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 and their technology components

June 2012
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■ find the most current information about BMC products
■ search a database for problems similar to yours and possible solutions
■ order or download product documentation
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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: `testsyst/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.
Products and solutions overview

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.
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.

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.

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
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.

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

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**

You can use the Database Administration solution to manage your DB2 databases quickly, efficiently, and effectively.

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

- BMC CATALOG MANAGER for DB2
Database Performance for DB2 solution overview

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.

Body text.

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. You 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

- 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.

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**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:

- A comprehensive set of data type conversions
- Powerful, easy-to-use SELECT-like syntax for specifying the data to unload
- Optional dynamic file allocation
- 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
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 BMCSORTrather 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:

- APPTUNE for DB2
- Pool Advisor for DB2
- SQL Performance for DB2
Common Infrastructure technology overview

The Common Infrastructure technology supports report functions. There is no documentation specific to this technology. This technology is automatically installed with the following solutions and products:

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

- APPTUNE for DB2
- 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
- CHANGE MANAGER for DB2
- DASD MANAGER PLUS for DB2
- Database Administration for DB2
- System Performance for DB2

The FMID is ZDOMxxx where xxx represents release number information.
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:

- 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
- 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 by setting default option values for you. (You can change the values, 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 is available with the following solutions and products:

- APPTUNE for DB2
- Pool Advisor for DB2
- SQL Performance for DB2
- System Performance for DB2

The FMID is ZLGCxxx where xxx represents release number information.

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:
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**
- **SNAPSHOT UPGRADE FEATURE for DB2**

The FMID is ZAINxxx where xxx represents release number information.

### 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**
- **System Performance for DB2**

The FMID is ZAEXxxx where xxx represents release number information.
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
- Pool Advisor for DB2
- SQL Performance for DB2
- System Performance for DB2

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
- RECOVERY MANANGER for DB2
- REORG PLUS for DB2
- System Performance for DB2
- UNLOAD PLUS for DB2
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 $B05UNLD job (Express installation) or the $B76APLY job (Custom installation) 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
- 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. Provides reliable authorized system runtime services.
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
- Pool Advisor for DB2
- Recovery Management for DB2
- RECOVERY MANAGER for DB2
- SQL Performance for DB2
- System Performance for DB2

The FMID is ZUSCxxx where xxx represents release number information.

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 \( \text{HLQ.LOAD} \) library. The Installation System now places passwords in the \( \text{HLQ.BMCPWD} \) library and copies the passwords to the \( \text{HLQ.BMCPLINK} \) 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 and components require above-the-bar memory and might abend if sufficient memory is not available.

This requirement affects the following BMC products and components:

- ALTER
- BMCSORT
- CATALOG MANAGER
- CHANGE MANAGER
- CHECK PLUS
- COPY PLUS
- DASD MANAGER PLUS
- High-speed Apply Engine
- LOADPLUS
- Log Master
- RECOVER PLUS
- RECOVERY MANAGER
- REORG PLUS
- UNLOAD PLUS

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 1: 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>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>Product or solution</td>
<td>Recommendation</td>
</tr>
<tr>
<td>-----------------------------</td>
<td>-------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
</tbody>
</table>
| Database Administration     | 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. |
| Database Performance        | If you are unable to specify REGION=0M:  
  - Specify NOLIMIT to allow unlimited above-the-bar memory.  
  - If you are unable to specify NOLIMIT:  
    - For DASD MANAGER, if above-the-bar memory limits are inadequate, contact your z/OS system administrator.  
    - For REORG PLUS, specify at least 4 GB; if you are operating on LOB or XML data, BMC recommends at least 32 GB. |
| High-speed Apply Engine     | Specify at least 1 GB.                                                                                                                                                                                   |
| 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. |
<p>| 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.                                                                                                                        |</p>
<table>
<thead>
<tr>
<th>Product or solution</th>
<th>Recommendation</th>
</tr>
</thead>
</table>
| 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.

