALL OR ANY COMBINATION OF THE THREE. T - TABLE LOCK, */
/* R - ROW LOCK, N - NO LOCKING. */
/*----------------------------------------------------------*/
SET PARM = &STR(&PARM,ELO=TRN)
```

3 Add the following command after the ELO locking option command:

```
SET PARM = &STR(&PARM,PR=
profileName)
```
As an example, adding the following line in the CLIST causes CATALOG MANAGER to invoke the session profile that is named PROGRAMMERS:

```
SET PARM = &STR(&PARM,PR=PROGRAMMERS)
```

4 Press END to exit.

## Editing the CONNECT command servers

The servers that the CATALOG MANAGER product uses in the CONNECT command are listed in the control table.

### To edit the control table to change or enable the servers

1 Edit the control table.

2 To change the servers that are listed for the CONNECT command (see Figure 19 on page 107), you can add, delete, or modify the data rows.

### Figure 41: CATALOG MANAGER CONNECT command servers

<table>
<thead>
<tr>
<th>PROD</th>
<th>SSID</th>
<th>S</th>
<th>SERVER NAME</th>
<th>SSID</th>
<th>COLL_ID</th>
<th>NICKNAME</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACT</td>
<td>DBBF</td>
<td>S</td>
<td>DBBA</td>
<td>DBBA</td>
<td>ACT</td>
<td>DBBFDBBA</td>
</tr>
<tr>
<td>ACT</td>
<td>DBBF</td>
<td>S</td>
<td>DBDB</td>
<td>DBDB</td>
<td>ACT</td>
<td>DBBFDBBB</td>
</tr>
<tr>
<td>ACT</td>
<td>DBBF</td>
<td>S</td>
<td>DBDA</td>
<td>DBDA</td>
<td>ACT</td>
<td>DBBFDBBD</td>
</tr>
</tbody>
</table>

3 Update the values for the Server Name, Server SSID, and the Server Nickname.

4 Complete the instructions in the comment block of Figure 20 on page 107 to enable the servers that were added by the MSSID installation. These server entries will be commented out. Some editing of the new server entries might be required.

### Figure 42: Control table for multiple SSID installation

<table>
<thead>
<tr>
<th>* * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *</th>
<th>SSID</th>
<th>COLL_ID</th>
<th>NICKNAME</th>
</tr>
</thead>
<tbody>
<tr>
<td>**PROD SSID S SERVER NAME</td>
<td>**SSID COLL_ID</td>
<td>**NICKNAME</td>
<td></td>
</tr>
<tr>
<td>ACT DBBF S DBBA</td>
<td>DBBA ACTv_r_D_MAIN</td>
<td>DBBFDBBA</td>
<td></td>
</tr>
<tr>
<td>ACT DBBF S DBDB</td>
<td>DBDB ACTv_r_D_MAIN</td>
<td>DBBFDBBB</td>
<td></td>
</tr>
<tr>
<td>ACT DBBF S DBDA</td>
<td>DBDA ACTv_r_D_MAIN</td>
<td>DBBFDBBD</td>
<td></td>
</tr>
<tr>
<td>ACT DBBA S DBBA</td>
<td>DBBA ACTv_r_D_MAIN</td>
<td>DBBFDBBA</td>
<td></td>
</tr>
<tr>
<td>ACT DBBA S DBDB</td>
<td>DBDB ACTv_r_D_MAIN</td>
<td>DBBFDBBB</td>
<td></td>
</tr>
<tr>
<td>ACT DBBA S DBDA</td>
<td>DBDA ACTv_r_D_MAIN</td>
<td>DBBFDBBD</td>
<td></td>
</tr>
</tbody>
</table>

5 Press END to exit.

6 If either of the following conditions exists, type **GENERATE** on the COMMAND line:
You edited the BMCDB2 CLIST to use a generated permanent ISPF table for the control table (specified \texttt{GENTABLE=Y} in the BMCDB2 CLIST)

You modified the control table that was previously generated
This action rebuilds the ISPF control table in the \textit{HLQ.UDBTLIB} data set.

### Adding ACTEMAIN and ACTDCL to the ISPF command table

System security can use a TSO command-limiting function to restrict an individual user or an entire site.

This function applies to TSO commands that are issued from the READY prompt or from ISPF.

**To add commands to the ISPF command table**

1. Edit the ISPF command table.

2. If command limiting is active, you must add the following commands to the list of commands that are allowed for CATALOG MANAGER:

   ■ ACTEMAIN--used to access CATALOG MANAGER

   ■ ACTDCL--used to create a DCLGEN in CATALOG MANAGER

Command limiting is activated in the following ways:

■ for an individual, with the TSOCMDS field of the logon ID record
  TSOCMDS specifies the name of a module that contains a list of valid commands for a user. For a sample list, see the ACFS$CMDS member of CAI.CAIMAC.

■ for an entire site, with the CMDLIST field of the GSO record named TSO
  The ALLCMDS field indicates permission for a user to bypass command limiting. Use the character that is specified in the BYPASS field of the GSO TSO record as a prefix for the command name.

### Enabling the use of SQL Explorer for DB2 within CATALOG MANAGER

Within CATALOG MANAGER, you can use commands to invoke the SQL Explorer for DB2 production.
To invoke SQL Explorer, CATALOG MANAGER uses the ACTPSS CLIST. To enable the use of SQL Explorer within CATALOG MANAGER, you must customize the ACTPSS CLIST in the HLQ.UDBCLLIB data set. For more information about customizing the CLIST, see the Installation System User Guide.

More DASD MANAGER PLUS configuration tasks

In addition to the configuration tasks for multiple products and for the Administrative products, you will need to perform tasks for DASD MANAGER PLUS.

The following tasks apply to DASD MANAGER PLUS:

- enabling other products to work within DASD MANAGER PLUS
- enabling REXX executables

DASD MANAGER PLUS use within other products

You can use the DASD MANAGER PLUS product within ALTER, CHANGE MANAGER, and CATALOG MANAGER.

The Installation System automatically enables these products to interact with one another, if the following conditions exist:

- you are installing DASD MANAGER PLUS and ALTER, CHANGE MANAGER, or CATALOG MANAGER simultaneously
  ~or~
  you currently have DASD MANAGER PLUS installed and you are installing ALTER, CHANGE MANAGER, or CATALOG MANAGER

- you select to allow the products to interact with one another on the Install System Product to Product panel

However, if you install DASD MANAGER PLUS after you have installed ALTER, CHANGE MANAGER, or CATALOG MANAGER, you must perform additional procedures to use DASD MANAGER PLUS within these products.
**Note**
To enable the use of DASD MANAGER PLUS within ALTER, CHANGE MANAGER, or CATALOG MANAGER, you must select the runtime enablement feature when you install DASD MANAGER PLUS.

---

### Enabling the use of DASD MANAGER PLUS within ALTER or CHANGE MANAGER

You can use DASD MANAGER PLUS within ALTER or CHANGE MANAGER.

The Installation System automatically enables this functionality if the following conditions exist:

- you are installing ALTER or CHANGE MANAGER and DASD MANAGER PLUS simultaneously
- you currently have DASD MANAGER PLUS installed and you are installing ALTER or CHANGE MANAGER
- you select to allow the products to interact with one another on the Install System Product to Product panel

### To enable DASD MANAGER PLUS

If one of the following conditions exists, perform the steps in the following procedure to use DASD MANAGER PLUS within ALTER or CHANGE MANAGER:

- you install DASD MANAGER PLUS after you install ALTER or CHANGE MANAGER and the products do not share libraries
- you install DASD MANAGER PLUS into a separate library

1. Edit the BMCDB2 CLIST.
   
   a. Add the DASD MANAGER PLUS load library HLQ to the HLQ2 variable.
   
   b. Add the DASD MANAGER PLUS product information to the control table values in `HLQ.CONTAB`, as shown in Figure 43 on page 162.

   Refer to the comments that precede the *DATA section of the control table for help with adding rows to the table.

   **Figure 43: Adding DASD MANAGER PLUS to the control table**

   *DATA
   *PROD SSID D/I DOPT PLAN APPL COLL_ID NICKNAME

---

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2 Update the ALTER or CHANGE MANAGER installation option for DASD MANAGER PLUS.

   a Set the DASDMAN option to (Y,R).

   b Reassemble the installation options module.

3 Edit the product options file (POF) and set the DASD_LOAD keyword to the DASD MANAGER PLUS load library or APF library.

4 Add the BMC Common Statistics collection list (ATS vrm_D_MAIN.*) to the PACKLIST for the Front End, Specification, and Analysis plans.

5 Rebind the plans.

6 Copy the ASUVERSN member from the DASD MANAGER PLUS load library to the ALTER or CHANGE MANAGER load library.

**Enabling the use of DASD MANAGER PLUS within CATALOG MANAGER**

Within CATALOG MANAGER, you can use commands to invoke DASD MANAGER PLUS.

The following commands are valid:

- SPACE, which displays the Space Estimation panels for table spaces and indexes
- STATS, which displays statistics panels for specified objects

The Installation System automatically enables this functionality if the following conditions exist:

- you are installing CATALOG MANAGER and DASD MANAGER PLUS simultaneously
- *or*
- you currently have DASD MANAGER PLUS installed and you are installing CATALOG MANAGER
- you select to allow the products to interact with one another on the Install System Product to Product panel
To enable DASD MANAGER PLUS when one version exists

If one of the following conditions exists, perform the steps in the following procedure to use DASD MANAGER PLUS within CATALOG MANAGER:

- you install DASD MANAGER PLUS after you install CATALOG MANAGER and the products do not share libraries
- you install DASD MANAGER PLUS into a separate library

1. Edit the BMCDB2 CLIST.
   
   a. Add the DASD MANAGER PLUS load library HLQ to the HLQ1 variable.
   
   b. Add the DASD MANAGER PLUS product information to the control table values in HLQ.CONTAB, as shown in Figure 44 on page 164.

   Refer to the comments that precede the *DATA section of the control table for help with adding rows to the table.

   Figure 44: Adding DASD MANAGER PLUS to the control table

2. Update the CATALOG MANAGER installation option for DASD MANAGER PLUS.

   a. Set the BOPTS option to ASUDOPD1 (or to the name of the DASD MANAGER PLUS installation options module).

   b. Reassemble the installation options module.

3. Edit the product options file (POF) and set the DASD_LOAD keyword to the new DASD MANAGER PLUS load library or APF library.
To enable DASD MANAGER PLUS when more than one version exists

Depending on your environment and on the products and solutions that you have installed, you might have two versions of DASD MANAGER PLUS installed. If the following conditions exist, you must perform the steps in the following procedure to use DASD MANAGER PLUS within CATALOG MANAGER:

- you currently have CATALOG MANAGER and DASD MANAGER PLUS installed, and you are installing a new version of DASD MANAGER PLUS into a separate library
- you want CATALOG MANAGER to interact with the new version of DASD MANAGER PLUS

1. Back up all of the OAD*, ASU*, and ATS* load modules in your existing library (where * is a wildcard) into a backup data set.

2. Copy the OAD*, ASU*, and ATS* load modules from the new library and replace the existing OAD*, ASU*, and ATS* load modules in the old library.

3. Edit the BMCDB2 CLIST and add the new DASD MANAGER PLUS load library HLQ to the HLQ1 variable.

4. Update the CATALOG MANAGER installation options.
   - Set the BOPTS option to ASUDOPD1 (or to the name of the DASD MANAGER PLUS installation options module).
   - Reassemble the installation options module.

5. Edit the product options file (POF) and set the DASD_LOAD keyword to the new DASD MANAGER PLUS load library or APF library.

Enabling REXX executables

The Installation System generates REXX executables for DASD MANAGER PLUS. These REXX executables can be implicitly executed.

To enable the REXX executables

1. To enable the REXX executables to be implicitly invoked from TSO without having to invoke DASD MANAGER PLUS, perform one of the following tasks:
   - Add the HLQ.DBREXX library to your SYSEXEC concatenation.
Copy the REXX executables from the HLQ=DBREXX library to a library in your SYSEEXEC concatenation.

More BMCSORT, RECOVER PLUS, and UNLOAD PLUS configuration tasks

In addition to the configuration tasks for multiple products, you must perform other tasks for BMCSORT, RECOVER PLUS, and UNLOAD PLUS.

Setting the MEMLIMIT system parameter

Several BMC products require above-the-bar memory and might abend if sufficient memory is not available.

This requirement affects the BMC products and solutions listed in Table 1 on page 58.

The default value for the System Management Facility (SMF) MEMLIMIT parameter is 2 GB. This value is set in member SMFPRMxx in SYS1.PARMLIB.

Before you begin

Determine whether you need to override the default MEMLIMIT value, based on the information in the following table:

Table 18: MEMLIMIT recommendations

<table>
<thead>
<tr>
<th>Product or solution</th>
<th>Recommendation</th>
</tr>
</thead>
</table>
| Administrative Assistant | If you are unable to specify REGION=0M:  
  ■ Specify NOLIMIT to allow unlimited above-the-bar memory.
  ■ If you are unable to specify NOLIMIT, specify at least 4 GB; if you are operating on LOB or XML data, BMC recommends at least 32 GB. |
<p>| ALTER               | If you are unable to specify REGION=0M, specify at least 1 GB; if you are operating on LOB or XML data, BMC recommends at least 32 GB. |</p>
<table>
<thead>
<tr>
<th>Product or solution</th>
<th>Recommendation</th>
</tr>
</thead>
<tbody>
<tr>
<td>CATALOG MANAGER</td>
<td>If you are unable to specify REGION=0M, specify at least 1 GB; if you are operating on LOB or XML data, BMC recommends at least 32 GB.</td>
</tr>
<tr>
<td>CHANGE MANAGER</td>
<td>If you are unable to specify REGION=0M, specify at least 1 GB; if you are operating on LOB or XML data, BMC recommends at least 32 GB.</td>
</tr>
<tr>
<td>CHECK PLUS</td>
<td>If you are unable to specify REGION=0M:</td>
</tr>
<tr>
<td></td>
<td>■ Specify NOLIMIT to allow unlimited above-the-bar memory.</td>
</tr>
<tr>
<td></td>
<td>■ If you are unable to specify NOLIMIT, specify at least 4 GB; if you are operating on LOB or XML data, BMC recommends at least 32 GB.</td>
</tr>
<tr>
<td>COPY PLUS</td>
<td>Specify at least 1 GB.</td>
</tr>
<tr>
<td>DASD MANAGER PLUS</td>
<td>If you are unable to specify REGION=0M:</td>
</tr>
<tr>
<td></td>
<td>■ Specify NOLIMIT to allow unlimited above-the-bar memory.</td>
</tr>
<tr>
<td></td>
<td>■ If you are unable to specify NOLIMIT and above-the-bar memory limits are inadequate, contact your z/OS system administrator.</td>
</tr>
<tr>
<td>Database Administration</td>
<td>If you are unable to specify REGION=0M:</td>
</tr>
<tr>
<td></td>
<td>■ Specify NOLIMIT to allow unlimited above-the-bar memory.</td>
</tr>
<tr>
<td></td>
<td>■ If you are unable to specify NOLIMIT, specify at least 4 GB; if you are operating on LOB or XML data, BMC recommends at least 32 GB.</td>
</tr>
<tr>
<td>Product or solution</td>
<td>Recommendation</td>
</tr>
<tr>
<td>----------------------------</td>
<td>--------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Database Performance</td>
<td>If you are unable to specify REGION=0M:</td>
</tr>
<tr>
<td></td>
<td>■ Specify NOLIMIT to allow unlimited above-the-bar memory.</td>
</tr>
<tr>
<td></td>
<td>■ If you are unable to specify NOLIMIT:</td>
</tr>
<tr>
<td></td>
<td>— For DASD MANAGER, if above-the-bar memory limits are inadequate, contact your z/OS system administrator.</td>
</tr>
<tr>
<td></td>
<td>— For REORG PLUS, specify at least 4 GB; if you are operating on LOB or XML data, BMC recommends at least 32 GB.</td>
</tr>
<tr>
<td>High-speed Apply Engine</td>
<td>Specify at least 1 GB.</td>
</tr>
<tr>
<td>LOADPLUS</td>
<td>If you are unable to specify REGION=0M:</td>
</tr>
<tr>
<td></td>
<td>■ Specify NOLIMIT to allow unlimited above-the-bar memory.</td>
</tr>
<tr>
<td></td>
<td>■ If you are unable to specify NOLIMIT, specify at least 4 GB; if you are operating on LOB or XML data, BMC recommends at least 32 GB.</td>
</tr>
<tr>
<td>Log Master</td>
<td>Specify at least 1 GB.</td>
</tr>
<tr>
<td>RECOVER PLUS</td>
<td>Specify at least 1 GB.</td>
</tr>
<tr>
<td>RECOVERY MANAGER</td>
<td>Specify at least 1 GB.</td>
</tr>
<tr>
<td>Recovery Management</td>
<td>Specify at least 1 GB.</td>
</tr>
<tr>
<td>REORG PLUS</td>
<td>If you are unable to specify REGION=0M:</td>
</tr>
<tr>
<td></td>
<td>■ Specify NOLIMIT to allow unlimited above-the-bar memory.</td>
</tr>
<tr>
<td></td>
<td>■ If you are unable to specify NOLIMIT, specify at least 4 GB; if you are operating on LOB or XML data, BMC recommends at least 32 GB.</td>
</tr>
</tbody>
</table>
To override the default MEMLIMIT value

1. Use one of the following methods to override the default MEMLIMIT value:
   - Specify the MEMLIMIT parameter in the JCL.
   - Specify REGION=0M in the JCL.
   - Use the SMF IEFUSI exit.

User authorizations

This topic describes the authorizations that are required for each product.

**RECOVER PLUS for DB2 user authorizations**

The RECOVER PLUS for DB2 product requires certain user authorizations.

**DB2 authorizations for RECOVER PLUS for DB2**

To use the RECOVER PLUS product, you must have the following DB2 authorizations:

- You must have EXECUTE authority on the RECOVER PLUS plan

  **Note**

  BMC recommends that you grant the EXECUTE privilege TO PUBLIC for the RECOVER PLUS main plan. This will allow all users to the RECOVER PLUS product.

- You must have one of the following authorizations:
  - INSTALL SYSADM, SYSADM, or SYSCTRL authority
  - DBADM or DBCTRL authority for the database containing the named spaces
  - RECOVERDB, DISPLAYDB, STARTDB, and STOPDB authority for the databases containing the named table spaces and index spaces
If you use RECOVER PLUS to make image copies (OUTCOPY option) from previous image copies, change accumulation files, and DB2 log records, you must have IMAGCOPY authority or an authority that implies IMAGCOPY.

**Note**
If the DB2 Access Control Authorization Exit is being invoked, DB2 authorizations must be granted using Resource Access Control Facility (RACF) or a similar system security package.

**APF authorizations for RECOVER PLUS for DB2**
RECOVER PLUS uses system services that require APF authorization.

All load modules loaded by these products must be authorized and must reside in APF-authorized libraries, as follows:

- system sort routine
- IDCAMS
- DSNUTILB

**RACF authorizations for RECOVER PLUS for DB2**
You must have the following RACF authorizations for RECOVER PLUS:

**Note**
These authorization requirements can also be fulfilled by using a system security package similar to RACF (for example, CA-ACF2 or CA-Top Secret from CA Technologies).

- If the underlying data sets of a table space or index space are protected, you must have CONTROL authority to access and to modify the data set.

**Note**
If you are using RACF and RECOVER PLUS was installed with option OPNDB2ID=YES, the CONTROL authority is not required to run RECOVER PLUS. However, if you are using any system security package other than RACF, CONTROL authority is still required, and the OPNDB2ID parameter is ignored.

If you are using RACF and RECOVER PLUS was installed with option OPNDB2ID=YES in a data sharing environment, you must ensure that the same RACF ID is shared by each DB2 subsystem in the data sharing group.

- If a table space or index space is STOGROUP-defined and the corresponding ICF catalog is protected, you must also have sufficient authority to access and update the MVS catalog.

- If the archive and active log data sets, the bootstrap data set (BSDS), and the DB2 directory are protected, users must have READ authority to access the data sets.
UNLOAD PLUS authorizations

UNLOAD PLUS does not run as part of the DB2 subsystem. Therefore, users must have system authorization that is equivalent to the authorization that DB2 requires.

Data set authorization requirements for UNLOAD PLUS

When using DIRECT YES, UNLOAD PLUS does not use DB2 to access data sets. Therefore, users must have system authorization that is equivalent to the authorization that DB2 requires.

You can obtain this authorization in one of the following ways:

- If you use RACF, specify OPNDB2ID=YES in your installation options.
- Establish authorization as described in “Requirements when OPNDB2ID=NO in UNLOAD PLUS” on page 63.

When using DIRECT NO, UNLOAD PLUS uses DB2 to access data sets. In this case, users do not need the authorization described in this topic.

Requirements when using RACF and OPNDB2ID=YES in UNLOAD PLUS

If you use RACF and OPNDB2ID=YES, the user who is running UNLOAD PLUS is not required to have all of the authorizations that the following section describes. Because OPNDB2ID=YES tells UNLOAD PLUS to use the DB2 RACF ID instead of the user’s RACF ID, the DB2 RACF ID must have RACF (READ) authorization for these data sets.

Requirements when OPNDB2ID=NO in UNLOAD PLUS

Some sites use RACF or a similar system security package to protect underlying data sets and the Integrated Catalog Facility (ICF) catalog of a table or index space. In that case, users must have READ privileges for the following sources:

- DB2 VSAM data sets
- DB2 image copy data sets
- DSN1COPY data sets
- Inline copy data sets
- Instant Snapshot copy data sets
- Online consistent copy data sets
- Cabinet copy data sets
- VSAM FlashCopy data sets
- VSAM linear data sets
- Encrypted copy data sets that are created by COPY PLUS
- Key data sets for encrypted copies

**Using a security package other than RACF**

The following procedure illustrates one method for granting these data set authorizations when your site uses a system security package other than RACF:

1. Associate users with a security group.
2. Grant EXECUTE privileges on the UNLOAD PLUS product program (ADUUMAIN) to the security group.
3. Grant the data set authorizations that are described in the preceding section to ADUUMAIN.

**DB2 authorization requirements for UNLOAD PLUS**

To run UNLOAD PLUS, users must have certain DB2 authorizations.

For all unload jobs, users must have the following authorizations:

- Sufficient DB2 authority to execute the UNLOAD PLUS plan and all packages that the UNLOAD PLUS plan uses
- Authorization equivalent to the authorization that the IBM DB2 UNLOAD utility requires

**Note**

UNLOAD PLUS enforces row- and column-level security only when DIRECT NO is in effect.

**Additional authorizations for canceling threads**

If you plan to use the FORCE option to cancel DB2 threads that might prevent a successful drain during a load job, you must have DISPLAY privileges. DISPLAY privileges might be implicit in the authority that you have.
Installation verification

After you customize and configure the products, you must verify the installation of the products.

Verifying the Administrative products’ installation

This procedure describes the steps that you must complete to verify that ALTER, CATALOG MANAGER, CHANGE MANAGER, or DASD MANAGER PLUS have been installed correctly.

To verify the installation

1. Invoke the BMCDB2 CLIST.

2. On the COMMAND line, type CONTAB.

3. On the BMCDB2TB panel, verify that the correct partitioned data set (PDS) and member name are displayed in the library in which the BMCDB2 CLIST is located. The *HLQ.CONTAB* sequential file should also be displayed in the library.

   If the PDS and member name are not displayed, set the BMCDB2C variable in the BMCDB2 CLIST to the correct library.

4. Exit the CONTAB panel.

5. Select one of the products that you installed.

6. Access the environment information for the product that you have selected as follows:
   
   - In ALTER or CHANGE MANAGER, at the main menu, type ENV on the Command line.
   
   - In CATALOG MANAGER, on the Primary Menu panel, type ENV on the Command line.
   
   - In DASD MANAGER PLUS, at the main menu, select User Options. Then select Current environment information.

7. Review the environment panel to verify the displayed information.
Note
If you are installing CATALOG MANAGER and are using the DDF, enter CONNECT on the Command line of the CATALOG MANAGER Primary Menu panel. The CATALOG MANAGER Change Access panel is displayed. Then verify connections or attachments to other DB2 subsystems.

8 Exit the environment panel.

9 Repeat Step 5 on page 110 through Step 8 on page 111 for each product that you installed.

Verifying Backup and Recovery product and Utility product installation

The Installation System generates an installation verification procedure (IVP) job for each installed Backup and Recovery or Utility product.

To help ensure that a product installed properly, BMC strongly recommends that you run the corresponding IVP job.

For products that use the dynamic bind process, the IVP job initializes that process by binding the necessary packages. Running the IVP job helps prevent subsequent bind problems, such as authorization problems, during product execution.

Before you begin

Complete the following tasks before running an IVP job:

- Submit all installation and customization jobs except the IVP job ($C70IVP). For more information, see the Installation System User Guide.

- Apply the appropriate fixes for each product that you are installing. For instructions, see the Installation System User Guide.

- Grant the appropriate authorizations. For more information, see the configuration information for the products that you have installed.

  If you are not the person who installed the products but are submitting the IVP job, ensure that you have the authorizations that are required to execute each product that was installed.

- Complete any additional configuration tasks for your installed products or components.
To verify installation

1 If your jobs use data sets that are managed by the Storage Management Subsystem (SMS), ensure that the SMS service routine load library (SYS1.CSSLIB) is APF-authorized.

Complete this step regardless of whether SYS1.CSSLIB is in your system LNKLST or STEPLIB concatenation.

2 Use one of the following methods to edit either the EXEC statement in the product job step of the IVP job ($C70IVP) or your job card:
   ■ Change the value of the REGION parameter to 0M.
   ■ If not already addressed by your site SMF defaults, add the MEMLIMIT parameter with an appropriate value for your site and the products that you are installing.

3 Submit the IVP job ($C70IVP).

The IVP job should complete with condition code 0 unless otherwise indicated by comments in the job.

Note
The following temporary objects exist only for the duration of the IVP job:

■ Database BMCIVPDB
■ Table space BMCIVPDB.BMCIVPTS
■ Table BMC.BMCIVPTB
■ Table BMC.BMCIVPT2
■ Index BMC.BMCIVPIX1
Configuring the Backup and Recovery products for DB2

You must complete the configuration tasks described in the following topics for the Backup and Recovery products for DB2.

Granting user authorizations for the Backup and Recovery products

Before you run the IVP jobs for the products that you are installing, you should grant the appropriate DB2 and data set authorizations to your users. This topic describes the authorizations that are required for each Backup and Recovery product.

After you have granted the appropriate authorizations, complete any additional configuration tasks for your installed products before verifying your installation.

Authorization verification mechanisms for Backup and Recovery products and Utility products

Many BMC products for DB2 use the same mechanisms to verify authorization.

If the DB2 DSNX@XAC authorization exit is available for your system, the product uses this exit to verify authorization for external access. The exit is available from the following sources:

- IBM provides a sample exit with DB2 for the IBM Resource Access Control Facility (RACF) component.
- CA Technologies provides the DSNX@XAC exit with CA-ACF2 and CA-Top Secret.
BMC recommends this mechanism for implementing external security. The access control authorization exit must be available in the STEPLIB, JOBLIB, linklist, or in the SYS3.DSN exit.

If the DSNX@XAC exit is not available, the product uses the standard DB2 method to check security.

RECOVERY MANAGER *for DB2* user authorizations

The RECOVERY MANAGER *for DB2* product requires certain user authorizations.

**RACF authorization for RECOVERY MANAGER**

The RACF security administrator must define an Open Multiple Virtual Storage (OMVS) segment for each RECOVERY MANAGER user.

The user ID assigned to the DBC started task must also have an OMVS segment defined.

The OMVS segment is required because DBC utilizes IBM z/OS UNIX System Services (USS) sockets for cross-address-space communication within an LPAR.

**System security authorizations for RECOVERY MANAGER *for DB2***

RECOVERY MANAGER *for DB2* requires certain security authorizations.

If you are using RACF or a similar system security package, you must have the following authorizations to use the RECOVERY MANAGER *for DB2* product:

- READ authority for archive log data sets
- READ authority for BSDS data sets
- ALTER authority for the DB2 active log data sets
- ALTER authority for the new archive log data sets to be created, if any
- ALTER authority for the archive history file

**DB2 authorizations for RECOVERY MANAGER *for DB2***

To use the RECOVERY MANAGER product, you must have the following DB2 authorizations:
You must have EXECUTE authority on the RMGR plan. (This allows you to build and save an object group and to maintain any object group that you create.)

To save changes to subsystem default recovery options, you must have one of the following DB2 authorizations:

- INSTALL SYSADM
- SYSADM
- DBADM for the RMGR repository database

**APF authorizations for RECOVERY MANAGER for DB2**

The RMGR load library must be APF-authorized.

In addition, you must add SCCAUTH to the AUTHPGM NAMES section of member IKJTSOxx in SYS1.PARMLIB.

*Note*

SCCAUTH is a common authorization module used by multiple BMC Software products, including the components of the Recovery Management for DB2 solution.

**Restricting TSO commands for RECOVERY MANAGER for DB2**

If your site restricts the use of TSO commands through an option of a RACF or similar system security package, be sure that the ARMUMAN, ARMUSEL, and ARMOPTM command names are added to the appropriate command table. Otherwise, message IKJ56500I ARMUMAN COMMAND NOT FOUND is issued when attempting to invoke the RMGR CLIST.

**COPY PLUS for DB2 user authorizations**

The COPY PLUS for DB2 product requires certain user authorizations.

**DB2 authorizations for COPY PLUS for DB2**

To use the COPY PLUS product, you must have the following DB2 authorizations:

- To run COPY PLUS, you must have EXECUTE authority on the COPY PLUS plan, and the plan owner must have EXECUTE authority to collection-id.* for the collections referenced by the plan.
For COPY PLUS to be able to process database objects, your primary or secondary authorization IDs must have one of the following authorities:

- Installation SYSADM, SYSADM, or SYSCTRL authority
- DBADM, DBCTRL, or DBMAINT authority for the database containing the named space
- IMAGCOPY, DISPLAYDB, STARTDB, and STOPDB authority for the database containing the named space
- DISPLAY (system wide) and IMAGCOPY, STARTDB, and STOPDB authority for the database that contains the named space

To copy the database (DSNDB01), you must have installation SYSADM, SYSADM, or SYSCTRL authority.

If you make SHRLEVEL CONCURRENT copies and set the installation option READONLY to LOCKTBL, you must also have SELECT authority for the tables that you are copying or be the owner of those tables.

To use the COPY ... RUNSTATS option, you must have the STATSAUTH privilege on the database.

**Note**

COPY PLUS checks authorization by using the DB2 security exit if this exit is in place.

For COPY PLUS to correctly determine the status of the DB2 security exit, the library containing module DSNX@XAC (most commonly DSNEEXIT) must be included in the COPY PLUS STEPLIB.

---

**APF Authorizations for COPY PLUS for DB2**

COPY PLUS uses system services that require APF authorization.

COPY PLUS must reside in an APF-authorized library. All load modules loaded by COPY PLUS must be authorized and must reside in APF-authorized libraries.

**RACF authorizations for COPY PLUS for DB2**

This topic describes the RACF authorizations that COPY PLUS for DB2 requires.

Because COPY PLUS does not run as part of the DB2 subsystem, you must have authorization equivalent to that required by DB2 to use COPY PLUS.

When the COPY PLUS installation option OPNDB2ID is set to NO, and when the underlying data set of a table space is protected by Resource Access Control Facility
(RACF) or a similar security system, you must have sufficient authority to access and modify the data set. For index spaces, you must have read access to the index data sets.

When the COPY PLUS installation option OPNDB2ID is set to YES, the DB2 RACF ID is used to allow DB2 data sets to be opened.

**Note**
For security systems other than RACF, the installation option OPNDB2ID must be set to NO.

If your DB2 is specified in the RACF started procedures table (ICHRIN03) as a privileged or trusted task and no user ID is associated with the DB2 address space, you cannot use OPNDB2ID to allow COPY PLUS to access the DB2 data sets. In this case, the user running COPY PLUS must have RACF authority to access the data sets needed for copying.

**Note**
If you are using SHRLEVEL CHANGE with data sharing, COPY PLUS will read the BSDS. Therefore, you will need READ authorization for the BSDS. COPY PLUS reads the group buffer pool check point records from the BSDSs for the group if it detects that the space being copied is group buffer pool dependent.

---

**RECOVER PLUS for DB2 user authorizations**

The RECOVER PLUS for DB2 product requires certain user authorizations.

**DB2 authorizations for RECOVER PLUS for DB2**

To use the RECOVER PLUS product, you must have the following DB2 authorizations:

- You must have EXECUTE authority on the RECOVER PLUS plan
  
  **Note**
  BMC recommends that you grant the EXECUTE privilege TO PUBLIC for the RECOVER PLUS main plan. This will allow all users to the RECOVER PLUS product.

- You must have one of the following authorizations:
  
  INSTALL SYSADM, SYSADM, or SYSCTRL authority
  DBADM or DBCTRL authority for the database containing the named spaces
RECOVERDB, DISPLAYDB, STARTDB, and STOPDB authority for the databases containing the named table spaces and index spaces

- If you use RECOVER PLUS to make image copies (OUTCOPY option) from previous image copies, change accumulation files, and DB2 log records, you must have IMAGCOPY authority or an authority that implies IMAGCOPY.

**Note**

If the DB2 Access Control Authorization Exit is being invoked, DB2 authorizations must be granted using Resource Access Control Facility (RACF) or a similar system security package.

---

**APF authorizations for RECOVER PLUS for DB2**

RECOVER PLUS uses system services that require APF authorization.

All load modules loaded by these products must be authorized and must reside in APF-authorized libraries, as follows:

- system sort routine
- IDCAMS
- DSNUTILB

---

**RACF authorizations for RECOVER PLUS for DB2**

You must have the following RACF authorizations for RECOVER PLUS:

**Note**

These authorization requirements can also be fulfilled by using a system security package similar to RACF (for example, CA-ACF2 or CA-Top Secret from CA Technologies).

- If the underlying data sets of a table space or index space are protected, you must have CONTROL authority to access and to modify the data set.

**Note**

If you are using RACF and RECOVER PLUS was installed with option OPNDB2ID=YES, the CONTROL authority is not required to run RECOVER PLUS. However, if you are using any system security package other than RACF, CONTROL authority is still required, and the OPNDB2ID parameter is ignored.

If you are using RACF and RECOVER PLUS was installed with option OPNDB2ID=YES in a data sharing environment, you must ensure that the same RACF ID is shared by each DB2 subsystem in the data sharing group.
If a table space or index space is STOGROUP-defined and the corresponding ICF catalog is protected, you must also have sufficient authority to access and update the MVS catalog.

If the archive and active log data sets, the bootstrap data set (BSDS), and the DB2 directory are protected, users must have READ authority to access the data sets.

Log Master for DB2 user authorizations

Log Master for DB2 requires certain user authorizations.

To use Log Master, you must have authorization within DB2 and through your system security package (such as the IBM product Resource Access Control Facility or RACF). These authorizations must be sufficient to access DB2 resources and perform the tasks accomplished during processing. The following topics provide more information about the required authorizations.

DB2 authorizations for Log Master for DB2

To ensure that Log Master runs correctly in your environment, you must have the following DB2 authorizations:

- EXECUTE privilege on the Log Master batch and online plans
- DISPLAYDB authority for the databases that contain the named table spaces and index spaces (and any databases related by referential integrity (RI) constraints)
- DISPLAY system privilege
- authorizations to perform quiesce at log mark

Before a Log Master job can use this feature of the product, the user ID of the job must also have one of the following DB2 authorizations:

- DBADM, DBCTL, or DBMAINT authority for the databases
- SYSCTRL or SYSADM authority
- IMAGCOPY privilege for the databases
log master uses the high-speed apply engine to execute generated SQL statements. for more details, look for information about DB2 authorizations for High-speed Apply.

Before a Log Master job can execute SQL, the user ID of the job (or the user ID specified in either the EXECSQL statement or the BINDOWN installation option) must have the following DB2 authorizations:

— EXECUTE privilege for the plan that the High-speed Apply Engine uses to access its own restart tables and the catalog (normally provided during installation)

— EXECUTE privilege for the High-speed Apply Engine restart package (normally provided during installation)

— INSERT, UPDATE, and DELETE privileges on the target tables

— appropriate privileges to bind or administer plans, packages, and collections

The High-speed Apply Engine provides several ways to grant these privileges. Some techniques avoid granting bind privileges to the user ID that runs Log Master. For more details, look for information about DB2 authorizations for plans, packages, and collections.

APF authorizations for Log Master for DB2

To use the Log Master product, you must have the APF authorizations described below.

APF authorization for batch programs

Log Master batch programs use operating system services that require APF authorization. Accordingly, the product must reside in APF-authorized libraries. Any libraries that you reference in the STEPLIB DD statements must also be APF-authorized.

APF authorization for the online interface

You can run the Log Master online interface with or without APF authorization. The APFONLIN installation option determines whether the product expects to have proper APF authorization.

Without authorization, an online user must enter the name and location of the bootstrap data set (BSDS) on the Product Options panel. The online interface does not run as an authorized TSO program.
With proper authorization, the product can obtain the name of the BSDS from DB2 dynamically. The online interface runs as an authorized TSO program. The TSO program name for the product is SCCAUTH. You must place this name in the operating system's SYS1.PARMLIB data set in the authorized command table. The command table is a member of SYS.PARMLIB named IKJTSOxx. The suffix xx is assigned during installation. The TSO command table contains several different lists. Place SCCAUTH in the authorized program list (which is specified as AUTHPGM NAMES).

---

**Note**

Perform this procedure on all operating system images where you expect the product to run as an authorized TSO program.

---

**RACF or similar security authorizations for Log Master for DB2**

Log Master does not run as part of the DB2 subsystem. To use the product, you must have system authority similar to that of DB2.

The following topics describe security requirements related to different environments and types of access.

**RACF authorizations for Log Master for DB2**

Log Master for DB2 requires RACF authorizations. Use the method described below to make Log Master work more efficiently in a RACF environment.

Log Master reads data from certain underlying DB2 data sets such as table spaces, active and archive logs, or the bootstrap data set (BSDS). If the underlying data sets are protected by RACF (or by a similar system security package). The user ID of the Log Master batch job must have authority to access all of the underlying data sets that the job requires.

To avoid granting authority for each required data set to the user ID of each Log Master batch job, use the OPNDB2ID installation option. Ensure that all of the following conditions are true:

- your environment uses RACF
  The OPNDB2ID installation option does not operate in other security environments.
- you install the product with the OPNDB2ID installation option set to YES
  When OPNDB2ID is set to YES, Log Master uses the RACF ID of DB2 to open the DB2 data sets.
- you explicitly associate a user ID with the DB2 address space
—For OPNDB2ID to work correctly, you must explicitly associate a user ID with DB2 regardless of whether you specify DB2 as a privileged or trusted task in the RACF started procedures table (ICHRIN03).

—To ensure OPNDB2ID option works correctly in a data sharing environment, the RACF IDs of the DBM1 address spaces within all DB2 subsystems within the data sharing group must be the same. The authorizations for the bootstrap and log data sets must also be the same.

**PACLOG for DB2 user authorizations**

PACLOG for DB2 requires certain user authorizations.

When all of the following circumstances exist, add ALMUMAN to the list of commands in the TSOCMDS module:

- You use the PACLOG logging environment modeling tool.
- You use the CA-ACF2 security system.
- Your shop restricts TSO commands.

**System security authorizations for PACLOG**

If you are using RACF or a similar system security package, you must have the following authorizations to use the PACLOG product:

- READ authority for archive log data sets
- READ authority for BSDS data sets
- ALTER authority for the DB2 active log data sets
- ALTER authority for the new archive log data sets to be created, if any
- ALTER authority for the archive history file
- DELETE/DEFINE authority for the DB2 archive data sets 1, 2, 3, and 4

**APF authorizations for PACLOG**

To use the PACLOG product, you must have APF authorization for all STEPLIB and JOBLIB libraries.
Note
PACLOG does not require an APF-authorized library for installation.

RACF authorizations for PACLOG

For RACF security, you must authorize the XCA compression started tasks BMCP and BMCBCSS in the started tasks names table.

CA-ACF2 authorizations for PACLOG

For CA-ACF2 security, you must authorize the XCA compression started tasks BMCP and BMCBCSS as started tasks under started task control.

BMC Archive History File

The user must have update authority for the BMC Archive History file (an system data set).

R+ CHANGE ACCUM for DB2 user authorizations

R+/CHANGE ACCUM for DB2 requires certain user authorizations.

DB2 authorizations for R+ CHANGE ACCUM

To use the R+/CHANGE ACCUM product, you must have the following DB2 authorizations:

WARNING
SQL access to the repository tables should not be allowed. UPDATE authority should be granted only to users who must bind the R+/CHANGE ACCUM and RECOVER PLUS plans.

Using the R+/CHANGE ACCUM batch program

To use the R+/CHANGE ACCUM batch program, R+/CHANGE ACCUM users must have one of the following DB2 authorizations:

- You must have INSTALL SYSADM or SYSADM authority.
You must have EXECUTE authority on the R+/CHANGE ACCUM plan and one of the following authorizations:

— SYSCTRL authority
— DBADM, DBCTRL, DBMAINT, or IMAGCOPY authority for the databases containing the target objects

Using the R+/CHANGE ACCUM ISPF interface

To use the R+/CHANGE ACCUM ISPF interface, you must have one of the following authorizations:

■ You must have EXECUTE authority for the RECOVER PLUS application plan.
■ If you execute the delete change accumulation file function, you must have one of these authorizations:
   — INSTALL SYSADM or SYSADM authority
   — SYSCTRL authority
   — DBADM, DBCTRL, DBMAINT, or IMAGCOPY authority for the databases containing the table spaces that have updates in the file being deleted

Using the MODIFY ACCUM command

To update the R+/CHANGE ACCUM repository, you must have the same DB2 authorities required to use the R+/CHANGE ACCUM batch program.

Deleting change accumulation groups and files

The R+/CHANGE ACCUM ISPF interface allows users with IMAGCOPY (or equivalent) authority to delete change accumulation groups and files.

To allow a user with INSTALL SYSADM authority to delete change accumulation groups and files, you must specify the user’s ID in the R+/CHANGE ACCUM installation options.

APF authorizations for R+ CHANGE ACCUM

R+/CHANGE ACCUM uses system services that require APF authorization.

R+/CHANGE ACCUM must reside in an APF-authorized library.
Note
The R+/CHANGE ACCUM ISPF interface does not require APF-authorization. You might want to separate the R+/CHANGE ACCUM ISPF load library (ISPLLIB) from other BMC libraries.

RACF authorizations for R+ CHANGE ACCUM

R+/CHANGE ACCUM requires the following RACF authorization.

If the archive and active log data sets, the bootstrap data set (BSDS), and the DB2 directory are protected by RACF (Resource Access Control Facility) or by a similar system security package, R+/CHANGE ACCUM users must have READ authority to access the data sets.

Note
If you are using RACF, and RECOVER PLUS was installed with option OPNDB2ID=YES, the user running RECOVER PLUS does not need READ authority. If your site uses a system security package other than RACF, READ authority is required.

CA-ACF2 authorizations for R+ CHANGE ACCUM

If you are using CA-ACF2 security with the R+/CHANGE ACCUM product, you must have the following authorizations:

- If your installation uses the “Command Limiting List,” you must add the command processor ACAPRI to the list.
- If the archive and active log data sets, the bootstrap data set (BSDS), and the DB2 directory are protected by CA-ACF2, R+/CHANGE ACCUM users must have READ authority to access the data sets.

High-speed Apply Engine user authorizations

High-speed Apply Engine requires certain user authorizations.

DB2 authorizations for the High-speed Apply Engine

The High-speed Apply Engine requires certain DB2 authorizations to run correctly.

To execute SQL or logical log input, the user ID that runs the High-speed Apply Engine must have the following DB2 authorizations:
EXECUTE privilege for the plan that High-speed Apply uses to access its own restart tables and the catalog

EXECUTE privilege for the restart package

appropriate table privileges such as, INSERT, UPDATE, or DELETE for the target tables (the specific privileges depend on the actions that the apply request performs)

appropriate privileges to bind or administer plans, packages, and collections

High-speed Apply provides several ways to grant these privileges. Some techniques avoid granting bind privileges to the user ID that runs High-speed Apply. For more information, see the topic on DB2 authorizations for plans, packages, and collections.

DB2 authorizations for the plans, packages, and collections of the High-speed Apply Engine

The High-speed Apply Engine creates plans, packages, and collections. Depending on the privileges that you are willing to grant to the user ID that runs High-speed Apply Engine, you can grant the DB2 authorizations and privileges for these activities using one of the methods described in this section.

The following table defines the variables that appear in all of the GRANT examples in this section. For more information about the parameters discussed in this section, see the High-speed Apply Engine Reference Manual.

### Table 19: Variables used in DB2 authorization examples

<table>
<thead>
<tr>
<th>Variable name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>aptPlan</td>
<td>name of High-speed Apply Engine plan that is specified during installation</td>
</tr>
<tr>
<td>collectionIDs</td>
<td>names of collections to which High-speed Apply Engine dynamically binds packages during processing</td>
</tr>
<tr>
<td></td>
<td>This name can be one of the following:</td>
</tr>
<tr>
<td></td>
<td>- one specific package designated for use by High-speed Apply Engine</td>
</tr>
<tr>
<td></td>
<td>- list of specific packages designated for use by High-speed Apply Engine</td>
</tr>
<tr>
<td></td>
<td>- &quot;*&quot;</td>
</tr>
<tr>
<td></td>
<td>This variable represents all collections. Your security policies might not permit this specification.</td>
</tr>
<tr>
<td>databaseName</td>
<td>target database being changed by the apply request</td>
</tr>
<tr>
<td>tableName</td>
<td>target tables being changed by the apply request</td>
</tr>
</tbody>
</table>
### Variable name | Description
--- | ---
**userid01** | authorization ID of the user running the apply request  
You can specify PUBLIC or a specific authorization ID.  

**userid02** | authorization ID (different than userid01) with authority to bind plans, bind packages, and administer collections  
This authorization ID can be a secondary authorization ID. The privileges that are granted to this authorization ID vary, depending on how you enable High-speed Apply Engine bind processing.  

**userPlan01** | name of a pre-bound plan that is bound by using special bind options (optional, when the BindAction parameter is Use)  

### Using the user ID running High-speed Apply for authorizations

With this method, you must grant authority and privileges to the user ID running the High-speed Apply Engine. This method has the following requirements:

- The user ID that runs High-speed Apply Engine (userid01) must have BINDADD authority, and one of the following statuses:

  - PACKADM authority
  
  - CREATE privileges on all packages (*)
  
  - CREATE privileges on a specific collection or list of collections designated for use by High-speed Apply Engine

- If userid01 has CREATE privileges only on specific collections, the apply request must specify one of those collection names as the value of the CollectionID parameter.

### Authorization examples for the user ID running High-speed Apply Engine

The following examples show the grant actions that are normally done during and after installation. The authorizations that you grant depend on your own security policies. For definitions of the variables shown in these examples, see the preceding table.

This example shows the authorizations that provide access to the High-speed Apply plan and restart table. These authorizations are normally granted during installation.

```sql
GRANT EXECUTE ON PLAN aptPlan TO userid01;
GRANT EXECUTE ON PACKAGE BMCAPT.APTREB2 TO userid01;
```

This example shows additional authorizations that are required to run the High-speed Apply Engine. These authorizations are normally granted after installation.

```sql
GRANT INSERT, UPDATE, SELECT, DELETE ON
```
Using BindOwner and a pre-bound plan

With this method, High-speed Apply Engine uses a pre-bound plan that was created under the authority of a different user ID. The pre-bound plan is validated at run time; therefore, it must have been previously bound by a different user ID with appropriate privileges. For a sample BIND command, see the High-speed Apply Engine Reference Manual.

This method has the following requirements:

- The user ID that runs High-speed Apply (userID01) must have
  - EXECUTE privilege on a specific pre-bound plan
  - BINDAGENT authority
- To be validated at run time, the plan must have been previously bound by a different user ID (userID02) with appropriate privileges.
- userID02 must have BINDADD authority and one of the following statuses:
  - PACKADM authority
  - CREATE privileges on all packages (*)
  - CREATE privileges on a specific collection or list of collections that is designated for use by High-speed Apply
- The apply request must specify the following parameter values:

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>BindAction</td>
<td>Use</td>
</tr>
<tr>
<td>BindOwner</td>
<td>user ID that bound the plan</td>
</tr>
<tr>
<td>CollectionID</td>
<td>name of the High-speed Apply Engine collection</td>
</tr>
<tr>
<td><strong>Note:</strong> This value is required if the user ID that binds the plan has CREATE privileges only on specific collections.</td>
<td></td>
</tr>
<tr>
<td>PlanName</td>
<td>name of the specific prebound plan</td>
</tr>
</tbody>
</table>
Authorization examples for using a pre-bound plan

The following examples show the authorizations that are normally granted during and after installation. The authorizations that you grant depend on your own security policies. For definitions of the variables shown in these examples, see the table at the beginning of this topic.

This example shows the authorizations that provide access to the High-speed Apply plan and restart table. These authorizations are normally granted during installation.

```
GRANT EXECUTE ON PLAN aptPlan TO userid01;
GRANT EXECUTE ON PACKAGE BMC.APTREB2 TO userid01;
```

This example shows additional authorizations that are required to run the High-speed Apply Engine. These authorizations are normally granted after installation.

```
GRANT INSERT, UPDATE, SELECT, DELETE ON tablesNames TO userid01;
GRANT EXECUTE ON PLAN userPlan01 TO userid01;
GRANT BINDAGENT TO userid01;
GRANT BINDADD TO userid02;
GRANT PACKADM ON COLLECTION collectionIDs TO userid02;
or
GRANT CREATE ON COLLECTION collectionIDs TO userid02;
```

Using the AuthID parameter

With this method, High-speed Apply Engine binds by using the authority of a specified user ID. High-speed Apply Engine uses this user ID only for bind processing. This method has the following requirements:

- The user ID that runs High-speed Apply Engine (userid01) must have EXECUTE privilege for the High-speed Apply Engine plan and restart table package. This user ID does not require special privileges for bind actions.

- The user ID that you specify for bind processing (userid02) can be a primary or secondary authorization ID, and
  - Must have SYSADM authority or SYSCTRL authority
  - Must be a valid TSO logon ID; otherwise, your security software can issue warning messages or prevent required processing
  - Cannot be a group ID

- The apply request must specify userid02 as the value of the AuthId configuration parameter.
Authorization examples for using the AuthID parameter

The following examples show the authorizations that are normally granted during and after installation. The authorizations that you grant depend on your own security policies. For definitions of the variables shown in these examples, see the table at the beginning of this topic.

This example shows the authorizations that provide access to the High-speed Apply Engine plan and restart table. These authorizations are normally granted during the install process.

```
GRANT EXECUTE ON PLAN aptPlan TO userid01;
GRANT EXECUTE ON PACKAGE BMCAPT.APTREB2 TO userid01;
```

This example shows additional authorizations that are required to run the High-speed Apply Engine. These authorizations are normally granted after installation.

```
GRANT INSERT, UPDATE, SELECT, DELETE ON tableNames TO userid01;
GRANT SYSADM TO userid02;
or
GRANT SYSCTRL TO userid02;
```

Summary of DB2 authorization requirements for the High-speed Apply Engine

The following table summarizes the DB2 authorizations requirements for different methods of specifying the [Bind] parameters to run High-speed Apply Engine. Note the following authorization considerations:

- Though any of the listed DB2 authorizations or privileges can be granted to PUBLIC, many of them normally are not; for example, SYSADM, SYSCTRL, BINDADD, and PACKADM.

- The BindOwner value must be one of the following:
  - A valid primary or secondary authorization ID of the user running High-speed Apply Engine
  - An authorization ID (with sufficient authority) that has granted BINDAGENT authority to the user running High-speed Apply Engine

- The AuthID value
  - Must be a valid TSO logon ID, not a group ID
  - Does not have to be a valid secondary authorization ID of the user running High-speed Apply Engine
Table 20: Summary of DB2 authorization requirements for High-speed Apply Engine

<table>
<thead>
<tr>
<th>[Bind] parameter usage method</th>
<th>DB2 authorization</th>
<th>Granted to one of listed IDs or to PUBLIC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Default [Bind] parameters (if you do not specify any parameters in your configuration)</td>
<td>EXECUTE privilege for High-speed Apply Engine plan (for example, APTBvvr)</td>
<td>primary authorization ID (user ID)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>secondary authorization ID</td>
</tr>
<tr>
<td></td>
<td>EXECUTE privilege for restart table package (for example, APTBvvr.APTREB2)</td>
<td>primary authorization ID (user ID)</td>
</tr>
<tr>
<td></td>
<td>BINDADD authority</td>
<td></td>
</tr>
<tr>
<td></td>
<td>PACKADM authority or CREATE IN privilege for collection</td>
<td>primary authorization ID (user ID)</td>
</tr>
<tr>
<td></td>
<td>SELECT, INSERT, UPDATE, and DELETE privileges on target tables</td>
<td>primary authorization ID (user ID)</td>
</tr>
<tr>
<td>Specify value for BindOwner (APOWNER) parameter</td>
<td>EXECUTE privilege for High-speed Apply Engine plan (for example, APTBvvr)</td>
<td>primary authorization ID (user ID)</td>
</tr>
<tr>
<td></td>
<td>secondary authorization ID</td>
<td></td>
</tr>
<tr>
<td></td>
<td>EXECUTE privilege for restart table package (for example, APTBvvr.APTREB2)</td>
<td>authorization ID specified by BindOwner parameter</td>
</tr>
<tr>
<td></td>
<td>BINDADD authority</td>
<td></td>
</tr>
<tr>
<td></td>
<td>PACKADM authority or CREATE IN privilege for collection</td>
<td></td>
</tr>
<tr>
<td></td>
<td>SELECT, INSERT, UPDATE, and DELETE privileges on target tables</td>
<td></td>
</tr>
<tr>
<td>Specify value for AuthID parameter</td>
<td>EXECUTE privilege for High-speed Apply Engine plan (for example, APTBvvr)</td>
<td>primary authorization ID (user ID)</td>
</tr>
<tr>
<td></td>
<td>secondary authorization ID</td>
<td></td>
</tr>
<tr>
<td></td>
<td>EXECUTE privilege for restart table package (for example, APTBvvr.APTREB2)</td>
<td>primary authorization ID (user ID)</td>
</tr>
<tr>
<td></td>
<td>SYSADM or SYSCTRL authority</td>
<td>authorization ID specified by AuthID parameter</td>
</tr>
<tr>
<td></td>
<td>SELECT, INSERT, UPDATE, and DELETE privileges on target tables</td>
<td>primary authorization ID (user ID)</td>
</tr>
</tbody>
</table>
### [Bind] parameter usage method

<table>
<thead>
<tr>
<th>Parameter usage method</th>
<th>DB2 authorization</th>
<th>Granted to one of listed IDs or to PUBLIC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Specify value for AuthID and BindOwner (APOWNER) parameters</td>
<td>EXECUTE privilege for High-speed Apply Engine plan (for example, APTBvvr)</td>
<td>■ primary authorization ID (user ID)  ■ secondary authorization ID</td>
</tr>
<tr>
<td></td>
<td>EXECUTE privilege for restart table package (for example, APTBvvr.APTREB2)</td>
<td>authorization ID specified by BindOwner parameter</td>
</tr>
<tr>
<td></td>
<td>SYSADM or SYSCTRL authority</td>
<td>authorization ID specified by AuthID parameter</td>
</tr>
<tr>
<td></td>
<td>SELECT, INSERT, UPDATE, and DELETE privileges on target tables</td>
<td>authorization ID specified by BindOwner parameter</td>
</tr>
</tbody>
</table>

### APF authorizations for the High-speed Apply Engine

To use the High-speed Apply Engine, you must have the following APF authorizations:

- The High-speed Apply load libraries must be APF-authorized.
- Any libraries you reference in the apply request (in the STEPLIB DD statements) must be APF-authorized.

The user ID that submits the apply request must have the appropriate authorizations to run the request.

### Configuring RECOVERY MANAGER

You must configure RECOVERY MANAGER to operate in your environment.

### Required temporary tables for RECOVERY MANAGER

RECOVERY MANAGER uses declared DB2 global temporary tables when performing the following tasks to generate recovery JCL:

- multi-job optimization
- stacked tape analysis
unchanged analysis (XUNCHANGED) processing for local subsystem recoveries

creating and reading groups from the repository

To ensure that you have enough space allocated for processing, set up the temporary tables.

For each DB2 Version 8 subsystem and for each member of a DB2 Version 8 data sharing system, create a temporary database and table space using an 8K BUFFERPOOL.

For information about creating the temporary database and table space, see the documentation for IBM DB2 UDB for z/OS Version 8.

For DB2 Version 9 systems, DB2 Version 9 uses the work file database to dynamically allocate the global temporary tables. For each DB2 Version 9 subsystem and for each member of a DB2 Version 9 data sharing system, you must ensure that the work file database contains at least one table space defined with a page size of 32 KB.

For information about creating the 32 KB table space in the work file database, see the documentation for IBM DB2 UDB for z/OS version 9.

Preparing for archive logs greater than 64 KB tracks

To successfully use archive logs greater than 64 KB tracks (available with DB2 Version 9 and later), you must set up some SMS rules.

To set up SMS rules for large archive logs

1. Create an SMS DATACLAS that uses LARGE for the data set name type.

   This value assigns a DSORG type of PS-L to the data set. The simplest way to accomplish this is to make assignments based on a data set name filter, as in the following example:

   ```
   WHEN (&DSN = DSNDXW.DXW2.ARCLG1L.A0*)
   SET &DATACLAS = 'DCLARGE'
   ```

2. Create a DATACLAS rule to accommodate temporary files that some RECOVERY MANAGER programs create when processing archive logs.

   These files are identified with .Z0* and should also be allocated as DSNTYPE=LARGE. An example follows:

   ```
   WHEN (&DSN = DSNDXW.DXW2.ARCLG1L.Z0*)
   SET &DATACLAS = 'DCLARGE'
   ```
Because archive log and temporary files can be extremely large, set up a STORCLAS rule and a STORGRP rule to direct the data sets to a specific SMS storage group.

Examples follow:

```
WHEN (&DATACLAS = 'DCLARGE')
  SET &STORCLAS = 'DXWSMS'
```

and

```
WHEN (&STORCLAS = 'DXWSMS')
  SET &STORGRP = 'DXWSMS'
```

## Migrating from an earlier version of RECOVERY MANAGER

Additional tasks, which are dependent on the versions you are updating from and to, are necessary if you migrating from an earlier version of RECOVERY MANAGER.

### Upgrading from RECOVERY MANAGER version 9.1 or earlier to version 9.2 or later

If you are updating from RECOVERY MANAGER version 9.1 or earlier to version 9.2 or later, the installation system generates job $C68ARM to migrate your existing RECOVERY MANAGER group definitions to the new repository. BMC recommends that you evaluate all groups and delete any that are unused, out of date, or incorrectly defined prior to running the $C68ARM job.

## Setting up data sharing for RECOVERY MANAGER for DB2

If you have installed RECOVERY MANAGER for some of your DB2 subsystems and are now preparing to migrate to data sharing, use this procedure.

### To set up data sharing for RECOVERY MANAGER

1. Add the following to the option set for each DB2 subsystem:

```
groupname.DSNLOAD=DB2.load.library
groupname.DSNEXIT=DB2.exit.library
groupname.DSNLOAD=DB2.load.library
groupname.DSNEXIT=DB2.exit.library
```

The variable `groupname` represents the group attach name of your data sharing group.
2 Verify that the following options are set in the option set for each DB2 subsystem:

<table>
<thead>
<tr>
<th>Option</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>optionname</td>
<td>options common to all subsystems</td>
</tr>
<tr>
<td>ssid. optionname</td>
<td>options for each subsystem and data sharing member</td>
</tr>
</tbody>
</table>

3 For each DB2 subsystem that will be a data sharing member, use the Product Option Sets option on the RECOVERY MANAGER main menu to update the work file database name and the group member name.

RECOVERY MANAGER, LGC, and DBC

RECOVERY MANAGER, which is also part of the Recovery Management solution, uses DB2 Product Configuration (LGC) for maintaining product option sets. LGC runs as an agent within the DB2 Component Services (DBC) started task address space. The DBC started task must be started in order to run RECOVERY MANAGER.

For more information about LGC and DBC, see the Global Infrastructure Components for DB2 Administration Guide.

RECOVERY MANAGER for DB2 archive history file

The RECOVERY MANAGER for DB2 archive history file records all archive logs processed by the batch archive program, ARMBARC. You should create an archive history file for each DB2 subsystem on which disaster recovery procedures will be generated.

The archive history file is also used to record image copies of DSNDB01.DBD01, DSNDBD01.SYSUTILX, and DSNDB06.SYSCOPY. Recording these entries in the history file allows the batch system resource recovery program, ARMBSRR, to create efficient recovery JCL for all catalog and directory spaces.

If you specify a name for the archive history file during the installation, the installation jobs create the history table. If you do not create a table during installation, you can use the ARMHIST member in the DBCNTL data set to create and format one.
RECOVERY MANAGER for DB2 option set

The ARM$OPTS, which is the default option set, contains information for all subsystems that share the RECOVERY MANAGER for DB2 load libraries and control files.

Adding a DB2 subsystem to RECOVERY MANAGER for DB2 adds the control information for that subsystem to the existing option set, ARM$OPTS.

If you browse the option set, you will see that variables unique to a DB2 subsystem are prefixed with the subsystem ID. Sharing the ARM$OPTS file among multiple subsystems could have repercussions for batch JCL generation processes. However, using the &SSID variable in the batch output JCL file name ensures that generated JCL can be easily identified and will not overlay JCL generated for other DB2 subsystems.

For more information, see the RECOVERY MANAGER for DB2 User Guide.

RECOVERY MANAGER for DB2 packages

RECOVERY MANAGER for DB2 packages are versioned with an ISO timestamp. SYSPACKAGE in the DB2 catalog will need to be cleaned up by using the FREE command because each release of RECOVERY MANAGER introduces a new version of each package.

RECOVERY MANAGER for DB2 repository

The repository consists of a set of table spaces that contain tables holding information about the groups that you create, including their attributes, subsystem, and group options.

A repository is required for each DB2 subsystem. In a data sharing environment, one repository is required for each data sharing group.

BCSS commands for PACLOG

The following commands are used to initialize the product in PACLOG processing only (PPO) mode. The REINIT PPO command is used to reinitialize PPO mode.

DAC ELM value
DAC LCD ON
DAC STATUS
REINIT PPO

After the REINIT PPO command is issued, the following commands are executed automatically:

DAC NVSAM ENABLE
DAC PPO ON
DAC PPO SHUTDOWN

Enabling interaction between products

You need to complete additional configuration tasks to enable interaction between products.

Enabling interaction between RECOVERY MANAGER and Log Master

To enable interaction between RECOVERY MANAGER and Log Master, Log Master must be installed and you must add some information to the RECOVERY MANAGER option set.

To enable interaction between Log Master and RECOVERY MANAGER

1. Add the following information to the RECOVERY MANAGER option set:

<table>
<thead>
<tr>
<th>Product option</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Log Master Load</td>
<td>Log Master load library</td>
</tr>
</tbody>
</table>

Enabling interaction between COPY PLUS and RECOVERY MANAGER

RECOVERY MANAGER can interact with COPY PLUS.

When you install RECOVERY MANAGER and COPY PLUS at the same time, this interaction is automatically enabled.

If you install the products at different times, you must ensure that they share the same common utilities (BMCUTIL) database so that COPY PLUS can access object sets that are created by RECOVERY MANAGER.
Enabling interaction between RECOVERY MANAGER and PACLOG

To enable interaction between RECOVERY MANAGER and PACLOG, PACLOG must be installed and you must add some information to the PACLOG option set.

**To enable interaction between RECOVERY MANAGER and PACLOG**

1. Add the following information to the PACLOG option set:

<table>
<thead>
<tr>
<th>Product option</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>PACLOG Load</td>
<td>PACLOG load library</td>
</tr>
<tr>
<td>PACLOG CNTL</td>
<td>PACLOG CNTL library</td>
</tr>
</tbody>
</table>

Enabling interaction between COPY PLUS and DASD MANAGER PLUS

If you plan to use DASD MANAGER PLUS with COPY PLUS, you must direct the utility synonyms to the correct DASD MANAGER PLUS tables and also direct the DASD MANAGER PLUS synonyms to the appropriate utility tables.

The following procedures describe the steps for accomplishing these tasks.

**Before you begin**

Review the following information about COPY PLUS and DASD MANAGER PLUS synonyms. Examine these synonyms and verify that the table names are correct.

**COPY PLUS synonyms**: If the BMCSTATS runtime option is used, COPY PLUS can update the DASD MANAGER PLUS statistics tables to update statistical information. The following table shows the synonyms that the COPY PLUS utility uses to reference the corresponding tables for DASD MANAGER PLUS.

**Table 21: DASD MANAGER PLUS table synonyms for COPY PLUS**

<table>
<thead>
<tr>
<th>Synonym</th>
<th>DASD MANAGER PLUS table a</th>
</tr>
</thead>
<tbody>
<tr>
<td>BMCACP_BMCXTBSP</td>
<td>BMCATS_vx:RS_TABLESPACE</td>
</tr>
<tr>
<td>BMCACP_BMCXTBPT</td>
<td>BMCATS_vx:RS_TABLEPART</td>
</tr>
</tbody>
</table>
The variable \( vr \) represents the version and release number of your current DASD MANAGER PLUS product. These table names are the default names as shipped and might have changed when DASD MANAGER PLUS was installed.

**To direct the utility synonyms to the DASD MANAGER PLUS tables**

If the current COPY PLUS synonyms do not point to the tables listed in Table 21 on page 202, complete the following steps to update them:

1. Drop the COPY PLUS synonyms.
2. Create the new COPY PLUS synonyms by using the same synonym names, but use the correct DASD MANAGER PLUS table names.

   **Note**

   If DASD MANAGER PLUS tables are not connected or installed when you install COPY PLUS, the associated package binds will complete with a return code 4.

### Setting the MEMLIMIT system parameter

Several BMC products require above-the-bar memory and might abend if sufficient memory is not available.

This requirement affects the BMC products and solutions listed in Table 1 on page 58.

The default value for the System Management Facility (SMF) MEMLIMIT parameter is 2 GB. This value is set in member SMFPRMxx in SYS1.PARMLIB.

**Before you begin**

Determine whether you need to override the default MEMLIMIT value, based on the information in the following table:
## Table 22: MEMLIMIT recommendations

<table>
<thead>
<tr>
<th>Product or solution</th>
<th>Recommendation</th>
</tr>
</thead>
</table>
| Administrative Assistant | If you are unable to specify REGION=0M:  
  - Specify NOLIMIT to allow unlimited above-the-bar memory.  
  - If you are unable to specify NOLIMIT, specify at least 4 GB; if you are operating on LOB or XML data, BMC recommends at least 32 GB. |
| ALTER                     | If you are unable to specify REGION=0M, specify at least 1 GB; if you are operating on LOB or XML data, BMC recommends at least 32 GB.          |
| CATALOG MANAGER           | If you are unable to specify REGION=0M, specify at least 1 GB; if you are operating on LOB or XML data, BMC recommends at least 32 GB.          |
| CHANGE MANAGER            | If you are unable to specify REGION=0M, specify at least 1 GB; if you are operating on LOB or XML data, BMC recommends at least 32 GB.          |
| CHECK PLUS                | If you are unable to specify REGION=0M:  
  - Specify NOLIMIT to allow unlimited above-the-bar memory.  
  - If you are unable to specify NOLIMIT, specify at least 4 GB; if you are operating on LOB or XML data, BMC recommends at least 32 GB. |
| COPY PLUS                 | Specify at least 1 GB.                                                                                                                        |
| DASD MANAGER PLUS         | If you are unable to specify REGION=0M:  
  - Specify NOLIMIT to allow unlimited above-the-bar memory.  
  - If you are unable to specify NOLIMIT and above-the-bar memory limits are inadequate, contact your z/OS system administrator. |
<table>
<thead>
<tr>
<th>Product or solution</th>
<th>Recommendation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Database Administration</td>
<td>If you are unable to specify REGION=0M:</td>
</tr>
<tr>
<td></td>
<td>■ Specify NOLIMIT to allow unlimited above-the-bar memory.</td>
</tr>
<tr>
<td></td>
<td>■ If you are unable to specify NOLIMIT, specify at least 4 GB; if you are operating on LOB or XML data, BMC recommends at least 32 GB.</td>
</tr>
<tr>
<td>Database Performance</td>
<td>If you are unable to specify REGION=0M:</td>
</tr>
<tr>
<td></td>
<td>■ Specify NOLIMIT to allow unlimited above-the-bar memory.</td>
</tr>
<tr>
<td></td>
<td>■ If you are unable to specify NOLIMIT:</td>
</tr>
<tr>
<td></td>
<td>— For DASD MANAGER, if above-the-bar memory limits are inadequate, contact your z/OS system administrator.</td>
</tr>
<tr>
<td></td>
<td>— For REORG PLUS, specify at least 4 GB; if you are operating on LOB or XML data, BMC recommends at least 32 GB.</td>
</tr>
<tr>
<td>High-speed Apply Engine</td>
<td>Specify at least 1 GB.</td>
</tr>
<tr>
<td>LOADPLUS</td>
<td>If you are unable to specify REGION=0M:</td>
</tr>
<tr>
<td></td>
<td>■ Specify NOLIMIT to allow unlimited above-the-bar memory.</td>
</tr>
<tr>
<td></td>
<td>■ If you are unable to specify NOLIMIT, specify at least 4 GB; if you are operating on LOB or XML data, BMC recommends at least 32 GB.</td>
</tr>
<tr>
<td>Log Master</td>
<td>Specify at least 1 GB.</td>
</tr>
<tr>
<td>RECOVER PLUS</td>
<td>Specify at least 1 GB.</td>
</tr>
<tr>
<td>RECOVERY MANAGER</td>
<td>Specify at least 1 GB.</td>
</tr>
<tr>
<td>Recovery Management</td>
<td>Specify at least 1 GB.</td>
</tr>
</tbody>
</table>
### To override the default MEMLIMIT value

1. Use one of the following methods to override the default MEMLIMIT value:
   - Specify the MEMLIMIT parameter in the JCL.
   - Specify REGION=0M in the JCL.
   - Use the SMF IEFUSI exit.

### Verifying Backup and Recovery product and Utility product installation

The Installation System generates an installation verification procedure (IVP) job for each installed Backup and Recovery or Utility product.

To help ensure that a product installed properly, BMC strongly recommends that you run the corresponding IVP job.

For products that use the dynamic bind process, the IVP job initializes that process by binding the necessary packages. Running the IVP job helps prevent subsequent bind problems, such as authorization problems, during product execution.
Before you begin

Complete the following tasks before running an IVP job:

■ Submit all installation and customization jobs except the IVP job ($C70IVP). For more information, see the Installation System User Guide.

■ Apply the appropriate fixes for each product that you are installing. For instructions, see the Installation System User Guide.

■ Grant the appropriate authorizations. For more information, see the configuration information for the products that you have installed.

If you are not the person who installed the products but are submitting the IVP job, ensure that you have the authorizations that are required to execute each product that was installed.

■ Complete any additional configuration tasks for your installed products or components.

To verify installation

1 If your jobs use data sets that are managed by the Storage Management Subsystem (SMS), ensure that the SMS service routine load library (SYS1.CSSLIB) is APF-authorized.

   Complete this step regardless of whether SYS1.CSSLIB is in your system LNKLIST or STEPLIB concatenation.

2 Use one of the following methods to edit either the EXEC statement in the product job step of the IVP job ($C70IVP) or your job card:

   ■ Change the value of the REGION parameter to 0M.

   ■ If not already addressed by your site SMF defaults, add the MEMLIMIT parameter with an appropriate value for your site and the products that you are installing.

3 Submit the IVP job ($C70IVP).

The IVP job should complete with condition code 0 unless otherwise indicated by comments in the job.
The following temporary objects exist only for the duration of the IVP job:

- Database BMCIVPDB
- Table space BMCIVPDB.BMCIVPTS
- Table BMC.BMCIVPTB
- Table BMC.BMCIVPT2
- Index BMC.BMCIVPIX1
Configuring the Database Administration solution

After you install and customize the components in the Database Administration solution, you might need to perform several additional configuration tasks to complete and verify the installation. You perform these tasks outside the Installation System dialog panels.

Multiple-product configuration tasks

This topic describes configuration tasks that apply to several products or solution components.

Authorization verification

You can enter your BMC Authorization passwords when you install the products.

If you are a licensed user and have already received and entered the permanent BMC Authorization passwords, ensure that the appropriate authorization modules are saved and copied to the new library after you install the products. The authorization modules are created when you add the password.

Note

In earlier product versions, the Installation System placed passwords directly into the $HLQ$.LOAD library. The Installation System now places passwords in the $HLQ$.BMCPSWD library and copies the passwords to the $HLQ$.BMCLINK library or to your APF-authorized library.

Alternatively, you can use the BMC Product Authorization utility to apply passwords and to change your CPU configuration.
**Note**
You can choose not to input passwords during installation of the products. However, if you are installing the BMC UNLOAD PLUS or LOADPLUS utility and you are migrating data from an earlier release using UNLOAD PLUS or LOADPLUS, you must input passwords for these products before you run the migration jobs.

---

**Setting the MEMLIMIT system parameter**

Several BMC products require above-the-bar memory and might abend if sufficient memory is not available.

This requirement affects the BMC products and solutions listed in Table 1 on page 58.

The default value for the System Management Facility (SMF) MEMLIMIT parameter is 2 GB. This value is set in member SMFPRMxx in SYS1.PARMLIB.

**Before you begin**

Determine whether you need to override the default MEMLIMIT value, based on the information in the following table:

**Table 23: MEMLIMIT recommendations**

<table>
<thead>
<tr>
<th>Product or solution</th>
<th>Recommendation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Administrative Assistant</td>
<td>If you are unable to specify REGION=0M:</td>
</tr>
<tr>
<td></td>
<td>■ Specify NOLIMIT to allow unlimited above-the-bar memory.</td>
</tr>
<tr>
<td></td>
<td>■ If you are unable to specify NOLIMIT, specify at least 4 GB; if you are operating on LOB or XML data, BMC recommends at least 32 GB.</td>
</tr>
<tr>
<td>ALTER</td>
<td>If you are unable to specify REGION=0M, specify at least 1 GB; if you are operating on LOB or XML data, BMC recommends at least 32 GB.</td>
</tr>
<tr>
<td>CATALOG MANAGER</td>
<td>If you are unable to specify REGION=0M, specify at least 1 GB; if you are operating on LOB or XML data, BMC recommends at least 32 GB.</td>
</tr>
<tr>
<td>CHANGE MANAGER</td>
<td>If you are unable to specify REGION=0M, specify at least 1 GB; if you are operating on LOB or XML data, BMC recommends at least 32 GB.</td>
</tr>
<tr>
<td>Product or solution</td>
<td>Recommendation</td>
</tr>
<tr>
<td>----------------------------</td>
<td>--------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>CHECK PLUS</td>
<td>If you are unable to specify REGION=0M:</td>
</tr>
<tr>
<td></td>
<td>■ Specify NOLIMIT to allow unlimited above-the-bar memory.</td>
</tr>
<tr>
<td></td>
<td>■ If you are unable to specify NOLIMIT, specify at least 4 GB; if you are operating on LOB or XML data, BMC recommends at least 32 GB.</td>
</tr>
<tr>
<td>COPY PLUS</td>
<td>Specify at least 1 GB.</td>
</tr>
<tr>
<td>DASD MANAGER PLUS</td>
<td>If you are unable to specify REGION=0M:</td>
</tr>
<tr>
<td></td>
<td>■ Specify NOLIMIT to allow unlimited above-the-bar memory.</td>
</tr>
<tr>
<td></td>
<td>■ If you are unable to specify NOLIMIT and above-the-bar memory limits are inadequate, contact your z/OS system administrator.</td>
</tr>
<tr>
<td>Database Administration</td>
<td>If you are unable to specify REGION=0M:</td>
</tr>
<tr>
<td></td>
<td>■ Specify NOLIMIT to allow unlimited above-the-bar memory.</td>
</tr>
<tr>
<td></td>
<td>■ If you are unable to specify NOLIMIT, specify at least 4 GB; if you are operating on LOB or XML data, BMC recommends at least 32 GB.</td>
</tr>
<tr>
<td>Database Performance</td>
<td>If you are unable to specify REGION=0M:</td>
</tr>
<tr>
<td></td>
<td>■ Specify NOLIMIT to allow unlimited above-the-bar memory.</td>
</tr>
<tr>
<td></td>
<td>■ If you are unable to specify NOLIMIT:</td>
</tr>
<tr>
<td></td>
<td>— For DASD MANAGER, if above-the-bar memory limits are inadequate, contact your z/OS system administrator.</td>
</tr>
<tr>
<td></td>
<td>— For REORG PLUS, specify at least 4 GB; if you are operating on LOB or XML data, BMC recommends at least 32 GB.</td>
</tr>
<tr>
<td>High-speed Apply Engine</td>
<td>Specify at least 1 GB.</td>
</tr>
<tr>
<td>Product or solution</td>
<td>Recommendation</td>
</tr>
<tr>
<td>--------------------</td>
<td>----------------</td>
</tr>
</tbody>
</table>
| LOADPLUS           | If you are unable to specify REGION=0M:  
■ Specify NOLIMIT to allow unlimited above-the-bar memory.  
■ If you are unable to specify NOLIMIT, specify at least 4 GB; if you are operating on LOB or XML data, BMC recommends at least 32 GB. |
| Log Master         | Specify at least 1 GB. |
| RECOVER PLUS       | Specify at least 1 GB. |
| RECOVERY MANAGER   | Specify at least 1 GB. |
| Recovery Management| Specify at least 1 GB. |
| REORG PLUS         | If you are unable to specify REGION=0M:  
■ Specify NOLIMIT to allow unlimited above-the-bar memory.  
■ If you are unable to specify NOLIMIT, specify at least 4 GB; if you are operating on LOB or XML data, BMC recommends at least 32 GB. |
| UNLOAD PLUS        | If you are unable to specify REGION=0M:  
■ Specify NOLIMIT to allow unlimited above-the-bar memory.  
■ If you are unable to specify NOLIMIT, specify at least 4 GB; if you are operating on LOB or XML data, BMC recommends at least 32 GB. |

**To override the default MEMLIMIT value**

1. Use one of the following methods to override the default MEMLIMIT value:  
■ Specify the MEMLIMIT parameter in the JCL.  
■ Specify REGION=0M in the JCL.  
■ Use the SMF IEFUSI exit.
User authorizations

This section describes the authorizations that are required for some of the components.

COPY PLUS for DB2 user authorizations

The COPY PLUS for DB2 product requires certain user authorizations.

**DB2 authorizations for COPY PLUS for DB2**
To use the COPY PLUS product, you must have the following DB2 authorizations:

- To run COPY PLUS, you must have EXECUTE authority on the COPY PLUS plan, and the plan owner must have EXECUTE authority to collection-id.* for the collections referenced by the plan.

- For COPY PLUS to be able to process database objects, your primary or secondary authorization IDs must have one of the following authorities:
  - Installation SYSADM, SYSADM, or SYSCTRL authority
  - DBADM, DBCTRL, or DBMAINT authority for the database containing the named space
  - IMAGCOPY, DISPLAYDB, STARTDB, and STOPDB authority for the database containing the named space
  - DISPLAY (system wide) and IMAGCOPY, STARTDB, and STOPDB authority for the database that contains the named space

- To copy the database (DSNDB01), you must have installation SYSADM, SYSADM, or SYSCTRL authority.
  
  If you make SHRLEVEL CONCURRENT copies and set the installation option READONLY to LOCKTBL, you must also have SELECT authority for the tables that you are copying or be the owner of those tables.
  
  To use the COPY ... RUNSTATS option, you must have the STATSAUTH privilege on the database.

  **Note**

  COPY PLUS checks authorization by using the DB2 security exit if this exit is in place.
  
  For COPY PLUS to correctly determine the status of the DB2 security exit, the library containing module DSNX@XAC (most commonly DSSEXIT) must be included in the COPY PLUS STEPLIB.

APF Authorizations for COPY PLUS for DB2

COPY PLUS uses system services that require APF authorization.
COPY PLUS must reside in an APF-authorized library. All load modules loaded by COPY PLUS must be authorized and must reside in APF-authorized libraries.

**RACF authorizations for COPY PLUS for DB2**

This topic describes the RACF authorizations that COPY PLUS for DB2 requires.

Because COPY PLUS does not run as part of the DB2 subsystem, you must have authorization equivalent to that required by DB2 to use COPY PLUS.

When the COPY PLUS installation option OPNDB2ID is set to NO, and when the underlying data set of a table space is protected by Resource Access Control Facility (RACF) or a similar security system, you must have sufficient authority to access and modify the data set. For index spaces, you must have read access to the index data sets.

When the COPY PLUS installation option OPNDB2ID is set to YES, the DB2 RACF ID is used to allow DB2 data sets to be opened.

**Note**

For security systems other than RACF, the installation option OPNDB2ID must be set to NO.

If your DB2 is specified in the RACF started procedures table (ICHRIN03) as a privileged or trusted task and no user ID is associated with the DB2 address space, you cannot use OPNDB2ID to allow COPY PLUS to access the DB2 data sets. In this case, the user running COPY PLUS must have RACF authority to access the data sets needed for copying.

**Note**

If you are using SHRLEVEL CHANGE with data sharing, COPY PLUS will read the BSDS. Therefore, you will need READ authorization for the BSDS. COPY PLUS reads the group buffer pool check point records from the BSDSs for the group if it detects that the space being copied is group buffer pool dependent.

**Authorization verification mechanisms for Backup and Recovery products and Utility products**

Many BMC products for DB2 use the same mechanisms to verify authorization.

If the DB2 DSNX@XAC authorization exit is available for your system, the product uses this exit to verify authorization for external access. The exit is available from the following sources:

- IBM provides a sample exit with DB2 for the IBM Resource Access Control Facility (RACF) component.
- CA Technologies provides the DSNX@XAC exit with CA-ACF2 and CA-Top Secret.

BMC recommends this mechanism for implementing external security. The access control authorization exit must be available in the STEPLIB, JOBLIB, linklist, or in the SYS3.DSN exit.

If the DSNX@XAC exit is not available, the product uses the standard DB2 method to check security.

**Setting LOADPLUS authorizations**

LOADPLUS does not run as part of the DB2 subsystem. Therefore, users must have system and data set authorizations that are equivalent to the authorizations that DB2 requires. Use the following procedures to set the necessary authorizations.

**To set DB2 authorizations**

1. For all load jobs, grant the following authorizations:
   - Sufficient DB2 authority to execute the LOADPLUS plan and all packages that the LOADPLUS plan uses
   - Authorization equivalent to the authorization that the IBM DB2 LOAD utility requires

2. To enable loading tables that contain identity columns, also complete the following authorization steps.

   **Note**
   These additional authorizations might be implicit in the authorization that the users have.

   a. Grant SELECT privileges on the following DB2 tables:
      - SYSIBM.SYSSEQUENCES
      - SYSIBM.SYSSEQUENCESDEP

   b. To enable use of the UPDATEMAXA YES option to update the MAXASSIGNEDVAL column of the SYSIBM.SYSSEQUENCES table, complete the following steps:

      1. Determine which of the following authorization IDs should have ALTER privileges for the table that is being loaded:
         - User ID of the job owner
2 Ensure that the value for the UPDMAXA_AUTHID installation option reflects this determination.

3 Grant ALTER privileges on the table that is being loaded for the appropriate authorization ID.

3 To enable loading a table whose table space or index spaces are defined with DEFINE NO, also grant INSERT privileges on that table.

   **Note**
   INSERT privileges might be implicit in the authority that the users have.

4 To enable the use of the FORCE option to cancel DB2 threads that might prevent a successful drain during a load job, also grant the following authorizations:

   ■ DISPLAY privileges
   ■ one of the following authorities:
     — SYSADM
     — SYSOPR
     — SYSCTRL

   **Note**
   These authorizations might be implicit in the authority that the users have.

5 To enable running an SQLAPPLY load, also grant the following authorizations.

   **Note**
   When running an SQLAPPLY load, LOADPLUS passes processing during the COMBINED phase to the High-speed Apply Engine component of the BMC Log Master for DB2 product. High-speed Apply requires the following DB2 authorizations. The APTGRANT member of the High-speed Apply \( HLQ.LLQSAMP \) installation data set (where \( HLQ \) is the high-level qualifier that is set during installation and \( LLQ \) is the low-level qualifier or prefix set during installation) contains sample authorization statements.
   You can use secondary authorization IDs to limit access as necessary for your site.

   ■ (normally granted during High-speed Apply installation) EXECUTE privileges:
     — EXECUTE privilege for the plan that High-speed Apply uses to access its own restart table and the catalog
EXECUTE privilege for the High-speed Apply restart package

(normally granted after High-speed Apply installation) additional privileges:

— INSERT privileges on the table that a user is loading

— INSERT, UPDATE, SELECT, and DELETE privileges on the High-speed Apply restart table

— CREATE privileges for the collections that High-speed Apply creates

— Bind privileges with the add option (BINDADD) for the plans and packages that High-speed Apply creates during apply processing

The High-speed Apply Engine provides several ways to grant the CREATE and BINDADD privileges. Some techniques avoid granting bind privileges to the user ID that runs High-speed Apply. For more information, see the High-speed Apply Engine Reference Manual.

Note

The pre-bound plan option, described in the High-speed Apply Engine Reference Manual, is not compatible with LOADPLUS.

To enable data set access using the DB2 RACF ID

1 Specify OPNDB2ID=YES in your installation options.

   This option tells LOADPLUS to use the DB2 RACF ID for data set access.

To enable data set access when not using the DB2 RACF ID

1 Specify OPNDB2ID=NO in your installation options.

   This option tells LOADPLUS not to use the DB2 RACF ID for data set access.

2 If using RACF or a similar system security package to protect underlying data sets and the Integrated Catalog Facility (ICF) catalog of a table or index space, set a minimum of the levels of authorization shown in the following table for all load jobs.

Table 24: Minimum levels of authorization that LOADPLUS requires

<table>
<thead>
<tr>
<th>Table or index space definition</th>
<th>To access, update, and define DB2 data sets</th>
<th>To access and update the ICF catalog</th>
</tr>
</thead>
<tbody>
<tr>
<td>VCAT-defined</td>
<td>CONTROL</td>
<td>UPDATE</td>
</tr>
</tbody>
</table>
The following steps illustrate one method for granting these data set authorizations when your site uses a system security package other than RACF:

1. Associate users with a security group.

2. Grant EXECUTE privileges on the LOADPLUS product program (AMUUMAIN) to the security group.

3. Grant the data set authorizations to AMUUMAIN.

3. To enable checking referential constraints during the load, also grant READ privileges on the primary index of the parent table for the table being loaded.

4. To enable using rename or FASTSWITCH processing, if you establish authority at a node lower than the highest node, grant the same privileges as shown in Table 24 on page 217 for the following data sets:

- When FASTSWITCH NO is in effect:
  - $VCAT.BMCDBD.database.object.I0001$
  - $VCAT.BMCDBC.database.object.I0001$
  - $VCAT.OLDDBD.database.object.I0001$
  - $VCAT.OLDDBC.database.object.I0001$
  - $VCAT.BMCDBD.database.object.J0001$
  - $VCAT.BMCDBC.database.object.J0001$
  - $VCAT.OLDDBD.database.object.J0001$
  - $VCAT.OLDDBC.database.object.J0001$

- When FASTSWITCH YES is in effect:
  - $VCAT.BMCDBD.database.object.I0001$
  - $VCAT.BMCDBC.database.object.I0001$
  - $VCAT.BMCDBD.database.object.J0001$
  - $VCAT.BMCDBC.database.object.J0001$
XBM and SUF authorizations

XBM and SUF require certain user authorizations.

The XBM security interface allows maximum flexibility in controlling access to XBM functions. For more information, see “Granting user authorizations for XBM” on page 345.

Setting UNLOAD PLUS authorizations

UNLOAD PLUS does not run as part of the DB2 subsystem. Therefore, users must have system authorizations and, for DIRECT YES, data set authorizations that are equivalent to the authorizations that DB2 requires. Use the following procedures to set the necessary authorizations.

To set DB2 authorizations

1. For all load jobs, set the following authorizations:
   - Sufficient DB2 authority to execute the UNLOAD PLUS plan and all packages that the UNLOAD PLUS plan uses
   - Authorization equivalent to the authorization that the IBM DB2 UNLOAD utility requires

   **Note**
   UNLOAD PLUS enforces row- and column-level security only when DIRECT NO is in effect.

2. To enable the use of the FORCE option to cancel DB2 threads that might prevent a successful drain during an unload job, grant the following authorizations:
   - DISPLAY privileges
   - one of the following authorities:
     - SYSADMT
     - SYSOPRT
     - SYSCRTL
Note
These authorizations might be implicit in the authority that the users have.

To enable data set access using the DB2 RACF ID

1 Specify OPNDB2ID=YES in your installation options.
   This option tells UNLOAD PLUS to use the DB2 RACF ID for data set access.

To enable data set access when not using the DB2 RACF ID

When using DIRECT NO, UNLOAD PLUS uses DB2 to access data sets. In this case, users do not need the authorization described in this procedure.

1 Specify OPNDB2ID=NO in your installation options.
   This option tells UNLOAD PLUS not to use the DB2 RACF ID for data set access.

2 If using RACF or a similar system security package to protect underlying data sets and the Integrated Catalog Facility (ICF) catalog of a table or index space, grant READ privileges for the following sources:
   ■ DB2 VSAM data sets
   ■ DB2 image copy data sets
   ■ DSN1COPY data sets
   ■ Inline copy data sets
   ■ Instant Snapshot copy data sets
   ■ Online consistent copy data sets
   ■ Cabinet copy data sets
   ■ VSAM FlashCopy data sets
   ■ VSAM linear data sets
   ■ Encrypted copy data sets that are created by COPY PLUS
   ■ Key data sets for encrypted copies

The following steps illustrate one method for granting these data set authorizations when your site uses a system security package other than RACF:
1. Associate users with a security group.

2. Grant EXECUTE privileges on the UNLOAD PLUS product program (ADUUMAIN) to the security group.

3. Grant the data set authorizations to ADUUMAIN.

**RECOVER PLUS for DB2 user authorizations**

The RECOVER PLUS for DB2 product requires certain user authorizations.

**DB2 authorizations for RECOVER PLUS for DB2**

To use the RECOVER PLUS product, you must have the following DB2 authorizations:

- You must have EXECUTE authority on the RECOVER PLUS plan

  **Note**
  
  BMC recommends that you grant the EXECUTE privilege TO PUBLIC for the RECOVER PLUS main plan. This will allow all users to the RECOVER PLUS product.

- You must have one of the following authorizations:
  
  INSTALL SYSADM, SYSADM, or SYSCTRL authority
  DBADM or DBCTRL authority for the database containing the named spaces
  RECOVERDB, DISPLAYDB, STARTDB, and STOPDB authority for the databases containing the named table spaces and index spaces

- If you use RECOVER PLUS to make image copies (OUTCOPY option) from previous image copies, change accumulation files, and DB2 log records, you must have IMAGCOPY authority or an authority that implies IMAGCOPY.

  **Note**
  
  If the DB2 Access Control Authorization Exit is being invoked, DB2 authorizations must be granted using Resource Access Control Facility (RACF) or a similar system security package.

**APF authorizations for RECOVER PLUS for DB2**

RECOVER PLUS uses system services that require APF authorization.

All load modules loaded by these products must be authorized and must reside in APF-authorized libraries, as follows:

- system sort routine
- IDCAMS
- DSNUTILB
RACF authorizations for RECOVER PLUS for DB2

You must have the following RACF authorizations for RECOVER PLUS:

Note

These authorization requirements can also be fulfilled by using a system security package similar to RACF (for example, CA-ACF2 or CA-Top Secret from CA Technologies).

- If the underlying data sets of a table space or index space are protected, you must have CONTROL authority to access and to modify the data set.

Note

If you are using RACF and RECOVER PLUS was installed with option OPNDB2ID=YES, the CONTROL authority is not required to run RECOVER PLUS. However, if you are using any system security package other than RACF, CONTROL authority is still required, and the OPNDB2ID parameter is ignored.

If you are using RACF and RECOVER PLUS was installed with option OPNDB2ID=YES in a data sharing environment, you must ensure that the same RACF ID is shared by each DB2 subsystem in the data sharing group.

- If a table space or index space is STOGROUP-defined and the corresponding ICF catalog is protected, you must also have sufficient authority to access and update the MVS catalog.

- If the archive and active log data sets, the bootstrap data set (BSDS), and the DB2 directory are protected, users must have READ authority to access the data sets.

Interaction among the products

When you install the products or solutions, the Installation System can automatically enable the products or components to interact with other products or components.

If one of the following conditions exist, however, you must perform additional steps to enable the products to interact with each other:

- you installed the products at different times and you did not select to allow the products to interact with one another on the Install System Product to Product Interface Panel

- synonyms in the CATALOG MANAGER product do not point to the correct utility tables
Enabling interaction between ALTER or CHANGE MANAGER and BMC utilities

Perform this task if you installed ALTER or CHANGE MANAGER under either of the following circumstances:

- You installed ALTER or CHANGE MANAGER in a separate installation session before you installed the Utility products.
- You installed ALTER or CHANGE MANAGER either in the same installation session as the Utility products or in a separate installation session after you installed the Utility products, but you did not associate ALTER or CHANGE MANAGER with the Utility products on the Product to Product Interface panel.

To use a different utilities load library

If the Utility products are installed in a different load library than ALTER or CHANGE MANAGER, perform the following steps to use a different utilities load library:

1. In the HLQ.UDBCNTL library, find the member that has the same name as the ALTER or CHANGE MANAGER installation options module.

2. In the POFDS parameter of the member, note the name of the POF.

3. In the HLQ.UDBCNTL library, find the POF member.

4. In the POF member, update the following keywords to use the different utilities load library (such as the DBLINK library):
   - ADDLOAD1
   - ADDLOAD2
   - BMC_CHECK_LOAD
   - BMC_COPY_LOAD
   - BMC_LOAD_LOAD
   - BMC_RECOVER_LOAD
   - BMC_REORG_LOAD
   - BMC_UNLOAD_LOAD

5. If necessary, add any additional load libraries to SLIB member AJXSTEPSU.
6 If you added load libraries in Step 5 on page 66, compile the SLIB member.

For sample compile JCL, refer to member AJXCOMPS in the HLQ.DBCNTL data set.

**Note**

If you want to modify the JCL in member AJXCOMPS, copy the member from HLQ.DBCNTL to HLQ.UDBCNTL. Then, modify the JCL in HLQ.UDBCNTL(AJXCOMPS).

### Enabling interaction between CATALOG MANAGER and BMC utilities

CATALOG MANAGER can interact with the BMCUTIL, BMCHIST, and BMCSYNC tables to provide BMC utility control, status, and history information. Note that history information is not provided for the BMC RECOVER PLUS for DB2 product. CATALOG MANAGER accesses the utility tables during batch processing and when using online commands.

#### Before you begin

Determine whether you need to perform this task and, if so, which parts of this task you need to perform:

- Perform this task under either of the following circumstances:
  - You installed CATALOG MANAGER in a separate installation session before you installed the Utility products (for example, BMC UNLOAD PLUS or LOADPLUS).
  - You installed CATALOG MANAGER either in the same installation session as the Utility products or in a separate installation session after you installed the Utility products, but you did not associate CATALOG MANAGER with the Utility products on the Product to Product Interface panel.

- Determine whether your current synonyms point to the correct tables. CATALOG MANAGER uses the following synonyms:
  - BMC.Utility for the BMCUTIL table
  - REORG.HISTORY for the BMCHIST table
  - BMC_UTIL_SYNC and BMC_UTIL_SYNC2 for the BMCSYNC table

- If your current synonyms do not point to the correct tables, use the task “To update synonyms” on page 67.
If the Utility products are installed in a different load library than CATALOG MANAGER, use the task “To use a different load library” on page 68.

**To update synonyms**

The *HLQ.UDBCNTL* member T1S#ACTU provides an example of a worklist for this procedure.

1. Drop the CATALOG MANAGER utility synonyms.

2. Create new CATALOG MANAGER utility synonyms by using the same synonym names, but with the correct table names.

3. Bind the packages ACTCSQBU and ACTQLBH into the main collection ID for CATALOG MANAGER.

4. Bind the CATALOG MANAGER BMC Utility History Plan. Use the existing plan bind source to create this plan, and then change the name.

   BMC specifies this plan as ACT vrDH, where *vr* is the version and release.

5. In the *HLQ.UDBCNTL* library, edit the member that has the same name as the CATALOG MANAGER installation options module. Change the value of HPLAN to the plan that was created in Step 4 on page 67.

6. Submit this member to reassemble the installation options module.

**To use a different load library**

1. In the *HLQ.UDBCNTL* library, find the member that has the same name as the CATALOG MANAGER installation options module.

2. In the POFDS parameter of the member, note the name of the POF.

3. In the *HLQ.UDBCNTL* library, find the POF member.

4. Update the following keywords in the POF member to use the different utilities load library (such as the DBLINK library):

   - **ADDLOAD1**
   - **ADDLOAD2**
   - **BMC_CHECK_LOAD**
   - **BMC_COPY_LOAD**
If necessary, add any additional load libraries to SLIB member AJXSTEPU.

If you added load libraries in Step 5 on page 68, compile the SLIB member.

For sample compile JCL, refer to member AJXCOMPS in the HLQ.DBCNTL data set.

Note
If you want to modify the JCL in member AJXCOMPS, copy the member from HLQ.DBCNTL to HLQ.UDBCNTL. Then, modify the JCL in HLQ.UDBCNTL(AJXCOMPS).

More CATALOG MANAGER and CHANGE MANAGER configuration tasks

In addition to the configuration tasks for multiple products, you need to perform other configuration tasks.

Using catalog indirection with ALTER, CATALOG MANAGER, and CHANGE MANAGER

After you install and customize your products, you can implement catalog indirection for ALTER, CATALOG MANAGER, or CHANGE MANAGER.

Catalog indirection is an optional method of implementing and maintaining these products. To accomplish catalog indirection, the products use synonyms that point either to a copy of the DB2 catalog or to user-created views of the catalog.

Catalog indirection allows products to query the DB2 catalog indirectly. Catalog indirection applies only to catalog queries. Any action that changes information in the catalog must operate on the actual catalog, not on a view of the catalog or a copy of the catalog. For example, when you issue a command through CATALOG MANAGER to update the catalog, the action affects the actual catalog. The Execution
Monitor in ALTER and CHANGE MANAGER also executes a worklist against the actual catalog. In contrast, the Analysis component in ALTER and CHANGE MANAGER can use either the actual catalog or catalog indirection when creating worklists.

General points about catalog indirection are as follows:

- Catalog indirection requires DB2 Version 9 or later in new-function mode.
- The products are set up to access the DB2 catalog directly. After the installation, you can use the Installation System to implement and maintain catalog indirection.
- You should reuse the installation profile that you specified in the full installation path for catalog indirection.
- The synonyms that reference the DB2 catalog are hardcoded in the components. You direct the synonyms to the catalog, copy, or views during installation by providing information on the Installation System panels.
- You can use the same copy or view of the catalog for CATALOG MANAGER and CHANGE MANAGER, or you can implement catalog indirection through separate copies or views for each product.
- Catalog indirection can provide the following benefits:
  — Reduces contention for the DB2 catalog
  — Provides an additional level of security for sensitive data in the catalog

**Note**

Although you can implement a view of a copy of the catalog and simultaneously reap both benefits of catalog indirection, this approach is extremely complex to maintain and is not recommended.

To install catalog indirection, see the *Installation System User Guide*.

**Implement and maintain catalog indirection**

Successful implementation of catalog indirection requires an in-depth understanding of the DB2 environment and its catalog structure, and experience in maintaining DB2 applications.

Each method of implementing catalog indirection should be managed as if catalog indirection were a DB2 application. Test the products fully without catalog indirection before you implement catalog indirection.
Implement catalog indirection

You can install catalog indirection for one or more of the products on one DB2 subsystem at a time. When you implement catalog indirection, the products use the existing product libraries and support the use of your own VSAM data sets. Optionally, the products can create a copy of the DB2 catalog by using the CREATE LIKE DDL syntax and create views of the DB2 catalog.

Maintain catalog indirection

You can apply maintenance to catalog indirection on one or more products on one DB2 subsystem at a time. You should perform maintenance if you have an existing copy or view of the DB2 catalog and have performed a new installation of the products.

Specify the installation options module

When a product runs, it uses its own installation options module that was built during installation. The BMCDB2 CLIST allocates the installation options module when you start the product.

When accessing the DB2 catalog with catalog indirection, the BMCDB2 CLIST allocates an indirect installation options module. This indirect installation options module must have a different name than the direct installation options module that was previously built.

The installation options module, the plan and collection IDs, and the synonym qualifier are all crucial for the implementation of catalog indirection. The qualifier of the plan and the packages is used to resolve synonyms that point to either a view of the DB2 catalog or a copy of the DB2 catalog, depending on the method of implementation. You should understand their use and interaction before you implement catalog indirection.

The installation options module uses the convention prdDOPyz. Table 2 on page 71 describes the variables for the installation options module.

Table 25: Installation options module variables

<table>
<thead>
<tr>
<th>Variable</th>
<th>Represents</th>
</tr>
</thead>
<tbody>
<tr>
<td>prd</td>
<td>Product code</td>
</tr>
<tr>
<td>y</td>
<td>Access type (D=direct, I=indirect)</td>
</tr>
<tr>
<td>z</td>
<td>SSID indicator</td>
</tr>
</tbody>
</table>

Table 3 on page 71 shows examples of installation options modules.
Table 26: Examples of installation options modules

<table>
<thead>
<tr>
<th>Example</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACMDOPDT</td>
<td>ALTER direct access for a test DB2 subsystem</td>
</tr>
<tr>
<td>ACMDOPIT</td>
<td>ALTER indirect access for a test DB2 subsystem</td>
</tr>
</tbody>
</table>

Unlike ALTER and CHANGE MANAGER, CATALOG MANAGER is designed to use a single installation options module for both direct and indirect access. The BMCDB2 CLIST allocates the same installation options module and thus the same plan for direct access and indirect access. The plan that is accessed contains two distinct collection IDs that are used to access direct or indirect catalogs. To implement a single installation options module, the installation dialog panels must process the CATALOG MANAGER installation options module differently from the installation options module of ALTER and CHANGE MANAGER.

The processing differences for CATALOG MANAGER are as follows:

- During installation of catalog indirection, the installation dialog panel prompts you for the creator of the CATALOG MANAGER indirect synonyms, for the indirect collection ID, and for the name of the direct options module. All other installation options module information has been previously gathered.

- During the batch JCL assembly step, the installation options module assembly step disassembles the existing installation options module, applies the indirect synonym creator that you specified in the preceding step, and reassembles and links the installation options module using the same name. The step also resolves the indirect collection ID that is located in a subsequent BIND package step. Because the installation dialog panel does not prompt you for this information, it must obtain the information from the existing installation options module by disassembling it.

**Note**

Do not regenerate the catalog indirect JCL for CATALOG MANAGER and then resume installation at a step later than the step that assembles the installation options module; doing so would cause the BINDs for the packages to fail because the value of the indirect collection ID would be unresolved. You must run the installation options module assembly step to resolve this value.

**Specify synonym qualifiers during maintenance**

If you are applying maintenance to catalog indirection, you must specify the synonym qualifier that is currently the owner of the products’ synonyms. This qualifier must be the qualifier that you supplied when you originally installed catalog indirection for the products.

The Installation System sets the qualifier status to USED/REUSE automatically. Maintenance for catalog indirection does not create any new DB2 objects, but it does
re-create the existing synonyms. Because the Installation System sets the qualifier status to USED/REUSE automatically, the synonyms are dropped and then re-created.

The Installation System uses one of the following three- or four-character prefixes when creating the synonyms for ALTER and CHANGE MANAGER. Table 4 on page 72 describes the prefixes.

Table 27: Synonym prefixes

<table>
<thead>
<tr>
<th>Prefix</th>
<th>Use</th>
</tr>
</thead>
<tbody>
<tr>
<td>CAT</td>
<td>Used by the Specification component of ALTER and CHANGE MANAGER&lt;br&gt;The synonyms are also used by the JCL Generation component’s data set sizing function.</td>
</tr>
<tr>
<td>CAT2</td>
<td>Used by the Analysis component of ALTER and CHANGE MANAGER, and the CM/PILOT component of CHANGE MANAGER&lt;br&gt;<strong>WARNING:</strong> CAT2 synonyms should not be redirected if the copy of the catalog has not been refreshed to match the DB2 catalog.</td>
</tr>
<tr>
<td>CAT3</td>
<td>Used by the Import component of ALTER and CHANGE MANAGER, and the Baseline and Compare components of CHANGE MANAGER&lt;br&gt;<strong>WARNING:</strong> CAT3 synonyms should not be redirected.</td>
</tr>
</tbody>
</table>

**Note**
The Execution component always accesses the DB2 catalog directly and does not use synonyms.

**Use a copy of the catalog**

Maintaining a copy of the catalog uses additional DASD space. The amount of space that is required equals the size of your DB2 catalog and can vary greatly, depending on your DB2 system.

You need to update the copy of the catalog on a timely basis to keep it accurate. Running the copy job does not have a significant impact on catalog contention but does consume other system resources. How often you should run the job depends on the amount of catalog change activity in your DB2 system and the type of users who are restricted to accessing a copy. A high-activity data center might need to run the job several times a day.

In addition, the job that updates the catalog copy prevents users from accessing the current copy of the catalog while the job runs. This restriction might have a negative impact on the products if you must run the copy job during a high-activity period.
The SEARCH command in CATALOG MANAGER uses dynamic structured query language (SQL). To enable the SEARCH command to work on the copy of the catalog that catalog indirection uses, either run GRANT SELECT ON TABLE statements or bind with Dynamic Rules (BIND) on the main plan.

**Use a copy of the catalog to reduce catalog contention**

Contention for the DB2 catalog can be a problem for data centers that have high DB2 transaction rates. Because the products require frequent access to the DB2 catalog, they can contribute to catalog contention.

To improve performance by reducing catalog contention, you can perform the following actions:

- Tune the copy of the catalog.
- Add your own indexes to the copy of the catalog.
- Reorganize the tables or table spaces of the copy of the catalog.
- Direct the information queries from specific groups of users to a recent copy of the DB2 catalog. The components also perform better because they do not have to compete with other applications for DB2 catalog information.

For catalog indirection to be effective, you must ensure that the copy of the catalog reflects the status of the actual catalog. The degree of accuracy that is required depends on the types of users who are involved and the purpose of their information queries. The job that updates the catalog copy temporarily halts all information queries made through the copy.

**Use a view of the catalog**

To control access to sensitive information in your catalog tables, you must design a view or a set of views on your system catalog that achieves the control that you need.

To define the view that a particular catalog indirection access method uses, you must edit the CREATE VIEW statements in the BMCCVIEW member that the Installation System generated. You must also add to the BMCCVIEW member the DML search criteria that limits access to selected rows of the catalog.

You must manage the authorizations to the groups of users who are allowed to access the DB2 catalog through a view or views. When a user attempts to access catalog information that a view filters out, an SQL error occurs.
Use a view of the catalog to control catalog access

Data centers with highly sensitive information might need to restrict how users access specific tables in the DB2 catalog.

To restrict catalog access, you can implement catalog indirection through one or more user-created views that filter out specified columns within the DB2 catalog tables. You can allow specific user groups to use the components in a limited fashion without compromising the security of the data or data structures that are defined in the catalog tables.

For example, assume that a user uses the components to perform an activity that changes information in the DB2 catalog. The user then completes a task that performs an information query against the copy of the catalog. In this case, it might seem that the first activity did not succeed. However, if you implement catalog indirection only for users who are already restricted to information-only queries, this problem might not occur. For example, you could implement catalog indirection for those users who are not allowed to run the Execution Monitor.

Using the appropriate CLIST

If multiple versions of the products are installed and the version and release numbers of the products on one DB2 subsystem are later than the version and release numbers of the products on another DB2 subsystem, use the CLIST for the later version and release of the products.

To use the CLIST

1. Ensure that a current copy of the appropriate CLIST is in the same SYSPROC concatenated library as your other CLISTs.

For example, if you installed version 9.3 of CATALOG MANAGER on DB2 subsystem DBDA and you installed version 10.1 of CATALOG MANAGER on DB2 subsystem DBDB, and you want to use one CLIST, use the CLIST for version 10.1 of CATALOG MANAGER on DBDB.

The Installation System generates the CLISTs for the Administrative products that are listed in the following table.

Table 28: CLISTs for the Administrative products

<table>
<thead>
<tr>
<th>CLIST</th>
<th>Description</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACTPSS</td>
<td>defines the integration of CATALOG MANAGER and SQL Explorer for DB2</td>
<td>HLQ.UDBCLIB</td>
</tr>
<tr>
<td>CLIST</td>
<td>Description</td>
<td>Location</td>
</tr>
<tr>
<td>------------</td>
<td>-----------------------------------------------------------------------------</td>
<td>--------------</td>
</tr>
<tr>
<td>AEXADMF1</td>
<td>invokes Fast Path Navigation for the Administrative products</td>
<td>HLQ.UDBCLIB</td>
</tr>
<tr>
<td>AEXADMF2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ALUWLDDL</td>
<td>converts an ALTER or CHANGE MANAGER worklist to a DDL file</td>
<td>HLQ.DBCLIB</td>
</tr>
<tr>
<td>ALUXGRNT</td>
<td>creates an additional ALTER or CHANGE MANAGER worklist that contains -SETS and -SQL authorization commands only</td>
<td>HLQ.DBCLIB</td>
</tr>
<tr>
<td>BMCDB2</td>
<td>invokes the Administrative products</td>
<td>HLQ.UDBCLIB</td>
</tr>
<tr>
<td>BMCDRIVC</td>
<td>defines user libraries for the product driver panels</td>
<td>HLQ.UDBCLIB</td>
</tr>
<tr>
<td>CKSQNUM</td>
<td>enables you to verify SQL worklists sequencing for ALTER and CHANGE MANAGER</td>
<td>HLQ.UDBCLIB</td>
</tr>
<tr>
<td></td>
<td>To use the CKSQNUM CLIST, copy it from your installation library to a CLIST library from which you can run it.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>The CKSQNUM CLIST is used outside the Installation System.</td>
<td></td>
</tr>
<tr>
<td>FIXSQNUM</td>
<td>enables you to verify and fix SQL worklists sequencing for ALTER and CHANGE MANAGER</td>
<td>HLQ.UDBCLIB</td>
</tr>
<tr>
<td></td>
<td>To use the FIXSQNUM CLIST, copy it from your installation library to a CLIST library from which you can run it.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>The FIXSQNUM CLIST is used outside the Installation System.</td>
<td></td>
</tr>
<tr>
<td>POFRESET</td>
<td>for the Administrative products, enables you to reset all of the ISPF variables in the ISPF profile with the variables in the initial or user POF</td>
<td>HLQ.DBCLIB</td>
</tr>
<tr>
<td></td>
<td>The POFRESET CLIST is used outside the Installation System.</td>
<td></td>
</tr>
<tr>
<td>READREPO</td>
<td>enables you to review installation profiles</td>
<td>HLQ.INSTALL</td>
</tr>
<tr>
<td></td>
<td>To use the READREPO CLIST, copy it from your custom installation library to a CLIST library from which you can run it.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>The READREPO CLIST is used outside the Installation System.</td>
<td></td>
</tr>
<tr>
<td>RSTRIG</td>
<td>calls the DASD MANAGER PLUS BMCTRIG Restart program</td>
<td>HLQ.UDBCLIB</td>
</tr>
</tbody>
</table>
### Enabling the implicit execution of CLISTS

This procedure describes the steps that you must perform to enable the implicit execution of the CLISTS that are generated for ALTER, CATALOG MANAGER, CHANGE MANAGER, and DASD MANAGER PLUS.

**To enable the implicit execution**

1. Enable the BMCDRIVC CLIST.

   Copy the CLIST from the `HLQ.JCL` library or the `HLQ.UDBCLIB` library to a library in your SYSPROC concatenation.

2. *(ALTER or CHANGE MANAGER)* Perform one of the following tasks to enable the ALTER or CHANGE MANAGER CLISTS (`ALUXGRNT`, `ALUWLDDL`, `FIXSQSUM`, and `CHKSQNUM`) to be implicitly invoked from within a worklist:

   - Add the `HLQ.DBCLIB` (`ALUXGRNT` or `ALUWLDDL`) library or the `HLQ.UDBCLIB` (`FIXSQSUM` or `CHKSQNUM`) library to your SYSPROC concatenation.

   - Copy the CLISTS from the `HLQ.DBCLIB` (`ALUXGRNT` or `ALUWLDDL`) library or the `HLQ.UDBCLIB` (`FIXSQSUM` or `CHKSQNUM`) library to a library in your SYSPROC concatenation.

3. *(DASD MANAGER PLUS)* Perform one of the following tasks to enable the RSTRIG CLIST for DASD MANAGER PLUS to be implicitly invoked from within JCL:

   - Add the `HLQ.UDBCLIB` library to your SYSPROC concatenation.

   - Copy the CLISTS from the `HLQ.UDBCLIB` library to a library in your SYSPROC concatenation.

---

<table>
<thead>
<tr>
<th>CLIST</th>
<th>Description</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>SHOWINFO</td>
<td>enables you to view the names of the profile data sets and JCL libraries</td>
<td><code>HLQ.INSTALL</code></td>
</tr>
<tr>
<td></td>
<td>If you are using OZI Customization to customize products to execute from runtime data sets, the SHOWINFO command also provides information such as the row ID of the RTE or TDS instance, the sysplex name, and the system name.</td>
<td></td>
</tr>
<tr>
<td>WHATSNEW</td>
<td>enables you to review newly supported features for the current version of the Installation System</td>
<td><code>HLQ.INSTALL</code></td>
</tr>
</tbody>
</table>
Working with the BMCDB2 CLIST

For the ALTER, CATALOG MANAGER, CHANGE MANAGER, and DASD MANAGER PLUS products, the Installation System generates an ISPF interface based on the options and components that you specify during installation. Products or components that are installed with different high-level qualifiers (for example, installed individually and residing in different libraries) can be accessed from the interface.

The interface consists of a CLIST (BMCDB2) and panels (BMCDB2PR, BMCDB2P2, BMCDB2TB, and BMCDB2H). You can use this combination without making changes to your TSO logon procedure. BMC recommends that new users use the supplied ISPF interface. The products or components require you to execute the CLIST from one of the ISPF dialog panels in your system.

The BMCDB2 CLIST uses the ISPF LIBDEF command to allocate all of the BMC product libraries. The Installation System customizes BMCDB2 and BMCDB2PR to include the data set names that you used when you installed the products or components. The Installation System specifies up to two DB2 load libraries and specifies the installation options module name for each product to support the DB2 subsystem where the component is installed.

If you install the products or components individually using the same target data sets, the BMCDB2 CLIST and BMCDB2PR panels are generated using the options only for the last product or component that was installed. Therefore, you might not be able to access the previously installed product or component unless you edit the BMCDB2 CLIST.

Setting the variables in the BMCDB2 CLIST

The BMCDB2 CLIST invokes the Administrative products.

You can edit several variables in the BMCDB2 CLIST to specify libraries and to use a generated permanent ISPF table. This procedure describes how to modify the variables.

**Note**

To turn off the PF key display, issue the PFSHOW OFF command.

When you edit variables in the BMCDB2 CLIST to specify libraries, do not change the qualifier of the product data sets. Each of the data sets uses a designated qualifier that varies, depending on whether you use runtime, SMP/E, or user libraries.

To set the variables in the CLIST

1. To invoke the BMCDB2 CLIST implicitly, copy the CLIST from the \*HLQ\*JCL library or the \*HLQ\*UDBCLLIB library to a library in your SYSPROC concatenation.
2 Edit the BMCDB2 CLIST.

3 If you copied the BMCDB2 CLIST from the HLQ.JCL library or the HLQ.UDBCLIB library to a library in your SYSPROC concatenation, modify the BMCDB2C variable in the BMCDB2 CLIST. Set this variable to the library in which the BMCDB2 CLIST was copied.

4 If you copied the BMCDB2PR, BMCDB2P2, BMCDB2TB, and BMCDB2H panels from the HLQ.JCL library or the HLQ.UDBPLIB library to another library, modify the BMCDB2P variable in the BMCDB2 CLIST. Set this variable to the library in which the panels were copied.

5 To improve the performance of the invocation of the products from a large control table in the BMCDB2 CLIST, set the GENTABLE variable in the BMCDB2 CLIST to Y, as shown in the following table.

```
SET BMCDB2T = &STR(BMC.DB2ADMN.D91.UDBTLIB)  /* Control TABLE DATASET        */
... SET GENTABLE = Y    /* USE GENERATED PERMANENT TABLE (Y/N)                   */
   /* FOR Control TABLE                                         */
```

To place a control table in a permanent ISPF table in the HLQ.UDBTLIB data set, invoke the BMCDB2 CLIST (see “Invoking the BMCDB2 CLIST” on page 78).

6 To not use the TSO ALTLIB command to dynamically add libraries to the SYSPROC concatenation, set the ALTCLIST variable to N.

7 Press END to exit.

**Invoking the BMCDB2 CLIST**

This procedure describes the steps to invoke the BMCDB2 CLIST.

**To invoke the BMCDB2 CLIST**

1 Invoke the BMCDB2 CLIST by using one of the following commands:

- Invoke BMCDB2 explicitly from your CLIST data set in the ISPF command shell or your ISPF dialog with the following command:

  ```
  ex 'HLQ.UDBCLIB(BMCDB2)' 
  ```

- If the BMCDB2 CLIST is copied to a library in your SYSPROC concatenation, invoke BMCDB2 implicitly with the following command:

  ```
  %BMCDB2
  ```

To specify various parameters with the BMCDB2 command, see “BMCDB2 command” on page 79.
2 On the BMC Administrative Products for DB2 (BMCDB2PR) panel, if the BMCDB2 CLIST supports multiple SSIDs, type ? for the **DB2 SSID**.

a On the BMCDB2 Subsystem Selection List (BMCDB2P2) panel, type S to select an SSID from the list of available SSIDs.

The SSID that you selected is displayed in the DB2 SSID field on the BMC Administrative Products for DB2 (BMCDB2PR) panel.

b Press **Enter**.

3 If one of the following conditions exist, on the BMC Administrative Products for DB2 (BMCDB2PR) panel, type **GENERATE** on the **COMMAND** line:

- you edited your BMCDB2 CLIST to use a generated permanent ISPF table for the control table by setting the GENTABLE variable to Y
- you modified the control table that was previously generated
- you want to specify the OPENTBL parameter in the BMCDB2 command

Issuing the GENERATE command places a control table in a permanent ISPF table in the *HLQ.UDBTLIB* data set, which improves the performance of the invocation of the products from a large control table referenced by the BMCDB2 CLIST. Refer to the **BMCDB2T** variable in the BMCDB2 CLIST for the location of the generated ISPF table.

4 Verify that all of the products appear on the BMCDB2PR panel that is displayed.

**BMCDB2 command**

This topic describes the parameters that you can specify with the BMCDB2 command.

You can specify various parameters with the BMCDB2 command to perform the following functions:

- Avoid the use of the ISPF LIBDEF facility to allocate the necessary ISPF data sets
- Use the ISPF LIBDEF facility to allocate all of the ISPF data sets, except the load data set
- Invoke the BMCDB2 CLIST implicitly
- Invoke a product implicitly
Invoke ALTER, CATALOG MANAGER, CHANGE MANAGER, or DASD MANAGER PLUS directly, without displaying the BMC Administrative Products for DB2 (BMCDB2PR) panel (improves performance)

**BMCDB2 command syntax**

The syntax of the BMCDB2 command is shown in the following figure.

**Figure 45: BMCDB2 command**

The parameters specify the following information:

- **LIBDEF**—determines whether the BMCDB2 CLIST should use the ISPF LIBDEF facility to allocate all necessary ISPF data sets (YES or NO)

  **Note**

  By default the BMCDB2 CLIST uses the ISPF LIBDEF facility to allocate all necessary ISPF data sets. Thus, you might not need to modify your TSO logon procedure to allocate data sets. If ISPF 4.2 or later is available, the STACK keyword is added to all LIBDEF statements that are used in the BMCDB2 CLIST.

- **LOADLDEF**—when LIBDEF is YES, indicates whether the ISPF LIBDEF facility should be used to allocate the ISPLLIB (load) data set (YES or NO)

  Use the LOADLDEF parameter if you have copied the load library for a product in your subsystem LINKLIST data sets or if you have previously added the load library to your STEPLIB concatenation.

- **CLSTEXEC**—indicates whether the BMCDB2 CLIST should be invoked explicitly (EXPLICIT) or implicitly (IMPLICIT)

  — If the CLIST is invoked explicitly, you must use a fully-qualified data set name and member name.

  — If the CLIST is invoked implicitly, you can use only the member name. In addition, the CLIST must reside in a library in your SYSPROC concatenation.
**Note**

In previous releases, the CLSTEXEC parameter controlled the invocation both the BMCDB2 CLIST and ALTER, CATALOG MANAGER, CHANGE MANAGER, or DASD MANAGER PLUS. The parameter now controls only the invocation of the BMCDB2 CLIST. To control the invocation of the products, use the LOADEXEC parameter.

- **LOADEXEC** - indicates whether the BMC products should be invoked explicitly (EXPLICIT) or implicitly (IMPLICIT)

The syntax of the BMCDB2 command display options is shown in the following figure.

**Figure 46: BMCDB2 command--display options**

```plaintext
displayOptions
  PGM(program) — PROD(prd) — CFUNC(ALLOC) — SSID(ssid) — OPENTBL(YES)
  BASED(baseID) [SHRAPPLE(S)] [ACCESS(DIRECT INDIRECT)]
```

The display option parameters specify the following information:

- **PGM**—specifies the name of the *program*, as listed in the following table

<table>
<thead>
<tr>
<th>Product</th>
<th>program</th>
</tr>
</thead>
<tbody>
<tr>
<td>ALTER</td>
<td>ALUFRONT</td>
</tr>
<tr>
<td>CATALOG MANAGER</td>
<td>ACTEMAIN</td>
</tr>
<tr>
<td>CHANGE MANAGER</td>
<td>ACMFRONT</td>
</tr>
<tr>
<td>DASD MANAGER PLUS</td>
<td>ASUFMAIN</td>
</tr>
</tbody>
</table>

- **PROD**—specifies the three-character product code (*prd*)

- **CFUNC**—specifies the CLIST function to perform (ALLOC)

- **SSID**—names the DB2 subsystem that is used to invoke the product (*ssid*)

**Note**

The SSID must be a valid DB2 subsystem that is defined in the control table.

- **OPENTBL**—specifies to issue an OPEN command against the control table (YES or NO)
Note
Before you can invoke a BMCDB2 command that specifies the OPENTBL(YES) option, you must first issue the GENERATE command from the BMC Administrative Products for DB2 (BMCDB2PR) panel.

- BASEID—no longer used
- SHRAPPL—indicates whether the products on a single SSID should use a shared ISPF profile (S) or use an individual profile (I)
- ACCESS—specifies to access the DB2 catalog directly (DIRECT) or to use an indirect copy of the catalog (INDIRECT)

Examples

The following examples show how you can use the various parameters with the BMCDB2 command.

To avoid the use of the ISPF LIBDEF facility

To avoid the use of the ISPF LIBDEF facility to allocate the necessary ISPF data sets, use the following command:

```
%BMCDB2 LIBDEF(NO)
```

To use the ISPF LIBDEF facility for all data sets, except the load data set

To use the ISPF LIBDEF facility to allocate all of the necessary ISPF data sets, except for the load data set, use the following command:

```
%BMCDB2 LIBDEF(YES) LOADEXEC(NO)
```

To invoke the CLIST implicitly

To invoke the CLIST implicitly, use the following command:

```
%BMCDB2 CLSTEXEC(IMPLICIT)
```

To invoke ALTER, CATALOG MANAGER, CHANGE MANAGER, or DASD MANAGER PLUS implicitly

To invoke a product implicitly, use the following command:

```
%BMCDB2 LOADEXEC(IMPLICIT)
```
To invoke ALTER, CATALOG MANAGER, CHANGE MANAGER, or DASD MANAGER PLUS directly

To invoke a product directly, you use the display options of the BMCDB2 command. When you use these options, the BMC Administrative Products for DB2 (BMCDB2PR) panel is not displayed. For example, to invoke CATALOG MANAGER directly, use the following commands:

```
%BMCDB2 GENERATE (from the BMC Administrative Products for DB2 [BMCDB2PR] panel)
ex 'HLQ.UDBCLIB(BMCDB2)' 'PGM(ACTEMAIN) PROD(ACT) SSID(DEBA) CFUNC(ALLOC) OPENTBL(YES)'
```

Creating indexes to improve performance

To improve performance, BMC recommends that you create indexes on the DB2 catalog tables and on copies of the catalog tables (if you are using catalog indirection).

**Note**

BMC strongly recommends that you take the following actions:

- If you are running the products on a DB2 Version 9 or 10 subsystem in new-function mode, create the DB2 Version 9 or 10 indexes on the DB2 catalog.

- If you are running the products on a DB2 Version 10 subsystem in conversion mode or enabling-new-function mode, create the DB2 Version 9 indexes on the DB2 catalog.

To create indexes on the DB2 catalog tables

1. Follow the instructions in the appropriate member in the HLQ.UDBCNTL data set to create the indexes:

   - *(DB2 Version 10)* BMIDB2XA
   - *(DB2 Version 9)* BMIDB2X9

To create indexes on copies of the DB2 catalog tables

1. For DB2 Versions 8 and later, it is not necessary to create indexes when you are implementing catalog indirection. The indexes already exist.
Shared components

The ALTER, CATALOG MANAGER, CHANGE MANAGER, and DASD MANAGER PLUS products share several components.

The following components are shared:

- JCL Generation, which controls the JCL generation process
- Execution Monitor, which controls worklist processing by reading and performing worklist commands
- Common SQL, which provides access to the DB2 catalog

When you unload ALTER, CATALOG MANAGER, CHANGE MANAGER, or DASD MANAGER PLUS (or any solution that includes one or more of these products), these components are also unloaded. The Installation System copies these components to an APF-authorized load library that any of the products can share. If you install the products at different times or if you are applying maintenance and any of the products share the same APF-authorized load library, you must bind each product to the new level of the shared components.

**Note**

If you do not properly bind all of the products that share the common components, any attempts to generate JCL or to execute worklists can cause SQLCODES -805 and -818. The product that has not been bound or upgraded will not run.

You do not have to bind a product separately to the shared components if the following conditions exist:

- You are using the same APF-authorized load library, and you are upgrading all products that use the shared components at the same time. The binds take place during the upgrade.
- You are using separate APF-authorized load libraries for your products.
Note
A problem occurs if all of the following conditions exist:

- You install one of the products or a solution that has one of the products as a component, and the product or solution uses the current version of the JCL Generation and Execution components.

- You install another product or solution that uses an earlier version of the JCL Generation and Execution components.

In this case, the products or solutions cannot use the same APF-authorized load library. To prevent the problem from occurring, choose a different load library when installing the additional product or solution.

## Binding a product to shared components

This procedure describes how to bind ALTER, CATALOG MANAGER, CHANGE MANAGER, or DASD MANAGER PLUS to the shared components.

### To bind the products

1. Edit the BIND packages and plans for the product, which are in the $HLQ.UDBCNTL$ data set.

   The following table lists the member names for the jobs. The variable $prd$ is the product or component code, and $ssid$ is the DB2 subsystem ID.

<table>
<thead>
<tr>
<th>Member name</th>
<th>Job</th>
</tr>
</thead>
<tbody>
<tr>
<td>$prdssidP$</td>
<td>package BIND jobs for direct access</td>
</tr>
<tr>
<td>$prdssidB$</td>
<td>plan BIND jobs (including CATALOG MANAGER plan BIND jobs for indirection)</td>
</tr>
<tr>
<td>$prdssidZ$</td>
<td>package and plan BIND jobs for indirection (except CATALOG MANAGER plan BIND jobs)</td>
</tr>
</tbody>
</table>

2. Concatenate the new $HLQ.DBDBRM$ library ahead of the old $HLQ.DBDBRM$ library in the DBRMLIB DD statement in these members.

3. Submit the BIND jobs.

4. Repeat for each product and for the ACS component, if applicable.
Generating environment-specific JCL

The JCL Generation component generates the JCL that is needed to execute all of the batch functions that use ISPF file tailoring.

You might need to change members of the BMC product skeleton library (SLIB) to generate environment-specific JCL. This procedure describes the steps you must perform to edit, test, and compile the SLIB.

To edit and compile SLIBs

1. Edit the appropriate SLIB members in HLQ.UDBSLIB to change the way the JCL is generated.

   **Note**
   Any customizations that you have made to the SLIB members for an earlier release are not included in your current installation.

   a. *(optional)* Edit the AJX#USRV member and change the EXEC REGION parameter.

      The EXEC REGION parameter is set by default to REGION=0M in the AJX#USRV member that resides in the SLIB. If you do not change the IBM-supplied default limits in the IEALIMIT or IEFUSI exit routine modules, this parameter requests that the job step get all of the available storage above and below the 16 MB line.

   b. Edit the AJX#DSNS member to generate JCL for GDGs.

2. Use JCL Generation to test the changes to the SLIB.

For more information about testing the SLIB members, refer to the following BMC books:

- *ALTER and CHANGE MANAGER for DB2 User Guide Volume 2*
- *CATALOG MANAGER for DB2 User Guide*
- *DASD MANAGER PLUS for DB2 User Guide*

3. Compile the SLIB members that you edited.

For a sample compile JCL, refer to member AJXCOMPS in the HLQ.DBCNTL data set. For more information about compiling the SLIB members, see the following BMC books:

- *ALTER and CHANGE MANAGER for DB2 User Guide Volume 2*
Specifying generation data groups

You can specify generation data groups (GDGs) by adding a symbolic variable to the local and recovery primary and backup copy keywords. As a result, the data set names are resolved using the symbolic variables, and include the GDG.

To specify a GDG

1. In the HLQ.UDBCNTL library, find the member that has the same name as the product installation options module.

2. In the POFDS parameter of the member, note the name of the POF.

3. In the HLQ.UDBCNTL library, find the POF member.

4. Add the symbolic (&GDG) to the end of the following keywords in the POF member:
   - PCPY1_PREFIX
   - PCPY2_PREFIX
   - RCPY1_PREFIX
   - RCPY2_PREFIX

   For example, set
   ```
   PCPY1='&PREFIX..&OBNOD..P&PART(&GDG)'
   ```

BMCDB2PR panel

The BMCDB2PR panel is part of the BMC-supplied ISPF interface that the Installation System generates.
This panel includes a product selection list from which you can select a product. It also includes a DB2 catalog access field, in which you can specify whether to use the DB2 catalog data directly or to use a copy or a view of the DB2 catalog (if applicable to the product or component).

You might need to add additional products to the selection list or modify the catalog access field after you install and customize ALTER, CATALOG MANAGER, CHANGE MANAGER, or DASD MANAGER PLUS.

Adding products to the BMCDB2PR panel

The Installation System enables you to add products to the BMCDB2PR panel.

Before you begin

Determine the following information:

- location of the BMCDB2PR panel
- location of the product’s CLIST
- the three-character code for the product

The following table lists the BMC products that you can add to the BMCDB2PR panel.

<table>
<thead>
<tr>
<th>Product</th>
<th>Product code</th>
</tr>
</thead>
<tbody>
<tr>
<td>APPTUNE for DB2</td>
<td>ASQ</td>
</tr>
<tr>
<td>CHANGE ACCUMULATION PLUS</td>
<td>CAP</td>
</tr>
<tr>
<td>COPY PLUS for DB2</td>
<td>ACP</td>
</tr>
<tr>
<td>EXTENDED BUFFER MANAGER for DB2</td>
<td>XBM</td>
</tr>
<tr>
<td>Log Master for DB2</td>
<td>ALP</td>
</tr>
<tr>
<td>OPERTUNE for DB2</td>
<td>DDT</td>
</tr>
<tr>
<td>PACLOG for DB2</td>
<td>ALM</td>
</tr>
<tr>
<td>RECOVERY MANAGER for DB2</td>
<td>ARM</td>
</tr>
</tbody>
</table>

- additional parameters, such as the SSID
To add the products

The UPDTBMC CLIST and the UPDTDB2 macro can be found in a customized installation library that the user creates while installing products from multiple tapes, or in the base installation library from a single product tape.

1. Copy the UPDTBMC CLIST from the HLQ.INSTALL library to a library in your SYSPROC concatenation.

2. Copy the UPDTDB2 macro from the HLQ.INSTALL library to a library in your SYSPROC concatenation.

3. To execute the CLIST, type TSO UPDTBMC on the COMMAND line.

4. In the Location of BMCDB2PR Panel? field, type the name of the library in which the panel resides.

5. In the Location of CLIST for Product Being Added? field, type the name of the library in which the CLIST resides.

6. In the Product Code for Product Being Added? field, type the three-character product code.

Modifying and validating the DB2 catalog access option on the BMCDB2PR panel

The BMCDB2PR panel might need slight customization before you run ALTER, CATALOG MANAGER, or CHANGE MANAGER with catalog indirection.

To modify and validate the option

1. Edit the BMCDB2PR panel in HLQ.UDBPLIB.

2. Add ,Indirect, as follows:

   ```
   +  DB2 Catalog Access . . . . . . . . . .Z  +(Direct,Indirect)
   ```

3. To validate the Indirect option, make the following changes:

   ```
   ver (&catopt,nb,list,'DIRECT','INDIRECT',D,I) -- Uncomment this line
   /****************************************/
   /*ver ($catopt,nb,list,'DIRECT',D) */         -- Comment out this line
   ```

4. Press END to exit.
Control table

By modifying the control table, you can add a product, specify the location of libraries, enable access to data sharing members, specify different libraries for SSIDs, and specify shared installation options.

**Note**
The data in the control table, which begins with the identifier *DATA, is placed in specific positions, and every data row must have an asterisk in column 73. Comment lines contain an asterisk (*) in column 1. The data in the control table is column specific.

Modifying the control table

This task describes how to modify the control table.

**To modify the control table**

1. Edit the control table in the HLQ.CONTAB data set.
2. Press END to exit.
3. If either of the following conditions exists, type GENERATE on the COMMAND line of the BMCDB2PR panel:
   - you edited your BMCDB2 CLIST to use a generated permanent ISPF table for the control table (specified GENTABLE=Y in the BMCDB2 CLIST)
   - you modified the control table that was previously generated

   This action rebuilds the ISPF control table in the HLQ.UDBTLIB data set.

Adding a product to the control table

This topic describes how to add a product to the control table.

**To add a product to the control table**

1. Edit the control table in the HLQ.CONTAB data set.
2. Add a line in the *PROD section for the product by using one of the following procedures:
If one product was installed into the same set of libraries as another product, add a line in the *PROD section for the product. The example in Figure 3 on page 91 shows the line that adds the CATALOG MANAGER product to the table. \( vr \) represents the version and release of the product.

**Figure 47: Adding CATALOG MANAGER to the control table**

```
*DATA
*PROD SSID D/I DOPT PLAN APPL COLL_ID NICKNAME
*----|----|-|--------|--------|----|------------------|------------------------
ACT  DBAP D ACTDOP01 ACT\(vr\)DG ACTA *
```

If one product was installed into a different set of libraries than another product, add a line in the *PROD section that specifies the high-level qualifier (HLQ) of the product libraries. In the example in Figure 4 on page 91, the line indicates the location of the CATALOG MANAGER libraries, which were installed into a different set of runtime libraries than DASD MANAGER PLUS.

**Figure 48: Specifying the location of CATALOG MANAGER libraries (runtime environment)**

```
*DATA
*PROD SSID D/I DOPT PLAN APPL COLL_ID NICKNAME
*----|----|-|--------|--------|----|------------------|------------------------
ACT  DBAP H HLQ_for_ACT *
```

In the example in Figure 5 on page 91, the lines indicate the location of the CATALOG MANAGER SMP/E libraries.

**Figure 49: Specifying the location of CATALOG MANAGER libraries (SMP/E environment)**

```
*DATA
*PROD SSID D/I DOPT PLAN APPL COLL_ID NICKNAME
*----|----|-|--------|--------|----|------------------|------------------------
ACT  DBAP T HLQ_for_DB *
ACT  DBAP B HLQ_for_BB *
ACT  DBAP X HLQ_for_XX *
ACT  DBAP P HLQ_for_password *
```

If the APF load library uses a different HLQ from other product libraries and is different from the variable APFLIB value in the control table, specify the line shown in Figure 6 on page 92 in the *PROD section.

---

**Note**

You cannot add an APF-authorized library to SMP/E libraries; you must be using runtime libraries to add an APF-authorized library.

**Figure 50: Specifying the location of the APF load library (runtime environment)**

```
*DATA
*PROD SSID D/I DOPT PLAN APPL COLL_ID NICKNAME
*----|----|-|--------|--------|----|------------------|------------------------
ACT  DBAP A ADDTNL.APF.LOAD *
```

More CATALOG MANAGER and CHANGE MANAGER configuration tasks
3 Press END to exit.

Enabling access to data sharing members in the control table

If you installed the DB2 products in a data sharing (sysplex) environment, you can enable access to all of the data sharing members or to the group attach name.

To enable access

1 Edit the control table in the HLQ.CONTAB data set.

2 Duplicate the table rows of the existing DB2 subsystem name for each member or group attach name.

3 Substitute the member or group attach name for the SSID column.

The example in Figure 7 on page 92 uses the group attach name GRP1. The VCAT control table variable is used by ALTER, CATALOG MANAGER, CHANGE MANAGER, and DASD MANAGER PLUS to indicate the VSAM catalog alias that contains the data sets for the DB2 catalog (DBDBCAT).

Figure 51: Enabling access to additional members

<table>
<thead>
<tr>
<th>DATA</th>
<th>PROD</th>
<th>SSID</th>
<th>D/I</th>
<th>DOPT</th>
<th>PLAN</th>
<th>APPL</th>
<th>COLL_ID</th>
<th>NICKNAME</th>
</tr>
</thead>
<tbody>
<tr>
<td>*</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ASU</td>
<td>DBDB</td>
<td>D</td>
<td>ASUDOPD1</td>
<td>ASUvrDC</td>
<td>ASU7</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ACT</td>
<td>DBDB</td>
<td>D</td>
<td>ACTDOPD1</td>
<td>ACTvrDM</td>
<td>ACT8</td>
<td>ACTvr_D_MAIN</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ACM</td>
<td>DBDB</td>
<td>D</td>
<td>ACMDOPD1</td>
<td>ACMvrDF</td>
<td>ACM8</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>EXIT</td>
<td>DBDB</td>
<td>'SYS3.DDBB.DSNEXIT'</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LOAD</td>
<td>DBDB</td>
<td>'SYS2.DB2V10M.DSNLOAD'</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>HLQ</td>
<td>DBDB</td>
<td>BMCADMN.Vvrmd10</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>VCAT</td>
<td>DBDB</td>
<td>DBDBCAT</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DDF</td>
<td>DBDB</td>
<td>DBDB</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ASU</td>
<td>GRP1</td>
<td>D</td>
<td>ASUDOPD1</td>
<td>ASUvrDC</td>
<td>ASUG</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ACT</td>
<td>GRP1</td>
<td>D</td>
<td>ACTDOPD1</td>
<td>ACTvrDM</td>
<td>ACTG</td>
<td>ACTvr_D_MAIN</td>
<td>GRP1</td>
<td></td>
</tr>
<tr>
<td>ACM</td>
<td>GRP1</td>
<td>D</td>
<td>ACMDOPD1</td>
<td>ACMvrDF</td>
<td>ACMG</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>EXIT</td>
<td>GRP1</td>
<td>'SYS3.DDBB.DSNEXIT'</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LOAD</td>
<td>GRP1</td>
<td>'SYS2.DB2V10M.DSNLOAD'</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>HLQ</td>
<td>GRP1</td>
<td>BMCADMN.Vvrmd10</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>VCAT</td>
<td>GRP1</td>
<td>DBDBCAT</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DDF</td>
<td>GRP1</td>
<td>DBDB</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

4 Press END to exit.

Specifying separate libraries in the control table

This topic describes how to specify separate libraries in the control table.
To specify separate libraries

1. Edit the control table in the \textit{HLQ\_CONTAB} data set.

2. If your installation has more than one version of DB2, use separate libraries for each version. Refer to the following scenarios as examples for editing the control table:

- **Scenario 1**: CATALOG MANAGER is installed on SSID DB91. The product libraries have an HLQ of BMC.DB91\*. Add the table shown in Figure 8 on page 93 to the control table.

  Figure 52: Adding CATALOG MANAGER to subsystem DB91

<table>
<thead>
<tr>
<th>*DATA</th>
<th>*PROD</th>
<th>SSID</th>
<th>D/I</th>
<th>DOPT</th>
<th>PLAN</th>
<th>APPL</th>
<th>COLL_ID</th>
<th>NICKNAME</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACT</td>
<td>DB91</td>
<td>D</td>
<td>ACTDOPD1</td>
<td>ACT</td>
<td>vr</td>
<td>DG</td>
<td>ACTA</td>
<td></td>
</tr>
<tr>
<td>*LIB</td>
<td>SSID</td>
<td>Data Set Name</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>EXIT</td>
<td>DB91</td>
<td>'SYS3.DB91.DSNEXIT'</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LOAD</td>
<td>DB91</td>
<td>'SYS2.DB2V91M.DSNLOAD'</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- **Scenario 2**: CATALOG MANAGER is installed on SSID DB10. The product libraries have an HLQ of BMC.DB10\*. Add the table shown in Figure 9 on page 93 to the control table.

  Figure 53: Adding CATALOG MANAGER to subsystem DB10

<table>
<thead>
<tr>
<th>*DATA</th>
<th>*PROD</th>
<th>SSID</th>
<th>D/I</th>
<th>DOPT</th>
<th>PLAN</th>
<th>APPL</th>
<th>COLL_ID</th>
<th>NICKNAME</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACT</td>
<td>DB10</td>
<td>D</td>
<td>ACTDOPD1</td>
<td>ACT</td>
<td>vr</td>
<td>DG</td>
<td>ACTB</td>
<td></td>
</tr>
<tr>
<td>*LIB</td>
<td>SSID</td>
<td>Data Set Name</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>EXIT</td>
<td>DB10</td>
<td>'SYS3.DB10.DSNEXIT'</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LOAD</td>
<td>DB10</td>
<td>'SYS2.DB2V10M.DSNLOAD'</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- **Scenario 3**: In a runtime environment, if the BMCDB2 CLIST in \textit{HLQ\_JCL} is used to invoke CATALOG MANAGER for both SSIDs, add the lines in Figure 10 on page 94 to the control table.

  Figure 54: Running DB10 CATALOG MANAGER from the DB91 BMCDB2 CLIST (runtime environment)

<table>
<thead>
<tr>
<th>*DATA</th>
<th>*PROD</th>
<th>SSID</th>
<th>D/I</th>
<th>DOPT</th>
<th>PLAN</th>
<th>APPL</th>
<th>COLL_ID</th>
<th>NICKNAME</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACT</td>
<td>DB10</td>
<td>D</td>
<td>ACTDOPD1</td>
<td>ACT</td>
<td>vr</td>
<td>DG</td>
<td>ACTB</td>
<td></td>
</tr>
<tr>
<td>*LIB</td>
<td>SSID</td>
<td>Data Set Name</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>EXIT</td>
<td>DB10</td>
<td>'SYS3.DB10.DSNEXIT'</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
The HLQ in Figure 10 on page 94 instructs the BMCDB2 CLIST to use BMC.DB91 as the HLQ for products that are installed on SSID DB10. Figure 11 on page 94 shows the updated control table.

**Figure 55: Updated control table (runtime environment)**

<table>
<thead>
<tr>
<th>DATA</th>
<th>PROD</th>
<th>SSID</th>
<th>D/I DOPT</th>
<th>PLAN</th>
<th>APPL</th>
<th>COLL_ID</th>
<th>NICKNAME</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>*</td>
<td>-----</td>
<td>----------</td>
<td>------</td>
<td>------</td>
<td>---------</td>
<td>----------</td>
</tr>
<tr>
<td>ACT</td>
<td>DB91</td>
<td>D</td>
<td>ACTDOPD1</td>
<td>ACTvrDG</td>
<td>ACTA</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ACT</td>
<td>DB10</td>
<td>D</td>
<td>ACTDOPD1</td>
<td>ACTvrDG</td>
<td>ACTB</td>
<td></td>
<td></td>
</tr>
<tr>
<td>*LIB</td>
<td>SSID</td>
<td>Data Set Name</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>*</td>
<td>-----</td>
<td>----------</td>
<td>------</td>
<td>-----</td>
<td>---------</td>
<td>----------</td>
</tr>
<tr>
<td>EXIT</td>
<td>DB91</td>
<td>'SYS3.DBAP.DSNEXIT'</td>
<td>*</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LOAD</td>
<td>DB91</td>
<td>'SYS2.DB2V91M.DSNLOAD'</td>
<td>*</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>HLO</td>
<td>DB91</td>
<td>BMC.DB91</td>
<td>*</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>EXIT</td>
<td>DB10</td>
<td>'SYS3.DB10.DSNEXIT'</td>
<td>*</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LOAD</td>
<td>DB10</td>
<td>'SYS2.DB2V10M.DSNLOAD'</td>
<td>*</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>HLO</td>
<td>DB10</td>
<td>BMC.DB10</td>
<td>*</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

In an SMP/E environment, if the BMCDB2 CLIST in HLQ JCL is used to invoke CATALOG MANAGER for both SSIDs, add the lines in Figure 12 on page 94 to the control table.

**Figure 66: Running DB10 CATALOG MANAGER from the DB91 BMCDB2 CLIST (SMP/E environment)**

<table>
<thead>
<tr>
<th>DATA</th>
<th>PROD</th>
<th>SSID</th>
<th>D/I DOPT</th>
<th>PLAN</th>
<th>APPL</th>
<th>COLL_ID</th>
<th>NICKNAME</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>*</td>
<td>-----</td>
<td>----------</td>
<td>------</td>
<td>------</td>
<td>---------</td>
<td>----------</td>
</tr>
<tr>
<td>ACT</td>
<td>DB10</td>
<td>D</td>
<td>ACTDOPD1</td>
<td>ACTvrDG</td>
<td>ACTB</td>
<td></td>
<td></td>
</tr>
<tr>
<td>*LIB</td>
<td>SSID</td>
<td>Data Set Name</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>*</td>
<td>-----</td>
<td>----------</td>
<td>------</td>
<td>-----</td>
<td>---------</td>
<td>----------</td>
</tr>
<tr>
<td>EXIT</td>
<td>DB10</td>
<td>'SYS3.DB10.DSNEXIT'</td>
<td>*</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LOAD</td>
<td>DB10</td>
<td>'SYS2.DB2V10M.DSNLOAD'</td>
<td>*</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DB</td>
<td>DB91</td>
<td>BMC.DB91.DBHLQ</td>
<td>*</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BB</td>
<td>BB91</td>
<td>BMC.DB91.BBHLQ</td>
<td>*</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>XX</td>
<td>BB91</td>
<td>BMC.DB91.XXHLQ</td>
<td>*</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PWD</td>
<td>BB91</td>
<td>BMC.DB91.PSWDHLQ</td>
<td>*</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Figure 13 on page 94 shows the updated control table.

**Figure 57: Updated control table (SMP/E environment)**

<table>
<thead>
<tr>
<th>DATA</th>
<th>PROD</th>
<th>SSID</th>
<th>D/I DOPT</th>
<th>PLAN</th>
<th>APPL</th>
<th>COLL_ID</th>
<th>NICKNAME</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>*</td>
<td>-----</td>
<td>----------</td>
<td>------</td>
<td>------</td>
<td>---------</td>
<td>----------</td>
</tr>
<tr>
<td>ACT</td>
<td>DB91</td>
<td>D</td>
<td>ACTDOPD1</td>
<td>ACTvrDG</td>
<td>ACTA</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ACT</td>
<td>DB10</td>
<td>D</td>
<td>ACTDOPD1</td>
<td>ACTvrDG</td>
<td>ACTB</td>
<td></td>
<td></td>
</tr>
<tr>
<td>*LIB</td>
<td>SSID</td>
<td>Data Set Name</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>*</td>
<td>-----</td>
<td>----------</td>
<td>------</td>
<td>-----</td>
<td>---------</td>
<td>----------</td>
</tr>
<tr>
<td>EXIT</td>
<td>DB91</td>
<td>'SYS3.DBAP.DSNEXIT'</td>
<td>*</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LOAD</td>
<td>DB91</td>
<td>'SYS2.DB2V91M.DSNLOAD'</td>
<td>*</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DB</td>
<td>DB91</td>
<td>BMC.DB91.DBHLQ</td>
<td>*</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BB</td>
<td>BB91</td>
<td>BMC.DB91.BBHLQ</td>
<td>*</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>XX</td>
<td>BB91</td>
<td>BMC.DB91.XXHLQ</td>
<td>*</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PWD</td>
<td>BB91</td>
<td>BMC.DB91.PSWDHLQ</td>
<td>*</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>EXIT</td>
<td>DB10</td>
<td>'SYS3.DB10.DSNEXIT'</td>
<td>*</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LOAD</td>
<td>DB10</td>
<td>'SYS2.DB2V10M.DSNLOAD'</td>
<td>*</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DB</td>
<td>DB10</td>
<td>BMC.DB10.DBHLQ</td>
<td>*</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BB</td>
<td>BB10</td>
<td>BMC.DB10.BBHLQ</td>
<td>*</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
3 Press END to exit.

Specifying the same installation options module in the control table

You can specify the same installation options module for ALTER, CATALOG MANAGER, CHANGE MANAGER, or DASD MANAGER PLUS to be shared between two or more DB2 subsystems.

Before you begin

The following requirements must be met:

- CATALOG MANAGER or DASD MANAGER PLUS must be at the same version and release level on each of the DB2 subsystems.

  The DB2 exit and load data sets, if different for each DB2 subsystem, will have to be removed from the installation options modules and put into a LINKLIST concatenation for use by foreground and batch processes.

- ALTER or CHANGE MANAGER must be at the same version and release level on all DB2 subsystems. In addition, the DB2 subsystems must be at the same version and release level.

  The DB2 exit and load data sets, if different for each DB2 subsystem, will have to be removed from the installation options modules and put into a LINKLIST concatenation for use by foreground and batch processes.

To specify the same installation options module

1 For each of the products, choose one installation options module to represent the product’s installation options for all relevant DB2 subsystems.

2 Verify that the control table contains distinct and correct values for the VCAT variable.

3 Change the control table installation options values specified for the product and SSID to the shared installation options module name.

Application IDs in the control table

The control table allocates the ISPF application ID based on DB2 subsystem access.
During installation, the Installation System attempts to make each ISPF application ID unique across DB2 subsystems.

By default, the first time that the Installation System generates the control table, individual application IDs \( \text{prdA} \) are specified, where \( \text{prd} \) is the three-character product code. The shared application ID ADMA is also specified.

If you use the SSID installation method to perform a second or subsequent installation, the Installation System attempts to scan the existing control table and to allocate a unique application ID. For example, if CATALOG MANAGER is initially installed on DB2T, the application ID is ACTA. If CATALOG MANAGER is installed on DB2P, the Installation System scans the BMCDB2 CLIST and uses application ID ACTB because ACTA is already in use. The shared application ID for an SSID installation is ADMB.

When you access ALTER, CATALOG MANAGER, CHANGE MANAGER, or DASD MANAGER PLUS, you can specify to use a shared or individual application ID, and the control table establishes the ISPF application ID and allocates the installation options module name. The product that receives control either initializes or refreshes your options with the information from the installation options module and the POF that is allocated by the control table.

**Application IDs for multiple SSIDs**

In some situations, when you make changes in one environment, those changes appear in another environment.

This situation usually happens when the same ISPF application ID is being established for multiple SSIDs, and is probably unacceptable because the user-option changes are SSID specific.

For example, if both of the DB2T and DB2P individual application IDs for CATALOG MANAGER are established as ACTA, any changes to user options that are made for DB2T are also made for the DB2P user options. The same is true for a shared application ID of ADMA used by DB2T and DB2P.

To avoid accidentally overlaying user options, ensure that the ISPF application that is established for each DB2 SSID is unique. The Installation System attempts to make each application ID unique in a given control table. It does not, however, make each application ID unique across multiple control tables. For example, if you execute the installation for DB2T and for DB2P, you have two control tables—one for each environment. The initial ISPF application ID for both SSIDs is \( xxxA \), which results in an overlay.

If you are planning to execute multiple copies of the BMCDB2 CLIST and control table, change the ISPF application ID that the control table allocates so that each SSID user profile is unique across all control tables (see Figure 14 on page 97).
If you do not change the application IDs, changing user options in one SSID might also change the same user options for a different SSID.

### Figure 58: Sample control table (runtime environment)

<table>
<thead>
<tr>
<th>*DATA</th>
<th>*PROD</th>
<th>SSID</th>
<th>D/I DOPT</th>
<th>PLAN</th>
<th>APPL</th>
<th>COLL_ID</th>
<th>NICKNAME</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>ALU</td>
<td>xxxx</td>
<td>D</td>
<td>ACMDOPD2</td>
<td>ACMvrDF</td>
<td>ALU#</td>
</tr>
<tr>
<td></td>
<td></td>
<td>ASU</td>
<td>xxxx</td>
<td>D</td>
<td>ASUDOPD1</td>
<td>ASUvrDJ</td>
<td>ASU#</td>
</tr>
<tr>
<td></td>
<td></td>
<td>ACT</td>
<td>xxxx</td>
<td>D</td>
<td>ACTDOPD1</td>
<td>ACTvrDM</td>
<td>ACT# ACTvr_D_MAIN</td>
</tr>
<tr>
<td></td>
<td></td>
<td>ACM</td>
<td>xxxx</td>
<td>D</td>
<td>ACMDOPD1</td>
<td>ACMvrDF</td>
<td>ACM#</td>
</tr>
<tr>
<td>*LIB</td>
<td></td>
<td>EXIT</td>
<td>xxxx</td>
<td>'DB2.DSNEXIT'</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>LOAD</td>
<td>xxxx</td>
<td>'DB2.DSNLOAD'</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>HLQ</td>
<td>xxxx</td>
<td>BMCADMN.V</td>
<td>vrm</td>
<td>D81</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>VCAT</td>
<td>xxxx</td>
<td>xxxx</td>
<td>CAT</td>
<td></td>
<td>*</td>
</tr>
<tr>
<td></td>
<td></td>
<td>DDF</td>
<td>xxxx</td>
<td></td>
<td></td>
<td></td>
<td>*</td>
</tr>
<tr>
<td></td>
<td></td>
<td>APPL</td>
<td>xxxx</td>
<td></td>
<td>ADMA#</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

In the sample shown in Figure 14 on page 97, the variable xxxx is the SSID name and # is a unique one-byte character (such as A for the first SSID, B for the second SSID, C for the third, and so on).

### Subsequent DB2 subsystems in the control table

The Installation System generates member BMCDB2SS to support subsequent DB2 subsystems.

This member contains logic for the installation options module allocation. When you use this member to update the control table, consider the following points:

- If you have MVS/ESA and TSO/E version 2.1 or later, the Installation System prompts you for the location of the control table and automatically updates it with the information in the BMCDB2SS.

- If you do not have MVS/ESA and TSO/E version 2.1 or later, follow the directions in BMCDB2SS for updating the control table.

- If you are installing CATALOG MANAGER, follow the instructions for modifying the CATALOG MANAGER plan name.

### Catalog indirection in the control table

Member BMCDB2CI is generated to support catalog indirection for ALTER, CATALOG MANAGER, or CHANGE MANAGER.
This member contains logic for the installation options module allocation for indirect access. When you use BMCDB2CI to update the control table, consider the following points:

- If you have MVS/ESA and TSO/E 2.1 or later, the Installation System automatically updates the control table with BMCDB2CI. The Installation System searches both the JCL output file and the installation file to apply the updates wherever a copy of the control table is found. The Installation System prompts you for the location of the control table.

- If you do not have MVS/ESA and TSO/E 2.1 or later, follow the directions in BMCDB2CI for updating the control table.

- If you are installing CATALOG MANAGER, follow the instructions for modifying the CATALOG MANAGER plan name.

## Fast Path Navigation

For ALTER, CATALOG MANAGER, CHANGE MANAGER, and DASD MANAGER PLUS, the Installation System provides Fast Path Navigation, which enables you to switch from one product to another without leaving the current product.

To initiate Fast Path Navigation, on the Command line of the current product, enter the name of the product to which you want to switch. The following table provides a list of the products and commands.

<table>
<thead>
<tr>
<th>Product</th>
<th>Command</th>
</tr>
</thead>
<tbody>
<tr>
<td>ALTER</td>
<td>BMCALTER</td>
</tr>
<tr>
<td>CATALOG MANAGER</td>
<td>BMCCAT</td>
</tr>
<tr>
<td>CHANGE MANAGER</td>
<td>BMCCCHG</td>
</tr>
<tr>
<td>DASD MANAGER PLUS</td>
<td>BMCDASD</td>
</tr>
</tbody>
</table>

For example, if you are currently using DASD MANAGER PLUS and want to view an object description in CATALOG MANAGER, enter BMCCAT on the DASD MANAGER PLUS Command line. When you initiate Fast Path Navigation, the main menu for the requested product is displayed. In this case, the DASD MANAGER PLUS session is temporarily suspended and then resumed when you exit CATALOG MANAGER.

To use Fast Path Navigation, the following conditions must be met:

- You must install the products by using the Installation System.
You must use the BMCDB2 CLIST during product invocation.

The distributed CLISTs AEXADMF1 and AEXADMF2 must be in a data set that is either in the ALTLIB list of the BMCDB2 CLIST or in your SYSPROC concatenation.

The product to which you are switching must be installed and reside in the same set of libraries as the product from which you are switching.

For CATALOG MANAGER, you must enable the ELO (Editor Lock Options) command in the AEXADMF1 and AEXADMF2 CLISTs.

---

**Note**

You cannot use Fast Path Navigation to access a product that is currently suspended. For example, if you switch from ALTER to DASD MANAGER PLUS, you cannot use Fast Path to return to ALTER because it is currently suspended. Instead, you have to exit the DASD MANAGER PLUS session to resume the ALTER session.

---

## User profile values

You can change the values in the installation options module or in the POF for a product on an individual basis by using the product’s user options.

These user options are saved and maintained in the user profile.

If you need to reset the values in the user profiles, you can use a refresh feature. This feature modifies one or more option values for all of the product’s users.

### Refreshing POF values in the user profile

You can specify a value to refresh the existing value of the variable in the user’s ISPF profile data set.

**To refresh an option value**

1. To refresh an option value, modify the value of the POF keyword in one of the following ways:
   - include `, (R)` after the option value, as in the following example:
     ```
     BMC_LOAD_OPTS=AMU$MMS,(R)
     ```
   - specify a blank and `, (R)`, as in the following example:
     ```
     BMC_LOAD_OPTS= , (R)
     ```
These examples refresh the name of the LOADPLUS user options module.

**Note**
If the value for the POF keyword ends with a comma, as in the following example, include ,R after the comma.

```
JOBCARD1=//JOBC JOB(&ZACCTNUM),'&PGMR',,(R)
```

When the POFDATE parameter is later than the previous POFDATE that is stored in the user’s ISPF profile, the specified value refreshes the existing value of the variable in the user’s ISPF profile data set.

**To troubleshoot refreshing POF values**

If you have problems refreshing your user options, complete the following steps:

1. Verify that the refresh option is coded on the correct POF keyword.
2. Verify the date in the POFDATE parameter.

**Refreshing installation options values in the user profile**

To refresh an option value in all existing user profiles, enclose the option value in parentheses and include ,R after the value inside the parentheses.

The following example illustrates how to refresh the option value:

```
SSID=(DB2J,R), *
```

**Note**
Do not drop either the continuation comma after the closing parenthesis or the continuation character in column 72.

This example refreshes the default DB2 subsystem ID for all users of the product.

For products other than CATALOG MANAGER, the ,R in the variable syntax indicates that the value specified will refresh the existing value of the variable in the user’s ISPF profile data set, if the time stamp of the installation options module is later than that in the user’s ISPF profile member. However, the user can change the override value in the user profile. In CATALOG MANAGER, the refresh occurs every time that a user starts the product.

**To troubleshoot refreshing installation options values**

If you have problems refreshing your user options, complete the following steps:
1 Verify that the refresh option is coded on the correct macro listing keyword in the installation options assembly member.

2 Verify that the installation options assembly was completed successfully with a return code of 0.

If you receive assembly errors, compare your installation options module listing with one that the installation process generated. Some common errors are as follows:

- missing comma delimiter after keyword value
- missing continuation character in column 72
- incorrect symbol-variable substitution
- missing or unbalanced single quotation marks

3 Verify that the assembled installation options member is the same installation options member that ALTER, CATALOG MANAGER, CHANGE MANAGER, and DASD MANAGER PLUS use.

   a To verify, access the environment information for your product as follows:

      ■ In ALTER or CHANGE MANAGER, at the main menu, type ENVI on the Command line.

      ■ In CATALOG MANAGER, on the Primary Menu panel or any list panel, type ENVI on the Command line.

      ■ In DASD MANAGER PLUS, at the main menu, select User Options. Then select Current environment information.

   b Compare the listed installation options module name with the name of the installation options module that you assembled and link-edited.

4 Verify that the installation options module assembly is updating the correct load library.

   The SYSLMOD ddname statement should refer to the load library where the products reside.

**Enabling the use of DDF**

CATALOG MANAGER and CHANGE MANAGER can access remote DB2 subsystems using the DB2 Distributed Data Facility (DDF).
If you did not enable the use of DDF during the installation of the products, perform the steps in this task.

To enable the use of DDF

1 Edit the `HLQ UDBCNTL` member `T1S#CDBS`:
   
   a Change the following variables to the values that you used when you installed CATALOG MANAGER or CHANGE MANAGER. To review the values, see the `prdINIT5` or `prdINIT6` member in the `HLQ JCL` library (where `prd` is the product code). For CHANGE MANAGER, also review the values for Common SQL in the `ACSINIT5` or `ACSINIT6` member.
      
      ■ Replace `**AUTHID` with the value for the primary or secondary authorization ID.
      
      ■ Replace `**SQLID` with the value of the synonym qualifier.
      
      ■ Replace `**COLLID` with the value of the collection ID.
   
   b (CHANGE MANAGER) For the synonyms that are prefixed with `CAT2` and `CAT3`, uncomment the SQL statements and add a dash (-). (That is, change `*SQL` to `-SQL`.)
   
   c (CHANGE MANAGER) If you are executing the worklist for only CHANGE MANAGER, comment out the BIND statements for the CATALOG MANAGER packages.
   
   d In the last SQL statement, specify to grant EXECUTE authority to PUBLIC or to specific users.
   
   e If you are executing the worklist for both CATALOG MANAGER and CHANGE MANAGER, repeat step Step 1.d on page 109.

2 Edit the `$C40INST` job to create a single step to execute the `T1S#CDBS` worklist for CATALOG MANAGER and for CHANGE MANAGER.

3 Edit the BMCDB2 CLIST:
   
   a Edit the control table.
   
   b Specify the servers to use with CATALOG MANAGER CONNECT.
      
      The same release level of CATALOG MANAGER must be installed on the remote DB2 subsystems and the DB2 subsystem from which you want to connect. The example in Figure 21 on page 109 shows that when CATALOG MANAGER is invoked on the DB2P subsystem, it can connect with the DB2A,
DB2B, and DB2C servers on remote DB2 subsystems. In this example, the unique nicknames combine the server name and SSID.

Figure 59: CATALOG MANAGER CONNECT command servers

<table>
<thead>
<tr>
<th>*PROD</th>
<th>SSID</th>
<th>SERVER NAME</th>
<th>SSID COLL_ID</th>
<th>NICKNAME</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACT</td>
<td>DB2P</td>
<td>S</td>
<td>DB2A</td>
<td>ACTvr_D_MAIN</td>
</tr>
<tr>
<td>ACT</td>
<td>DB2P</td>
<td>S</td>
<td>DB2B</td>
<td>ACTvr_D_MAIN</td>
</tr>
<tr>
<td>ACT</td>
<td>DB2P</td>
<td>S</td>
<td>DB2C</td>
<td>ACTvr_D_MAIN</td>
</tr>
</tbody>
</table>

*Press END to exit.

More CATALOG MANAGER configuration tasks

In addition to the configuration tasks for multiple components and for CATALOG MANAGER and CHANGE MANAGER, you need to perform tasks for CATALOG MANAGER.

Access to catalog information

CATALOG MANAGER uses dynamic SQL to access DB2 catalog tables or product log tables.

CATALOG MANAGER observes the privileges of the user who lists the tables.

CATALOG MANAGER does not bypass any DB2 security when it generates and executes SQL, DML, or DB2 commands. DB2 rejects any action requested by CATALOG MANAGER for which the user is not authorized by DB2.

DB2 requires that users have at least the SELECT privilege to access catalog tables or product log tables. The CATALOG MANAGER installation options settings cannot override the DB2 SELECT authorization requirement.

Prohibiting access to CATALOG MANAGER functions

The CATALOG MANAGER initial command restricts users from all CATALOG MANAGER functions except data editing.

When the initial command is enabled, CATALOG MANAGER starts at the Edit DB2 Table Options panel where users can set options for editing data, controlling the
display of data, and processing SQL. Users can navigate through all data editing panels, but cannot access the Primary Menu panel or other function panels. When users press END from the Edit DB2 Table Options panel, CATALOG MANAGER closes.

**WARNING**

You cannot enable both the initial command and the entry panel command (see Specifying an entry panel on page 103) in the same BMCDB2 CLIST.

To enable the initial command

1. Edit the BMCDB2 CLIST.
2. Find the lines that are shown in Figure 15 on page 103.

**Figure 60: BMCDB2 CLIST--CATALOG MANAGER initial command**

```clist
WHEN(ACTEMAIN) DO /* CATALOG MANAGER
SET BMCFPCNT= 10100
IF (&ACCESS = INDIRECT) THEN +
SET CIACCESS = YES
SET APPLID = &ACTAPPL
SET PARM = &STR(&PARM,ELO=TRN)
/* EDITOR LOCK OPTIONS (ELO) - ALLOWS USER TO IDENTIFY */
/* THE DEFAULT LOCKING OPTIONS FOR DATA EDITING. USER */
/* MAY CHOOSE ALL OR ANY COMBINATION OF THE THREE. */
/* T - TABLE LOCK, R - ROW LOCK, N - NO LOCKING */
/* UNCOMMENT 'SET PARM' LINE BELOW TO ALLOW ACCESS ONLY */
/* TO DATA EDITINGFUNCTION. USERS CANNOT ACCESS OTHER */
/* CATALOG MANAGER FUNCTIONS. */
/* ----- */
/* SET PARM = &STR(&PARM,E=EDIT) */
/* */
/* */
3. As directed in the CLIST, uncomment the following line:

```clist
/* SET PARM = &STR(&PARM,E=EDIT) */
```

4. Press END to exit.

Specifying an entry panel

You can optionally cause CATALOG MANAGER to display an entry panel other than the Primary Menu panel by adding an entry panel command to the BMCDB2 CLIST.

The entry panel command is a CATALOG MANAGER single command of 1 through 48 characters that is passed as a parameter to the CATALOG MANAGER product module ACTEMAIN from the BMCDB2 CLIST. Users have access to all functions of
CATALOG MANAGER unless they have been restricted by other means, such as a customized session profile.

**WARNING**
You cannot enable both the entry panel command and the initial command in the same BMCDB2 CLIST.

---

**To edit the BMCDB2 CLIST to enable a different entry panel**

1. Edit the BMCDB2 CLIST.

2. Find the lines that are shown in Figure 16 on page 104.

   **Figure 61: BMCDB2 CLIST--CATALOG MANAGER entry panel**

   ```
   WHEN(ACTEMAIN) DO /* CATALOG MANAGER
       SET BMCFPCNT= 10100
       IF (&ACCESS = INDIRECT) THEN +
       SET CIACCESS = YES
       SET APPLID = &ACTAPPL
       SET PARM = &STR(S=&SSID,O=&ACTDOPT,D=&ASUDOPTD,+ M=BC,1=&CIACCESS,A=&ACMDOPT,+ DB2CAT=&DB2VCAT )
       /* EDITOR LOCK OPTIONS (ELO) - ALLOWS USER TO IDENTIFY */
       /* THE DEFAULT LOCKING OPTIONS FOR DATA EDITING, USER */
       /* MAY CHOOSE ALL OR ANY COMBINATION OF THE THREE. */
       /* T - TABLE LOCK, R - ROW LOCK, N - NO LOCKING */
       SET PARM = &STR(&PARM,ELO=TRN)
       /* UNCOMMENT 'SET PARM' LINE BELOW TO ALLOW ACCESS ONLY */
       /* TO DATA EDITING FUNCTION. USERS CANNOT ACCESS OTHER */
       /* CATALOG MANAGER FUNCTIONS. */
       /* CATALOG MANAGER configuration tasks */
       /* SET PARM = &STR(&PARM, E=EDIT) */
   *---------------------------------------------------------------------------*
   /* SET PARM = &STR(&PARM,C=CONNECT) */
   *---------------------------------------------------------------------------*/
   
   3. Replace the command E=EDIT with the entry panel command. The entry panel command syntax is C= command.

   **Note**
   If the CATALOG MANAGER command that you specify requires a function or object type and qualifier, you must include them when defining the entry panel command parameter.

4. Uncomment the line that includes the entry panel command.

   The following example shows the edited line from the BMCDB2 CLIST to specify the CONNECT entry panel command.

   ```
   SET PARM = &STR(&PARM,C=CONNECT)
   ```

5. Press END to exit.
Specifying locking options for editing data

CATALOG MANAGER offers three locking options for editing table data: shared table lock, row lock, and no lock.

To set the editor locking options for all users, you must enable the locking options command. The command is passed as a parameter to the CATALOG MANAGER product module ACTEMAIN from the BMCDB2 CLIST.

To enable the locking options command

1. Edit the BMCDB2 CLIST.
2. Find the lines shown in Figure 17 on page 105.

   Figure 62: BMCDB2 CLIST--CATALOG MANAGER entry panel for locking options

   WHEN(ACTEMAIN) DO /* CATALOG MANAGER
   SET BMCFPCNT= 10100
   IF (&ACCESS = INDIRECT) THEN +
   SET CIACCESS = YES
   SET APPLID  = &ACTAPPL
   SET PARM    = &STR(S=&SSID,O=&ACTDOPT,D=&ASUDOPTD,+ M=&CLOptions,I=&CIACCESS,A=&ACMDOPT,+
   DB2CAT=&DB2VCAT)
   /* EDITOR LOCK OPTIONS (ELO) - ALLOWS USER TO IDENTIFY                       */
   /* THE DEFAULT LOCKING OPTIONS FOR DATA EDITING. USER                        */
   /* MAY CHOOSE ALL OR ANY COMBINATION OF THE THREE.                           */
   /* T - TABLE LOCK, R - ROW LOCK, N - NO LOCKING                              */
   SET PARM = &STR(&PARM, ELO=TRN)
   */
   /* END OF CLIST */

3. Enable the CATALOG MANAGER locking options command.

   The syntax for the locking options command is ELO= option.

   As an example, Figure 17 on page 105 shows the locking option command ELO set to TRN. These options determine whether requests for edits from any user are allowed while a table is edited. For more information about the options for data editing, see the CATALOG MANAGER for DB2 User Guide.

4. Press END to exit.

   **Note**
   The CATALOG MANAGER data editing package ACTJTEQ is installed with the following values for two BIND PACKAGE options: an ISOLATION value of CS (cursor stability) and a CURRENTDATA value of YES. You can change these values by rebinding the data editing package with other values that are allowed by DB2. For BIND PACKAGE syntax and descriptions, see the IBM documentation.

5. If you plan to use Fast Path Navigation (see “Fast Path Navigation” on page 98), you must edit the AEXADMF1 and AEXADMF2 CLISTs and enable the
CATALOG MANAGER locking options command as you did in Step 3 on page 105 for the BMCDB2 CLIST.

For example, if you set ELO to TRN, then add the following statement to the AEXADMF2 CLIST:

```set pARM = &STR(&parM,ELO=TRN)```

**Setting the session profile**

The CATALOG MANAGER session profile enables you to customize specific product displays and operations for specific users or groups of users.

To initially set the session profile for all user groups, you must invoke the session profile command. The CATALOG MANAGER session profile command (1 to 18 characters) that calls a set of user-customized features that is saved under a specific session profile name. The session profile command is passed as a parameter to the CATALOG MANAGER product module ACTEMAIN from the BMCDB2 CLIST.