**Authorization verification mechanisms for Backup and Recovery products and Utility products**

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

The following table presents an overview of these mechanisms.
### Table 2: Authorization verification mechanisms

<table>
<thead>
<tr>
<th>Authorization mechanism</th>
<th>BMC product actions</th>
</tr>
</thead>
</table>
| DB2 access control authorization exit                       | The BMC product uses the DSNX@XAC authorization 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 Security for DB2 and CA-Top Secret Security for DB2.  
  
  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. |

One of the following security products from CA Technologies:  
- CA-ACF2 Security for DB2  
- CA-Top Secret Security for DB2

| License product actions                                      | The BMC product uses either of these CA Technologies products with any version of DB2. The BMC product detects the presence of the CA Technologies product in the DB2 subsystem where the BMC product is running.  
  
  To use either of these CA Technologies products with the BMC product, you must meet the following requirements:  
  - You must be using a version of your security product that enables external security calls for DB2.  
  - The value of the ACFORTSS installation option must be YES (the default).  

  Note: If you have one of these security products installed, but the version does not support external security, complete one of the following tasks:  
  - Change the value of the ACFORTSS installation option to NO. The BMC product then uses the standard DB2 method to check security.  
  - Contact your security vendor for the required APAR to enable external security calls for DB2. Then, ensure that the value of the ACFORTSS installation option is YES. |
<table>
<thead>
<tr>
<th>Authorization mechanism</th>
<th>BMC product actions</th>
</tr>
</thead>
<tbody>
<tr>
<td>none are available</td>
<td>The BMC product uses the standard DB2 method to check security.</td>
</tr>
</tbody>
</table>

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 Security or CA-Top Secret Security).

- 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.

CA-ACF2 authorizations for RECOVER PLUS for DB2
To use CA-ACF2 for DB2 from Computer Associates for security validation, set the ACFORTSS installation option to YES.

CA-Top Secret authorizations for RECOVER PLUS for DB2
To use CA-Top Secret Security for DB2 from Computer Associates for security validation, set the ACFORTSS installation option to YES.

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
- 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.

---

### 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 65, 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 67.
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 AJXSTEMU.

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 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 9.1 of CATALOG MANAGER on DB2 subsystem DBDA and you installed version 9.2 of CATALOG MANAGER on DB2 subsystem DBDB, and you want to use one CLIST, use the CLIST for version 9.2 of CATALOG MANAGER on DBDB.
The Installation System generates the CLISTs for the Administrative products that are listed in the following table.

### Table 3: 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>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>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.

---

**CLIST** | **Description** | **Location**
---|---|---
SHOWINFO | enables you to view the names of the profile data sets and JCL libraries
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. | HLQ.INSTALL
WHATSNEW | enables you to review newly supported features for the current version of the Installation System | HLQ.INSTALL
Working with the BMCDB2 CLIST

The BMCDB2 CLIST invokes ALTER, CATALOG MANAGER, CHANGE MANAGER, and DASD MANAGER PLUS.

You might need to manually edit the CLIST to add components or to perform other tasks.

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 PF$HOW 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) */
```
To place a control table in a permanent ISPF table in the \textit{HLQ.UDBTLIB} data set, invoke the BMCDB2 CLIST (see “Invoking the BMCDB2 CLIST” on page 72).

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:

     \texttt{ex ‘HLQ.UDBCLIB(BMCDB2)’}

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

     \texttt{%BMCDB2}

To specify various parameters with the BMCDB2 command, see “BMCDB2 command” on page 73.

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

   a On the BMCDB2 Subsystem Selection List (BMCDB2P2) panel, type \texttt{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 \texttt{Enter}.

2 If one of the following conditions exist, on the BMC Administrative Products for DB2 (BMCDB2PR) panel, type \texttt{GENERATE} on the \texttt{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.
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 4: Program names**

<table>
<thead>
<tr>
<th>Product</th>
<th>program</th>
</tr>
</thead>
<tbody>
<tr>
<td>ALTER</td>
<td><em>(versions 8.3 and later)</em> ALUFRONT</td>
</tr>
<tr>
<td></td>
<td><em>(versions 8.2 and earlier)</em> ALTFRONT</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:

```plaintext
%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 8 subsystem in new-function mode, create the DB2 Version 8 indexes on the DB2 catalog.

- If you are running the products on a DB2 Version 8 subsystem in conversion mode or enabling-new-function mode, create the DB2 Version 7 indexes on the DB2 catalog.

To create indexes on the DB2 catalog tables

1. Execute the -AMS commands in the appropriate member in the HLQ.UDBCNTL data set to create VSAM data sets:
   - (DB2 Version 8 in new-function mode or DB2 Version 9) BMIDB2V8
   - (DB2 Version 8 in conversion mode or enabling-new-function mode) BMIDB2VC

2. Follow the instructions in the appropriate member in the HLQ.UDBCNTL data set to create the indexes:
   - (DB2 Version 8 in new-function mode or DB2 Version 9) BMIDB2I8
   - (DB2 Version 8 in conversion mode or enabling-new-function mode) BMIDB2IX

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Note
When you migrate to DB2 Version 8 in new-function mode or DB2 Version 9, several indexes that are created with the BMIDB2IX member are duplicated. Manually drop the following duplicate indexes and rebind the product packages:

- `<owner>.IXIFK1`
- `<owner>.IXIREL1`
- `<owner>.IXITAOB`
- `<owner>.IXICAOB`

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

- *(ALTER, CHANGE MANAGER, DASD MANAGER PLUS)* 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.
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.

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 5: 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:

- \textit{ALTER and CHANGE MANAGER for DB2 User Guide Volume 2}
- \textit{CATALOG MANAGER for DB2 User Guide}
- \textit{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 \textit{HLQ.DBCNTL} data set. For more information about compiling the SLIB members, see the following BMC books:

- \textit{ALTER and CHANGE MANAGER for DB2 User Guide Volume 2}
- \textit{CATALOG MANAGER for DB2 User Guide}
- \textit{DASD MANAGER PLUS for DB2 User Guide}

\textbf{Note}

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

\section*{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.

\subsection*{To specify a GDG}

1 In the \textit{HLQ.DBCNTL} 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 \textit{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

```bash
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 6: 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 . . . . . . . . . . . . . . . . . . . . . . +
   + (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 85 shows the line that adds the CATALOG MANAGER product to the table.  \( vr \) represents the version and release of the product.
     Figure 3: Adding CATALOG MANAGER to the control table
     ![Figure 3: Adding CATALOG MANAGER to the control table]

   - 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 85, 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 4: Specifying the location of CATALOG MANAGER libraries (runtime environment)
     ![Figure 4: Specifying the location of CATALOG MANAGER libraries (runtime environment)]

   - In the example in Figure 5 on page 85, the lines indicate the location of the CATALOG MANAGER SMP/E libraries.
     Figure 5: Specifying the location of CATALOG MANAGER libraries (SMP/E environment)
     ![Figure 5: Specifying the location of CATALOG MANAGER libraries (SMP/E environment)]
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 86 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)**

---

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 87 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**

<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>ASUrDC</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ASU7</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ACT</td>
<td>DBDB</td>
<td>D</td>
<td>ACTDOPD1</td>
<td>ACTrDM</td>
<td>ACT8</td>
<td>ACTr_D_MAIN</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DBDB</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ACM</td>
<td>DBDB</td>
<td>D</td>
<td>ACMDOPD1</td>
<td>ACMrDF</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ACM8</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>EXIT</td>
<td>DBDB</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>'SYS3.DBDB.DSNEXIT'</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LOAD</td>
<td>DBDB</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>'SYS2.DB2V10M.DSNLOAD'</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>HLQ</td>
<td>DBDB</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BMCADMN.Vyrm.D10</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>VCAT</td>
<td>DBDB</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DBDBCAT</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DDF</td>
<td>DBDB</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DBDB</td>
<td></td>
<td></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>ASUrDC</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ASUG</td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ACT</td>
<td>GRP1</td>
<td>D</td>
<td>ACTDOPD1</td>
<td>ACTrDM</td>
<td>ACTG</td>
<td>ACTr_D_MAIN</td>
<td></td>
<td></td>
</tr>
<tr>
<td>GRP1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ACM</td>
<td>GRP1</td>
<td>D</td>
<td>ACMDOPD1</td>
<td>ACMrDF</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ACMG</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>EXIT</td>
<td>GRP1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>'SYS3.DBDB.DSNEXIT'</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LOAD</td>
<td>GRP1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>'SYS2.DB2V10M.DSNLOAD'</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>HLQ</td>
<td>GRP1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BMCADMN.Vyrm.D10</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>VCAT</td>
<td>GRP1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DBDBCAT</td>
<td></td>
<td></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 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 88 to the control table.

Figure 8: Adding CATALOG MANAGER to subsystem DB91