**To invoke the session profile command**

1. Edit the BMCDB2 CLIST.

2. Find the lines that are shown in Figure 18 on page 106.

   **Figure 63: BMCDB2 CLIST--location for session profile command**

   ```
   /*--------------------------------------------------------------------------*/
   /* EDITOR LOCK OPTIONS (ELO) - ALLOWS USER TO IDENTIFY THE */
   /* DEFAULT LOCKING OPTIONS FOR DATA EDITING. USER MAY CHOOSE */
   /* ALL OR ANY COMBINATION OF THE THREE. T - TABLE LOCK, */
   /* R - ROW LOCK, N - NO LOCKING. */
   /*--------------------------------------------------------------------------*/
   
   SET pARM = &STR(&parM,ELO=TRN)
   /*--------------------------------------------------------------------------*/
   ```

3. Add the following command after the ELO locking option command:

   ```set pARM = &STR(&parM,PR=profileName)```

   As an example, adding the following line in the CLIST causes CATALOG MANAGER to invoke the session profile that is named PROGRAMMERS:

   ```set pARM = &STR(&parM,PR=PROGRAMMERS)```

4. Press END to exit.
Editing the CONNECT command servers

The servers that the CATALOG MANAGER product uses in the CONNECT command are listed in the control table.

To edit the control table to change or enable the servers

1. Edit the control table.

2. To change the servers that are listed for the CONNECT command (see Figure 19 on page 107), you can add, delete, or modify the data rows.

Figure 64: CATALOG MANAGER CONNECT command servers

<table>
<thead>
<tr>
<th>*PROD</th>
<th>SSID</th>
<th>S</th>
<th>SERVER NAME</th>
<th>SSID COLL_ID</th>
<th>NICKNAME</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACT</td>
<td>S</td>
<td>DBBA</td>
<td>DBBA ACTv_r_D_MAIN</td>
<td>DBBFDBBA</td>
<td>*</td>
</tr>
<tr>
<td>ACT</td>
<td>S</td>
<td>DBDB</td>
<td>DBDB ACTv_r_D_MAIN</td>
<td>DBBFDBDB</td>
<td>*</td>
</tr>
</tbody>
</table>

3. Update the values for the Server Name, Server SSID, and the Server Nickname.

4. Complete the instructions in the comment block of Figure 20 on page 107 to enable the servers that were added by the MSSID installation. These server entries will be commented out. Some editing of the new server entries might be required.

Figure 65: Control table for multiple SSID installation

<p>| * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * |
| <strong>INSERTED FROM MSSID INSTALL</strong> |
| * TO USE, MANUALLY UPDATE SERVER DATA ROWS BELOW AND UNCOMMENT BY REMOVING COLUMN ONE ASTERISK |</p>
<table>
<thead>
<tr>
<th>*PROD</th>
<th>SSID</th>
<th>S</th>
<th>SERVER NAME</th>
<th>SSID COLL_ID</th>
<th>NICKNAME</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACT</td>
<td>S</td>
<td>DBBA</td>
<td>DBBA ACTv_r_D_MAIN</td>
<td>DBBFDBBA</td>
<td>*</td>
</tr>
<tr>
<td>ACT</td>
<td>S</td>
<td>DBDB</td>
<td>DBDB ACTv_r_D_MAIN</td>
<td>DBBFDBDB</td>
<td>*</td>
</tr>
<tr>
<td>ACT</td>
<td>S</td>
<td>DBDA</td>
<td>DBDA ACTv_r_D_MAIN</td>
<td>DBBFDBDA</td>
<td>*</td>
</tr>
<tr>
<td>*ACT</td>
<td>S</td>
<td>DBBA</td>
<td>DBBA ACTv_r_D_MAIN</td>
<td>DBBFDBBA</td>
<td>*</td>
</tr>
<tr>
<td>*ACT</td>
<td>S</td>
<td>DBDB</td>
<td>DBDB ACTv_r_D_MAIN</td>
<td>DBBFDBDB</td>
<td>*</td>
</tr>
<tr>
<td>*ACT</td>
<td>S</td>
<td>DBDA</td>
<td>DBDA ACTv_r_D_MAIN</td>
<td>DBBFDBDA</td>
<td>*</td>
</tr>
</tbody>
</table>

5. Press END to exit.

6. If either of the following conditions exists, type GENERATE on the COMMAND line:
   - You edited the BMCDB2 CLIST to use a generated permanent ISPF table for the control table (specified GENTABLE=Y in the BMCDB2 CLIST)
   - You modified the control table that was previously generated
     This action rebuilds the ISPF control table in the HLQ(UDBTLIB) data set.
Adding ACTEAMAIN and ACTDCL to the ISPF command table

System security can use a TSO command-limiting function to restrict an individual user or an entire site.

This function applies to TSO commands that are issued from the READY prompt or from ISPF.

To add commands to the ISPF command table

1. Edit the ISPF command table.

2. If command limiting is active, you must add the following commands to the list of commands that are allowed for CATALOG MANAGER:

   - ACTEAMAIN—used to access CATALOG MANAGER
   - ACTDCL—used to create a DCLGEN in CATALOG MANAGER

Command limiting is activated in the following ways:

- for an individual, with the TSOCMDS field of the logon ID record
  TSOCMDS specifies the name of a module that contains a list of valid commands for a user. For a sample list, see the ACF$CMDS member of CAI.CAIMAC.

- for an entire site, with the CMDLIST field of the GSO record named TSO
  The ALLCMDS field indicates permission for a user to bypass command limiting. Use the character that is specified in the BYPASS field of the GSO TSO record as a prefix for the command name.

Enabling the use of SQL Explorer for DB2 within CATALOG MANAGER

Within CATALOG MANAGER, you can use commands to invoke the SQL Explorer for DB2 production.

To invoke SQL Explorer, CATALOG MANAGER uses the ACTPSS CLIST. To enable the use of SQL Explorer within CATALOG MANAGER, you must customize the ACTPSS CLIST in the HLQ.UDBCLLIB data set. For more information about customizing the CLIST, see the Installation System User Guide.
More LOADPLUS configuration tasks

In addition to the configuration tasks for multiple components, the following tasks apply to LOADPLUS.

Configuring products that prevent x37 abends in LOADPLUS

Products that prevent x37 abends must be configured to ensure that they work properly with EXCP processing in LOADPLUS.

When inadequate space is available for work data sets during job execution, the system issues an x37 abend and ends the job. Some sites use products such as the BMC MainView Storage Resource Manager (SRM) StopX37/II product to allocate additional volumes automatically when this condition occurs. However, those products might fail to intercept x37 abends if EXCP processing is in use.

LOADPLUS uses EXCP processing. Complete the following procedure to ensure proper handling of x37 abends.

To prevent x37 abends in LOADPLUS

1. Determine whether your site uses a product that intercepts x37 abends and whether that product is sensitive to EXCP processing.

   See your DASD storage management system administrator for assistance.

2. If you use MainView SRM StopX37, use one of the following methods to configure the product to prevent x37 abends in LOADPLUS.

   **Note**

   If you use a similar product from another vendor, see that product’s documentation regarding activating support for EXCP processing.

   - Update the System Master Global member (the active SMMSYS xx member) in UBBPARM:

     ```
     $SKIP=(PROG=AMUUMAIN,CHECK=(EXCP))
     ```

     Using this method eliminates the need to maintain the code in any subsequent RLST processing.

   - Include the NOCHECK keyword in the specific SMRLST xx member that is associated with the SPACVOLA function. (The variable `numberOfVolumes`
represents the maximum number of volumes that can be available for volume extension.)

```
SET SPACVOLA=numberOfVolumes NOCHECK=EXCP
INC PGM=(AMUUMAIN)
```

Using this method instructs the system to allow jobs that execute the listed programs to run regardless of whether those programs use EXCP processing.

## Configuring XBM and SUF

After you finish installing and authorizing the product, you must configure XBM and SUF to operate in your environment.

For more information, see “Configuring XBM and SUF” on page 345.

## More Cross-System Image Manager configuration tasks

In addition to the configuration tasks for multiple components, several configuration tasks apply to Cross-System Image Manager.

## Configuring Cross-System Image Manager

The customization process constructs the XIM started task procedure and the XIM initiator procedure in the HLQ.JCL data set.

Configuring XIM involves copying these procedures into the appropriate libraries.

### Before you begin

Complete the following tasks before you perform these configuration tasks:

- Apply the appropriate component fixes.
- Submit all applicable installation jobs.

### To configure XIM

1. Copy the XIM started task procedure from the HLQ.JCL data set into a procedure library that is recognized by your JES subsystem.
Note
The default name of the XIM started task procedure in the HLQ.JCL data set is XIMACM.

2 Specify the SUFFIX parameter (within the XIM started task procedure) that XIM receives as part of the XIM parameter options member name.

The SUFFIX parameter identifies the last one to five characters of a partitioned data set (PDS) member that begins with the character string XIM (XIM xxxxx).

3 Copy the XIM initiator procedure from the HLQ.JCL data set into a procedure library that is recognized by your JES system.

Note
The default name of the XIM initiator procedure in the HLQ.JCL data set is either the name that you entered as the value for the INIT_PROC option or the default of XIMACMI.

You do not need to specify a valid SSID parameter within the XIM initiator procedure. XIM generates this value internally.

Do not include a STEPLIB DD statement in your initiator procedure. If you include this statement, you can encounter abends in the initiator.

Restricting access to the worklist parallelism feature

The Database Administration solution enables you to use the worklist parallelism feature to run portions of a CHANGE MANAGER worklist concurrently. CHANGE MANAGER uses the XIM technology to provide sysplex performance improvements by enabling the distribution and management of discrete units of work (UOW) across one or more IBM OS/390 and z/OS images.

By default, user access to execute portions of a worklist concurrently and to dynamically start XIM is not restricted. You can control access to these functions for a user or a group of users by performing the following tasks:

1 Apply a zap.

2 If you are using RACF, specify a general resource profile.

Note
If you are using another security package that is compatible with the System Authorization Facility (SAF), contact Customer Support.
To apply a zap

1 To enable the restriction of access to these functions, apply the following zap to the Execution function of CHANGE MANAGER:

<table>
<thead>
<tr>
<th>NAME</th>
<th>AEXPMAIN MAINRACC</th>
</tr>
</thead>
<tbody>
<tr>
<td>VER</td>
<td>003E 47F0,C1D8</td>
</tr>
<tr>
<td>REP</td>
<td>003E 4700,0000</td>
</tr>
<tr>
<td>CHECKSUM</td>
<td>0916482E</td>
</tr>
</tbody>
</table>

To specify a general resource profile

In RACF, general resource profiles are used to protect the resources that are defined in the class descriptor table, such as programs.

1 To restrict a user’s or group’s access to each of the worklist parallelism functions, you must add general resource profiles with the following profile information:

- CLASS => FACILITY
- PROFILE => BMCACM. ssid.PARALLEL. objectName

The profile definition contains the following values:

- BMCACM specifies that the profile is for CHANGE MANAGER.
- ssid represents the name of the DB2 subsystem or a DB2 group attachment name (wildcard characters can be used to match one or more characters).
- PARALLEL represents the function that is secured.
- objectName represents the object or resource name that is secured.
  - For executing a worklist, the objectName is EXECUTE.
  - For starting XIM dynamically, the objectName is DYNSTART.

Each user or group that is given access to a resource profile must have an access level of CONTROL or higher.

Execution of XIM

The Database Administration solution uses the XIM technology to manage units of work (UOWs).

XIM executes as a separate OS/390 or z/OS started task. You must start XIM on each image where CHANGE MANAGER will use XIM as a distribution point for UOWs.
XIM uses the services of the IBM Cross-System Coupling Facility (XCF) to locate and connect to other instances of itself within the OS/390 or z/OS parallel sysplex.

If your site uses the Resource Access Control Facility (RACF) or CA-Top Secret, you can authorize the procedures for the XIM subsystem as started tasks in the started procedures table. If your site uses CA-ACF2, you can authorize the procedures for the XIM subsystem as started tasks under the started task control. Table 33 on page 272 describes authorization for XIM.

Table 33: Authorizing XIM procedures

<table>
<thead>
<tr>
<th>Product</th>
<th>Task</th>
</tr>
</thead>
<tbody>
<tr>
<td>RACF or CA-Top Secret</td>
<td>Authorize the procedures for the following subsystems as started tasks in the started procedures table:</td>
</tr>
<tr>
<td></td>
<td>■ XIM performance subsystem</td>
</tr>
<tr>
<td></td>
<td>■ XIM extended job entry subsystem</td>
</tr>
<tr>
<td></td>
<td>If you are running RACF version 2.1 or later, you can use the STARTED class to add or modify RACF security definitions for started procedures without having to perform an IPL of the system. The STARTED class allows you to modify the security definitions dynamically through the RDEFINE, RALTER, and RLIST commands. For more information about using the STARTED class, see the appropriate RACF publication.</td>
</tr>
<tr>
<td>CA-ACF2</td>
<td>Authorize the procedures for the following subsystems as started tasks under the started task control:</td>
</tr>
<tr>
<td></td>
<td>■ XIM performance subsystem</td>
</tr>
<tr>
<td></td>
<td>■ XIM extended job entry subsystem</td>
</tr>
<tr>
<td></td>
<td>See the appropriate CA-ACF2 publication for more information.</td>
</tr>
</tbody>
</table>

Your systems programmer can issue XIM console commands from an OS/390 or z/OS console to start, stop, and modify XIM. This section describes the commands to use and the procedures to follow to perform the following tasks:

- determine the status of XIM
- start XIM
- inactivate XIM initiators
- shut down XIM
- activate XIM initiators
- modify MVS image variables
- troubleshoot the execution of XIM

For more information about XIM, see the Cross-System Image Manager (XIM) User Guide.

**Determining the status of XIM**

You can use the STATUS command to display information about XIM instances in the sysplex or jobs connected to an XIM initiator.

**To determine the status**

1. To determine whether XIM is running, issue the following command:

   `/F XIMACM, STATUS`

   An excerpt from the JES log shows the result of issuing the STATUS command where XIM is active:

<table>
<thead>
<tr>
<th>Jobname</th>
<th>Jobid</th>
<th>Smfid</th>
<th>Cvtsname</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>XIMACM</td>
<td>STC01000</td>
<td>DB2A</td>
<td>DB2A</td>
<td>Active</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>16 inits</td>
</tr>
<tr>
<td>XIMACM</td>
<td>STC08798</td>
<td>SYSN</td>
<td>SYSN</td>
<td>Active</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>16 inits</td>
</tr>
<tr>
<td>XIMACM</td>
<td>STC08638</td>
<td>DB2B</td>
<td>DB2B</td>
<td>Active</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>16 inits</td>
</tr>
</tbody>
</table>

**Starting XIM**

Start XIM on each OS/390 or z/OS image that processes work for CHANGE MANAGER.

**Before you begin**

Before you start XIM, ensure the following items:

- the STEPLIB library is APF authorized
- the XIM started task name is unique for each version of the solution if both of the following conditions exist:
  - You have installed the worklist parallelism feature of the Database Administration solution in one environment (for example, production).
— You later install a new version of the solution in a different environment (for example, test).

- the XIM started task procedure name that is specified on the Execution Worklist Parallelism Options panel matches the name of the started task

For information about specifying the procedure name, see the ALTER and CHANGE MANAGER for DB2 User Guide Volume 2.

**To start XIM**

1. To start XIM, issue the following command:

   `/S XIMACM`

   XIMACM is the name of the started task. The XIMACM procedure is located in a system PROCLIB data set. (When the component was installed, the procedure should have been copied to this data set.)

   Under the following conditions, the Execution function of the solution attempts to start XIM automatically on the image on which Execution is running:

   - XIM is not started.
   - You attempt to execute a worklist that has worklist parallelism enabled.
   - The XIMSTART YES parameter is specified in the AEXPIN input stream in the execution JCL for a worklist.

   XIM is not started on any image other than the image on which you submitted a job.

**Inactivating XIM initiators**

You can use the QUIESCE command to prevent additional work from being accepted.

Work that is in progress is allowed to finish. Typically, you would issue this command before shutting down XIM.

**To inactivate the initiators**

1. To inactivate the XIM initiators, issue the following command:

   `/F XIMACM,QUIESCE`
An excerpt from the system log shows the result of issuing the QUIESCE command:

```
BMC95100I XIM QUIESCE Command Accepted, XIM QUIESCE in progress XIMACM
BMC95100I XIM STOP Command Accepted, Initiator termination in progress
BMC98522I Initiator shutdown request received in ASID(01F6). XJS1
BMC98212I XJS initiator ended in ASID(01F6). XJS1
```

**Note**
The XIM initiators are inactivated only on the image on which you issued the QUIESCE command. If more than one image is participating in a group, issue the QUIESCE command on each image.

---

### Shutting down XIM

You can use the SHUTDOWN command to terminate inactive XIM initiators and XIM.

**Before you begin**

Before you issue the command, inactivate all XIM initiators. If any XIM initiators are active, the SHUTDOWN command fails.

**To shut down XIM**

1. Issue the QUIESCE command.

2. To terminate the XIMACM address space completely, issue the following command on each image:

   `/F XIMACM,SHUTDOWN`

### Activating XIM initiators

If XIM is quiesced, you can use the ACTIVATE command to allow initiators to be scheduled again.

**To activate initiators**

1. To restart the XIM initiators, issue the following command:

   `/F XIMACM,ACTIVATE`
Modifying MVS image variables

To modify variables that are specific to an OS/390 or z/OS image, you can modify the member from which active parameters are loaded.

Before you begin

Before you can modify the variables, you must determine the location from which the parameters are loaded.

To determine the location from which the parameters are loaded

1. Using your normal method to review SYSOUT, review the active XIMACM started task.
   Alternatively, you can review the XIMACM procedure in your system PROCLIB library.

2. Locate the partitioned data set (PDS) that is allocated to the XIMPARM ddname.

3. On the //EXEC PGM=XIMMAIN statement, locate the PARM option.
   A keyword specifies SUFFIX=xxxx.

4. To determine the member name, append the SUFFIX to XIM.
   For example, if SUFFIX=PARM, the active parameters are loaded from the XIMPARM member, as shown in the following line of JCL:

   ```
   //XIMPARM DD DSN=RCDTJP.XIM.UDBPARM(XIMPARM)
   ```

To modify the variables

1. Edit the XIM xxxx member in the data set that is referenced by the //XIMPARM DD statement.
   In the example shown in Figure 66 on page 277, the name of the member is XIMACMI.

2. Modify the INITIATORS variable.
   In the example shown in Figure 66 on page 277, the member contains global variables and MVS image variables. The variables in the MVS image variables section override the same variables in the global variable section. For example, the default value for the global number of initiators is 8. However, for the DB2A subsystem ID, the number of initiators is 16.
**Note**

Typically, you should not modify other variables unless Customer Support directs you to do so. However, you must ensure that the values for the XIM_GROUP and XCF_GROUP parameters are unique for each version if both of the following conditions exist:

- You have installed the worklist parallelism feature of the Database Administration solution in one environment (for example, production).
- You later install a new version of the solution in a different environment (for example, test).

In addition, the XIM group name that is specified on the Execution Worklist Parallelism Options panel must match the name of the group.

For information about specifying the group name, see the *ALTER and CHANGE MANAGER for DB2 User Guide Volume 2.*

---

**Figure 66: XIMACMI member**

```plaintext
* 
* XIM STARTUP PARM FOR CHANGE MANAGER FOR DB2
* 
* SYNTAX RULES:
* USE COL 1 - 71
* USE ONE PARAMETER PER STATEMENT
* DO NOT CONTINUE A PARM ONTO A SECOND LINE
* ANYTHING FOLLOWING A PARM AND ITS VALUE IS A COMMENT
* THE EQUAL SIGN IS THE REQUIRED DELIMITER
* SPACES TO THE LEFT AND RIGHT OF THE = ARE PERMITTED
* BLANK LINES AND LINES BEGINNING WITH * ARE IGNORED
* **************************************************************
* GLOBAL VARIABLE SECTION         ******************
* XIM_GROUP=XIMACM
* XCF_GROUP=XIMACMCF
* INITIATORS=8
* INIT_PROC=XIMACMI        *  PROC FOR TARGET INITIATORS
* 
* RESPONSE TIMEOUT INTERVAL (SECONDS)
* RESPONSE_TIMEOUT=90      *  RESPONSE TIME OUT (SECONDS)
* WORKLOAD_REFRESH=1      *  WORKLOAD REFRESH INTERVAL (MINUTES)
* ENVIRONMENT_TIMER=60     *  ENVIRONMENT TIMER INTERVAL (SECONDS)
* 
* LOCAL MVS IMAGE VARIABLES (COMMENTED TO SHOW AS AN EXAMPLE)
* DO DB2A
* INITIATORS=16            *  # OF INITIATORS AT STARTUP
* END
* 
```

3. Save the changes to the member.
4. Inactivate XIM by issuing the QUIESCE command:

   `/F XIMACM,QUIESCE`

5. Verify the status of XIM by issuing the STATUS command:

   `/F XIMACM,STATUS`
6 Shut down XIM by issuing the SHUTDOWN command:

/F XIMACM,SHUTDOWN

7 Start XIM by issuing the start command:

/S XIMACM

The new instance of XIMACM uses the new parameters.

8 To verify the new parameters, issue the STATUS command:

/F XIMACM,STATUS

9 Review the values that XIM displays in the system log.

10 If you use data sharing, repeat Step 4 on page 277 through Step 9 on page 278 for each OS/390 or z/OS image.

Troubleshooting the execution of XIM

You can perform several tasks to determine whether your job can connect with XIM.

To troubleshoot XIM

1 If your job could not connect with XIM, use any of the following methods to determine the cause:

   ■ Issue the STATUS command to verify whether XIM was started:

       /F XIMACM,STATUS

   ■ If you are using a data sharing environment, ensure that XIM was started on all of the images.

   ■ Ensure that the STEPLIB library was APF authorized.

   ■ Review the output from the XIMACM started task procedure.

   ■ Review the XIM job or the system log for error messages that were issued by the XIM started task or by the CHANGE MANAGER batch job.

     Using your job name, search the log for enqueue-type messages for the IBM Global Resource Serialization (GRS) or Unicenter CA-MIM products.

     If you are using a data sharing environment with multiple OS/390 or z/OS images and you previously canceled a parallel job, an initiator might still be running and holding data sets. This initiator might be preventing another initiator from starting.
Installation verification

After you customize and configure the products, you must verify the installation of the products.

Verifying the Administrative products’ installation

This procedure describes the steps that you must complete to verify that ALTER, CATALOG MANAGER, CHANGE MANAGER, or DASD MANAGER PLUS have been installed correctly.

To verify the installation

1. Invoke the BMCDB2 CLIST.
2. On the COMMAND line, type CONTAB.
3. On the BMCDB2TB panel, verify that the correct partitioned data set (PDS) and member name are displayed in the library in which the BMCDB2 CLIST is located. The HLQ.CONTAB sequential file should also be displayed in the library.
   
   If the PDS and member name are not displayed, set the BMCDB2C variable in the BMCDB2 CLIST to the correct library.
4. Exit the CONTAB panel.
5. Select one of the products that you installed.
6. Access the environment information for the product that you have selected as follows:
   
   - In ALTER or CHANGE MANAGER, at the main menu, type ENV on the Command line.
   - In CATALOG MANAGER, on the Primary Menu panel, type ENV on the Command line.
In DASD MANAGER PLUS, at the main menu, select User Options. Then select Current environment information.

7 Review the environment panel to verify the displayed information.

**Note**
If you are installing CATALOG MANAGER and are using the DDF, enter CONNECT on the Command line of the CATALOG MANAGER Primary Menu panel. The CATALOG MANAGER Change Access panel is displayed. Then verify connections or attachments to other DB2 subsystems.

8 Exit the environment panel.

9 Repeat Step 5 on page 110 through Step 8 on page 111 for each product that you installed.

---

**Verifying Backup and Recovery product and Utility product installation**

The Installation System generates an installation verification procedure (IVP) job for each installed Backup and Recovery or Utility product.

To help ensure that a product installed properly, BMC strongly recommends that you run the corresponding IVP job.

For products that use the dynamic bind process, the IVP job initializes that process by binding the necessary packages. Running the IVP job helps prevent subsequent bind problems, such as authorization problems, during product execution.

**Before you begin**

Complete the following tasks before running an IVP job:

- Submit all installation and customization jobs except the IVP job ($C70IVP). For more information, see the *Installation System User Guide*.

- Apply the appropriate fixes for each product that you are installing. For instructions, see the *Installation System User Guide*.

- Grant the appropriate authorizations. For more information, see the configuration information for the products that you have installed.

If you are not the person who installed the products but are submitting the IVP job, ensure that you have the authorizations that are required to execute each product that was installed.
Complete any additional configuration tasks for your installed products or components.

**To verify installation**

1. If your jobs use data sets that are managed by the Storage Management Subsystem (SMS), ensure that the SMS service routine load library (SYS1.CSSLIB) is APF-authorized.

   Complete this step regardless of whether SYS1.CSSLIB is in your system LNKLST or STEPLIB concatenation.

2. Use one of the following methods to edit either the EXEC statement in the product job step of the IVP job ($C70IVP) or your job card:
   - Change the value of the REGION parameter to 0M.
   - If not already addressed by your site SMF defaults, add the MEMLIMIT parameter with an appropriate value for your site and the products that you are installing.

3. Submit the IVP job ($C70IVP).

   The IVP job should complete with condition code 0 unless otherwise indicated by comments in the job.

   **Note**
   
   The following temporary objects exist only for the duration of the IVP job:

   - Database BMCIVPDB
   - Table space BMCIVPDB.BMCIVPTS
   - Table BMC.BMCIVPTB
   - Table BMC.BMCIVPT2
   - Index BMC.BMCIVPIX1
Configuring the Database Performance solution

After you finish installing the Database Performance solution, you must configure the solution to operate in your environment.

After you complete these post-installation tasks, the solution is ready for use.

Granting user authorizations and controlling access

To use Database Performance for DB2, you need authorization within DB2 and through your system security package.

These authorizations must be sufficient to access resources and perform the tasks that are required during Database Performance for DB2 processing.

Note
If you are using the access control authorization exit that IBM provides, you can control access through your selected security package for the Database Performance components. If you do not plan to use the access control authorization exit, you must grant user authorizations according to the information in the following sections.

DASD MANAGER PLUS authorizations

You can restrict access to the DASD MANAGER PLUS component and the Execution function by controlling the authorization that is granted to these plans.

You can restrict access to the Execution function by using PLAN authorizations.
The names of the plans vary, depending on the version and release of the component that you are using. The conventions for plan names are as follows:

- for DASD MANAGER PLUS: `prdvrmyz`
- for Execution: `prdvrmn`n

The following table lists the variables for the plan names. An example of a DASD MANAGER PLUS 11.1.00 direct access Report Display plan is ASU111DR.

**Table 34: Plan name variables**

<table>
<thead>
<tr>
<th>Variable</th>
<th>Represents</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>prd</code></td>
<td>product code</td>
</tr>
<tr>
<td><code>v</code></td>
<td>version level</td>
</tr>
<tr>
<td><code>r</code></td>
<td>release level</td>
</tr>
</tbody>
</table>
| `y`      | access type (D=direct, I=indirect)  
  Note: The access type for DASD MANAGER PLUS must be direct (D). |
| `z` or `nn` | access type (D=direct, I=indirect)  
  Note: The access type for DASD MANAGER PLUS must be direct (D). |

The following table lists the plans that the functions in DASD MANAGER PLUS use and the plans that the Execution function uses in DASD MANAGER PLUS.

**Table 35: DASD MANAGER PLUS and Execution function plans**

<table>
<thead>
<tr>
<th>Plan name</th>
<th>Function name</th>
<th>Plan description</th>
</tr>
</thead>
</table>
| ASU\textit{v}r\textit{DJ} | BMCTRIG Utility Job Generation | controls access to utility-job generation from BMCTRIG  
  Any user who needs to perform online or BMCTRIG JCL generation should be authorized to use this plan. |
| ASU\textit{v}r\textit{DR} | Report Display         | controls access to displaying reports  
  Any user who needs to report events and exceptions online should be authorized to use this plan. |
<table>
<thead>
<tr>
<th>Plan name</th>
<th>Function name</th>
<th>Plan description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ASUvrDS</td>
<td>Statistics Collection</td>
<td>controls access to statistics collection and to the operations that update the catalog. Any user who needs to run BMCSTATS or who needs to run BMCTRIG to evaluate objects should be authorized to use this plan.</td>
</tr>
<tr>
<td></td>
<td>DB2 Catalog Update</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Exception, Corrective Action, and Analysis</td>
<td></td>
</tr>
<tr>
<td>ASUvrDZ</td>
<td>Browse DASD MANAGER PLUS</td>
<td>controls access to the Browse function, which displays statistics from the DASD MANAGER PLUS databases. Any user who needs to display statistics online should be authorized to use this plan. You can restrict the online programs to limit a user to defining objects and specifying and analyzing changes. Consider placing this minimum restriction on the online programs but restricting authorization to run the Execution plans. Doing so allows you to control which users can run changes.</td>
</tr>
<tr>
<td></td>
<td>Database Statistics</td>
<td></td>
</tr>
<tr>
<td>AEXvtvDA (DASD MANAGER PLUS)</td>
<td>Execution Monitor Entry (Authorization)</td>
<td>enables users to execute a worklist when EXECUTE authority is granted. You should carefully consider who receives authorization to use this plan.</td>
</tr>
</tbody>
</table>
### Setting REORG PLUS authorizations

REORG PLUS does not run as part of the DB2 subsystem. Therefore, users must have system and data set authorizations that are equivalent to the authorizations that DB2 requires. Use the following procedures to set the necessary authorizations.

#### To set DB2 authorizations

1. For all reorganization jobs, grant the following authorizations:

<table>
<thead>
<tr>
<th>Plan name</th>
<th>Function name</th>
<th>Plan description</th>
</tr>
</thead>
</table>
| AEXvDM (DASD MANAGER PLUS) | Execution Monitor | enables users to attach to DB2 with alternate authorization IDs for the -AUTH commands. This plan does not control who has authorization to execute a worklist. Because this plan does not affect who can run Execution, you can grant PUBLIC authority to this plan. The Execution plan contains some packages that use dynamic SQL. Some of these packages cause long-running SQL and might need to be added to your resource limit specification table (RLST). The packages are as follows:

- AEXAUNLD unloads data from tables.
- AEXSQLIO performs all worklist -SQL commands, including deletions before a data-only migration -LOAD or -BMCL command.

By restricting authorization to run the Execution plans, you can control what change and migrate functions users can perform. The Execution Security Exit provides further control over the Execution component’s authorization switching function.

---

**BMC Products and Solutions for DB2 Configuration Guide**

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- Sufficient DB2 authority to execute the REORG PLUS plan and all packages that the REORG PLUS plan uses
- Authorization equivalent to the authorization that the comparable IBM DB2 REORG utility requires
- ALTER INDEX and ALTER TABLE privileges for the database containing the named table space or index (if not implicit in the authority that you have)

**Note**
REORG PLUS does not check for the DELETE privilege when the SELECT/DELETE option is used. REORG PLUS does not check for the UPDATE privilege when the UPDATE option is used.

2 *To enable running a SHRLEVEL CHANGE reorganization*, if users have DBADM, DBCTRL, or REORG authority, also grant the following additional authorities:

- TRACE authority
- MONITOR2 authority
- DISPLAY authority (if not already granted to PUBLIC)

**Note**
These privileges might be implicit in the authority that the users have.

3 *To enable reorganizing base table spaces that contain XML columns*, also grant SELECT privileges on the following DB2 tables:

- SYSIBM.SYSSEQUENCES
- SYSIBM.SYSSEQUENCESDEP

**Note**
These privileges might be implicit in the authority that the users have.

4 *To enable reorganizing user-defined XML indexes*, also grant SELECT privileges on the SYSIBM.SYSXMLRELS DB2 table.

**Note**
These privileges might be implicit in the authority that the users have.

5 *To enable using the DSRSEXIT user exit to update the DB2 catalog* (in other words, the DSRSEXIT user exit has a default of YES for the BMC_ALTER_DB2_CATALOG variable), also complete the following steps:
a For the ALTER TABLESPACE statement, grant one of the following privileges:

- Ownership of the table space
- DBADM authority for the database that contains the table
- SYSADM or SYSCTRL authority

b For the ALTER INDEX or ALTER TABLE statement, grant one of the following privileges:

- Ownership of the index
- Ownership of the table on which the index is defined
- DBADM authority for the database that contains the table
- SYSADM or SYSCTRL authority

6 To enable the use of the FORCE option to cancel DB2 threads that might prevent a successful drain during a reorganization job, also grant the following authorizations:

- DISPLAY privileges
- one of the following authorities:
  — SYSADM
  — SYSOPR
  — SYSCTRL

   **Note**

These authorizations might be implicit in the authority that the users have.

7 To enable use of the EXTENDED BUFFER MANAGER (XBM) product or SNAPSHOT UPGRADE FEATURE (SUF) component of XBM, also complete the authorization steps described in the XBM authorization information in this configuration guide.

**To enable data set access using the DB2 RACF ID**

1 Specify OPNDB2ID=YES in your installation options.

   This option tells REORG PLUS to use the DB2 RACF ID for data set access.
**Note**

Using OPNDB2ID=NO can improve performance, depending on the size of your data set profiles and the number of VSAM data sets that are involved in the reorganization.

---

**To enable data set access when not using the DB2 RACF ID**

1. Specify OPNDB2ID=NO in your installation options.

   This option tells REORG PLUS not to use the DB2 RACF ID for data set access.

2. If using RACF or a similar system security package to protect underlying data sets and the Integrated Catalog Facility (ICF) catalog of a table or index space, grant a minimum of the following levels of authorization:
   - ALTER or CONTROL to access, update, and define DB2 data sets
   - UPDATE or CONTROL to access and update the ICF catalog

   The following steps illustrate one method for granting these data set authorizations when your site uses a system security package other than RACF:
   1. Associate users with a security group.
   2. Grant EXECUTE privileges on the REORG PLUS product program (ARUUMAIN) to the security group.
   3. Grant the data set authorizations to ARUUMAIN.

3. To enable using rename or FASTSWITCH processing, if you establish authority at a node lower than the highest node, grant the same privileges as described in **Step 2 on page 217** for the following data sets:
   - For STAGEDSN=BMC:
     - `VCAT.BMCDBD.database.object.I0001`
     - `VCAT.BMCDXC.database.object.I0001`
     - `VCAT.OLDDBD.database.object.I0001`
     - `VCAT.OLDDBC.database.object.I0001`
     - `VCAT.BMCDDB.database.object.J0001`
     - `VCAT.BMCDXC.database.object.J0001`
     - `VCAT.OLDDBD.database.object.J0001`
For STAGEDSN=DSN (the default when you use the FASTSWITCH process):

- VCAT.BMCDBD.database.object.I0001
- VCAT.BMCDBC.database.object.I0001
- VCAT.BMCDBD.database.object.J0001
- VCAT.BMCDBC.database.object.J0001
- VCAT.DSNDBD.database.object.S0001
- VCAT.DSNDBC.database.object.S0001

**XBM and SUF authorizations**

XBM and SUF require certain user authorizations.

The XBM security interface allows maximum flexibility in controlling access to XBM functions. For more information, see “Granting user authorizations for XBM” on page 345.

**Starting and stopping the UIM server**

You must start the UIM server to enable the ISPF-Export utility for DASD MANAGER PLUS. BMC recommends that you start the UIM server automatically as part of the IPL process.

To start and stop the UIM server, you must issue MVS operator commands on the host that the UIM server is installed on.

For more information about the ISPF-Export utility, see “Configuring the ISPF-Export utility for DASD MANAGER PLUS” on page 336.

**To start the UIM server**

1. Issue the following MVS operator command, where `uimServerName` is the name of the UIM server started task:

   ```
   /S uimServerName
   ```
To stop the UIM Service

1. Issue the following MVS operator command, where uimServerName is the name of the UIM server started task:

   /P uimServerName

   **Note**
   To avoid data loss, notify active users if you must stop the UIM server.

Setting the MEMLIMIT system parameter

Several BMC products require above-the-bar memory and might abend if sufficient memory is not available.

This requirement affects the BMC products and solutions listed in Table 1 on page 58.

The default value for the System Management Facility (SMF) MEMLIMIT parameter is 2 GB. This value is set in member SMFPRMxx in SYS1.PARMLIB.

**Before you begin**

Determine whether you need to override the default MEMLIMIT value, based on the information in the following table:

<table>
<thead>
<tr>
<th>Product or solution</th>
<th>Recommendation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Administrative Assistant</td>
<td>If you are unable to specify REGION=0M:</td>
</tr>
<tr>
<td></td>
<td>■ Specify NOLIMIT to allow unlimited above-the-bar memory.</td>
</tr>
<tr>
<td></td>
<td>■ If you are unable to specify NOLIMIT, specify at least 4 GB; if you are operating on LOB or XML data, BMC recommends at least 32 GB.</td>
</tr>
<tr>
<td>ALTER</td>
<td>If you are unable to specify REGION=0M, specify at least 1 GB; if you are operating on LOB or XML data, BMC recommends at least 32 GB.</td>
</tr>
<tr>
<td>CATALOG MANAGER</td>
<td>If you are unable to specify REGION=0M, specify at least 1 GB; if you are operating on LOB or XML data, BMC recommends at least 32 GB.</td>
</tr>
<tr>
<td>Product or solution</td>
<td>Recommendation</td>
</tr>
<tr>
<td>-----------------------------</td>
<td>-----------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>CHANGE MANAGER</td>
<td>If you are unable to specify REGION=0M, specify at least 1 GB; if you are operating on LOB or XML data, BMC recommends at least 32 GB.</td>
</tr>
<tr>
<td>CHECK PLUS</td>
<td>If you are unable to specify REGION=0M:</td>
</tr>
<tr>
<td></td>
<td>■ Specify NOLIMIT to allow unlimited above-the-bar memory.</td>
</tr>
<tr>
<td></td>
<td>■ If you are unable to specify NOLIMIT, specify at least 4 GB; if you are operating on LOB or XML data, BMC recommends at least 32 GB.</td>
</tr>
<tr>
<td>COPY PLUS</td>
<td>Specify at least 1 GB.</td>
</tr>
<tr>
<td>DASD MANAGER PLUS</td>
<td>If you are unable to specify REGION=0M:</td>
</tr>
<tr>
<td></td>
<td>■ Specify NOLIMIT to allow unlimited above-the-bar memory.</td>
</tr>
<tr>
<td></td>
<td>■ If you are unable to specify NOLIMIT and above-the-bar memory limits are inadequate, contact your z/OS system administrator.</td>
</tr>
<tr>
<td>Database Administration</td>
<td>If you are unable to specify REGION=0M:</td>
</tr>
<tr>
<td></td>
<td>■ Specify NOLIMIT to allow unlimited above-the-bar memory.</td>
</tr>
<tr>
<td></td>
<td>■ If you are unable to specify NOLIMIT, specify at least 4 GB; if you are operating on LOB or XML data, BMC recommends at least 32 GB.</td>
</tr>
<tr>
<td>Database Performance</td>
<td>If you are unable to specify REGION=0M:</td>
</tr>
<tr>
<td></td>
<td>■ Specify NOLIMIT to allow unlimited above-the-bar memory.</td>
</tr>
<tr>
<td></td>
<td>■ If you are unable to specify NOLIMIT:</td>
</tr>
<tr>
<td></td>
<td>— For DASD MANAGER, if above-the-bar memory limits are inadequate, contact your z/OS system administrator.</td>
</tr>
<tr>
<td></td>
<td>— For REORG PLUS, specify at least 4 GB; if you are operating on LOB or XML data, BMC recommends at least 32 GB.</td>
</tr>
<tr>
<td>Product or solution</td>
<td>Recommendation</td>
</tr>
<tr>
<td>---------------------------</td>
<td>-------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>High-speed Apply Engine</td>
<td>Specify at least 1 GB.</td>
</tr>
<tr>
<td>LOADPLUS</td>
<td>If you are unable to specify REGION=0M:</td>
</tr>
<tr>
<td></td>
<td>■ Specify NOLIMIT to allow unlimited above-the-bar memory.</td>
</tr>
<tr>
<td></td>
<td>■ If you are unable to specify NOLIMIT, specify at least 4 GB; if you are operating on LOB or XML data, BMC recommends at least 32 GB.</td>
</tr>
<tr>
<td>Log Master</td>
<td>Specify at least 1 GB.</td>
</tr>
<tr>
<td>RECOVER PLUS</td>
<td>Specify at least 1 GB.</td>
</tr>
<tr>
<td>RECOVERY MANAGER</td>
<td>Specify at least 1 GB.</td>
</tr>
<tr>
<td>Recovery Management</td>
<td>Specify at least 1 GB.</td>
</tr>
<tr>
<td>REORG PLUS</td>
<td>If you are unable to specify REGION=0M:</td>
</tr>
<tr>
<td></td>
<td>■ Specify NOLIMIT to allow unlimited above-the-bar memory.</td>
</tr>
<tr>
<td></td>
<td>■ If you are unable to specify NOLIMIT, specify at least 4 GB; if you are operating on LOB or XML data, BMC recommends at least 32 GB.</td>
</tr>
<tr>
<td>UNLOAD PLUS</td>
<td>If you are unable to specify REGION=0M:</td>
</tr>
<tr>
<td></td>
<td>■ Specify NOLIMIT to allow unlimited above-the-bar memory.</td>
</tr>
<tr>
<td></td>
<td>■ If you are unable to specify NOLIMIT, specify at least 4 GB; if you are operating on LOB or XML data, BMC recommends at least 32 GB.</td>
</tr>
</tbody>
</table>

**To override the default MEMLIMIT value**

1. Use one of the following methods to override the default MEMLIMIT value:
   - Specify the MEMLIMIT parameter in the JCL.
   - Specify REGION=0M in the JCL.
   - Use the SMF IEFUSI exit.
Configuring XBM and SUF

After you finish installing and authorizing the product, you must configure XBM and SUF to operate in your environment.

For more information, see “Configuring XBM and SUF” on page 345.

Configuring DASD MANAGER PLUS

After you finish installing the DASD MANAGER PLUS component, you must complete the tasks described in this section to configure DASD MANAGER PLUS to operate in your environment.

Enabling REXX executables

The Installation System generates REXX executables for DASD MANAGER PLUS. These REXX executables can be implicitly executed.

To enable the REXX executables

1. To enable the REXX executables to be implicitly invoked from TSO without having to invoke DASD MANAGER PLUS, perform one of the following tasks:

   - Add the $HLQ.DBREXX library to your SYSEXEC concatenation.
   - Copy the REXX executables from the $HLQ.DBREXX library to a library in your SYSEXEC concatenation.

Creating indexes to improve performance

To improve performance, BMC recommends that you create indexes on the DB2 catalog tables and on copies of the catalog tables (if you are using catalog indirection).
BMC strongly recommends that you take the following actions:

- If you are running the products on a DB2 Version 9 or 10 subsystem in new-function mode, create the DB2 Version 9 or 10 indexes on the DB2 catalog.

- If you are running the products on a DB2 Version 10 subsystem in conversion mode or enabling-new-function mode, create the DB2 Version 9 indexes on the DB2 catalog.

**To create indexes on the DB2 catalog tables**

1. Follow the instructions in the appropriate member in the `HLQ.UDBCNTL` data set to create the indexes:
   - (DB2 Version 10) BMIDB2XA
   - (DB2 Version 9) BMIDB2X9

**To create indexes on copies of the DB2 catalog tables**

1. For DB2 Versions 8 and later, it is not necessary to create indexes when you are implementing catalog indirection. The indexes already exist.

**Using the appropriate CLIST**

If multiple versions of the products are installed and the version and release numbers of the products on one DB2 subsystem are later than the version and release numbers of the products on another DB2 subsystem, use the CLIST for the later version and release of the products.

**To use the CLIST**

1. Ensure that a current copy of the appropriate CLIST is in the same SYSPROC concatenated library as your other CLISTS.

For example, if you installed version 9.3 of CATALOG MANAGER on DB2 subsystem DBDA and you installed version 10.1 of CATALOG MANAGER on DB2 subsystem DBDB, and you want to use one CLIST, use the CLIST for version 10.1 of CATALOG MANAGER on DBDB.

The Installation System generates the CLISTs for the Administrative products that are listed in the following table.
### Table 37: CLISTs for the Administrative products

<table>
<thead>
<tr>
<th>CLIST</th>
<th>Description</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACTPSS</td>
<td>defines the integration of CATALOG MANAGER and SQL Explorer for DB2</td>
<td>HLQ.UDBCLIB</td>
</tr>
<tr>
<td>AEXADMF1</td>
<td></td>
<td>HLQ.UDBCLIB</td>
</tr>
<tr>
<td>AEXADMF2</td>
<td>invokes Fast Path Navigation for the Administrative products</td>
<td>HLQ.UDBCLIB</td>
</tr>
<tr>
<td>ALUWLDDL</td>
<td>converts an ALTER or CHANGE MANAGER worklist to a DDL file</td>
<td>HLQ.DBCLIB</td>
</tr>
<tr>
<td>ALUXGRNT</td>
<td>creates an additional ALTER or CHANGE MANAGER worklist that contains -SETS and -SQL authorization commands only</td>
<td>HLQ.DBCLIB</td>
</tr>
<tr>
<td>BMCDB2</td>
<td>invokes the Administrative products</td>
<td>HLQ.UDBCLIB</td>
</tr>
<tr>
<td>BMCDRIVC</td>
<td>defines user libraries for the product driver panels</td>
<td>HLQ.UDBCLIB</td>
</tr>
<tr>
<td>CKSQNUM</td>
<td>enables you to verify SQL worklists sequencing for ALTER and CHANGE MANAGER To use the CKSQNUM CLIST, copy it from your installation library to a CLIST library from which you can run it. The CKSQNUM CLIST is used outside the Installation System.</td>
<td>HLQ.UDBCLIB</td>
</tr>
<tr>
<td>FIXSQNUM</td>
<td>enables you to verify and fix SQL worklists sequencing for ALTER and CHANGE MANAGER To use the FIXSQNUM CLIST, copy it from your installation library to a CLIST library from which you can run it. The FIXSQNUM CLIST is used outside the Installation System.</td>
<td>HLQ.UDBCLIB</td>
</tr>
<tr>
<td>POFRESET</td>
<td>for the Administrative products, enables you to reset all of the ISPF variables in the ISPF profile with the variables in the initial or user POF The POFRESET CLIST is used outside the Installation System.</td>
<td>HLQ.DBCLIB</td>
</tr>
<tr>
<td>READREPO</td>
<td>enables you to review installation profiles To use the READREPO CLIST, copy it from your custom installation library to a CLIST library from which you can run it. The READREPO CLIST is used outside the Installation System.</td>
<td>HLQ.INSTALL</td>
</tr>
</tbody>
</table>
Enabling the implicit execution of CLISTs

This procedure describes the steps that you must perform to enable the implicit execution of the CLISTs that are generated for ALTER, CATALOG MANAGER, CHANGE MANAGER, and DASD MANAGER PLUS.

To enable the implicit execution

1. Enable the BMCDRIVC CLIST.

   Copy the CLIST from the HLQ.JCL library or the HLQ.UDBCLIB library to a library in your SYSPROC concatenation.

2. *(ALTER or CHANGE MANAGER)* Perform one of the following tasks to enable the ALTER or CHANGE MANAGER CLISTs (ALUXGRNT, ALUWLDDL, FIXSQSUM, and CHKSQNUM) to be implicitly invoked from within a worklist:
   - Add the HLQ.DBCLIB (ALUXGRNT or ALUWLDDL) library or the HLQ.UDBCLIB (FIXSQSUM or CHKSQNUM) library to your SYSPROC concatenation.
   - Copy the CLISTs from the HLQ.DBCLIB (ALUXGRNT or ALUWLDDL) library or the HLQ.UDBCLIB (FIXSQSUM or CHKSQNUM) library to a library in your SYSPROC concatenation.

3. *(DASD MANAGER PLUS)* Perform one of the following tasks to enable the RSTRIG CLIST for DASD MANAGER PLUS to be implicitly invoked from within JCL:
   - Add the HLQ.UDBCLIB library to your SYSPROC concatenation.
Copy the CLISTs from the HLQ.UDBCLIB library to a library in your SYSPROC concatenation.

## Working with the BMCDB2 CLIST

For the ALTER, CATALOG MANAGER, CHANGE MANAGER, and DASD MANAGER PLUS products, the Installation System generates an ISPF interface based on the options and components that you specify during installation. Products or components that are installed with different high-level qualifiers (for example, installed individually and residing in different libraries) can be accessed from the interface.

The interface consists of a CLIST (BMCDB2) and panels (BMCDB2PR, BMCDB2P2, BMCDB2TB, and BMCDB2H). You can use this combination without making changes to your TSO logon procedure. BMC recommends that new users use the supplied ISPF interface. The products or components require you to execute the CLIST from one of the ISPF dialog panels in your system.

The BMCDB2 CLIST uses the ISPF LIBDEF command to allocate all of the BMC product libraries. The Installation System customizes BMCDB2 and BMCDB2PR to include the data set names that you used when you installed the products or components. The Installation System specifies up to two DB2 load libraries and specifies the installation options module name for each product to support the DB2 subsystem where the component is installed.

If you install the products or components individually using the same target data sets, the BMCDB2 CLIST and BMCDB2PR panels are generated using the options only for the last product or component that was installed. Therefore, you might not be able to access the previously installed product or component unless you edit the BMCDB2 CLIST.

## Setting the variables in the BMCDB2 CLIST

The BMCDB2 CLIST invokes the Administrative products.

You can edit several variables in the BMCDB2 CLIST to specify libraries and to use a generated permanent ISPF table. This procedure describes how to modify the variables.
To turn off the PF key display, issue the PFSHOW OFF command.
When you edit variables in the BMCDB2 CLIST to specify libraries, do not change the qualifier of the product data sets. Each of the data sets uses a designated qualifier that varies, depending on whether you use runtime, SMP/E, or user libraries.

To set the variables in the CLIST

1. To invoke the BMCDB2 CLIST implicitly, copy the CLIST from the HLQ.JCL library or the HLQ.UDBCLIB library to a library in your SYSPROC concatenation.

2. Edit the BMCDB2 CLIST.

3. If you copied the BMCDB2 CLIST from the HLQ.JCL library or the HLQ.UDBCLIB library to a library in your SYSPROC concatenation, modify the BMCDB2C variable in the BMCDB2 CLIST. Set this variable to the library in which the BMCDB2 CLIST was copied.

4. If you copied the BMCDB2PR, BMCDB2P2, BMCDB2TB, and BMCDB2H panels from the HLQ.JCL library or the HLQ.UDBPLIB library to another library, modify the BMCDB2P variable in the BMCDB2 CLIST. Set this variable to the library in which the panels were copied.

5. To improve the performance of the invocation of the products from a large control table in the BMCDB2 CLIST, set the GENTABLE variable in the BMCDB2 CLIST to Y, as shown in the following table.

```plaintext
SET BMCDB2T = &STR(BMC.DB2ADMN.D91.UDBTLIB) /* Control TABLE DATASET */
SET GENTABLE = Y /* USE GENERATED PERMANENT TABLE (Y/N) */
/* FOR Control TABLE */
```

To place a control table in a permanent ISPF table in the HLQ.UDBTLIB data set, invoke the BMCDB2 CLIST (see “Invoking the BMCDB2 CLIST” on page 78).

6. To not use the TSO ALTLIB command to dynamically add libraries to the SYSPROC concatenation, set the ALTCLIST variable to N.

7. Press END to exit.

Invoking the BMCDB2 CLIST

This procedure describes the steps to invoke the BMCDB2 CLIST.
To invoke the BMCDB2 CLIST

1. Invoke the BMCDB2 CLIST by using one of the following commands:
   - Invoke BMCDB2 explicitly from your CLIST data set in the ISPF command shell or your ISPF dialog with the following command:
     ```
     ex 'HLQ.UDBCLIB(BMCDB2)'
     ```
   - If the BMCDB2 CLIST is copied to a library in your SYSPROC concatenation, invoke BMCDB2 implicitly with the following command:
     ```
     %BMCDB2
     ```

   To specify various parameters with the BMCDB2 command, see “BMCDB2 command” on page 79.

2. On the BMC Administrative Products for DB2 (BMCDB2PR) panel, if the BMCDB2 CLIST supports multiple SSIDs, type ? for the DB2 SSID.
   a. On the BMCDB2 Subsystem Selection List (BMCDB2P2) panel, type S to select an SSID from the list of available SSIDs.
      The SSID that you selected is displayed in the DB2 SSID field on the BMC Administrative Products for DB2 (BMCDB2PR) panel.
   b. Press Enter.

3. If one of the following conditions exist, on the BMC Administrative Products for DB2 (BMCDB2PR) panel, type GENERATE on the COMMAND line:
   - you edited your BMCDB2 CLIST to use a generated permanent ISPF table for the control table by setting the GENTABLE variable to Y
   - you modified the control table that was previously generated
   - you want to specify the OPENTBL parameter in the BMCDB2 command

   Issuing the GENERATE command places a control table in a permanent ISPF table in the HLQ.UDBTLIB data set, which improves the performance of the invocation of the products from a large control table referenced by the BMCDB2 CLIST. Refer to the BMCDB2T variable in the BMCDB2 CLIST for the location of the generated ISPF table.

4. Verify that all of the products appear on the BMCDB2PR panel that is displayed.
BMCDB2 command

This topic describes the parameters that you can specify with the BMCDB2 command.

You can specify various parameters with the BMCDB2 command to perform the following functions:

- Avoid the use of the ISPF LIBDEF facility to allocate the necessary ISPF data sets
- Use the ISPF LIBDEF facility to allocate all of the ISPF data sets, except the load data set
- Invoke the BMCDB2 CLIST implicitly
- Invoke a product implicitly
- Invoke ALTER, CATALOG MANAGER, CHANGE MANAGER, or DASD MANAGER PLUS directly, without displaying the BMC Administrative Products for DB2 (BMCDB2PR) panel (improves performance)

BMCDB2 command syntax

The syntax of the BMCDB2 command is shown in the following figure.

**Figure 67: BMCDB2 command**

The parameters specify the following information:

- **LIBDEF**—determines whether the BMCDB2 CLIST should use the ISPF LIBDEF facility to allocate all necessary ISPF data sets (YES or NO)
Note
By default the BMCDB2 CLIST uses the ISPF LIBDEF facility to allocate all necessary ISPF data sets. Thus, you might not need to modify your TSO logon procedure to allocate data sets. If ISPF 4.2 or later is available, the STACK keyword is added to all LIBDEF statements that are used in the BMCDB2 CLIST.

- LOADLDEF--when LIBDEF is YES, indicates whether the ISPF LIBDEF facility should be used to allocate the ISPLLIB (load) data set (YES or NO)
  
  Use the LOADLDEF parameter if you have copied the load library for a product in your subsystem LINKLIST data sets or if you have previously added the load library to your STEPLIB concatenation.

- CLSTEXEC--indicates whether the BMCDB2 CLIST should be invoked explicitly (EXPLICIT) or implicitly (IMPLICIT)
  
  — If the CLIST is invoked explicitly, you must use a fully-qualified data set name and member name.
  
  — If the CLIST is invoked implicitly, you can use only the member name. In addition, the CLIST must reside in a library in your SYSPROC concatenation.

Note
In previous releases, the CLSTEXEC parameter controlled the invocation both the BMCDB2 CLIST and ALTER, CATALOG MANAGER, CHANGE MANAGER, or DASD MANAGER PLUS. The parameter now controls only the invocation of the BMCDB2 CLIST. To control the invocation of the products, use the LOADEXEC parameter.

- LOADEXEC - indicates whether the BMC products should be invoked explicitly (EXPLICIT) or implicitly (IMPLICIT)

The syntax of the BMCDB2 command display options is shown in the following figure.

**Figure 68: BMCDB2 command--display options**

The display option parameters specify the following information:

- PGM--specifies the name of the *program*, as listed in the following table
Table 38: Program names

<table>
<thead>
<tr>
<th>Product</th>
<th>program</th>
</tr>
</thead>
<tbody>
<tr>
<td>ALTER</td>
<td>ALUFRONT</td>
</tr>
<tr>
<td>CATALOG MANAGER</td>
<td>ACTEMAIN</td>
</tr>
<tr>
<td>CHANGE MANAGER</td>
<td>ACMFRONT</td>
</tr>
<tr>
<td>DASD MANAGER PLUS</td>
<td>ASUFMAIN</td>
</tr>
</tbody>
</table>

- **PROD**—specifies the three-character product code (prd)
- **CFUNC**—specifies the CLIST function to perform (ALLOC)
- **SSID**—names the DB2 subsystem that is used to invoke the product (ssid)

**Note**
The SSID must be a valid DB2 subsystem that is defined in the control table.

- **OPENTBL**—specifies to issue an OPEN command against the control table (YES or NO)

**Note**
Before you can invoke a BMCDB2 command that specifies the OPENTBL(YES) option, you must first issue the GENERATE command from the BMC Administrative Products for DB2 (BMCDB2PR) panel.

- **BASEID**—no longer used
- **SHRAPPL**—indicates whether the products on a single SSID should use a shared ISPF profile (S) or use an individual profile (I)
- **ACCESS**—specifies to access the DB2 catalog directly (DIRECT) or to use an indirect copy of the catalog (INDIRECT)

**Examples**

The following examples show how you can use the various parameters with the BMCDB2 command.

**To avoid the use of the ISPF LIBDEF facility**

To avoid the use of the ISPF LIBDEF facility to allocate the necessary ISPF data sets, use the following command:

```
%BMCDB2 LIBDEF(NO)
```
To use the ISPF LIBDEF facility for all data sets, except the load data set

To use the ISPF LIBDEF facility to allocate all of the necessary ISPF data sets, except for the load data set, use the following command:

`%BMCDB2 LIBDEF(YES) LOADLDEF(NO)`

To invoke the CLIST implicitly

To invoke the CLIST implicitly, use the following command:

`%BMCDB2 CLSTEXEC(IMPLICIT)`

To invoke ALTER, CATALOG MANAGER, CHANGE MANAGER, or DASD MANAGER PLUS implicitly

To invoke a product implicitly, use the following command:

`%BMCDB2 LOADEXEC(IMPLICIT)`

To invoke ALTER, CATALOG MANAGER, CHANGE MANAGER, or DASD MANAGER PLUS directly

To invoke a product directly, you use the display options of the BMCDB2 command. When you use these options, the BMC Administrative Products for DB2 (BMCDB2PR) panel is not displayed. For example, to invoke CATALOG MANAGER directly, use the following commands:

```
%BMCDB2
GENERATE (from the BMC Administrative Products for DB2 [BMCDB2PR] panel)
ex 'HLQ.UDBCLIB(BMCDB2)' 'PGM(ACTEMAIN) PROD(ACT) SSID(DEBA) CFUNC(ALLOC) OPENTBL(YES)'
```

Completing optional configuration tasks

This section describes additional configuration tasks that you might complete to customize the installation of the Database Performance for DB2 solution for your site.
Verifying installation of the REORG PLUS and DASD MANAGER PLUS components

This topic provides procedures for verifying the installation of the REORG PLUS and DASD MANAGER PLUS components of the Database Performance solution.

To verify installation of the REORG PLUS component

The Installation System generates an installation verification procedure (IVP) job for the REORG PLUS component.

Complete the following tasks before you run the IVP job:

- Submit all installation jobs, except the IVP job ($C70IVP). For more information, see the BMC Installation System User Guide.

- Apply the appropriate fixes for the products that you are installing. For more information about applying maintenance, see the BMC Installation System User Guide.

- Grant the appropriate authorizations. See the information on “Granting user authorizations and controlling access” on page 283.

Note
If you are not the person who installed the solution but are submitting the IVP job, ensure that you have the authorizations that are required to execute each component that was installed.

1 If your jobs use data sets that are managed by Storage Management Subsystem (SMS), ensure that the SMS service routine load library (SYS1.CSSLIB) is APF-authorized, regardless of whether it is in your system LNKLIST or STEPLIB concatenation.

2 Run the IVP job ($C70IVP).

The IVP job should complete with condition code 0 unless otherwise indicated by comments in the job.
Note
The following temporary objects exist only for the duration of the IVP job:

- database BMCIVPDB
- table space BMCIVPDB.BMCIVPTS
- table BMC.BMCIVPTB
- index BMC.BMCIVPIX1

To verify installation of the DASD MANAGER PLUS component

This procedure describes the steps that you must complete to verify that the DASD MANAGER PLUS component, which has an ISPF interface, has been installed correctly.

1. Invoke the BMCDB2 CLIST as described in “Invoking the BMCDB2 CLIST” on page 78.

2. On the COMMAND line, type CONTAB .

3. On the BMCDB2TB panel, verify that the correct partitioned data set (PDS) and member name are displayed in the library in which the BMCDB2 CLIST is located. The HLQ(CONTAB sequential file should also be displayed in the library.

   If the PDS and member name are not displayed, set the BMCDB2C variable in the BMCDB2 CLIST to the correct library.

4. Exit the CONTAB panel.

5. Select DASD MANAGER PLUS.

6. To access the environment information, at the main menu, select User Options, and then select Current environment information.

7. Review the environment panel to verify the displayed information. Exit the environment panel.

Enabling interaction with other BMC Software products

The Installation System automatically enables the Database Performance for DB2 solution to interact with the several BMC Software products.
The Installation System automatically enables the solution to interact with the following BMC Software products if you install them at the same time, or if you select to allow their interaction on the Product to Product Interface Panel during installation:

- LOADPLUS
- COPY PLUS
- ALTER
- CHANGE MANAGER
- CATALOG MANAGER

However, if any of the following conditions exist, you must perform additional steps to enable the products to interact:

- You installed the products at different times and did not select to allow the products to interact with one another.
- The products do not share libraries.
- Synonyms in the Utility products do not point to the correct DASD MANAGER PLUS tables.

In these cases, you must perform the tasks in this section to enable interaction.

**Using a different Utilities load library with DASD MANAGER PLUS**

Perform this task if you installed DASD MANAGER PLUS in a separate installation session before you installed the Utility products, and if the Utility products are installed in a different load library than DASD MANAGER PLUS.

1. In the `HLQ.UDBCNTL` library, find the DASD MANAGER PLUS member that has the same name as the installation options module.

2. In the member, locate the name of the POF in the POFDS parameter.

3. In the `HLQ.UDBCNTL` library, find the POF member.

4. Update the keywords in the POF member to use the different Utilities load library (such as the DBLINK library). For a description of the keywords, see the DASD MANAGER PLUSS documentation.

   - ADDLOAD1
5 If necessary, add any additional load libraries to SLIB member AJXSTEPU.

6 If you added load libraries in step 5, compile the SLIB member.

For sample compile JCL, see member AJXCOMPS in the HLQ.DBCNTL data set. For more information, see “Generating environment-specific JCL” on page 86.

Note
If you want to modify the JCL in member AJXCOMPS, copy the member from HLQ.DBCNTL to HLQ.UDBCNTL. Then, modify the JCL in HLQ.UDBCNTL(AJXCOMPS).

**Enabling COPY PLUS to update DASD MANAGER PLUS tables**

If you use the BMCSTATS command option, COPY PLUS can update the DASD MANAGER PLUS statistics tables to refresh statistical information.

**Before you begin**

Determine whether your current COPY PLUS synonyms refer to the correct tables. The following table shows the synonyms that these utility products use to reference the corresponding tables for DASD MANAGER PLUS.

<table>
<thead>
<tr>
<th>Synonym</th>
<th>DASD MANAGER PLUS table</th>
</tr>
</thead>
<tbody>
<tr>
<td>BMCACP_BMCXTBSP</td>
<td>BMCATSyy:RS_TABLESPACE</td>
</tr>
<tr>
<td>BMCACP_BMCXTBSP</td>
<td>BMCATSyy:RS_TABLEPART</td>
</tr>
<tr>
<td>BMCACP_BMCXTBLS</td>
<td>BMCATSyy:RS_TABLES</td>
</tr>
</tbody>
</table>

The codes and variables in the table are defined as follows:

- ACP is the product code for COPY PLUS.
**yy** is the version and release number of your current DASD MANAGER PLUS product. These table names are the default names as shipped and might have changed when DASD MANAGER PLUS was installed.

If your current COPY PLUS synonyms do not point to the tables that are listed in the table, complete the following steps to update them. The `HLQ.UDBCNTL` member `T1S#ASUC` provides an example of a worklist for steps 1 and 2 given below.

**To enable COPY PLUS to update DASD MANAGER PLUS tables**

1. Drop the COPY PLUS synonyms.
2. Create the new COPY PLUS synonyms by using the same synonym names, but with the correct DASD MANAGER PLUS table names.

**Enabling the use of DASD MANAGER PLUS within ALTER or CHANGE MANAGER**

If you use the BMCSTATS command option, COPY PLUS can update the DASD MANAGER PLUS statistics tables to refresh statistical information.

Perform the steps in this procedure if either of the following conditions exists:

- You installed the Database Performance solution after you installed ALTER or CHANGE MANAGER, and the products do not share libraries.
- You installed the DASD MANAGER PLUS component into a separate library.

**To enable the use of DASD MANAGER PLUS within ALTER or CHANGE MANAGER**

1. Edit the BMCDB2 CLIST.
   a. Add the DASD MANAGER PLUS load library HLQ to the HLQ2 variable.
   b. Add the DASD MANAGER PLUS product information to the control table values, as shown below.

   **Note**
   Refer to the comments that precede the *DATA section of the control table for help with adding rows to the table.

<table>
<thead>
<tr>
<th>*DATA</th>
<th>*PROD</th>
<th>SSID</th>
<th>D/I</th>
<th>DOPT</th>
<th>PLAN</th>
<th>APPL</th>
<th>COLL_ID</th>
<th>NICKNAME</th>
</tr>
</thead>
<tbody>
<tr>
<td>*-----</td>
<td>-----</td>
<td>------</td>
<td>------</td>
<td>------</td>
<td>------</td>
<td>------</td>
<td>--------</td>
<td>---------</td>
</tr>
<tr>
<td>ASU</td>
<td>DBAP</td>
<td>D</td>
<td>ASUDOPD1</td>
<td>ASU711DC</td>
<td>ASU</td>
<td></td>
<td></td>
<td>*</td>
</tr>
</tbody>
</table>

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2 Update the ALTER or CHANGE MANAGER installation option for DASD MANAGER PLUS.
   
   a Set the DASDMAN option to (Y,R).
   
   b Reassemble the installation options module.

3 Edit the product options file (POF) and set the DASD_LOAD= keyword to the DASD MANAGER PLUS load library or APF library.

4 Add the DASD MANAGER PLUS collection and package list (ASUVrm_D_MAIN.*) to the PACKLIST for the Front End, Specification, and Analysis plans.

5 Rebind the plans.

6 Copy the ASUVERSN member from the DASD MANAGER PLUS load library to the ALTER or CHANGE MANAGER load library.

**Enabling the use of DASD MANAGER PLUS within CATALOG MANAGER**

Within CATALOG MANAGER, you can use the SPACE command to display the Space Estimation panels for table spaces and indexes and the STAT command to display statistics panels for specified objects.

Complete the following steps to enable interaction.

Perform the steps in this procedure if either of the following conditions exists:

- You installed the Database Performance solution after you installed CATALOG MANAGER, and the products do not share libraries.
- You installed the DASD MANAGER PLUS component into a separate library.

**To enable the use of DASD MANAGER PLUS within CATALOG MANAGER**

1 Edit the BMCDB2 CLIST.
   
   a Add the DASD MANAGER PLUS load library HLQ to the HLQ1 variable.
   
   b Add the DASD MANAGER PLUS product information to the BMCDB2 control table values, as shown below.
Refer to the comments that precede the *DATA section of the control table for help with adding rows to the table.

```
*DATA
*PROD SSID D/I DOPT PLAN APPL COLL_ID            NICKNAME
*----|----|-|--------|--------|----|------------------|----------------
--------
ASU  DBAP D ASUDOPD1 ASU711DC
ASUA                                           *
```

2 Update the CATALOG MANAGER installation option for DASD MANAGER PLUS.

   a Set the BOPTS option to ASUDOPD1 (or to the name of the DASD MANAGER PLUS installation options module).

   b Reassemble the installation options module.

3 Edit the product options file (POF) and set the DASD_LOAD keyword to the new DASD MANAGER PLUS load library or APF library.

**To enable the use of DASD MANAGER PLUS within CATALOG MANAGER if you have two versions of DASD MANAGER PLUS installed**

Depending on your environment and on the products and solutions that you have installed, you might have two versions of DASD MANAGER PLUS installed. If the following conditions exist, you must perform the steps in the following procedure to use DASD MANAGER PLUS within CATALOG MANAGER:

- you currently have CATALOG MANAGER and DASD MANAGER PLUS installed, and you are installing a new version of DASD MANAGER PLUS into a separate library

- you want CATALOG MANAGER to interact with the new version of DASD MANAGER PLUS

1 Back up all of the OAD* and ASU* load modules in your existing library (where * is a wildcard) into a backup data set.

2 Copy the OAD* and ASU* load modules from the new library and replace the existing OAD* and ASU* load modules in the old library.

3 Edit the BMCDB2 CLIST and add the new DASD MANAGER PLUS load library HLQ to the HLQ1 variable.

4 Update the CATALOG MANAGER installation options.

   a Set the BOPTS option to ASUDOPD1 (or to the name of the DASD MANAGER PLUS installation options module).
b  Reassemble the installation options module.

5  Edit the product options file (POF) and set the DASD_LOAD keyword to the new DASD MANAGER PLUS load library or APF library.

### Enabling Database Performance for DB2 for data sharing

To enable Database Performance in a data sharing environment, create a temporary database on each data sharing member (if you have not already done so).

For details, see the $C79TMPD job that the Installation System generated during the customization process.

### Accessing multiple z/OS systems

You must complete several tasks to access multiple z/OS system when you use Database Performance for DB2.

To access multiple z/OS systems, complete the following tasks:

- Create a UIM server on each system (see “Creating additional UIM servers” on page 312).
- Create JCL Generation POFs for each DB2 subsystem within each system (see “Creating additional JCL Generation POFs” on page 319).

### Creating additional UIM servers

You must have a separate UIM server for each z/OS system that you want to access. Use the procedures in this section to create additional UIM servers.

When the UIM server was installed, the sample startup procedure was copied, customized, and saved in your UIM sample library (HLQ.XXSAMP, where HLQ is the high-level qualifier that you specified during installation). Use this sample to create an additional UIM server.

To create a new UIM server, complete the following procedures in this section:

1  “To create a startup configuration member” on page 313
2  “To create a started task procedure” on page 314
3  “To allocate the HFS data set” on page 316
To create a startup configuration member

1. Locate the #NORMAL member in the UIM sample library.

2. Create a new startup configuration member by copying the #NORMAL member from the sample library into your configuration file and giving it a new name.

You will use this same name when you name the started task procedure for the new UIM server. The following figure shows the startup configuration member. The HLQ shown in this member is the high-level qualifier that you specified during installation.

Figure 69: Startup configuration member

```xml
<BMCHTTP>
  <BMC_PARM ID="PORT" VALUE="9999" />
  <BMC_PARM ID="AUTH_TIMEOUT_SECS" VALUE="1800" />
  <BMC_PARM ID="AFF_TIMEOUT_SECS" VALUE="1800" />
  <BMC_PARM ID="HFS_DATASET" VALUE="HLQ.HFS" />
  <BMC_PARM ID="ALLOW_NETCMD" VALUE="YES" />
</BMCHTTP>
```

3. Edit the new startup configuration member by changing the variables that are listed in the following table.
Table 39: Startup configuration member variables

<table>
<thead>
<tr>
<th>Variable</th>
<th>Definition</th>
<th>Accepted value</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;BMC_PARM ID=&quot;PORT&quot; VALUE=&quot;9999&quot;/&gt;</td>
<td>port value for the UIM server</td>
<td>unique numeric value in the range of 1 through 65535</td>
<td>Changing UIM server options on page 330</td>
</tr>
<tr>
<td>&lt;BMC_PARM ID=&quot;AUTH_TIMEOUT_SECS&quot; VALUE=&quot;1800&quot;/&gt;</td>
<td>security authorization timeout</td>
<td>numeric value in seconds</td>
<td></td>
</tr>
<tr>
<td>&lt;BMC_PARM ID=&quot;AFF_TIMEOUT_SECS&quot; VALUE=&quot;affinitySeconds&quot;/&gt;</td>
<td>idle timeout period for affinity tasks</td>
<td>unique numeric value in seconds</td>
<td></td>
</tr>
<tr>
<td>&lt;BMC_PARM ID=&quot;HFS_DATASET&quot; VALUE=&quot;HLQ.HFS&quot;/&gt;</td>
<td>hierarchical file system (HFS) data set name</td>
<td>extended partitioned data set (PDSE) name for storing the HFS data</td>
<td></td>
</tr>
<tr>
<td>&lt;BMC_PARM ID=&quot;ALLOW_NETCMD&quot; VALUE=&quot;YES&quot; /&gt;</td>
<td>whether to enable or disable the network browser command interface</td>
<td>YES (default), NO, or AUTHORIZE</td>
<td></td>
</tr>
</tbody>
</table>

To create a started task procedure

After creating the startup configuration member, you must create a started task procedure for that startup member.

1. Locate the #UIMx member in the UIM server sample library.

2. Create a new #UIMx member by copying the #UIMx member to your system procedure library and giving the new member the name that you selected for the startup member.

The following figure shows the #UIMx member.

Figure 70: #UIMx member

```plaintext
//uimx     PROC M=uimx, <-- name of configuration member
// ENV=   
,copy---------------------------+
//uimx     EXEC PGM=UIMMAIN, <- specify accounting info +
//       ACCT=(acct),         <- specify region size +
//       REGION=OK,         <- specify region size +
//       TIME=1440,         +
// PARM=('\C \&M \&ENV -L =B =CNFTRACE =VERSION')  
/*                     */
/*                     */
/* COMMON COMMAND-LINE PARAMETERS: */
```
3 Edit the new #UIMx member.

   a Add your DB2 load library to the STEPLIB concatenation.

   b Change the variables that are listed in the following table.
Table 40: #UIMx member data set name variables

<table>
<thead>
<tr>
<th>Data set name variables</th>
<th>Definition</th>
<th>Accepted value</th>
</tr>
</thead>
<tbody>
<tr>
<td>uimx</td>
<td>\textit{uimx} is the name of the started task procedure and the startup configuration member</td>
<td>name that you gave to the #UIMx member when you copied it to your system procedure library</td>
</tr>
<tr>
<td>HLQXXLINK</td>
<td>\textit{HLQ} is the high-level qualifier for the load library that contains the UIM server and product execution code</td>
<td>valid data set name qualifier</td>
</tr>
<tr>
<td>HLQ*LINK</td>
<td>\textit{HLQ} is the high-level qualifier for the library that contains your product code</td>
<td></td>
</tr>
<tr>
<td>HLQXXCONT</td>
<td>\textit{HLQ} is the high-level qualifier for the library that contains content information for the UIM server</td>
<td></td>
</tr>
<tr>
<td>HLQXXCNFG</td>
<td>\textit{HLQ} is the high-level qualifier for the library that contains UIM server execution parameters that are used during initialization of the UIM server</td>
<td></td>
</tr>
<tr>
<td>HLQUIMCNFG</td>
<td>\textit{HLQ} is the high-level qualifier for the library from the UIM configuration installation panel to write out tailored configuration members</td>
<td></td>
</tr>
</tbody>
</table>

**To allocate the HFS data set**

After creating the startup configuration member and the started task procedure, you can perform the following steps:

1. You can allocate and initialize the HFS data set.

   This server-side storage data set stores user preferences and dynamic configuration information on the UIM server.

2. You can submit the customized data set, or you can customize a copy of the data set member in the sample library.

   During installation, the HLQ.HFS member in the SAMP library was created and customized with your site specific information. You can submit the customized data set, or you can customize a copy of the data set member in the sample library.
You can share the HFS data set between all UIM servers that are on the host, or you can create an HFS data set for each UIM that is on the host.

**To customize a copy of the data set member**

1. Locate the #DEFHFS member in the UIM sample library.

   The following figure shows the #DEFHFS member. The HLQ shown in this member is the high-level qualifier that you specified during installation.

   ![Figure 71: Default #DEFHFS member](image)

   //ALLPDSE EXEC PGM=IEFBR14
   //HFSPDSE DD DISP=(NEW,CATLG),UNIT=SYSDA,SPACE=(CYL,(1,1)),
   //       DCB=(DSORG=PO,RECFM=VB,LRECL=4096),
   //       DSNTYPE=LIBRARY,
   //       DSN=HLQ.HFS

2. Edit the #DEFHFS member by changing the values of the parameters that are listed in the following table.

   **Table 41: #DEFHFS member information**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Definition</th>
<th>Accepted value</th>
</tr>
</thead>
<tbody>
<tr>
<td>UNIT</td>
<td>device for placing data sets</td>
<td>see your site standards</td>
</tr>
<tr>
<td>DSN</td>
<td>high-level qualifier for the HFS data set</td>
<td>see your site standards</td>
</tr>
</tbody>
</table>

3. Save the edited #DEFHFS member with a new name.

4. Submit the DEFHFSJC member JCL.

**To initialize the HFS data set**

1. Before you can share connections in a sysplex, you must initialize the HFS data set that you allocated.

   During installation, the HFSLOAD data set is created and customized with your site-specific information.

**To submit a copy of the customized data set member**

1. Locate #LOADHFS in the UIM server sample data set.
The following figure shows the default #LOADHFS member.

**Figure 72: Default #LOADHFS member**

```c
//*--------------------------------------------------------------
//*
//*     Load the BMC HFS PDSE with SAMP library members.
//*     Optionally convert previous BMC HFS HostList.xml if found.
//*
//*--------------------------------------------------------------
//LOADHFS EXEC PGM=UIMHFSL,REGION=0K,
PARM='=version $UIMHFSL $UIMHFST'
//*
** UIMHFSL parameters:
**
** memname  Samplib control cards member, default is $HFSLOAD.
** - $HFSLOAD is a Load of default properties files
** -t        Activate tracing to SYSPRINT
**
** SAS/C Runtime Library parameters:
**
** =version  Print Runtime Library release information to SYSTERM
**
**--------------------------------------------------------------
//STEPLIB  DD  DISP=SHR,DSN=?????????.LOAD
//*
** SAS/C DD'S
/SYSTEMM DD  SYSOUT=*  
/SYSPRINT DD  SYSOUT=*  
/STGRPT DD  SYSOUT=*  
/**
** STANDARD JOB DD'S
/SYSUDUMP DD  SYSOUT=*  
/**
/HFSPDSE  DD  DISP=SHR,DSN=?????????.HFS
/SAMP     DD  DISP=SHR,DSN=?????????.SAMP
/CONT     DD  DISP=SHR,DSN=?????????.CONTENT
/**
/*

2 Edit the #LOADHFS member, and change the variable ????????? to the high-level qualifier according to your site standards.

3 Save the edited member as HFSLOAD.

--- Note ---
This step overwrites the customized data set that was created during installation.

4 Submit the HFSLOAD member JCL.

**To enable or disable password caching**

By default, when you create connections, the UIM server caches the password. However, you can enable and disable the password caching.

1 Locate member #UPDADM in the UIM server sample library.
The following figure shows the default member #UPDADM.

**Figure 73: Default member #UPDADM**

```c
/*--------------------------------------------------------------*/
/*  Load the BMC HFS PDSE with SAMP library member to update the*/
/*  Password Caching setting.                                 */
/*--------------------------------------------------------------*/
//UPDADM  EXEC PGM=UIMHFSL,REGION=0K,
//  PARM='=b =version $UPDADM'
//*   memname   Samplib control cards member, default is $HFSLOAD.
//*   - $UPDADM is an update of Password cache member only
//*   -t        Activate tracing to SYSPRINT

/STEPLIB  DD  DISP=SHR,DSN=?????????.LOAD
/
/*   SAS/C DD'S
/SYSTEM  DD  SYSOUT=* 
/SYSPRINT DD  SYSOUT=* 
/STGRPT   DD  SYSOUT=* 
/STANDARD JOB DD'S
/SYSUDUMP DD  SYSOUT=* 
/
/HFSPODSE DD  DISP=SHR,DSN=?????????.HFS 
/SAMP     DD  DISP=SHR,DSN=?????????.SAMP
```

2 Edit member #UPDADM, and change ?????????? to the high-level qualifier according to your site standards.

3 Save the edited member as UPDADMIN.

4 Save the edited member as UPDADMIN.

The following example shows the default member $ADMIN.

```c
AllowPasswordCaching=true
```

5 Perform one of the following actions:

- To disable password caching, set `AllowPasswordCaching=false`.
- To enable password caching, set `AllowPasswordCaching=true`.

6 Save $ADMIN.

7 Submit the member UPDADMIN JCL.

### Creating additional JCL Generation POFs

You can create additional JCL Generation POFs for each subsystem on each z/OS image by using the ISPF interface for the DASD MANAGER PLUS component.
Any JCL Generation POFs that you create in addition to the initial POF are considered user POFs (also called action POFs). For information about creating user or action POFs, see the *DASD MANAGER PLUS for DB2 User Guide*.

### Merging multiple products into a single UIM server

Several BMC products for DB2 and IMS use the UIM server. You can merge multiple products into a single UIM server.

If you already have a UIM server installed on a z/OS image, and you install an additional product that uses the UIM server, you can merge the two UIM servers into a single UIM server and a single started task procedure.

For example, if you are installing the Database Performance for DB2 solution and you already have a UIM server installed for an IMS product (such as RECOVERY MANAGER for IMS), you can perform the steps in this section to enable the solution to work with your existing UIM server started task procedure.

**Note**

IMS products might require additional steps to merge into a single UIM server. For more information, see the documentation for your IMS product.

### To merge multiple products into one UIM server

1. Locate the #UIMx member that the Installation System created in the UIM server sample library (*HLQ.XXSAMP*).

2. Copy the #UIMx member to your system procedure library and give the new member the name that you selected for the startup member during installation.

3. Ensure that the new UIM load library (HLQ.XXLINK) is first in the STEPLIB concatenation.

4. Add the older versions of the following files in concatenation order after the newer versions:
   - application load library
   - content file
   - configuration file
**Note**

The content files and the configuration files must be ordered from newest products and files to the oldest products and files.

The following figure shows an example of a consolidated started task procedure for the UIM server. This example UIM server works for Database Performance (DFD), an IMS product, and other DB2 products.

**Figure 74: Consolidated #UIM member**

```plaintext
//DFDUIMQ9  PROC M=DFDUIMQ9, +
//    ENV= +
//    REGION=OK, +
//    TIME=1440,ACCT=(5210), +
//    PARM=('-C &M &ENV -L =B =CNFTRACE =S =U =VERSION')

* COMMON COMMAND-LINE PARAMETERS:
* -C MMMMMM  CONFIGURATION FILE MEMBERNAME
* -P 9999 TCP LISTENER PORT NUMBER
* -L(LOG MESSAGES AND TRACE VIA SUBTASK
* -SOUT= SPECIFY THE SYSOUT CLASS FOR DYNAMICALLY ALLOCATED
*   LOG FILES( IE. =SOUT=X )
* SAS/C RUNTIME LIBRARY PARAMETERS:
* =B(PRINT FUNCTION TRACEBACK WITH LIBRARY WARNINGS
* =CNFTRACE PRINT DIAGNOSTICS DUE TO TCP/IP CONFIGURATION FAILURES
* =S(PRINT STORAGE ANALYSIS REPORT AT TERMINATION
* =U(PRINT STORAGE USAGE REPORT AT TERMINATION
* =VERSION PRINT RUNTIME LIBRARY RELEASE INFORMATION TO SYSTERM

STEPLIB DD DISP=SHR,DSN=HLQ.XXLINK <-from new UIM/DHS installation
    DD DISP=SHR,DSN=DFD.LOAD <-from new DFD installation
    DD DISP=SHR,DSN=HLQ.IMLOAD <-from merged IMS installation
    DD DISP=SHR,DSN=productCodeLOAD <-from nonmerged IMS installed
    DD DISP=SHR,DSN=DB2HLQ.DSNEXIT <-if other DB2 products
    DD DISP=SHR,DSN=DB2HLQ.DSNLOAD <-if DB2 products installed

SYSTERM DD SYSOUT=*
5 Restart the UIM server address space.

Shared components

The ALTER, CATALOG MANAGER, CHANGE MANAGER, and DASD MANAGER PLUS products share several components.

The following components are shared:

- JCL Generation, which controls the JCL generation process
- Execution Monitor, which controls worklist processing by reading and performing worklist commands
- Common SQL, which provides access to the DB2 catalog
When you unload ALTER, CATALOG MANAGER, CHANGE MANAGER, or DASD MANAGER PLUS (or any solution that includes one or more of these products), these components are also unloaded. The Installation System copies these components to an APF-authorized load library that any of the products can share. If you install the products at different times or if you are applying maintenance and any of the products share the same APF-authorized load library, you must bind each product to the new level of the shared components.

**Note**
If you do not properly bind all of the products that share the common components, any attempts to generate JCL or to execute worklists can cause SQLCODES -805 and -818. The product that has not been bound or upgraded will not run.

You do not have to bind a product separately to the shared components if the following conditions exist:

- You are using the same APF-authorized load library, and you are upgrading all products that use the shared components at the same time. The binds take place during the upgrade.

- You are using separate APF-authorized load libraries for your products.

**Note**
A problem occurs if all of the following conditions exist:

- You install one of the products or a solution that has one of the products as a component, and the product or solution uses the current version of the JCL Generation and Execution components.

- You install another product or solution that uses an earlier version of the JCL Generation and Execution components.

In this case, the products or solutions cannot use the same APF-authorized load library. To prevent the problem from occurring, choose a different load library when installing the additional product or solution.

**Binding a product to shared components**

This procedure describes how to bind ALTER, CATALOG MANAGER, CHANGE MANAGER, or DASD MANAGER PLUS to the shared components.

**To bind the products**

1. Edit the BIND packages and plans for the product, which are in the `HLQUDBCNTL` data set.
The following table lists the member names for the jobs. The variable prd is the product or component code, and ssid is the DB2 subsystem ID.

**Table 42: Member names for jobs for BIND packages and plans**

<table>
<thead>
<tr>
<th>Member name</th>
<th>Job</th>
</tr>
</thead>
<tbody>
<tr>
<td>prdssidP</td>
<td>package BIND jobs for direct access</td>
</tr>
<tr>
<td>prdssidB</td>
<td>plan BIND jobs (including CATALOG MANAGER plan BIND jobs for indirection)</td>
</tr>
<tr>
<td>prdssidZ</td>
<td>package and plan BIND jobs for indirection (except CATALOG MANAGER plan BIND jobs)</td>
</tr>
</tbody>
</table>

2. Concatenate the new HLQ.DBDBRM library ahead of the old HLQ.DBDBRM library in the DBRMLIB DD statement in these members.