```
*DATA
*PROD SSID D/I DOPT PLAN APPL COLL_ID NICKNAME
--- | --- | --- | --- | --- | --- |
ACT  DB91 D ACTDOPD1 ACTvrDG
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 88 to the control table.

Figure 9: Adding CATALOG MANAGER to subsystem DB10

```
*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'
```

Scenario 3: In a runtime environment, if the BMCDB2 CLIST in HLQJCL is used to invoke CATALOG MANAGER for both SSIDs, add the lines in Figure 10 on page 88 to the control table.

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

```
*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'
```
The HLQ in Figure 10 on page 88 instructs the BMCDB2 CLIST to use BMC.DB91 as the HLQ for products that are installed on SSID DB10. Figure 11 on page 89 shows the updated control table.

**Figure 11: Updated control table (runtime environment)**

```
*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 89 to the control table.

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

```
*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 *
```
Figure 13 on page 90 shows the updated control table.

**Figure 13: Updated control table (SMP/E environment)**

<table>
<thead>
<tr>
<th>ACT</th>
<th>SSID</th>
<th>D/I</th>
<th>OPT</th>
<th>PLAN</th>
<th>APPL</th>
<th>COLL_ID</th>
<th>NICKNAME</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACTA</td>
<td>DB91</td>
<td>D</td>
<td>ACT</td>
<td>ACTDOPDI</td>
<td>ACTvrDG</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>ACTB</td>
<td>DB10</td>
<td>D</td>
<td>ACT</td>
<td>ACTDOPDI</td>
<td>ACTvrDG</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*LIB  SSID Data Set Name

EXIT DB91 'SYS3.DBAP.DSNEXIT'
LOAD DB91 'SYS2.DB2V91M.DSNLOAD'
DB DB91
BMC.DB91.DBHLQ
BB DB91
BMC.DB91.BBHLQ
XX DB91
BMC.DB91.XXHLQ
PSWD DB91
BMC.DB91.PSWDHLQ
EXIT DB10 'SYS3.DB10.DSNEXIT'
LOAD DB10 'SYS2.DB2V10M.DSNLOAD'
DB DB10
BMC.DB10.DBHLQ
BB DB10
BMC.DB10.BBHLQ
XX DB10
BMC.DB10.XXHLQ
PSWD DB10
BMC.DB10.PSWDHLQ

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 92).

**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)**

<table>
<thead>
<tr>
<th>SSID</th>
<th>D/I DOPT</th>
<th>PLAN</th>
<th>APPL COLL_ID</th>
<th>NICKNAME</th>
</tr>
</thead>
<tbody>
<tr>
<td>ALU</td>
<td>xxxx</td>
<td>D</td>
<td>ACMDOPD2</td>
<td>ACMvrDF</td>
</tr>
<tr>
<td>ALU#</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ASU</td>
<td>xxxx</td>
<td>D</td>
<td>ASUDOPD1</td>
<td>ASUvrDJ</td>
</tr>
<tr>
<td>ASU#</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ACT</td>
<td>xxxx</td>
<td>D</td>
<td>ACTDOPD1</td>
<td>ACTvrDM</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>ACTvr_D_MAIN</td>
</tr>
<tr>
<td>ACM</td>
<td>xxxx</td>
<td>D</td>
<td>ACMDOPD1</td>
<td>ACMvrDF</td>
</tr>
<tr>
<td>ACM#</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>*LIB</td>
<td>SSID Data Set Name</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Exit</td>
<td>'DB2.DSNEXIT'</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Load</td>
<td>'DB2.DSNLOAD'</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

More ALTER and CATALOG MANAGER configuration tasks
In the sample shown in Figure 14 on page 92, 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.
**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:
     \[
     \text{BMC\_LOAD\_OPTS=AMU$MMS,(R)}
     \]
   - 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.

\[
\text{JOBCARD1=//JOB\_JOB(&ZACCTNUM),"&PGMR",,(R)}
\]

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.

**Worklist execution**

In CATALOG MANAGER, you can execute a worklist through the Execution component by using the plans provided with ALTER, CHANGE MANAGER, or DASD MANAGER PLUS.

The following requirements must be met to execute a worklist through the Execution component:

- ALTER, CHANGE MANAGER, or DASD MANAGER PLUS is installed.

- The CATALOG MANAGER AOPTS installation option or BOPTS installation option specifies the installation options module name for ALTER, CHANGE MANAGER, or DASD MANAGER PLUS, as follows:
  - To use the ALTER execution plans, in CATALOG MANAGER specify the name of the ALTER installation options module for the AOPTS installation option.
  - To use the CHANGE MANAGER execution plans, in CATALOG MANAGER specify the name of the CHANGE MANAGER installation options module for the AOPTS installation option.
  - To use the DASD MANAGER PLUS execution plans, in CATALOG MANAGER specify the name of the DASD MANAGER PLUS installation options module for the BOPTS installation option.

**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 100) 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 99.

   **Figure 15: BMCDB2 CLIST--CATALOG MANAGER initial command**

   ```
   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=&ASUDDOPT,+M=BC,I=CIACCESS,A=&ACMDOPT,+DB2CAT=&DB2VCAT )
      /* EDITOR LOCK OPTIONS (ELO) - ALLOWS USER TO IDENTIFY USER */
      /* THE DEFAULT LOCKING OPTIONS FOR DATA EDITING. */
      /* 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) */
   
   /-----------------------------*/
   
   As directed in the CLIST, uncomment the following line:

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

3. 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 100.

**Figure 16: BMCDB2 CLIST--CATALOG MANAGER entry panel**

```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,O=&ASUDOPTD,+M=BC,I=&CIACCESS,A=&ACMDOPT,+DB2CAT=&DB2VCAT )
/* EDITOR LOCK OPTIONS (ELO) - ALLOWS USER TO IDENTIFY */
/* THE DEFAULT LOCKING OPTIONS FOR DATA EDITING. */
/* 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 \texttt{E=EDIT} with the entry panel command. The entry panel command syntax is \texttt{C=command}.

\textbf{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.

\begin{verbatim}
SET PARM = &STR(&PARM,C=CONNECT)
\end{verbatim}

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 101.

**Figure 17: BMCDB2 CLIST--CATALOG MANAGER entry panel for locking options**
Enable the CATALOG MANAGER locking options command.

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

As an example, Figure 17 on page 101 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.

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.

If you plan to use Fast Path Navigation (see “Fast Path Navigation” on page 94), you must edit the AEXADMF1 and AEXADMF2 CLISTs and enable the CATALOG MANAGER locking options command as you did in Step 3 on page 102 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.
Find the lines that are shown in Figure 18 on page 103.

**Figure 18: BMCDB2 CLIST--location for session profile command**

```c
/*----------------------------------------------------------*/
/* 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)
```

Add the following command after the ELO locking option command:

```c
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:

```c
SET PARM = &STR(&PARM,PR=PROGRAMMERS)
```

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 103), you can add, delete, or modify the data rows.