3. Submit the BIND jobs.

4. Repeat for each product and for the ACS component, if applicable.

**Generating environment-specific JCL**

The JCL Generation component generates the JCL that is needed to execute all of the batch functions that use ISPF file tailoring.

You might need to change members of the BMC product skeleton library (SLIB) to generate environment-specific JCL. This procedure describes the steps you must perform to edit, test, and compile the SLIB.

**To edit and compile SLIBs**

1. Edit the appropriate SLIB members in HLQ.UDBSLIB to change the way the JCL is generated.

   **Note**

   Any customizations that you have made to the SLIB members for an earlier release are not included in your current installation.

2. (optional) Edit the AJX#USRV member and change the EXEC REGION parameter.

   The EXEC REGION parameter is set by default to REGION=0M in the AJX#USRV member that resides in the SLIB. If you do not change the IBM-supplied default limits in the IEALIMIT or IEFUSI exit routine modules, this parameter requests that the job step get all of the available storage above and below the 16 MB line.
b Edit the AJX#DSNS member to generate JCL for GDGs.

2 Use JCL Generation to test the changes to the SLIB.

For more information about testing the SLIB members, refer to the following BMC books:

- *ALTER and CHANGE MANAGER for DB2 User Guide Volume 2*
- *CATALOG MANAGER for DB2 User Guide*
- *DASD MANAGER PLUS for DB2 User Guide*

3 Compile the SLIB members that you edited.

For a sample compile JCL, refer to member AJXCOMPS in the *HLQ.DBCNTL* data set. For more information about compiling the SLIB members, see the following BMC books:

- *ALTER and CHANGE MANAGER for DB2 User Guide Volume 2*
- *CATALOG MANAGER for DB2 User Guide*
- *DASD MANAGER PLUS for DB2 User Guide*

**Note**

If you want to modify the JCL in member AJXCOMPS, copy the member from *HLQ.DBCNTL* to *HLQ.UDBCNTL*. Then, modify the JCL in *HLQ.UDBCNTL(AJXCOMPS)*.

---

**Specifying generation data groups**

You can specify generation data groups (GDGs) by adding a symbolic variable to the local and recovery primary and backup copy keywords. As a result, the data set names are resolved using the symbolic variables, and include the GDG.

**To specify a GDG**

1 In the *HLQ.UDBCNTL* library, find the member that has the same name as the product installation options module.

2 In the POFDS parameter of the member, note the name of the POF.

3 In the *HLQ.UDBCNTL* library, find the POF member.
4 Add the symbolic (&GDG) to the end of the following keywords in the POF member:

- PCPY1\_PREFIX
- PCPY2\_PREFIX
- RCPY1\_PREFIX
- RCPY2\_PREFIX

For example, set

```
PCPY1='&PREFIX..&OBNOD..P&PART(&GDG)'
```

### Changing installation options after customization

To change the default values of installation options after customizing Database Performance, use one or more of the following procedures.

**Note**

For information about changing UIM server options, see “Changing UIM server options” on page 330.

### Modifying installation options modules

If you modify any of the values in a $C30DOPT job after customization, you must use the following procedure to apply the changes.

**To apply changes to the $C30DOPT job**

1 After making the changes, rerun the $C30DOPT job.

2 For products listed in the table Table 43 on page 327, if you changed the plan name, edit the bind job and bind the plan:

   a In the bind job listed for your product in Table 43 on page 327, change the plan name to the plan name in $C30DOPT.

   You must perform this action for each product for which you changed the plan name.

   b Change the product collection ID in the PKLIST statement (the first parameter of this statement) to match the plan name.
c (\textit{DASD MANAGER only}) Edit the control table in the BMCDB2 CLIST by changing the name of the plan to match the plan name that you changed in \$C30DOPT. (For more information, see “Modifying the control table” on page 90.)

d Rerun the bind job.

\textit{Note}

If you are using data sharing and plan to use mixed versions of DB2 in the same data sharing group, complete the following steps:

1 Ensure that the DSNZPARM ABIND is set to COEXIST.

2 Use the earliest version of DB2 in the data sharing group to perform the bind.

3 Run the IVP job to verify that the changes took effect.

For more information, see “Verifying installation of the REORG PLUS and DASD MANAGER PLUS components” on page 305.

Table 43: Bind jobs

<table>
<thead>
<tr>
<th>Product</th>
<th>Bind job a</th>
</tr>
</thead>
<tbody>
<tr>
<td>ALTER</td>
<td>ACM ssidB</td>
</tr>
<tr>
<td>BMCDSN</td>
<td>ABU ssidB</td>
</tr>
<tr>
<td>CATALOG MANAGER</td>
<td>ACT ssidB</td>
</tr>
<tr>
<td>CHANGE MANAGER</td>
<td>ACM ssidB</td>
</tr>
<tr>
<td>CHECK PLUS</td>
<td>ACK ssidB</td>
</tr>
<tr>
<td>DASD MANAGER PLUS</td>
<td>ASU ssidB</td>
</tr>
<tr>
<td>LOADPLUS</td>
<td>AMU ssidB</td>
</tr>
<tr>
<td>REORG PLUS</td>
<td>ARU ssidB</td>
</tr>
<tr>
<td>UNLOAD PLUS</td>
<td>ADU ssidB</td>
</tr>
</tbody>
</table>

\textsuperscript{a} The ssid variable represents the ID of the DB2 subsystem where you will run the job.

\textbf{POF values}

Making changes to your POFs does not require reassembly or linkage.
Locate the POF in the *HLQ.DBCNTL* data set, make any required changes, and save the changes.

Some of the options in the JCL Generation POF provide values for your ISPF user options. You can use the refresh capability to update these values. For more information, see “User profile values” on page 99.

**User profile values**

You can change the values in the installation options module or in the POF for a product on an individual basis by using the product’s user options.

These user options are saved and maintained in the user profile.

If you need to reset the values in the user profiles, you can use a refresh feature. This feature modifies one or more option values for all of the product’s users.

**Refreshing installation options values in the user profile**

To refresh an option value in all existing user profiles, enclose the option value in parentheses and include ,R after the value inside the parentheses.

The following example illustrates how to refresh the option value:

```
SSID=(DB2J,R), *
```

**Note**

Do not drop either the continuation comma after the closing parenthesis or the continuation character in column 72.

This example refreshes the default DB2 subsystem ID for all users of the product.

For products other than CATALOG MANAGER, the ,R in the variable syntax indicates that the value specified will refresh the existing value of the variable in the user’s ISPF profile data set, if the time stamp of the installation options module is later than that in the user’s ISPF profile member. However, the user can change the override value in the user profile. In CATALOG MANAGER, the refresh occurs every time that a user starts the product.

**To troubleshoot refreshing installation options values**

If you have problems refreshing your user options, complete the following steps:

1. Verify that the refresh option is coded on the correct macro listing keyword in the installation options assembly member.

2. Verify that the installation options assembly was completed successfully with a return code of 0.
If you receive assembly errors, compare your installation options module listing with one that the installation process generated. Some common errors are as follows:

- missing comma delimiter after keyword value
- missing continuation character in column 72
- incorrect symbol-variable substitution
- missing or unbalanced single quotation marks

3 Verify that the assembled installation options member is the same installation options member that ALTER, CATALOG MANAGER, CHANGE MANAGER, and DASD MANAGER PLUS use.

   a To verify, access the environment information for your product as follows:

      ■ In ALTER or CHANGE MANAGER, at the main menu, type ENVI on the Command line.

      ■ In CATALOG MANAGER, on the Primary Menu panel or any list panel, type ENVI on the Command line.

      ■ In DASD MANAGER PLUS, at the main menu, select User Options. Then select Current environment information.

   b Compare the listed installation options module name with the name of the installation options module that you assembled and link-edited.

4 Verify that the installation options module assembly is updating the correct load library.

The SYSLMOD ddname statement should refer to the load library where the products reside.

**Refreshing POF values in the user profile**
You can specify a value to refresh the existing value of the variable in the user’s ISPF profile data set.

**To refresh an option value**

1 To refresh an option value, modify the value of the POF keyword in one of the following ways:

   ■ include ,(R) after the option value, as in the following example:

   ```
   BMC_LOAD_OPTS=AMU$MMS,(R)
   ```
specify a blank and \texttt{,(R)}, as in the following example:

\begin{verbatim}
BMC_LOAD_OPTS= ,(R)
\end{verbatim}

These examples refresh the name of the LOADPLUS user options module.

\textbf{Note}

If the value for the \texttt{POF} keyword ends with a comma, as in the following example, include \texttt{,(R)} after the comma.

\begin{verbatim}
JOBCARD1=//JOBC \texttt{JOB(&ZACCTNUM),'&PGMR',,(R)}
\end{verbatim}

When the \texttt{POFDATE} parameter is later than the previous \texttt{POFDATE} that is stored in the user’s ISPF profile, the specified value refreshes the existing value of the variable in the user’s ISPF profile data set.

\textbf{To troubleshoot refreshing POF values}

If you have problems refreshing your user options, complete the following steps:

1. Verify that the refresh option is coded on the correct POF keyword.
2. Verify the date in the \texttt{POFDATE} parameter.

\textbf{Changing UIM server options}

If you modify any of the values in a $C30DOPT job after customization, you must use the following procedure to apply the changes.

The UIM server is configured during installation. However, you can view or alter the original configuration of the UIM server permanently by changing the values for variables in the startup and trace members of the configuration file.

You can change the following UIM server configuration options:

- port number (“To change the port number” on page 331)
- authorization security timeout (“To change the security authorization timeout feature permanently” on page 332)
- affinity timeout (“To change the idle timeout for affinity tasks” on page 332)
- server-side storage (HFS) data set (“To change the HFS server-side storage data set name” on page 333)
- tracing (“To change the overall tracing option permanently” on page 334)
enable/disable network browser command interface ("To enable or disable the network browser command interface" on page 333)

Each UIM server requires a configuration member, called the startup member, that describes the unique characteristics of that server. This member is specified as a parameter in the UIM server configuration file.

The sample library contains a template for the startup member named #NORMAL. The installation process customizes the #NORMAL member, gives it the same name as the started task procedure, and copies it to the HLQ.XXCNFG data set.

For an example of this startup member and a description of the variables that you can change, see Figure 69 on page 313 and Table 39 on page 314.

To change the port number

A port number for the UIM server is the address of a TCP/IP application, in this case the UIM server, on a z/OS image. The UIM server has one port number that DASD MANAGER uses to contact the UIM server. You can change the port number globally for all applications that communicate with the UIM server.

1. Edit your startup configuration member.

   Note
   
The startup member is located in the HLQ.XXCNFG data set and is typically the same name as the started task procedure name for the UIM server.

2. In your startup configuration member, find the PORT variable.

   The default port number is 9999.

   The PORT variable is displayed as follows:

   `<BMC_PARM ID="PORT" VALUE="9999" />

3. Change the value of BMC_PARM ID="PORT" from 9999 to a unique numeric value between 1 and 65535.

   WARNING
   
   Check with your TCP/IP administrator to ensure that you are entering a unique port number. If you do not enter a unique port number, program errors might occur.
To change the security authorization timeout feature permanently

The UIM server is equipped with a timeout security feature. This feature controls the amount of time that all applications which communicate with the UIM server can remain inactive before security authorization expires. This value is set during installation. You can change the timeout feature permanently for all applications that communicate with the UIM server.

1 Edit your startup configuration member.

Note
The startup member is located in the HLQ.XXCNFG data set and is typically the same name as the started task procedure name for the UIM server.

2 From your startup configuration member, find the AFF_TIMEOUT_SECS variable.

The default number of seconds is 1800.

The AFF_TIMEOUT_SECS variable is displayed as follows:

```
<BMC_PARM ID="AFF_TIMEOUT_SECS" VALUE="1800" />
```

3 Change the value of BMC_PARM ID="AFF_TIMEOUT_SECS" from 1800 to any numeric value in seconds.

To change the idle timeout for affinity tasks

Affinity timeout is the amount of time that the task is held between requests for the affinity. When the task is inactive for the defined period, the affinity is no longer valid and the task is available for other work.

1 Edit your startup configuration member.

Note
The startup member is located in the HLQ.XXCNFG data set and is typically the same name as the started task procedure name for the UIM server.

2 From your startup configuration member, find the AFF_TIMEOUT_SECS variable.

The default number of seconds is 1800.
The AFF_TIMEOUT_SECS variable is displayed as follows:

```xml
<BMC_PARM ID="AFF_TIMEOUT_SECS" VALUE="1800" />
```

3 Change the value of BMC_PARM ID="AFF_TIMEOUT_SECS" from 1800 to any numeric value in seconds.

**To change the HFS server-side storage data set name**

The server-side storage data set stores user preferences and dynamic configuration information on the UIM server.

1 Edit your startup configuration member.

   **Note**
   The startup member is located in the HLQXXCNFG data set and is typically the same name as the started task procedure name for the UIM server.

2 From your startup configuration member, find the HFS_DATASET variable.

   The HFS_DATASET variable contains the data set name to use for the UIM server server-side storage data set. The HFS_DATASET variable is displayed as follows:

```xml
<BMC_PARM ID="HFS_DATASET" VALUE="HLQ_HFS" />
```

3 Change the value of the high-level qualifier (HLQ) for HFS_DATASET to a value that meets your site’s standards.

**To enable or disable the network browser command interface**

The network browser command interface, also known as the BMC UIM server commands web page, displays UIM server information and allows an administrator to make dynamic modifications to UIM server settings.

You can enable or disable the network command interface. You can also provide an active authentication with the browse session. After the variable ALLOW_NETCMD is set to AUTH, the user must log in using the following command in the web browser:

http://uimServerHostName:uimPortNumber/UIMLogon

If the logon is successful, the user can display the BMC UIM server Commands web page (http://uimServerHostName:uimPortNumber/htpcmd.html).

1 Edit your startup configuration member.
The startup member is located in the HLQ.XXCNFG data set and is typically the same name as the started task procedure name for the UIM server.

2 From your startup configuration member, find the ALLOW_NETCMD variable.

By default, the network browser commands are processed by the UIM server, but you can disable them by setting the ALLOW_NETCMD value to NO.

The ALLOW_NETCMD variable is displayed as follows:

```
<BMC_PARM   ID="ALLOW_NETCMD"
VALUE="YES" />
```

3 Change the ALLOW_NETCMD value to one of the following values:

- YES enables the network browsing command interface.
- NO disables the network browsing command interface.
- AUTH requires logging on via uimlogon.html.

To change the overall tracing option permanently

```
<BMCHTTP>
<RRLOG  VALUE="OFF"/>
<TRACE  VALUE="ON" >
 <BMC_PARM ID="TRACE_ACTION"
VALUE="TRACEACTION_WARNING" />
 <!-- BMC_PARM ID="TRACE_ACTION"
VALUE="TRACEACTION_INFO" -->>
 <!-- BMC_PARM ID="TRACE_ACTION"
VALUE="TRACEACTION_ENTRYEXIT" -->>
 <!-- BMC_PARM ID="TRACE_ACTION"
VALUE="TRACEACTION_CONTROL" -->>
 <!-- BMC_PARM ID="TRACE_ACTION"
VALUE="TRACEACTION_MEMORY" -->>
 <!-- BMC_PARM ID="TRACE_ACTION"
VALUE="TRACEACTION_SOCKET" -->>
 <!-- BMC_PARM ID="TRACE_ACTION"
VALUE="TRACEACTION_THREAD" -->>
 <!-- BMC_PARM ID="TRACE_ACTION"
VALUE="TRACEACTION_WAIT" -->>
 <BMC_PARM ID="TRACE_COMPONENT"
VALUE="TRACECOMPONENT_SERVER" />
 <!-- BMC_PARM ID="TRACE_COMPONENT"
VALUE="TRACECOMPONENT_SERVER_WL" -->>
 <BMC_PARM ID="TRACE_COMPONENT"
VALUE="TRACECOMPONENT_CLIENT" />
 <BMC_PARM ID="TRACE_COMPONENT"
VALUE="TRACECOMPONENT_REQUEST" />
 <BMC_PARM ID="TRACE_COMPONENT"
VALUE="TRACECOMPONENT_EXTENSION" />
 <BMC_PARM ID="TRACE_COMPONENT"
VALUE="TRACECOMPONENT_TASKMGR" />
 <BMC_PARM ID="TRACE_COMPONENT"
VALUE="TRACECOMPONENT_TASKWKR" />
```
1 Edit your trace configuration member.

The trace member is shown above.

2 From your trace configuration member, find the TRACE VALUE variable.

3 To enable or disable the overall tracing option, perform one of the following tasks:
   - To enable the overall tracing option, type ON inside the quotation marks, as shown in the following example:

     `<TRACE VALUE="ON">`

   - To disable the overall tracing option, type OFF inside the quotation marks, as shown in the following example:

     `<TRACE VALUE="OFF">`

4 Verify that the TRACE VALUE has been enabled or disabled.

**To verify that the overall tracing option is enabled**

1 Edit your trace configuration member.

2 Ensure that the overall trace option is enabled.

If the overall trace option is enabled, the variable is displayed as follows:

   `<TRACE VALUE="ON">`

3 If the overall trace option is not enabled, edit the variable as required to enable it.

**To enable specific tracing options**

1 From the list of specific tracing options, find the option that you want to enable, as shown in the following example:

   `<!---- BMC_PARM    ID="TRACE_ACTION" VALUE="TRACEACTION_INFO" ---->`

2 Remove the exclamation point, hyphens, and space (!-- ) that are displayed between the opening bracket (<) and text (BMC_PARM).

3 Remove the hyphens (--) that are displayed between the forward slash (/) and the closing bracket (>).
The specific tracing option is enabled, as shown in the following example:

```
<BMC_PARM ID="TRACE_ACTION"
  VALUE="TRACEACTION_INFO" />
```

To disable specific tracing options

1. From the list of specific tracing options, locate the option that you want to disable, as shown in the following example:

```
<BMC_PARM ID="TRACE_ACTION"
  VALUE="TRACEACTION_INFO" />
```

2. Type an exclamation point, two hyphens, and a space (!-- ) between the opening bracket (<) and text (BMC_PARM).

3. Type two hyphens (--) between the forward slash (/) and the closing bracket (>).

The specific tracing option is disabled, as shown in the following example:

```
<!--BMC_PARM ID="TRACE_ACTION"
  VALUE="TRACEACTION_INFO" />
```

Configuring the ISPF-Export utility for DASD MANAGER PLUS

This section describes additional configuration tasks that you need to complete to use the Export utility for DASD MANAGER PLUS.

With the Export utility, you can ensure that your DASD MANAGER PLUS object definitions match on all DB2 subsystems where DASD MANAGER PLUS resides. You can copy definitions from a local "controlling" DASD MANAGER PLUS repository to "destination" DASD MANAGER PLUS repositories on other DB2 subsystems. The subsystems can reside in the same sysplex or across sysplexes.

Before launching the Export from DASD MANAGER PLUS, review the tasks in “Preparing your environment for exporting” on page 339.

Recommendations for setting up connections

BMC recommends that you use one DB2 subsystem as your control or master subsystem. You can copy (export) all definitions from the control subsystem.

BMC also recommends using a primary UIM server as the connection repository. The UIM server is a TCP/IP application that facilitates communication between logical partitions (LPARS), which can span sysplexes. The UIM server provides the data transport mechanism between the source and destination.
Following these recommendations helps you avoid accidentally overwriting object definitions and connection information.

**Note**

To delete definitions from multiple data sources, you must manually delete the definitions from each data source.

### Enterprise list and personal list of connections

When you launch Export from DASD MANAGER PLUS, you must define at least one host connection. After you define a host connection, you can add and work with a DB2 data sources. When you define a host connection, the connection definition remains available each time that you start Export and log in.

Host connections for personal use are managed separately from host connections for the entire enterprise. This separation makes it easier to isolate activities in different environments (such as testing systems versus production systems or different groups of application systems).

Export supports a shared list called a enterprise connection list (ECL) which is used to identify the host connections that you define. The ECL is maintained by one or more administrators and resides on the UIM server. It contains host definitions and port numbers of one or more UIM servers. If you have the appropriate security authority, you can add, delete, and edit connection information in the ECL.

All destinations are obtained from your personal connection list (PCL). You can define a connection in your personal list by entering connection information (such as the host name and port number). Also, if a connection has been predefined in the shared ECL, you can add that connection by selecting it from the shared list. After you define a host connection in your personal list, that connection definition remains available each time you log onto Export.

### Required authorizations for using ISPF-Export

Before launching Export from DASD MANAGER PLUS, you need to appropriate Resource Access Control Facility (RACF) authority and SAF authority to access the ECL.

**TCP/IP and UIM server access**

Export uses existing login credentials for the definition phase. Export also prompts you for login credentials when you specify a UIM connection for the primary UIM server, and for any other UIM servers that will participate in an export. Export requires a valid RACF or equivalent user ID and password for these credentials. The security administrator for your site sets up the user ID and password.
The RACF security administrator must define an Open Multiple Virtual Storage (OMVS) segment for the UIM server started task in order to enable TCP/IP access. The security administrator must also assign a user ID with an OMVS segment to the started task procedure name for the UIM server address space.

The UIM Primary Server is the connection repository where PCL’s and ECL’s are stored. Communication to the primary UIM server is through the use of POF values for host name and port number. The security administrator usually specifies this information during installation.

When you launch Export, the JCL Generation component of DASD MANAGER PLUS accesses the POF to retrieve the primary UIM host name and port number. Export then prompts you for a TSO userid and password and creates a UIM connection using the host and port number specified in the POF.

Note
Typically, the security administrator sets the primary server value in the ASU_XP_UIMSRVHOST option before you launch Export. If that option was not set, Export uses the current system where you are logged in as the primary UIM server.

The following table lists the POF keywords that are associated with Export and specifies how they affect DASD MANAGER PLUS.

**Table 44: POF keywords for specifying the UIM host definition**

<table>
<thead>
<tr>
<th>POF keyword</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>ASU_XP_LOGD_DATA=</td>
<td>specifies the SMS data class and the allocation attributes of the Export log file</td>
</tr>
<tr>
<td>ASU_XP_LOGD_MGMTC=</td>
<td>specifies the SMS management class that defines the migration, retention, and backup requirements of the Export log file</td>
</tr>
<tr>
<td>ASU_XP_LOGD_PRIQTY=10</td>
<td>defines the primary allocation for the Export log file</td>
</tr>
<tr>
<td>ASU_XP_LOGD_SECQTY=2</td>
<td>defines the secondary allocation for the Export log file</td>
</tr>
<tr>
<td>ASU_XP_LOGD_STORC=</td>
<td>specifies the SMS storage class that defines the processing requirements of the Export log file</td>
</tr>
<tr>
<td>ASU_XP_LOGD_UNIT=SYSDA</td>
<td>specifies the unit for the Export log file</td>
</tr>
<tr>
<td>ASU_XP_LOGDSN=&amp;PREFIX..XPORT.LOG(R)</td>
<td>specifies the Export log file</td>
</tr>
<tr>
<td>ASU_XP_UIMSRVPORT=</td>
<td>specifies the port number of the primary UIM server that contains the host definitions repository for the Export utility</td>
</tr>
<tr>
<td>ASU_XP_UIMSRVHOST=</td>
<td>specifies the host name of the primary UIM server for the Export utility</td>
</tr>
</tbody>
</table>
**POF keyword**  |  **Definition**  
--- | ---  
ASU_XP_UIMSRVTIMEOUT=300  |  specifies the UIM timeout parameter that determines how long the Export utility should wait for a response from the UIM server before timing out

**TCP/IP and user access**

An OMVS segment must be defined in RACF for each Export user ID. An OMVS segment is required to make use of TCP/IP services such as the FTP server on z/OS. The OMVS segment specifies the UIM to be used, the home directory, and the shell program name.

**SAF authority to access the ECL**

Export uses a shared ECL that resides on the UIM server. Users who have the appropriate authority can modify information in the ECL. The security administrator sets the authority level, shown in the following table, that limits your ability to access and edit these connections.

<table>
<thead>
<tr>
<th>Authority level</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>none</td>
<td>You must set up your own connections and cannot view or edit the ECL.</td>
</tr>
<tr>
<td>READ</td>
<td>You can view and select from the ECL.</td>
</tr>
<tr>
<td>UPDATE</td>
<td>You have full access to the ECL and can view, edit, delete, and add connection definitions.</td>
</tr>
</tbody>
</table>

In addition, the System Authorization Facility (SAF) (part of z/OS) provides an interface to your security product, such as CA Technologies ACF, CA-ACF2, or CA-Top Secret. Using security rules, SAF determines who can access z/OS resources, and what type of access approved users have. Through SAF, you can define who can read or maintain the ECL based on

- user ID
- product function or feature

**Preparing your environment for exporting**

Use this task to set up your environment to accommodate exporting definitions.

**Before you begin**
Ensure that you have DASD MANAGER PLUS installed on each LPAR and configured for each DB2 subsystem that will participate in the export.

Verify with the security administrator that TCP/IP access is enabled.

To prepare your environment for exporting

1. Verify that the UIM server that contains the connection repository (as well as each z/OS image that will participate in the export) is running by checking the JESMSGLG SYSOUT file for the following messages:

   ```
   BMC3402901 UIM Server, Level v.r.mm mm.dd.yy, initialization complete!
   BMC3401221 Ready for MVS Operator Commands
   ```

2. Specify a primary UIM server by using the following POF keywords to specify the host name and port number:

   - ASU_XP_UIMSRVPORT
   - ASU_XP_UIMSRVHOST

3. (optional) Limit update access to the ECL (which contains all the connection information for the enterprise) by specifying the following definition:

   ```
   BBM.SDBA.DNA.ECL
   ```

   Use this profile name with the RESOURCE CLASS of FACILITY to maintain users who can control the ECL.

Completing additional optional tasks for DASD MANAGER PLUS

This section describes additional configuration tasks that you might complete to customize the DASD MANAGER PLUS component for your site.

**BMCDB2PR panel**

The BMCDB2PR panel is part of the BMC-supplied ISPF interface that the Installation System generates.

This panel includes a product selection list from which you can select a product. It also includes a DB2 catalog access field, in which you can specify whether to use the
DB2 catalog data directly or to use a copy or a view of the DB2 catalog (if applicable to the product or component).

You might need to add additional products to the selection list or modify the catalog access field after you install and customize ALTER, CATALOG MANAGER, CHANGE MANAGER, or DASD MANAGER PLUS.

**Adding products to the BMCDB2PR panel**

The Installation System enables you to add products to the BMCDB2PR panel.

**Before you begin**

Determine the following information:

- location of the BMCDB2PR panel
- location of the product’s CLIST
- the three-character code for the product

The following table lists the BMC products that you can add to the BMCDB2PR panel.

<table>
<thead>
<tr>
<th>Product</th>
<th>Product code</th>
</tr>
</thead>
<tbody>
<tr>
<td>APPTUNE for DB2</td>
<td>ASQ</td>
</tr>
<tr>
<td>CHANGE ACCUMULATION PLUS</td>
<td>CAP</td>
</tr>
<tr>
<td>COPY PLUS for DB2</td>
<td>ACP</td>
</tr>
<tr>
<td>EXTENDED BUFFER MANAGER for DB2</td>
<td>XBM</td>
</tr>
<tr>
<td>Log Master for DB2</td>
<td>ALP</td>
</tr>
<tr>
<td>OPERTUNE for DB2</td>
<td>DDT</td>
</tr>
<tr>
<td>PACLOG for DB2</td>
<td>ALM</td>
</tr>
<tr>
<td>RECOVERY MANAGER for DB2</td>
<td>ARM</td>
</tr>
</tbody>
</table>

- additional parameters, such as the SSID

**To add the products**

The UPDTBMC CLIST and the UPDTDB2 macro can be found in a customized installation library that the user creates while installing products from multiple tapes, or in the base installation library from a single product tape.
1 Copy the UPDTBMC CLIST from the *HLQ.INSTALL* library to a library in your SYSPROC concatenation.

2 Copy the UPDTDB2 macro from the *HLQ.INSTALL* library to a library in your SYSPROC concatenation.

3 To execute the CLIST, type **TSO UPDTBMC** on the **COMMAND** line.

4 In the **Location of BMCDB2PR Panel?** field, type the name of the library in which the panel resides.

5 In the **Location of CLIST for Product Being Added?** field, type the name of the library in which the CLIST resides.

6 In the **Product Code for Product Being Added?** field, type the three-character product code.

### Fast Path Navigation

For **ALTER**, **CATALOG MANAGER**, **CHANGE MANAGER**, and **DASD MANAGER PLUS**, the Installation System provides Fast Path Navigation, which enables you to switch from one product to another without leaving the current product.

To initiate Fast Path Navigation, on the **Command** line of the current product, enter the name of the product to which you want to switch. The following table provides a list of the products and commands.

<table>
<thead>
<tr>
<th>Product</th>
<th>Command</th>
</tr>
</thead>
<tbody>
<tr>
<td>ALTER</td>
<td>BMCALTER</td>
</tr>
<tr>
<td>CATALOG MANAGER</td>
<td>BMCCAT</td>
</tr>
<tr>
<td>CHANGE MANAGER</td>
<td>BMCCCHG</td>
</tr>
<tr>
<td>DASD MANAGER PLUS</td>
<td>BMCDASD</td>
</tr>
</tbody>
</table>

For example, if you are currently using **DASD MANAGER PLUS** and want to view an object description in **CATALOG MANAGER**, enter **BMCCAT** on the **DASD MANAGER PLUS COMMAND** line. When you initiate Fast Path Navigation, the main menu for the requested product is displayed. In this case, the DASD MANAGER PLUS session is temporarily suspended and then resumed when you exit **CATALOG MANAGER**.

To use Fast Path Navigation, the following conditions must be met:
- You must install the products by using the Installation System.
- You must use the BMCDB2 CLIST during product invocation.
- The distributed CLISTs AEXADMF1 and AEXADMF2 must be in a data set that is either in the ALTLIB list of the BMCDB2 CLIST or in your SYSPROC concatenation.
- The product to which you are switching must be installed and reside in the same set of libraries as the product from which you are switching.
- For CATALOG MANAGER, you must enable the ELO (Editor Lock Options) command in the AEXADMF1 and AEXADMF2 CLISTs.

**Note**
You cannot use Fast Path Navigation to access a product that is currently suspended. For example, if you switch from ALTER to DASD MANAGER PLUS, you cannot use Fast Path to return to ALTER because it is currently suspended. Instead, you have to exit the DASD MANAGER PLUS session to resume the ALTER session.
Configuring XBM and SUF

After you finish installing the product, you must configure EXTENDED BUFFER MANAGER (XBM) and SNAPSHOT UPGRADE FEATURE (SUF) to operate in your environment.

Table 48 on page 345 lists the tasks that you must perform to configure the XBM and SUF. Complete the tasks in the order that they are presented, using the References column to direct you to the task instructions.

**Note**

Because SUF is a subcomponent of XBM, the process for installing and customizing the products is the same. The features that are enabled are determined by password authorization.

<table>
<thead>
<tr>
<th>Order</th>
<th>Task</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>“Granting user authorizations for XBM” on page 345</td>
</tr>
<tr>
<td>2</td>
<td>“Configuring XBM subsystems” on page 353</td>
</tr>
<tr>
<td>3</td>
<td>“Configuring XBM components” on page 363</td>
</tr>
</tbody>
</table>

Granting user authorizations for XBM

The XBM security interface allows maximum flexibility in controlling access to XBM functions.

Through the security interface, you can control ISPF access to XBM for a user or a group of users. For example, you can control the ability to change information in the XBM repository and the size of the XBM cache. However, the security interface does not prohibit users from using the ISPF interface to monitor XBM.

You can control access to XBM functions through IBM RACF (version 1.9 or later) or through other security packages that are compatible with the System Authorization Facility (SAF), such as the CA Technologies CA-ACF2 or CA-Top Secret products.
XBM security does not check commands from any MVS system console, including the IBM System Display and Search Facility (SDSF). XBM security checks only commands that are entered through the XBM ISPF interface.

In addition to RACF and other SAF-compatible security packages, the XBM security interface provides two exit points for user-written security routines. For more information, see “Using XBM user exits” on page 351.

The security interface is optional for RACF users and CA-Top Secret users. If you do not implement security access to XBM, its functions are unsecured and available to any user with access to the XBM ISPF interface.

**Note**

If you are using CA-ACF2, the security interface is not optional. By default, CA-ACF2 secures all functions. If you want an unsecured environment, you must implement XBM security and give access to all XBM users, or create an XBM user exit to bypass security checking.

---

**Configuring CA-ACF2 security**

You can use CA-ACF2 to secure XBM by defining resource rules for access to XBM functions.

This procedure explains how to use resource rules.

**To configure CA-ACF2 security**

1. Ensure that SAF is enabled on your MVS system.

   XBM issues a RACROUTE macro to SAF to determine whether a request can be approved.

2. Update the INFODIR record as follows:

   CHANGE INFODIR TYPES(R-RFAC)

3. Refresh the INFODIR record.

4. Define resource rules to provide access authority to users of specific XBM actions and resources, by using the following format:

   \$KEY(BMCXBM.ssid.action.object **********)TYPE(FAC)

   The variables represent the following values:

   - **ssid** represents the XBM subsystem ID.
action represents the XBM action.

object represents the XBM object or resource name.

For more information about defining a resource profile, see “RACF resource profiles” on page 348.

5 Rebuild the FAC resource rule by performing an initial program load (IPL) of MVS, or by issuing the following MVS MODIFY command:

F ACF2,REBUILD(FAC)

For more information about CA-ACF2, see the vendor-provided user documentation for that product.

Configuring CA-Top Secret security

You can use CA-Top Secret to secure XBM by defining resource profiles for access to XBM functions.

To configure CA-Top Secret security

1 Ensure that SAF is enabled on your MVS system.

XBM issues a RACROUTE macro to SAF to determine if a request can be approved.

2 Add the XBM resource profile BMCXBM and the XBM subsystem (indicated by the ssid):

TSS ADD(departmentACID) IBMFAC(BMCXBM)
TSS ADD(departmentACID) IBMFAC(ssid)

3 Permit access to the XBM resource profile BMCXBM and the XBM subsystem:

TSS PER(userID or profile) IBMFAC(BMCXBM(ssid).action.object) ACCESS(Control or higher)
TSS PER(userID or profile) IBMFAC(ssid) ACCESS(UPDATE)

Resource profiles for XBM require the following form:

BMCXBM.ssidd.action.object

The variables represent the following values:

ssid represents the XBM subsystem ID.

action represents the XBM action.

object represents the XBM object or resource name.
For more information about the XBM resource profile, including values for action and object, see “RACF resource profiles” on page 348. For more information about CA-Top Secret, see the vendor-provided user documentation for that product.

## Configuring RACF security

If you are using the RACF system security package in your system environment, you must have certain authorizations. For more information about RACF, see the IBM RACF documentation.

### RACF user ID

Installations frequently allow the security system to assign a default user ID to the XBM started tasks.

Consequently, tasks can be added without requiring an update to the equivalent of the RACF ICHRIN03 table. This table contains the name of the started-task procedure and the user ID that should be assigned to it.

If you want to use this method to establish security for the XBM started tasks in your environment, grant started tasks the necessary user ID authorizations. If you do not want XBM to use this default user ID, you must modify ICHRIN03 to assign a different user ID to XBM.

**Note**

If RACF is configured on your MVS system to allow an unknown user, you do not need to supply a user ID for the XBM started task. The XBM started task can run as a RACF unknown user.

### RACF resource profiles

To secure XBM functions by using RACF security, you should use one or more RACF resource profiles that are defined with a class of **Facility**.

A facility-class resource profile lets you protect your nonstandard resources, such as program actions. These resource profiles let you control access to one or more resources with similar names and identical security requirements and protect a group of related resources.

**Note**

Each user or group that is given access to an XBM RACF resource profile must have an access level of **Control** or higher.
Define a RACF resource profile as follows:

```
BMCXBM.ssid.action.object
```

The variables represent the following values:

- **BMCXBM** specifies that the profile is for XBM.
- **ssid** represents the name of the XBM subsystem.
- **action** represents the XBM function to be secured.
- **object** represents the XBM object or resource name to be secured.

Wildcard patterns are supported for **ssid**, **action**, and **object**, according to RACF rules.

Table 49 on page 349 defines the values for **action** and **object**.

### Table 49: Security action and object values

<table>
<thead>
<tr>
<th>Action</th>
<th>Object</th>
<th>Action description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ADMIN</td>
<td>CONFIG</td>
<td>Activates a configuration</td>
</tr>
<tr>
<td></td>
<td>MS</td>
<td>Activates or deactivates a management set</td>
</tr>
<tr>
<td>COPY</td>
<td>EMCSYMM</td>
<td>Splits a Business Continuance Volume (BCV) device</td>
</tr>
<tr>
<td></td>
<td>PPRC</td>
<td>Splits a Peer-to-Peer Remote Copy (PPRC) device</td>
</tr>
<tr>
<td>MAINT</td>
<td>CONFIG</td>
<td>Adds, updates, deletes, or renames a configuration</td>
</tr>
<tr>
<td></td>
<td>MS</td>
<td>Adds, updates, deletes, or renames a management set</td>
</tr>
<tr>
<td></td>
<td>OPTION</td>
<td>Changes XBM, IMS, PSS, SSI, and VSAM options</td>
</tr>
<tr>
<td>PROTECT</td>
<td>EMCSYMM</td>
<td>Controls the hold or release of a BCV device</td>
</tr>
<tr>
<td>RESET</td>
<td>DATASET</td>
<td>Resets data set statistics</td>
</tr>
<tr>
<td>RESTORE</td>
<td>EMCSYMM</td>
<td>Restores or incrementally restores a standard volume from a BCV</td>
</tr>
<tr>
<td>SNAP</td>
<td>DATASET</td>
<td>Controls Instant Snapshot support for utility jobs</td>
</tr>
<tr>
<td></td>
<td>VVOLUME</td>
<td>Controls hardware snapshot support for virtual volumes</td>
</tr>
<tr>
<td>SSIALLOW</td>
<td>LMIIRROR</td>
<td>Controls the SSI option to make local mirrors available for EMC Symmetrix Remote Data Facility (SRDF) snapshots</td>
</tr>
<tr>
<td></td>
<td>RMIRROR</td>
<td>Controls the SSI option to make remote mirrors available for EMC SRDF snapshots</td>
</tr>
<tr>
<td></td>
<td>SYNC@REG</td>
<td>Controls the SSI option to synchronize EMC BCVs at snapshot registration</td>
</tr>
</tbody>
</table>
### Examples of RACF resource profiles

This section provides examples of defining resource profiles with different access levels:

- **Controlling access to XBM maintenance actions**
  
  The following example shows how you can control access to *all* XBM maintenance actions for configurations (add, update, rename, and delete) on an XBM subsystem named XBMP:

  \[
  \text{BMCXBM.XBMP.MAINT.CONFIG}
  \]

  To control access to all XBM maintenance actions for configurations, management sets, and options, use the following profile:

  \[
  \text{BMCXBM.XBMP.MAINT.*}
  \]

- **Controlling access to all XBM subsystems and actions**
  
  To control access to all XBM subsystems and all XBM actions (ADMIN, MAINT, and SYSTEM) for all XBM resources, use the following profile:

  \[
  \text{BMCXBM.*.*.*}
  \]

  When XBM is started as a job or a started task, it activates a configuration. If you are using the security interface, XBM must be in the RACF started-task table and must have an associated RACF user ID.
Controlling access to intelligent storage manipulation

To control access to intelligent storage manipulation (split and establish storage device mirrors) on an XBM subsystem, use the following profiles:

- BMCXB.XBMP.COPY.* (to control mirror split)
- BMCXB.XBMP.SYNC.* (to control mirror establish)

**Note**

These actions must be available to the user ID of any snapshot jobs that are expected to use SSI-enabled hardware features, such as hardware snapshots or Instant Snapshots. Otherwise, limit access to users who are expected to manipulate intelligent storage features.

Controlling access to virtual volume snapshots

If you enable virtual volume snapshots, you should define a resource profile as follows:

```
BMCXB.ssid.SNAP.VVOLUME
```

In this profile, `ssid` indicates the XBM subsystem. SNAP and VOLUME indicate the function and object to be secured.

No RACF authorization by default

If you are running MVS with no RACF authorization by default, you must authorize the following resource profiles to the XBM started task.

At a minimum, the XBM started task requires authorization to these resource profiles to successfully initialize:

```
BMCXB.ssid.MAINT.CONFIG
BMCXB.ssid.ADMIN.CONFIG
```

The variable `ssid` represents the name of the XBM subsystem.

**Note**

Any user or group that has access to the resource profile must have an access level of Control or higher, and these profiles must be defined with a class of Facility. This class of profile will enable you to protect your nonstandard resources, such as program actions.

Using XBM user exits

XBM provides the ability for your installation to write either or both of the following security exits: XBMXAEX1 and XBMXAEX2.
You can use these exits to provide security for installations without an SAF-compatible security package, or you can use them to supplement an SAF-compatible security package.

If the exit routines are in your XBM load library, XBM calls the routines. You can pass parameters to these exits by using the standard ALC conventions.

**XBMXAEX1 exit**

XBM calls the XBMXAEX1 exit after XBM gets the user ID.

The exit passes a pointer to a copy of the user ID. The copied user ID is eight characters long. If required, the user ID is padded with blanks.

You can use this exit to change the user ID in any way, because you are changing only what XBM sees as a user ID. XBM does not check any return codes.

**XBMXAEX2 exit**

XBM calls the XBMXAEX2 exit when a user attempts to perform any of the protected action and object pairs.

“RACF resource profiles” on page 348 describes the protected action and object pairs.

XBM passes the following parameters to this exit:

- A pointer to the user ID, which the XBMXAEX1 exit might have modified
  The user ID is eight characters. If required, the user ID is padded with blanks.

- A pointer to the fully qualified action.object
  This parameter is variable in length and is delimited by a null (X'00').

For example, if the user is trying to activate a configuration on XBMP, the second parameter points to the following string of characters:

```
BMCXBMB:XBMP.ADMIN.CONFIG
```

A null (X'00') immediately follows the character string.

The exit returns a return code. You can use this exit to pass a return code to XBM that can result in bypassing any further security checking.

Table 50 on page 353 describes the required return codes.
Table 50: XBM user exit return codes

<table>
<thead>
<tr>
<th>Return code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Authorized and no security checking is required</td>
</tr>
<tr>
<td>4</td>
<td>Ignore and perform security checking</td>
</tr>
<tr>
<td>8</td>
<td>No authority</td>
</tr>
</tbody>
</table>

Configuring XBM subsystems

This section describes how to set up the XBM subsystems and PROCs for XBM.

Completing XBM installation

To complete your installation of XBM, perform the following steps:

1. Copy the XBM PROC to a PROCLIB.

   Each maintenance level of XBM requires one started-task procedure per XBM subsystem. The PROC is generated by the Installation System into a member in the JCL data set.

   See “Defining and starting the XBM started task” on page 354 for detailed information about setting up the PROC.

   **Note**

   If you do not specify the value of the XBM ssid using the SYS parameter in the PROC, the XBM ssid will be the first four characters of the member name. For example, if the member name is XBMO15, the XBM ssid would be XBMO.

   For example, if you name your XBM subsystems XBMA, XBMB, and XBMC, you can specify the pattern XBM* as the XBM ssid value in the XBM$OPTS member to access all of these subsystems.

2. If you have a previous version of XBM active, cycle the XBM started task and any ISPF sessions to activate the new code.

3. Copy the XBM EXEC to a CLIST library.

   The Installation System customizes the member XBMISPF in the JCL library. Options for XBMISPF are defined in XBM$OPTS, which is also located in the JCL library. XBM$OPTS is the default options member for XBMISPF. If you do not
specify an options member when you run XBMISPF, the EXEC uses the XBM $OPTS member.

--- Note
You should place XBMISPF and XBM$OPTS in a system library (SYSPROC or SYSEXEC) accessible to TSO users.

4 If you want to create the common BMCDISP panel, modify ISR@PRIM or an equivalent panel, as follows:

In the )BODY area of your user CLIST, add the following entry:

%O + BMC XBM

)PROC area of the XBM SYSPROC library, add the following entry:

O,'CMD(XBMISPF)'

5 If you are using multiple XBM subsystems, create a separate XBM$OPTx member for each XBM subsystem. In each XBM$OPTx member, specify the name of the associated XBM subsystem in the XBMSSID parameter.

You could use pattern-matching characters in the XBMSSID parameter of the XBM$OPTS member and use a single XBM$OPTS member for all subsystems. To use pattern-matching characters, you must use a standard naming convention for your XBM subsystems so that the pattern can match multiple subsystem names.

For more information, see “Configuring XBM$OPTS for data sharing environments” on page 361.

**Defining and starting the XBM started task**

XBM started tasks are initialized by submitting the started-task procedure. More than one XBM subsystem can be started by using single or multiple procedure members.

**To create an XBM procedure in your system library**

1 Copy the XBM PROC from the install HLQ.JCL to your system PROCLIB (where HLQ is the high-level qualifier you specified during installation).

2 Edit the PROC parameters as desired. You do not need to change the parameters before you start XBM for the first time.
Figure 75 on page 355 shows an example of the JCL for the procedure.

**Figure 75: Sample of JCL for XBM started task**

```plaintext
//XBM         PROC CONFIG='*',MS=',XBMGRP=',SYS=',XSSI=
//*===================================================================
//*           (C)COPYRIGHT 1993 - 2013 BMC SOFTWARE
//*===================================================================
//XBM         EXEC PGM=XBMXMAIN,REGION=0M,TIME=1440,
//*            PARM=('CONFIG=&CONFIG MS=&MS ',
//*            ' XBMGROUP=&XBMGRP SYS=&SYS SSI=&XSSI')
//********************************************************************
//STEPLIB     DD DISP=SHR,DSN=hlq.XBMLINK (xbm/Solution loadlib)
//            DD DISP=SHR,DSN=hlq.BBLINK (BMC Security modules)
//BMCPWSD    DD DISP=SHR,DSN=securityLibraryName (if used for auth)
//SYSPRINT    DD SYSOUT=*,DCB=RECFM=VA
//XBMXINIT    DD DUMMY  *** XBM.INITIALIZATION.COMMAND.FILE  ***
//PROIGN      DD DUMMY
//X37IGN      DD DUMMY
//XBMXTASK    DD DISP=SHR,DSN=yourlib.SVAA(OR IXFP).SIBLINK
//            DD DISP=SHR,DSN=yourlib.SVAA(OR IXFP).SIBLOAD
//            DD DISP=SHR,DSN=yourlib.SVAA(OR IXFP).STKLOAD
//XBMREP01    DD DISP=SHR,DSN=hlq.VSAM.XBMREP01
//XBMREP02    DD DISP=SHR,DSN=hlq.VSAM.XBMREP02
```

**Note**

You must specify the location of the modules for security password checking and for authorization:

- You must include the location of the security modules in the XBM STEPLIB or the linklist. The security modules are typically located in the XBM.BBLINK library.

- You can specify the location of the authorization modules by either including them in an XBM STEPLIB library or in the LINKLIST, or by using the BMCPWSDD DD statement and including them in the specified library.

3 Submit the JCL to start the XBM subsystem.

**Parameters**

This section describes the parameters that the XBM procedure accepts.

**CONFIG**

The first time that you start XBM, you do not have a configuration file to specify. Consequently, XBM activates the DEFAULT_CONFIG configuration. During subsequent restarts, if you do not specify a CONFIG parameter, XBM activates the last active configuration.
MS

The first time that you start XBM, you do not have a management set (MS) to specify. Because management sets do not have default values, a management set does not activate automatically. During subsequent restarts, XBM activates a management set only if you specify it or add the ACTIVATE commands to your XBMXINIT data set.

XBMGROUP

This parameter specifies the name of the cross-system coupling facility (XCF) group that you want this XBM subsystem to join when the PSS component is started, if applicable. This name must match the first level of the structure name for the XBM structures defined in your coupling facility resource manager (CFRM) policy. The first time that you start XBM, the default for this parameter is XBMGROUP.

If you specify an XCF group name by using this parameter, you must perform the following tasks before the XBM subsystem can join the group:

1. Set the **Join sysplex group when PSS started** option to Yes on the PSS Options subpanel.

2. Start the PSS component.

**Note**
The XBMGROUP parameter overrides any XCF group name that you enter in the **Sysplex group name** field on the PSS Options subpanel. If you enter an XCF group name on the MVS command to start the XBM started task, that group name overrides the XBMGROUP parameter and the group name on the PSS Options subpanel.

SYS

The XBM subsystem name (identified as XBMID by DB2 utilities, or XBMSSID by IMS utilities) is the first four characters of the started-task procedure, or it is the name specified with the SYS parameter (a maximum of four characters). The SYS parameter takes higher precedence.
This subsystem name must

- Start with a letter
- Be two to four characters in length
- Contain only the letters A-Z, the numbers 0-9, $, or #

Note the following considerations when setting up your system name:

- If you specify an invalid value in the SYS parameter, XBM starts the subsystem by using the first four characters of the name of the started task or job as the XBM subsystem name. For example, if your site has naming conventions that require you to name the started task DB2AXBM (where DB2A is a valid DB2 subsystem name), the SYS parameter lets you name your XBM subsystem so that it does not conflict with the DB2 subsystem name, another XBM subsystem name, or an MVS command.

- You can use a single PROC for multiple subsystems if you want to use XBM in a data sharing environment and you use the &SYSCLONE symbolic from MVS system symbols. For more information, see “Defining PROCs for use with multiple XBM subsystems” on page 360.

- You can use the same XBM SSID on multiple XBM subsystems in a non-data-sharing environment.

XBM uses systems-wide enqueues in order to add an extra layer of protection for the XBM repository and to provide data sharing capability. If you do not intend to use XBM in a data sharing environment with shared repositories, you can use the same XBM ID on each LPAR/ JES SSID. To do so, you must update the GRSRNLxx member in SYS1.PARMLIB and correctly modify the SYSTEMS EXCLUSION LIST.

Any resource named in this list is treated as a local resource when an ENQ, DEQ, or RESERVE macro is issued for the resource and is specified with a scope of SYSTEMS.

If you are not running with shared repositories, you must ensure that each repository has unique names to avoid ENQ conflicts.

You can use the &SYSNAME parameter (D SYMBOLS) to differentiate the repository from a single PROC. For example, after you use IDCAMS to define the data sets for your XBM started tasks, use the following example in the PROC to allocate the different repository on each LPAR.

```
//XBMREPO1 DD DISP=SHR,DSN=HLQ.XBM.&SYSNAME..XBMREPO1
```
**Example**

Assume that you have an XBM SSID of XBMP. You would update the SYSTEMS EXCLUSION LIST in SYS1.PARMLIB(GRSRNLxx) with the QNAME of **BMCXBM**, the RNAME value of **XBMP**, and the TYPE value of **SPECIFIC**, as follows:

```
RNLDEF RNL(EXCL) TYPE(SPECIFIC)
  QNAME(BMCXBM)
  RNAME(XBMP)
```

You can use TYPE(SPECIFIC) only for a 4-byte XBM SSID.

If you have a 3-byte SSID name (for example, XBM), use a generic resource name entry to match a portion of a resource name. A match occurs whenever the specified portion of the generic resource name entry matches the beginning of the same portion of an input search argument.

```
RNLDEF RNL(EXCL) TYPE(GENERIC)
  QNAME(BMCXBM)
  RNAME(XBM)
```

You can dynamically activate the updated RNL by using the `SET GRSRNL=xx` IBM z/OS operator command. You must restart any active XBM subsystems to pick up the change.

To show all resources for the BMCXBM major QNAME, issue the following DISPLAY command:

```
D GRS,RES=(BMCXBM,*)
```

**WARNING**

The SYS parameter on the started task JCL (or on the XBM START command) names the XBM subsystem only. Do not use any MVS subsystem name, DB2 subsystem name, or MVS subsystem command for the SYS parameter.

**XDB2, XIMS, XVSAM, XSSI, XPSS, XZIIP**

These parameters specify whether the indicated component will start when the XBM subsystem starts.

By default, all components with a valid password start when you start the XBM subsystem the first time. Upon subsequent starts of the XBM subsystem, XBM components will try to resume the state that they were in when the XBM subsystem stopped. Authorized components that were running will restart, but components that were stopped or disabled will not start. If you do not want a component to start, specify **N** or **NO** for the corresponding parameter value.

For example, if you do not want the SSI component to start, enter `XSSI='NO'` as a parameter for the PROC. If you want to restart the component later, you can use the XBM ISPF interface or the START console command.
Note

If you are using SUF and are not planning to use hardware snapshots or Instant Snapshots, BMC recommends that you specify not to start the SSI component. Doing so bypasses the device discovery phase and reduces startup times.

DD statements

The start procedure includes DD statements that you should define.

Table 51 on page 359 describes the DD statements.

Table 51: DD statements for XBM started task

<table>
<thead>
<tr>
<th>DD statement</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>XBMREP&lt;nn&gt;</td>
<td>This statement is required. It references the XBM repository data sets. The suffix &lt;nn&gt; represents a number from 01 through 09. If you allocate multiple repository data sets, the number suffixes must be sequential and begin with 01. In the sample JCL for an XBM started task in “Defining and starting the XBM started task” on page 354, two repository data sets are allocated.</td>
</tr>
<tr>
<td>XBMXTASK</td>
<td>This statement is required when using IBM RVA or StorageTek SVA devices for Instant Snapshots or SSI-assisted (hardware) snapshots. This statement references the location of the library containing the SIBBATCH program. If you reference the SIBBATCH library location using the MVS linklist, delete or comment out this DD statement.</td>
</tr>
<tr>
<td>BMCPSWD</td>
<td>This optional statement specifies the location of the XBM authorization modules. At initialization, XBM attempts to find authorization modules in the BMCPSWD DD statement, or a if BMCPSWD library is not used, within the XBM STEPLIB or linklist. If XBM cannot find the authorization modules, XBM component activation fails. <strong>Note:</strong> If you specify both the BMCPSWD statement in the PROC and include authorization modules within your STEPLIB or linklist, XBM uses only the authorization modules specified in the BMCPSWD statement to authorize the product.</td>
</tr>
<tr>
<td>PROIGN</td>
<td>This statement is required when using XBM and FlashCopy version 2 to process snapshots in the same environment as the BMC MainView SRM product. This statement prevents MainView SRM from changing the snapshot allocations. If you use another product to manage volume allocation or volume pooling, see that product’s documentation for information about how to exclude XBM from that management.</td>
</tr>
<tr>
<td>X37IGN</td>
<td>This statement protects XBM from STOPX37 processing.</td>
</tr>
<tr>
<td>DD statement</td>
<td>Description</td>
</tr>
<tr>
<td>--------------</td>
<td>-------------</td>
</tr>
<tr>
<td>XBMXINIT</td>
<td>This optional statement points to an XBM initialization command file. This command file allows you to specify commands for XBM to perform automatically during initialization.</td>
</tr>
</tbody>
</table>

**Note**

BMC recommends that you specify REGION=0M, which allows XBM to dynamically obtain enough storage to allocate its internal structures. If XBM does not have the storage necessary to create internal structures, initialization fails. If you use IEFUSI exits to limit region size, specify a minimum REGION=65M to allow XBM enough storage to allocate its internal structures.

---

### Defining PROCs for use with multiple XBM subsystems

If you want to set up multiple XBM subsystems, perform the following steps:

1. Use the Installation System to unload the XBM libraries to a common XBM load library.

2. On each system where you want to run XBM, create an XBM PROC that points to the common XBM load library.

**Note**

XBM repositories can be shared among XBM subsystems. However, to create unique repositories for each XBM subsystem, run the $C10VSAM job and provide a different data set name for the repository on each XBM subsystem.

As an alternative to creating multiple PROCs, you can also use one of the following methods to enable the use of a single PROC to start multiple XBM subsystems:

- Override the SYS parameter to a unique XBM SSID when you issue the START XBM command. For example, issue

  —START XBM,SYS=XBM1 to start the XBM subsystem on SYS1

  —START XBM,SYS=XBM2 to start the XBM subsystem on SYS2

  and so on.

- Use the &SYSCLONE symbolic from the MVS system symbols as part of the SYS parameter.

  Using &SYSCLONE allows you to create unique XBM SSIDs across the sysplex without having separate PROCs. You can create two-, three-, or four-character IDs by combining &SYSCLONE with other literal characters. Table 52 on page
361 provides examples of using &SYSCLONE with other characters to produce unique identifiers.

<table>
<thead>
<tr>
<th>Specification</th>
<th>Results</th>
<th>Examples</th>
</tr>
</thead>
</table>
| SYS=&SYSCLONE     | two-character, unique subsystem identifier | — Subsystem SYSO: XBMSSID=SO  
|                   |                                   | — Subsystem SYSP: XBMSSID=SP |
| SYS= A &SYSCLONE  | three-character, unique subsystem identifier | — Subsystem SYSO: XBMSSID=ASO  
|                   |                                   | — Subsystem SYSP: XBMSSID=ASP |
| SYS= AB&SYSCLONE  | four-character, unique system identifier | — Subsystem SYSO: XBMSSID=XBSO  
|                   |                                   | — Subsystem SYSP: XBMSSID=XBSP |
| SYS= AH&SYSCLONE  | four-character, unique system identifier | — Subsystem SYSO: XBMSSID=AHSO  
|                   |                                   | — Subsystem SYSP: XBMSSID=AHSP |

To determine the value of &SYSCLONE at your site, contact your system programmer.

Configuring XBM$OPTS for data sharing environments

If you are using XBM in a data sharing environment, BMC recommends that you specify a pattern mask in the XBMSSID parameter of the XBM$OPTS member.

Doing so allows you to use the ISPF interface to access all XBM subsystems that match the pattern using a single CLIST and XBM$OPTS member. Otherwise, you would need a different XBM$OPTS member for each XBM subsystem.
For example, if you name your XBM subsystems XBMA, XBMB, and XBCM, you can specify the pattern XBM* as the value for XBMSSID in the XBM$OPTS member. This value enables you to access all of these subsystems. For an example of the XBM$OPTS member, see Figure 76 on page 362.

Figure 76: Sample of XBM$OPTS member

```rexx
/* REXX */
/* XBM(TM) VERSION 6.1.XX */
XBMSSID = 'XBM*' /* XBM SUBSYSTEM ID */
XBMLLIB = 'HLQ.XXLINK'
XBMLLIB = 'HLQ.XXPLIB'
XBMTLIB = 'HLQ.XXPLIB'
ADDRESS ISPEXEC "VPUT (XBMSSID) SHARED"
ADDRESS ISPEXEC "VPUT  (XBMLLIB) SHARED"
ADDRESS ISPEXEC "VPUT  (XBMLLIB) SHARED"
ADDRESS ISPEXEC "VPUT  (XBMLLIB) SHARED"
ADDRESS ISPEXEC "VPUT  (XBMLLIB) SHARED"
```

Where to go from here

Depending on the XBM components you plan to use, you might need to perform additional tasks to configure the components. See the chapter about configuring and managing the XBM subsystem in the EXTENDED BUFFER MANAGER and SNAPSHOT UPGRADE FEATURE User Guide.

Using the XBM initialization command file

The XBM initialization command file allows you to specify commands for XBM to perform automatically following initialization.

For example, you can instruct XBM to activate several management sets after initialization.

The XBMXINIT DD statement that is included in the XBM PROC points to the command file. The command file is a data set you create that lists the commands that you want to execute. Figure 77 on page 362 shows an example of an XBM initialization command file.

Figure 77: XBM initialization command file

```rexx
* *****XBM INITIALIZATION COMMAND FILE*****
* * COMMAND TO ACTIVATE MANAGEMENT SETS
ACT MS PRODUCTION_1
* *******************************************
```

The command file in Figure 77 on page 362 supports the comment operator command, "* " (asterisk followed by a space). You can include the comment command in the file to provide descriptive text. Comments are echoed to SYSPRINT and the MVS console.
Note

BMC does not recommend activating a configuration by using the initialization command file. If you do not specify a configuration in the PROC, XBM automatically activates the last configuration that was used before it starts to process the initialization command file. If you then activate a configuration in the command file, XBM must deactivate the configuration it started with the PROC before activating the new configuration.

Configuring XBM components

This section provides a brief overview of the optional components that you might need to configure before using XBM:

- If you are planning on performing hardware or Instant Snapshots, you must configure the SSI component. This component manages communication between XBM and the hardware devices.

- If you are going to use XBM for snapshot processing in a DB2 or IMS data sharing environment, you must configure the PSS component.

For more information about these tasks, see the EXTENDED BUFFER MANAGER and SNAPSHOT UPGRADE FEATURE User Guide.

Setting up the SSI component

The SSI component, when used with supported software and hardware, can perform hardware-assisted snapshot processing and Instant Snapshots.

This section explains how to install and configure the software and hardware products that the SSI component requires.

Before you begin

Contact your intelligent storage vendor to ensure that the software for your devices has appropriate PTFs and microcode installed to support XBM hardware-assisted snapshot functions.

When you start the SSI component, XBM starts a discovery process that locates and determines the status of supported storage devices that you have in your environment. Through the SSI monitor, you can view and manage these devices. The amount of time it takes XBM to perform the discovery process depends on the number and complexity of hardware devices in your environment.
To set up the SSI component

1. Install one of the storage devices and the appropriate supporting software that are listed in Table 53 on page 364.

Table 53: Hardware and software requirements for SSI

<table>
<thead>
<tr>
<th>Storage device</th>
<th>Required software</th>
</tr>
</thead>
<tbody>
<tr>
<td>Generic device capable of PPRC</td>
<td>version of MVS that supports PPRC operations</td>
</tr>
<tr>
<td>EMC Symmetrix a</td>
<td>■ EMC Symmetrix Control Facility b (SCF) subsystem</td>
</tr>
<tr>
<td></td>
<td>■ EMC TimeFinder c</td>
</tr>
<tr>
<td>Hitachi ShadowImage</td>
<td>■ Version of MVS that supports PPRC operations</td>
</tr>
<tr>
<td></td>
<td>■ Remote Copy (HRC)</td>
</tr>
<tr>
<td></td>
<td>■ IBM DFSMS/MVS Remote Copy Support</td>
</tr>
<tr>
<td></td>
<td>■ IBM FlashCopy version 2 (if applicable)</td>
</tr>
<tr>
<td>IBM Enterprise Storage Subsystem (Shark)</td>
<td>■ IBM FlashCopy version 2</td>
</tr>
<tr>
<td>IBM RVA d</td>
<td>■ IBM Extended Facilities Product</td>
</tr>
<tr>
<td>StorageTek SVA d</td>
<td>■ IBM Extended Facilities Product (IXFP) or</td>
</tr>
<tr>
<td></td>
<td>■ StorageTek SVA Administrator</td>
</tr>
</tbody>
</table>
To use the volume-level snapshot method, you must install the 5x63 level of EMC microcode. If you plan to use the data set-level or Instant Snapshot method, you must install the 5x66 level of EMC microcode.

To use the SCF subsystem, you must reference the location of the subsystem in the XBM STEPLIB or in the MVS link list.

If you have EMC TimeFinder version 5.3.1 or later, you might need two EMC products. If you are performing mirroring, you will need EMC TimeFinder/Mirror. If you are performing data-set-level or Instant Snapshots, you will need EMC TimeFinder/Snap. EMC separated the mirroring and SNAP capability in EMC TimeFinder version 5.3.1. For more information, see the EMC documentation.

To support Instant Snapshots or data set-level snapshots using IBM RVA or STK SVA devices, XBM requires the SIBBATCH program. The SIBBATCH program is an IBM IXFP utility program. The library for the SIBBATCH program must be copied to an APF-authorized library on your system. Reference the location of the SIBBATCH library by using your MVS LNKLST or the XBMXTASK DD statement in the JCL generated for the XBM PROC, shown in Figure 75 on page 355. If you reference the location of the SIBBATCH library in your MVS LNKLST, remove or comment out the XBMXTASK DD statement in the XBM PROC JCL.

2 Configure the XBM product, including the SSI component.

For more information about configuring the SSI component, see EXTENDED BUFFER MANAGER and SNAPSHOT UPGRADE FEATURE User Guide.

### Setting up the PSS component

The PSS component enables snapshot utilities processing in a DB2 sysplex (data sharing) environment and snapshot processing in an IMS data sharing environment.

To use the PSS component, perform the steps described in this procedure.

1 Add the XBM cache and list structures to your coupling facility resource manager (CFRM) policy. For detailed information about these CFRM structures, see the EXTENDED BUFFER MANAGER and SNAPSHOT UPGRADE FEATURE User Guide.

   **Note**

   A single set of XBM structures in the CFRM policy is valid for multiple DB2 data sharing groups.

2 Install and initialize an XBM subsystem on each CPU running DB2 or IMS in the sysplex.
Note

All XBM subsystems in a data sharing group must be the same version.

3 Specify the appropriate values on the PSS Options panel. Instructions for accessing the PSS Options panel and setting appropriate values can be found in the EXTENDED BUFFER MANAGER and SNAPSHOT UPGRADE FEATURE User Guide.

4 Stop and restart the PSS component on each XBM subsystem to enable the options.
Configuring the OPERTUNE *for DB2* product

This chapter outlines the post-installation and configuration tasks that are necessary for the successful completion of OPERTUNE *for DB2* installation.

Overview of the OPERTUNE configuration process

After you use the OS/390 and z/OS Installer to generate and execute installation JCL, you must also perform post-installation tasks to complete the installation and configuration process for the OPERTUNE products.

The following process summarizes OPERTUNE post-installation tasks:

1. “Copying the OPERTUNE procedure to a PROCLIB” on page 368
2. “Invoking the OPERTUNE CLIST or the common BMCDISPN panel” on page 369
3. “Creating an OPERTUNE system profile” on page 371
4. “Defining security for OPERTUNE” on page 371
5. “Starting the OPERTUNE started task” on page 373
6. “Preparing ISPF for OPERTUNE diagnostics” on page 374
7. “Establishing OPERTUNE communications” on page 375
Copying the OPERTUNE procedure to a PROCLIB

This *required* task copies the OPERTUNE started task procedure needed to a PROCLIB.

Each maintenance level of OPERTUNE requires only one started task procedure per z/OS. The Installation System customizes the member DDTPROC in the output JCL data set.

**To copy the OPERTUNE procedure to a PROCLIB**

1. Copy the DDTPROC member to a PROCLIB at your installation.

2. Ensure that the DDTPROC member contains the appropriate DD statements.

   The procedure uses the following DD statements:

   - *(required)* DDTPROFS references the OPERTUNE profile data set that contains user, system, and security profiles.

   - *(required)* DDTAUDIT logs the changes made to all subsystems by this OPERTUNE and provides an audit trace.
     
     By default, the log is written to SYSOUT. To write the audit log to DASD, preallocate a data set with the following attributes:

     — LRECL=121
     — RECFM=FB
     — DSORG=PS

     If you allocate the data set in the OPERTUNE procedure with DISP=MOD, you *must* periodically check and empty the data set to prevent it from filling up. If you specify DISP=OLD, you must copy the data set each time OPERTUNE is terminated.

     If you write the audit log to a data set, specify DCB=BUFNO=1 on the DD statement to prevent buffering from occurring. You must make this specification to be able to view the latest OPERTUNE logged changes through the ISPF Browse option. In addition, if you perform an IPL on the z/OS system while OPERTUNE is still running, some OPERTUNE changes might not be logged to the data set.

   - *(optional)* DDTTRACE provides internal trace information for diagnostic purposes. Like DDTLOG, these traces could be output to SYSOUT or to DASD.
The default is SYSOUT and is recommended. If you want to write the traces to DASD, preallocate a data set with the following attributes:

- LRECL=121
- RECFM=FB
- DSORG=PS

(optional) DDTTRACS provides a log to track the security profile created by the OPERTUNE security exit. Like DDTAUDIT, these traces could be output to SYSOUT or to DASD. The default is SYSOUT and is recommended. If you want to write the traces to DASD, preallocate a data set with the following attributes:

- LRECL=121
- RECFM=FB
- DSORG=PS

3 If you are installing a maintenance upgrade, cycle the OPERTUNE started task and any ISPF sessions, using OPERTUNE to activate the new code.

**Note**

For the purpose of canceling threads, BMC Software recommends that you run OPERTUNE at a dispatching priority higher than any DB2-allied address spaces. Code the appropriate DPRTY parameter [for example, DPRTY=(n,m)] on the EXEC statement of the OPERTUNE procedure.

---

**Invoking the OPERTUNE CLIST or the common BMCDISPN panel**

This *required* task enables the OPERTUNE CLIST or common BMCDISPN panel.

Each maintenance level of OPERTUNE requires only one CLIST per z/OS.

**Note**

The BMCDISPN panel is located in the output JCL data set.

---

**To invoke the OPERTUNE CLIST or the common BMCDISPN panel**

1 If the ISPF module ISPLINK does not reside in an ISPLLIB library, a STEPLIB library, the LPALIB, or the LINKLST and you do not want to copy ISPLINK to
one of these libraries, modify the OPERTUNE CLIST DDTCLIST to concatenate DDTLOAD with the library where ISPLINK is located as follows:

```
ALLOC F(DDTLOAD) DA('HLQ1.LOAD' 'SYS1.ISPLOAD') SHR REUSE
```

*HLQ1* is the high-level qualifier of your OPERTUNE load library.

The Installation System customizes the member DDTCLIST in the output JCL data set.

2 Copy the member to a CLIST library at your installation.

If your installation uses variable-block (VB) CLISTs rather than fixed-block (FB) CLISTs, you can re-block the CLIST by executing DDTRBLK, which is provided in the *LLQSAMP* (where *LLQ* is DB, XX, BB, and UBB) data set. Execution of DDTRBLK allocates a new VB CLIST, so you need to modify DDTRBLK to provide old and new high-level qualifiers for data sets and a volume for the allocation of the new CLIST library.

3 Invoke the OPERTUNE CLIST from TSO in one of the following ways:

- **Use `%DDTCLIST`**.
- **Make OPERTUNE available from an ISPF menu by modifying ISR@PRIM or an equivalent panel, as follows:**

  1. In the )BODY area, add the following line:

     ```
     %O     + BMC OPERTUNE
     ```

  2. In the )PROC area, add the following line:

     ```
     O,'CMD(DDTCLIST)' /* OPERTUNE USING LIBDEF */
     ```

     The LIBDEF option is required to support multiple OPERTUNE systems at different maintenance levels.

- **Use the panel customized by the Installation System that provides access to any or all of the System and SQL Performance products. If you use it, modify ISR@PRIM or an equivalent panel as follows:**

  1. In the panel area, add the following line:

     ```
     %P     + SYSTEM AND SQL PERFORMANCE PRODUCTS FOR DB2
     ```

  2. In the )PROC area, add the following line:

     ```
     P,'PANEL(BMCDISPN)'
     ```

4 Exit and reenter ISPF.

5 Select option P from the install system main menu or an equivalent panel to invoke the System and SQL Performance products.
Creating an OPERTUNE system profile

Before you can access an OPERTUNE system, you must create a system profile.

An OPERTUNE system runs as a started task, not as a z/OS subsystem. See the OPERTUNE for DB2 Reference Manual for a discussion about creating system profiles.

This task is required for full installation.

To create a system profile

1. From the OPERTUNE Miscellaneous Selection Menu, select option 2 (OPERTUNE System Profiles).

2. Type `ADD` and the new system name on the Command line of the Profile Selection List panel. Use the four-character OPERTUNE identifier specified during execution of the installation dialog.

3. Create additional system profiles as needed.

Defining security for OPERTUNE

This task defines security for using OPERTUNE.

The task is required for full installation and optional for maintenance installation.

OPERTUNE secures its features through OPERTUNE user and security profiles. It also provides a security exit to interface with other security packages, such as RACF and CA-ACF2. The SAF interface is required in order to use the default security exit.

You can use OPERTUNE security, the security interface exit, or a combination of both. When you install OPERTUNE, the DEFAULT security profile is created. Two user profiles called * and DDTOPER are also created. See the OPERTUNE for DB2 Reference Manual for information about using the security interface exit and setting up security profiles.

To define security

1. Select option 8 (Administrative Utilities) from the OPERTUNE Main Selection Menu by typing `8` on the Command line and pressing Enter.

2. Select option 12 and indicate N/A as the primary target OPERTUNE.
3 When the Miscellaneous Selection Menu is displayed again, select option 3 (Security Profiles).

4 Create a security profile with full authority for the installer:
   a Type ADD profileName (where profileName is a name of your choice) on the Command line of the Profile Selection List panel, and press Enter. (For more information about creating a security profile, see the OPERTUNE for DB2 Reference Manual.)
   b Copy the DEFAULT security profile into this new security profile by typing COPY DEFAULT on the Command line.
   c Save your new security profile.

5 Create a user profile with full authority for the installer by typing ADD userProfile (where userProfile is a name of your choice) on the Command line of the Profile Selection List panel. Specify the security profile that you created in Step 4 on page 372. See the OPERTUNE for DB2 Reference Manual for details about creating a user profile.

The * user profile that OPERTUNE creates during installation does not specify a security profile, so the DEFAULT security profile is used. The DEFAULT security profile provides full update authority to all subsystems of the user.

The * user profile is used by any new user invoking the OPERTUNE dialog, if a specific user profile for that user ID has not been created. When that new user issues the first request to the target OPERTUNE, a new user profile for the new user’s ID is created, modeled after the * user profile. If only administrative functions are performed, no new profile is built and the DEFAULT profile continues to be used.

For these reasons, the values in the * user profile should be global. Review the * user profile and modify it to suit your environment. Delete the * user profile to restrict the authority of new users.

6 Review the DEFAULT security profile and modify it to suit your environment.

The DEFAULT security profile is created during initialization of the VSAM profile data set and has full authority. The DEFAULT security profile is used by any user invoking the OPERTUNE dialog unless a security profile has been specified in the user profile of that user. For this reason, the values in the DEFAULT security profile should be global.

7 Define a default operator profile named DDT OPER in the following situations:
You decide to delete the * user profile to deny new users access through ISPF, but you want to allow operators to issue OPERTUNE commands from the operator console.

You want your operators to have different authorizations than those of the * user profile.

8 After defining DDTOPER, define a security profile with the appropriate authority and specify the security profile in the DDTOPER profile. If neither the * user profile nor DDTOPER profiles are defined, only the MAINT command can be issued from the operator console. See the OPERTUNE for DB2 Reference Manual for more information on the MAINT command.

9 Create additional user profiles as needed.

Starting the OPERTUNE started task

This *required* task starts the OPERTUNE started task.

A sample started task is in the output JCL data set member DDTPROC.

**To start the OPERTUNE started task**

1 From a system console, type one of the following commands:

- **S DDTPROC**
  
  If you are using a customized procedure, substitute the name of that procedure for DDTPROC.

- **S DDTPROC, SYS= opertuneID**
  
  The variable opertuneID is the four-character ID of an OPERTUNE system at your installation that is different from the default specified in the OPERTUNE procedure.

The following example shows the messages that appear during a normal startup of an OPERTUNE started task, where opID is the four-character OPERTUNE system ID, asID is the address space ID, and DB2ssid is the DB2 subsystem ID. These messages are issued in route code 11.

```
BMC31002I opID OPERTUNE Vv.r.mm, ASID(asID) - nnnnnnnnn
BMC31154W opID OPERTUNE FOR type TRIAL WILL EXPIRE IN nn DAYS
BMC31300I opID NO VTAM APPLID SPECIFIED - VTAM OPERATIONS NOT POSSIBLE
BMC31500I opIDDB2ssid ACCEPTING WORK REQUESTS FOR DB2ssid
BMC31500I opIDDB2ssid ACCEPTING WORK REQUESTS FOR DB2ssid
BMC31019I opID INITIALIZATION COMPLETE
```
Preparing ISPF for OPERTUNE diagnostics

This task enables OPERTUNE to obtain a dump for diagnostic purposes.

OPERTUNE provides diagnostic panels in case an abend occurs in the ISPF dialog. However, you might need to obtain a dump to diagnose the problem.

To prepare ISPF for OPERTUNE diagnostics

Complete this task for each user of OPERTUNE.

1. From the ISPF Primary Option Menu, select option 0.

2. Select Environ from the action bar and modify the settings to enable a dump.

3. Ensure that your logon procedure has a SYSUDUMP DD statement specified, or use the TSO ALLOC command when the abend occurs to allocate a dump data set.

The following examples illustrate how to properly obtain a dump.

Example 1
The following command sends output to SYSOUT X:

```
TSO ALLOC FI(SYSUDUMP) CLASS(X)
```

Example 2
The following command sends output to a preallocated data set, where HLQ is a high-level qualifier of your choice:

```
TSO ALLOC FI(SYSUDUMP) DSN('HLQ.SYSUDUMP') OLD
```
Establishing OPERTUNE communications

Optionally, you can establish communications between two or more OPERTUNE systems.

To establish OPERTUNE communications

1. For detailed instructions, see the OPERTUNE for DB2 Reference Manual.
Configuring Recovery Management

After you finish installing the solution, you must configure the components of Recovery Management to operate in your environment.

Granting user authorizations for Recovery Management

Before you run the IVP jobs for the products that make up Recovery Management, you must grant the appropriate user authorizations.

After you have granted the appropriate authorizations, complete any additional configuration tasks for your installed products before verifying your installation.

Authorization verification mechanisms for Backup and Recovery products and Utility products

Many BMC products for DB2 use the same mechanisms to verify authorization.

If the DB2 DSNX@XAC authorization exit is available for your system, the product uses this exit to verify authorization for external access. The exit is available from the following sources:

- IBM provides a sample exit with DB2 for the IBM Resource Access Control Facility (RACF) component.
- CA Technologies provides the DSNX@XAC exit with CA-ACF2 and CA-Top Secret.
BMC recommends this mechanism for implementing external security. The access control authorization exit must be available in the STEPLIB, JOBLIB, linklist, or in the SYS3.DSN exit.

If the DSNX@XAC exit is not available, the product uses the standard DB2 method to check security.

**RECOVERY MANAGER for DB2 user authorizations**

The RECOVERY MANAGER for DB2 product requires certain user authorizations.

**RACF authorization for RECOVERY MANAGER**

The RACF security administrator must define an Open Multiple Virtual Storage (OMVS) segment for each RECOVERY MANAGER user.

The user ID assigned to the DBC started task must also have an OMVS segment defined.

The OMVS segment is required because DBC utilizes IBM z/OS UNIX System Services (USS) sockets for cross-address-space communication within an LPAR.

**System security authorizations for RECOVERY MANAGER for DB2**

RECOVERY MANAGER for DB2 requires certain security authorizations.

If you are using RACF or a similar system security package, you must have the following authorizations to use the RECOVERY MANAGER for DB2 product:

- READ authority for archive log data sets
- READ authority for BSDS data sets
- ALTER authority for the DB2 active log data sets
- ALTER authority for the new archive log data sets to be created, if any
- ALTER authority for the archive history file

**DB2 authorizations for RECOVERY MANAGER for DB2**

To use the RECOVERY MANAGER product, you must have the following DB2 authorizations:
You must have EXECUTE authority on the RMGR plan. (This allows you to build and save an object group and to maintain any object group that you create.)

To save changes to subsystem default recovery options, you must have one of the following DB2 authorizations:

— INSTALL SYSADM
— SYSADM
— DBADM for the RMGR repository database

**APF authorizations for RECOVERY MANAGER for DB2**

The RMGR load library must be APF-authorized.

In addition, you must add SCCAUTH to the AUTHPGM NAMES section of member IKJTSOxx in SYS1.PARMLIB.

*Note*
SCCAUTH is a common authorization module used by multiple BMC Software products, including the components of the Recovery Management for DB2 solution.

**Restricting TSO commands for RECOVERY MANAGER for DB2**

If your site restricts the use of TSO commands through an option of a RACF or similar system security package, be sure that the ARMUMAN, ARMUSEL, and ARMOPTM command names are added to the appropriate command table. Otherwise, message IKJ56500I ARMUMAN COMMAND NOT FOUND is issued when attempting to invoke the RMGR CLIST.

**COPY PLUS for DB2 user authorizations**

The COPY PLUS for DB2 product requires certain user authorizations.

**DB2 authorizations for COPY PLUS for DB2**

To use the COPY PLUS product, you must have the following DB2 authorizations:

— To run COPY PLUS, you must have EXECUTE authority on the COPY PLUS plan, and the plan owner must have EXECUTE authority to collection-id.* for the collections referenced by the plan.
- For COPY PLUS to be able to process database objects, your primary or secondary authorization IDs must have one of the following authorities:
  
  — Installation SYSADM, SYSADM, or SYSCTRL authority
  
  — DBADM, DBCTRL, or DBMAINT authority for the database containing the named space
  
  — IMAGCOPY, DISPLAYDB, STARTDB, and STOPDB authority for the database containing the named space
  
  — DISPLAY (system wide) and IMAGCOPY, STARTDB, and STOPDB authority for the database that contains the named space

- To copy the database (DSNDB01), you must have installation SYSADM, SYSADM, or SYSCTRL authority.

  If you make SHRLEVEL CONCURRENT copies and set the installation option READONLY to LOCKTBL, you must also have SELECT authority for the tables that you are copying or be the owner of those tables.

  To use the COPY ... RUNSTATS option, you must have the STATSAUTH privilege on the database.

  **Note**

  COPY PLUS checks authorization by using the DB2 security exit if this exit is in place.

  For COPY PLUS to correctly determine the status of the DB2 security exit, the library containing module DSNX@XAC (most commonly DSNEXIT) must be included in the COPY PLUS STEPLIB.

---

**APF Authorizations for COPY PLUS for DB2**

COPY PLUS uses system services that require APF authorization.

COPY PLUS must reside in an APF-authorized library. All load modules loaded by COPY PLUS must be authorized and must reside in APF-authorized libraries.

**RACF authorizations for COPY PLUS for DB2**

This topic describes the RACF authorizations that COPY PLUS for DB2 requires.

Because COPY PLUS does not run as part of the DB2 subsystem, you must have authorization equivalent to that required by DB2 to use COPY PLUS.

When the COPY PLUS installation option OPNDB2ID is set to NO, and when the underlying data set of a table space is protected by Resource Access Control Facility
(RACF) or a similar security system, you must have sufficient authority to access and modify the data set. For index spaces, you must have read access to the index data sets.

When the COPY PLUS installation option OPNDB2ID is set to YES, the DB2 RACF ID is used to allow DB2 data sets to be opened.

**Note**

For security systems other than RACF, the installation option OPNDB2ID must be set to NO.

If your DB2 is specified in the RACF started procedures table (ICHRIN03) as a privileged or trusted task and no user ID is associated with the DB2 address space, you cannot use OPNDB2ID to allow COPY PLUS to access the DB2 data sets. In this case, the user running COPY PLUS must have RACF authority to access the data sets needed for copying.

**Note**

If you are using SHRLEVEL CHANGE with data sharing, COPY PLUS will read the BSDS. Therefore, you will need READ authorization for the BSDS. COPY PLUS reads the group buffer pool check point records from the BSDSs for the group if it detects that the space being copied is group buffer pool dependent.

---

**RECOVER PLUS for DB2 user authorizations**

The RECOVER PLUS for DB2 product requires certain user authorizations.

**DB2 authorizations for RECOVER PLUS for DB2**

To use the RECOVER PLUS product, you must have the following DB2 authorizations:

- You must have EXECUTE authority on the RECOVER PLUS plan
  
  **Note**
  
  BMC recommends that you grant the EXECUTE privilege TO PUBLIC for the RECOVER PLUS main plan. This will allow all users to the RECOVER PLUS product.

- You must have one of the following authorizations:
  
  INSTALL SYSADM, SYSADM, or SYSCTRL authority
  DBADM or DBCTRL authority for the database containing the named spaces
RECOVERDB, DISPLAYDB, STARTDB, and STOPDB authority for the databases containing the named table spaces and index spaces

- If you use RECOVER PLUS to make image copies (OUTCOPY option) from previous image copies, change accumulation files, and DB2 log records, you must have IMAGCOPY authority or an authority that implies IMAGCOPY.

**Note**
If the DB2 Access Control Authorization Exit is being invoked, DB2 authorizations must be granted using Resource Access Control Facility (RACF) or a similar system security package.

---

**APF authorizations for RECOVER PLUS for DB2**

RECOVER PLUS uses system services that require APF authorization.

All load modules loaded by these products must be authorized and must reside in APF-authorized libraries, as follows:

- system sort routine
- IDCAMS
- DSNUTILB

---

**RACF authorizations for RECOVER PLUS for DB2**

You must have the following RACF authorizations for RECOVER PLUS:

**Note**
These authorization requirements can also be fulfilled by using a system security package similar to RACF (for example, CA-ACF2 or CA-Top Secret from CA Technologies).

- If the underlying data sets of a table space or index space are protected, you must have CONTROL authority to access and to modify the data set.

**Note**
If you are using RACF and RECOVER PLUS was installed with option OPNDB2ID=YES, the CONTROL authority is not required to run RECOVER PLUS. However, if you are using any system security package other than RACF, CONTROL authority is still required, and the OPNDB2ID parameter is ignored.

If you are using RACF and RECOVER PLUS was installed with option OPNDB2ID=YES in a data sharing environment, you must ensure that the same RACF ID is shared by each DB2 subsystem in the data sharing group.
If a table space or index space is STOGROUP-defined and the corresponding ICF catalog is protected, you must also have sufficient authority to access and update the MVS catalog.

If the archive and active log data sets, the bootstrap data set (BSDS), and the DB2 directory are protected, users must have READ authority to access the data sets.

Log Master for DB2 user authorizations

Log Master for DB2 requires certain user authorizations.

To use Log Master, you must have authorization within DB2 and through your system security package (such as the IBM product Resource Access Control Facility or RACF). These authorizations must be sufficient to access DB2 resources and perform the tasks accomplished during processing. The following topics provide more information about the required authorizations.

DB2 authorizations for Log Master for DB2

To ensure that Log Master runs correctly in your environment, you must have the following DB2 authorizations

- EXECUTE privilege on the Log Master batch and online plans
- DISPLAYDB authority for the databases that contain the named table spaces and index spaces (and any databases related by referential integrity (RI) constraints)
- DISPLAY system privilege
- authorizations to perform quiesce at log mark

Before a Log Master job can use this feature of the product, the user ID of the job must also have one of the following DB2 authorizations:

- DBADM, DBCTL, or DBMAINT authority for the databases
- SYSCTRL or SYSADM authority
- IMAGCOPY privilege for the databases
authorizations to execute SQL

Log Master uses the High-speed Apply Engine to execute generated SQL statements. For more details, look for information about DB2 authorizations for High-speed Apply.

Before a Log Master job can execute SQL, the user ID of the job (or the user ID specified in either the EXECSQL statement or the BINDOWN installation option) must have the following DB2 authorizations:

— EXECUTE privilege for the plan that the High-speed Apply Engine uses to access its own restart tables and the catalog (normally provided during installation)

— EXECUTE privilege for the High-speed Apply Engine restart package (normally provided during installation)

— INSERT, UPDATE, and DELETE privileges on the target tables

— appropriate privileges to bind or administer plans, packages, and collections

The High-speed Apply Engine provides several ways to grant these privileges. Some techniques avoid granting bind privileges to the user ID that runs Log Master. For more details, look for information about DB2 authorizations for plans, packages, and collections.

APF authorizations for Log Master for DB2

To use the Log Master product, you must have the APF authorizations described below.

APF authorization for batch programs

Log Master batch programs use operating system services that require APF authorization. Accordingly, the product must reside in APF-authorized libraries. Any libraries that you reference in the STEPLIB DD statements must also be APF-authorized.

APF authorization for the online interface

You can run the Log Master online interface with or without APF authorization. The APFONLIN installation option determines whether the product expects to have proper APF authorization.

Without authorization, an online user must enter the name and location of the bootstrap data set (BSDS) on the Product Options panel. The online interface does not run as an authorized TSO program.
With proper authorization, the product can obtain the name of the BSDS from DB2 dynamically. The online interface runs as an authorized TSO program. The TSO program name for the product is SCCAUTH. You must place this name in the operating system's SYS1.PARMLIB data set in the authorized command table. The command table is a member of SYS1.PARMLIB named IKJTSOxx. The suffix xx is assigned during installation. The TSO command table contains several different lists. Place SCCAUTH in the authorized program list (which is specified as AUTHPGM NAMES).

**Note**
Perform this procedure on all operating system images where you expect the product to run as an authorized TSO program.

---

**RACF or similar security authorizations for Log Master for DB2**

Log Master does not run as part of the DB2 subsystem. To use the product, you must have system authority similar to that of DB2.

The following topics describe security requirements related to different environments and types of access.

**RACF authorizations for Log Master for DB2**

Log Master for DB2 requires RACF authorizations. Use the method described below to make Log Master work more efficiently in a RACF environment.

Log Master reads data from certain underlying DB2 data sets such as table spaces, active and archive logs, or the bootstrap data set (BSDS). If the underlying data sets are protected by RACF (or by a similar system security package). The user ID of the Log Master batch job must have authority to access all of the underlying data sets that the job requires.

To avoid granting authority for each required data set to the user ID of each Log Master batch job, use the OPNDB2ID installation option. Ensure that all of the following conditions are true:

- your environment uses RACF
  The OPNDB2ID installation option does not operate in other security environments.

- you install the product with the OPNDB2ID installation option set to YES
  When OPNDB2ID is set to YES, Log Master uses the RACF ID of DB2 to open the DB2 data sets.

- you explicitly associate a user ID with the DB2 address space
For OPNDB2ID to work correctly, you must explicitly associate a user ID with DB2 regardless of whether you specify DB2 as a privileged or trusted task in the RACF started procedures table (ICHRIN03).

To ensure OPNDB2ID option works correctly in a data sharing environment, the RACF IDs of the DBM1 address spaces within all DB2 subsystems within the data sharing group must be the same. The authorizations for the bootstrap and log data sets must also be the same.

XBM and SUF authorizations

XBM and SUF require certain user authorizations.

The XBM security interface allows maximum flexibility in controlling access to XBM functions. For more information, see “Granting user authorizations for XBM” on page 345.

R+ CHANGE ACCUM for DB2 user authorizations

R+/CHANGE ACCUM for DB2 requires certain user authorizations.

DB2 authorizations for R+ CHANGE ACCUM

To use the R+/CHANGE ACCUM product, you must have the following DB2 authorizations:

**WARNING**

SQL access to the repository tables should not be allowed. UPDATE authority should be granted only to users who must bind the R+/CHANGE ACCUM and RECOVER PLUS plans.

Using the R+/CHANGE ACCUM batch program

To use the R+/CHANGE ACCUM batch program, R+/CHANGE ACCUM users must have one of the following DB2 authorizations:

- You must have INSTALL SYSADM or SYSADM authority.
- You must have EXECUTE authority on the R+/CHANGE ACCUM plan and one of the following authorizations:
  - SYSCTRL authority
— DBADM, DBCTRL, DBMAINT, or IMAGCOPY authority for the databases containing the target objects

**Using the R+/CHANGE ACCUM ISPF interface**

To use the R+/CHANGE ACCUM ISPF interface, you must have one of the following authorizations:

- You must have EXECUTE authority for the RECOVER PLUS application plan.
- If you execute the delete change accumulation file function, you must have one of these authorizations:
  - INSTALL SYSADM or SYSADM authority
  - SYSCTRL authority
  - DBADM, DBCTRL, DBMAINT, or IMAGCOPY authority for the databases containing the table spaces that have updates in the file being deleted

**Using the MODIFY ACCUM command**

To update the R+/CHANGE ACCUM repository, you must have the same DB2 authorities required to use the R+/CHANGE ACCUM batch program.

**Deleting change accumulation groups and files**

The R+/CHANGE ACCUM ISPF interface allows users with IMAGCOPY (or equivalent) authority to delete change accumulation groups and files.

To allow a user with INSTALL SYSADM authority to delete change accumulation groups and files, you must specify the user’s ID in the R+/CHANGE ACCUM installation options.

**APF authorizations for R+ CHANGE ACCUM**

R+/CHANGE ACCUM uses system services that require APF authorization.

R+/CHANGE ACCUM must reside in an APF-authorized library.

**Note**

The R+/CHANGE ACCUM ISPF interface does not require APF-authorization. You might want to separate the R+/CHANGE ACCUM ISPF load library (ISPLLIB) from other BMC libraries.
RACF authorizations for R+ CHANGE ACCUM

R+/CHANGE ACCUM requires the following RACF authorization.

If the archive and active log data sets, the bootstrap data set (BSDS), and the DB2 directory are protected by RACF (Resource Access Control Facility) or by a similar system security package, R+/CHANGE ACCUM users must have READ authority to access the data sets.

Note

If you are using RACF, and RECOVER PLUS was installed with option OPNDB2ID=YES, the user running RECOVER PLUS does not need READ authority. If your site uses a system security package other than RACF, READ authority is required.

CA-ACF2 authorizations for R+ CHANGE ACCUM

If you are using CA-ACF2 security with the R+/CHANGE ACCUM product, you must have the following authorizations:

- If your installation uses the “Command Limiting List,” you must add the command processor ACAPRI to the list.
- If the archive and active log data sets, the bootstrap data set (BSDS), and the DB2 directory are protected by CA-ACF2, R+/CHANGE ACCUM users must have READ authority to access the data sets.

High-speed Apply Engine user authorizations

High-speed Apply Engine requires certain user authorizations.

DB2 authorizations for the High-speed Apply Engine

The High-speed Apply Engine requires certain DB2 authorizations to run correctly.

To execute SQL or logical log input, the user ID that runs the High-speed Apply Engine must have the following DB2 authorizations:

- EXECUTE privilege for the plan that High-speed Apply uses to access its own restart tables and the catalog
- EXECUTE privilege for the restart package
appropriate table privileges such as, INSERT, UPDATE, or DELETE for the target
tables (the specific privileges depend on the actions that the apply request
performs)

appropriate privileges to bind or administer plans, packages, and collections

High-speed Apply provides several ways to grant these privileges. Some
techniques avoid granting bind privileges to the user ID that runs High-speed
Apply. For more information, see the topic on DB2 authorizations for plans,
packages, and collections.

**DB2 authorizations for the plans, packages, and collections of the High-speed
Apply Engine**

The High-speed Apply Engine creates plans, packages, and collections. Depending
don the privileges that you are willing to grant to the user ID that runs High-speed
Apply Engine, you can grant the DB2 authorizations and privileges for these
activities using one of the methods described in this section.

The following table defines the variables that appear in all of the GRANT examples
in this section. For more information about the parameters discussed in this section,
see the *High-speed Apply Engine Reference Manual*.

### Table 54: Variables used in DB2 authorization examples

<table>
<thead>
<tr>
<th>Variable name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>aptPlan</td>
<td>name of High-speed Apply Engine plan that is specified during installation</td>
</tr>
</tbody>
</table>
| collectionIDs | names of collections to which High-speed Apply Engine dynamically binds packages
during processing
This name can be one of the following:
- one specific package designated for use by High-speed Apply Engine
- list of specific packages designated for use by High-speed Apply Engine
- "*"
  This variable represents all collections. Your security policies might not permit this
  specification. |
| databaseName  | target database being changed by the apply request                           |
| tableNames    | target tables being changed by the apply request                             |
| userid01      | authorization ID of the user running the apply request
You can specify PUBLIC or a specific authorization ID. |
Variable name | Description
---|---
userid02 | authorization ID (different than userid01) with authority to bind plans, bind packages, and administer collections
This authorization ID can be a secondary authorization ID. The privileges that are granted to this authorization ID vary, depending on how you enable High-speed Apply Engine bind processing.

userPlan01 | name of a pre-bound plan that is bound by using special bind options (optional, when the BindAction parameter is Use)

**Using the user ID running High-speed Apply for authorizations**

With this method, you must grant authority and privileges to the user ID running the High-speed Apply Engine. This method has the following requirements:

- The user ID that runs High-speed Apply Engine (userid01) must have BINDADD authority, and one of the following statuses:
  - PACKADM authority
  - CREATE privileges on all packages (*)
  - CREATE privileges on a specific collection or list of collections designated for use by High-speed Apply Engine
- If userid01 has CREATE privileges only on specific collections, the apply request must specify one of those collection names as the value of the CollectionID parameter.

**Authorization examples for the user ID running High-speed Apply Engine**

The following examples show the grant actions that are normally done during and after installation. The authorizations that you grant depend on your own security policies. For definitions of the variables shown in these examples, see the preceding table.

This example shows the authorizations that provide access to the High-speed Apply plan and restart table. These authorizations are normally granted during installation.

```sql
GRANT EXECUTE ON PLAN aptPlan TO userid01;
GRANT EXECUTE ON PACKAGE BMCAPT.APTREB2 TO userid01;
```

This example shows additional authorizations that are required to run the High-speed Apply Engine. These authorizations are normally granted after installation.

```sql
GRANT INSERT, UPDATE, SELECT, DELETE ON tableNames TO userid01;
GRANT BINDADD TO userid01;
```
GRANT PACKADM ON COLLECTION collectionIDs TO userid01;
or
GRANT CREATE ON COLLECTION collectionIDs TO userid01;

Using BindOwner and a pre-bound plan

With this method, High-speed Apply Engine uses a pre-bound plan that was created under the authority of a different user ID. The pre-bound plan is validated at run time; therefore, it must have been previously bound by a different user ID with appropriate privileges. For a sample BIND command, see the High-speed Apply Engine Reference Manual.

This method has the following requirements:

- The user ID that runs High-speed Apply (userid01) must have
  - EXECUTE privilege on a specific pre-bound plan
  - BINDAGENT authority
- To be validated at run time, the plan must have been previously bound by a different user ID (userid02) with appropriate privileges.
- userid02 must have BINDADD authority and one of the following statuses:
  - PACKADM authority
  - CREATE privileges on all packages (*)
  - CREATE privileges on a specific collection or list of collections that is designated for use by High-speed Apply
- The apply request must specify the following parameter values:

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>BindAction</td>
<td>Use</td>
</tr>
<tr>
<td>BindOwner</td>
<td>user ID that bound the plan</td>
</tr>
<tr>
<td>CollectionID</td>
<td>name of the High-speed Apply Engine collection</td>
</tr>
</tbody>
</table>
| Note: This value is required if the user ID that binds the plan has CREATE privileges only on specific collections.

| PlanName | name of the specific prebound plan                                  |
Authorization examples for using a pre-bound plan

The following examples show the authorizations that are normally granted during and after installation. The authorizations that you grant depend on your own security policies. For definitions of the variables shown in these examples, see the table at the beginning of this topic.

This example shows the authorizations that provide access to the High-speed Apply plan and restart table. These authorizations are normally granted during installation.

```sql
GRANT EXECUTE ON PLAN aptPlan TO userid01;
GRANT EXECUTE ON PACKAGE BMC.APTREB2 TO userid01;
```

This example shows additional authorizations that are required to run the High-speed Apply Engine. These authorizations are normally granted after installation.

```sql
GRANT INSERT, UPDATE, SELECT, DELETE ON tablesNames TO userid01;
GRANT EXECUTE ON PLAN userPlan01 TO userid01;
GRANT BINDAGENT TO userid01;
GRANT BINDADD TO userid02;
GRANT PACKADM ON COLLECTION collectionIDs TO userid02;
or
GRANT CREATE ON COLLECTION collectionIDs TO userid02;
```

Using the AuthID parameter

With this method, High-speed Apply Engine binds by using the authority of a specified user ID. High-speed Apply Engine uses this user ID only for bind processing. This method has the following requirements:

- The user ID that runs High-speed Apply Engine (userid01) must have EXECUTE privilege for the High-speed Apply Engine plan and restart table package. This user ID does not require special privileges for bind actions.

- The user ID that you specify for bind processing (userid02) can be a primary or secondary authorization ID, and
  - Must have SYSADM authority or SYSCTRL authority
  - Must be a valid TSO logon ID; otherwise, your security software can issue warning messages or prevent required processing
  - Cannot be a group ID

- The apply request must specify userid02 as the value of the AuthId configuration parameter.
Authorization examples for using the AuthID parameter

The following examples show the authorizations that are normally granted during and after installation. The authorizations that you grant depend on your own security policies. For definitions of the variables shown in these examples, see the table at the beginning of this topic.

This example shows the authorizations that provide access to the High-speed Apply Engine plan and restart table. These authorizations are normally granted during the install process.

```
GRANT EXECUTE ON PLAN aptPlan TO userid01;
GRANT EXECUTE ON PACKAGE BMCAPT.APTREB2 TO userid01;
```

This example shows additional authorizations that are required to run the High-speed Apply Engine. These authorizations are normally granted after installation.

```
GRANT INSERT, UPDATE, SELECT, DELETE ON tableName TO userid01;
GRANT SYSADM TO userid02;
or
GRANT SYSCTRL TO userid02;
```

Summary of DB2 authorization requirements for the High-speed Apply Engine

The following table summarizes the DB2 authorizations requirements for different methods of specifying the [Bind] parameters to run High-speed Apply Engine. Note the following authorization considerations:

- Though any of the listed DB2 authorizations or privileges can be granted to PUBLIC, many of them normally are not; for example, SYSADM, SYSCTRL, BINDADD, and PACKADM.

- The BindOwner value must be one of the following:
  
  — A valid primary or secondary authorization ID of the user running High-speed Apply Engine

  — An authorization ID (with sufficient authority) that has granted BINDAGENT authority to the user running High-speed Apply Engine

- The AuthID value
  
  — Must be a valid TSO logon ID, not a group ID

  — Does not have to be a valid secondary authorization ID of the user running High-speed Apply Engine
<table>
<thead>
<tr>
<th>[Bind] parameter usage method</th>
<th>DB2 authorization</th>
<th>Granted to one of listed IDs or to PUBLIC</th>
</tr>
</thead>
</table>
| Default [Bind] parameters (if you do not specify any parameters in your configuration) | EXECUTE privilege for High-speed Apply Engine plan (for example, APTB\texttt{\text{vvr}}) | ■ primary authorization ID (user ID)  
■ secondary authorization ID |
|  | EXECUTE privilege for restart table package (for example, APTB\texttt{\text{vvr}.APTREB2}) | primary authorization ID (user ID) |
|  | BINDADD authority | primary authorization ID (user ID) |
|  | PACKADM authority or CREATE IN privilege for collection | primary authorization ID (user ID) |
|  | SELECT, INSERT, UPDATE, and DELETE privileges on target tables | primary authorization ID (user ID) |
| Specify value for BindOwner (APOWNER) parameter | EXECUTE privilege for High-speed Apply Engine plan (for example, APTB\texttt{\text{vvr}}) | ■ primary authorization ID (user ID)  
■ secondary authorization ID |
|  | EXECUTE privilege for restart table package (for example, APTB\texttt{\text{vvr}.APTREB2}) | authorization ID specified by BindOwner parameter |
|  | BINDADD authority | |
|  | PACKADM authority or CREATE IN privilege for collection | |
|  | SELECT, INSERT, UPDATE, and DELETE privileges on target tables | |
| Specify value for AuthID parameter | EXECUTE privilege for High-speed Apply Engine plan(for example, APTB\texttt{\text{vvr}}) | ■ primary authorization ID (user ID)  
■ secondary authorization ID |
|  | EXECUTE privilege for restart table package (for example, APTB\texttt{\text{vvr}.APTREB2}) | primary authorization ID (user ID) |
|  | SYSADM or SYSCTRL authority | authorization ID specified by AuthID parameter |
|  | SELECT, INSERT, UPDATE, and DELETE privileges on target tables | primary authorization ID (user ID) |
### [Bind] parameter usage

<table>
<thead>
<tr>
<th>Parameter Usage</th>
<th>DB2 Authorization</th>
<th>Granted to one of listed IDs or to PUBLIC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Specify value for AuthID and BindOwner (APOWNER) parameters</td>
<td>EXECUTE privilege for High-speed Apply Engine plan (for example, APTBvvr)</td>
<td>primary authorization ID (user ID)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>secondary authorization ID</td>
</tr>
<tr>
<td></td>
<td>EXECUTE privilege for restart table package (for example, APTBvvr.APTREB2)</td>
<td>authorization ID specified by BindOwner parameter</td>
</tr>
<tr>
<td></td>
<td>SYSADM or SYSCTRL authority</td>
<td>authorization ID specified by AuthID parameter</td>
</tr>
<tr>
<td></td>
<td>SELECT, INSERT, UPDATE, and DELETE privileges on target tables</td>
<td>authorization ID specified by BindOwner parameter</td>
</tr>
</tbody>
</table>

### APF authorizations for the High-speed Apply Engine

To use the High-speed Apply Engine, you must have the following APF authorizations:

- The High-speed Apply load libraries must be APF-authorized.
- Any libraries you reference in the apply request (in the STEPLIB DD statements) must be APF-authorized.

The user ID that submits the apply request must have the appropriate authorizations to run the request.

### Configuring RECOVERY MANAGER

You must configure RECOVERY MANAGER to operate in your environment.

### Required temporary tables for RECOVERY MANAGER

RECOVERY MANAGER uses declared DB2 global temporary tables when performing the following tasks to generate recovery JCL:

- multi-job optimization
- stacked tape analysis
unchanged analysis (XUNCHANGED) processing for local subsystem recoveries

creating and reading groups from the repository

To ensure that you have enough space allocated for processing, set up the temporary tables.

For each DB2 Version 8 subsystem and for each member of a DB2 Version 8 data sharing system, create a temporary database and table space using an 8K BUFFERPOOL.

For information about creating the temporary database and table space, see the documentation for IBM DB2 UDB for z/OS Version 8.

For DB2 Version 9 systems, DB2 Version 9 uses the work file database to dynamically allocate the global temporary tables. For each DB2 Version 9 subsystem and for each member of a DB2 Version 9 data sharing system, you must ensure that the work file database contains at least one table space defined with a page size of 32 KB.

For information about creating the 32 KB table space in the work file database, see the documentation for IBM DB2 UDB for z/OS version 9.

Preparing for archive logs greater than 64 KB tracks

To successfully use archive logs greater than 64 KB tracks (available with DB2 Version 9 and later), you must set up some SMS rules.

To set up SMS rules for large archive logs

1 Create an SMS DATACLAS that uses LARGE for the data set name type.

   This value assigns a DSORG type of PS-L to the data set. The simplest way to accomplish this is to make assignments based on a data set name filter, as in the following example:

   WHEN (&DSN = DSNDXW.DXW2.ARCLG1L.A0*)
   SET &DATACLAS = 'DCLARGE'

2 Create a DATACLAS rule to accommodate temporary files that some RECOVERY MANAGER programs create when processing archive logs.

   These files are identified with .Z0* and should also be allocated as DSNTYPE=LARGE. An example follows:

   WHEN (&DSN = DSNDXW.DXW2.ARCLG1L.Z0*)
   SET &DATACLAS = 'DCLARGE'
Because archive log and temporary files can be extremely large, set up a STORCLAS rule and a STORGRP rule to direct the data sets to a specific SMS storage group.

Examples follow:

```sql
WHEN (&DATACLAS = 'DCLARGE')
  SET &STORCLAS = 'DXWSMS'

and

WHEN (&STORCLAS = 'DXWSMS')
  SET &STORGRP = 'DXWSMS'
```

**Migrating from an earlier version of RECOVERY MANAGER**

Additional tasks, which are dependent on the versions you are updating from and to, are necessary if you migrating from an earlier version of RECOVERY MANAGER.

**Upgrading from RECOVERY MANAGER version 9.1 or earlier to version 9.2 or later**

If you are updating from RECOVERY MANAGER version 9.1 or earlier to version 9.2 or later, the installation system generates job $C68ARM to migrate your existing RECOVERY MANAGER group definitions to the new repository. BMC recommends that you evaluate all groups and delete any that are unused, out of date, or incorrectly defined prior to running the $C68ARM job.

**Setting up data sharing for RECOVERY MANAGER for DB2**

If you have installed RECOVERY MANAGER for some of your DB2 subsystems and are now preparing to migrate to data sharing, use this procedure.

**To set up data sharing for RECOVERY MANAGER**

1. Add the following to the option set for each DB2 subsystem:
   ```
   groupname.DSNLOAD=DB2.load.library
   groupname.DSNEXIT=DB2.exit.library
   groupname.DSNLOAD=DB2.load.library
   groupname.DSNEXIT=DB2.exit.library
   ```

   The variable `groupname` represents the group attach name of your data sharing group.
2 Verify that the following options are set in the option set for each DB2 subsystem:

<table>
<thead>
<tr>
<th>Option</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>optionname</td>
<td>options common to all subsystems</td>
</tr>
<tr>
<td>ssid. optionname</td>
<td>options for each subsystem and data sharing member</td>
</tr>
</tbody>
</table>

3 For each DB2 subsystem that will be a data sharing member, use the Product Option Sets option on the RECOVERY MANAGER main menu to update the work file database name and the group member name.

**RECOVERY MANAGER, LGC, and DBC**

RECOVERY MANAGER, which is also part of the Recovery Management solution, uses DB2 Product Configuration (LGC) for maintaining product option sets. LGC runs as an agent within the DB2 Component Services (DBC) started task address space. The DBC started task must be started in order to run RECOVERY MANAGER.

For more information about LGC and DBC, see the Global Infrastructure Components for DB2 Administration Guide.

**RECOVERY MANAGER for DB2 archive history file**

The RECOVERY MANAGER for DB2 archive history file records all archive logs processed by the batch archive program, ARMBARC. You should create an archive history file for each DB2 subsystem on which disaster recovery procedures will be generated.

The archive history file is also used to record image copies of DSNDB01.DB01, DSNDBD01.SYSUTILX, and DSNDB06.SYSCOPY. Recording these entries in the history file allows the batch system resource recovery program, ARMBSRR, to create efficient recovery JCL for all catalog and directory spaces.

If you specify a name for the archive history file during the installation, the installation jobs create the history table. If you do not create a table during installation, you can use the ARMHIST member in the DBCNTL data set to create and format one.
RECOVERY MANAGER for DB2 option set

The ARM$OPTS, which is the default option set, contains information for all subsystems that share the RECOVERY MANAGER for DB2 load libraries and control files.

Adding a DB2 subsystem to RECOVERY MANAGER for DB2 adds the control information for that subsystem to the existing option set, ARM$OPTS.

If you browse the option set, you will see that variables unique to a DB2 subsystem are prefixed with the subsystem ID. Sharing the ARM$OPTS file among multiple subsystems could have repercussions for batch JCL generation processes. However, using the &SSID variable in the batch output JCL file name ensures that generated JCL can be easily identified and will not overlay JCL generated for other DB2 subsystems.

For more information, see the RECOVERY MANAGER for DB2 User Guide.

RECOVERY MANAGER for DB2 packages

RECOVERY MANAGER for DB2 packages are versioned with an ISO timestamp. SYSPACKAGE in the DB2 catalog will need to be cleaned up by using the FREE command because each release of RECOVERY MANAGER introduces a new version of each package.

RECOVERY MANAGER for DB2 repository

The repository consists of a set of table spaces that contain tables holding information about the groups that you create, including their attributes, subsystem, and group options.

A repository is required for each DB2 subsystem. In a data sharing environment, one repository is required for each data sharing group.

Configuring XBM and SUF

After you finish installing and authorizing the product, you must configure XBM and SUF to operate in your environment.

For more information, see “Configuring XBM and SUF” on page 345.
Enabling interaction between products

You need to complete additional configuration tasks to enable interaction between products.

Enabling interaction between RECOVERY MANAGER and Log Master

To enable interaction between RECOVERY MANAGER and Log Master, Log Master must be installed and you must add some information to the RECOVERY MANAGER option set.

To enable interaction between Log Master and RECOVERY MANAGER

1 Add the following information to the RECOVERY MANAGER option set:

<table>
<thead>
<tr>
<th>Product option</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Log Master Load</td>
<td>Log Master load library</td>
</tr>
</tbody>
</table>

Enabling interaction between COPY PLUS and RECOVERY MANAGER

RECOVERY MANAGER can interact with COPY PLUS.

When you install RECOVERY MANAGER and COPY PLUS at the same time, this interaction is automatically enabled.

If you install the products at different times, you must ensure that they share the same common utilities (BMCUTIL) database so that COPY PLUS can access object sets that are created by RECOVERY MANAGER.

Enabling interaction between RECOVERY MANAGER and PACLOG

To enable interaction between RECOVERY MANAGER and PACLOG, PACLOG must be installed and you must add some information to the PACLOG option set.
To enable interaction between RECOVERY MANAGER and PACLOG

1. Add the following information to the PACLOG option set:

<table>
<thead>
<tr>
<th>Product option</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>PACLOG Load</td>
<td>PACLOG load library</td>
</tr>
<tr>
<td>PACLOG CNTL</td>
<td>PACLOG CNTL library</td>
</tr>
</tbody>
</table>

Enabling interaction between COPY PLUS and DASD MANAGER PLUS

If you plan to use DASD MANAGER PLUS with COPY PLUS, you must direct the utility synonyms to the correct DASD MANAGER PLUS tables and also direct the DASD MANAGER PLUS synonyms to the appropriate utility tables.

The following procedures describe the steps for accomplishing these tasks.

Before you begin

Review the following information about COPY PLUS and DASD MANAGER PLUS synonyms. Examine these synonyms and verify that the table names are correct.

**COPY PLUS synonyms:** If the BMCSTATS runtime option is used, COPY PLUS can update the DASD MANAGER PLUS statistics tables to update statistical information. The following table shows the synonyms that the COPY PLUS utility uses to reference the corresponding tables for DASD MANAGER PLUS.

Table 56: DASD MANAGER PLUS table synonyms for COPY PLUS

<table>
<thead>
<tr>
<th>Synonym</th>
<th>DASD MANAGER PLUS table</th>
</tr>
</thead>
<tbody>
<tr>
<td>BMCACP_BMCXTBSP</td>
<td>BMCATS&lt;var&gt;RS_TABLESPACE</td>
</tr>
<tr>
<td>BMCACP_BMCXTBPT</td>
<td>BMCATS&lt;var&gt;RS_TABLEPART</td>
</tr>
<tr>
<td>BMCACP_BMCXTBLS</td>
<td>BMCATS&lt;var&gt;RS_TABLES</td>
</tr>
</tbody>
</table>

<var> represents the version and release number of your current DASD MANAGER PLUS product. These table names are the default names as shipped and might have changed when DASD MANAGER PLUS was installed.

To direct the utility synonyms to the DASD MANAGER PLUS tables

If the current COPY PLUS synonyms do not point to the tables listed in Table 21 on page 202, complete the following steps to update them:
1 Drop the COPY PLUS synonyms.

2 Create the new COPY PLUS synonyms by using the same synonym names, but use the correct DASD MANAGER PLUS table names.

Note
If DASD MANAGER PLUS tables are not connected or installed when you install COPY PLUS, the associated package binds will complete with a return code 4.

Setting the MEMLIMIT system parameter

Several BMC products require above-the-bar memory and might abend if sufficient memory is not available.

This requirement affects the BMC products and solutions listed in Table 1 on page 58.

The default value for the System Management Facility (SMF) MEMLIMIT parameter is 2 GB. This value is set in member SMFPRMxx in SYS1.PARMLIB.

Before you begin

Determine whether you need to override the default MEMLIMIT value, based on the information in the following table:

Table 57: MEMLIMIT recommendations

<table>
<thead>
<tr>
<th>Product or solution</th>
<th>Recommendation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Administrative Assistant</td>
<td>If you are unable to specify REGION=0M:</td>
</tr>
<tr>
<td></td>
<td>■ Specify NOLIMIT to allow unlimited above-the-bar memory.</td>
</tr>
<tr>
<td></td>
<td>■ If you are unable to specify NOLIMIT, specify at least 4 GB; if you are operating on LOB or XML data, BMC recommends at least 32 GB.</td>
</tr>
<tr>
<td>ALTER</td>
<td>If you are unable to specify REGION=0M, specify at least 1 GB; if you are operating on LOB or XML data, BMC recommends at least 32 GB.</td>
</tr>
<tr>
<td>CATALOG MANAGER</td>
<td>If you are unable to specify REGION=0M, specify at least 1 GB; if you are operating on LOB or XML data, BMC recommends at least 32 GB.</td>
</tr>
<tr>
<td>Product or solution</td>
<td>Recommendation</td>
</tr>
<tr>
<td>----------------------------</td>
<td>--------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>CHANGE MANAGER</td>
<td>If you are unable to specify REGION=0M, specify at least 1 GB; if you are operating on LOB or XML data, BMC recommends at least 32 GB.</td>
</tr>
<tr>
<td>CHECK PLUS</td>
<td>If you are unable to specify REGION=0M:</td>
</tr>
<tr>
<td></td>
<td>■ Specify NOLIMIT to allow unlimited above-the-bar memory.</td>
</tr>
<tr>
<td></td>
<td>■ If you are unable to specify NOLIMIT, specify at least 4 GB; if you are operating on LOB or XML data, BMC recommends at least 32 GB.</td>
</tr>
<tr>
<td>COPY PLUS</td>
<td>Specify at least 1 GB.</td>
</tr>
<tr>
<td>DASD MANAGER PLUS</td>
<td>If you are unable to specify REGION=0M:</td>
</tr>
<tr>
<td></td>
<td>■ Specify NOLIMIT to allow unlimited above-the-bar memory.</td>
</tr>
<tr>
<td></td>
<td>■ If you are unable to specify NOLIMIT and above-the-bar memory limits are inadequate, contact your z/OS system administrator.</td>
</tr>
<tr>
<td>Database Administration</td>
<td>If you are unable to specify REGION=0M:</td>
</tr>
<tr>
<td></td>
<td>■ Specify NOLIMIT to allow unlimited above-the-bar memory.</td>
</tr>
<tr>
<td></td>
<td>■ If you are unable to specify NOLIMIT, specify at least 4 GB; if you are operating on LOB or XML data, BMC recommends at least 32 GB.</td>
</tr>
<tr>
<td>Database Performance</td>
<td>If you are unable to specify REGION=0M:</td>
</tr>
<tr>
<td></td>
<td>■ Specify NOLIMIT to allow unlimited above-the-bar memory.</td>
</tr>
<tr>
<td></td>
<td>■ If you are unable to specify NOLIMIT:</td>
</tr>
<tr>
<td></td>
<td>— For DASD MANAGER, if above-the-bar memory limits are inadequate, contact your z/OS system administrator.</td>
</tr>
<tr>
<td></td>
<td>— For REORG PLUS, specify at least 4 GB; if you are operating on LOB or XML data, BMC recommends at least 32 GB.</td>
</tr>
<tr>
<td>Product or solution</td>
<td>Recommendation</td>
</tr>
<tr>
<td>--------------------------</td>
<td>--------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>High-speed Apply Engine</td>
<td>Specify at least 1 GB.</td>
</tr>
<tr>
<td>LOADPLUS</td>
<td>If you are unable to specify REGION=0M:</td>
</tr>
<tr>
<td></td>
<td>■ Specify NOLIMIT to allow unlimited above-the-bar memory.</td>
</tr>
<tr>
<td></td>
<td>■ If you are unable to specify NOLIMIT, specify at least 4 GB; if you are operating on LOB or XML data, BMC recommends at least 32 GB.</td>
</tr>
<tr>
<td>Log Master</td>
<td>Specify at least 1 GB.</td>
</tr>
<tr>
<td>RECOVER PLUS</td>
<td>Specify at least 1 GB.</td>
</tr>
<tr>
<td>RECOVERY MANAGER</td>
<td>Specify at least 1 GB.</td>
</tr>
<tr>
<td>Recovery Management</td>
<td>Specify at least 1 GB.</td>
</tr>
<tr>
<td>REORG PLUS</td>
<td>If you are unable to specify REGION=0M:</td>
</tr>
<tr>
<td></td>
<td>■ Specify NOLIMIT to allow unlimited above-the-bar memory.</td>
</tr>
<tr>
<td></td>
<td>■ If you are unable to specify NOLIMIT, specify at least 4 GB; if you are operating on LOB or XML data, BMC recommends at least 32 GB.</td>
</tr>
<tr>
<td>UNLOAD PLUS</td>
<td>If you are unable to specify REGION=0M:</td>
</tr>
<tr>
<td></td>
<td>■ Specify NOLIMIT to allow unlimited above-the-bar memory.</td>
</tr>
<tr>
<td></td>
<td>■ If you are unable to specify NOLIMIT, specify at least 4 GB; if you are operating on LOB or XML data, BMC recommends at least 32 GB.</td>
</tr>
</tbody>
</table>

**To override the default MEMLIMIT value**

1. Use one of the following methods to override the default MEMLIMIT value:
   - Specify the MEMLIMIT parameter in the JCL.
   - Specify REGION=0M in the JCL.
   - Use the SMF IEFUSI exit.
Verifying Backup and Recovery product and Utility product installation

The Installation System generates an installation verification procedure (IVP) job for each installed Backup and Recovery or Utility product.

To help ensure that a product installed properly, BMC strongly recommends that you run the corresponding IVP job.

For products that use the dynamic bind process, the IVP job initializes that process by binding the necessary packages. Running the IVP job helps prevent subsequent bind problems, such as authorization problems, during product execution.

Before you begin

Complete the following tasks before running an IVP job:

- Submit all installation and customization jobs except the IVP job ($C70IVP). For more information, see the Installation System User Guide.
- Apply the appropriate fixes for each product that you are installing. For instructions, see the Installation System User Guide.
- Grant the appropriate authorizations. For more information, see the configuration information for the products that you have installed.
  If you are not the person who installed the products but are submitting the IVP job, ensure that you have the authorizations that are required to execute each product that was installed.
- Complete any additional configuration tasks for your installed products or components.

To verify installation

1. If your jobs use data sets that are managed by the Storage Management Subsystem (SMS), ensure that the SMS service routine load library (SYS1.CSSLIB) is APF-authorized.

   Complete this step regardless of whether SYS1.CSSLIB is in your system LNKLST or STEPLIB concatenation.

2. Use one of the following methods to edit either the EXEC statement in the product job step of the IVP job ($C70IVP) or your job card:
   - Change the value of the REGION parameter to 0M.
If not already addressed by your site SMF defaults, add the MEMLIMIT parameter with an appropriate value for your site and the products that you are installing.

3 Submit the IVP job ($C70IVP).

The IVP job should complete with condition code 0 unless otherwise indicated by comments in the job.

---

**Note**

The following temporary objects exist only for the duration of the IVP job:

- Database BMCIVPDB
- Table space BMCIVPDB.BMCIVPTS
- Table BMC.BMCIVPTB
- Table BMC.BMCIVPT2
- Index BMC.BMCIVPIX1
Configuring the System and SQL Performance products for DB2

This section applies to all System and SQL Performance products except OPERTUNE.

*Note*

Some procedures and tasks in this section do not apply to all of the System and SQL Performance products. All instructions that apply to APPTUNE and SQL Explorer also apply to SQL Performance for DB2. All instructions that apply to Pool Advisor also apply to BMC System Performance for DB2.

Overview

The System and SQL Performance products and solutions for DB2 provide an integrated environment that allows you to use one performance product or solution alone or multiple products or solutions together.

Using products together saves time and further automates performance analysis functions. The integrated environment from which the products operate allows all products to operate concurrently without placing unnecessary burdens on system storage, resource use, or execution time.

When multiple System and SQL Performance products or solutions are installed and active, they share a common interface. If multiple products are installed but only one product is active, the product-specific main menu for the active product is displayed instead of a common main menu. The main menu that is displayed reflects the active product mix.
Figure 78 on page 408 is an example of the main menu for a single product.

**Figure 78: SQL Explorer main menu**

DIY4 -------------------------- SQL EXPLORER 11.1.0 --------------------------
Command ===>

Option . .
0. Options
1. Explain
2. Explain and Compare
3. Compare
4. Mismatch Analysis
5. Impact Analysis
6. DBRM / Load Compare
7. Migrate Access Path Statistics
8. Declarations Generator
R. SQL Explorer Rules Help
M. Maintenance

SSID . . . . . DIY4
DDF Location

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F1=Help    F2=Split   F3=End     F7=Up      F8=Down    F9=Swap   F10=Left
F11=Right  F12=Cancel

Figure 79 on page 408 is an example of the main menu that is displayed when all System and SQL Performance products and solutions are installed and active.

**Figure 79: System and SQL Performance for DB2 common main menu**

DOMSELECT/I System and SQL Performance for DB2 18:17:00
Command ===>

Current Data Collector : A62D    Status : ACTIVE

SELECT ONE OF THE FOLLOWING OPTIONS. THEN PRESS ENTER.
_ D. SYSTEM PERFORMANCE SOLUTION - DB2 SUBSYSTEM AND STORAGE POOL ANALYSIS
--- SQL PERFORMANCE SOLUTION ---
Q. APPTUNE AND INDEX COMPONENT - DB2 APPLICATION AND INDEX ANALYSIS
S. SQL EXPLORER COMPONENT - DB2 SQL ANALYSIS
A. PERFORMANCE ADVISORS - ADVICE AND RECOMMENDATIONS

1. DOMPLEXES - SELECT/CHANGE DOMPLEX CONNECTION
2. SESSION STATUS - VIEW CURRENT SESSION RESOURCE USAGE
3. USER OPTIONS - VIEW/MODIFY USER OPTIONS
4. LOG OPERATIONS - VIEW/PRINT LOGGED SCREENS AND REPORTS
5. ADMINISTRATION - MANAGE PRODUCT AND USER PROFILES

H. HELP
X. EXIT
Z. ABOUT THE SYSTEM AND SQL PERFORMANCE PRODUCTS

**Note**
The MainView for DB2 - Data Collector component provides access to Administration functions of the System and SQL Performance products environment by a hyperlink from a MainView for DB2 Easy Menu. For more information, see the MainView for DB2 User Guide.
Controlling access to the System and SQL Performance products for DB2

This section outlines the security mechanisms for controlling access to System and SQL Performance products and components and to DB2.

User IDs for the DBC component

The DBC is the host address space used by the System and SQL Performance products.

The common “Data Collector” component for the Performance products runs under the DBC and is sometimes referred to as the DOM agent. The DOM agent is responsible for such things as connecting to DB2 subsystems, starting traces, and collecting and saving data. You can run the DBC as a batch job or as a started task, but BMC recommends running it as a started task. Restrict batch mode to testing the initial installation.

Note

If you plan to use more than one product in the same environment, BMC Software recommends that you use only one DBC for each z/OS image.

The following DBC user IDs are assigned according to the method that was used to start the DBC:

- batch
  The USER parameter of the JOB statement assigns this ID.

- started task
  Your MVS security system assigns this ID based on entries in the equivalent of the RACF ICHRIN03 table. This table contains the name of the started task procedure and the user ID that should be assigned to it. A user ID is often associated with each started task.
**Note** *(APPTUNE and SQL Performance only)*

READ authority (or its equivalent) must be granted to the DBC started task ID on SYSUSERAUTH if either of the following conditions are true:

- DB2 security is being enforced through the **Enforce security via DB2 authorization table** option (see “Verifying or changing the global resource enqueues” on page 437).

- The DB2 catalog data sets are protected by a security system.

READ authority (or its equivalent) must be granted to the DBC started task on SYSDBASE if either of the following conditions are true:

- The object collection is set to `Y`.

- The DB2 catalog data sets are protected by a security system.

Sites frequently allow the security system to assign a default user ID to started tasks so that started tasks can be added without requiring an update to the equivalent of the RACF ICHRIN03 table. In this case, you should grant the necessary authorizations to the user ID of the default started task. If you do not want the products being installed to use this default user ID, you must modify the ICHRIN03 table to assign a different user ID to the DBC.

**Note**

If you make changes to the ICHRIN03 table, an IPL is required to put them into effect.

The user assigned to the DBC started task needs RACF authority to the log files and DB2 authority to start traces and execute Explains. You can use the DOMEXIT1 exit to assign a user ID to the DBC when no default user ID is assigned by your security system. This exit runs as an APF-authorized program within the Data Collector and is invoked during Data Collector initialization. The user assigned to the started task of the Data Collector needs RACF authority to the trace data sets and DB2 authority to start traces and execute Explains.

Console message IEF695I Procedure *procName* is assigned to User *userID*, is issued at DBC startup and reports the user ID being used by the DBC. You can also issue the USERS command to determine which user ID that the DBC is using.

You must also add a rule to provide READ authority to the FACILITY class entity CSVDYNL.*linkListName* when the following conditions exist:

- You are using CA-ACF2, CA-Top Secret, or RACF to control access to DB2.
You are using LINKLIST instead of STEPLIB for access to the BMC System and SQL Performance products.

The `linkListName` variable represents the name of your LINKLIST data set.

For the authority requirements of the DBC, see “Managing security with CA-ACF2, CA-Top Secret, or RACF security” on page 416.

Security and permissions for user IDs for the System and SQL Performance products

Multiple user IDs are associated with installing, configuring, and using the product. The IDs include:

- Installation user IDs
- DBC started task user IDs
- NGLARCH stated task user IDs
- Online user IDs

For details of the permissions and security settings required by these IDs, see the *BMC Global Infrastructure Administration Guide*.

**Note**

For detailed information about DBC user IDs, see “User IDs for the DBC component” on page 409

Plan name

The System and SQL Performance products provide one plan. APPTUNE, SQL Explorer, MainView for DB2 - Data Collector, SQL Performance, and System Performance use this plan. Pool Advisor does not use a plan.

The default plan name is DAA `vvrD1`, where `vvr` is the version and release level. This plan is used to perform all SQL Explorer product functions, and for Explains in APPTUNE, MainView for DB2 - Data Collector, and SQL Performance.
MVS security

If you have an MVS security system, you must grant the required authorizations, even if your security system does not control access to DB2.

If you have no MVS security system, see “DB2 and product security” on page 417.

VSAM data sets

The installation process creates VSAM data sets.

Table 58 on page 412 describes the function of each data set. For optimum performance, grant global access for each of the following data sets if you are using IBM RACF.

Table 58: VSAM data sets created by the installation process

<table>
<thead>
<tr>
<th>Data set</th>
<th>What the data set stores</th>
</tr>
</thead>
<tbody>
<tr>
<td>PROFILE</td>
<td>User Profile user records for all product users and definitions for APPTUNE application groups</td>
</tr>
<tr>
<td></td>
<td>The user record contains the parameters for session characteristics and function keys.</td>
</tr>
<tr>
<td>SECURITY</td>
<td>User Profile security records</td>
</tr>
<tr>
<td></td>
<td>Security records contain parameters that grant or deny access to various product functions and to DB2.</td>
</tr>
<tr>
<td>HELP</td>
<td>online Help text associated with the products and their components</td>
</tr>
<tr>
<td>COPYDIR</td>
<td>names of the archived log files for use by the archive directory</td>
</tr>
<tr>
<td>log files</td>
<td>trace records gathered from DB2 and BMC Software products</td>
</tr>
<tr>
<td>DCC$VARS1</td>
<td>default parameter variable values and user-coded overrides to variable values (Pool Advisor and System Performance only)</td>
</tr>
<tr>
<td>PMD$HIST</td>
<td>long-term history records—daily, page sets, and objects (Pool Advisor and System Performance only)</td>
</tr>
</tbody>
</table>

a Do not make the name of this data set version sensitive. You retain and reuse these files when you upgrade to a later release of the products.

Report log data sets (APPTUNE and SQL Performance)

The installation process does not allocate report log data sets. Users allocate them to store report and screen images for later viewing and printing. See the online Help for information about report logging (HELP TRPTLOG).
BBPARM and BBTMPLT data sets

Although only Pool Advisor and System Performance currently use these data sets, they must be present in order for you to use any of the System and SQL Performance products.

The BBPARM data set contains the following information:

- parameters that determine the changes that should be made to the monitored resources and the maximum and minimum threshold values that will be used when advisors recommend changes
- rules that trigger recommendations for changes to monitored resources

The BBTMPLT data set contains the advisor text that is displayed in Pool Advisor and System Performance.

Data set users

The following classes of users need authority to access the data sets that the installation process creates:

- DB2 Component Services (DBC)
- product installer
- product administrator
  - The product administrator controls internal security and determines whether users should be restricted from performing tasks such as issuing MVS or DB2 commands. A site can designate an individual to be the product administrator or can allow all users to perform administrative functions.
- product users

Table 59 on page 414 lists RACF access authorization requirements for product data sets and Table 60 on page 415 lists CA-ACF2 access authorization requirements for product data sets. Consult with your security administrator as needed about assigning the appropriate authorizations.

Note

For more information about DBC security, see “Managing security with CA-ACF2, CA-Top Secret, or RACF security” on page 416.
## Table 59: RACF access authorization to product data sets

<table>
<thead>
<tr>
<th></th>
<th>DBC</th>
<th>archive processing</th>
<th>product installer</th>
<th>product administrator</th>
<th>all users</th>
</tr>
</thead>
<tbody>
<tr>
<td>Profile</td>
<td>NA</td>
<td>NA</td>
<td>A</td>
<td>U</td>
<td>U&lt;sup&gt;c&lt;/sup&gt;</td>
</tr>
<tr>
<td>Security</td>
<td>R</td>
<td>NA</td>
<td>A</td>
<td>U</td>
<td>R</td>
</tr>
<tr>
<td>Help</td>
<td>NA</td>
<td>NA</td>
<td>A</td>
<td>R</td>
<td>R</td>
</tr>
<tr>
<td>Report log</td>
<td>NA</td>
<td>NA</td>
<td>A</td>
<td>U</td>
<td>U&lt;sup&gt;d&lt;/sup&gt;</td>
</tr>
<tr>
<td>Log files</td>
<td>A</td>
<td>R</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>Archives</td>
<td>NA</td>
<td>A</td>
<td>R</td>
<td>R</td>
<td>R</td>
</tr>
<tr>
<td>COPYDIR</td>
<td>U</td>
<td>U</td>
<td>A</td>
<td>U</td>
<td>R</td>
</tr>
<tr>
<td>PMDS$HIST</td>
<td>U&lt;sup&gt;a&lt;/sup&gt;</td>
<td>NA</td>
<td>A&lt;sup&gt;a&lt;/sup&gt;</td>
<td>U&lt;sup&gt;a&lt;/sup&gt;</td>
<td>NA</td>
</tr>
<tr>
<td>DCC$VARS</td>
<td>U&lt;sup&gt;a&lt;/sup&gt;</td>
<td>NA</td>
<td>A&lt;sup&gt;a&lt;/sup&gt;</td>
<td>U&lt;sup&gt;a&lt;/sup&gt;</td>
<td>NA</td>
</tr>
<tr>
<td>BBPARM</td>
<td>R</td>
<td>NA</td>
<td>A</td>
<td>U</td>
<td>NA</td>
</tr>
<tr>
<td>BBTMPLT</td>
<td>R</td>
<td>NA</td>
<td>A</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>DB2MSTR</td>
<td>R</td>
<td>NA</td>
<td>R&lt;sup&gt;b&lt;/sup&gt;</td>
<td>R&lt;sup&gt;b&lt;/sup&gt;</td>
<td>R&lt;sup&gt;b&lt;/sup&gt;</td>
</tr>
<tr>
<td>DBC PARMLIB</td>
<td>R</td>
<td>R</td>
<td>A</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>DBC repository</td>
<td>A</td>
<td>NA</td>
<td>A</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>DB2 Product Configuration datastore</td>
<td>U</td>
<td>NA</td>
<td>S</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>RTCS private registry</td>
<td>U</td>
<td>U</td>
<td>A</td>
<td>U</td>
<td>R</td>
</tr>
</tbody>
</table>

Legend: R = READ  U = UPDATE  A = ALTER  S = SUPERUSER  NA = not applicable

- **a** Authorization is required if System Performance or Pool Advisor is installed. Otherwise, authorization is NA.
- **b** The product installer, product administrator, and all users need READ (R) authority if the Data Collector is run with the ENFORCE SECURITY VIA DB2 AUTHORIZATION TABLE option set to Y.
- **c** You can use U (UPDATE) if you want to enable users to update their own profile settings or to be able to create their own reports. This access could be set to R (READ) but doing so might cause errors to be displayed. However, you can ignore these messages and the product continues to work normally.
- **d** All users need UPDATE authority to their own report log data sets.
### Table 60: CA-ACF2 access to product data sets

<table>
<thead>
<tr>
<th></th>
<th>DBC</th>
<th>Archive processing</th>
<th>Product installer</th>
<th>Product administrator</th>
<th>All users</th>
</tr>
</thead>
<tbody>
<tr>
<td>Profile</td>
<td>NA</td>
<td>NA</td>
<td>WA</td>
<td>W</td>
<td>W &lt;sup&gt;c&lt;/sup&gt;</td>
</tr>
<tr>
<td>Security</td>
<td>R</td>
<td>NA</td>
<td>WA</td>
<td>W</td>
<td>R</td>
</tr>
<tr>
<td>Help</td>
<td>NA</td>
<td>NA</td>
<td>WA</td>
<td>R</td>
<td>R</td>
</tr>
<tr>
<td>Report log</td>
<td>NA</td>
<td>NA</td>
<td>WA</td>
<td>W</td>
<td>W</td>
</tr>
<tr>
<td>Log files</td>
<td>WA</td>
<td>R</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>Archives</td>
<td>NA</td>
<td>WA</td>
<td>R</td>
<td>R</td>
<td>R</td>
</tr>
<tr>
<td>COPYDIR</td>
<td>W</td>
<td>W</td>
<td>WA</td>
<td>W</td>
<td>R</td>
</tr>
<tr>
<td>PMDS$HIST</td>
<td>W &lt;sup&gt;a&lt;/sup&gt;</td>
<td>NA</td>
<td>WA &lt;sup&gt;a&lt;/sup&gt;</td>
<td>W &lt;sup&gt;a&lt;/sup&gt;</td>
<td>NA</td>
</tr>
<tr>
<td>DCC$VARS</td>
<td>W &lt;sup&gt;a&lt;/sup&gt;</td>
<td>NA</td>
<td>WA &lt;sup&gt;a&lt;/sup&gt;</td>
<td>W &lt;sup&gt;a&lt;/sup&gt;</td>
<td>NA</td>
</tr>
<tr>
<td>BBPARM</td>
<td>R</td>
<td>NA</td>
<td>WA</td>
<td>W</td>
<td>NA</td>
</tr>
<tr>
<td>BBTMLT</td>
<td>R</td>
<td>NA</td>
<td>WA</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>DB2MSTR</td>
<td>R</td>
<td>NA</td>
<td>R &lt;sup&gt;b&lt;/sup&gt;</td>
<td>R &lt;sup&gt;b&lt;/sup&gt;</td>
<td>R &lt;sup&gt;b&lt;/sup&gt;</td>
</tr>
<tr>
<td>DBC PARMLIB</td>
<td>R</td>
<td>R</td>
<td>WA</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>DBC repository</td>
<td>WA</td>
<td>NA</td>
<td>WA</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>DB2 Product</td>
<td>W</td>
<td>NA</td>
<td>S</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>Configuration</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>datastore</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>RTCS private</td>
<td>W</td>
<td>W</td>
<td>WA</td>
<td>W</td>
<td>R</td>
</tr>
<tr>
<td>registry</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Legend:  
- R = READ  
- U = UPDATE  
- A = ALTER  
- S = SUPERUSER  
- NA = not applicable

- <sup>a</sup> Authorization is required if System Performance or Pool Advisor is installed. Otherwise, authorization is NA.
- <sup>b</sup> The product installer, product administrator, and all users need READ (R) authority if the Data Collector is run with the ENFORCE SECURITY VIA DB2 AUTHORIZATION TABLE option set to Y.
- <sup>c</sup> You can use W (WRITE) if you want to enable users to update their own profile settings or to be able to create their own reports. This access could be set to R (READ) but doing so might cause errors to be displayed. However, you can ignore these messages and the product continues to work normally.
Managing security with CA-ACF2, CA-Top Secret, or RACF security

If you use CA-ACF2, CA-Top Secret, or RACF to control access to DB2, the following considerations apply.

CA-ACF2

If you are using CA-ACF2 to control user access to DB2, you must assign a unique logon ID to the DBC. The logon ID definition must specify the STC option, indicating that the ID is for use by a started task. You must also enable SAF so that CA-ACF2 can recognize the RACROUTE calls that the product issues.

CA-ACF2 can use a TSO command-limiting function to restrict an individual user or an entire site. This function applies to TSO commands that you issue from the READY prompt or from ISPF.

If command limiting is active, you must specify the commands shown in Table 61 on page 416.

Table 61: Commands you specify in command-limiting environments

<table>
<thead>
<tr>
<th>Command</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>DOMDMAIN</td>
<td>access the System and SQL Performance products for DB2 Report Manager for viewi</td>
</tr>
<tr>
<td>BBM9TC21</td>
<td>hyperlink to the MainView for DB2 component of System Performance</td>
</tr>
<tr>
<td>DMDAIEZ2</td>
<td>invoke ISPF Edit to allow editing of Pool Advisor for DB2 ZPARM keywords</td>
</tr>
<tr>
<td>DMDRJCL1</td>
<td>invoke ISPF Edit to allow editing of the JCL member created in the Configuration Analyzer process (Pool Advisor and System Performance)</td>
</tr>
<tr>
<td>LGCOMAIN</td>
<td>invoke the ISPF interface for the DB2 Product Configuration (LGC) component to allow editing of option sets</td>
</tr>
<tr>
<td>PSSSQLX</td>
<td>execute an Explain or a single SQL statement from the product (SQL Explorer, APPTUNE, SQL Performance, and MainView for DB2 – Data Collector)</td>
</tr>
<tr>
<td>PSSDCL</td>
<td>create a DCLGEN in the product (SQL Explorer and SQL Performance)</td>
</tr>
<tr>
<td>PSSCATI</td>
<td>invoke common Explain functionality from CATALOG MANAGER for DB2</td>
</tr>
</tbody>
</table>

Command limiting is activated in the following ways:

- for an individual, with the TSOCMDS field of the logon ID record
  TSOCMDS specifies the name of a module that contains a list of valid commands for a user. For a sample list, see the ACF$CMDS member of CAI.CAIMAC.
for an entire site, with the CMDLIST field of the GSO record named TSO

The ALLCMDS field indicates permission for a user to bypass command limiting. Use the character that is specified in the BYPASS field of the GSO TSO record as a prefix for the command name.

**CA-Top Secret**

If you are using CA-Top Secret to control user access to DB2, you must update the Facilities Matrix table to identify the program name. If the program name is not in the table, CA-Top Secret does not allow a program to issue RACROUTE calls. You can specify the first three characters of the program name in the Facilities Matrix table. For the System and SQL Performance products, the first three characters are DOM. These characters then act as a wildcard (DOM*, for example), allowing any program beginning with the characters DOM to issue RACROUTE calls.

**CA-ACF2, CA-Top Secret, and RACF**

The names in the following list of grants reflect the default names that are used during installation where vr indicates the version and release levels of the product. If you used different names during installation, replace these default names with your own names.

```
GRANT CREATETAB ON DATABASE BMCPERF
    TO PUBLIC;
GRANT USE OF TABLESPACE BMCPERF.BMCUPLAN
    TO PUBLIC;
GRANT ALL ON TABLE BMCDAAvr.SQLX_BASE
    TO PUBLIC;
GRANT ALL ON TABLE BMCDAAvr.SQLX_STATS
    TO PUBLIC;
GRANT ALL ON TABLE BMCDAAvr.SQLX_SQLTXT
    TO PUBLIC;
```

Define the grants as follows:

- If you use CA-ACF2 security, define the grants to CA-ACF2.
- If you use RACF or CA-Top Secret, define the grants to DB2.

**DB2 and product security**

The product administrator is responsible for establishing default security options for all users and for maintaining individual user access options through the User Profile.

The User Profile controls access to the following components and functions:

- Data Collector subsystems
authority to issue product commands (through Data Collector subsystems)

authority to issue DB2 commands

SECURITY data set and security processing

Product security is enforced through the SECURITY data set. Each user is registered in this data set automatically when a User Profile is created.

Users can modify their User Profiles through User Options or product administrators can modify them in User Profile administration. When a change is made to a User Profile from the administration panels, the records in the PROFILE and SECURITY data sets are updated. When a change is made from the User Options panels, only the record in the PROFILE data set is updated. Administrators can prevent users from modifying many of the profile values by locking the values. Users can view the values in locked fields but cannot modify them. Only users with profile administration authority can change locked values.

When a user begins a product session, the profile records from the SECURITY and PROFILE data sets are merged. If a value is locked, the setting from the SECURITY record is used. If a value is not locked, the setting from the PROFILE data set is used.

See the System and SQL Performance for DB2 Administrator Guide for a complete description of User Profiles.

DB2 security

You can restrict authority to start DB2 traces (APPTUNE and SQL Performance) and issue DB2 commands with product security alone or with DB2 security checking.

Use the DOMPLEX option called Enforce security via DB2 authorization table to specify the type of security enforcement that the product uses, as follows:

- Specify N to use only product security (default value).
- Specify Y to use both DB2 security and product security.

For an explanation of DOMPLEX options, see “Verifying or customizing the DOMPLEX option set” on page 439.

Using only product security

Authority to issue DB2 commands is controlled exclusively through the product when you specify N for Enforce security via DB2 authorization table. This option prevents validation of authorization in DB2. For example, if a User Profile
indicates that DB2 commands can be issued, the product allows the user to issue DB2 commands whether or not the user has SYSOPR or other authority in DB2.

You can use the DOMEXIT2 user exit to override individual security options in the User Profile.

For more information about DOMEXIT2, see the System and SQL Performance for DB2 Administrator Guide. For an explanation of DOMPLEX options, see “Verifying or changing DOMPLEX parameters” on page 454.

■ Using both DB2 and product security

If you specify Y for Enforce security via DB2 authorization table, security is enforced for both DB2 and for the product. For DB2 operations, the product validates authority in the User Profile first. DB2 authority is validated only if the product allows the operation. For example, if the User Profile indicates that the user is allowed to issue commands, the product validates the user's DB2 authority. If the user does not have command authorization in DB2, the user cannot issue commands.

On the other hand, because DB2 authorization is checked only if the operation is authorized by the product, it is possible for the product to restrict a user from issuing commands, even when DB2 command authority has been granted to the user. When Y is specified for the Enforce security via DB2 authorization table option, the product can prevent a user from performing a function that DB2 would allow because that function is not authorized by the product. When user access to a specific function is denied because of insufficient security, the product issues error messages.

The product establishes a user’s DB2 authority when the user first logs on to the product. If the target DB2 subsystem is not active when the user logs on, security checking is deferred until DB2 is started and the user makes the first request for a DB2 service.

■ DB2 authorization requirements

All product users need DB2 authority. The user assigned to the DBC started task needs RACF authority to the log files and DB2 authority to start traces and execute Explains.

If you implement a product so that it controls security (by specifying N for the Enforce security via DB2 authorization table option), the product’s User Profile enforces all authorizations when the product is installed. The product’s User Profile also enforces authorization to perform non-DB2-related functions. See “Checking the default User Profile” on page 459 for information about defining a User Profile. For detailed information about creating User Profiles, see the System and SQL Performance for DB2 Administrator Guide.

If you use product security and DB2 security (by specifying Y for the Enforce security via DB2 authorization table option), you must grant the user authorization to the appropriate functions on each DB2 subsystem. You must issue the proper DB2 authority to the user to issue DB2 commands.
Performing post-installation tasks

When you finish using the Installation System to generate and execute installation JCL, you must perform various post-installation tasks to complete the installation process. This section provides a detailed description of the post-installation tasks that are common to the System and SQL Performance products. Perform these tasks in the order in which they are presented. These tasks must be performed only once, even if you are installing multiple products.

1. Defining a DOMPLEX.
2. Verifying the product for data sharing members.
3. Customizing the CLISTs for SQL Explorer and CATALOG MANAGER.
5. Generating Help text from DB2 trace record field descriptions.
6. Editing or reviewing the DBC JCL procedure (DBC$STC).
7. Adding or replacing the CLIST member for the ISPF interface.
8. Making products available from a menu.
9 Invoking SQL Explorer directly.

10 Invoking BMC Software products without LIBDEFS.

11 Verifying or changing the global resource enqueues.

12 Refreshing the MVS Linklist Lookaside.

13 Verifying the product authorization.

\( ^a \) If you are installing only SQL Explorer or OPERTUNE, this task does not apply.

**Defining a DOMPLEX**

This task applies to all System and SQL Performance products except OPERTUNE and SQL Explorer.

**To define a DOMPLEX**

1 On the main menu for your System and SQL Performance product or solution, select **Administration**.

   **Note**
   You can also define a DOMPLEX from the Installation System. On the Runtime Enablement (RTE) Process menu, select **Specify product customization values** under the **Initial runtime instance** heading and then select **Customize product options** under the **Product Configuration** heading.

2 On the Administration menu, select **2 (DOMPLEX Option Sets)**.

3 On the DOMPLEX Options Set panel, if you migrated from a previous release, select the DOMPLEX data set that is listed. Otherwise, type **I** next to the product or solution name and press **Enter** to create a new DOMPLEX option set.

4 On the DOMPLEX option set panel, expand each section and review or change the values.

   **Tip**
   To expand sections on the DOMPLEX option set panel, place the cursor on the + sign next to a section and press **Enter**. The major sections are DOMPLEX Parameters, Data Collector List, DB2 Monitor List, and Output Groups.

You must define at least one Data Collector, one DB2 subsystem to monitor, and one output group with LOGSET parameters. For more information about
individual fields and sections, press F1 for Help or see the *System and SQL Performance for DB2 Administrator Guide*.

5 Press F3 when you finish.

6 When prompted, name the DOMPLEX and provide a description.

---

**Note**
The DOMPLEX name should match the DOMPLEX value specified in the DOM$STRRT job. The Data Collector name should match the DBC subsystem ID.

---

**Editing the DOMPLEX option set online**

Use this procedure to edit the DOMPLEX option set through the online interface.

---

**Note**
When working in the interface, you might need to type FILTOFF on the command line to see all of the fields.

---

1 In the interface, navigate to the DOMPLEX Options Set panel.

2 Select a DOMPLEX option set for modification by typing E in the field beside that DOMPLEX.

The panel displays sections in that option set:

| Filter: Off | Parameters that apply to entire DOMPLEX |
| + DOMPLEX Parameters | Parameters that apply to entire DOMPLEX |
| + Data Collector List (1) | Data Collector(DBC) subsystems in DOMPLEX |
| + DB2 Monitor List (11) | DB2 Sub-systems to be monitored |
| + OutGp DCID DspSize (6) | Output Groups - valid range: 001-256 |

---

**Tip**
You can expand a section by selecting the plus sign and pressing **Enter**, or by typing **S** over the sign. (To collapse an expanded section, select the minus sign and press **Enter**, or type **S** over the minus sign.)

3 Expand the **DOMPLEX Parameters** section, and ensure that you have the correct SECURITY and COPYDIR data sets for version 10.1 or later listed.

This section contains values that apply to the entire DOMPLEX.

4 Expand the **Data Collector List** section, and ensure that the DBC ID is specified as the Data Collector.

This section lets you define the initialization parameters for each Data Collector (for example, the number of concurrent batch and online users allowed).
Tip

The Data Collector List, DB2 Monitor List, and OutGp DCID DspSize sections contain collections of repeating groups and support the following commands:

- **I** inserts a new instance in the repeating group.
- **D** deletes an instance.
- **R** replicates an instance.

5 If you have Pool Advisor, perform the following steps:

a Expand the Data Collector List section.

b Open each Data Collector ID listed, and zoom into each of the following field names by putting your cursor on the > sign and pressing **Enter**:

- Data Collectors advisor variable repository
- Pool Advisor history repository

**Note**

Ensure that these repositories exist before bringing up the DBC subsystem. Use the PMDHIST and PMDJINST members from the SAMP data set (BBSAMP or BMCSAMP) to create them.

6 Expand the DB2 Monitor List section, open each DB2 subsystem, and ensure that you have the correct Dynamic Explain plan name for this release. The default name is DAAVVRD1.

This section lets you identify and define the DB2 subsystems that can be monitored by the Data Collectors in the DOMPLEX.

7 Expand the Output Groups section, open each output group, and check that the Data Collector SSID is correct and matches the DBC SSID that you plan to use on each LPAR in this sysplex for the same DBC group.

This section lets you define the output groups that will be used to buffer trace records, and to define and allocate log files to which records will be written from the output groups.

**Note**

Do not use an asterisk (*) for the Data Collector ID. If you have a DB2 subsystem that comes up on different LPARs, define it to all of the Data Collectors that might monitor it.
8 Set the NGL LOGSET parameters:

a Expand the NGL LOGSET Parameters section.

b Define a value for the LDS Allocation type and the appropriate SMS data.

c Ensure that a high-level qualifier (HLQ) is defined for the LDS DSN prefix.

<table>
<thead>
<tr>
<th>NGL LOGSET Parameters</th>
<th>LOGSET attributes used by this group</th>
</tr>
</thead>
<tbody>
<tr>
<td>Logset time span</td>
<td>7D (nD,nH,nM)</td>
</tr>
<tr>
<td>Max log buffers</td>
<td>10 (2-20)</td>
</tr>
<tr>
<td>Max read buffers</td>
<td>4 (2-99)</td>
</tr>
<tr>
<td>Deferred write time</td>
<td>60 (1-999 sec.)</td>
</tr>
<tr>
<td>Minimum log file data sets (LDS)</td>
<td>2 (1-99)</td>
</tr>
<tr>
<td>Maximum log file data sets (LDS)</td>
<td>5 (1-99)</td>
</tr>
<tr>
<td>Space to allocate (per LDS)</td>
<td>100 (1-9999 MB) note: 1 CYL=720KB</td>
</tr>
<tr>
<td>LDS Allocation type</td>
<td>_______ (SMS, VOL, NONE)</td>
</tr>
<tr>
<td>LDS Volume</td>
<td>_______ (required for type=VOL)</td>
</tr>
<tr>
<td>LDS DFSMS Data class.</td>
<td>_______ (required for type=SMS)</td>
</tr>
<tr>
<td>LDS DFSMS Management class.</td>
<td>_______ (required for type=SMS)</td>
</tr>
<tr>
<td>LDS DFSMS Storage class</td>
<td>_______ (required for type=SMS)</td>
</tr>
<tr>
<td>LDS DSN prefix</td>
<td>__________________________________</td>
</tr>
</tbody>
</table>

Note
BMC recommends using SMS values that will have access to many volumes. If you specify a volume, BMC recommends that you specify a group name that would have access to a pack of volumes. If your SMS rules are set based on the HLQ in the DSN Prefix field, you should specify NONE for LDS Allocation Type and you do not need to fill in any of the LDS Volume or SMS fields.

9 If you plan to archive the trace data, review these fields:

| Enable Archiving            | Y (Y=Yes,N=No) |
| Archive Wait Time           | 600 (1-9999 Sec) |
| Archive post processing job | (optional) DOMPARM PDS member |
| Max days to keep archives   | 0 (1-999 Days,0=NoLimit) |
| Max number archives to keep | 0 (1-999 Data sets,0=NoLimit) |
| Max combined size of archives | 0 (1-999999 Mb,0=NoLimit) |
| Archive file Allocation type | (SMS, UNIT, VOL, NONE) |
| Archive Volume              | _______ (required for type=VOL) |
| Archive Unit.               | _______ (required for type=UNIT) |
| Archive DFSMS Data class.   | _______ (required for type=SMS) |
| Archive DFSMS Management class. | _______ (required for type=SMS) |
| Archive DFSMS Storage class | _______ (required for type=SMS) |
| Archive GDG.                | N (Y=Yes,N=No) |
| Archive DSN prefix          | ::AFDQA.N11J.OBJ |
| Alternate full archive DSN  |           |

10 Expand and review Subsystems supported by this group to ensure that the correct DB2s are listed for this data collector.

An asterisk (*) in this field indicate that all DB2 subsystems in the DB2 Monitor List that are active on the LPAR will be monitored.

11 Press F3 to save the option set.
Verifying the product for data sharing members

This topic applies to APPTUNE, SQL Explorer, and SQL Performance.

Make sure that you define a DB2 subsystem in the DOMPLEX option set for every data sharing member in the data sharing groups.

See “Checking or modifying the DB2 subsystems to monitor” on page 442 to display a list of the DB2 subsystems defined to the DOMPLEX or to add a DB2 subsystem to the DOMPLEX.

The Installation System customizes a member in the install JCL for each DB2 subsystem. The member is called PSS2 ssid, where ssid is the subsystem identifier. These members contain the DB2 libraries and the product plan name. For data sharing groups, verify that a PSS2 ssid member has been replicated for each data sharing subsystem. If data sharing members are at different versions or modes of DB2, BMC recommends that you use different plans and collection IDs for the members.

If your DB2 libraries are in the LINKLIST, leave the values blank for the DSNEXIT= and DSNLOAD= parameters in the PSS2 ssid member.

Customizing the CLISTs for SQL Explorer and CATALOG MANAGER

This topic applies only to SQL Explorer and SQL Performance.

You can launch the common Explain component from CATALOG MANAGER, enabling you to access and analyze SQL from CATALOG MANAGER. You can also launch the SQLX edit macro of the SQL Explorer product from a TSO Edit session outside the product environment to Explain or execute a single SQL statement.

Setting up the SQLX edit macro

To use the SQLX edit macro, you must make some adjustments to your TSO data sets and libraries.

You can make these adjustments in one of the following ways:

- Concatenate a CLIST library containing the SQLX member with your logon procedure SYSPROC DD statement.

- Copy the SQLX member from your HLQ.UBBCLIB data set to a common CLIST library.
Add subsystem information for the SQLX edit macro and the ACTPSS CLIST

During the product installation, the SQLX edit macro and the ACTPSS CLIST are customized for information from the installation that is performed on each subsystem.

SQLX is then copied into your SYSPROC concatenation and your product UBBCLIB library or your runtime BMCCLIB. ACTPSS is copied to your product UDBCLIB library or your runtime BMCCLIB. You might need to customize these members for subsequent installations or for additional data sharing members. Skeleton members, #SQLX and ACTPSS, can be found in the BBCLIB or DBCLIB data set, respectively, if no customization took place during installation. Copy the skeleton members to SQLX and ACTPSS in your CLIST or user library and customize them as described in this section.

Adding subsystem information after installation

To add subsystem information from subsequent installations to SQLX and ACTPSS after installation, append the subsystem information at the top of the member following the /* REXX line. The closing comment symbols (*/) must be on a line following the customized lines. For an example, see Figure 80 on page 427.

The format of the data is as follows where ssid is your subsystem identifier:

ssid keyword value

Table 62 on page 426 lists the keywords that you can specify, with a description of each keyword and an example for each value.

Table 62: Keywords for adding subsystem information to SQLX and ACTPSS

<table>
<thead>
<tr>
<th>Keyword</th>
<th>Description</th>
<th>Sample value</th>
</tr>
</thead>
<tbody>
<tr>
<td>PLAN</td>
<td>SQL Explorer plan name</td>
<td>DAA vnrD1 b</td>
</tr>
<tr>
<td>EXIT</td>
<td>DSNEXIT library for SSID</td>
<td>SYS3.DEAH.DSNEXIT</td>
</tr>
<tr>
<td>LOAD</td>
<td>DSNLOAD library for SSID</td>
<td>SYS2.DB2vrm.DSNLOAD</td>
</tr>
<tr>
<td>CNTL</td>
<td>control library for SSID (HLQ.LLQSAMP)</td>
<td>BMCPERF.LLQSAMP</td>
</tr>
<tr>
<td>MLIB</td>
<td>message library for SSID (HLQ.LLQMLIB)</td>
<td>BMCPERF.LLQMLIB</td>
</tr>
<tr>
<td>PLIB</td>
<td>panel library for SSID (HLQ.LLQPLIB)</td>
<td>BMCPERF.LLQPLIB</td>
</tr>
<tr>
<td>SLIB</td>
<td>skeleton library for SSID (HLQ.LLQSLIB)</td>
<td>BMCPERF.LLQSLIB</td>
</tr>
<tr>
<td>CLIB</td>
<td>CLIST library for SSID (HLQ.LLQCLIB)</td>
<td>BMCPERF.LLQCLIB</td>
</tr>
<tr>
<td>LLIB</td>
<td>LOAD library for SSID (HLQ.LLQLINK)</td>
<td>BMCPERF.LLQLINK</td>
</tr>
</tbody>
</table>
### Keyword Description | Sample value
---|---
DLIB | LOAD library for DB2 common code *(HLQ.LLQLINK)* | BMCPERF.LLQLINK
TLIB | ISPF table library for SSID *(HLQ.LLQLIBTLIB)* | BMCPERF.LLQLIB
XLIB | *(HLQ.LLQXLIB)* | BMCPERF.XXLINK
PSWD | Password data set *(HLQ.BMCPSWD)* | BMCPERF.BMCPSWD

*a* Library names changed with version 6.1 of the System and SQL Performance products. *LLQ* represents DB, XX, BB, and UBB.

*b* vvr is the version and release level for the current release.

---

**Figure 80 on page 427** shows a complete example of this information for the subsystem ID DEAH.

**Figure 80: Sample of appended subsystem information for subsystem ID DEAH**

```Rexx
/* REXX *****************************************/
DEAH PLAN DAAvvrD1
DEAH EXIT SYS3.DEAH.DSNEXIT
DEAH LOAD SYS2.DSNLOAD
DEAH CNTL BMCPERF.BBSAMP
DEAH MLIB BMCPERF.BBMLIB
DEAH PLIB BMCPERF.BBPLIB
DEAH SLIB BMCPERF.BBSLIB
DEAH CLIB BMCPERF.BBCLIB
DEAH LLIB BMCPERF.BBLINK
DEAH DLIB BMCPERF.DBLINK
DEAH TLIB BMCPERF.BTBLIB
DEAH XLIB BMCPERF.XXLINK
DEAH PSWD BMCPERF.BMCPSWD
*/
```

To append the subsystem information, begin entering data either on the second line of the comments section of the SQLX edit macro or between the /* REXX line and the closing comment line */ of the ACTPSS CLIST. The data can begin in any column. Enter complete information for all SSIDs that you want to access.

---

**Creating indexes to improve performance**

This topic applies to APPTUNE, SQL Explorer, MainView for DB2 – Data Collector, System Performance, and SQL Performance. It does not apply to Pool Advisor when it is run as a stand-alone product.

To improve performance, BMC Software recommends that you create indexes on the DB2 catalog.
To create indexes on the DB2 catalog tables

1 Follow the instructions in the BMIDB2XA or BMIDB2X9 member in the HLQ.UBBSAMP data set to create the indexes on the catalog.

If you are migrating to DB2 Version 9 or later, you can manually drop the following indexes and rebind the product packages:

- `owner.IXIFK1`
- `owner.IXIREL1`
- `owner.IXITAOB`
- `owner.IXITCAOB`

To create indexes on the user plan tables

If your plan tables have many rows from performing BIND with EXPLAIN(YES) operations, BMC Software recommends that you add indexes to your plan tables. The following procedure describes how to create indexes on the user plan tables.

1 Follow the instructions in the DAADB2IX member in the HLQ.LLQSAMP data set (PSSSAMP, BBSAMP, or your runtime SAMP data set) to create the indexes on your plan tables.

Generating Help text from DB2 trace record field descriptions

This task is optional, and applies to APPTUNE, Pool Advisor, MainView for DB2 - Data Collector, System Performance, and SQL Performance. It does not apply to SQL Explorer when it is run as a stand-alone product.

The Help job generates Help text from DB2 trace record field descriptions, which are located in the DSNWMSGS member of the DB2 SDSNIVPD data set. Run this job if you want to be able to retrieve DB2 field descriptions from DSNWMSGS while using the product.

An example of a field and its description is as follows:

QBSTGET (number of getpages)

To generate Help text from DSNWMSGS, modify and submit the JCL provided in the DOMHELP member of the LLQSAMP library (DOMSAMP, BBSAMP, or runtime SAMP data set). The DBC subsystem cannot be active while this job is running.
The Help job performs the following tasks:

- converts DSNWMSGS macro text to loadable Help text records
- copies the loadable Help text records to the HELP data set
- reorganizes the HELP data set

For information about using the online Help facility, see the user guides for the products that you are installing.

**Editing or reviewing the DBC JCL procedure**

This task is *required*. The task does not apply to SQL Explorer or OPERTUNE.

To use the DBC component, you must configure the DBC started task.

**Before you begin**

Review this information before modifying the DBC JCL procedure (DBC$STC). Figure 81 on page 429 shows an example of the DBC$STC job generated by the Installation System.

**Figure 81: DBC$STC JCL**

```plaintext
//DBC PROC ACC=,
  SSID=DC01,    ===> SSID
  G=DCPLEX,    ===> GROUP
  T=NO,    ===> TRACE
  TIM=1440    ===> 
/**
    /**************************************************************************/
    // DESCRIPTION:
    // BMC SOFTWARE DBC SUBSYSTEM STARTUP JCL PROCEDURE.
    // REQUIRED DD STATEMENTS:
    // DBCPARMS - DBC SUBSYSTEM INITIALIZATION PARAMETERS
    // DBCPRINT - DBC SUBSYSTEM MESSAGES
    // OPTIONAL DD STATEMENTS:
    // STEPLIB - OPTIONAL ONLY IF THE DBC LOAD LIBRARY IS IN THE SYSTEM
    // LINK List.
    // DBCSECUR - DBC SUBSYSTEM SECURITY OPTIONS
    // SYSPRINT - RECOMMENDED WITH RECFM=VA
    //*
    // CUSTOMIZATION STEPS:
    // COPY THIS PROC TO YOUR SYSTEM PROCLIB
    // APF AUTHORIZE THE DBC STEPLIB DATA SET(S).
    // START THE DBC ADDRESS SPACE. FOR EXAMPLE:
    // /S DBC$STC
    //*
    // NOTES:
    // THE DBC SUBSYSTEM IS A LONG-RUNNING-SERVICE ADDRESS SPACE THAT
```
WARNING

BMC Software recommends that you note the following restrictions before making changes to the STEPLIB statement in the DBC PROC. The load libraries that are specified in the STEPLIB statement must be APF authorized. If you have one runtime or deployment data set, you can reference only that data set on the STEPLIB line.

When the product PROC is invoked, the SSID parameter identifies the SSID of the DBC subsystem. The GROUP parameter specifies the DBC group to which this DBC subsystem belongs. For more information about the DBC started task, see BMC Global Infrastructure Administration Guide.

To edit or review the JCL procedures for the DBC (all products)

1. Locate and review the DBC started task procedure.

2. Start the DBC (which runs as a z/OS subsystem) by using one of the following methods:
   - by issuing the z/OS START command from an operator console
   - by using a batch job

To start the DBC subsystem by using the z/OS START command for the product PROC

1. Copy the modified PROC into your SYS1.PROCLIB (or equivalent) started task library.
2 Ensure that you have performed all security authorization steps.

For authorization requirements, see the Installation System User Guide. The procedure for defining an AUTHID for a started task varies with the security system used.

3 Issue the START command.

To start the DBC subsystem by using a batch job

---

WARNING

BMC Software recommends executing the products in batch only when testing the initial installation. After initial installation, run the product as a started task. Stopping the product when it is running in batch abnormally terminates the initiator in which it was running.

---

1 Edit a data set to submit the DBC subsystem JCL.

2 Create a JOB statement that meets your site requirements.

3 Copy the modified PROC JCL into the data set after the JOB statement.

4 Append the following statement to the PROC JCL (where ssid is the DBC subsystem):

```
// PEND
// EXEC PROC=DOMssid
```

The following example starts DBC subsystem DC01.

```
// MONITOR EXEC PROC=DOMPROC,SYS=DC01.
```

5 Press F3 to save the data set.

Where to go from here

DOMPLEX option sets are created by using the Administration function. For instructions for reviewing the DOMPLEX option set, see “Verifying or customizing the DOMPLEX option set” on page 439.

The dispatching priority of the DBC subsystem should be higher than that of the DB2 MSTR address spaces to be monitored and should be lower than the IRLM.

Adding or replacing the CLIST member for the ISPF interface

This step is required. You can add or replace the CLIST for the ISPF interface.
This task varies, depending on whether you used the Installation System to modify and submit the JCL:

- If you used the Installation System to modify and submit the JCL (tailored model), replace the DOMCLIST member that executes the product initialization in your CLIST library with the member from the JCL library.

- If you did not use the Installation System to modify and submit the JCL, use the DOMCLIST member in the BBCLIB library (untailored model), and follow the modification instructions provided to point to the new product libraries. Modify this CLIST to specify the new product data set names. This CLIST dynamically allocates ISPF libraries and invokes the product.

Execute the CLIST by issuing the command **EX DOMCLIST**.

**Note**
If your site uses VB CLISTs rather than FB CLISTs, you can reblock the CLIST by executing DOMRBLK provided in the DOMSAMP, BBSAMP, or runtime SAMP data set. Execution of DOMRBLK allocates a new VB CLIST. As a result, you must modify DOMRBLK to provide old and new high-level qualifiers for data sets and a volume for the allocation of the new CLIST library.

Figure 82 on page 432 shows the CLIST for executing a product.

**Figure 82: CLIST for executing a product**

```plaintext
PROC 0 PRD() +
     P() +
     SSID() +
/*********************************************************************/
/*                        BMC CHANGE NOTES :                        */
/*                                                                   */
/*     $BMCCHG BQ26349,MAC COMMENT ON DP= PARM               @301850 */
/*                                                                   */
/*********************************************************************/
/***********************************************************************/
/*    CLIST FOR EXECUTION OF THE SYSTEM AND SQL PERFORMANCE PRODUCTS */
/*                                                                 */
/*    THE PRD= PARM CAN BE USED TO CONTROL THE EXECUTION OF WHICH */
/*    LICENSED SYSTEM AND SQL PERFORMANCE PRODUCTS WILL BE SHOWN AS */
/*    OPTIONS ON THE INITIAL PRODUCT MENU.                         */
/*    THE 'PRD' PARM IS ALSO USED TO CONTROL THE ALLOCATION OF      */
/*    ADDITIONAL FILES REQUIRED BY SOME COMPONENTS. THE COMPONENT    */
/*    CODES ARE AS FOLLOWS:                                         */
/*    PRD(A) ACTIVITY MONITOR FOR DB2 (LEGACY ONLY)                 */
/*    B MAINVIEW FOR DB2                                           */
/*    P POOL ADVISOR                                              */
/*    O OPERTUNE                                                   */
/*    D BMC SYSTEM PERFORMANCE SOLUTION (INCLUDES B,P,O)            */
/*    Q BMC APPTUNE                                                */
/*    S BMC SQL EXPLORER                                           */
/*    I BMC SQL PERFORMANCE FOR DB2 (INCLUDES Q,S)                  */
```
/*    TO SPECIFY MULTIPLE PRODUCTS, USE ALL COMPONENT CODES TOGETHER.  
/*    FOR EXAMPLE: 'P(PRDS=PQS)' 
/*    SPECIFYING 'PRD()' WILL CAUSE ALL FILE TYPES TO BE ALLOCATED 
/*    IF THEY EXIST. 
/*    THE DP= PARM CAN BE USED TO SPECIFY A DEFAULT DOMPLEX THAT WILL 
/*    BE AUTOMATICALLY SELECTED FOR USE DURING YOUR PRODUCT SESSION. 
/*    THE DATA COLLECTOR FOR THAT DOMPLEX MUST BE ONE YOU ARE 
/*    AUTHORIZED TO USE. FOR EXAMPLE: P(DP=DOMPLEX) 
/*    TO SPECIFY BOTH PARMS (PRD AND DP), YOU MUST SEPARATE THE PARMS 
/*    WITH A COMMA AND ENCLOSE THE PARMS IN SINGLE QUOTES. 
/*    FOR EXAMPLE: P('PRD=PQ,DP=DOMPLEX') SSID() 
/*    THE 'SSID' PARM IS USED TO PASS THE SUBSYSTEM IDENTIFIER FROM 
/*    THE BMCDB2PR PANEL TO THE SQL EXPLORER MAIN MENU. 
*/

CONTROL MSG NOSYMLIST NOCONLIST NOLIST NOFLUSH
 IF &SYSISPF ≠ ACTIVE THEN DO
 WRITE THIS CLIST REQUIRES ISPF TO BE ACTIVE
 EXIT CODE(12)
END

SET &PRDLEN = &LENGTH(&PRD)
 IF &PRDLEN GT 0 THEN +
 SET &P = &STR(PRD=&PRD,&P)

ALLOC F(DOMPLIB) +
 DA('BMCPERF.BMCPPLIB') SHR REU
ALLOC F(DOMTLIB) +
 DA('BMCPERF.BMCTPLIB') SHR REU
ALLOC F(DOMLOAD) +
 DA('BMCPERF.BMCLINK') SHR REU
ALLOC F(BMCPWLD) +
 DA('BMCPERF.BMCPWLD') SHR REU
ALLOC F(DOMCUST) +
 DA('BMCPERF.BMCCSTM') SHR REU
ALLOC F(DOMBARC) +
 DA('BMCPERF.COPYDIR') SHR REU
ALLOC F(DOMPROF) +
 DA('BMCPERF.PROFILE') SHR REU
ALLOC F(DOMAUTH) +
 DA('BMCPERF.SECURITY') SHR REU
ALLOC F(DOMHELP) +
 DA('BMCPERF.HELP') SHR REU

***************************************************************************** 
/* SPECIAL PSS ALLOCATIONS 
***************************************************************************** 
PSSALLOC: +
 ALLOC F(PSSMLIB) +
 DA('BMCPERF.BMCPMLIB') SHR REU
ALLOC F(PSSLIB) +
 DA('BMCPERF.BMCPSSLIB') SHR REU
ALLOC F(PSCLIB) +
 DA('BMCPERF.BMCPSCLIB') SHR REU
ALLOC F(PSCNTL) +
 DA('BMCPERF.BMCPSCNTL') SHR REU
ISPEXEC LIBDEF ISPMLIB LIBRARY ID(PSSMLIB)
ISPEXEC LIBDEF ISPSSLIB LIBRARY ID(PSSLIB)
ALTLIB ACTIVATE APPLICATION(CLIST) FILE(PSCLIB) UNCOND
PSSSKIP: CONTROL MSG

***************************************************************************** 
/* REMOVE COMMENT ON SYSOUT ALLOCATION IF SORT MESSAGES ARE BEING 
/* SENT TO THE TERMINAL. 
/* REMOVE COMMENT ON SORT WORK FILE ALLOCATIONS AND FREE STATEMENT 
/* AT THE END OF THIS CLIST TO PRE-ALLOCATE SORT WORK FILES. 
*****************************************************************************
Making products available from a menu

This task is optional.

You can make products available from the menu.

To make products available from an ISPF menu

Modify ISR@PRIM or an equivalent panel as follows:

1. In the )BODY area, add the following line:
   
   `%O + SYSTEM AND SQL PERFORMANCE PRODUCTS FOR DB2+

2. In the )PROC area, add the following line:

   `O,'CMD(DOMCLIST) NEWAPPL'
To make products available from the panel customized by the installation

Modify ISR@PRIM or an equivalent panel as follows:

1. In the panel area, add the following line:
   
   ```
   %P     + SYSTEM AND SQL PERFORMANCE PRODUCTS FOR DB2
   ```

2. In the )PROC area, add the following line:
   
   ```
   P,'PANEL(BMCDISPN)'
   ```

3. Exit and reenter ISPF.

4. Invoke the products by selecting option P from the System and SQL Performance products Install System menu or a panel of your choice.

   **Note**

   If your system security restricts the access of command processors under TSO, you must add DOMDMMAIN, DMDQIED2, PSSSQLX, PSSCATI, LGCOMAIN, and PSSDCL (for SQL Explorer) to the list of commands that are allowed.

Installing maintenance has no effect on product authorization. However, you must ensure that your product authorization tables reside in the new production libraries. For more information, see the *Installation System User Guide*.

### Invoking SQL Explorer directly

This task is *optional*.

To invoke the SQL Explorer for DB2 product directly, use the PSSCLIST that was customized during installation.

### Invoking System and SQL Performance products without LIBDEFs

This task is *optional*.

For those BMC Software products that provide an online dialog, the installation system generates an ISPF interface, based on the options and products that you specify during installation. BMC Software products that are installed with different high-level qualifiers (that is, products that are installed individually and that might reside in different libraries) can be accessed from the interface.
The interface consists of a CLIST (BMCDRIVC) and a panel (BMCDRIV) that lists all of the products that you installed. CLISTs that are specific to the individual products in this list are invoked when you select them. The System and SQL Performance products use DOMCLIST. You can use this combination without making changes to your TSO logon procedure. BMC Software recommends that new users use the ISPF interface that BMC provides. The System and SQL Performance products require that you execute the CLIST from one of the ISPF dialog panels in your system.

DOMCLIST uses the ISPF LIBDEF command to allocate all BMC Software product libraries. The installation system customizes DOMCLIST to include the data set names that you used when you installed the products. Subsequent LIBDEF commands from within the product are stacked.

**Before you begin**

If you have your own ISPF environment and do not want to invoke DOMCLIST with the LIBDEF command, be sure to include the DOMCLIST-referenced data sets in your environment.

**To invoke BMC products without LIBDEFs**

1. Allocate the following DDs:
   - DOMLOAD (for the product load libraries)
   - PSSCNTL (for the sample data set that contains the default layout member for Explain, Workload Access Path Compare, and Index Advisor processing) and PSS2 ssid members.
   - BMCPSWD (for the password data set)

2. Perform an ALTLIB command on the PSSCLIB file for the product CLIST library.

3. Invoke the product.

Execute the following command from your panel, where pp is a list of the products to enable and dc is the two-character prefix of the DOMPLEX name:

```plaintext
SET P = &STR('PRD=pp,DP=dcPLEX')
ISPEXEC SELECT CMD(DOMDMAIN &P) MODE(FSCR) NEWAPPL(DOM2) PASSLIB
```

You can enable as many of the following products as needed:

<table>
<thead>
<tr>
<th>Option</th>
<th>Product</th>
</tr>
</thead>
<tbody>
<tr>
<td>B</td>
<td>MainView for DB2 - Data Collector</td>
</tr>
<tr>
<td>P</td>
<td>Pool Advisor for DB2</td>
</tr>
</tbody>
</table>
Verifying or changing the global resource enqueues

This task is required for shared-DASD environments that use a global resource manager like GRS or MIM.

Ensure that SYSTEMS-level enqueues are propagated throughout the complex. The System and SQL Performance products mostly use SYSTEMS enqueues with resource names that are prefixed by AMFORDB2, BMCDBCR, and BMCLGC.

Contact BMC Support to allow RNL overrides.

Refreshing the MVS Linklist Lookaside

This task is optional.

Refresh the LINKLST data set only if both of the following conditions are true:

- You are using the MVS Linklist Lookaside (LLA) feature.
- You have installed the product load modules into a LINKLST data set.

In a shared-DASD environment, refresh the LINKLST data set on each CPU that is using one or more of the System and SQL Performance products.

Verifying the product authorization

All BMC Software products require product authorization before you can use them. This section describes how you can authorize your products.
You can apply your BMC Software authorization passwords when you install the System and SQL Performance products. If you are a licensed user and have already received and applied the permanent BMC Software authorization passwords, ensure that you save the appropriate authorization modules and copy them to the new load library after you execute the Full installation. The authorization modules are created when the password is added.

You can also use the BMC Software Product Authorization utility to apply passwords and to change your CPU configuration. To use the Product Authorization utility, see the chapter on applying product passwords in the *Installation System User Guide*.

## Configuring the System and SQL Performance products

This section describes how to start the System and SQL Performance products that you have installed, create or review profiles, and check key values to make them consistent with the standards at your site.

*Note*

Not all configuration tasks apply to all System and SQL Performance products. In some cases, the panels that are encountered and the fields that are displayed on product panels differ, depending on the active product mix. The panel examples in this book assume that all System and SQL Performance products are installed and active. Information that is specific to one or more products is identified in the text.

The following list summarizes the System and SQL Performance products customization tasks.

- “Verifying or customizing the DOMPLEX option set” on page 439
- “Verifying or changing DOMPLEX parameters” on page 454
- “Checking the default User Profile” on page 459

*Note*

Before you start to configure the System and SQL Performance products, perform the following tasks:

- APF authorize the load library data sets.
- If you are using RACF add your product user ID to table ICHRIN03.
Verifying or customizing the DOMPLEX option set

This task is required for full and SSID installations. This task is not required if you are installing only SQL Explorer or OPERTUNE.

DOMPLEX option sets define one or more Data Collectors for monitoring DB2. The Data Collectors run as DOM agents with the DBC subsystem.

A DBC subsystem in a DOMPLEX can monitor all of the DB2 subsystems on the same z/OS image. BMC recommends that each DBC subsystem in the DOMPLEX share the same VSAM data sets (for more information, see “VSAM data sets” on page 412) and product load libraries. You can define multiple DOMPLEXes, but each DBC subsystem can be defined to only one DOMPLEX.

The DOMPLEX option set contains the parameters that affect product initialization, identifies and defines the DB2 subsystems to be monitored, and defines log files. You can modify these values as you follow the examples in this chapter. These examples use a DOMPLEX option set called DC01PLEX and a Data Collector called DC01.

Data Collector names must consist of four characters and cannot be the same as the name of the DB2 subsystem or any other subsystem on the z/OS system. The Data Collector name should match the name of the DBC subsystem ID.

This task consists of the following subtasks:

- “Starting a product session” on page 439
- “Checking the values in the DOMPLEX option set” on page 440
- “Checking or modifying the DB2 subsystems to monitor” on page 442
- “Checking or modifying the output groups” on page 446

Starting a product session

You do not need an active Data Collector to access the Report Manager, but functionality will be limited to those tasks that do not require an active Data Collector. Some Administration functions require that the DBC started task be active and that the DB2 Product Configuration agent is running.

To start a product session

1. Log on to TSO.

2. Invoke ISPF from TSO.
3  Navigate to the ISPF menu that you previously modified to invoke the System and SQL Performance products (see “Adding or replacing the CLIST member for the ISPF interface” on page 431).

4  Select the option to invoke the products or execute your CLIST.

The product logo is displayed, followed by a main menu.

--- Note ---

The main menu that is displayed reflects the active product mix. If a single product is invoked, the main menu for that product is displayed. If you are invoking multiple System and SQL Performance products or solutions, a common main menu listing those products and solutions is displayed (see Figure 83 on page 440). Only active products are listed on the menu.

Figure 83: System and SQL Performance for DB2 main menu

Checking the values in the DOMPLEX option set

You can view the DOMPLEX option set within the interface.

1  Display the Administration menu (Figure 84 on page 441).
The Administration option appears on all main menus, but the option number is not the same on all main menus. Select the option that is labeled **Administration**.

**Figure 84: Administration menu**

```
DOMEADM1/I                      ADMINISTRATION                        17:02:20
COMMAND ===> ________________________________________________________________
SELECT ONE OF THE FOLLOWING OPTIONS. THEN PRESS ENTER.
  1. USER PROFILES           - VIEW/MODIFY USER PROFILES
  2. DOMPLEX OPTION SETS     - VIEW/MODIFY DOMPLEX OPTION SETS
  3. MAINTENANCE             - VIEW MAINTENANCE APPLIED SINCE INSTALL
  4. APPTUNE FILTERS         - VIEW/MODIFY APPTUNE FILTER OPTION SETS
```

2. From the Administration menu, select option 2 (DOMPLEX Option Sets) and press **Enter**.

The DOMPLEX Options Set panel (Figure 85 on page 441) is displayed.

**Figure 85: DOMPLEX Option Sets panel**

```
File  Filter  Help
DOMPLEX Option Sets
Command ===>                                                  Scroll ===> PAGE
Solution/Product                        Version Changed            More:   +
  System and SQL Performance DOMPLEX Prof V11.1.0
    ADS8       CLASSIFIED                         2011/01/22 17:03:33 RDADAC2
    AFDPLEX    AFD DOMPLEX                        2010/11/16 16:17:02 JKS
    AFDQANGL   AFDQA 10.1 PLEX FOR DBC/NGL        2010/11/16 19:04:47 BMCADM
```

3. From the DOMPLEX Option Sets panel, select the DOMPLEX option set that you created during installation.

This panel is also the starting point for creating a new DOMPLEX option set.

- To select a DOMPLEX option set for modification, move the cursor to the field beside that DOMPLEX, type **E** (edit), and press **Enter**.

- To create a new DOMPLEX option set, type **I** next to the product or solution name and press **Enter**.

- To create a new DOMPLEX option set by copying from an existing option set, type **C** in the field next to the name of the option set to be copied and press **Enter**.
The DOMPLEX option set panel (Figure 86 on page 442) is displayed.

**Figure 86: DOMPLEX option set panel**

File  Filter  Help

Command ===>  DCO1PLEX - Test Option Set  Scroll ===> PAGE

Filter: Off
+ DOMPLEX Parameters  Parameters that apply to entire DOMPLEX
+ Data Collector List (1)  Data Collector(DBC) subsystems in DOMPLEX
+ DB2 Monitor List (11)  DB2 Sub-systems to be monitored
+ OutGp DCID DspSize (6)  Output Groups - valid range: 001-256

********************************* End of List *********************************

The DOMPLEX option set panel allows you to specify the options for an individual option set. This panel contains the following sections:

- Use the **DOMPLEX Parameters** section to set values that apply to the entire DOMPLEX.

- Use the **Data Collector List** section to define the initialization parameters for each Data Collector (for example, the number of concurrent batch and online users allowed).

- Use the **DB2 Monitor List** section to identify and define the DB2 subsystems that can be monitored by the Data Collectors in the DOMPLEX.

- Use the **OutGp DCID DspSize** section to define the output groups that will be used to buffer trace records and to define and allocate log files to which records will be written from the output groups.

For ease of installation, this book assumes that default options are used during installation for most parameters and discusses only the **DB2 Monitor List** and **OutGp DCID DspSize** sections.

A detailed description of all DOMPLEX option set values is provided in the *System and SQL Performance for DB2 Administrator Guide* and in the online Help that accompanies the products.

If you press F1 while the cursor is positioned on an input or output field on a panel, specific information about that field is displayed. To view general information or information about a panel, use the Help menu at the top of the panel.

**Checking or modifying the DB2 subsystems to monitor**

One Data Collector can monitor all DB2 subsystems on the z/OS system.
Note
You must define at least one DB2 subsystem for each DOMPLEX option set. The Data Collector (DOM Agent) will not start unless there is at least one DB2 subsystem defined.

To check or modify the DB2 subsystems to monitor

1. At the DOMPLEX option sets panel, expand the DB2 Monitor List section.

   The DB2 subsystems that were specified during installation are listed in the Data Collector List section. You can delete DB2 subsystems from or add DB2 subsystems to the list that will be monitored by this DOMPLEX.

2. To add a DB2 subsystem, type I over the - sign next to Data Collector List and press Enter.

3. Type over the DB2 subsystem identifier with the value that you need to add.

   Note
   Use an asterisk (*) to specify all DB2 subsystems. If you use an asterisk, the definitions of all DB2 subsystems on the system will be the same.

4. Expand the DB2 subsystem for which you want to specify parameters, as shown in Figure 87 on page 443.

   Figure 87: DOMPLEX object set - Expanded DB2 Monitor List

5. Check or set the values that define the DB2 subsystem, as described in Table 63 on page 444.
<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>DB2 SSID</strong></td>
<td>Specify the subsystem ID of the DB2 being defined.</td>
</tr>
<tr>
<td><strong>Is this a production DB2?</strong></td>
<td>Specify whether this is a production DB2. Valid values are Y and N.</td>
</tr>
<tr>
<td><strong>Monitor with MainView for DB2 - DC</strong></td>
<td>Specify whether this DB2 will be monitored by MainView for DB2 - Data Collector. Valid values are Y and N.</td>
</tr>
<tr>
<td><strong>Monitor with Pool Advisor/ System Perf</strong></td>
<td>Specify whether Pool Advisor should automatically monitor this DB2 subsystem when its associated Data Collector is started. Valid values are Y and N.</td>
</tr>
<tr>
<td><strong>Monitor with APPTUNE</strong></td>
<td>Specify whether to collect data automatically for APPTUNE reporting at Data Collector initialization.</td>
</tr>
<tr>
<td></td>
<td>■ Specify Y to collect data from this DB2 for APPTUNE reporting.</td>
</tr>
<tr>
<td></td>
<td>■ Specify N if you do not want to collect data from this DB2 for APPTUNE.</td>
</tr>
<tr>
<td><strong>Dynamic Explain plan name</strong></td>
<td>Specify the name of the plan used by DB2 for Dynamic Explain. This value must be the same as the plan name bound on this DB2 subsystem during installation. The default plan name in the installation JCL is DAA vvrD1 where vvr is the current release level of the product. If this default is used at installation, you must specify DAA vvrD1 here. If you used a different name at installation, you must specify that name here.</td>
</tr>
<tr>
<td><strong>(MainView for DB2 only) DB2 IFCIDs to be traced automatically</strong></td>
<td>Use this option to select specific IFCIDs to trace. When you select this option, a new panel opens where you can specify the IFCIDs to be automatically traced. Separate values with a comma. You can enter a range of values by placing a hyphen between the first and last values.</td>
</tr>
<tr>
<td><strong>(MainView for DB2 only) DB2 IFCIDs to be discarded</strong></td>
<td>Use this option to prevent tracing of specific DB2 IFCIDs. When you select this option, a new panel opens where you can specify the specific DB2 IFCIDs that you do not want to trace. Separate values with a comma. You can enter a range of values by placing a hyphen between the first and last values.</td>
</tr>
<tr>
<td><strong>(MainView for DB2 only) BMC IFCIDs to be discarded</strong></td>
<td>Use this option to prevent tracing of specific BMC IFCIDs. When you select this option, a new panel opens where you can specify the specific BMC IFCIDs that you do not want to trace. Separate values with a comma. You can enter a range of values by placing a hyphen between the first and last values.</td>
</tr>
<tr>
<td>Field</td>
<td>Description</td>
</tr>
<tr>
<td>--------------------------------------------</td>
<td>---------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td><em>(MainView for DB2 only)</em> Class2-In-DB2 elapsed timing info</td>
<td>Specify whether to collect Class 2-In-DB2 elapsed timing information. Valid values are Y and N.</td>
</tr>
<tr>
<td><em>(MainView for DB2 only)</em> Class3-DB2 suspend timing info</td>
<td>Specify whether to collect Class 3-DB2 suspend timing information. Valid values are Y and N.</td>
</tr>
<tr>
<td><em>(MainView for DB2 only)</em> Class5-Time spent doing IFI requests</td>
<td>Specify whether to collect Class 5-Time spent doing IFI requests. Valid values are Y and N.</td>
</tr>
<tr>
<td><em>(MainView for DB2 only)</em> Class7-DB2 events (packages, DBRMs)</td>
<td>Specify whether to collect Class 7-DB2 events (packages, DBRMs). Valid values are Y and N.</td>
</tr>
<tr>
<td><em>(MainView for DB2 only)</em> Class8-Wait time for packages</td>
<td>Specify whether to collect Class 8-Wait time for packages. Valid values are Y and N.</td>
</tr>
<tr>
<td><em>(MainView for DB2 only)</em> Class10-Optional package detail data</td>
<td>Specify whether to collect Class 10-Optional package detail data. Valid values are Y and N.</td>
</tr>
<tr>
<td>Collect dynamic SQL stats in stmt cache</td>
<td>Specify whether to collect dynamic SQL statistics in statement cache. Valid values are Y and N.</td>
</tr>
<tr>
<td>Collect static SQL stats in stmt cache</td>
<td>Specify whether to collect static SQL statistics in statement cache. Valid values are Y and N.</td>
</tr>
</tbody>
</table>
### Field | Description
--- | ---
SQL Performance/APPTUNE options | Expand the SQL Performance/APPTUNE options group to specify the following values:

- **APPTUNE Filter Name**
  Specify the APPTUNE filter name to use. This name should match the name of the filter option set. Default filters are available. For more information about filter option sets, see the *System and SQL Performance for DB2 Administrator Guide*.

- **Fixed Collection Interval**
  Specify the interval (in minutes) at which data is written from the reduction table to the trace data sets. You can specify a value here and all intervals will have the same specified length. Specify 0 (zero) to set an individual Hourly Collection Intervals Schedule.

  **Note:** BMC recommends that you specify the same statistical interval for all DB2s that are monitored by the same Data Collector. Valid values are any number in the range 1-1440.

- **Hourly Collection Intervals Schedule (0-23)**
  Type Y at each hour boundary upon which an interval is to begin.

  **Note:** BMC recommends that you specify the same statistical intervals for all DB2s that are monitored by the same Data Collector. Doing so synchronizes the intervals for all monitored DB2s. If the intervals are synchronized, reporting data will be the same for all DB2s.

6 Press **F3** to save your values and return to the DOMPLEX Option Sets panel.

7 If prompted, enter the name of the option set and a description.

**Checking or modifying the output groups**

An output group is a collection of specifications that is used to collect and process data for writing to the LOGSET log file data sets for batch or historical reporting.

**To check or modify the output group**

1 Select the Administration option from your product main menu.

2 On the Administration menu, select **2** (DOMPLEX Option Sets).

3 On the DOMPLEX Option Sets panel, type **E** next to the option set for which you want to modify option groups and press **Enter**.
4 Expand the Output Groups section on the DOMPLEX option set panel (as shown in Figure 88 on page 447).

**Figure 88: DOMPLEX option set panel - Expanded Output Group**

![Figure 88](image)

5 Expand the group number that you want to edit.

**Note**

If you need to create a new output group, type I on the - (minus) sign on the Output Groups section and press Enter.

The new output group is created at the top of the list with the number 001. If the group number 001 is already in use, rename the group by typing a new unused value in the range 001-256 over the 001 group number and pressing Enter.

6 Specify the following values:

a In the **Group Number** field, specify the number of the corresponding output group. Possible values are numbers in the range 001-256. In the **Data Collector SSID** field, specify the ID of the Data Collector that owns the output group.

Only the data from DB2s that are running on the same system as that Data Collector are captured and stored by this output group. If you specify DB2s that are running on a different system, they are ignored.

b In the **Data space size**, specify the size of the data space (in megabytes) assigned to collect and process the data for this output group before it is written to the log files.

Possible values are any number in the range 0-2000. The total amount of data space specified for all output groups defined to the same Data Collector cannot exceed 2 GB.

7 Specify the IFCIDs that you want to capture and store in this output group:

a Expand the **Data Classes** section.
b Specify the values for the parameters shown in Table 64 on page 448. The valid values for each parameter are Y (Yes) or N (No).

### Table 64: Data classes for an output group

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
<th>Related IFCIDs</th>
</tr>
</thead>
<tbody>
<tr>
<td>APERROr</td>
<td>Specify whether to collect APPTUNE error data.</td>
<td>APPTUNE/SQL Performance BMC IFCID: 007—SQL Errors</td>
</tr>
<tr>
<td>APOBJEct</td>
<td>Specify whether to collect APPTUNE object summary data.</td>
<td>APPTUNE/SQL Performance Object Statistics. BMC IFCIDs:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>008—SQL Statement/Object Cross-Reference</td>
</tr>
<tr>
<td></td>
<td></td>
<td>009—Access Object Statistics</td>
</tr>
<tr>
<td>APSTACc</td>
<td>Specify whether to collect APPTUNE statement accounting interval data.</td>
<td>APPTUNE/SQL Performance BMC IFCIDs:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>006—Interval Statistics</td>
</tr>
<tr>
<td></td>
<td></td>
<td>307—SQL Statement Summary</td>
</tr>
<tr>
<td></td>
<td></td>
<td>318—Filter Data</td>
</tr>
<tr>
<td>APSTACCS</td>
<td>Specify whether to collect APPTUNE statement accounting summaries data.</td>
<td>APPTUNE/SQL Performance Accounting Statement Summary records: (BMC IFCIDs 308-310)</td>
</tr>
<tr>
<td>APSTMt</td>
<td>Specify whether to collect APPTUNE statement text, host variables, and exceptions data.</td>
<td>APPTUNE/SQL Performance BMC IFCIDs:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>004—SQL Exceptions</td>
</tr>
<tr>
<td></td>
<td></td>
<td>005—SQL Statement Text</td>
</tr>
<tr>
<td></td>
<td></td>
<td>010—Host Variables</td>
</tr>
<tr>
<td></td>
<td></td>
<td>011—Object Statistics per SQL Exception</td>
</tr>
<tr>
<td>DB2ACCT</td>
<td>Specify whether to collect DB2 accounting data.</td>
<td>DB2 accounting records. DB2 IFCIDS:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>003—Accounting</td>
</tr>
<tr>
<td></td>
<td></td>
<td>239—Package Accounting DBRMs</td>
</tr>
<tr>
<td>DB2AUDIT</td>
<td>Specify whether to collect DB2 audit data.</td>
<td>DB2 audit records. DB2 IFCIDs:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>140—Audit Authorization Failures</td>
</tr>
<tr>
<td></td>
<td></td>
<td>141—Audit GRANTs and REVOKEs</td>
</tr>
<tr>
<td></td>
<td></td>
<td>142—Audited Object DDL</td>
</tr>
<tr>
<td></td>
<td></td>
<td>143—Audited Object First Write Attempt</td>
</tr>
<tr>
<td></td>
<td></td>
<td>144—Audited Object First Read Attempt</td>
</tr>
<tr>
<td></td>
<td></td>
<td>145—Audited Object DML at BIND</td>
</tr>
<tr>
<td></td>
<td></td>
<td>146—User-Defined Audit Trace</td>
</tr>
<tr>
<td></td>
<td></td>
<td>312—Audit Trail for DCE Security Processing</td>
</tr>
<tr>
<td>Name</td>
<td>Description</td>
<td>Related IFCIDs</td>
</tr>
<tr>
<td>--------------</td>
<td>-----------------------------------------------------------------------------</td>
<td>--------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>DB2PERF</td>
<td>Specify whether to collect DB2 performance data.</td>
<td>DB2 Performance Records (all other DB2 IFCIDs)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>MainView for DB2 - Data Collector IFCIDs:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>023-025—Utility Processing</td>
</tr>
<tr>
<td></td>
<td></td>
<td>090—Text of DB2 Command</td>
</tr>
<tr>
<td></td>
<td></td>
<td>173—ASUTIME Exceeded</td>
</tr>
<tr>
<td></td>
<td></td>
<td>125—RID List Processing</td>
</tr>
<tr>
<td></td>
<td></td>
<td>225—Storage Summary</td>
</tr>
<tr>
<td>DB2SYS</td>
<td>Specify whether to collect DB2 statistics events data.</td>
<td>DB2 system records. DB2 IFCIDs:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>001—System Statistics</td>
</tr>
<tr>
<td></td>
<td></td>
<td>002—Database Statistics</td>
</tr>
<tr>
<td></td>
<td></td>
<td>031—EDM Pool Full Condition</td>
</tr>
<tr>
<td></td>
<td></td>
<td>054—Lock Contention</td>
</tr>
<tr>
<td></td>
<td></td>
<td>102—Start Short on Storage</td>
</tr>
<tr>
<td></td>
<td></td>
<td>103—End Short on Storage</td>
</tr>
<tr>
<td></td>
<td></td>
<td>104—Log Data Set Names</td>
</tr>
<tr>
<td></td>
<td></td>
<td>105—DBID/OBID Translate to Names</td>
</tr>
<tr>
<td></td>
<td></td>
<td>106—System Parameters (DSNZPARM)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>107—Page Set OPEN/CLOSE</td>
</tr>
<tr>
<td></td>
<td></td>
<td>172—Deadlock Detail</td>
</tr>
<tr>
<td></td>
<td></td>
<td>196—Timeout Detail</td>
</tr>
<tr>
<td></td>
<td></td>
<td>199—Data Set I/O Statistics</td>
</tr>
<tr>
<td></td>
<td></td>
<td>202—Statistics Dynamic DSNZPARMS</td>
</tr>
<tr>
<td></td>
<td></td>
<td>203—Heuristic Decision (DDF COMMIT/ABORT)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>204—Partner COLD START Detected</td>
</tr>
<tr>
<td></td>
<td></td>
<td>206—SNA Compare States (CS) Protocol Error</td>
</tr>
<tr>
<td></td>
<td></td>
<td>205—WARM START logname or syncpoint error</td>
</tr>
<tr>
<td></td>
<td></td>
<td>206—SNA Compare States (CS) Protocol Error</td>
</tr>
<tr>
<td></td>
<td></td>
<td>207—Heuristic Damage During CS Exchange</td>
</tr>
<tr>
<td></td>
<td></td>
<td>208—SNA Syncpoint Protocol Error</td>
</tr>
<tr>
<td></td>
<td></td>
<td>209—Syncpoint Communication Failure</td>
</tr>
<tr>
<td></td>
<td></td>
<td>210—LOGNAME Changed on WARM START</td>
</tr>
<tr>
<td></td>
<td></td>
<td>230—Global Statistics</td>
</tr>
<tr>
<td></td>
<td></td>
<td>232—Thread Entry or Exit from DB</td>
</tr>
<tr>
<td></td>
<td></td>
<td>233—Start/End Call Stored Procedure Server</td>
</tr>
<tr>
<td>DCSYSTEM</td>
<td>Specify whether to collect DATA Collector events data.</td>
<td>Data Collector events. BMC IFCIDs:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>241—Command Response</td>
</tr>
<tr>
<td></td>
<td></td>
<td>245—DB2 WTO Messages</td>
</tr>
<tr>
<td>MVDBACC</td>
<td>Specify whether to collect MainView for DB2 - DC accounting summary data.</td>
<td>MainView for DB2 - Data Collector Accounting Summary Records (BMC IFCIDs 350-352)</td>
</tr>
<tr>
<td>OPERTUNE</td>
<td>Specify whether to collect OPERTUNE events data.</td>
<td>OPERTUNE records (BMC IFCID 17)</td>
</tr>
</tbody>
</table>
### Table 65: NGL LOGSET parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>LOGSET compression</td>
<td>Specify whether log file data will be compressed, and if so, to what degree.</td>
</tr>
<tr>
<td></td>
<td>- A selection of <strong>LOW</strong> (default), is considered the optimal balance of</td>
</tr>
<tr>
<td></td>
<td>compression and CPU usage.</td>
</tr>
<tr>
<td></td>
<td>- A selection of <strong>HIGH</strong> will save more DASD space but use significantly</td>
</tr>
<tr>
<td></td>
<td>more CPU (including zIIP usage where available).</td>
</tr>
<tr>
<td></td>
<td>- A selection of <strong>NO</strong> disables compression, saving CPU usage at the</td>
</tr>
<tr>
<td></td>
<td>expense of DASD space.</td>
</tr>
<tr>
<td>Parameter</td>
<td>Description</td>
</tr>
<tr>
<td>-----------------------------------</td>
<td>-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>LOGSET time span</td>
<td>Specify the LOGSET time span in days (D), hours (H), or minutes (M). You can only specify one type of time D, H, or M. If you specify a number without a type, the value defaults to days. This value specifies the amount of time that you would like to have data kept in log files. If the log files are all filled up in less time than this target value, more log files will be allocated up to the Max LOGSET data sets specified.</td>
</tr>
<tr>
<td>Max log buffers</td>
<td>Specify the maximum number of log I/O buffers that are used. Valid values are from 1 through 99.</td>
</tr>
<tr>
<td>Max read buffers</td>
<td>Specify the maximum number of read I/O buffers that are used. Valid values are from 1 through 99.</td>
</tr>
<tr>
<td>Deferred write time</td>
<td>Specify the deferred write time. The deferred write time is the maximum time delay before buffered records are written to the DASD log files. Shorter deferred times mean less vulnerability to data loss in the event of an outage, but it requires more write I/Os. Valid values are from 1 through 999 seconds.</td>
</tr>
<tr>
<td>Minimum log file data sets (LDS)</td>
<td>Specify the minimum number of data sets to use in the LOGSET. The NGL agent will allocate this number of data sets at start up. Valid values are from 1 through 99.</td>
</tr>
<tr>
<td>Maximum log file data sets (LDS)</td>
<td>Specify the maximum number of data sets to use in the LOGSET. The NGL agent will allocate up to this number of data sets, as needed, to meet the retention goal specified in the LOGSET time specification. Valid values are from 1 through 99.</td>
</tr>
<tr>
<td>Space to allocate (per LDS)</td>
<td>Specify the total space used for the LOGFILE. This space is used to create each LOGFILE data set. Valid values are from 1 through 9999 MB.</td>
</tr>
<tr>
<td>LDS allocation type</td>
<td>Specify the type of allocation parameters to be used.</td>
</tr>
<tr>
<td></td>
<td>■ <strong>SMS</strong> means that DFSMS parameters will be used and at least one of the 3 SMS parameters (storage class, management class, data class) must be provided.</td>
</tr>
<tr>
<td></td>
<td>■ <strong>VOL</strong> means that a traditional VOLSER will be provided to indicate where the LOGFILE should be allocated.</td>
</tr>
<tr>
<td></td>
<td>■ <strong>NONE</strong> means that no allocation parameters will be provided and the system defaults will handle the details.</td>
</tr>
<tr>
<td>LDS Volume</td>
<td>Specify the volume for the LOGSET. This value is required if the allocation type is <strong>VOL</strong>; otherwise, this value is ignored.</td>
</tr>
<tr>
<td>Parameter</td>
<td>Description</td>
</tr>
<tr>
<td>---------------------------------</td>
<td>------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>LDS DFSMS Data class</td>
<td><em>(optional)</em> Specify the DFSMS Data class for the LOGSET. You must specify one of the LDS DFSMS parameters if the allocation type is <strong>SMS</strong>. This parameter is ignored if the allocation type is not <strong>SMS</strong>.</td>
</tr>
<tr>
<td>LDS DFSMS Management class</td>
<td><em>(optional)</em> Specify the DFSMS Management class for the LOGSET. You must specify one of the LDS DFSMS parameters if the allocation type is <strong>SMS</strong>. This parameter is ignored if the allocation type is not <strong>SMS</strong>.</td>
</tr>
<tr>
<td>LDS DFSMS Storage class</td>
<td><em>(optional)</em> Specify the DFSMS Storage class for the LOGSET. You must specify one of the LDS DFSMS parameters if the allocation type is <strong>SMS</strong>. This parameter is ignored if the allocation type is not <strong>SMS</strong>.</td>
</tr>
<tr>
<td>LDS DSN prefix</td>
<td>Specify the DSN prefix for the LOGSET log file data sets. BMC recommends referencing the <strong>Data Collector ID</strong> and <strong>Output Group Number</strong> in the DSN prefix to make it unique (for example, BMCPERF.DC01.OG001).</td>
</tr>
<tr>
<td>Enable Archiving</td>
<td>Specify whether to enable LOGSET data set archiving. Valid values are <strong>Y</strong> (Yes) and <strong>N</strong> (No). For more information about archiving, see “Additional information about archiving and the NGL” on page 461.</td>
</tr>
<tr>
<td>Archive Wait Time</td>
<td><em>(optional)</em> Specify the maximum time in seconds to wait for an archive to finish before reusing a LOGFILE. Allowed values are 1-9999 with the default value of 600 seconds.</td>
</tr>
<tr>
<td>Archive post processing job</td>
<td><em>(optional)</em> Specify the member that contains the job that executes when the archive job is done. The data set that contains the member is defined by the DOMPARMS DD in the DBC started task. For more information about the post-processing job, see “Additional information about archiving and the NGL” on page 461.</td>
</tr>
<tr>
<td>Max days to keep archives</td>
<td>Specify the number of days that archive data sets are kept. You can specify 1 to 999 days, or specify 0 (zero) for no limit.</td>
</tr>
<tr>
<td>Max numbers of archives to keep</td>
<td>Specify the number of archived data sets that are kept. You can specify 1 to 999, or specify 0 (zero) for no limit.</td>
</tr>
<tr>
<td>Max combined size of archives</td>
<td>Specify the maximum DASD space usage allowed in all archives. You can specify 1 to 999999 MB, or specify 0 (zero) for no limit.</td>
</tr>
<tr>
<td>Parameter</td>
<td>Description</td>
</tr>
<tr>
<td>---------------------------------</td>
<td>---------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Archive file Allocation type</td>
<td>Specify the type of allocation parameters to be used.</td>
</tr>
<tr>
<td></td>
<td>■ <strong>SMS</strong> means that DFSMS parameters will be used. At least one of the three SMS parameters (storage class, management class, data class) must be provided. If you select this value, VOL and UNIT parameters are ignored.</td>
</tr>
<tr>
<td></td>
<td>■ <strong>VOL</strong> means that a traditional VOLSER will be provided to indicate where the LOGFILE should be allocated, and SMS parameters are ignored.</td>
</tr>
<tr>
<td></td>
<td>■ <strong>UNIT</strong> means that a traditional UNIT will be provided to indicate where the LOGFILE should be allocated, and SMS parameters are ignored.</td>
</tr>
<tr>
<td>Archive Volume</td>
<td><em>(optional)</em> Specify the volume for the archive.</td>
</tr>
<tr>
<td>Archive DFSMS Data class</td>
<td><em>(optional)</em> Specify the DFSMS data class.</td>
</tr>
<tr>
<td>Archive DFSMS Management class</td>
<td><em>(optional)</em> Specify the DFSMS management class for the archive.</td>
</tr>
<tr>
<td>Archive DFSMS Storage class</td>
<td><em>(optional)</em> Specify the DFSMS storage class for the archive.</td>
</tr>
<tr>
<td>Archive GDG</td>
<td>Specify the GDG element to control whether ARCPREFIX or ARCDSN is the base name for a generation data group. Valid values are <strong>Y</strong> (Yes) and <strong>N</strong> (No). You must specify GDG as <strong>Y</strong> if the archive output data set is to be a member of a generation data group. The archive program will create a +1 version for the output data set.</td>
</tr>
<tr>
<td>Archive DSN prefix</td>
<td><em>(optional)</em> Specify the DSN prefix for the NGL archive data set.</td>
</tr>
<tr>
<td></td>
<td><strong>Note:</strong> Instead of this field you can specify a fully qualified DSN for the archive by specifying an archive data set prefix in the Alternate full archive DSN option. The Archive DSN prefix and Alternate full archive DSN options are mutually exclusive.</td>
</tr>
<tr>
<td></td>
<td>BMC recommends referencing the Data Collector ID and Output Group Number in the DSN prefix to make it unique (for example, BMCPERF.DC01.OG001). A sequence number prefixed by the letter A will be appended as the last node.</td>
</tr>
<tr>
<td>Parameter</td>
<td>Description</td>
</tr>
<tr>
<td>-----------------------------------</td>
<td>-----------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Alternate full archive DSN</td>
<td><em>(optional)</em> Specify the fully qualified NGL archive data set name.</td>
</tr>
<tr>
<td></td>
<td><strong>Note</strong>: Instead of this field you can specify an archive data set prefix for the archive by using the Archive DSN prefix option. The Archive DSN prefix and Alternate full Archive DSN options are mutually exclusive.</td>
</tr>
<tr>
<td></td>
<td>BMC recommends referencing the Data Collector ID and Output Group Number as well as using date and time symbolics to make the data set name unique each time (for example, BMCPERF.DC01.OG001.D&amp;JDAY..T&amp;HHMMSS).</td>
</tr>
</tbody>
</table>

9 Specify the DB2 SSIDs associated with this group:

   a Place your cursor on the > (greater than) sign next to **Subsystems supported by this group** and press Enter.

   b At the Zoom panel, specify up to 63 DB2 SSIDs for the DB2 subsystems supported by this output group.

      You can also specify * to associate all DB2 subsystems in your DB2 Monitor List with this output group. Any DB2 subsystems that are running on a different system are ignored.

   c Press F3 to return to the previous panel when finished.

**Verifying or changing DOMPLEX parameters**

This task is *required* for a new product installation. It is *optional* for a migration installation.

The DOMPLEX parameters affect all users and procedures that use the same DOMPLEX option set.

**To verify or change DOMPLEX parameters**

1 At your product main menu, select Administration.

2 At the Administration menu, select 2 (DOMPLEX Option Sets) and press Enter.

3 At the DOMPLEX Options Sets panel, type E next to the DOMPLEX for which you want to define values and press Enter.
4. At the DOMPLEX options set panel, expand **DOMPLEX Parameters**, as shown in Figure 89 on page 455.

**Figure 89: DOMPLEX option set panel -- Expanded DOMPLEX parameters**

```
  File  Filter  Confirm
      Help

AFDQA111 - AFDQA 11.1 PLEX FOR DBC/NGL

Command ===>                                                  Scroll ===> CSR

Filter: Off                                                   More:
- DOMPLEX Parameters               Parameters that apply to entire DOMPLEX
  Sysplex communications enabled . . . .: Y (Y=Yes,N=No)
  Global data transfer limit . . . .: 100 (1-999 MB)
  Local data transfer limit. . . . .: 500 (1-999 MB)
  Collect IFCID 3 in accounting trace . .: Y (Y=Yes,N=No)
  Security via DB2 authorization tables.: N (Y=Yes,N=No)
  Authorization for DB2 commands . . . .: Y (Y=Yes,N=No)
  Authorization for MVS commands . . . .: Y (Y=Yes,N=No)
  Translate all panels to upper case . .: N (Y=Yes,N=No)
  Site Panel Language identifier . . . .: E (E=English,J=Japanese)
  Date formatting style option . . . .: U (U=USA,E=Europe,I=ISO)
  Decimal formatting style option. . . .: U (U=USA,E=Europe,I=ISO)
  IDCAMS module name . . . . . . . . .: IDCAMS
  Work file DASD unit name . . . .: SYSALLDA
  Security data set DSN . .: AFDQA.V111TEST.SECURITY
  Archive directory DSN . .: AFDQA.V111TEST.COPYDIR
  Data Collector List (1)          Data Collector(DBC) subsystems in DOMPLEX
  DB2 Monitor List (11)            DB2 Sub-systems to be monitored
  + OutGp DCID DspSize (6)           Output Groups - valid range: 001-256
  +/- expandable section (enter ? for action menu). > zoomable field
  F1=Help      F3=Exit      F6=Actions   F7=Backward  F8=Forward  F12=Cancel
```

5. Specify the parameters, as described in Table 66 on page 455.

**Table 66: DOMPLEX Parameters fields**

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sysplex communications enabled</td>
<td>Specify whether the Data Collector on the current system will connect to an XCF group in the coupling facility, and subsequently establish communication with all Data Collectors in the DOMPLEX. Valid values are Y (Yes) and N (No). The default is Y.</td>
</tr>
<tr>
<td>Global data transfer limit</td>
<td>Specify the maximum size (in megabytes) of a request that can be transferred to a remote system. Any request that exceeds the specified limit specified will be terminated. Valid values are any number in the range 1 through 999. The default value is 20. For information about data transfer limits, see “Data transfer limit calculations” on page 458.</td>
</tr>
<tr>
<td><strong>Field</strong></td>
<td><strong>Description</strong></td>
</tr>
<tr>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Local data transfer limit</td>
<td>Specify the maximum size (in megabytes) of a request that can be transferred to a user on the local system. Any request that exceeds the limit will be terminated. Valid values are any number in the range 1 through 999. The default value is 50. For information about data transfer limits, see “Data transfer limit calculations” on page 458.</td>
</tr>
<tr>
<td><em>(MainView for DB2 only)</em> Collect IFCID 3 in accounting trace</td>
<td>Specify whether to collect IFCID 3 in accounting trace. Valid values are Y (Yes) and N (No).</td>
</tr>
<tr>
<td>Security via DB2 authorization tables</td>
<td>Specify whether security through the DB2 authorization tables is enabled. Valid values are Y (Yes) and N (No).</td>
</tr>
<tr>
<td>Authorization for DB2 commands</td>
<td>Specify whether authorization is required for DB2 commands. Valid values are Y (Yes) and N (No).</td>
</tr>
<tr>
<td>Authorization for MVS commands</td>
<td>Specify whether authorization is required for MVS commands. Valid values are Y (Yes) and N (No).</td>
</tr>
<tr>
<td>Translate all panels to upper case</td>
<td>Specify whether System and SQL Performance product panels are displayed in both upper- and lower-case characters or only in upper-case characters. This value sets the default for users who do not set a preference in their profile.</td>
</tr>
<tr>
<td></td>
<td>■ Specify Y to display panels and reports in upper-case characters.</td>
</tr>
<tr>
<td></td>
<td>■ <em>(default)</em> Specify N to display panels and reports in mixed case.</td>
</tr>
<tr>
<td></td>
<td><strong>Note:</strong> This setting does not apply to SQL Explorer-specific reports and panels or Explain reports. It does apply to panels shared by SQL Explorer with other System and SQL Performance products.</td>
</tr>
<tr>
<td>Site Panel Language identifier</td>
<td>Specify the language used on System and SQL Performance product panels. This field acts as the default for all users who do not set a preference in User Options or the User Profile. Specify E (English) or J (Japanese).</td>
</tr>
<tr>
<td>Field</td>
<td>Description</td>
</tr>
<tr>
<td>------------------------------</td>
<td>-----------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Date formatting style option</td>
<td>Specify the style of date used for display and input on panels with dates.</td>
</tr>
<tr>
<td></td>
<td>■ Specify U to display dates in United States format (mm/dd/yy or mm/dd/yyyy).</td>
</tr>
<tr>
<td></td>
<td>■ Specify E to display dates in the European format (dd/mm/yy or dd/mm/yyyy).</td>
</tr>
<tr>
<td></td>
<td>■ Specify I to display dates in the ISO format (yy/mm/dd or yyyy/mm/dd).</td>
</tr>
<tr>
<td></td>
<td>If you do not specify a value, the default value is used. A value set in User Options overrides this value.</td>
</tr>
<tr>
<td>Decimal formatting style option</td>
<td>Specify the symbol to use to the left of the fractional portion of a number with decimal places.</td>
</tr>
<tr>
<td></td>
<td>■ Specify U to use a period (.) as the decimal separator (United States format).</td>
</tr>
<tr>
<td></td>
<td>■ Specify E to use a comma (,) as the decimal separator (European format).</td>
</tr>
<tr>
<td></td>
<td>If you do not specify a value, the default value is used. Any value set in User Options overrides this value.</td>
</tr>
<tr>
<td>IDCAMS module name</td>
<td>Specify the name of the IDCAMS module. The IBM default name is IDCAMS. If the default at your site is different, you must specify it during installation.</td>
</tr>
<tr>
<td>Work file DASD unit name</td>
<td>Specify the unit name to use for allocating temporary DASD work files. The IBM default unit name is SYSDA. If the default at your site is different, you must specify it during installation.</td>
</tr>
<tr>
<td>Security data set name</td>
<td>Specify the name of the VSAM data set that contains the User Profile security values.</td>
</tr>
<tr>
<td>COPYDIR archive dataset name</td>
<td>Specify the name of the VSAM data set that contains the archives.</td>
</tr>
</tbody>
</table>

6 Press **F3** until you return to the Administration menu.

7 If prompted, enter the name of the DOMPLEX and a description.
Data transfer limit calculations

The local transfer limit controls how much local storage a user data request can occupy from a single request for data. This limit ensures that a single user cannot use too much of the Data Collector private storage area for a single request.

The global transfer limit controls how much data a Data Collector will attempt to return to a remote Data Collector for a single data request from a remote user. This transfer limit controls the demand on Coupling Facility resources. Because the entire request for data from all DB2 subsystems must be satisfied from within the local transfer limit buffer, the local transfer limit must always be larger than the global limit.

Because concurrent users may be issuing simultaneous requests, each request can potentially use up to that amount of storage. If the local transfer limit is set too high, and your environment has many concurrent users, simultaneous requests can exceed the private virtual storage capacity of the Data Collector and cause it to fail.

Typical z/OS systems provide between 1300 MB and 1600 MB of available private storage, so a value of 1000 MB is a good working maximum for all concurrent user requests combined. Because this storage must be balanced between the number of active user requests and the size of those requests, 1000 MB can support a limit of 50 MB for 20 simultaneous requests. If the limit is increased to accommodate a large user request, you must then decrease the number of users. For example, increasing the limit to 100 MB results in only 10 simultaneous user requests that obtain the maximum amount of data.

If you have a large number of concurrent users, the size of the user requests should be reduced. You can reduce the actual size of the request, or consider requesting the data from a batch report request. Batch report requests that do not use the Data Collector as their source are not subject to these limitations.

If you are changing the default limits, use the following considerations in your calculations:

- The combination of local transfer limits for all users and the global transfer limits for all DB2s should never exceed 1000 MB.
- The higher the local transfer limits, the lower the number of users that will be using those limits.
- The global transfer limit should always be lower than the local transfer limit.
Checking the default User Profile

User Profiles define the operating characteristics for a product session, including the authorizations granted to individual users.

To make the job of administration easier, the product automatically generates a User Profile the first time a user tries to sign on by copying the default User Profile loaded during installation (called 9DEFAULT).

WARNING

The 9DEFAULT records shipped in the SECURITY and PROFILE data sets contain default values that grant maximum authority to users. If you want to use the 9DEFAULT profile but do not want all users to have maximum authority, you must modify the 9DEFAULT profile before users access the product. Alternatively, you can delete the 9DEFAULT profile to prevent unauthorized access. BMC recommends that you copy the 9DEFAULT profile to another profile (8DEFAULT, for example) and create a User Profile with maximum authority for yourself first.

Before making the product available to multiple users in your environment, check the authorizations in the 9DEFAULT profile to make sure they are consistent with the security strategy at your site. User Profiles are discussed in detail in the System and SQL Performance for DB2 Administrator Guide.

Extensive online Help exists for all panels and their associated fields. If you press F1 while the cursor is positioned on a text-only area of a panel, a description of that panel is displayed. If you press F1 while the cursor is positioned on an input or output field on a panel, specific information about that field is displayed.

To view and modify User Profile values

1. Select option 1 (User Profiles) from the Administration menu.

   The User Profile Administration panel (Figure 90 on page 459) is displayed.

   Figure 90: User Profile Administration panel

   DOMEPRFU/P  User Profile Administration  LINE 195 OF 196
   Command ===> ___________________________ Scroll ===> CSR_

   To add a profile, type the name in the "New profile" field, and/or type one or more action codes. Then press Enter.

   V -View  M -Modify  D -Delete  C -Copy

   New profile ________
   Act Name Description Last change date Changed by
   M USER01 DEFAULT PROFILE 9DEFAULT
   _ 9DEFAULT DEFAULT PROFILE

2. Move the cursor to the Act field beside the User Profile of the product administrator. Type M (Modify) and press Enter.
The User Profile Data Menu (Figure 91 on page 460) is displayed.

**Figure 91: User Profile Data Menu**

```
Command ===>  User Profile Data Menu  15:46:29
User name : USER01

Type an optional description for this user in the field below.
Description DEFAULT_PROFILE__________

Select one of the following options. Then press Enter.

_ A. Authorization          - Display authorization values that can be set
      only by an administrator.
_ 1. Session Control        - Parameters that control the user's session
_ 2. Not available

The following values cannot be locked from user update.
_ 3. Session Options        - Parameters that customize the session
_ 4. Presentation Options   - Parameters that control language and formatting
_ 5. Function Keys          - Function key values

3  Press F3 to exit.

A confirmation panel is displayed.

4  Select option 1 (Save changes) and press Enter.

--- Note ---
An individual security record is not created until a User Profile is modified. By opening and saving the User Profile of the product administrator before modifying the 9DEFAULT User Profile, you ensure that the administrator retains maximum authority.

5  Repeat Step 2 on page 459 through Step 4 on page 460, selecting the 9DEFAULT User Profile.

6  Review each option on the User Profile Data Menu carefully, especially option A (Authorization) and option 1 (Session Control).

- Use **Authorization** (option A) to display authorization values that can be set only by an administrator:
  - Data Collector access
  - DB2 access
  - product access

- Use **Session Control** (option 1) to set the parameters that control access to product functions and limit resource use.
- Use **Session Options** (option 3) to set characteristics for the user’s session (for example, placement of **Command** line and display of panel ID).

- Use **Presentation Options** (option 4) to set the parameters that control the presentation of data on your screen (for example, upper- or mixed-case, date style, and decimal style).

- Use **Function Keys** (option 5) to set function key defaults.

7 Press **F3** to exit the User Profile Data Menu.

   A confirmation panel is displayed.

8 Select option **1** to save your changes.

9 Press **F3** until the main menu is displayed. Leave your product session active.

### Additional information about archiving and the NGL

You can setup a procedure to automatically generate an archive of a log file, and setup a post processing job that is automatically submitted each time an archive procedure finishes.

The archives are automatically registered in the Archive Directory and can be used to create the batch reports described in the following books:

- **APPTUNE for DB2 User Guide**
- **Pool Advisor for DB2 User Guide**
- **BMC System Performance for DB2 User Guide**
- **MainView for DB2 Performance Reporter User Guide**

When enabled the Data Collector initiates a procedure to create an archive of a log file, when any of the following conditions occur:

- A log file is full
- The SWITCH command is issued

To enable archiving:

1 Set **Enable Archiving** to **Y** on the output group that you are interested in archiving.
2 Copy the NGLARCH member from SAMPLIB into your SYS1.PROCLIB (or equivalent) started task library.

**Note**
The default name for this process is NGLARCH. You can change the process name. For more details, see “Renaming the NGLARCH process” on page 462.

In addition, you can configure an archive post-processing job that is automatically submitted each time an archive procedure finishes. For more details, see “Setting up an archive post-processing job” on page 462.

### Renaming the NGLARCH process

You can change the name of the NGLARCH process.

1 Edit installation job $G65INIT.

2 Change the `<PROCNAME>` value to the new name of the NGLARCH proc.

3 Rerun the NGLINIT step.

### Setting up an archive post-processing job

You can configure an archive post-processing job (#DOMPOST) that is automatically submitted each time an archive procedure finishes.

1 Set up the job as a member of the dataset specified on the DOMPARMS DD of the DBC started task.

2 Specify the member name in the Archive post processing job field in the DOMPLEX option set.

The symbols in Table 67 on page 462 are supported in the optional archive post-processing job. The product replaces these symbols in the JCL with the appropriate values when the job is submitted for execution.

**Note**
All the $DOM symbols are optional in the post-processing jobs.

### Table 67: Symbols used in archive post-processing jobs

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Substituted value</th>
</tr>
</thead>
<tbody>
<tr>
<td>$DOMSSN</td>
<td>Current DBC subsystem ID</td>
</tr>
</tbody>
</table>
### Verifying the installation

The verification tasks you perform will depend on the products you are installing.

- If you installed SQL Explorer, APPTUNE, MainView for DB2 - Data Collector, or SQL Performance, you must start a product session and issue an Explain command.

MainView for DB2 - Data Collector users must access the menu from a MainView for DB2 Easy Menu. For more information, see the MainView for DB2 User Guide.

---

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Substituted value</th>
</tr>
</thead>
<tbody>
<tr>
<td>$DOMDSN</td>
<td>Current trace data set name</td>
</tr>
<tr>
<td>$DOMDATE</td>
<td>Current date in the format Dyyddd, where yy is the year (00-99) and ddd is the day of the year (000-365)</td>
</tr>
<tr>
<td>$DOMTIME</td>
<td>Current time in the format TMhhmmss, where hh is hours (00-23), mm is minutes (00-59), and ss is seconds (00-59)</td>
</tr>
<tr>
<td>$DOMLSET</td>
<td>LOGSET name</td>
</tr>
<tr>
<td>$DOMPLX</td>
<td>Current DOMPLEX name name (specified in the DOMPLEX option set)</td>
</tr>
<tr>
<td>$DOMARC</td>
<td>Archive data set name</td>
</tr>
</tbody>
</table>

You can substitute substrings of these symbols, using the substring function:

\[
\text{\$SUBSTR(ss, ll, vvvvvvv)}
\]

The syntax of the substring function is:

- The \( ss \) value represents the starting position.
- The \( ll \) value represents the length.
- The \( vvvvvvv \) value is a symbol name.

For example, to represent the first 10 characters of \$DOMDSN:

\[
\text{\$SUBSTR(1, 10, \$DOMDSN)}
\]

---

**Note**

A sample post-processing job (#DOMPOST) can be found in the DOMSAMP, BBSAMP, or runtime SAMP data set, along with a REXX EXEC (DOMRPOST) that you can use to display these symbolics.
If you installed SQL Performance, you must verify that you can access the Index Component reports.

If you installed SQL Explorer or SQL Performance, you must also verify the SQL Explorer installation.

If you installed Pool Advisor or System Performance, you must start a product session and start a reporting session.

The following steps summarize the System and SQL Performance products verification tasks and the products for which you must run them.

<table>
<thead>
<tr>
<th>Step</th>
<th>Procedures</th>
<th>Products</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>“Starting the DBC subsystem” on page 464</td>
<td>All products except SQL Explorer and OPERTUNE</td>
</tr>
<tr>
<td>2</td>
<td>“Checking the system console log messages” on page 465</td>
<td>All products except SQL Explorer and OPERTUNE</td>
</tr>
<tr>
<td>3</td>
<td>“Starting a product session” on page 470</td>
<td>All products</td>
</tr>
<tr>
<td>4</td>
<td>“Selecting a DOMPLEX” on page 470</td>
<td>All products except SQL Explorer and OPERTUNE</td>
</tr>
<tr>
<td>5</td>
<td>“Issuing a dynamic Explain command” on page 471</td>
<td>SQL Explorer APPTUNE MainView for DB2 - Data Collector SQL Performance</td>
</tr>
<tr>
<td>6</td>
<td>“Accessing the Index Component reports” on page 475</td>
<td>SQL Performance</td>
</tr>
<tr>
<td>7</td>
<td>“Verifying the SQL Explorer installation” on page 477</td>
<td>SQL Explorer SQL Performance</td>
</tr>
<tr>
<td>8</td>
<td>“Starting a Pool Advisor or System Performance reporting session” on page 484</td>
<td>Pool Advisor System Performance</td>
</tr>
</tbody>
</table>

**Starting the DBC subsystem**

This task is *required* for all products except for SQL Explorer or OPERTUNE.

The product procedure (PROC) must be invoked to initialize the DBC. One DBC subsystem can monitor multiple DB2 subsystems on one z/OS. The DB2 subsystems to be monitored were specified in the DOMPLEX option set. The DBC can be invoked as a z/OS started task or as a batch job.
Invoking the DBC subsystem as a started task

The DBC subsystem is started during installation. If you need to restart it, use this procedure.

Issue the MVS START command for the started task created from DBC$STC (see “Editing or reviewing the DBC JCL procedure” on page 429):

```
/S DBC$STC
```

**Note**
You can also issue the MVS START command for the started task by specifying START dbc_ProcName. Normally, the DBC will start all of the installed agents, including the Data Collector agent.

**Warning!** Do not use the name of the DB2 subsystem

Invoking the DBC subsystem as a batch Job

Submit the JCL created when you edited the JCL procedures (see “Editing or reviewing the DBC JCL procedure” on page 429).

To stop the batch job, issue the following command:

```
/p jobName
```

When you stop the batch job, you must also stop the initiator under which the batch job ran by issuing the /p (purge) command.

**Note**
The DBC subsystem is a long-running-service address space that normally remains active for the life of an IPL. Therefore, BMC does not recommend starting the DBC subsystem as a batch job. Doing so causes the JES initiator to be busy for the life of the DBC subsystem. If you want to run the DBC as a batch job, replace the PROC statement with a valid JCL job card.

Checking the system console log messages

Watch the system console log for the messages issued by the product procedure (PROC).

When the DBC and Data Collector become active, messages similar to those shown in the JES Job Log and SYSPRINT Messages Report (Figure 92 on page 466) are displayed.
DSNW133I messages (Trace data set lost. Destination not accessible.) are sometimes issued by DB2 while the Data Collector is starting. You can ignore these messages. The messages will stop after the Data Collector starts and makes contact with DB2.

Pool Advisor and System Performance only: The Data Collector performs an object scan every night and issues messages BMC23510 and BMC23511 for each DB2 it monitors, marking the beginning and end of the scan.

To check the system console log messages

1 Verify the licensing for your installed products.

   Lines that begin with BMC24907 contain the licensing information for your installed products.

2 Verify the subsystem and plan names.

   Lines that begin with BMC24951 contain information about the subsystems and plans that are recognized by the Data Collector, as shown in the following example:

   ```
   BMC24951 DOM7 DB2=DEC7 Rel=810 Char=*DEC7 Status=UP Plan=DAAvvrD1
   ```

   This information is stored in the DOMPLEX option set. The Data Collector uses these plans to perform Explain operations. If you bind one of these plans under a different name, the Explain process will fail.

3 On the Command line in the system console, type `/dcid APPSTAT`, where `dcid` is the subsystem ID of the local DBC previously specified in the DOMPLEX option set.

   The statuses of all DB2s that are recognized by the Data Collector are displayed.

Figure 92: JES job log and SYSPRINT messages report
23.29.04 STC27629 BMC23035 COLLECTION=ACTIVE ENTRIES=0 FILTER=!BMCTEST

23.29.08 STC27629 BMC87901I DASDB2A1 DAS COMMANDS ACTIVE FOR TASK OF DBCRI101.
23.29.08 STC27629 BMC87927I DASDB2A1 DAS - MODULE ADDED/REPLACED: DASDB2AV.

23.29.19 STC27629 BMC24453 DC2B *SPD* RC=0000 - Product initialization successful
23.29.19 STC27629 BMC22154 DC2B System Performance Solution for DB2 version 11.01.00 (2013/03) now active

23.29.21 STC27629 BMC24524 DC2B Outgrp 006 trk 1 of 420 in DATASPACE

23.29.22 STC27629 BMC24726 DC2B Remote member DOM0DC2ADB2A02 joined XCF group DBCRIOPT successfully
23.29.22 STC27629 BMC24951 DC2B DB2=DEBF Rel= Char=*DEBF Status=DOWN Plan=DAA111D1
23.29.22 STC27629 BMC24951 DC2B DB2=DEDK Rel= Char=*DEDK Status=DOWN Plan=DAA111D1
23.29.22 STC27629 BMC24951 DC2B DB2=DEFU Rel= Char=*DEFU Status=DOWN Plan=DAA111D1
23.29.22 STC27629 BMC24951 DC2B DB2=DEFY Rel= Char=*DEFY Status=DOWN Plan=DAA111D1
23.29.32 STC27629 BMC24951 DC2B DB2=DEBF Rel= Char=*DEBF Status=STARTING Plan=DAA111D1
23.30.12 STC27629 BMC24381 VXTB XML document successfully built
23.30.12 STC27629 BMC24453 DC2B *SPD* RC=0000 - Product initialization successful
23.30.12 STC27629 BMC22154 DC2B System Performance Solution for DB2 version 11.01.00 (2013/03) now active

Verifying the installation

BMC Products and Solutions for DB2 Configuration Guide
### Detailed information for all messages is available in the online Help. Type HELP <messageID> on the Command line of any System and SQL Performance product panel and press Enter.

<table>
<thead>
<tr>
<th>Time</th>
<th>User</th>
<th>Action</th>
<th>Message</th>
</tr>
</thead>
<tbody>
<tr>
<td>23.30.54</td>
<td>STC27629</td>
<td>BMC24177</td>
<td>Control variables not loaded from repository; default values will be used</td>
</tr>
<tr>
<td>23.32.01</td>
<td>STC27629</td>
<td>BMC24978</td>
<td>Object name list successfully updated for DEFF</td>
</tr>
</tbody>
</table>

To stop this DBC subsystem at a later time, use the MVS STOP command as follows:

```
P ssid
```

where `ssid` is the name of your DBC.

If the DBC is being run as a batch job, use the following MVS STOP command:

```
P jobName
```

where `jobName` is the DBC batch job.

When the STOP command is issued, a list of messages is displayed. Detailed information for all messages is available in online Help.

---

**Note**

You can issue MVS START and STOP commands from the operator console or SDSF.

---

### Starting a product session

If you previously terminated your session, see “Starting a product session” on page 439 for instructions to invoke the product. Otherwise, the product’s main menu is still displayed.

### Selecting a DOMPLEX

The product selects a DOMPLEX automatically if there is a DOMPLEX with a compatible Data Collector active when you begin your session.

---

**BMC Products and Solutions for DB2 Configuration Guide**
If no Data Collector is selected (the **Current Data Collector** field is blank), follow these directions to select a Data Collector:

**To select a DOMPLEX**

1. Display the DOMPLEX Selection panel (Figure 93 on page 471).

   The DOMPLEXes option appears on all main menus, but the option number is not the same on all main menus. Select the option that is labeled **DOMPLEXes**.

   **Figure 93: DOMPLEX Selection panel**

<table>
<thead>
<tr>
<th>Current Data Collector</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Select a DOMPLEX from the following list to be the data source for future requests. Press Enter to process the new selection.</strong></td>
<td></td>
</tr>
<tr>
<td>Sel</td>
<td>DOMPLEX</td>
</tr>
<tr>
<td>----</td>
<td>---------</td>
</tr>
<tr>
<td>1</td>
<td>DOMDC01</td>
</tr>
<tr>
<td>LOCAL DB2S: DB2S DB21</td>
<td></td>
</tr>
</tbody>
</table>

2. Select a DOMPLEX from the list of defined DOMPLEXes.

   Select a DOMPLEX with a compatible Data Collector that has a **Status** of ACTIVE.

   **Note**

   If no DOMPLEX with an active compatible Data Collector is available, return to “Verifying the installation” on page 463 and start a Data Collector.

   Type **S** in the **Sel** field beside the DOMPLEX name and press **Enter**.

3. Press **F3** (End) to return to the main menu.

**Issuing a dynamic Explain command**

This task applies only to APPTUNE, MainView for DB2 - Data Collector, and SQL Performance.

The successful execution of an Explain command confirms that the Report Manager is communicating with the Data Collector, that the Data Collector is communicating with DB2, that the DAAvvrD1 plan is working, and that installation is complete.

**To issue a dynamic Explain command**

1. Display the Explain Object Specification panel (Figure 94 on page 472).
- From the APPTUNE Main Menu, select option 3 (Explain Interface) and press Enter.

- From the System and SQL Performance main menu, select option Q (APPTUNE and Index Component), then select option 3 (Explain Interface), and press Enter.

- From MainView for DB2, hyperlink from the THDDETL view for a long-running thread to access a report from which you can invoke the dynamic Explain for the active SQL statement. For more information, see the MainView for DB2 User Guide.

**Figure 94: Explain Object Specification panel (PSSPA115)**

| PSSPA115 - ---------------- Explain Object Specification ------------------------ |
| Command ===>
| SSID   . . DBBJ |
| Type   . . 5 (1=Plan, 2=Package, 3=DBRM, 4=DBRMLIB, 5=Ad Hoc SQL) |
| Plan: |
| Name |
| Package: |
| COL2ID                       Name . . . |
| Version |
| DBRM: |
| Plan                         Name . . . |
| DSRMLIB:   (Specify PDS with member name or wildcard member.) |
| DSN . . |
| Processing Mode: L          (L=List object(s), |
| B=Batch Explain with specified objects) |

2 Complete the Explain Object Specification panel as follows:

a Specify a DB2 subsystem in the SSID field.

b Type 5 in the Type field.

c Press Enter.

An edit session is displayed (Figure 95 on page 472).

**Figure 95: Ad hoc SQL Explain edit session**

File  Edit  Edit_Settings  Menu  Utilities  Compilers  Test  Help
ISREDDE2  EXPLAIN  Columns 00001 00072
Command ===>  Scroll ===> PAGE
******* *************************************************** Top of Data ***************
==MSG> -Warning- The UNDO command is not available until you change
==MSG> your edit profile using the command RECOVERY ON.
000001 SELECT * FROM SYSTABLES WHERE NAME = :H
******* *************************************************** Bottom of Data ***************

3 In the edit window, type \texttt{SELECT * FROM SYSTABLES WHERE NAME = :H} and press F3.
The Explain or Execute Parameters panel (Figure 96 on page 473) is displayed.

**Figure 96: Explain or Execute Parameters panel (PSSPA117)**

```
PSSPA117 ----------------- Explain or Execute Parameters ----------------------
Command ===> 
Specify the options below and press ENTER to continue. 
Option ............. 1  1. Explain 
                        2. Execute 
                        3. Edit 
Qualifier Name . . . . SYSIBM
```

4 Complete the Explain or Execute Parameters panel as follows:

a Type 1 in the **Option** field.

b Type **SYSIBM** in the **Qualifier Name** field.

c Press **Enter** to display the Explain Results panel (Figure 97 on page 473).

**Note**

Actions shown in bold in Figure 97 on page 473 are available only if you have applied the SQL Performance solution password. They will not be displayed for an SQL Explorer-only installation.

**Figure 97: Explain Results panel (PSSPE200)**

```
FILE  COMMANDS  OPTIONS  HELP
-------------------------------------------------------------------------------
PSSPW200                   Explain Results for
SQLTEXT
Command ===>                                                  Scroll ==> CSR
More:       >
Actions: S H R RS RW RI XD XS W P T C D U IM SA
LBL  STMTNO  COST*RATE SQL-STATEMENT
XD01  114690.937500 select * from systables ;
COST*RATQ PL MIX QTYPE  METH ACC MTCH IX TBNAME             IXNAME
XD01  114690.93  1  1   0 SELECT    0 R      0 N  SYSTABLES
******************************** Bottom of Data *******************************
```

5 Verify that the Explain executed correctly by reviewing the Explain Results.

The Explain Results panel displays COST information associated with the Explain.

**Tip**

You can type action codes next to the statement area or access path area on the Explain Report to see more information. To view all information on the Explain Results panel, press **F11** to scroll to the right and press **F10** to scroll to the left.

a If the command returns a negative SQL code instead of Explain text, verify the following conditions:
The plan table that was used is the correct format for the version of DB2.

**Note**

To check which plan table was used, perform the following steps:

1. Press F3 from the SQL Error panel.
2. On the Explain Results for SQLTEXT panel (PSSPW200), put your cursor on OPTIONS in the task bar and hit **Enter**.
3. Choose option 1 (Explain).
4. Check the plan tables in the DB2 subsystem that have the creator of the value listed in the **Plan Table Owner** field.

The plan name was specified correctly in the PSS2 ssid member in the UBBSAMP or your runtime SAMP data set that is allocated to the PSSCNTL DD.

If you receive an SQLCODE=100 warning, check to make sure that the $C81PERF job was run.

This job creates a stand-alone database and tablespace that the product uses to create user plan tables, if needed. A dummy PLANTBL table is also created with the synonym BMCPSS_PLANTBL. The product uses this synonym to find the database and tablespace if plan tables need to be created. If the product cannot find this synonym, you will receive an SQLCODE=100, NOT FOUND warning.

The database, tablespace, and PLANTBL table may persist from release to release. Make sure that the synonym qualifier matches the qualifier used in the BIND of the PSS packages.

**Note**

If your DB2 subsystem was recently migrated to DB2 Version 10 or later, the Explain request will fail unless all of the Explain tables being used are in a UNICODE tablespace and are in the DB2 Version 10 Explain schema. IBM provides the following jobs to identify and convert user plan tables: DSNTIJPM, DSNTIJXA, DSNTIJXB, and DSNTIJCX. If the plan tables do not exist, they will be created in the tablespace for the System and SQL Performance for DB2 products. BMCUPLAN is the default tablespace name.

c If one or more of these conditions were not met, correct them and repeat the steps in this procedure. If you cannot determine why the command failed, contact BMC Customer Support for assistance.
Where to go from here

When you have successfully produced the Explain Results, the verification procedure for APPTUNE and MainView for DB2 - Data Collector is complete.

If you are also installing SQL Explorer or SQL Performance, you must verify the SQL Explorer installation.

Accessing the Index Component reports

This task applies only to SQL Performance. The display of the Index Component reports confirms that the Index Component of SQL Performance has been installed correctly.

To access the Index Component reports

1. From the System and SQL Performance for DB2 main menu (Figure 79 on page 408, select option Q (APPTUNE and Index Component) and press Enter.

The APPTUNE and Index Component Main Menu (Figure 98 on page 475) is displayed.

**Figure 98: APPTUNE and Index Component Main Menu (DOMEPLN3)**

<table>
<thead>
<tr>
<th>Command</th>
<th>APPTUNE and Index Component Main Menu</th>
</tr>
</thead>
<tbody>
<tr>
<td>DOMEPLN3</td>
<td>APPTUNE and Index Component Main Menu</td>
</tr>
<tr>
<td>14:36:12</td>
<td></td>
</tr>
</tbody>
</table>

Current Data Collector: NO1A  Status: ACTIVE  Data Collection: READY

Select one of the following options. Then press Enter.

0. Statement Cache - Analyze dynamic statement cache statistics
1. SQL Workload - Analyze current and historical SQL workloads
2. DB2 Status - View current DB2 status by subsystem
3. Explain Interface - Explain an SQL statement
4. Application Profiles - Create and maintain application groups
5. Command Interface - Issue commands, view responses
D. Archive Directory - View/manage the directory of trace archives
2. About APPTUNE

2. Select option 1 (SQL Workload) and press Enter.
The SQL Workload Analysis Menu (Figure 99 on page 476) is displayed.

Figure 99: SQL Workload Analysis Menu (ASQEWAM1)

ASQEWAM1/I   SQL Workload Analysis Menu 13:39:48
Command ===> ________________________________________________________________

Report Criteria:
Source of data . . . . : Subsystem DOMS
For DB2 SSIDs . . . . : *
Duration . . . . . . : No time limit
Initial report . . . . : SUBSYSTEM ANALYSIS (DATA)
Application profile . : DEFAULT           Owner :

Select one of the following options to change the report criteria or to begin reporting.
1. Workload analysis   - Begin workload reporting
2. Initial report      - Select the initial report to be viewed
3. Report type         - Select the report type (data or graph)
4. Application profile - Select the profile for group reporting
5. Time interval       - Specify the time frame for reporting
6. Data source, DB2(s) - Select data source and DB2 subsystems

3 Select option 2 (Workload analysis) and press Enter.

The SQL Workload Initial Analysis Level panel (Figure 101 on page 477 is displayed.

Figure 100: SQL Workload Initial Analysis Level panel (DOMEPNL3)

DOMEPNL3 I   SQL Workload Initial Analysis Level 14:45:00
Command ===> ________________________________________________________________

Current initial report : SUBSYSTEM ANALYSIS (DATA)

Select one of the following initial reports to display, then press Enter.
22 APPTUNE Reports:
1. DB2 Subsystem ID
2. Program/DBRM
3. Plan
4. User/Operator ID
5. Application Group
6. Connection ID
7. SQL Statement
8. SQL Error Code
9. CorrID
10. Objects
11. Client Application Name
12. Client Workstation Name
13. Client User ID
14. Interval
15. SAP
16. Logical DB2 (OS group or SSID)
17. Requesting Location
18. Implicit Qualifier

4 Select option 21 (Subsystem Getpage Volume) and press Enter.
The SQL Workload Analysis Menu (Figure 101 on page 477) is displayed.

**Figure 101: SQL Workload Analysis Menu (ASQEWAM1)**

ASQEWAM1/I               SQL Workload Analysis Menu                   13:40:14
Command ====> ________________________________________________________________
Report Criteria:
Source of data . . . : Subsystem DOMS
For DB2 SSIDs . . . . : *
Duration . . . . . . : No time limit
Initial report . . . : INDEX SUBSYSTEM GETPAGE VOLUME
Application profile . : DEFAULT           Owner :

Select one of the following options to change the report criteria or to begin reporting.
1 1. Workload analysis   - Begin workload reporting
2. Initial report      - Select the initial report to be viewed
3. Report type         - Select the report type (data or graph)
4. Application profile - Select the profile for group reporting
5. Time interval       - Specify the time frame for reporting
6. Data source, DB2(s) - Select data source and DB2 subsystems

5  Select option 1 (Workload analysis) and press Enter.

The Subsystem Getpage Volume report (Figure 102 on page 477) is displayed.

**Figure 102: Subsystem Getpage Volume report**

ASQEGRPVW/I                      View a Report                      LINE 1 OF 1
Command ====> _______________________________________________ Scroll ===> CSR_
BMC$ftwr.IOQDSTAT    --    SUBSYSTEM GETPAGE VOLUME    --       09/29 14:18:31
-----------------------------------------------------------------------------------------------------------------------
Actions: B-Table/Index Breakdown  A-Table Getpage
Logical       +---------- Getpage ----------+  +- Sync I/O --+  +--- Async I/O --+     Total    Change  Change  Logical
DB2 Name        Index%   /Stmt   Number AvgTime   Number AvgTime    Number     Pages     Stmts     Stmts  Stmt %  DB2 Name
--------        ------  ------ -------- -------  ------- -------  --------  --------  --------  --------  ------  --------
+ DECA             8.0%   36.0  10488252 0.00001     2617 0.00472       460      8861    291152    162789    55.9  DECA

6  If the report is not displayed, ensure that the Data Collector is monitoring the DB2 subsystems and that you are collecting object information.

**Verifying the SQL Explorer installation**

To verify that SQL Explorer has been installed correctly, you must test the following functions:

- Call Attach facility (CAF)
- Impact Analysis
- Distributed Data facility (DDF)
Note
Each of these tests begins at the SQL Explorer main menu. Select option 0 from the main menu to change any default values before you begin.

Testing the Call Attach Facility

To test the Call Attach Facility, complete the following steps:

1. From the System and SQL Performance main menu, select option S (SQL Explorer Component) and press Enter.

   The SQL Explorer Menu is displayed.

2. Select option 1 (Explain), type the subsystem ID of an active, local DB2 subsystem in the SSID field, and press Enter.

   The Explain Object Specification panel is displayed.

3. Complete the Explain Object Specification panel as follows:

   - Type 2 in the Type field.
   - Type % in the Package: COLLID field (% is a wildcard).
   - Type PSSXSQL in the Package: Name field.
   - Type % in the Package: Version field.
   - Type L (List Objects) in the Processing Mode field.

4. Press Enter to display the Explain Object Selection List panel.

   At least one entry for package PSSXSQL should be displayed on the Explain Object Selection List panel. This entry verifies that CAF is working. Multiple entries indicate that more than one version of SQL Explorer is installed.

5. Type S next to one of the PSSXSQL packages, and press Enter to display a list of statements.

6. Type XD next to one of the statements, and press Enter to execute a dynamic Explain.

   The Explain Results panel is displayed.

7. Verify that the Explain executed correctly by reviewing the Explain results.
The Explain Results panel displays COST information associated with the Explain.

You can type action codes next to the statement area or access path area on the Explain Results panel to see more information. To view all information on the Explain Results panel, press F11 to scroll to the right and press F10 to scroll to the left.

a If the command returns a negative SQL code instead of Explain text, verify the following conditions:

- The plan table that was used is the correct format for the version of DB2.

  **Note**
  To check which plan table was used, perform the following steps:

  1. Press F3 from the SQL Error panel.
  2. On the Explain Results for SQLTEXT panel (PSSPW200), put your cursor on OPTIONS in the task bar and hit Enter.
  3. Choose option 1 (Explain).
  4. Check the plan tables in the DB2 subsystem that have the creator of the value listed in the Plan Table Owner field.

b If you receive an SQLCODE=100 warning, check to make sure that the $C81PERF job was run.

This job creates a stand-alone database and tablespace that the product uses to create user plan tables, if needed. A dummy PLANTBL table is also created with the synonym BMCPSS_PLANTBL. The product uses this synonym to find the database and tablespace if plan tables need to be created. If the product cannot find this synonym, you will receive an SQLCODE=100, NOT FOUND warning.

The database, tablespace, and PLANTBL table can persist from release to release. Make sure that the synonym qualifier matches the qualifier used in the BIND of the PSS packages.
If your DB2 subsystem was recently migrated to DB2 Version 10 or later, the Explain request will fail unless all of the Explain tables being used are in a UNICODE tablespace and are in the DB2 Version 10 Explain schema. IBM provides the following jobs to identify and convert user plan tables: DSNTIJPM, DSNTIJXA, DSNTIJXB, and DSNTIJCX. If the plan tables do not exist, they will be created in the tablespace for the System and SQL Performance for DB2 products. BMCUPLAN is the default tablespace name.

8 If one or more of these conditions were not met, correct them and repeat Step 6 on page 478. If you cannot determine why the command failed, contact BMC Software Customer Support for assistance.

Testing Impact Analysis

To test Impact Analysis, complete the following steps:

1 Return to the SQL Explorer menu (PSSPF000).
2 Select option 5 (Impact Analysis).
3 Type the subsystem ID of an active, local DB2 in the SSID field, and press Enter.

The Impact Analysis Object Specification panel (Figure 103 on page 480) is displayed.

Figure 103: Impact Analysis Object Specification panel (PSSPI010)

<table>
<thead>
<tr>
<th>PSSPI010</th>
<th>Impact Analysis Object Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Command</td>
<td>====&gt;</td>
</tr>
<tr>
<td>Process Mode</td>
<td>O (O=Online, B=Batch)</td>
</tr>
<tr>
<td>Objects to Analyze (Case-Sensitive):</td>
<td>(Table, View, Alias, and Synonym)</td>
</tr>
<tr>
<td>Creator</td>
<td>. . %</td>
</tr>
<tr>
<td>Name</td>
<td>. . BMCPSS_BASE</td>
</tr>
<tr>
<td>Columns:</td>
<td>(Comma-Delimited List)</td>
</tr>
<tr>
<td>Name</td>
<td>. . APPLNAME</td>
</tr>
</tbody>
</table>

For the specified table objects, search only these DBRMs and packages:

Type . . . . 2 (1=DBRM, 2=Package, 3=DBRMs and Packages)

| DBRM: | Plan | . . Name | . . % |
| Package: | COLLID | . . % |
| Version | % |

Options

4 Complete the Impact Analysis Object Specifications panel as follows:

- Type O in the Process Mode field.
- Type % in the **Creator** field.

- Type **BMCPSS_BASE** in capital letters in the **Name** field.

- Type **APPLNAME** in capital letters in the **Columns: Name** field.

- Type 2 in the **Type** field.

- Type % in the **Package: COLLID** field (% is a wildcard).

- Type **PSSXSQL** in the **Package: Name** field.

- Type % in the **Package: Version** field.

5 Press **Enter** to execute online Impact Analysis.

---

**Note**

If any of the data sets do not exist, the Allocate Data Set panel is displayed. Allocate the product data sets if prompted.

---


The Summary report should list one impacted SELECT statement in each PSSXSQL package that is listed. The Summary will also show a mixed list of the impacted base table.

7 If the command returns a negative SQL code instead of the Impact Analysis Summary report, verify that the plan name was specified correctly in the PSS2ssid member in the **LLQSAMP** (where **LLQ** is DB, XX, BB, and UBB) data that is allocated to the PSSCNTL DD.

8 If one or more of these conditions were not met, correct them and repeat the procedure. If you cannot determine why the command failed, contact BMC Software Customer Support for assistance.

If you are not using the Distributed Data Facility (DDF), you have finished the verification process for SQL Explorer and SQL Performance. If you are using the DDF, continue to the next task

**Testing the Distributed Data Facility**

To test the Distributed Data Facility, complete the following steps.

1 Return to the SQL Explorer menu (PSSPF000).
2 Select option 1, type the subsystem ID of an active, local DB2 in the SSID field, type the location of a remote DB2 in the DDF Location field, and press Enter.

The Explain Object Specification panel is displayed.

3 If the values previously typed in the fields on the Explain Object Specification panel are no longer displayed, use the values from Figure 94 on page 472. Press Enter to display the Explain Object Selection List panel.

At least one entry for package PSSXSQL should be displayed on the Explain Object Specification List panel if SQL Explorer is installed at the remote site and its location name is in the communications database for the subsystem to which you are connecting. Multiple entries indicate that more than one version of SQL Explorer is installed.

4 Type S next to one of the PSSXSQL packages and press Enter to display a list of statements.

5 Type XD next to one of the statements and press Enter to execute a dynamic Explain.

The Explain Results panel is displayed.

6 Verify that the Explain executed correctly by reviewing the Explain results.

The Explain Results panel displays COST information associated with the Explain.

You can type action codes next to the statement area or access path area on the Explain Results panel to see more information. To view all information on the Explain Results panel, press F11 to scroll to the right and press F10 to scroll to the left.

If the command returns a negative SQL code instead of Explain text, verify the following conditions:

- The plan table that was used is the correct format for the version of DB2.
To check which plan table was used, perform the following steps:

1. Press F3 from the SQL Error panel.

2. On the Explain Results for SQLTEXT panel (PSSPW200), put your cursor on OPTIONS in the task bar and hit Enter.

3. Choose option 1 (Explain).

4. Check the plan tables in the DB2 subsystem that have the creator of the value listed in the Plan Table Owner field.

The plan name was specified correctly in the PSS2 ssid member in the LLQ SAMP (where LLQ is DB, XX, BB, and UBB) data set that is allocated to the PSSCNTL DD.

7. If you receive an SQLCODE=100 warning, check to make sure that the $C81PERF job was run.

This job creates a stand-alone database and tablespace that the product uses to create user plan tables, if needed. A dummy PLANTBL table is also created with the synonym BMCPSS_PLANTBL. The product uses this synonym to find the database and tablespace if plan tables need to be created. If the product cannot find this synonym, you will receive an SQLCODE=100, NOT FOUND warning.

The database, tablespace, and PLANTBL table may persist from release to release. Make sure that the synonym qualifier matches the qualifier used in the BIND of the PSS packages.

8. If one or more of these conditions were not met, correct them and repeat Step 5 on page 482. If you cannot determine why the command failed, contact BMC Software Customer Support for assistance.

When you have successfully completed these steps, you have finished the verification process for SQL Explorer and SQL Performance.
Starting a Pool Advisor or System Performance reporting session

1 Select option **P** (Pool Advisor) from the Pool Advisor for DB2 main menu, or select option **D** (System Performance) from the System Performance for DB2 main menu.

The DB2 Pools Status Monitor report (PMDMAIN) is displayed for Pool Advisor (Figure 104 on page 484).

### Figure 104: DB2 Pools Status Monitor report (PMDMAIN)

<table>
<thead>
<tr>
<th>PMDEQRPN/P</th>
<th>Pool Advisor Report Viewer</th>
<th>LINE 1 OF 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Command ======&gt;</td>
<td>___________________________</td>
<td>Scroll ======&gt; CSR_</td>
</tr>
<tr>
<td>SYSTEM.PMDMAIN -- DB2 POOLS STATUS MONITOR -- 01/02 17:44:24</td>
<td></td>
<td></td>
</tr>
<tr>
<td>---&lt; &gt;----------------&lt; ---&lt; &gt;----------------&lt; ---&lt; &gt;---</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Actions: T - Text A - Analysis H - History C - Configuration advisor</td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt;-------- Efficiency --------&gt;</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DB2  Rel  Health  Region  PageRt  BPGpRt  BP  DSC  EDM  RID  SORT  GBP</td>
<td></td>
<td></td>
</tr>
<tr>
<td>----  ---  ------  ------  ------  ----  ----  ----  ----  ----  ----  ----</td>
<td></td>
<td></td>
</tr>
<tr>
<td>+ DBBJ  9.1  GOOD  34M  0  0  100%  100%  100%  100%  100% N/A%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>+ DBBP  9.1  GOOD  118M  0  0  100%  100%  100%  100%  100% N/A%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>+ DBI1  9.1  GOOD  51M  0  0  100%  100%  100%  100%  100%  100%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>+ DBI2  9.1  GOOD  87M  0  0  100%  100%  100%  100%  100%  100%</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The Sysplex DB2 Monitor report (SPDMAIN) is displayed for System Performance (Figure 105 on page 484).

### Figure 105: Sysplex DB2 Monitor report (SPDMAIN)

<table>
<thead>
<tr>
<th>SPDEQRPN/P</th>
<th>System Performance for DB2</th>
<th>LINE 1 OF 6</th>
</tr>
</thead>
<tbody>
<tr>
<td>Command ======&gt;</td>
<td>___________________________</td>
<td>Scroll ======&gt; CSR_</td>
</tr>
<tr>
<td>BMCSftwr.SPDMAIN -- SYSPLEX DB2 MONITOR -- 09/28 14:00:06</td>
<td></td>
<td></td>
</tr>
<tr>
<td>---&lt; &gt;-------------------&lt; ---&lt; &gt;------------------&lt; ---&lt; &gt;---</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Actions: S- Details Z- ZPARMS M- MainView O- Opertune P- Pool Advisor</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DB2  Rel  DS-Group  MVS  CPU%  Strg  PgRt  Rate  Thds  Thrd  Strg  Log  Dist  Othr</td>
<td></td>
<td></td>
</tr>
<tr>
<td>----  ---  ------  ----  ------  ------  ----  ----  ----  ----  ----  ----  ----</td>
<td></td>
<td></td>
</tr>
<tr>
<td>+ DBI1 7.1 DSNDBI  SYSO  1  69M  0  0  0 GOOD  GOOD FAIR  GOOD  GOOD</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

2 Verify that data is present from the DB2 subsystems defined to the selected Data Collector.

When you have successfully activated the DB2 Pools Status Monitor report or the Sysplex DB2 Monitor report showing current data, you have finished the verification process for Pool Advisor and System Performance.
Configuring the Utility products for DB2

This chapter describes the tasks that you need to complete and the information that you need to know to prepare the Utility products for use following installation.

Granting user authorizations for the Utility products

Before you run the IVP jobs for the products that you are installing, you should grant the appropriate DB2 and data set authorizations to your users. This topic describes the authorizations that are required for each Utility product.

After you have granted the appropriate authorizations, complete any additional configuration tasks for your installed products before verifying your installation.

Authorization verification mechanisms for Backup and Recovery products and Utility products

Many BMC products for DB2 use the same mechanisms to verify authorization.

If the DB2 DSNX@XAC authorization exit is available for your system, the product uses this exit to verify authorization for external access. The exit is available from the following sources:

- IBM provides a sample exit with DB2 for the IBM Resource Access Control Facility (RACF) component.

- CA Technologies provides the DSNX@XAC exit with CA-ACF2 and CA-Top Secret.
BMC recommends this mechanism for implementing external security. The access control authorization exit must be available in the STEPLIB, JOBLIB, linklist, or in the SYS3.DSN exit.

If the DSNX@XAC exit is not available, the product uses the standard DB2 method to check security.

Setting CHECK PLUS authorizations

CHECK PLUS does not run as part of the DB2 subsystem. Therefore, users must have system and data set authorizations that are equivalent to the authorizations that DB2 requires. Use the following procedures to set the necessary authorizations.

To set DB2 authorizations

1. For all check jobs, set the following authorizations:

   - Sufficient DB2 authority to execute the CHECK PLUS plan and all packages that the CHECK PLUS plan uses

   - Authorization equivalent to the authorization that the comparable IBM DB2 CHECK utility requires

   **Note**
   The CHECK TABLESPACE command requires only the authority to execute the CHECK PLUS plans and packages.

2. To enable the use of the FORCE option to cancel DB2 threads that might prevent a successful drain during a check job, also grant the following authorizations:

   - DISPLAY privileges

   - one of the following authorities:

     —SYSADM
     —SYSOPR
     —SYSCTRL

   **Note**
   These authorizations might be implicit in the authority that the users have.
To enable data set access using the DB2 RACF ID

1 Specify OPNDB2ID=YES in your installation options.

   This option tells CHECK PLUS to use the DB2 RACF ID for data set access.

To enable data set access when not using the DB2 RACF ID

1 Specify OPNDB2ID=NO in your installation options.

   This option tells CHECK PLUS not to use the DB2 RACF ID for data set access.

2 If using RACF or a similar system security package to protect underlying data sets and the Integrated Catalog Facility (ICF) catalog of a table or index space, set a minimum of the levels of authorization shown in the following table:

<table>
<thead>
<tr>
<th>Table or index space definition</th>
<th>To access DB2 data sets</th>
<th>To access the ICF catalog</th>
</tr>
</thead>
<tbody>
<tr>
<td>VCAT-defined</td>
<td>READ</td>
<td>READ</td>
</tr>
<tr>
<td>STOGROUP-defined</td>
<td>READ</td>
<td>READ</td>
</tr>
</tbody>
</table>

The following steps illustrate one method for granting these data set authorizations when your site uses a system security package other than RACF:

1 Associate users with a security group.

2 Grant EXECUTE privileges on the CHECK PLUS product program (ACKUMAIN) to the security group.

3 Grant the data set authorizations to ACKUMAIN.

Setting LOADPLUS authorizations

LOADPLUS does not run as part of the DB2 subsystem. Therefore, users must have system and data set authorizations that are equivalent to the authorizations that DB2 requires. Use the following procedures to set the necessary authorizations.

To set DB2 authorizations

1 For all load jobs, grant the following authorizations:

   ■ Sufficient DB2 authority to execute the LOADPLUS plan and all packages that the LOADPLUS plan uses
Authorization equivalent to the authorization that the IBM DB2 LOAD utility requires

2 To enable loading tables that contain identity columns, also complete the following authorization steps.

Note
These additional authorizations might be implicit in the authorization that the users have.

a Grant SELECT privileges on the following DB2 tables:
   - SYSIBM.SYSSEQUENCES
   - SYSIBM.SYSSEQUENCESDEP

b To enable use of the UPDATEMAXA YES option to update the MAXASSIGNEDVAL column of the SYSIBM.SYSSEQUENCES table, complete the following steps:

1 Determine which of the following authorization IDs should have ALTER privileges for the table that is being loaded:
   - user ID of the job owner
   - INSTALL SYSADM

2 Ensure that the value for the UPDMAXA_AUTHID installation option reflects this determination.

3 Grant ALTER privileges on the table that is being loaded for the appropriate authorization ID.

3 To enable loading a table whose table space or index spaces are defined with DEFINE NO, also grant INSERT privileges on that table.

Note
INSERT privileges might be implicit in the authority that the users have.

4 To enable the use of the FORCE option to cancel DB2 threads that might prevent a successful drain during a load job, also grant the following authorizations:
   - DISPLAY privileges
   - one of the following authorities:
     - SYSADM
SYSOPR

SYSCTRL

Note
These authorizations might be implicit in the authority that the users have.

5 To enable running an SQLAPPLY load, also grant the following authorizations.

Note
When running an SQLAPPLY load, LOADPLUS passes processing during the COMBINED phase to the High-speed Apply Engine component of the BMC Log Master for DB2 product. High-speed Apply requires the following DB2 authorizations. The APTGRANT member of the High-speed Apply HLQ.LLQSAMP installation data set (where HLQ is the high-level qualifier that is set during installation and LLQ is the low-level qualifier or prefix set during installation) contains sample authorization statements.

You can use secondary authorization IDs to limit access as necessary for your site.

- (normally granted during High-speed Apply installation) EXECUTE privileges:
  - EXECUTE privilege for the plan that High-speed Apply uses to access its own restart table and the catalog
  - EXECUTE privilege for the High-speed Apply restart package

- (normally granted after High-speed Apply installation) additional privileges:
  - INSERT privileges on the table that a user is loading
  - INSERT, UPDATE, SELECT, and DELETE privileges on the High-speed Apply restart table
  - CREATE privileges for the collections that High-speed Apply creates
  - Bind privileges with the add option (BINDADD) for the plans and packages that High-speed Apply creates during apply processing

The High-speed Apply Engine provides several ways to grant the CREATE and BINDADD privileges. Some techniques avoid granting bind privileges to the user ID that runs High-speed Apply. For more information, see the High-speed Apply Engine Reference Manual.

Note
The pre-bound plan option, described in the High-speed Apply Engine Reference Manual, is not compatible with LOADPLUS.
To enable data set access using the DB2 RACF ID

1 Specify OPNDB2ID=YES in your installation options.

This option tells LOADPLUS to use the DB2 RACF ID for data set access.

To enable data set access when not using the DB2 RACF ID

1 Specify OPNDB2ID=NO in your installation options.

This option tells LOADPLUS not to use the DB2 RACF ID for data set access.

2 If using RACF or a similar system security package to protect underlying data sets and the Integrated Catalog Facility (ICF) catalog of a table or index space, set a minimum of the levels of authorization shown in the following table for all load jobs.

---

**Table 69: Minimum levels of authorization that LOADPLUS requires**

<table>
<thead>
<tr>
<th>Table or index space definition</th>
<th>To access, update, and define DB2 data sets</th>
<th>To access and update the ICF catalog</th>
</tr>
</thead>
<tbody>
<tr>
<td>VCAT-defined</td>
<td>CONTROL</td>
<td>UPDATE</td>
</tr>
<tr>
<td>STOGROUP-defined</td>
<td>ALTER or CONTROL</td>
<td>UPDATE or CONTROL</td>
</tr>
</tbody>
</table>

---

The following steps illustrate one method for granting these data set authorizations when your site uses a system security package other than RACF:

1 Associate users with a security group.

2 Grant EXECUTE privileges on the LOADPLUS product program (AMUUMAIN) to the security group.

3 Grant the data set authorizations to AMUUMAIN.

3 To enable checking referential constraints during the load, also grant READ privileges on the primary index of the parent table for the table being loaded.

4 To enable using rename or FASTSWITCH processing, if you establish authority at a node lower than the highest node, grant the same privileges as shown in Table 24 on page 217 for the following data sets:

   - When FASTSWITCH NO is in effect:
     - VCAT.BMCDBD.database.object.I0001
     - VCAT.BMCDBC.database.object.I0001
When FASTSWITCH YES is in effect:

— *VCAT.BMCDBD.database.object.I0001*
— *VCAT.BMCDBC.database.object.I0001*
— *VCAT.BMCDBD.database.object.J0001*
— *VCAT.BMCDBC.database.object.J0001*

### Setting REORG PLUS authorizations

REORG PLUS does not run as part of the DB2 subsystem. Therefore, users must have system and data set authorizations that are equivalent to the authorizations that DB2 requires. Use the following procedures to set the necessary authorizations.

#### To set DB2 authorizations

1. For all reorganization jobs, grant the following authorizations:

   - Sufficient DB2 authority to execute the REORG PLUS plan and all packages that the REORG PLUS plan uses
   - Authorization equivalent to the authorization that the comparable IBM DB2 REORG utility requires
   - ALTER INDEX and ALTER TABLE privileges for the database containing the named table space or index (if not implicit in the authority that you have)

### Note

REORG PLUS does not check for the DELETE privilege when the SELECT/DELETE option is used. REORG PLUS does not check for the UPDATE privilege when the UPDATE option is used.
2 To enable running a SHRLEVEL CHANGE reorganization, if users have DBADM, DBCTRL, or REORG authority, also grant the following additional authorities:

- TRACE authority
- MONITOR2 authority
- DISPLAY authority (if not already granted to PUBLIC)

Note
These privileges might be implicit in the authority that the users have.

3 To enable reorganizing base table spaces that contain XML columns, also grant SELECT privileges on the following DB2 tables:

- SYSIBM.SYSSEQUENCES
- SYSIBM.SYSSEQUENCESDEP

Note
These privileges might be implicit in the authority that the users have.

4 To enable reorganizing user-defined XML indexes, also grant SELECT privileges on the SYSIBM.SYSXMLRELS DB2 table.

Note
These privileges might be implicit in the authority that the users have.

5 To enable using the DSRSEXIT user exit to update the DB2 catalog (in other words, the DSRSEXIT user exit has a default of YES for the BMC_ALTER_DB2_CATALOG variable), also complete the following steps:

a For the ALTER TABLESPACE statement, grant one of the following privileges:

- Ownership of the table space
- DBADM authority for the database that contains the table
- SYSADM or SYSCTRL authority

b For the ALTER INDEX or ALTER TABLE statement, grant one of the following privileges:

- Ownership of the index
- Ownership of the table on which the index is defined
- DBADM authority for the database that contains the table
- SYSADM or SYSCTRL authority

6  To enable the use of the FORCE option to cancel DB2 threads that might prevent a successful drain during a reorganization job, also grant the following authorizations:
- DISPLAY privileges
- one of the following authorities:
  - SYSADM
  - SYSOPR
  - SYSCTRL

  **Note**
  These authorizations might be implicit in the authority that the users have.

7  To enable use of the EXTENDED BUFFER MANAGER (XBM) product or SNAPSHOT UPGRADE FEATURE (SUF) component of XBM, also complete the authorization steps described in the XBM authorization information in this configuration guide.

**To enable data set access using the DB2 RACF ID**

1  Specify OPNDB2ID=YES in your installation options.

   This option tells REORG PLUS to use the DB2 RACF ID for data set access.

   **Note**
   Using OPNDB2ID=NO can improve performance, depending on the size of your data set profiles and the number of VSAM data sets that are involved in the reorganization.

**To enable data set access when not using the DB2 RACF ID**

1  Specify OPNDB2ID=NO in your installation options.

   This option tells REORG PLUS not to use the DB2 RACF ID for data set access.

2  If using RACF or a similar system security package to protect underlying data sets and the Integrated Catalog Facility (ICF) catalog of a table or index space, grant a minimum of the following levels of authorization:
ALTER or CONTROL to access, update, and define DB2 data sets

UPDATE or CONTROL to access and update the ICF catalog

The following steps illustrate one method for granting these data set authorizations when your site uses a system security package other than RACF:

1. Associate users with a security group.

2. Grant EXECUTE privileges on the REORG PLUS product program (ARUUMAIN) to the security group.

3. Grant the data set authorizations to ARUUMAIN.

   To enable using rename or FASTSWITCH processing, if you establish authority at a node lower than the highest node, grant the same privileges as described in Step 2 on page 217 for the following data sets:

   - For STAGEDSN=BMC:
     - VCAT.BMCDBD.database.object.I0001
     - VCAT.BMCDBC.database.object.I0001
     - VCAT.OLDDBD.database.object.I0001
     - VCAT.OLDDBC.database.object.I0001
     - VCAT.BMCDBD.database.object.J0001
     - VCAT.BMCDBC.database.object.J0001
     - VCAT.OLDDBD.database.object.J0001
     - VCAT.OLDDBC.database.object.J0001
   
   - For STAGEDSN=DSN (the default when you use the FASTSWITCH process):
     - VCAT.BMCDBD.database.object.I0001
     - VCAT.BMCDBC.database.object.I0001
     - VCAT.BMCDBD.database.object.J0001
     - VCAT.BMCDBC.database.object.J0001
     - VCAT.DSNDBD.database.object.S0001
     - VCAT.DSNDBC.database.object.S0001
Setting UNLOAD PLUS authorizations

UNLOAD PLUS does not run as part of the DB2 subsystem. Therefore, users must have system authorizations and, for DIRECT YES, data set authorizations that are equivalent to the authorizations that DB2 requires. Use the following procedures to set the necessary authorizations.

To set DB2 authorizations

1. For all load jobs, set the following authorizations:
   - Sufficient DB2 authority to execute the UNLOAD PLUS plan and all packages that the UNLOAD PLUS plan uses
   - Authorization equivalent to the authorization that the IBM DB2 UNLOAD utility requires

   **Note**
   UNLOAD PLUS enforces row- and column-level security only when DIRECT NO is in effect.

2. To enable the use of the FORCE option to cancel DB2 threads that might prevent a successful drain during an unload job, grant the following authorizations:
   - DISPLAY privileges
   - one of the following authorities:
     — SYSADM
     — SYSOPR
     — SYSCTRL

   **Note**
   These authorizations might be implicit in the authority that the users have.

To enable data set access using the DB2 RACF ID

1. Specify OPNDB2ID=YES in your installation options.

   This option tells UNLOAD PLUS to use the DB2 RACF ID for data set access.
To enable data set access when not using the DB2 RACF ID

When using DIRECT NO, UNLOAD PLUS uses DB2 to access data sets. In this case, users do not need the authorization described in this procedure.

1 Specify OPNDB2ID=NO in your installation options.

   This option tells UNLOAD PLUS not to use the DB2 RACF ID for data set access.

2 If using RACF or a similar system security package to protect underlying data sets and the Integrated Catalog Facility (ICF) catalog of a table or index space, grant READ privileges for the following sources:

   - DB2 VSAM data sets
   - DB2 image copy data sets
   - DSN1COPY data sets
   - Inline copy data sets
   - Instant Snapshot copy data sets
   - Online consistent copy data sets
   - Cabinet copy data sets
   - VSAM FlashCopy data sets
   - VSAM linear data sets
   - Encrypted copy data sets that are created by COPY PLUS
   - Key data sets for encrypted copies

The following steps illustrate one method for granting these data set authorizations when your site uses a system security package other than RACF:

1 Associate users with a security group.

2 Grant EXECUTE privileges on the UNLOAD PLUS product program (ADUUMAIN) to the security group.

3 Grant the data set authorizations to ADUUMAIN.
Completing recommended system-level changes for the Utility products

This section describes the system changes that BMC recommends when using the Utility products.

Configuring products that prevent x37 abends in LOADPLUS

Products that prevent x37 abends must be configured to ensure that they work properly with EXCP processing in LOADPLUS.

When inadequate space is available for work data sets during job execution, the system issues an x37 abend and ends the job. Some sites use products such as the BMC MainView Storage Resource Manager (SRM) StopX37/II product to allocate additional volumes automatically when this condition occurs. However, those products might fail to intercept x37 abends if EXCP processing is in use.

LOADPLUS uses EXCP processing. Complete the following procedure to ensure proper handling of x37 abends.

To prevent x37 abends in LOADPLUS

1. Determine whether your site uses a product that intercepts x37 abends and whether that product is sensitive to EXCP processing.

   See your DASD storage management system administrator for assistance.

2. If you use MainView SRM StopX37, use one of the following methods to configure the product to prevent x37 abends in LOADPLUS.

   Note
   If you use a similar product from another vendor, see that product’s documentation regarding activating support for EXCP processing.

   - Update the System Master Global member (the active SMMSYS xx member) in UBBPARM:

     `SKIP=(PROG=AMUUMAIN,CHECK=(EXCP))`

     Using this method eliminates the need to maintain the code in any subsequent RLST processing.

   - Include the NOCHECK keyword in the specific SMRLST xx member that is associated with the SPACVOLA function. (The variable `numberOfVolumes`
represents the maximum number of volumes that can be available for volume extension.)

\[
\text{SET SPACVOLA=numberOfVolumes NOCHECK=EXCP INC PGM=(AMUUMAIN)}
\]

Using this method instructs the system to allow jobs that execute the listed programs to run regardless of whether those programs use EXCP processing.

## Setting the MEMLIMIT system parameter

Several BMC products require above-the-bar memory and might abend if sufficient memory is not available.

This requirement affects the BMC products and solutions listed in Table 1 on page 58.

The default value for the System Management Facility (SMF) MEMLIMIT parameter is 2 GB. This value is set in member SMFPRMxx in SYS1.PARMLIB.

### Before you begin

Determine whether you need to override the default MEMLIMIT value, based on the information in the following table:

### Table 70: MEMLIMIT recommendations

<table>
<thead>
<tr>
<th>Product or solution</th>
<th>Recommendation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Administrative Assistant</td>
<td>If you are unable to specify REGION=0M:</td>
</tr>
<tr>
<td></td>
<td>- Specify NOLIMIT to allow unlimited above-the-bar memory.</td>
</tr>
<tr>
<td></td>
<td>- If you are unable to specify NOLIMIT, specify at least 4 GB; if you are operating on LOB or XML data, BMC recommends at least 32 GB.</td>
</tr>
<tr>
<td>ALTER</td>
<td>If you are unable to specify REGION=0M, specify at least 1 GB; if you are operating on LOB or XML data, BMC recommends at least 32 GB.</td>
</tr>
<tr>
<td>CATALOG MANAGER</td>
<td>If you are unable to specify REGION=0M, specify at least 1 GB; if you are operating on LOB or XML data, BMC recommends at least 32 GB.</td>
</tr>
<tr>
<td>CHANGE MANAGER</td>
<td>If you are unable to specify REGION=0M, specify at least 1 GB; if you are operating on LOB or XML data, BMC recommends at least 32 GB.</td>
</tr>
<tr>
<td>Product or solution</td>
<td>Recommendation</td>
</tr>
<tr>
<td>-------------------------------</td>
<td>-------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>CHECK PLUS</td>
<td>If you are unable to specify REGION=0M:</td>
</tr>
<tr>
<td></td>
<td>■ Specify NOLIMIT to allow unlimited above-the-bar memory.</td>
</tr>
<tr>
<td></td>
<td>■ If you are unable to specify NOLIMIT, specify at least 4 GB; if you are operating on LOB or XML data, BMC recommends at least 32 GB.</td>
</tr>
<tr>
<td>COPY PLUS</td>
<td>Specify at least 1 GB.</td>
</tr>
<tr>
<td>DASD MANAGER PLUS</td>
<td>If you are unable to specify REGION=0M:</td>
</tr>
<tr>
<td></td>
<td>■ Specify NOLIMIT to allow unlimited above-the-bar memory.</td>
</tr>
<tr>
<td></td>
<td>■ If you are unable to specify NOLIMIT and above-the-bar memory limits are inadequate, contact your z/OS system administrator.</td>
</tr>
<tr>
<td>Database Administration</td>
<td>If you are unable to specify REGION=0M:</td>
</tr>
<tr>
<td></td>
<td>■ Specify NOLIMIT to allow unlimited above-the-bar memory.</td>
</tr>
<tr>
<td></td>
<td>■ If you are unable to specify NOLIMIT, specify at least 4 GB; if you are operating on LOB or XML data, BMC recommends at least 32 GB.</td>
</tr>
<tr>
<td>Database Performance</td>
<td>If you are unable to specify REGION=0M:</td>
</tr>
<tr>
<td></td>
<td>■ Specify NOLIMIT to allow unlimited above-the-bar memory.</td>
</tr>
<tr>
<td></td>
<td>■ If you are unable to specify NOLIMIT:</td>
</tr>
<tr>
<td></td>
<td>&quot;— For DASD MANAGER, if above-the-bar memory limits are inadequate, contact your z/OS system administrator.</td>
</tr>
<tr>
<td></td>
<td>&quot;— For REORG PLUS, specify at least 4 GB; if you are operating on LOB or XML data, BMC recommends at least 32 GB.</td>
</tr>
<tr>
<td>High-speed Apply Engine</td>
<td>Specify at least 1 GB.</td>
</tr>
<tr>
<td>Product or solution</td>
<td>Recommendation</td>
</tr>
<tr>
<td>--------------------</td>
<td>----------------</td>
</tr>
</tbody>
</table>
| LOADPLUS           | If you are unable to specify REGION=0M:  
|                    |   ■ Specify NOLIMIT to allow unlimited above-the-bar memory.  
|                    |   ■ If you are unable to specify NOLIMIT, specify at least 4 GB; if you are operating on LOB or XML data, BMC recommends at least 32 GB. |
| Log Master         | Specify at least 1 GB. |
| RECOVER PLUS       | Specify at least 1 GB. |
| RECOVERY MANAGER   | Specify at least 1 GB. |
| Recovery Management| Specify at least 1 GB. |
| REORG PLUS         | If you are unable to specify REGION=0M:  
|                    |   ■ Specify NOLIMIT to allow unlimited above-the-bar memory.  
|                    |   ■ If you are unable to specify NOLIMIT, specify at least 4 GB; if you are operating on LOB or XML data, BMC recommends at least 32 GB. |
| UNLOAD PLUS        | If you are unable to specify REGION=0M:  
|                    |   ■ Specify NOLIMIT to allow unlimited above-the-bar memory.  
|                    |   ■ If you are unable to specify NOLIMIT, specify at least 4 GB; if you are operating on LOB or XML data, BMC recommends at least 32 GB. |

**To override the default MEMLIMIT value**

1. Use one of the following methods to override the default MEMLIMIT value:
   - Specify the MEMLIMIT parameter in the JCL.
   - Specify REGION=0M in the JCL.
   - Use the SMF IEFUSI exit.
Increasing the size of DB2 active logs for LOADPLUS

For SQLAPPLY load jobs, LOADPLUS uses insert processing. Insert processing writes to your DB2 logs unless your table space is defined as NOT LOGGED. Therefore, if you are installing LOADPLUS, you might need to increase the size of your active logs.

For guidelines about sizing your active logs, see the IBM DB2 installation guide. For information about SQLAPPLY load jobs, see the LOADPLUS for DB2 Reference Manual.

Enabling interaction between the Utility products and other BMC products

The Installation System automatically enables the BMC Administrative products to interact with most of the BMC Utility products. However, you might need to complete additional steps to enable the products to interact with each other.

After you have completed these and any additional configuration tasks for your installed products, verify your installation by using the procedure described in “Verifying Backup and Recovery product and Utility product installation” on page 111.

Enabling interaction between the Utility products and ALTER or CHANGE MANAGER

Under certain conditions, you must tell ALTER or CHANGE MANAGER which Utility product load libraries to use.

Perform this task if you installed ALTER or CHANGE MANAGER under either of the following circumstances and the Utility products are installed in a different load library:

- You installed ALTER or CHANGE MANAGER in a separate installation session before you installed the Utility products.

- You installed ALTER or CHANGE MANAGER either in the same installation session as the Utility products or in a separate installation session after you installed the Utility products, but you did not associate ALTER or CHANGE MANAGER with the Utility products on the Product to Product Interface panel.
To use a different load library

1. In the HLQ.LLQCNTL library, find the member that has the same name as the ALTER or CHANGE MANAGER installation options module.

2. In the POFDS parameter of the member, locate the name of the product options file (POF).

3. In the HLQ.LLQCNTL library, find the ALTER or CHANGE MANAGER POF member.

4. In the POF member, update the following keywords to use the different load libraries for the Utility products that you are installing:
   - ADDLOAD1
   - ADDLOAD2
   - BMC_CHECK_LOAD
   - BMC_LOAD_LOAD
   - BMC_REORG_LOAD
   - BMC_UNLOAD_LOAD

5. If necessary, add any additional load libraries to SLIB member AJXSTEPU.

6. If you added load libraries in Step 5 on page 502, compile the SLIB member.

   For a sample compile job, refer to member AJXCOMPS in the HLQ.LLQCNTL data set. For more information about testing or compiling the SLIB members, see the ALTER and CHANGE MANAGER for DB2 User Guide.

Enabling interaction between the Utility products and CATALOG MANAGER

CATALOG MANAGER can interact with the BMCUUTIL, BMCHIST, and BMCSYNC tables to provide BMC utility control, status, and history information.

CATALOG MANAGER accesses the utility tables during batch processing and when using online commands.
Before you begin

Use the following information to determine whether you need to perform this task and, if so, which parts of this task you need to perform:

■ Perform this task under either of the following circumstances:
  — You installed CATALOG MANAGER in a separate installation session before you installed the Utility products.
  — You installed CATALOG MANAGER either in the same installation session as the Utility products or in a separate installation session after you installed the Utility products, but you did not associate CATALOG MANAGER with the Utility products on the Product to Product Interface panel.

■ Determine whether your current synonyms point to the correct tables. CATALOG MANAGER uses the following synonyms:
  — BMC_UTILITY for the BMCUTIL table
  — REORG_HISTORY for the BMCHIST table
  — BMC_UTIL_SYNC and BMC_UTIL_SYNC2 for the BMCSYNC table

■ If your current synonyms do not point to the correct tables, use the task “To update synonyms” on page 503.

■ If the Utility products are installed in a different load library than CATALOG MANAGER, use the task “To use a different load library” on page 504.

To update synonyms

Use the following procedure to update synonyms. The HLQ.LLQDBCNTL member TIS#ACTU provides an example of a worklist for this procedure.

1. Drop the CATALOG MANAGER utility synonyms.

2. Create new CATALOG MANAGER utility synonyms by using the same synonym names, but with the correct table names.

3. Bind the packages ACTCSQBU and ACTQLBH into the main collection ID for CATALOG MANAGER.

4. Bind the CATALOG MANAGER BMC Utility History Plan by using the existing plan bind source to create this plan, and then changing the name.

   BMC specifies this plan as ACTvrmDH, where vrm is the version, release, and maintenance level.
5 In the HLQ.LLQCNTL library, locate the member that has the same name as the CATALOG MANAGER installation options module.

6 In this member, change the value of HPLAN to the plan that was created in Step 4 on page 503.

7 Submit the job to reassemble the installation options module.

**To use a different load library**

1 In the HLQ.LLQCNTL library, find the member that has the same name as the CATALOG MANAGER installation options module.

2 In the POFDS parameter of the member, locate the name of the product options file (POF).

3 In the HLQ.LLQCNTL library, find the CATALOG MANAGER POF member.

4 Update the following keywords in the POF member to use the different utilities load library.
   - ADDLOAD1
   - ADDLOAD2
   - BMC_CHECK_LOAD
   - BMC_LOAD_LOAD
   - BMC_REORG_LOAD
   - BMC_UNLOAD_LOAD

5 If necessary, add any additional load libraries to SLIB member AJXSTEPU.

6 If you added load libraries in Step 5 on page 504, compile the SLIB member.

For a sample compile job, refer to member AJXCOMPS in the HLQ.LLQDBCNTL data set. For more information about testing or compiling the SLIB members, see the CATALOG MANAGER for DB2 User Guide.
Enabling interaction between the Utility products and DASD MANAGER PLUS

If you use the BMCSTATS command option, REORG PLUS and LOADPLUS can update the DASD MANAGER PLUS tables to refresh the statistical information.

Use this procedure if you installed DASD MANAGER PLUS in a separate installation session before you installed the Utility products and the Utility products are installed in a different load library than DASD MANAGER PLUS.

**To use a different load library**

1. In the `HLQ.LLQCNTL` library, find the member that has the same name as the DASD MANAGER PLUS installation options module.

2. In the POFDS parameter of this member, locate the name of the product options file (POF).

3. In the `HLQ.LLQCNTL` library, find the DASD MANAGER PLUS POF member.

4. Update the following keywords in the POF member to use the different utilities load library.
   - ADDLOAD1
   - ADDLOAD2
   - BMC_LOAD_LOAD
   - BMC_REORG_LOAD

5. If necessary, add any additional load libraries to SLIB member AJXSTEEPU.

6. If you added load libraries in Step 5 on page 505, compile the SLIB member.

   For a sample compile job, refer to member AJXCOMPS in the `HLQ.LLQDBCNTL` data set. For more information about testing or compiling the SLIB members, see the *DASD MANAGER PLUS for DB2 User Guide*.

Verifying Backup and Recovery product and Utility product installation

The Installation System generates an installation verification procedure (IVP) job for each installed Backup and Recovery or Utility product.
To help ensure that a product installed properly, BMC strongly recommends that you run the corresponding IVP job.

For products that use the dynamic bind process, the IVP job initializes that process by binding the necessary packages. Running the IVP job helps prevent subsequent bind problems, such as authorization problems, during product execution.

**Before you begin**

Complete the following tasks before running an IVP job:

- Submit all installation and customization jobs except the IVP job ($C70IVP). For more information, see the *Installation System User Guide*.

- Apply the appropriate fixes for each product that you are installing. For instructions, see the *Installation System User Guide*.

- Grant the appropriate authorizations. For more information, see the configuration information for the products that you have installed.
  
  If you are not the person who installed the products but are submitting the IVP job, ensure that you have the authorizations that are required to execute each product that was installed.

- Complete any additional configuration tasks for your installed products or components.

**To verify installation**

1. If your jobs use data sets that are managed by the Storage Management Subsystem (SMS), ensure that the SMS service routine load library (SYS1.CSSLIB) is APF-authorized.

   Complete this step regardless of whether SYS1.CSSLIB is in your system LNKLST or STEPLIB concatenation.

2. Use one of the following methods to edit either the EXEC statement in the product job step of the IVP job ($C70IVP) or your job card:

   - Change the value of the REGION parameter to 0M.

   - If not already addressed by your site SMF defaults, add the MEMLIMIT parameter with an appropriate value for your site and the products that you are installing.

3. Submit the IVP job ($C70IVP).

   The IVP job should complete with condition code 0 unless otherwise indicated by comments in the job.
The following temporary objects exist only for the duration of the IVP job:

- Database BMCIVPDB
- Table space BMCIVPDB.BMCIVPTS
- Table BMC.BMCIVPTB
- Table BMC.BMCIVPT2
- Index BMC.BMCIVPIX1
Configuring BMC Workbench

After you install the BMC Workbench for DB2 product, you might need to perform several additional configuration tasks to complete and verify the installation. You perform these tasks outside the Installation System dialog panels.

Configuration overview

This section provides an overview of the component architecture, procedure, and requirements of the configuration process of BMC Workbench.

Architecture of BMC Workbench

BMC Workbench for DB2 uses common BMC infrastructure components:

If they were not already installed for other BMC products, installing BMC Workbench also installs the following components:

- **UIM** - started task for User Interface Middleware. A minimum of one UIM is required for each SYSPLEX.
- **DBC** - started task for IBM DB2 Component Services. One DBC is required for each LPAR where BMC Workbench is installed.
- **LGC** - a DB2 Product Configuration agent that runs within the DBC. One LGC is required for each DBC started task.
- **RTCS** - started task for Runtime Component Services. One RTCS is required for each LPAR where BMC Workbench is installed.

Infrastructure operation

The following process summarizes how the infrastructure components help control the product's operation:
You enter your BMC Workbench URL in your web browser and provide your logon credentials.

You are signed on to the UIM, which matches the host and port from the URL.

When you request information from a DB2 subsystem, the UIM contacts the local DBC that is running the GUDWBNCH namespace.

The DBC contacts other DBCs in the same DBC Group to return a list of DB2 subsystems that are available to you as a BMC Workbench user.

**DBC agents**

The BMC Workbench client uses multiple agents that run under the control of a DBC to provide DB2 related information. Each agent (Navigation, DDL, Execution, and Explain) is responsible for specific information requests from the BMC Workbench client:

- The Navigation agent (GUD) processes all requests related to DB2 catalog objects, such as generating a list of tables.

- The DDL agent (DDL) processes all requests related to generating SQL or DB2 command syntax, such as CREATE, DROP, START, STOP, DISPLAY, and BIND.

- The Execution agent (EXE) processes all DDL, DML, DB2 command, and MVS job submission requests, such as processing the SQL syntax that the DDL agent generated.

- The Explain agent (EXP) is responsible for processing all requests related to SQL tuning, such as accessing information in the DB2 SQL cache or performing an Explain of an SQL statement.

The agents run as a service within the DBC. As such, multiple instances of each agent can be active at any given time, based on the configuration parameters that are set up in the DBC. For more information, see the *BMC Global Infrastructure Administration Guide*.

**BMC Workbench for DB2 requirements**

BMC Workbench for DB2 has the following requirements:

- The default value of the z/OS Workload Manager (WLM) environment name must match the name of the WLM address space (with a maximum of eight characters).
Each started task requires a user-selected subsystem ID. These subsystem IDs must not be predefined to the operating system (for example, they should not be defined in IEFSSNxx members in SYS1.PARMLIB, nor by the SETSSI ADD command). If you predefine the subsystem ID, an IPL might be required to upgrade to a new release or maintenance level.

If you are using a security package such as IBM RACF or CA Technologies CA-ACF2 or CA-Top Secret, the System Authorization Facility (SAF) must be enabled.

The dispatching priority of the BMC DB2 Component Services (DBC) technology should be higher than that of the DB2MSTR and DB2DBM1 regions.

You can run the DBC as a batch job or as a started task. The job or started task must have a user ID (also referred to as a LOGON ID or ACID) associated with it. If you run the DBC as a started task, assigning a user ID might involve system updates or security table updates.

BMC does not recommend running the DBC in batch mode unless you are testing the initial installation. Stopping products that are running in batch mode terminates the initiators in which the products are running.

To successfully execute the DB2 commands (BIND, REBIND, FREE, START, STOP, DISPLAY), you must have the IBM supplied stored procedure, SYSPROC.ADMIN_COMMAND_DSN, installed and the Workload Manager (WLM) defined.

**Installing SYSPROC.ADMIN_COMMAND_DSN**

If you have not yet installed SYSPROC.ADMIN_COMMAND_DSN complete these steps:

1. Create a JCL startup procedure for the IBM z/OS Workload Manager (WLM) environment.

2. Create the SYSPROC.ADMIN_COMMAND_DSN stored procedure in the DB2 catalog, and specify the WLM environment.

3. Activate the WLM environment.

---

**Note**

For more information, see the *IBM DB2 for z/OS Installation Guide*.
The BMC Workbench for DB2 product options, known as GUDOPT option sets, provide default values that control the product’s behavior during execution.

The installation process automatically creates a default option set named GUDOPT that is based on definitions that you supply during installation.

**Note**
For more information, see the section explaining how to work with option sets in the BMC Global Infrastructure Administration Guide.

For each GUDOPT option set, you can specify the following details:

- Specify the plan that various components of BMC Workbench use when accessing IBM DB2 resources.

- Specify the product default options module that Catalog Access component uses. For more information, see Step 6 on page 513.

- Specify the name of the PDS that contains the product XML configuration member. For more information, see Step 6 on page 513.

- Specify the name of the PDS that contains the ISPF MLIB-like members used by the product. You can specify up to three data sets. If you specify more than one data set, the data sets are concatenated for use in the order specified. For more information, see Step 7 on page 513.

- Specify the Run authorized option. This option enables you, if your user ID does not have explain authority, to allow explain to acquire SYSADM authority before doing the explain. The default is N. For more information, see Step 7 on page 513.

- Specify the rules engine data set that contains the processing rules for the SQL Tuning component. For more information, see Step 7 on page 513.

**To edit a GUDOPT option set**

**Note**
Any changes that you make to the BMC Workbench option set (GUDOPT) affect all users.

1. Invoke the LGCISPF CLIST from the CLIB data set:
   EX 'HLQ..BMCCLIB(LGCISPF)'

---

**BMC Products and Solutions for DB2 Configuration Guide**
Note
If you want to connect to a DBC other than the default DBC, invoke the clist with the DBC parm where xxxx is the DBC SSID on that LPAR:

`EX 'HLQ..BMCCLIB(LGCISPF) DBC(xxxx)'

2 In the DB2 Product Configuration - Main Menu (panel LGCPMENU), select 2 Manage Product Options.

3 In the Product Options Sets panel (LGCP1001) expand the BMC Workbench list by selecting the plus sign (+) next to BMC Workbench and pressing Enter.

4 Type E next to the option set that you want to edit.

5 For Common Options DB2 Plan Name, specify your BMC Workbench plan.

    Note
    The default plan name is BMCGUIPL.

6 At Catalog Access Options, specify the following values:

   ■ At Product DOPT Name, specify the product default options module (DOPT) that the Catalog Access component uses.

   ■ At Configuration DSN, specify the data set that contains the product XML configuration member.

   ■ At Message DSN #1-3, specify the Catalog Manager MLIB data set that contains the ISPF MLIB members used by the product. You must specify the message DSN #1.

7 At SQL Tuning Options, specify the following values:

   ■ At Run authorized - N/Y, you can allow explain to acquire SYSADM authority before doing the explain if your user ID does not have explain authority. The default is N.

   ■ At Rules DSN, you specify the SAMP data set used by common explain that contains the processing rules for the SQL Tuning component.

8 Press F3 to exit and save.

A validation process checks your entries. If any validation errors exist the cursor is positioned on the Filter: Invalid View screen.

For more information about correcting validation errors, see the *BMC Global Infrastructure Administration Guide*.
To have your changes take effect, stop and restart the GUD agents in the DBC by issuing the following commands in SDSF:

- `/dbcssid GUD,STOPALL`
- `/dbcssid GUD,STARTALL`

Configuring security for BMC Workbench

This section outlines the security mechanisms for controlling access to BMC Workbench for DB2 and to IBM DB2.

For further security details, see *BMC Global Infrastructure Administration Guide*.

Controlling access to BMC Workbench for DB2

BMC Workbench for DB2 provides one plan. The default plan name is BMCGUIPL. This plan is used to perform all BMC Workbench functions and is bound with the CATALOG MANAGER and Common Explain collection IDs.

Managing DBC security

If you use Computer Technologies CA-ACF2, Computer Technologies CA-Top Secret, or IBM RACF to control access to IBM DB2 you must take into consideration certain requirements.

CA-ACF2

If you are using CA-ACF2 to control user access to DB2, you must assign a unique logon ID to the DBC. The logon ID definition must specify the STC option, indicating that the ID is for use by a started task. You must also enable SAF so that CA-ACF2 can recognize the RACROUTE calls that the product issues.

CA-ACF2 can use a TSO command-limiting function to restrict an individual user or an entire site. This function applies to TSO commands that you issue from the READY prompt or from ISPF.

If command limiting is active, you must specify the LGCOMAIN command. The LGCOMAIN command invokes the ISPF interface for the DB2 Product Configuration (LGC) component to allow editing of option sets.
Command limiting can be activated for an individual or an entire site as follows:

- For an individual, with the TSOCMDS field of the logon ID record
  TSOCMDS specifies the name of a module that contains a list of valid commands for a user. For a sample list, see the ACF$CMDS member of CAI.CAIMAC.

- For an entire site, with the CMDLIST field of the GSO record named TSO
  The ALLCMDS field indicates permission for a user to bypass command limiting. Use the character that is specified in the BYPASS field of the GSO TSO record as a prefix for the command name.

**CA-Top Secret**

If you are using CA-Top Secret to control user access to DB2, you must update the Facilities Matrix table to identify the program name. If the program name is not in the table, CA-Top Secret does not allow a program to issue RACROUTE calls. You can specify the first three characters of the program name in the Facilities Matrix table.

**Required grants for CA-ACF2, CA-Top Secret, and RACF**

If you use CA-ACF2 security, define the following grants to CA-ACF2. If you use RACF or CA-Top Secret, define the following grants to DB2:

```plaintext
GRANT CREATETAB ON DATABASE BMCPERF
   TO PUBLIC;
GRANT USE OF TABLESPACE BMCPERF.BMCUPLAN
   TO PUBLIC;
```

*Note*

The names in this list of grants reflect the default names used during installation. If you used different names during installation, replace these default names with your own names.

**DB2 security**

To authorize SQL Explains, you can use SYSADM authority or your user ID’s authorization as it exists in DB2. If your user ID does not have Explain authority, you can use the following procedure to allow Explain to acquire SYSADM authority.

This procedure sets the Run authorized (authexpl) option in the GUDOPT option set.
To allow Explain to acquire SYSADM authority

**Note**

Any changes that you make to the Run authorized option affects all users.

1. Invoke the LGCISPCLIST from the CLIB data set:
   ```
   EX 'HLQ..BMCCLIB(LGCISPCLIST)' 
   ```

   If you want to connect to a DBC other than the default DBC, invoke the LGCISPCLIST with the DBC parm where xxxx is the DBC SSID on that LPAR:
   ```
   EX 'HLQ..BMCCLIB(LGCISPCLIST)' 'DBC(4xxx)' 
   ```

2. On the DB2 Product Configuration – Main Menu (panel LGCPMENU), select 2 Manage Product Options.

3. In the Product Options Sets panel (LGCP1001), expand the BMC Workbench list by selecting the plus sign (+) next to BMC Workbench and pressing Enter.

4. Type E next to the option set that you want to edit.

5. Set the Run authorized option to Y.

6. Press F3 to save and exit.

---

**Migrating to a new version of DB2**

Use the following procedures to migrate between IBM DB2 versions.

**To migrate from DB2 Version 9 to Version 10**

1. Issue the following console command to stop the BMC Workbench agents:
   ```
   /dbcssid GUD,STOPALL. 
   ```

   **Note**

   The `dbcssid` value represents the DBC subsystem ID.


3. Perform the appropriate rebind:
   - If SYSIBM.SYSPACKSTMTMT has been converted to the new DB2 Version 10 format, run the DAAUP9#A job.
Note
If Automatic Rebind (ABIND) is set to YES or COEXIST on your subsystem, you can skip this step.

■ If SYSIBM.SYSPACKSTMT has not been converted to the new format and Automatic Rebind (ABIND) is set to NO on your subsystem, run these jobs:
  Perform the following bind tasks:
    — Run DAAssidP or PS1ssidP (bind packages) to rebind all packages.
    — Run DAAssidB or PS1ssidB (bind plan) to bind the plan.

Note
The ssid value represents the DB2 subsystem ID.
Either DAA* bind jobs or PS1* bind jobs are available, depending on which solution is installed and whether userlibs were concatenated or consolidated into runtime datasets. The bind jobs are in either the BMCCNTL, UDBCNTL, BMCSAMP, or the UBBSAMP data set.

4 Convert the user plan tables to unicode by using the following sample jobs from IBM:
  ■ DSNTIJPM
  ■ DSNTIHXA
  ■ DSNTIJXB
  ■ DSNTIJXC

You are now operating the BMC product environment in exploitation mode.

5 Issue the following console command to start your GUD agents:
   / dbcssid GUD,STARTALL

Common Explain
The Common Explain technology enables you to Explain dynamic and static SQL statements. Common Explain provides both statistical and textual information about the access path, and suggests how to improve SQL statement performance.
Expert rules

The Explain feature is driven by a set of expert rules.

These rules trigger messages that tell you where performance problems exist and what design changes are needed. Each expert rule has an associated severity value and threshold.

Severity codes in rules

Each message that is associated with a rule has a severity code.

The severity code determines the order in which the messages are displayed and the color used to display them. Severe messages are displayed first, followed by warning and informational messages.

The severity code is displayed as the tenth character in the message identifier (as shown in the following example).

Example

BMC184032W

Table 71 on page 518 shows the possible severity codes.

**Table 71: Severity codes**

<table>
<thead>
<tr>
<th>Code</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>S (severe error)</td>
<td>Correct the issue before continuing.</td>
</tr>
<tr>
<td>W (warning)</td>
<td>Review the messages before continuing, to determine whether you need to correct the issue.</td>
</tr>
<tr>
<td>I (informational)</td>
<td>The message provides additional information, but no action is required.</td>
</tr>
<tr>
<td>X (suppress)</td>
<td>The message will be suppressed (not displayed).</td>
</tr>
</tbody>
</table>

Using predefined rules

The product includes predefined sets of rules, intended for different groups of users.

The rules files are available in the *HLQ.BMCSAMP* data set.
To select predefined rules

1. In BMC Workbench, on the SQL Tuning Options dialog box, select the rule set (DEFAULT or APPLDEV) that you require from the list.

Defining new expert rules

You can define new expert rules variables (facts) by creating a REXX EXEC. Common Explain creates the set of rules variables based on the SQL statement that is being explained. You can set new values for those variables and you can make your own variables.

To define new expert rules

1. Using a text editor, create a REXX exec.

   Note
   The SAMP data set contains a sample REXX exec (PSSREXI) that you can edit to create a customized rules set.

2. Save the edited REXX exec as a member of the same data set as the rule sets.

   The name of the member must be PSSREXIT.

   If PSSREXIT exists in the data set, Common Explain executes the REXX exec before running the rules engine. The REXX exec replaces and adds variable values to which the rules engine will subsequently refer.

REXX exec can call the following functions:

- SETS and SETF functions take two arguments, the variable name and the variable value.
- GETS and GETF functions take one argument, the variable name.
- PSSRXSQL function takes one argument, an SQL statement.

By calling the PSSRXSQL function, the REXX exec can perform the following SQL statements:

- FETCH INTO
- SELECT INTO
- COMMIT
- ROLLBACK
- OPEN
- CLOSE
- EXECUTE IMMEDIATE (for executing INSERT, UPDATE, or DELETE SQL statements)

PSSRXSQL sets the following REXX variables after executing an SQL statement:

- SQLCODE
- SQLSTATE
- SQLERRM (contains the text of an error message)
- “INTO” variables
- cursor_name.n variables

For more information, (see “PSSRXQ external function” on page 522).

**Structure of rules**

You store rules in a data set member.

The rules are stored in the BMCSAMP or BBSAMP data set, in the following members:

- PSSDFLT for default rules
- PSSJAPAN for rules in Japanese

**Standard format for a rule set**

The first line of the data set member contains the rule set declaration:

```
RULESET ruleSetName
```

Following the RULESET declaration, you can have one or more rules. Rules are processed in the order in which they are defined in the rule set. Each rule adheres to the following standard format, though the ELSE clause is optional.

```
name: IF predicate
  THEN OUT=action1
  ELSE OUT=action2
```

In this format, the variables are as follows:
name indicates the name of the rule and must be unique within the rule set. Do not include a space between the name of the rule and the colon.

predicate is an IF statement that specifies the value that is being evaluated and the value to which it is being compared. The predicate can include multiple conditions separated by AND or OR.

Example

- IF UPDATE_NO_WHERE = "Y"
- IF MIN = "Y" OR MAX = "Y"
- IF OPTIMIZE = "Y" AND (MIN = "Y" OR MAX = "Y" OR AVG = "Y" OR SUM = "Y")
- IF PARTITIONS > 0

action1 value indicates the action that will be performed if the condition within the predicate is true. Usually, the action specifies issuing a message. The message must end with \n and be enclosed in quotes. Vertical bars (||) indicate that the message continues across lines.

Example

THEN OUT=OUT||"BMC184024I-Consider the use of BETWEEN in "||"place of >= and <=. DB2 may consider using an index to provide the"||"answer.\n"

action2 indicates the action that will be performed if the condition within the predicate is false. This value follows the same rules as action1.

Samples from the default rule set

Following are descriptions of sample rules (RULE1032, RULE2002, and RULE1026) from the default rule set.

RULE1032 triggers if OPTIMIZE and UNION are both used. The rule then produces a message that indicates that the rows will not be optimized due to this condition.

RULE1032: IF OPTIMIZE = "Y" AND UNION = "Y"
THEN OUT=OUT||"BMC184032W-The OPTIMIZE FOR N ROWS will be"||"ignored due to the use of a UNION DISTINCT.\n"

RULE2002 the rule triggers if VALIDATE is set to R. The rule then produces a message to indicate that this setting can impact performance.

RULE2002: IF VALIDATE = "R"
THEN OUT=OUT||"BMC184172I-The SQL and DB2 authorizations "||"will be checked at execution time. This can adversely impact perfo"||"rmance. Review with DBA on this usage.\n"
RULE1026 provides two different message outputs by providing an ELSE statement. If QUALIFIED is set to N, one message is generated; otherwise, a different message is generated.

**RULE1026: IF QUALIFIED = "N"**

```
THEN OUT=OUT||"BMC184026I-The tables referenced in the FR"||
"OM clause are not qualified. These will be resolved at bind time by the QUALIFIER name, by a SET CURRENT SQLID if the query is dynamic, or it will default to the executing AUTH ID.
" ELSE OUT=OUT||"BMC184028I-The tables referenced in the FR"||
"OM clause are fully qualified. This will limit the flexibility for the qualifier to be resolved at bind time.
```

**PSSRXSQL external function**

The PSSRXSQL external function sets values according to the SQL statement. You can call PSSRXSQL from REXX exec whenever you need to execute SQL.

In each example in Table 72 on page 522, the argument in parentheses is an SQL statement. When PSSRXSQL runs, it sets the variable rc to the return code of the command that ran. The value in the rc variable determines subsequent processing. Using this external PSSRXSQL function, you can perform any SQL statement.

<table>
<thead>
<tr>
<th>SQL statement</th>
<th>Example</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>OPEN CURSOR</td>
<td><code>rc = pssrxsql(&quot;OPEN cursorName CURSOR FOR&quot; sqlStatement)</code></td>
<td>Prepare the SQL SELECT statement and open the specified cursor.</td>
</tr>
<tr>
<td>FETCH CURSOR</td>
<td><code>rc = pssrxsql(&quot;FETCH cursorName&quot;)</code>&lt;br&gt;<code>rc = pssrxsql(&quot;FETCH cursorName INTO v1, v2, . . . vn&quot;)</code></td>
<td>Fetch the first or next row. Return SQLCODE = 100 when all rows have been fetched. The first form of the function puts the data into variables whose names are <code>cursorName.columnName</code>. It also puts values into variables like <code>cursorName.n</code>, where <code>n</code> is the column number of the query. The second form puts values into the specified variables. The maximum length of a variable name is 250 characters. Variable names can contain <code>@</code>, <code>#</code>, <code>$</code>, ¢, ., !, ?, or <code>_</code>.</td>
</tr>
<tr>
<td>CLOSE CURSOR</td>
<td><code>rc = pssrxsql(&quot;CLOSE cursorName&quot;)</code></td>
<td>Close the specified cursor.</td>
</tr>
<tr>
<td>EXECUTE</td>
<td><code>rc = pssrxsql(sqlStatement)</code></td>
<td>Prepare and run the SQL statement. If the statement is SELECT, return no more than one row. The function sets variables as it does for FETCH. If the SELECT statement has no INTO clause, the stem name is always SELECT.</td>
</tr>
<tr>
<td>COMMIT</td>
<td><code>rc = pssrxsql(&quot;COMMIT&quot;)</code></td>
<td>Commit uncommitted work, and close all open cursors.</td>
</tr>
<tr>
<td>ROLLBACK</td>
<td><code>rc = pssrxsql(&quot;ROLLBACK&quot;)</code></td>
<td>Back out relational database changes made since the last commit.</td>
</tr>
</tbody>
</table>
**Note**  
The current version of the PSSRXSQL external function does not support the following items:

- More than three open cursors at the same time
- Parameter markers
- The DESCRIBE command
- Mixed-case commands
- LOBs

Commands must be all lowercase or all uppercase. For example, either open or OPEN is acceptable, but oPeN is not valid.

**PSSRXSQL return codes**

If PSSRXSQL encounters non-SQL errors, it returns one of the following return codes.

Table 73: PSSRXSQL return codes

<table>
<thead>
<tr>
<th>Return code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Success</td>
</tr>
<tr>
<td>30</td>
<td>No command in the argument string</td>
</tr>
<tr>
<td>31</td>
<td>Already disconnected</td>
</tr>
<tr>
<td>32</td>
<td>Already connected</td>
</tr>
<tr>
<td>33</td>
<td>Cursor already open</td>
</tr>
<tr>
<td>34</td>
<td>Too many open cursors</td>
</tr>
<tr>
<td>35</td>
<td>Unknown cursor</td>
</tr>
<tr>
<td>36</td>
<td>Out of memory</td>
</tr>
<tr>
<td>37</td>
<td>SQL failure</td>
</tr>
<tr>
<td></td>
<td>The variable SQLCODE is set, and the variable SQLERRM contains a printable error message.</td>
</tr>
<tr>
<td>38</td>
<td>Argument string length greater than 32,767 characters</td>
</tr>
<tr>
<td>39</td>
<td>An ‘INTO’ was expected but not found</td>
</tr>
</tbody>
</table>

**Printing error messages**

The following code formats and prints SQL error messages to the SYSTSPRT data set when the product is running in batch mode or TSO:
rc = pssrxml("select current_timestamp into :TS from sysibm.sysdummy1")
if rc <> 0 then do
  msg = "BMC184001S-PSSREXIT rc=" || rc || "\n"
  if sqlcode <> 0 then do i = 1 to 1000 by 80
    m = substr(sqlerrm,i+1,79)
    if m = ' ' then leave
    msg = msg || "BMC184001S-" || m || "\n"
  end
  rc = sets("OUT", msg)
end

**Note**

BMC does not recommend using the SAY command instead of the STEPS function because the DBC does not allocate a SYSTSPRT data set.

You can use the REXX variable SQLSTATE instead of SQLCODE. SQLSTATE indicates both warnings and errors.

If the product issues a warning without an error, PSSRXSQL returns rc=0, SQLCODE=0, ignoring warnings so that all the row values are returned. If you want to inspect warnings, use the SQLSTATE variable.
Migrating to a different version of DB2

This topic describes how to migrate or fall back to a different version of DB2.

Overview of DB2 migration and fallback

Migration is the process of upgrading from one version or mode of DB2 to a later version or mode.

Fallback is the process of returning to an earlier version of DB2. This topic provides the procedures that you must perform to ensure that the BMC products continue to execute after migration or fallback.

Supported DB2 versions

Ensure that your product versions support the DB2 version to which you are migrating or falling back, as listed in the following table.

<table>
<thead>
<tr>
<th>BMC product</th>
<th>DB2 Version 9</th>
<th>DB2 Version 10</th>
</tr>
</thead>
<tbody>
<tr>
<td>ALTER or CHANGE MANAGER</td>
<td>9.3.00</td>
<td>10.1.00</td>
</tr>
<tr>
<td>APPTUNE</td>
<td>6.1.00</td>
<td>10.1.00</td>
</tr>
<tr>
<td>CATALOG MANAGER</td>
<td>9.3.00</td>
<td>10.1.00</td>
</tr>
<tr>
<td>CHECK PLUS</td>
<td>9.2.00</td>
<td>10.1.00</td>
</tr>
</tbody>
</table>
The BMC products for DB2 support several DB2 Version 10 modes. The following table lists the DB2 Version 10 modes that the products support.

### Table 75: Supported DB2 Version 10 modes

<table>
<thead>
<tr>
<th>Mode</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>CM8</td>
<td>conversion mode from DB2 Version 8</td>
</tr>
<tr>
<td>CM8*</td>
<td>conversion mode* from DB2 Version 8</td>
</tr>
<tr>
<td>CM9</td>
<td>conversion mode from DB2 Version 9</td>
</tr>
<tr>
<td>CM9*</td>
<td>conversion mode* from DB2 Version 9</td>
</tr>
<tr>
<td>ENFM8 a</td>
<td>enabling-new-function mode from DB2 Version 8</td>
</tr>
<tr>
<td>ENFM8*</td>
<td>enabling-new-function mode* from DB2 Version 8</td>
</tr>
<tr>
<td>ENFM9 a</td>
<td>enabling-new-function mode from DB2 Version 9</td>
</tr>
<tr>
<td>Mode</td>
<td>Description</td>
</tr>
<tr>
<td>----------</td>
<td>--------------------------------------------------</td>
</tr>
<tr>
<td>ENFM9*</td>
<td>enabling-new-function mode* from DB2 Version 9</td>
</tr>
<tr>
<td>NFM</td>
<td>new-function mode</td>
</tr>
</tbody>
</table>

Before using the Administrative products in this mode, you must run the IBM job DSNTIJEN to successful completion. DSNTIJEN converts DB2 to enabling-new-function mode from DB2 Version 8 or 9.1. Successful completion of DSNTIJEN completes catalog migration. If DSNTIJEN does not complete successfully, CATALOG MANAGER issues the following message:

CATALOG CONVERSION HAS BEEN STARTED BUT HAS NOT COMPLETED. USING A PARTIALLY CONVERTED DB2 CATALOG MAY CAUSE UNPREDICTABLE RESULTS.

ALTER, CHANGE MANAGER, and DASD MANAGER PLUS fail.

## Migration considerations

Consider the following items when you migrate from an earlier version of DB2 to DB2 Version 10:

- When either of the following sets of conditions exists, DB2 cannot run DDL that CATALOG MANAGER generates:
  
  — After migrating a DB2 Version 8 or 9 NFM subsystem to DB2 Version 10 NFM, you create an object that is associated with a Version 10 feature (for example, a temporal table). Then, you fall back to Version 10 CM8*, ENFM8*, CM9*, or ENFM9*.

  — After migrating a DB2 Version 8 NFM subsystem to DB2 Version 10 NFM, you create an object that is associated with a Version 9 feature. Then, you fall back to Version 10 CM8* or ENFM8.

Because a DB2 Version 10 NFM catalog now exists on the subsystem to which you fell back, that subsystem considers the newly created object to be valid. CATALOG MANAGER generates valid DDL for the object as it exists in the Version 10 NFM catalog; however, CATALOG MANAGER will not be able to recover the object or to include it in the Drop Recovery Log if dropped. ALTER or CHANGE MANAGER issues an error message upon encountering the new object.

- When you migrate a DB2 Version 9 NFM subsystem to a DB2 Version 10 NFM subsystem, BMC recommends issuing the REBIND command and specifying EXPLAIN YES on all packages.
New DB2 version migration

This topic describes the process of upgrading from one version or mode of DB2 to a later version or mode.

Administrative products and solutions

When you migrate to a new version or mode of DB2, you must perform certain tasks to ensure that the Administrative products continue to execute.

**Note**
In procedures, ssid refers to the DB2 subsystem ID, and HLQ refers to the high-level qualifier that your site uses.

**Migrating to DB2 Version 9 new-function mode from Version 8**

Complete the appropriate procedures to migrate your Administrative products to DB2 Version 9 new-function mode.

**Note**
For information about falling back to DB2 Version 8 when your DB2 Version 9 subsystem is in other modes, refer to the IBM documentation.

**To migrate ALTER or CHANGE MANAGER version 9.3 or later on DB2 Version 8 new-function mode**

1. Migrate the DB2 catalog.

2. Run the following upgrade jobs from *HLQUDBCNTL*:
   - ACMUP8#9
   - ACSUP8#9

   **Note**
   If you use DB2 data sharing and have members in the data sharing group at different version levels of DB2, run the upgrade jobs at the lower level of DB2.

3. *(ALTER or CHANGE MANAGER version 10.1.00 and later)* Modify the *HLQUDBCNTL(ACS ssidP)* bind job as follows:
a  Locate the BIND PACKAGE statements for the ACS collection IDs.

b  Remove the /* delimiter from between the statements.

| BIND PACKAGE(ACS101_D_MAIN) MEMBER(ACSCQEX) + OWNER(RDADQL2) QUALIFIER(ACS101S) + ISOLATION(CS) CURRENTDATA(NO) + VALIDATE(RUN) ENCODING(EBCDIC) RELEASE(COMMIT) |
|/* delete this line |
| BIND PACKAGE(ACS101_D_MAIN) MEMBER(ACSCQCM) + OWNER(RDADQL2) QUALIFIER(ACS101S) + ISOLATION(CS) CURRENTDATA(NO) SQLERROR(CONTINUE) + VALIDATE(RUN) ENCODING(EBCDIC) RELEASE(COMMIT) |

4  **(ALTER or CHANGE MANAGER version 10.1.00 and later)** Run the following bind jobs from HLQ.UDBCNTL:

- ACMssidP
- ACSssid P

**To migrate ALTER or CHANGE MANAGER version or 9.2 on DB2 Version 8 new-function mode**

1  Migrate the DB2 catalog.

2  Run one of the following sets of upgrade jobs from HLQ.UDBCNTL:

- **(ALTER)** ALUUP8#9 and ACSUP8#9
- **(CHANGE MANAGER)** ACMUP8#9 and ACSUP8#9

--- **Note**

If you use DB2 data sharing and have members in the data sharing group at different version levels of DB2, run the upgrade jobs at the lower level of DB2.

--- **To migrate ALTER, CHANGE MANAGER, or CATALOG MANAGER and catalog indirection**

1  Migrate the DB2 catalog.

--- **Note**

Your DB2 subsystem must be running in new-function mode before you can install catalog indirection again.

2  Install catalog indirection again.
To migrate CATALOG MANAGER version 9. x or later

1. Migrate the DB2 catalog.

2. Run the `HLQ.UDBCNTL(ACTUP8#9)` upgrade job.

   **Note**
   If you use DB2 data sharing and have members in the data sharing group at different version levels of DB2, run the upgrade job at the lower level of DB2.

3. *(CATALOG MANAGER version 10.1.00 and later)* Modify the `HLQ.UDBCNTL(ACTssidP)` bind job as follows:

   a. Locate the BIND PACKAGE statements for the ACT collection IDs.

   b. Remove the /* delimiter from between the statements.

   ```
   BIND PACKAGE(ACT101_D_MAIN) MEMBER(ACSCQEX) +
   OWNER(RDADQL2) QUALIFIER(ACT101S) +
   ISOLATION (CS) CURRENTDATA(NO) +
   VALIDATE(RUN) ENCODING(EBCDIC) RELEASE(COMMIT) +
   /* delete this line
   BIND PACKAGE(ACT101_D_MAIN) MEMBER(ACSCQCM) +
   OWNER(RDADQL2) QUALIFIER(ACT101S) +
   ISOLATION (CS) CURRENTDATA(NO) SQLERROR(CONTINUE) +
   VALIDATE(RUN) ENCODING(EBCDIC) RELEASE(COMMIT)
   ```

4. *(CATALOG MANAGER version 10.1.00 and later)* Run the `HLQ.UDBCNTL(ACTssidP)` bind job.

5. *(CATALOG MANAGER version 11.1.00 and later)* Run the `HLQ.UDBCNTL(PS1ssidP)` or `HLQ.UDBCNTL(DAAssidP)` bind job.

To migrate DASD MANAGER PLUS version 9. x or later

1. Migrate the DB2 catalog.

2. Run one of the following sets of upgrade jobs from `HLQ.UDBCNTL`:

   - *(DASD MANAGER PLUS version 9.3.00 and later)* ASUUP8#9, ACSUP8#9, and ATSUP8#9
   - *(DASD MANAGER PLUS version 9.1.01)* ASUUP8#9 and ACSUP8#9

   **Note**
   If you use DB2 data sharing and have members in the data sharing group at different version levels of DB2, run the upgrade jobs at the lower level of DB2.
Modify the 

HLQ.UDBCNTL(ACS ssidP) bind job as follows:

a Locate the BIND PACKAGE statements for the ACS collection IDs.

b Remove the /* delimiter from between the statements.

```
BIND PACKAGE(ACS101_D MAIN) MEMBER(ACSCQEX) +
OWNER(RDADQL2) QUALIFIER(ACS101S) +
ISOLATION (CS) CURRENTDATA(NO) +
VALIDATE(RUN) ENCODING(EBCDIC) RELEASE(COMMIT)
/*
---delete this line
BIND PACKAGE(ACS101_D MAIN) MEMBER(ACSCQCM) +
OWNER(RDADQL2) QUALIFIER(ACS101S) +
ISOLATION (CS) CURRENTDATA(NO) SQLERROR(CONTINUE) +
VALIDATE(RUN) ENCODING(EBCDIC) RELEASE(COMMIT)
```

Run the following bind jobs from HLQ.UDBCNTL:

- ASUssidP
- ACSssidP
- ATSssidP

**Migrating to DB2 Version 10 from Version 8 new-function mode**

Complete the appropriate procedures to migrate your Administrative products from DB2 Version 8 new-function mode to DB2 Version 10.

You can migrate to any of the following DB2 Version 10 modes:

- conversion mode from Version 8 (CM8)
- enabling-new-function mode from Version 8 (ENFM8)
- new-function mode (NFM)

**To migrate ALTER or CHANGE MANAGER version 10.1 or later**

1. Migrate the DB2 catalog.

2. If you are migrating the following modes of DB2, run the ACMUP8#0 and ACSUP8#0 upgrade jobs from HLQ.UDBCNTL:
New DB2 version migration

<table>
<thead>
<tr>
<th>From</th>
<th>To</th>
</tr>
</thead>
<tbody>
<tr>
<td>Version 10 conversion mode from Version 8 (CM8)</td>
<td>Version 10 enabling-new-function mode from Version 8 (ENFM8)</td>
</tr>
<tr>
<td>Version 10 ENFM8</td>
<td>Version 10 new-function mode (NFM)</td>
</tr>
</tbody>
</table>

**Note**

If you use DB2 data sharing and have members in the data sharing group at different version levels of DB2, run the upgrade jobs at the lower level of DB2.

3 Modify the `HLQ.UDBCNTL(ACSssidP)` bind job as follows:

a Locate the BIND PACKAGE statements for the ACS collection IDs.

b Remove the /* delimiter from between the statements.

```sql
BIND PACKAGE(ACS101_D_MAIN) MEMBER(ACSCQEX) +
OWNER(RDADQL2) QUALIFIER(ACS101S) +
ISOLATION (CS) CURRENTDATA(NO) +
VALIDATE(RUN) ENCODING(EBCDIC) RELEASE(COMMIT)
/*
----delete this line
BIND PACKAGE(ACS101_D_MAIN) MEMBER(ACSCQCM) +
OWNER(RDADQL2) QUALIFIER(ACS101S) +
ISOLATION (CS) CURRENTDATA(NO) SQLERROR(CONTINUE) +
VALIDATE(RUN) ENCODING(EBCDIC) RELEASE(COMMIT)
```

4 Run the following bind jobs from `HLQ.UDBCNTL`:

- ACMssidP
- ACSssidP

**To migrate CATALOG MANAGER version 10.1 or later**

1 Migrate the DB2 catalog.

2 If you are migrating the following modes of DB2, run the ACTUP8#0 upgrade job from `HLQ.UDBCNTL`:

<table>
<thead>
<tr>
<th>From</th>
<th>To</th>
</tr>
</thead>
<tbody>
<tr>
<td>Version 10 conversion mode from Version 8 (CM8)</td>
<td>Version 10 enabling-new-function mode from Version 8 (ENFM8)</td>
</tr>
<tr>
<td>Version 10 ENFM8</td>
<td>Version 10 new-function mode (NFM)</td>
</tr>
</tbody>
</table>
**Note**
If you use DB2 data sharing and have members in the data sharing group at different version levels of DB2, run the upgrade job at the lower level of DB2.

3 Modify the `HLQ.UDBCNTL(ACTssidP)` bind job as follows:

a Locate the BIND PACKAGE statements for the ACT collection IDs.

b Remove the /* delimiter from between the statements.

```
BIND PACKAGE(ACT101_D_MAIN) MEMBER(ACSCQEX) +
OWNER(RDADQL2) QUALIFIER(ACT101S) +
ISOLATION(CS) CURRENTDATA(NO) +
VALIDATE(RUN) ENCODING(EBCDIC) RELEASE(COMMIT)
/
```

```sql
----delete this line
BIND PACKAGE(ACT101_D_MAIN) MEMBER(ACSCQCM) +
OWNER(RDADQL2) QUALIFIER(ACT101S) +
ISOLATION(CS) CURRENTDATA(NO) SQLERROR(CONTINUE) +
VALIDATE(RUN) ENCODING(EBCDIC) RELEASE(COMMIT)
```

4 Run the `HLQ.UDBCNTL(ACTssidP)` bind job.

5 *(CATALOG MANAGER version 11.1.00 and later)* Run the `HLQ.UDBCNTL(PS1ssidP)` or `HLQ.UDBCNTL(DAAssidP)` bind job.

**To migrate DASD MANAGER PLUS version 10.1 or later**

1 Migrate the DB2 catalog.

2 If you are migrating the following modes of DB2, run the ASUUP8#0, ACSUP8#0, and ATSUP8#0 upgrade jobs from `HLQ.UDBCNTL`:

<table>
<thead>
<tr>
<th>From</th>
<th>To</th>
</tr>
</thead>
<tbody>
<tr>
<td>Version 10 conversion mode from Version 8 (CM8)</td>
<td>Version 10 enabling-new-function mode from Version 8 (ENFM8)</td>
</tr>
<tr>
<td>Version 10 ENFM8</td>
<td>Version 10 new-function mode (NFM)</td>
</tr>
</tbody>
</table>

**Note**
If you use DB2 data sharing and have members in the data sharing group at different version levels of DB2, run the upgrade jobs at the lower level of DB2.

3 Modify the `HLQ.UDBCNTL(ACSssidP)` bind job as follows:

a Locate the BIND PACKAGE statements for the ACS collection IDs.
b Remove the /* delimiter from between the statements.

```sql
BIND PACKAGE(ACS101_D_MAIN) MEMBER(ACSCQEX) +
  OWNER(RDADQL2) QUALIFIER(ACS101S) +
  ISOLATION (CS) CURRENTDATA(NO) +
  VALIDATE(RUN) ENCODING(EBCDIC) RELEASE(COMMIT) +
/*
---delete this line
BIND PACKAGE(ACS101_D_MAIN) MEMBER(ACSCQCM) +
  OWNER(RDADQL2) QUALIFIER(ACS101S) +
  ISOLATION (CS) CURRENTDATA(NO) SQLERROR(CONTINUE) +
  VALIDATE(RUN) ENCODING(EBCDIC) RELEASE(COMMIT)
```

4 Run all of the following bind jobs from *HLQ.UDBCNTL*:

- ASUssidP
- ACSssid P
- ATSssid P

**Migrating to DB2 Version 10 from Version 9 new-function mode**

Complete the appropriate procedures to migrate your Administrative products from DB2 Version 9 new-function mode to DB2 Version 10.

You can migrate to any of the following DB2 Version 10 modes:

- conversion mode from Version 9 (CM9)
- enabling-new-function mode from Version 9 (ENFM9)
- new-function mode (NFM)

**To migrate ALTER or CHANGE MANAGER version 10.1 or later**

1 Migrate the DB2 catalog.

2 If you are migrating the following modes of DB2, run the ACMUP9#0 and ACSUP9#0 upgrade jobs from *HLQ.UDBCNTL*:

<table>
<thead>
<tr>
<th>From</th>
<th>To</th>
</tr>
</thead>
<tbody>
<tr>
<td>Version 10 conversion mode from Version 9 (CM9)</td>
<td>Version 10 enabling-new-function mode from Version 9 (ENFM9)</td>
</tr>
<tr>
<td>Version 10 ENFM9</td>
<td>Version 10 new-function mode (NFM)</td>
</tr>
</tbody>
</table>

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Note
If you use DB2 data sharing and have members in the data sharing group at different version levels of DB2, run the upgrade jobs at the lower level of DB2.

3 Run all of the following bind jobs from HLQ.UDBCNTL:

- ACM ssidP
- ACS ssidP

To migrate CATALOG MANAGER version 10.1 or later

1 Migrate the DB2 catalog.

2 If you are migrating the following modes of DB2, run the ACTUP9#0 upgrade job from HLQ.UDBCNTL:

<table>
<thead>
<tr>
<th>From</th>
<th>To</th>
</tr>
</thead>
<tbody>
<tr>
<td>Version 10 conversion mode from Version 9 (CM9)</td>
<td>Version 10 enabling-new-function mode from Version 9 (ENFM9)</td>
</tr>
<tr>
<td>Version 10 ENFM9</td>
<td>Version 10 new-function mode (NFM)</td>
</tr>
</tbody>
</table>

Note
If you use DB2 data sharing and have members in the data sharing group at different version levels of DB2, run the upgrade job at the lower level of DB2.

3 Run the HLQ.UDBCNTL(ACTssidP) bind job.

4 (CATALOG MANAGER version 11.1.00 and later) Run the HLQ.UDBCNTL(PS1ssidP) or HLQ.UDBCNTL(DAAssidP) bind job.

To migrate DASD MANAGER PLUS version 10.1 or later

1 Migrate the DB2 catalog.

2 If you are migrating the following modes of DB2, run the ASUUP9#0, ACSUP9#0, and ATSUP9#0 upgrade jobs from HLQ.UDBCNTL:

<table>
<thead>
<tr>
<th>From</th>
<th>To</th>
</tr>
</thead>
<tbody>
<tr>
<td>Version 10 conversion mode from Version 9 (CM9)</td>
<td>Version 10 enabling-new-function mode from Version 9 (ENFM9)</td>
</tr>
<tr>
<td>Version 10 ENFM9</td>
<td>Version 10 new-function mode (NFM)</td>
</tr>
</tbody>
</table>
Note

If you use DB2 data sharing and have members in the data sharing group at different version levels of DB2, run the upgrade jobs at the lower level of DB2.

3 Run the following bind jobs from $HLQ.UDBCNTL$:

- ASussidP
- ACSssid P
- ATSssid P

**Completing the migration to a new version of DB2**

Perform the following procedure to verify the values for the DB2EXIT and DB2LOAD libraries.

1 Verify the values for the libraries in the product options file (POF).

   a Edit the POF in your $HLQ.UDBCNTL$ data set. The name of the file is specified in the POFDS keyword in the installation options module for your product.

   b Ensure that the values for the DB2EXIT and DB2LOAD keywords are correct for the version of DB2 to which you have migrated.

2 If you modified the values in the POF in step 1, refresh the POF. When you refresh the POF, users receive the updated values.

   a Edit the initial POF outside of the product.

   b Change the value of the POFDATE keyword to the current date.

   c Append the refresh attribute \( (R) \) to the values that you want to update.

   d Save the POF.

   e *(for runtime data sets)* Copy the POF from $HLQ.UDBCNTL$ to $HLQ.BMCCNTL$.

3 Verify the values for the libraries in the control table.

   a Edit the control table in the $HLQ.CONTAB$ data set.

   b Ensure that the location and name of the DB2EXIT and DB2LOAD libraries are correct for the version of DB2 to which you have migrated. For example:

   *LIB SSID Data Set Name*
Backup and Recovery and Utility products and solutions

For the Backup and Recovery and Utility products, simply run the $C70IVP job to complete verification after migrating to a new DB2 version, or to enabling-new-function or new-function mode.

You do not need to complete any other tasks to ensure that these products continue to execute. These products detect when you migrate to a new DB2 version and automatically perform binds to accommodate new columns for the new release.

**Note**

If you use DB2 data sharing and have members in the data sharing group at different version levels of DB2, run $C70IVP as follows:

- *(Backup and Recovery products)* Run $C70IVP on members at the lower level of DB2.

- *(Utility products)* Run $C70IVP first on members at the lower level of DB2, and then on members at the higher level of DB2.

For more information, see the IBM parameter ABIND=COEXIST in DSNZPARM.

System and SQL Performance products and solutions

To maintain the System and SQL Performance Products when you migrate to a new version of DB2, follow the steps and guidelines in this procedure.

**Before you begin**

- To maintain the product when you create a new DB2 catalog for a new version of DB2, perform a full installation of the product. Then you will be operating in exploitation mode.

- Perform this procedure only after you migrate to Version 10 compatibility mode or NFM mode.
Note
When you install a new product release, you can choose to reuse the product tables from the previous release. When you choose this option, the Installation System creates a $C40ALTR job that alters any columns required for the new release onto the existing tables. Both releases continue to function and can share use of the same tables.

Previous releases included the product version as part of the table names. If your installation strategy is to continue to reuse the product tables from one release to another, you should rename the tables to be version independent.

To migrate between versions of DB2

1. Before you migrate to DB2 Version 10, stop the DOM agent by issuing the following console command:

   `/dbcssid DOM,STOP`

   The `dbcssid` value represents the DBC subsystem ID.

2. Update the PSS2* members in HLQ.BBSAMP to reflect the DB2 Version 10 libraries.

3. Update ACTPSS in `HLQ.CLIST` to reflect the Version 10 libraries for the CATALOG MANAGER interface to SQL Explorer.

4. Update the SQLX edit macro in your SYSPROC concatenation to reflect the DB2 Version 10 libraries for that DB2 subsystem.

5. As soon as SYSIBM.SYSPACKSTMT has been converted to the new DB2 Version 10 format at some point during ENFM mode, run DAAUP9#A.

   - If SYSIBM.SYSPACKSTMT has not been converted to the new format and Automatic Rebind (ABIND) is set to NO on your subsystem, rebind all packages by using DAAssidP (bind packages) and then bind the plan by running DAAssidB (bind plan) in UBBSAMP. The `ssid` value represents the subsystem ID.

   - If Automatic Rebind is set to YES or COEXIST, you do not need to perform the rebind.

6. Convert the user plan tables to unicode by using sample jobs provided by IBM. These jobs include DSNTIJPM, DSNTIHXA, DSNTIJXB, and DSNTIJXC.

   Then you will be operating in exploitation mode.
Earlier DB2 version fallback

This topic describes the process of returning to an earlier version of DB2.

Administrative products and solutions

When you fall back to an earlier version of DB2, you must perform certain tasks to ensure that the Administrative products continue to execute.

Falling back to DB2 Version 9 from Version 10 conversion mode (CM9)

Complete the appropriate procedures to enable the Administrative products to execute after falling back to DB2 Version 9 from DB2 Version 10 conversion mode (CM9).

Note

For information about falling back to Version 9 when your DB2 Version 10 subsystem is in other modes, refer to the IBM documentation.

To enable fallback for ALTER or CHANGE MANAGER version 10.1 or later

1. To rebind all of the packages and plans, run the following bind jobs from HLQ.UDBCNTL:
   - ACMssidP
   - ACMssidB
   - ACSssidP

To enable fallback for ALTER, CHANGE MANAGER, or CATALOG MANAGER and catalog indirection

1. To rebind all indirect packages or plans for the earlier version of indirection, run one of the following sets of bind jobs from HLQ.UDBCNTL:

   Note

   The earlier version of indirection must still exist.

   - (ALTER or CHANGE MANAGER) ACMssidZ and ACMssidB
   - (CATALOG MANAGER) ACTssidZ
To enable fallback for CATALOG MANAGER version 10.1 or later

1. To rebind all CATALOG MANAGER packages and plans, run the following bind jobs from HLQ.UDBCNTL:

- ACTssidP
- ACTssidB
- (CATALOG MANAGER version 11.1.00 and later) PS1ssidP or DAAssidP
- (CATALOG MANAGER version 11.1.00 and later) PS1ssidB or DAAssidB

To enable fallback for DASD MANAGER PLUS version 10.1 or later

1. To rebind all of the packages and plans, run the following bind jobs from HLQ.UDBCNTL:

- ASUssidP
- ASUssidB
- ACSssidP
- ATSssidP

Backup and Recovery products and solutions

When you fall back to an earlier version of DB2, you must perform certain tasks to ensure that the Backup and Recovery products continue to execute.

Falling back to an earlier version of DB2

If fallback to an earlier version of DB2 is necessary for RECOVER PLUS, perform the following procedure.

To enable fallback for RECOVER PLUS

1. Free the packages contained in the products collection (for example, FREE BMCAFR.* for RECOVER PLUS).

2. Run the $C70IVP job to complete the verification procedure.
Performing these tasks prevents the possibility of SQLCODE -607 errors that might result when the packages were bound after an upgrade get an automatic rebind after you fall back.

If you use DB2 data sharing and have members in the data sharing group at different version levels of DB2, run $C70IVP on members at the lower level of DB2.

For more information, see the IBM parameter ABIND=COEXIST in DSNZPARM.

### Utility products

For the Utility products, simply run the $C70IVP job to complete verification after falling back to an earlier version of DB2.

### System and SQL Performance products and solutions

To maintain the System and SQL Performance Products when you fall back to a previous version of DB2, follow the steps and guidelines in this procedure.

#### To fall back to a previous version

1. Update the PSS2* members in HLQ.BBSAMP to reflect the Version 9 libraries.

2. Update ACTPSS in HLQ.CLIST or UDBCLIB to reflect the Version 9 libraries for the CATALOG MANAGER interface to SQL Explorer.

3. Update the SQLX edit macro in your SYSPROC concatenation to reflect the Version 9 libraries.

4. Free PG PSS0SQL if SYSIBM.SYSPACKSTMT has reverted to the non Version 10 format. Rebind all packages and plans by using DAAssidP (bind packages) and DAAssidB (bind plans) in UBBSAMP, where ssid is the subsystem ID.
ASUBREP repository migration program

The ASUBREP program migrates the DASD MANAGER PLUS for DB2 object set repository.

You must migrate a DASD MANAGER PLUS for DB2 version 10.1.00 and earlier repository to the new repository for DASD MANAGER PLUS for DB2 version 11.1.00 and later.

About ASUBREP

The ASUBREP program reads object sets from the DASD Manager 11.1 or later repository that were migrated forward from a DASD Manager 10.1 or earlier repository.

After reading the old DASD Manager object set definitions, ASUBREP saves the object set definitions into the Common Object Set repository. ASUBREP is the only DASD MANAGER PLUS program that accesses a old object set definition that was migrated to the DASD Manager 11.1.00 or later repository.

You must migrate your object sets to the new repository before using DASD MANAGER PLUS for DB2 version 11.1.00 and later to have your previously-defined object sets available for use. Migrating object sets into the DASD MANAGER PLUS version 11.1.00 repository can be time consuming. BMC recommends that you delete any unnecessary object sets prior to invoking ASUBREP so that the conversion process completes more quickly.

Authorizations for ASUBREP

The ASUBREP program requires certain authorizations.

The following authorizations are required to execute the ASUBREP program:
Building the JCL

Building your own ASUBREP job to generate JCL to recover the DB2 subsystem involves creating JCL that includes the following statements:

- a JOB statement
- an EXEC statement
- data definition statements that specify the use of the following libraries and data sets:
  - DASD MANAGER PLUS and DB2 load libraries
  - input data sets
  - output data sets

Specifying the ASUBREP JOB statement

The JOB statement for the ASUBREP starts with a job name and includes standard JOB statement parameters, such as accounting information and a name that identifies the run.

The JOB statement should include the REGION parameter, which specifies the amount of virtual storage that the job requires. If you omit the REGION parameter from the JOB statement, you can include it in the EXEC statement. BMC recommends you specify REGION=0M, which makes the amount of virtual storage needed to run the job automatically available when the ASUBREP job is executed. If REGION=0M is not allowed at your company, specify REGION=4M.

Specifying the ASUBREP EXEC statement

The ASUBREP EXEC statement uses a specific format.
The EXEC statement for the ASUBREP program has the following format:

```plaintext
//stepname EXEC PGM=ASUBREP,
//         PARM='ssid,,,opts module',
//         REGION=0M
```

The variable `ssid` is the DB2 subsystem or attach name where the DASD MANAGER PLUS object sets reside. If you do not provide a subsystem ID, the program uses the subsystem ID indicated in the DSNHDECP module found in the STEPLIB or link list.

**Note**
The SSID parameter is positional and requires the comma even if you do not enter a specific subsystem ID. If the program cannot find the SSID that you specified or that is listed in the DSNHDECP module, it will issue message BMC80583E INVALID PARAMETER FOR SSID and set the return code to 8.

The variable `opts module` is the DASD MANAGER PLUS options load module.

### Specifying the ASUBREP STEPLIB DD statement

The ASUBREP STEPLIB DD statement identifies the load libraries.

The STEPLIB DD statement identifies the DASD MANAGER PLUS load library and DB2 load libraries that you want ASUBREP to use. For example:

```plaintext
//STEPLIB DD DISP=SHR,DSN=PRODUCT.LOAD.LIBS
//       DD DISP=SHR,DSN=DSNEXIT
//       DD DISP=SHR,DSN=DSNLOAD
```

### Specifying the ASUBREP data set DD statements

In the JCL, you specify each data set used by ASUBREP with a ddname (data definition name).

Following are the data sets (optional and required) that are used by ASUBREP:

- **SYSIN (required)**

  The input data set that contains one or more control statements. Attributes for this data set must be fixed length records, with a length of 80 (RECFM=F or FB, LRECL=80).

- **SYSPRINT (required)**
SYSTERM

UTPRINT

These are used for messages that are returned from DASD MANAGER PLUS. DASD MANAGER PLUS reports all object sets found in the repository.

ASUBREP syntax and option descriptions

The ASUBREP syntax and option descriptions in this section are the control statements that you use when you build SYSIN input.

For more information about syntax rules and wildcard support, see the DASD MANAGER PLUS for DB2 documentation.

**Figure 106: ASUBREP control statement**

```
 MODE UPDATE REPORT :

 REPLACE NO YES :
```

**Table 76: ASUBREP syntax options**

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>MODE</td>
<td>This MODE option enables you to update the object sets in the repository or to issue reports without updating the repository. UPDATE mode is the default value and results in the object sets being created in the repository. REPORT mode prints all messages and reports in the SYSPRINT but does not alter the repository.</td>
</tr>
<tr>
<td>REPLACE</td>
<td>The REPLACE statement indicates whether to replace an existing object set in the repository when you are migrating object sets. NO is the default value and results in object sets not being created in the new repository if a object set name already exists. A message also prints in SYSPRINT stating that the object set will not be migrated. YES deletes the object set from the new repository if it already exists before migrating the object set from the old repository.</td>
</tr>
</tbody>
</table>
Sample ASUBREP JCL

Following is an example of JCL for ASUBREP.

Figure 107: Sample ASUBREP JCL

```
//JTRBREP JOB (PARM), 'TEST V1110 DEDK',
//   REGION=0M,
//   MSGCLASS=X,
//   MSGLEVEL=(1,1),
//   CLASS=A

*--------------------------------------------------------------------
* DASD MANAGER REPOSITORY MIGRATION PROGRAM
*--------------------------------------------------------------------

//ASUBREP EXEC PGM=ASUBREP,PARM='DEDK,,,JTR110DK'
//STEP1IB DD DISP=SHR,DSN=ASU.PRODUCT.LOADLIB
//                           DD DISP=SHR,DSN=SYS3.DEDK.DSNEXIT
//                           DD DISP=SHR,DSN=CSGI.DB2V91M.DSNLOAD
//SYSPRINT DD SYSOUT=*,HOLD=YES
//SYSTERM  DD SYSOUT=*,HOLD=YES
//UTPRINT  DD SYSOUT=*,HOLD=YES

* ASUBREP READS OBJECT SETS FROM A DASD MANAGER REPOSITORY PRIOR
* TO THIS RELEASE (V10.1.00 AND EARLIER) USING THE SYNONYMS
* THAT WERE IN PLACE FOR THAT REPOSITORY. AFTER READING THE
* OBJECT SETS IN THE OLD REPOSITORY, ASUBREP SAVES TO THE
* OBJECT SETS IN THE NEW REPOSITORY BASED ON THE SYNONYMS
* DEFINED FOR DASD MANAGER V11.1.00 AND HIGHER.
*
* SYNTAX FOR ASUBREP:
* MODE - INDICATE WHETHER OBJECT SETS SHOULD BE UPDATED IN
*        THE NEW REPOSITORY OR OUTPUT REPORTS ONLY.
*        UPDATE: (DEFAULT) OBJECT SETS ARE CREATED IN THE NEW
*        REPOSITORY.
*        REPORT: PRINTS ALL THE MESSAGES AND REPORTS IN SYSPRINT,
*        BUT DOES NOT ALTER THE NEW REPOSITORY.
* REPLACE - INDICATES WHETHER TO REPLACE EXISTING OBJECT SETS
* IN THE NEW REPOSITORY DURING MIGRATION.
* NO: (DEFAULT) OBJECT SETS THAT ALREADY EXIST IN THE NEW
* REPOSITORY WILL NOT BE SAVED.
* YES: DELETES THE OBJECT SETS FROM THE NEW REPOSITORY AND
*      SAVES THEM AGAIN.
*
* MODE REPORT | UPDATE (UPDATE IS THE DEFAULT)
* REPLACE YES | NO (NO IS THE DEFAULT)
*
//SYSIN    DD *

MODE REPORT
REPLACE NO
```

ASUBREP output files and sample output

The following figure shows an edited sample SYSPRINT for ASUBREP showing output for several of the 469 object sets processed.

Appendix B  ASUBREP repository migration program 547
The complete ASUPRINT lists every object set from the old system and tells whether it migrated to the new repository. Notice that there are 381 object sets--380 migrated and 1 new subsystem option object set created--in the new repository. If this is the first run of ASUBREP and no object sets have been created by running DASD MANAGER PLUS for DB2 version 11.1.00, there will be 381 object sets migrated.

At the very bottom of the SYSPRINT, you find a totals section that includes the following information:

- **IGNORED**—includes change accumulation object sets
  You can search for the BMC17810W message to find the specific object sets that were ignored.

- **SKIPPED**—includes repository object sets and ARMBGPS groups
  You can search for the BMC17822W message to find the specific object sets that were skipped.

- **SAVE FAILED**—includes any object set containing a bad definition
  A scenario when an object set would show SAVE FAILED is where you created an object set with SQL in the old repository and an error is detected with the statement.
  You can search for the BMC17815W message with FAILED to find the specific object sets that failed.

- **PROCESSED WITH WARNING**—possible error in object set validation
  See message BMC17816W.

- **EXISTS, NOT REPLACED**—an object set with the same name that was created by another BMC product such as RECOVERY MANAGER already exists
  See message BMC17821I.

- **NEW SUBSYSTEM OPTION OBJECT SET**—Starting with DASD MANAGER PLUS version 11.1.00, if any subsystem options were set in the old repository, the migration program creates a new object set in the new repository.
  The subsystem options are stored in BMCASU.SUBSYSTEM_OPTIONS. DASD MANAGER PLUS issues a message if an object set has been saved.

The formula for the total number of object sets in the new repository is:

\[
\text{TOTAL OBJECT SETS IN NEW REPOSITORY} = \text{OBJECT SETS TO PROCESS} - \text{IGNORED} - \text{SKIPPED} - \text{SAVE FAILED} + \text{NEW SUBSYSTEM OPTION OBJECT SET}
\]
Note

This calculation is valid only for the first run after migration. If you have been running DASD MANAGER PLUS for DB2 version 11.1.00 and you have created and deleted object sets, these counts might very likely not match the calculation, depending on your actions.

Figure 108: Sample ASUBREP output - excerpt from Repository Migration report

```
** DASD MANAGER PLUS FOR DB2 V11.01.00 **

Time . . .: 11:10:10 AM   Wednesday, February 27, 2013

Connected to DB2 SSID = DEDK

MODE REPORT
REPLACE NO

228 Object Sets to Process

Processing Object Set AEX.AEXA01 (#1)

Obj Type       By Part  Beg Part  End Part  IX  RI
TS            N        0000      0000      N   N
%.AEXS3001

Obj Type       By Part  Beg Part  End Part  IX  RI
TS            N        0000      0000      N   N
%.AEXS3101

Obj Type       By Part  Beg Part  End Part  IX  RI
TS            N        0000      0000      N   N
%.AEXS3201

Obj Type       By Part  Beg Part  End Part  IX  RI
TS            N        0000      0000      N   N
%.AEXS3301

Obj Type       By Part  Beg Part  End Part  IX  RI
TS            N        0000      0000      N   N
%.AEXS3401

Obj Type       By Part  Beg Part  End Part  IX  RI
TS            N        0000      0000      N   N
%.AEXS3501

Object Set AEX.AEXA01 not saved

.
.
.

Processing Object Set SKH.SKHDB (#228)

Obj Type       By Part  Beg Part  End Part  IX  RI
TS            N        0000      0000      Y   N
SKHDB%.%

Object Set SKH.SKHDB not saved

Object Sets to Process: 228
```
Executing the ASUBREP JCL

Consider the following information to run the ASUBREP JCL:

- Ensure that the job owner has the appropriate authorizations. For more information, see “Authorizations for ASUBREP” on page 543.

- No restart is available for ASUBREP. You must resubmit the job after correcting any error conditions.
Common utility tables

This chapter describes the contents of the common utility tables, considerations for these tables, and how to maintain them if necessary.

Overview of common utility tables

The BMC common utility tables contain information about the BMC utilities that you generate and submit through a BMC utility product.

Table 77 on page 551 lists the tables that each utility uses and each table’s default name and synonym.

Table 77: Common utility tables

<table>
<thead>
<tr>
<th>Table</th>
<th>Default name</th>
<th>Synonym</th>
<th>Utilities that use this table</th>
</tr>
</thead>
<tbody>
<tr>
<td>BMCDICT</td>
<td>CMN_BMCDICT</td>
<td>BMC_BMCDICT</td>
<td>■ LOADPLUS</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>■ REORG PLUS</td>
</tr>
<tr>
<td>BMCHIST</td>
<td>CMN_BMCHIST</td>
<td>BMC_BMCHIST</td>
<td>■ CHECK PLUS</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>■ COPY PLUS</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>■ LOADPLUS</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>■ RECOVER PLUS</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>■ REORG PLUS</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>■ UNLOAD PLUS</td>
</tr>
<tr>
<td>Table</td>
<td>Default name</td>
<td>Synonym</td>
<td>Utilities that use this table</td>
</tr>
<tr>
<td>------------</td>
<td>----------------</td>
<td>-----------------</td>
<td>-------------------------------------------------------------------</td>
</tr>
<tr>
<td>BMCLGRNX</td>
<td>CMN_BMCLGRNX</td>
<td>BMC_BMCLGRNX</td>
<td>COPY PLUS, Log Master, RECOVER PLUS, RECOVERY MANAGER</td>
</tr>
<tr>
<td>BMCSYNC</td>
<td>CMN_BMCSYNC</td>
<td>BMC_BMCSYNC</td>
<td>CHECK PLUS, COPY PLUS, DASD MANAGER PLUS (BMCSTATS), LOADPLUS</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>RECOVER PLUS, RECOVERY MANAGER, REORG PLUS, UNLOAD PLUS</td>
</tr>
<tr>
<td>BMCTRANS</td>
<td>CMN_BMCTRANS</td>
<td>BMC_BMCTRANS</td>
<td>Log Master, RECOVERY MANAGER</td>
</tr>
</tbody>
</table>
### Considerations and warnings for common utility tables

This topic describes important information that you need to know when using the common utility tables.

Note the following considerations:

- Some columns in the tables are present for compatibility with specific BMC utilities and are not used by all of the utilities.
If you have applications that depend on the structure or content of these tables, be aware that these tables are subject to change.

In general, the utility tables should not require maintenance, with the exception of BMCHIST.

You should back up the BMC table spaces on a regular basis to enable recoveries. If you use COPY PLUS as the copy utility, you must use SHRLEVEL CHANGE for the following spaces:

- BMCUTIL
- BMCHIST
- BMCSYNC
- BMCXCOPY

Supported versions of the following BMC products support the LOCKROW installation option:

- CHECK PLUS
- LOADPLUS
- REORG PLUS
- UNLOAD PLUS

If the value of the option is YES (which is the default value), the products use MVS enqueues instead of SQL LOCK TABLE statements to serialize updates to the BMCSYNC and BMCUTIL tables.

The following BMC products always use MVS enqueues for serialization when updating the BMCSYNC and BMCUTIL tables:

- COPY PLUS
- DASD MANAGER PLUS
- RECOVER PLUS
WARNING
The following warnings apply to the common utility tables:

- Do not run LOADPLUS, REORG PLUS, or UNLOAD PLUS against the BMC common utility tables or table spaces. Doing so can cause unpredictable results.

- Because RECOVER PLUS uses BMC tables during the recovery process, you cannot use RECOVER PLUS to recover any BMC table except the BMCHIST table.

- Do not run the RUNSTATS utility against the BMC common utility tables. Doing so can negatively impact utility performance.

- BMC strongly recommends that you use the ISOLATION (UR) bind option and issue SQL COMMIT statements when querying the tables in the BMC database. If objects in the BMC database are restricted for UPDATE, the executing BMC utilities might not be able to complete successfully.

Managing common utility tables

This topic provides basic procedures for working with the common utility tables.

To determine your site’s table names

The names of the common utility tables can be changed during installation.

1 To determine the names that your site uses, perform one of the following actions:

- Use your utility to run a job with restart parameters of MAINT and MSGLEVEL(1).
  Specifying MSGLEVEL(1) with MAINT prints the names of the BMC tables that your utility uses and identifies the applied maintenance. The utility does not perform any other processing, and the job ends without affecting any utility that is running.

- Run the following SQL statement, replacing tableName with a BMC common utility table name (listed in “Overview of common utility tables” on page 551):

```sql
SELECT CREATOR, NAME FROM SYSIBM.SYSTABLES
WHERE TSNAME='tableName';
```

- Get the names from your DB2 system administrator.

To query the tables

1 Run SQL statements similar to the following examples.
**Example**

This example queries the BMCXCOPY table to access information about the rows in an index space:

```sql
SELECT * 
FROM creatorName.CMN_BMCXCOPY 
  WHERE DBNAME = 'databaseName'
    AND IXNAME = 'indexSpaceName'
ORDER BY START_RBA;
```

This example identifies (from the BMCHIST table) the database name, table space name, elapsed time, and when the utility completed:

```sql
SELECT DBNAME,SPNAME,CHAR(ELAPSED,ISO),CHAR(TIME,ISO) 
FROM creatorName.CMN_BMCHIST 
WHERE UTILID='utilityID';
```

**To display BMC utility status**

1. To display the status of all BMC utilities that are executing or awaiting restart for a given table space or index space, use the following SQL statements:

```sql
SELECT * FROM creatorName.CMN_BMCUTIL 
  WHERE DBNAME='databaseName'
    AND SPNAME='tableSpaceName'

SELECT * FROM creatorName.CMN_BMCSYNC 
  WHERE NAME1='databaseName'
    AND NAME2='spaceName';
```

**To terminate a BMC utility**

1. To terminate a BMC utility, perform one of the following actions:

   - To terminate a BMC utility that is executing, use the following SQL statements:
     
     ```sql
     DELETE FROM creatorName.CMN_BMCUTIL 
       WHERE UTILID='utilityID';
     DELETE FROM creatorName.CMN_BMCSYNC 
       WHERE UTILID='utilityID';
     DELETE FROM creatorName.CMN_BMCDICT -- for LOADPLUS and REORG PLUS 
       WHERE UTILID='utilityID';
     ```
     
     The utility terminates with return code 8 when the next checkpoint is taken.

   - To clean up a BMC utility that is not executing, run the utility with the correct utility ID and specify the TERM restart parameter.

**BMCDICT table**

The BMCDICT table stores the compression dictionary during load or reorganization processing.

Table 78 on page 557 describes the BMCDICT table.
### Table 78: BMCDICT Table

<table>
<thead>
<tr>
<th>Column name</th>
<th>Data type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>UTILID</td>
<td>CHAR(16)</td>
<td>Utility identifier</td>
</tr>
<tr>
<td>DBNAME</td>
<td>CHAR(8)</td>
<td>Database name</td>
</tr>
<tr>
<td>TSNAME</td>
<td>CHAR(8)</td>
<td>Table space name</td>
</tr>
<tr>
<td>PARTITION</td>
<td>SMALLINT</td>
<td>Partition number For a nonpartitioned table space, the value is 0.</td>
</tr>
<tr>
<td>SEQNO</td>
<td>SMALLINT</td>
<td>Sequence number</td>
</tr>
<tr>
<td>DICTDATA</td>
<td>VARCHAR(4000)</td>
<td>Dictionary data</td>
</tr>
</tbody>
</table>

### BMCDICT Table Considerations

This topic describes important information that you need to know about the BMCDICT table.

Note the following considerations:

- If you are processing a large number of compressed partitions, you might need to increase the size of the BMCDICT table space significantly from the standard size that was allocated during installation. To estimate the allocation, multiply 64 KB by the number of compressed partitions that you are processing concurrently (loading with LOADPLUS or reorganizing with REORG PLUS).

- LOADPLUS inserts rows into the BMCDICT table during the PRELOAD phase and deletes those rows following compression processing in the LOAD phase.

- REORG PLUS inserts rows into the BMCDICT table during the UNLOAD phase and deletes those rows following compression processing in the RELOAD phase.

### Maintaining the BMCDICT Table

If LOADPLUS or REORG PLUS abends during the time between building the compression dictionary and completing compression, rows might remain in the BMCDICT table.

On rare occasions, you might need to take action to control expansion of the BMCDICT table.
To control expansion of the BMCDICT table

1. Delete any rows in the BMCUTIL table that you know are no longer valid.
   Do not delete any rows for instances of utilities that are awaiting restart.

2. Use the following SQL statement to delete rows from the BMCDICT table:

   ```sql
   DELETE
   FROM creatorName.CMN_BMCDICT
   WHERE UTILID NOT IN
   (SELECT UTILID FROM creatorName.CMN_BMCUTIL);
   ```

   **Note**
   The names of the BMCUTIL and BMCDICT tables might have been changed at
   your site during installation.

BMCHIST table

The BMCHIST table contains information about completed executions of the BMC utilities for DB2.

Table 79 on page 558 describes the BMCHIST table.

The following configuration or installation options control use of the BMCHIST table:

- HISTORY (for COPY PLUS, RECOVER PLUS, and UNLOAD PLUS)
- BMCHIST (for REORG PLUS)

If the option value is NO, the utility bypasses any updates to the BMCHIST table. If the value is YES (or the utility does not use a configuration or installation option), the utility inserts rows into the BMCHIST table during the UTILTERM phase.

Table 79: BMCHIST table

<table>
<thead>
<tr>
<th>Column name</th>
<th>Data type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>DBNAME</td>
<td>CHAR(8)</td>
<td>Name of the database that contains the table or index space</td>
</tr>
<tr>
<td>SPNAME</td>
<td>CHAR(8)</td>
<td>Name of the table or index space</td>
</tr>
<tr>
<td>Column name</td>
<td>Data type</td>
<td>Description</td>
</tr>
<tr>
<td>-------------</td>
<td>-----------</td>
<td>-------------</td>
</tr>
<tr>
<td>UTILNAME</td>
<td>CHAR(8)</td>
<td>Name of the utility:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>■ CHECK</td>
</tr>
<tr>
<td></td>
<td></td>
<td>■ COPY</td>
</tr>
<tr>
<td></td>
<td></td>
<td>■ LOAD</td>
</tr>
<tr>
<td></td>
<td></td>
<td>■ RECOVER</td>
</tr>
<tr>
<td></td>
<td></td>
<td>■ REORG</td>
</tr>
<tr>
<td></td>
<td></td>
<td>■ UNLOAD</td>
</tr>
<tr>
<td>UTILID</td>
<td>CHAR(16)</td>
<td>Utility identifier</td>
</tr>
<tr>
<td>AUTHID</td>
<td>CHAR(8)</td>
<td>User ID that ran the utility</td>
</tr>
<tr>
<td>DATE</td>
<td>DATE</td>
<td>Date that the utility completed</td>
</tr>
<tr>
<td>TIME</td>
<td>TIME</td>
<td>Time that the utility completed</td>
</tr>
<tr>
<td>ELAPSED</td>
<td>TIME</td>
<td>Elapsed time of the utility</td>
</tr>
<tr>
<td>Column name</td>
<td>Data type</td>
<td>Description</td>
</tr>
<tr>
<td>-------------</td>
<td>---------------</td>
<td>---------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>PARTITION</td>
<td>LONG VARCHAR</td>
<td>ALL, or the partition numbers as specified by the DSNUM option (COPY PLUS) or the PART option. Note the following conditions:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>■ This column lists only three-digit partitions (any loaded partitions 1 through 999). Four-digit partitions (any loaded partitions from 1000 through 4096) are not stored in this column. For jobs that load only four-digit partitions, this column is empty.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>■ If the list of partitions exceeds 1011 bytes, the utility truncates the value that is stored in this column.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>■ For UNLOAD PLUS, if you specified LOGICAL PART, these partitions are the physical partitions that correspond to the logical partitions that you specified.</td>
</tr>
<tr>
<td>OBJNAME</td>
<td>VARCHAR(27)</td>
<td>Fully qualified object name</td>
</tr>
<tr>
<td>PHASE_1</td>
<td>CHAR(8)</td>
<td>Name of utility phase 1</td>
</tr>
<tr>
<td>ELAPSED_1</td>
<td>TIME</td>
<td>Elapsed time of phase 1</td>
</tr>
<tr>
<td>PHASE_2</td>
<td>CHAR(8)</td>
<td>Name of utility phase 2</td>
</tr>
<tr>
<td>ELAPSED_2</td>
<td>TIME</td>
<td>Elapsed time of phase 2</td>
</tr>
<tr>
<td>PHASE_3</td>
<td>CHAR(8)</td>
<td>Name of utility phase 3</td>
</tr>
<tr>
<td>ELAPSED_3</td>
<td>TIME</td>
<td>Elapsed time of phase 3</td>
</tr>
<tr>
<td>PHASE_4</td>
<td>CHAR(8)</td>
<td>Name of utility phase 4</td>
</tr>
<tr>
<td>ELAPSED_4</td>
<td>TIME</td>
<td>Elapsed time of phase 4</td>
</tr>
<tr>
<td>PHASE_5</td>
<td>CHAR(8)</td>
<td>Name of utility phase 5</td>
</tr>
<tr>
<td>ELAPSED_5</td>
<td>TIME</td>
<td>Elapsed time of phase 5</td>
</tr>
</tbody>
</table>
Maintaining the BMCHIST table

When a utility completes successfully, it inserts a row into the BMCHIST table.

You can control expansion of this table by deleting old rows. If you use REORG PLUS, you can also control inserts into the BMCHIST table.

To delete old rows from the BMCHIST table

1 To delete selected rows from the BMCHIST table based on the date that the utility completed, use the following sample SQL statement:

```sql
DELETE
FROM creatorName.CMN_BMCHIST
WHERE DATE < 'yyyy-mm-dd';
```

To control inserts into the BMCHIST table (REORG PLUS only)

1 Use the TERMEXIT option to specify a user exit that controls inserts into the BMCHIST table.

For more information, see the REORG PLUS for DB2 Reference Manual.

BMCLGRNX table

The BMCLGRNX table contains log ranges that show when a table space was open for updates.

Table 80 on page 561 describes the contents of the BMCLGRNX table.

<table>
<thead>
<tr>
<th>Column name</th>
<th>Data type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>LGRDBID</td>
<td>CHAR(2)</td>
<td>DBID of the modified object</td>
</tr>
<tr>
<td>LGRPSID</td>
<td>CHAR(2)</td>
<td>OBID of the modified object</td>
</tr>
<tr>
<td>LGRUCDT</td>
<td>CHAR(6)</td>
<td>Modification date (mmddyy)</td>
</tr>
<tr>
<td>LGRUCTM</td>
<td>CHAR(8)</td>
<td>Modification time (hmmsssth)</td>
</tr>
<tr>
<td>LGRSRBA</td>
<td>CHAR(6)</td>
<td>Starting RBA</td>
</tr>
<tr>
<td>LGRSPBA</td>
<td>CHAR(6)</td>
<td>Stopping RBA</td>
</tr>
<tr>
<td>LGRPART</td>
<td>SMALLINT</td>
<td>Table space partition number</td>
</tr>
</tbody>
</table>
### BMCSYNC table

The BMCSYNC table contains information about the status of the objects that the currently executing utilities are accessing.

*Table 81 on page 563 describes the BMCSYNC table. The BMCSYNC table synchronizes and controls access to DB2 spaces by concurrently executing BMC utility products. If you have more than one BMC utility installed, all of these utilities should share the same BMCSYNC table.*

*The utilities insert rows into the BMCSYNC table during the UTILINIT phase. While the job executes, the utilities update the table as the status of the object changes. The utilities delete rows from the BMCSYNC table during the UTILTERM phase.*

---

<table>
<thead>
<tr>
<th>Column name</th>
<th>Data type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>LGRSLRSN</td>
<td>CHAR(6)</td>
<td>Starting LRSN of update log records for data sharing For non-data-sharing, the value is X'000000000000'.</td>
</tr>
<tr>
<td>LGRELRSN</td>
<td>CHAR(6)</td>
<td>Ending LRSN of update log records for data sharing For non-data-sharing, the value is X'000000000000'.</td>
</tr>
<tr>
<td>LGRMEMBER</td>
<td>CHAR(2)</td>
<td>Data sharing member ID of the modifying DB2 subsystem For non-data-sharing, the value is X'0001'.</td>
</tr>
</tbody>
</table>

---

**Note**

RECOVERY MANAGER uses the BMCLGRNX table only for DB2 Versions 9 and 10. RECOVERY MANAGER uses the SYSIBM.SYSLGRNX table for DB2 versions greater than Version 10.
Table 81: BMCSYNC table

<table>
<thead>
<tr>
<th>Column name</th>
<th>Data type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>UTILID</td>
<td>CHAR(16)</td>
<td>Utility identifier. <em>(RECOVER PLUS)</em> This column is blank when a RECOVER UNLOADKEYS command creates the row and then a RECOVER BUILDINDEX command reads and deletes the row.</td>
</tr>
<tr>
<td>NAME1</td>
<td>CHAR(8)</td>
<td>Database name or creator name. <em>(DASD MANAGER PLUS)</em> This value is the database name. <em>(CHECK PLUS, LOADPLUS, REORG PLUS, and UNLOAD PLUS)</em> If the value for NAME1 would exceed 8 bytes or the value for NAME2 would exceed 18 bytes, NAME1 contains the DBID for the object.</td>
</tr>
<tr>
<td>NAME2</td>
<td>CHAR(18)</td>
<td>Space, table, or index name. <em>(DASD MANAGER PLUS)</em> The BMCSTATS utility always inserts the space name (limited to a maximum of 8 characters). <em>(CHECK PLUS, LOADPLUS, REORG PLUS, and UNLOAD PLUS)</em> If the value for NAME1 would exceed 8 bytes or the value for NAME2 would exceed 18 bytes, NAME2 contains the table OBID or index ISOBID of the object in hexadecimal format.</td>
</tr>
<tr>
<td>Column name</td>
<td>Data type</td>
<td>Description</td>
</tr>
<tr>
<td>-------------</td>
<td>-----------</td>
<td>-------------</td>
</tr>
</tbody>
</table>
| KIND        | CHAR(2)   | Type of object:  
  ■ IP (index partition)  
  ■ IX (index)  
  ■ TB (table)  
  ■ TP (table space partition)  
  ■ TS (table space)  
  ■ DD, DW, D1, D2 (dynamic work file allocation)  
  ■ CI (copy information)  
  ■ RD (restart data set block) |
| PARTITION   | SMALLINT  | Physical partition number:  
  ■ Null or 0 for a single data set nonpartitioned space  
  ■ Data set number for a multi-data-set, nonpartitioned space  
  ■ Partition number for a partitioned space  
  (CHECK PLUS, COPY PLUS, DASD MANAGER PLUS, LOADPLUS, REORG PLUS, and UNLOAD PLUS) The value is null or 0 for any nonpartitioned space. |
| BMCID       | SMALLINT  | Internal identifier of the object  
  DASD MANAGER PLUS does not use this column. |
<table>
<thead>
<tr>
<th>Column name</th>
<th>Data type</th>
<th>Description</th>
</tr>
</thead>
</table>
| UTILNAME    | CHAR(8)   | Name of the executing utility:  
  - CHECK  
  - COPY  
  - STATS  
  - LOAD  
  - RECOVER  
  - REORG  
  - UNLOAD |
| SHRLEVEL    | CHAR(1)   | Degree to which utilities can share this object:  
  - Blank means that no status is requested, and any other utility can obtain any status.  
  - S allows sharing among any number of SHRLEVEL S utilities.  
  - X indicates that exclusive control is required. No other utility can run with SHRLEVEL X.  
For more information, see “Shared access levels of BMC utilities” on page 569.
<table>
<thead>
<tr>
<th>Column name</th>
<th>Data type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>STATUS</td>
<td>CHAR(1)</td>
<td>Status of the utility or object:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>■ Blank (indicates no processing has been done)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>■ C (for CHECK PLUS, indicates checked)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>■ L (for LOADPLUS, indicates loaded)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>■ U (for UNLOAD PLUS, indicates unloaded)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>■ R (for REORG PLUS, indicates reloaded)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>DASD MANAGER PLUS does not use this column.</td>
</tr>
<tr>
<td>XCOUNT</td>
<td>INTEGER</td>
<td>Number of rows or keys processed in the current phase</td>
</tr>
<tr>
<td></td>
<td></td>
<td>DASD MANAGER PLUS does not use this column.</td>
</tr>
<tr>
<td>DDNAME</td>
<td>CHAR(8)</td>
<td>Check, load, unload, or work ddname</td>
</tr>
<tr>
<td></td>
<td></td>
<td>DASD MANAGER PLUS does not use this column.</td>
</tr>
<tr>
<td>BLOCKS</td>
<td>INTEGER</td>
<td>Number of blocks for the check, load, unload, or work data set</td>
</tr>
<tr>
<td></td>
<td></td>
<td>DASD MANAGER PLUS does not use this column.</td>
</tr>
<tr>
<td>ORIG_STATUS</td>
<td>CHAR(8)</td>
<td>Encoded representation of the original DB2 status of the space (RECOVER PLUS) This column restores the DB2 status of a space after recovery, if necessary.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>DASD MANAGER PLUS does not use this column.</td>
</tr>
</tbody>
</table>
## BMCSYNC table considerations

This topic contains important information that you need to know about the BMCSYNC table.

Note the following considerations:

- By default, DASD MANAGER PLUS uses the BMCSYNC table to synchronize access to DB2 spaces. However, if you want to turn this feature off, you may do so by specifying No for the BMCSYNC installation option. If you specify No for this option, DASD MANAGER PLUS does not use the BMCSYNC table and the product bypasses BMCUTIL table access, UTILID enqueue logic, and object name enqueue logic used for BMC utility concurrency control. Turning this feature off can lead to VSAM data set access failures in BMCSTATS or other utilities due to utility conflicts that are no longer detected.

- You might need to increase the size of the BMCSYNC table space from the standard size that was allocated during installation when any of the following conditions exists:

  — You are processing a large number of partitions.

  Estimate this allocation based on the following factors:
—Number of utilities that you are executing concurrently
—Number of partitions that you are processing concurrently
—Number of files that you are allocating dynamically

—You are loading a partition-by-growth table space.
Estimate this allocation based on the following factors:
—Number of utilities that you are running concurrently
—Value of MAXPARTITIONS
—Number of files that you are allocating dynamically

—You are loading or unloading XML data and the XML table space is partition-
by-growth.
Estimate this allocation based on the following factors:
—Number of utilities that you are executing concurrently
—Number of XML columns that you are loading or unloading
—Value of MAXPARTITIONS (a minimum of 256 partitions in this case)
—Number of files that you are allocating dynamically

—You are loading or unloading LOB data.
Estimate this allocation based on the following factors:
—Number of utilities that you are executing concurrently
—Number of LOB columns that you are loading or unloading
—Number of partitions in the base table space
—Number of files that you are allocating dynamically

**Maintaining the BMCSYNC table**

When a utility abends, rows might remain in the BMCSYNC table.

On rare occasions, you might need to take action to control expansion of the
BMCSYNC table.
To control expansion of the BMCSYNC table

1 Use one of the following methods to delete rows in the BMCSYNC table:

- Use the TERM restart parameter on the EXEC statement to delete rows from both the BMCUTIL and BMCSYNC tables. Do not delete any rows for instances of utilities that are awaiting restart.

- Delete invalid rows from the BMCUTIL table. Do not delete any rows for instances of utilities that are awaiting restart.

Then use the following SQL statement to delete rows from the BMCSYNC table:

```sql
DELETE FROM creatorName.CMN_BMCSYNC
WHERE UTILID NOT IN
(SELECT UTILID FROM creatorName.CMN_BMCUTIL);
```

**Note**
The names of the BMCUTIL and BMCSYNC tables might have been changed at your site during installation.

Cleaning up RECOVER UNLOADKEYS entries

Successful completion of a RECOVER UNLOADKEYS job leaves rows in BMCSYNC with blank utility IDs for table space partitions and indexes related to the unloaded keys. The table space rows prevent other BMC utilities from obtaining exclusive control of the table space.

To clean up RECOVER UNLOADKEYS entries

1 Use one of the following methods to remove the invalid BMCSYNC rows:

- Run a RECOVER BUILDINDEX job.

- Run a job that uses the following statement for the table space and each index:

```sql
DELETE FROM creatorName.CMN_BMCSYNC
WHERE UTILID=''
AND NAME1='databaseName'
AND NAME2='spaceName'
AND UTILNAME='RECOVER';
```

Shared access levels of BMC utilities

BMC utility jobs register DB2 objects in the BMCSYNC table.
The registering utility assigns a sharing level to each registered object. The sharing level controls access to that object from other BMC utilities. For partitioned DB2 spaces, registration is performed at the partition level.

**Note**

All BMC utility products use the BMCUTIL table to control the use of utility IDs, which identify executions of BMC utilities. Each BMC utility product must have a unique ID for restart purposes. This unique ID is stored in the BMCUTIL table. For more information about this table, see “BMCUTIL table” on page 575.

The BMCSYNC table allows multiple BMC utilities (or multiple instances of a utility) to operate concurrently on different partitions of a DB2 space if no nonpartitioning indexes are involved. In addition, some BMC utilities can operate concurrently on the same object or partition. For information about which products can operate concurrently, see Table 82 on page 570. For additional serialization and concurrency issues for each utility, see that utility’s reference manual.

The "Access level" column in Table 82 on page 570 refers to the value of the "SHRLEVEL" column name in the BMCSYNC table (“BMCSYNC table” on page 562).

### Table 82: Shared access levels of BMC utilities

<table>
<thead>
<tr>
<th>Product</th>
<th>Access level</th>
<th>Additional information</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHECK PLUS</td>
<td>S</td>
<td>None</td>
</tr>
<tr>
<td>COPY PLUS</td>
<td>S or blank</td>
<td>If you specify COPY IMAGECOPY, COPY PLUS registers the object with no access status (blank). Otherwise, COPY PLUS registers the object with shared access (S).</td>
</tr>
<tr>
<td>DASD MANAGER PLUS (BMCSTATS)</td>
<td>S</td>
<td>None</td>
</tr>
<tr>
<td>LOADPLUS</td>
<td>X</td>
<td>If you specify PART, LOADPLUS registers only the specified partitions with exclusive access (X). If no nonpartitioned indexes exist on the table space, you can run other utilities on different partitions while running this job.</td>
</tr>
<tr>
<td>Product</td>
<td>Access level</td>
<td>Additional information</td>
</tr>
<tr>
<td>--------------------</td>
<td>--------------</td>
<td>-----------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>RECOVER PLUS</td>
<td>X, S, or blank</td>
<td>RECOVER PLUS registers an object with shared access (S) under the following conditions:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>■ The table space for an index is registered with shared access if the index is being</td>
</tr>
<tr>
<td></td>
<td></td>
<td>rebuilt and its table space is not recovered in the same job.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>■ A table space partition is registered with shared access if the keys for that partition</td>
</tr>
<tr>
<td></td>
<td></td>
<td>are unloaded with a RECOVER UNLOADKEYS operation.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>RECOVER PLUS registers an object with no access status (blank) if you specify the</td>
</tr>
<tr>
<td></td>
<td></td>
<td>following commands or options:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>■ the ACCUM command</td>
</tr>
<tr>
<td></td>
<td></td>
<td>■ OUTCOPY ONLY</td>
</tr>
<tr>
<td></td>
<td></td>
<td>■ INDEP OUTSPACE</td>
</tr>
<tr>
<td></td>
<td></td>
<td>RECOVER PLUS registers the object with exclusive access (X) in all other cases.</td>
</tr>
<tr>
<td>RECOVERY MANAGER</td>
<td>S</td>
<td>None</td>
</tr>
<tr>
<td>REORG PLUS</td>
<td>X</td>
<td>If you specify PART, REORG PLUS registers only the specified partitions with exclusive</td>
</tr>
<tr>
<td></td>
<td></td>
<td>access (X). If no nonpartitioned indexes exist on the table space, you can run other</td>
</tr>
<tr>
<td></td>
<td></td>
<td>utilities on different partitions while running this job.</td>
</tr>
<tr>
<td>UNLOAD PLUS</td>
<td>S</td>
<td>None</td>
</tr>
</tbody>
</table>

**WARNING**

Do not run an IBM utility, command, or SQL statement that attempts to manipulate the structure, data, or status of an object that a BMC utility is currently processing. For example, commands and SQL statements such as -STOP, -START, EXCHANGE, and ALTER will produce unpredictable results.
The following considerations apply when executing BMC utilities concurrently:

- If BMCSTATS is processing multiple objects and encounters an object that is held by another utility, the BMCSTATS job issues a warning. The warning identifies the object and the utility that is using it. BMCSTATS continues processing the next object.
- If BMCSTATS is processing an object and another utility requires exclusive control of that object, the other utility stops execution at initialization time.

**BMCTRANS table**

The BMCTRANS table contains information that RECOVERY MANAGER and Log Master use for transaction recovery.

Table 83 on page 572 describes the contents of the BMCTRANS table. The table contains one row for each execution of Log Master (that is, one row for each log scan performed).

**Table 83: BMCTRANS table**

<table>
<thead>
<tr>
<th>Column Name</th>
<th>Data type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>USERID</td>
<td>CHAR(8) NOT NULL</td>
<td>Transaction creator</td>
</tr>
<tr>
<td>TRANID</td>
<td>VARCHAR(18) NOT NULL</td>
<td>Transaction ID</td>
</tr>
<tr>
<td>STARTTIME</td>
<td>TIMESTAMP NOT NULL WITH DEFAULT</td>
<td>Transaction start time</td>
</tr>
<tr>
<td>PITRBA</td>
<td>CHAR(6) NOT NULL FORBIT DATA</td>
<td>RBA for point-in-time recovery</td>
</tr>
<tr>
<td>OUTDSNAME</td>
<td>VARCHAR(35) NOT NULL</td>
<td>Output data set prefix for SQL statements or the logical log</td>
</tr>
<tr>
<td>Column Name</td>
<td>Data type</td>
<td>Description</td>
</tr>
<tr>
<td>-----------------</td>
<td>-------------------------------------</td>
<td>-----------------------------------------------------------------------------</td>
</tr>
<tr>
<td>STATE</td>
<td>SMALLINT NOT NULL</td>
<td>Level of recovery analysis performed:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>■ 0 (only UNDO analysis has been performed)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>■ 1 through 9999 (UNDO and PIT analysis have been performed)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>■ Greater than 10000 (UNDO, PIT, and REDO analysis have been performed)</td>
</tr>
<tr>
<td>PITTIME</td>
<td>TIMESTAMP NOT NULL WITH DEFAULT</td>
<td>Timestamp for the PIT RBA</td>
</tr>
<tr>
<td>SEQNO</td>
<td>SMALLINT NOT NULL</td>
<td>Sequence number of the filter text</td>
</tr>
<tr>
<td>PITWKEST</td>
<td>FLOAT NOT NULL</td>
<td>Work estimate</td>
</tr>
<tr>
<td>FILTERLINE</td>
<td>VARCHAR(1040) NOT NULL</td>
<td>Text of the filter (may span more than one row)</td>
</tr>
<tr>
<td>UNDONUMROWSUPD</td>
<td>FLOAT</td>
<td>Number of unique rows (RIDs) that are selected by the filter of the log scan</td>
</tr>
<tr>
<td>UNDOSUBSEQUPDROWS</td>
<td>FLOAT</td>
<td>Total number of anomaly log records relating to one of the rows (RIDs)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>selected by the log scan</td>
</tr>
<tr>
<td>UNDOLOGRECROWS</td>
<td>FLOAT</td>
<td>Number of unique rows (RIDs) that are affected by an anomaly log record</td>
</tr>
<tr>
<td>Column Name</td>
<td>Data type</td>
<td>Description</td>
</tr>
<tr>
<td>---------------------</td>
<td>-----------------------------</td>
<td>-----------------------------------------------------------------------------</td>
</tr>
<tr>
<td>UNDOJOBSTATUS</td>
<td>SMALLINT</td>
<td>Code indicating the status of an UNDO log scan:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>■ 0 (no action taken)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>■ 1 (Log Master execution started)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>■ 2 (Log Master execution completed successfully with return code 0,4)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>■ 3 (Log Master execution completed unsuccessfully with return code 8,12)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>■ 4 (Log Master execution abnormally ended)</td>
</tr>
<tr>
<td>REDOJOBSTATUS</td>
<td>SMALLINT</td>
<td>Code indicating the status of a REDO log scan:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>■ 0 (no action taken)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>■ 1 (Log Master execution started)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>■ 2 (Log Master execution completed successfully with return code 0,4)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>■ 3 (Log Master execution completed unsuccessfully with return code 8,12)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>■ 4 (Log Master execution abnormally ended)</td>
</tr>
<tr>
<td>ENDTIME</td>
<td>TIMESTAMP NOT NULL WITH DEFAULT</td>
<td>Transaction end time</td>
</tr>
<tr>
<td>ACTION</td>
<td>SMALLINT</td>
<td>Code indicating what recovery, if any, has been performed on the transaction</td>
</tr>
</tbody>
</table>
BMCUTIL table

The BMCUTIL table contains information about utilities that are currently running or started.

Table 84 on page 575 describes the BMCUTIL table. The utilities use the table to control the use of utility IDs. Each BMC utility must have a unique ID for restart purposes. If you have more than one BMC utility installed, all of these utilities should share the same BMCUTIL table.

The utilities insert rows into the BMCUTIL table during the UTILINIT phase and update the table as the job status changes. The utilities delete rows from the BMCUTIL table during the UTILTERM phase.

Table 84: BMCUTIL table

<table>
<thead>
<tr>
<th>Column name</th>
<th>Data type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>UTILID</td>
<td>CHAR(16)</td>
<td>Utility identifier</td>
</tr>
<tr>
<td>STATUS</td>
<td>CHAR(1)</td>
<td>Execution status of the utility:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>■ A (active, not executing command)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>■ I (initializing)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>■ P (pausing or pause-stopped)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>■ S (stopped)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>■ T (terminating)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>■ X (executing command)</td>
</tr>
<tr>
<td></td>
<td></td>
<td><em>(DASD MANAGER PLUS)</em> The value for this column is always X.</td>
</tr>
<tr>
<td>Column name</td>
<td>Data type</td>
<td>Description</td>
</tr>
<tr>
<td>------------</td>
<td>-----------</td>
<td>-------------</td>
</tr>
</tbody>
</table>
| UTILNAME   | CHAR(8)   | Name of the executing utility:  
  ■ CHECK  
  ■ COPY  
  ■ STATS  
  ■ LOAD  
  ■ RECOVER  
  ■ REORG  
  ■ UNLOAD  |
| PHASE      | CHAR(8)   | Current phase of the utility  
COPY PLUS does not use this column. |
| USERID     | CHAR(8)   | User ID executing the utility |
| SSID       | CHAR(4)   | DB2 subsystem where the utility is running |
| RESTART    | CHAR(1)   | Restart option:  
  ■ N (not restart)  
  ■ P (RESTART(PHASE))  
  ■ Y (RESTART)  
DASD MANAGER PLUS does not use this column. |
| NOTEID     | CHAR(8)   | TSO user ID to be notified  
DASD MANAGER PLUS does not use this column. |
| DBNAME     | CHAR(8)   | (RECOVER PLUS and REORG PLUS) Name of the database containing the table or index space for which the last checkpoint was taken  
This value can be blank.  
The other utilities do not use this column. |
### Maintaining the BMCUTIL table

When a utility abends, rows might remain in the BMCUTIL table.

On rare occasions, you might need to take action to control expansion of the BMCUTIL table.

**To control expansion of the BMCUTIL table**

1. Use one of the following methods to delete rows from the BMCUTIL table:

   - Use the TERM restart parameter on the EXEC statement to delete rows from both the BMCUTIL and BMCSYNC tables. Do not delete any rows for instances of utilities that are awaiting restart.

---

<table>
<thead>
<tr>
<th>Column name</th>
<th>Data type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPNAME</td>
<td>CHAR(8)</td>
<td><em>(RECOVER PLUS and REORG PLUS)</em> Name of the table or index space for which the last checkpoint was taken. This value can be blank. The other utilities do not use this column.</td>
</tr>
<tr>
<td>SPSTATUS</td>
<td>CHAR(5)</td>
<td><em>(REORG PLUS)</em> Space status before the utility stopped. The other utilities do not use this column.</td>
</tr>
<tr>
<td>COMMANDNO</td>
<td>SMALLINT</td>
<td>Not used (always 0)</td>
</tr>
<tr>
<td>COMMAND</td>
<td>VARCHAR(256)</td>
<td>First 256 characters of the utility command text. RECOVER PLUS, DASD MANAGER PLUS, and COPY PLUS do not use this column.</td>
</tr>
<tr>
<td>STATE</td>
<td>LONG VARCHAR</td>
<td>Utility state and sync information. DASD MANAGER PLUS does not use this column.</td>
</tr>
<tr>
<td>START_TIMESTAMP</td>
<td>TIMESTAMP</td>
<td>Starting timestamp of the utility</td>
</tr>
</tbody>
</table>
Delete invalid rows in the BMCUTIL table. Do not delete any rows for instances of utilities that are awaiting restart.

Then use the following SQL statement to delete rows from the BMCSYNC table:

```sql
DELETE
FROM creatorName.CMN_BMCSYNC
WHERE UTILID NOT IN
(SELECT UTILID FROM creatorName.CMN_BMCUTIL);
```

**Note**
The names of the BMCUTIL and BMCSYNC tables might have been changed at your site during installation.

---

## BMCXCOPY table

The BMC utilities use the BMCXCOPY table to track registered copies.

Table 85 on page 579 describes the contents of the BMCXCOPY table, which contains information about the following types of registered copies:

- Indexes that COPY PLUS has copied:
  - COPY NO index copies
  - DSNUM n index (nonpartitioned) copies
  - Incremental index copies
  - Index copies that are made at data set level

- Instant Snapshots made by COPY PLUS with the BMC EXTENDED BUFFER MANAGER (XBM) product or BMC SNAPSHOT UPGRADE FEATURE (SUF) technology, and any standard copies made in association with the Instant Snapshot

- Online consistent copies

- Cabinet copies

- Encrypted copies

The BMCXCOPY table functions like SYSIBM.SYSCOPY except that IXNAME replaces TSNAME in BMCXCOPY. You must control authorization and access to users for BMCXCOPY through standard DB2 authorization.
If you have more than one BMC utility installed, all of these utilities should share the same BMCXCOPY table.

### Table 85: BMCXCOPY table

<table>
<thead>
<tr>
<th>Column name</th>
<th>Data type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>DBNAME</td>
<td>CHAR(8)</td>
<td>Name of the database</td>
</tr>
<tr>
<td>IXNAME</td>
<td>CHAR(8)</td>
<td>Name of the index space or table space for Instant Snapshots and associated copies</td>
</tr>
<tr>
<td>DSNUM</td>
<td>INTEGER</td>
<td>Data set number within the index or table space</td>
</tr>
<tr>
<td>ICTYPE</td>
<td>CHAR(1)</td>
<td>Operation type:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>■ F (COPY FULL YES; for COPY PLUS, online consistent copies)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>■ I (COPY FULL NO)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>■ W (REORG LOG NO)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>■ B (REBUILD INDEX)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>■ P (POINT-IN-TIME RECOVERY)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>■ C (for COPY PLUS version 7.3 and earlier, online consistent copies)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>■ s (used by COPY PLUS to track system pages)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>■ m (indicates that the table space was exported by the COPY PLUS EXPORT command or migrated by the RECOVER PLUS IMPORT command)</td>
</tr>
<tr>
<td>ICDATE</td>
<td>CHAR(6)</td>
<td>Date of the entry (yymmdd)</td>
</tr>
<tr>
<td>Column name</td>
<td>Data type</td>
<td>Description</td>
</tr>
<tr>
<td>--------------</td>
<td>-----------</td>
<td>-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>START_RBA</td>
<td>CHAR(10)</td>
<td>48-bit positive integer containing the relative byte location of a point in the DB2 recovery log. The indicated point as follows:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>■ For ICTYPE F, the starting point for all updates since the image copy was taken</td>
</tr>
<tr>
<td></td>
<td></td>
<td>■ For COPY_TYPE O, the minimum of the consistent point and the oldest inflight URID</td>
</tr>
<tr>
<td></td>
<td></td>
<td>■ (RECOVERY MANAGER) For ICTYPE C, the consistent log point for the copy</td>
</tr>
<tr>
<td></td>
<td></td>
<td>— RBA for non-data-sharing systems</td>
</tr>
<tr>
<td></td>
<td></td>
<td>— LRSN for data sharing systems</td>
</tr>
<tr>
<td>FILESEQNO</td>
<td>INTEGER</td>
<td>Tape file sequence number of the copy</td>
</tr>
<tr>
<td>DEVTYPE</td>
<td>CHAR(8)</td>
<td>Type of device on which the copy resides</td>
</tr>
<tr>
<td>IBMREQD</td>
<td>CHAR(1)</td>
<td>Whether the row came from the basic machine-readable material (MRM) tape:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>■ N (NO)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>■ Y (YES)</td>
</tr>
<tr>
<td>DSNAME</td>
<td>CHAR(44)</td>
<td>Name of the data set</td>
</tr>
<tr>
<td></td>
<td></td>
<td>If STYPE V, DSNAME is the name of the VSAM data component.</td>
</tr>
<tr>
<td>ICTIME</td>
<td>CHAR(6)</td>
<td>Time at which this row was inserted (hhmmss)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>The insertion takes place after the completion of the operation that the row represents.</td>
</tr>
<tr>
<td>Column name</td>
<td>Data type</td>
<td>Description</td>
</tr>
<tr>
<td>--------------</td>
<td>---------------</td>
<td>---------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>SHRLEVEL</td>
<td>CHAR(1)</td>
<td>SHRLEVEL parameter on COPY if ICTYPE F:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>■ C (change)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>■ R (reference)</td>
</tr>
<tr>
<td>DSVOLSER</td>
<td>VARCHAR(1784)</td>
<td>Volume serial numbers of the data set</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Commas separate items in a list of 6-byte numbers. This column is blank if the data set is cataloged.</td>
</tr>
<tr>
<td>TIMESTAMP</td>
<td>TIMESTAMP</td>
<td>Date and time when the row was inserted</td>
</tr>
<tr>
<td></td>
<td></td>
<td>This column contains the date and time that are recorded in ICDATE and ICTIME. The use of TIMESTAMP over ICDATE and ICTIME is recommended, because later DB2 releases might not support the latter two columns.</td>
</tr>
<tr>
<td>ICBACKUP</td>
<td>CHAR(2)</td>
<td>Type of image copy contained in the data set:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>■ LB (data set contains local backup data)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>■ RP (data set contains recovery system main data)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>■ RB (data set contains recovery system backup data)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>■ Blank (data set contains local system main data or is not one of multiple copies)</td>
</tr>
<tr>
<td>Column name</td>
<td>Data type</td>
<td>Description</td>
</tr>
<tr>
<td>----------------</td>
<td>-------------</td>
<td>-----------------------------------------------------------------------------</td>
</tr>
<tr>
<td>ICUNIT</td>
<td>CHAR(1)</td>
<td>Media on which the image copy data set is stored:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>■ D (DASD)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>■ T (tape)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>■ Blank (medium is neither tape nor DASD)</td>
</tr>
<tr>
<td>STYPE</td>
<td>CHAR(1)</td>
<td>Type of copy:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>■ Blank (for ICTYPE=F)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>■ V (Instant Snapshot or a VSAM data set)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>■ e (encrypted copy)</td>
</tr>
<tr>
<td>PIT_RBA</td>
<td>CHAR(10)</td>
<td>Point-in-time recovery:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>■ X'000000000000' (for ICTYPE=F)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>■ consistent point (for COPY_TYPE=O)</td>
</tr>
<tr>
<td>GROUP_MEMBER</td>
<td>CHAR(8)</td>
<td>Data-sharing group member (the name of the SSID where the copy was made)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>This column is blank if you are not using data sharing.</td>
</tr>
<tr>
<td>OTYPE</td>
<td>CHAR(1)</td>
<td>Type of object:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>■ T (table)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>■ I (index)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>■ i (compressed index)</td>
</tr>
<tr>
<td>LOWDSNUM</td>
<td>INTEGER</td>
<td>Not used</td>
</tr>
<tr>
<td>HIGHDSNUM</td>
<td>INTEGER</td>
<td>Not used</td>
</tr>
<tr>
<td>COPYPAGESF</td>
<td>FLOAT(8)</td>
<td>Number of pages written to the copy data set</td>
</tr>
<tr>
<td>Column name</td>
<td>Data type</td>
<td>Description</td>
</tr>
<tr>
<td>-----------------</td>
<td>-----------</td>
<td>---------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>NPAGESF</td>
<td>FLOAT(8)</td>
<td>High-used RBA divided by the page size</td>
</tr>
<tr>
<td>CPAGESF</td>
<td>FLOAT(8)</td>
<td>Total number of changed pages</td>
</tr>
<tr>
<td>JOBNAME</td>
<td>CHAR(8)</td>
<td>Job name</td>
</tr>
<tr>
<td>AUTHID</td>
<td>CHAR(8)</td>
<td>Authorization ID</td>
</tr>
<tr>
<td>OLDEST_VERSION</td>
<td>SMALLINT</td>
<td>When ICTYPE= B, F, I, S, W, or X, the version number of the oldest format of data for an object</td>
</tr>
<tr>
<td></td>
<td></td>
<td>For other values of ICTYPE, the value is -1.</td>
</tr>
<tr>
<td>LOGICAL_PART</td>
<td>INTEGER</td>
<td>Logical partition number</td>
</tr>
<tr>
<td>LOGGED</td>
<td>CHAR(1)</td>
<td>Logging attribute of the table space:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>■ Y (logged)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>■ N (not logged)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>■ Blank (row inserted prior to DB2 version 9)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>For a non-LOB table space or index space, blank indicates that the logging attribute is logged.</td>
</tr>
<tr>
<td>TTYPE</td>
<td>CHAR(8)</td>
<td>Row format for the table space or partition:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>■ RRF (reordered row format)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>■ BRF (basic row format)</td>
</tr>
<tr>
<td>INSTANCE</td>
<td>SMALLINT</td>
<td>Instance number of the current base objects (table and index) The default value is 1.</td>
</tr>
<tr>
<td>RELCREATED</td>
<td>CHAR(1)</td>
<td>DB2 release that created the object</td>
</tr>
<tr>
<td></td>
<td></td>
<td>If the release is earlier than Version 9, the value is blank.</td>
</tr>
<tr>
<td>Column name</td>
<td>Data type</td>
<td>Description</td>
</tr>
<tr>
<td>----------------</td>
<td>-----------</td>
<td>-----------------------------------------------------------------------------</td>
</tr>
<tr>
<td>COPY_TYPE</td>
<td>CHAR(1)</td>
<td>Type of copy:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>■ C (cabinet copy)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>■ O (online consistent copy)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>■ X (export copy)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>■ I (import copy)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>■ Blank (default value)</td>
</tr>
<tr>
<td>NOTE_VALUE</td>
<td>CHAR(4)</td>
<td>Encoded value that quickly locates data for a specific space in a cabinet copy</td>
</tr>
<tr>
<td></td>
<td></td>
<td>The default value is blank.</td>
</tr>
<tr>
<td>NOTE_TYPE</td>
<td>CHAR(1)</td>
<td>Type of NOTE (issued by COPY PLUS):</td>
</tr>
<tr>
<td></td>
<td></td>
<td>■ A (ABS - tape)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>■ R (REL - disk)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>■ F (frame)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>■ Blank (default value)</td>
</tr>
<tr>
<td>OCC_COPY_RBA</td>
<td>CHAR(10)</td>
<td>Original START_RBA of an online consistent copy</td>
</tr>
<tr>
<td></td>
<td></td>
<td>The default value is blank.</td>
</tr>
<tr>
<td>OCC_LOCKRULE</td>
<td>CHAR(1)</td>
<td>Locking rule for a table space (not used for indexes):</td>
</tr>
<tr>
<td></td>
<td></td>
<td>■ A (for page level)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>■ R (for row level)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>■ Blank (default value)</td>
</tr>
<tr>
<td>Column name</td>
<td>Data type</td>
<td>Description</td>
</tr>
<tr>
<td>---------------------</td>
<td>------------</td>
<td>---------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>OCC_SPACE_ALTERED</td>
<td>CHAR(1)</td>
<td>Whether the space was altered:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>■ Y (altered)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>■ N (not altered)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>■ Blank (default value)</td>
</tr>
<tr>
<td>CAB_BLOCKS</td>
<td>INTEGER</td>
<td>Total number of frames written for a cabinet copy</td>
</tr>
<tr>
<td>EXPSSID</td>
<td>CHAR(4)</td>
<td>source location SSID of the migration file (valid with COPY_TYPE = 'I')</td>
</tr>
<tr>
<td>EXPSLRSN</td>
<td>CHAR(10)</td>
<td>indicates the SYNC AUTO point on the source (valid with COPY_TYPE = 'I' and COPY_TYPE = 'X')</td>
</tr>
<tr>
<td>EXPTLRSN</td>
<td>CHAR(10)</td>
<td>indicates the SYNC AUTO point on the target (valid with COPY_TYPE = 'I')</td>
</tr>
</tbody>
</table>

Maintaining the BMCXCOPY table

Periodically, you should review BMCXCOPY and delete old rows to control its expansion.

To control expansion of the BMCXCOPY table

1. To delete all rows from the BMCXCOPY table that are older than 30 days, run an SQL DELETE statement, using the following statement as an example:

   ```sql
   DELETE
   FROM creatorName.CMN_BMCXCOPY
   WHERE DAYS(CURRENT_TIMESTAMP) - DAYS(TIMESTAMP) > 30;
   ```
Common DB2 repository tables

The BMC common DB2 repository is made up of several DB2 tables.

Naming conventions

The BMC common DB2 repository tables follow a naming convention. The following table provides the synonyms and local table names.

<table>
<thead>
<tr>
<th>Synonym</th>
<th>Local table name</th>
</tr>
</thead>
<tbody>
<tr>
<td>BMCSCC_OBJSETS</td>
<td>BMCUTIL.CMN_OS</td>
</tr>
<tr>
<td>BMCSCC_OBJSET_DEF</td>
<td>BMCUTIL.CMN_OS_DEF</td>
</tr>
<tr>
<td>BMCSCC_OBJSET_SQL</td>
<td>BMCUTIL.CMN_OS_SQL</td>
</tr>
<tr>
<td>BMCSCC_GRPPOPTS</td>
<td>BMCUTIL.CMN_OS_OPTS</td>
</tr>
<tr>
<td>BMCSCC_PRODREG</td>
<td>BMCUTIL.CMN_OS_PREG</td>
</tr>
<tr>
<td>BMCSCC_GROUPAUTH</td>
<td>BMCUTIL.CMN_OS_GAUTH</td>
</tr>
</tbody>
</table>

OBJSETS table

The following table describes the contents of the OBJSETS table. This table describes and provides information about object sets. This table contains one row for each object set defined in the repository.

<table>
<thead>
<tr>
<th>Column name</th>
<th>Data type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>OSNAME</td>
<td>VARCHAR(27) NOT NULL</td>
<td>name of object set</td>
</tr>
<tr>
<td>Column name</td>
<td>Data type</td>
<td>Description</td>
</tr>
<tr>
<td>----------------</td>
<td>------------------------------------</td>
<td>----------------------------------------------------------------------------</td>
</tr>
<tr>
<td>CREATE_TSMP</td>
<td>TIMESTAMP NOT NULL WITH DEFAULT</td>
<td>timestamp of object set creation</td>
</tr>
<tr>
<td>CREATE_UID</td>
<td>CHAR(8) NOT NULL</td>
<td>AUTHID of creator of the object set</td>
</tr>
<tr>
<td>UPDATE_TSMP</td>
<td>TIMESTAMP NOT NULL WITH DEFAULT</td>
<td>timestamp of last maintenance activity</td>
</tr>
<tr>
<td>UPDATE_UID</td>
<td>CHAR(8) NOT NULL</td>
<td>AUTHID of last updater of the object set</td>
</tr>
<tr>
<td>DESCRIPTION</td>
<td>VARCHAR(60) NOT NULL</td>
<td>description of the object set</td>
</tr>
<tr>
<td>PRODUCT_ID</td>
<td>CHAR(3) NOT NULL</td>
<td>creating product ID</td>
</tr>
<tr>
<td></td>
<td></td>
<td>■ ACP (COPY PLUS)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>■ AFR (RECOVER PLUS)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>■ ARM (RECOVERY MANAGER)</td>
</tr>
<tr>
<td>TYPE</td>
<td>CHAR(2) NOT NULL</td>
<td>product group type</td>
</tr>
<tr>
<td></td>
<td></td>
<td>■ BG - full subsystem</td>
</tr>
<tr>
<td></td>
<td></td>
<td>■ BA - application</td>
</tr>
<tr>
<td></td>
<td></td>
<td>■ RP - repository plan group</td>
</tr>
<tr>
<td>NUMBER_OBJECTS</td>
<td>INTEGER NOT NULL WITH DEFAULT</td>
<td>number of objects from last open</td>
</tr>
<tr>
<td>CHECKSUM</td>
<td>SMALLINT NOT NULL</td>
<td>verification value from API updates</td>
</tr>
<tr>
<td>OSNAME_DELIMITED</td>
<td>CHAR(1) NOT NULL WITH DEFAULT 'N'</td>
<td>for use with delimited names will be 'Y' if the related column is a delimited name (entered with double quotes around it) when entered</td>
</tr>
</tbody>
</table>

**OBJSET_DEF table**

The following table describes the contents of the OBJSET_DEF table. This table contains one row for each object set definition specification defined for an object set.
<table>
<thead>
<tr>
<th>Column name</th>
<th>Data type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>OSNAME</td>
<td>VARCHAR(27) NOT NULL</td>
<td>name of the object set</td>
</tr>
<tr>
<td>SEQNO</td>
<td>SMALLINT NOT NULL</td>
<td>sequence number of definition</td>
</tr>
<tr>
<td>INCEXC_IND</td>
<td>CHAR(1) NOT NULL</td>
<td>include or exclude indicator (+, -)</td>
</tr>
<tr>
<td>PATTERN_TYPE</td>
<td>CHAR(2) NOT NULL</td>
<td>Pattern for include or exclude:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- TS (table space name pattern)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- IX (index name pattern)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- TB (table name pattern)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- IS (index space name pattern)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- PL (plan name pattern)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- PG (package name pattern)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- SG (stogroup name pattern)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- OS (object set name pattern)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- SQ (dynamic SQL pattern)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- RP (repository plan)</td>
</tr>
<tr>
<td>INC_IX</td>
<td>CHAR(1) NOT NULL</td>
<td>include related indexes</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Y (Yes)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- N (No)</td>
</tr>
<tr>
<td>INC_RI</td>
<td>CHAR(1) NOT NULL</td>
<td>include RI objects</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Y (Yes)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- N (No)</td>
</tr>
<tr>
<td>INC_LOBS</td>
<td>CHAR(1) NOT NULL</td>
<td>include LOB objects</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Y (Yes)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- N (No)</td>
</tr>
<tr>
<td>Column name</td>
<td>Data type</td>
<td>Description</td>
</tr>
<tr>
<td>----------------</td>
<td>------------------------</td>
<td>--------------------------------------------------</td>
</tr>
<tr>
<td>INC_XML</td>
<td>CHAR(1) NOT NULL</td>
<td>include XML objects</td>
</tr>
<tr>
<td></td>
<td></td>
<td>■ Y (Yes)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>■ N (No)</td>
</tr>
<tr>
<td>INC_CLONES</td>
<td>CHAR(1) NOT NULL</td>
<td>include clones only</td>
</tr>
<tr>
<td></td>
<td></td>
<td>■ Y (Yes)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>■ N (No)</td>
</tr>
<tr>
<td>BY_PART</td>
<td>CHAR(1) NOT NULL</td>
<td>expand objects by partition</td>
</tr>
<tr>
<td></td>
<td></td>
<td>■ Y (Yes)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>■ N (No)</td>
</tr>
<tr>
<td>PART_BEG</td>
<td>SMALLINT NOT NULL</td>
<td>beginning partition number (0-4096)</td>
</tr>
<tr>
<td>PART_END</td>
<td>SMALLINT NOT NULL</td>
<td>ending partition number (0-4096)</td>
</tr>
<tr>
<td>REF_SEQ_NBR</td>
<td>SMALLINT NOT NULL</td>
<td>for future use</td>
</tr>
<tr>
<td>DESC</td>
<td>VARCHAR(60) NOT NULL</td>
<td>description of the specification</td>
</tr>
<tr>
<td>OBJ_QUAL1</td>
<td>VARCHAR(128) NOT NULL</td>
<td>object qualifier 1</td>
</tr>
<tr>
<td>OBJ_QUAL2</td>
<td>VARCHAR(128) NOT NULL</td>
<td>object qualifier 2</td>
</tr>
<tr>
<td>OBJ_QUAL3</td>
<td>VARCHAR(128) NOT NULL</td>
<td>object qualifier 3</td>
</tr>
<tr>
<td>UNI_QUALS</td>
<td>CHAR(1) NOT NULL</td>
<td>UNICODE indicator</td>
</tr>
<tr>
<td>UPDATE_UID</td>
<td>CHAR(8) NOT NULL</td>
<td>ID of last updater of object set definitions</td>
</tr>
<tr>
<td>UPDATE_TSMP</td>
<td>TIMESTAMP NOT NULL WITH DEFAULT</td>
<td>timestamp of last maintenance activity</td>
</tr>
<tr>
<td>PACKAGE_VERSION</td>
<td>SMALLINT NOT NULL</td>
<td>package version</td>
</tr>
<tr>
<td>INC_HISTORY</td>
<td>CHAR(1) NOT NULL WITH DEFAULT 'N'</td>
<td>include related history objects</td>
</tr>
<tr>
<td></td>
<td></td>
<td>■ Y (Yes)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>■ N (No)</td>
</tr>
</tbody>
</table>
### OBJSET_SQL table

The following table describes the contents of the OBJSET_SQL table. This table contains one row for each object set specification in dynamic SQL (type SQ).

<table>
<thead>
<tr>
<th>Column name</th>
<th>Data type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>OSNAME</td>
<td>VARCHAR(27) NOT NULL</td>
<td>name of the object set</td>
</tr>
<tr>
<td>SPEC_SEQNO</td>
<td>SMALLINT NOT NULL</td>
<td>sequence number from OBJSET_DEF table</td>
</tr>
<tr>
<td>SEQNO</td>
<td>SMALLINT NOT NULL</td>
<td>sequence number to order multiple SQL entries</td>
</tr>
<tr>
<td>TEXT</td>
<td>VARCHAR(72) NOT NULL</td>
<td>line of SQL text</td>
</tr>
</tbody>
</table>

### GRPOPTS table

The following table describes the contents of the GRPOPTS table. This table contains one row for each option defined to either a defined group, or a subsystem level option.

<table>
<thead>
<tr>
<th>Column name</th>
<th>Data type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>OSNAME</td>
<td>VARCHAR(27) NOT NULL</td>
<td>name of object set</td>
</tr>
</tbody>
</table>
### OPTION_TYPE

<table>
<thead>
<tr>
<th>Column name</th>
<th>Data type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>OPTION_TYPE</td>
<td>CHAR(10) NOT NULL</td>
<td>option type</td>
</tr>
<tr>
<td></td>
<td></td>
<td>■ backup -- ARMOPTBKUP</td>
</tr>
<tr>
<td></td>
<td></td>
<td>■ recover -- ARMOPTRCVR</td>
</tr>
</tbody>
</table>

These are the option types currently used by RECOVERY MANAGER. The option type is defined by the product, so this list is product-dependent.

### OPTION

<table>
<thead>
<tr>
<th>Column name</th>
<th>Data type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>OPTION</td>
<td>VARCHAR(200) NOT NULL</td>
<td>option name</td>
</tr>
</tbody>
</table>

### OPT_VALUE

<table>
<thead>
<tr>
<th>Column name</th>
<th>Data type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>OPT_VALUE</td>
<td>VARCHAR(200) NOT NULL</td>
<td>value for named option</td>
</tr>
</tbody>
</table>

---

## PRODREG table

The following table describes the contents of the PRODREG table. There should be one entry for each product and version that is registered.

<table>
<thead>
<tr>
<th>Column name</th>
<th>Data type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>PRODUCT_ID</td>
<td>CHAR(3) NOT NULL</td>
<td>product ID</td>
</tr>
<tr>
<td>PLAN_NAME</td>
<td>VARCHAR(24) NOT NULL</td>
<td>plan name</td>
</tr>
<tr>
<td>PRODUCT_VERSION</td>
<td>CHAR(4) NOT NULL</td>
<td>product version</td>
</tr>
</tbody>
</table>

## GROUPAUTH table

The following table describes the contents of the GROUPAUTH table. This table optionally contains one row for each authority granted on a group. No rows exist if no authority has been granted.

<table>
<thead>
<tr>
<th>Column name</th>
<th>Data type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>OSNAME</td>
<td>VARCHAR(27) NOT NULL</td>
<td>name of object set</td>
</tr>
<tr>
<td>GRANTEE</td>
<td>CHAR(8) NOT NULL</td>
<td>AUTHID to whom authorization was granted</td>
</tr>
<tr>
<td>TYPE</td>
<td>CHAR(1) NOT NULL</td>
<td>type of authorization granted</td>
</tr>
<tr>
<td>GRANTOR</td>
<td>CHAR(8) NOT NULL</td>
<td>grantor of authorization</td>
</tr>
<tr>
<td>Column name</td>
<td>Data type</td>
<td>Description</td>
</tr>
<tr>
<td>--------------</td>
<td>------------------------------------</td>
<td>--------------------------------------------------</td>
</tr>
<tr>
<td>DATE_GRANTED</td>
<td>TIMESTAMP NOT NULL WITH DEFAULT</td>
<td>timestamp of when authorization was granted</td>
</tr>
</tbody>
</table>
Overview of BMC products and solutions for DB2

BMC offers both products and solutions for DB2 to address specific areas of DB2 data management. Most of the products and solutions include the use of technologies to ensure their full functionality.

Technologies

The BMC technologies are often referred to as technology components because they are automatically installed when you install many of the products and solutions from BMC. They are not stand-alone products.

Several products or solutions often share the use of a technology component. When this occurs, the technology component is called a shared component.

Products

The BMC products for DB2 provide many features and functionality for working with DB2 data. Products are selected from the product and solution list in the Installation System and have their own passwords.

Solutions

The BMC solutions for DB2 combine various BMC products and technologies. In a solution, the products are referred to as product components and the technologies are called technology components.

When you choose a solution from the product and solution list in the Installation System, all of the components of the solution are automatically installed. Solutions have their own passwords and often offer capabilities above those provided by the individual components of the solution.
BMC products for DB2 and their components overview

BMC products for DB2 and their components
overview
BMC offers products for DB2 that provide features to help you with your DB2 data
management tasks. Many of these products include technology components from
BMC, which are automatically installed to provide the full functionality of the
product.
In many cases, several products share the use of a technology component, which is
then often referred to as a shared component.
Most of the products and their technology components are also components in one
or more of the BMC solutions for DB2 In a solution, the products are referred to as
product components.
The following table shows the BMC products for DB2 and any components used by
the products. A legend is used for the component names.

Note

Information about components and FMIDs is available in the release notes for the
products.
Additionally, a report listing version-specific information for the products and their
components as well as FMID information is available on the BMC ESD site at ftp://
(Related files for the other installation tapes are prefixed with bxx, mxx, and ixx.)
You will need to contact Customer Support for a password to access this
information.
Table 86: BMC products for DB2 and their components
Product name

Components: A=BMC Common Statistics (ATS), B=BMC Password Security System,
C=BMC Primary Subsystem, D=BMC Space Estimation Common Code (ASH), E=BMC
Subsystem, F=BMCSORT, G=Common Explain, H=Common Infrastructure, I=Common SQL
(ACS), J=DATA ACCELERATOR Compression, K=DB2 Assist Services, L=DB2 Common Code
(SCC), M=DB2 Component Services (DBC), N=DB2 Product Configuration, O=DB2 Utilities
Common Code (D2U), P=Dignus C runtimes and C++ objects, Q=High-speed Apply
Engine, R=Install Execution Code (AIN), S=JCL Generation and Execution, T=Next
Generation Logger, U=Option Value Migration, V=Rules Engine, W=Runtime Component
System (RTCS), X=SAS Runtime Library Support, Y=User Interface Middleware Common
Services, Z=ISR External Routines
A B C D E F G H I

ALTER for DB2 a

X

X

X

J

K L

X

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X

M N O P Q R S T U V W X Y Z
X X

X X

X

X

X


### BMC products for DB2 and their components overview

**Components:**

| Product name                    | A | B | C | D | E | F | G | H | I | J | K | L | M | N | O | P | Q | R | S | T | U | V | W | X | Y | Z |
| APPTUNE for DB2                 | X |   |   | X | X | X | X | X | X | X | X | X | X | X | X | X |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| CATALOG MANAGER for DB2         | X | X | X | X | X | X | X | X | X | X | X | X |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| CHANGE MANAGER for DB2<sup>a</sup> | X | X | X | X | X | X | X | X | X | X | X | X |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| CHECK PLUS for DB2              | X | X |   | X | X | X | X | X | X |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| COPY PLUS for DB2               | X |   |   | X | X | X | X | X | X | X | X | X |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| DASD MANAGER PLUS for DB2       | X | X | X | X | X | X | X | X | X | X | X | X |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| EXTENDED BUFFER MANAGER for DB2 | X |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| LOADPLUS for DB2                | X | X | X |   | X | X | X | X | X | X | X | X |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| Log Master for DB2              | X | X |   | X | X | X | X | X | X | X | X | X |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| MainView for DB2<sup>b</sup>    | X | X | X | X | X | X | X | X | X | X | X | X |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| OPERTUNE for DB2                | X |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| PACLOG for DB2                  | X | X | X |   | X | X | X | X | X | X | X | X |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| Pool Advisor for DB2            | X |   |   | X | X | X | X | X | X | X | X | X |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| R+/CHANGE ACCUM for DB2<sup>c</sup> | X | X | X | X | X | X | X | X | X | X | X | X |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| RECOVER PLUS for DB2<sup>c</sup> | X | X | X | X | X | X | X | X | X | X | X | X |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| RECOVERY MANAGER for DB2        | X |   |   | X | X | X | X | X | X | X | X | X |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| REORG PLUS for DB2              | X | X | X |   | X | X | X | X | X | X | X | X |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
BMC solutions for DB2 and their components overview

The BMC solutions for DB2 combine various BMC products and technologies to address specific areas of DB2 data management. The solutions are packages of BMC products and their technologies that are grouped together to perform a specific data management task.
In a solution, the products are referred to as product components and technologies are called technology components.

In many cases, several product components share the use of a technology component, which is then often referred to as a shared component.

When you choose a solution from the product and solution list in the Installation System, all of the components of the solution are automatically installed.

Solutions have their own passwords. When you use the solution password, you can take advantage of additional features that are available when one solution component can rely on the presence of other components.

BMC offers the following solutions for DB2:

- Administrative Assistant for DB2
- Database Administration for DB2
- Database Performance for DB2
- Recovery Management for DB2
- SQL Performance for DB2
- System Performance for DB2

The following table shows all of the solutions and their components.

Note

Information about components and FMIDs is available in the release notes for the solutions.

Additionally, a report listing version-specific information for the products and solutions and their components as well as FMID information is available on the BMC ESD site at ftp://epddownload.bmc.com/bmc/esd/ozi/ in the cxx_ozi_tape_product_list.txt file. (Related files for the other installation tapes are prefixed with bxx, mxx, and ixx.) You will need to contact Customer Support for a password to access this information.

### Table 87: BMC solutions for DB2 and their components

<table>
<thead>
<tr>
<th>Product or technology name</th>
<th>Solution name: A=Administrative Assistant, B=Database Administration, C=Database Performance, D=Recovery Management, E=SQL Performance, F=System Performance</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>A</td>
</tr>
<tr>
<td>Product components</td>
<td></td>
</tr>
<tr>
<td>Product or technology name</td>
<td>Solution name: A=Administrative Assistant, B=Database Administration, C=Database Performance, D=Recovery Management, E=SQL Performance, F=System Performance</td>
</tr>
<tr>
<td>----------------------------</td>
<td>-------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td></td>
<td>A</td>
</tr>
<tr>
<td>ALTER for DB2</td>
<td>X</td>
</tr>
<tr>
<td>APPTUNE for DB2</td>
<td></td>
</tr>
<tr>
<td>CATALOG MANAGER for DB2</td>
<td>X</td>
</tr>
<tr>
<td>CHANGE MANAGER for DB2</td>
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</tr>
<tr>
<td>COPY PLUS for DB2</td>
<td>X</td>
</tr>
<tr>
<td>DASD MANAGER PLUS for DB2</td>
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</tr>
<tr>
<td>LOADPLUS for DB2</td>
<td>X</td>
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<tr>
<td>Log Master for DB2</td>
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</tr>
<tr>
<td>MainView for DB2^a</td>
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</tr>
<tr>
<td>OPERTUNE for DB2</td>
<td></td>
</tr>
<tr>
<td>Pool Advisor for DB2</td>
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</tr>
<tr>
<td>R+/CHANGE ACCUM for DB2^b</td>
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</tr>
<tr>
<td>RECOVER PLUS for DB2^b</td>
<td>X^d</td>
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<tr>
<td>RECOVERY MANAGER for DB2</td>
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<tr>
<td>REORG PLUS for DB2</td>
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<tr>
<td>SNAPSHOT UPGRADE FEATURE for DB2</td>
<td>X</td>
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<tr>
<td>SQL Explorer for DB2</td>
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</tr>
<tr>
<td>UNLOAD PLUS for DB2</td>
<td>X^e</td>
</tr>
<tr>
<td><strong>Technology components</strong>^c</td>
<td></td>
</tr>
<tr>
<td>BMC Common Statistics (ATS)</td>
<td>X</td>
</tr>
<tr>
<td>BMC Password Security System</td>
<td>X</td>
</tr>
<tr>
<td>Product or technology name</td>
<td>Solution name: A=Administrative Assistant, B=Database Administration, C=Database Performance, D=Recovery Management, E=SQL Performance, F=System Performance</td>
</tr>
<tr>
<td>---------------------------------</td>
<td>---------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td></td>
<td>A</td>
</tr>
<tr>
<td>BMC Space Estimation Common Code (ASH)</td>
<td>X</td>
</tr>
<tr>
<td>BMCSORT</td>
<td>X</td>
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<tr>
<td>Common Explain</td>
<td>X</td>
</tr>
<tr>
<td>Common Infrastructure</td>
<td></td>
</tr>
<tr>
<td>Common SQL (ACS)</td>
<td>X</td>
</tr>
<tr>
<td>Cross-System Image Manager (XIM)</td>
<td>X</td>
</tr>
<tr>
<td>DB2 Assist Services</td>
<td></td>
</tr>
<tr>
<td>DB2 Common Code (SCC)</td>
<td>X</td>
</tr>
<tr>
<td>DB2 Component Services (DBC)</td>
<td></td>
</tr>
<tr>
<td>DB2 Product Configuration</td>
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</tr>
<tr>
<td>DB2 Utilities Common Code (D2U)</td>
<td>X</td>
</tr>
<tr>
<td>Dignus C runtimes and C++ objects</td>
<td>X</td>
</tr>
<tr>
<td>DNA Host Services (DHS) and DNA Core</td>
<td></td>
</tr>
<tr>
<td>High-speed Apply Engine</td>
<td></td>
</tr>
<tr>
<td>Install Execution Code (AIN)</td>
<td>X</td>
</tr>
<tr>
<td>ISR External Routines</td>
<td>X</td>
</tr>
<tr>
<td>JCL Generation and Execution</td>
<td>X</td>
</tr>
<tr>
<td>Next Generation Logger (NGL)</td>
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</tr>
<tr>
<td>Option Value Migration</td>
<td>X</td>
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<tr>
<td>Rules Engine</td>
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</tr>
<tr>
<td>Product or technology name</td>
<td>Solution name: A=Administrative Assistant, B=Database Administration, C=Database Performance, D=Recovery Management, E=SQL Performance, F=System Performance</td>
</tr>
<tr>
<td>---------------------------</td>
<td>-----------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td></td>
<td>A</td>
</tr>
<tr>
<td>Runtime Component System (RTCS)</td>
<td></td>
</tr>
<tr>
<td>SAS Runtime Library Support</td>
<td>X</td>
</tr>
<tr>
<td>System Performance component</td>
<td></td>
</tr>
<tr>
<td>User Interface Middleware (UIM) Common Services</td>
<td>X</td>
</tr>
<tr>
<td>User Interface Middleware (UIM) server</td>
<td></td>
</tr>
</tbody>
</table>

a MainView for DB2 includes the Data Collector and the CATALOG MANAGER for DB2 (Browse).

b R+/CHANGE ACCUM is automatically installed with RECOVER PLUS. However, you must have an R+/CHANGE ACCUM or Recovery Management password to use R+/CHANGE ACCUM. Note that R+/CHANGE ACCUM is under controlled availability.

c These components provide value as part of the indicated solutions and their product components (not as stand-alone components).

d The full functionality of RECOVER PLUS is not available when it is installed with Administrative Assistant.

e The full functionality of UNLOAD PLUS and BASIC UNLOAD is not available when they are installed with Administrative Assistant.

f The full functionality of RECOVER PLUS is not available when it is installed with Database Administration.

BMC technology components for DB2 and their products and solutions overview

Most of the BMC products and solutions for DB2 include the use of technologies that are referred to as technology components. These technology components ensure the full functionality of the products and solutions in which they are included.
In many cases, several products or solutions share the use of a technology component, which is then often referred to as a shared component.

The following table shows the technologies with the products and solutions that use them.

**Note**
Information about components and FMIDs is available in the release notes for the products and solutions.
Additionally, a report listing version-specific information for the products and solutions and their components as well as FMID information is available on the BMC ESD site at ftp://epddownload.bmc.com/bmc/esd/ozi/ in the cxx_ozi_tape_product_list.txt file. (Related files for the other installation tapes are prefixed with bxx, mxx, and ixx.) You will need to contact Customer Support for a password to access this information.

Table 88: BMC technologies for DB2 and their products and solutions

<table>
<thead>
<tr>
<th>Product or solution name</th>
<th>Administrative Assistant for DB2</th>
<th>ALTER for DB2</th>
<th>APPTUNE for DB2</th>
<th>CATALOG MANAGER for DB2</th>
<th>CHANGE MANAGER for DB2</th>
<th>CHECK PLUS for DB2</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>A X</td>
<td>A X</td>
<td>A X</td>
<td>A X X</td>
<td>A X X X</td>
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<td></td>
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<td>B X</td>
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<td>C X X</td>
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*Note:* The technologies are identified by their component names (e.g., ACS, AT, BMCSORT, etc.).
| Product or solution name | Technology components: \(^{c}A=\) BMC Common Statistics (ATS), \(^{c}B=\) BMC Password Security System, \(^{c}C=\) BMC Primary Subsystem, \(^{d}D=\) BMC Space Estimation Common Code (ASH), \(^{c}E=\) BMC Subsystem, \(^{c}F=\) BMCSCORT, \(^{c}G=\) Common Explain, \(^{c}H=\) Common Infrastructure, \(^{c}I=\) Common SQL (ACS), \(^{c}J=\) Cross-System Image Manager (XIM) \(^{c}K=\) DATA ACCELERATOR Compression, \(^{c}L=\) DB2 Assist Services, \(^{c}M=\) DB2 Component Services (DBC), \(^{c}N=\) DB2 Product Configuration, \(^{c}O=\) DB2 Solution Common Code (SCC), \(^{c}P=\) DB2 Utilities Common Code (D2U), \(^{c}Q=\) Dignus C runtimes and C++ objects, \(^{c}R=\) High-speed Apply Engine, \(^{c}S=\) Install Execution Code (AIN), \(^{c}T=\) JCL Generation and Execution, \(^{c}U=\) Mainframe Host Services (DHS) \(^{d}V=\) Next Generation Logger, \(^{c}W=\) Option Value Migration, \(^{c}X=\) Rules Engine, \(^{c}Y=\) Runtime Component System (RTCS), \(^{d}Z=\) RECOVER PLUS, \(^{c}AA=\) SAS Runtime Library Support, \(^{c}BB=\) System Performance component, \(^{d}CC=\) UNLOAD PLUS, \(^{d}DD=\) User Interface Middleware Common Services (USC), \(^{c}EE=\) User Interface Middleware server (UIM), \(^{c}FF=\) ISR External Routines | A | B | C | D | E | F | G | H | I | J | K | L | M | N | O | P | Q | R | S | T | U | V | W | X | Y | Z | A | B | C | D | E | F |
| COPY PLUS for DB2      | X |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| DASD MANAGER PLUS for DB2 | X | X | X | X |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| Database Administration for DB2 | X | X | X | X |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| Database Performance for DB2 | X | X | X | X |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| EXTENDED BUFFER MANAGER for DB2 | X |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| LOADPLUS for DB2       | X | X |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| Log Master for DB2     | X | X |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| MainView for DB2a      | X | X |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| OPERTUNE for DB2       | X |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| PACLOG for DB2         | X | X |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| Pool Advisor for DB2   | X | X |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| R+/CHANGE ACCUM for DB2b | X | X |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| RECOVER PLUS for DB2b  | X | X |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| Recovery Management for DB2 | X | X |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| RECOVERY MANAGER for DB2 | X |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
### Technology components:

- **A** = BMC Common Statistics (ATS), **B** = BMC Password Security System, **C** = BMC Primary Subsystem, **D** = BMC Space Estimation Common Code (ASH), **E** = BMC Subsystem, **F** = BMCSORT, **G** = Common Explain, **H** = Common Infrastructure, **I** = Common SQL (ACS), **J** = Cross-System Image Manager (XIM), **K** = DATA ACCELERATOR Compression, **L** = DB2 Assist Services, **M** = DB2 Component Services (DBC), **N** = DB2 Product Configuration, **O** = DB2 Solution Common Code (SCC), **P** = DB2 Utilities Common Code (D2U), **Q** = Dignus C runtimes and C++ objects, **R** = High-speed Apply Engine, **S** = Install Execution Code (AIN), **T** = JCL Generation and Execution, **U** = Mainframe Host Services (DHS), **V** = Next Generation Logger, **W** = Option Value Migration, **X** = Rules Engine, **Y** = Runtime Component System (RTCS), **Z** = RECOVER PLUS, **AA** = SAS Runtime Library Support, **BB** = System Performance component, **CC** = UNLOAD PLUS, **DD** = User Interface Middleware Common Services (USC), **EE** = User Interface Middleware server (UIM), **FF** = ISR External Routines

| Product or solution name | A | B | C | D | E | F | G | H | I | J | K | L | M | N | O | P | Q | R | S | T | U | V | W | X | Y | Z | A | B | C | D | E | F |
| REORG PLUS for DB2       | X | X |   | X | X | X |   |   | X |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| SNAPSHOT UPGRADE FEATURE for DB2 |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   | X | X |
| SQL Explorer for DB2     | X | X |   | X | X | X |   |   | X |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| SQL Performance for DB2  | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X |
| System Performance for DB2| X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X |
| UNLOAD PLUS for DB2      | X | X |   | X | X | X |   |   | X |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   | X | X |

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**a** MainView for DB2 includes the CATALOG MANAGER for DB2 Browse component.

**b** R+/CHANGE ACCUM is automatically installed with RECOVER PLUS. However, you must have an R+/CHANGE ACCUM or Recovery Management password to use R+/CHANGE ACCUM. As a product, R+/CHANGE ACCUM is under controlled availability.

**c** These components are available only as part of the indicated product or solution (not as stand-alone components)

**d** Although RECOVER PLUS and UNLOAD PLUS are products, they are automatically installed with some products and solutions as shown in this table. In these cases, the full functionality of the RECOVER PLUS and UNLOAD PLUS products is not available.
UNLOAD PLUS is installed with versions of ALTER and CHANGE MANAGER that run on DB2 Version 8 or later.
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