**Figure 19: 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>DBBF</td>
<td>S DBBA</td>
<td>DBBA</td>
<td>ACTvr_D_MAIN</td>
</tr>
<tr>
<td>DBBFDBBA</td>
<td>*</td>
<td>DBBA ACTvr_D_MAIN</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ACT</td>
<td>DBBF</td>
<td>S DBDB</td>
<td>DBDB</td>
<td>ACTvr_D_MAIN</td>
</tr>
<tr>
<td>DBBFDBDB</td>
<td>*</td>
<td>DBDB ACTvr_D_MAIN</td>
<td></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 104 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 SSID</th>
<th>SERVER NAME</th>
<th>SSID COLL_ID</th>
<th>NICKNAME</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACT</td>
<td>DBBF S DBBA</td>
<td>DBBA ACTv_r_D_MAIN</td>
<td></td>
</tr>
<tr>
<td></td>
<td>DBBFDBBA</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ACT</td>
<td>DBBF S DBDB</td>
<td>DBDB ACTv_r_D_MAIN</td>
<td></td>
</tr>
<tr>
<td></td>
<td>DBBFDBDB</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ACT</td>
<td>DBBF S DBDA</td>
<td>DBDA ACTv_r_D_MAIN</td>
<td></td>
</tr>
<tr>
<td></td>
<td>DBBFDBDA</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ACT</td>
<td>DBBA S DBBA</td>
<td>DBBA ACTv_r_D_MAIN</td>
<td></td>
</tr>
<tr>
<td></td>
<td>DBBFDBBA</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ACT</td>
<td>DBBA S DBDB</td>
<td>DBDB ACTv_r_D_MAIN</td>
<td></td>
</tr>
<tr>
<td></td>
<td>DBBFDBDB</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ACT</td>
<td>DBBA S DBDA</td>
<td>DBDA ACTv_r_D_MAIN</td>
<td></td>
</tr>
<tr>
<td></td>
<td>DBBFDBDA</td>
<td></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 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 106.

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 106 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 COLL_ID</th>
<th>NICKNAME</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACT</td>
<td>DB2P</td>
<td>DB2A</td>
<td>DB2A ACTvr_D_MAIN</td>
<td></td>
</tr>
<tr>
<td></td>
<td>DB2P</td>
<td>DB2B</td>
<td>DB2B ACTvr_D_MAIN</td>
<td></td>
</tr>
<tr>
<td></td>
<td>DB2P</td>
<td>DB2C</td>
<td>DB2C ACTvr_D_MAIN</td>
<td></td>
</tr>
<tr>
<td></td>
<td>DB2P</td>
<td>DB2B</td>
<td>*</td>
<td></td>
</tr>
<tr>
<td></td>
<td>DB2P</td>
<td>DB2C</td>
<td>*</td>
<td></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 System and SQL Performance for DB2 Installation 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 ENVI on the Command line.
   - In CATALOG MANAGER, on the Primary Menu panel, type ENVI 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 107 through Step 8 on page 108 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.
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.

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 65, 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 67.

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\textsubscript{vr} DH, where \textit{vr} is the version and release.

5 In the \textit{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 \textit{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 \textit{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 \textit{HLQ.DBCNTL} data set.

---

**Note**

If you want to modify the JCL in member AJXCOMPS, copy the member from \textit{HLQ.DBCNTL} to \textit{HLQ.UDBCNTL}. Then, modify the JCL in \textit{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 116, 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 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 9.1 of CATALOG MANAGER on DB2 subsystem DBDA and you installed version 9.2 of CATALOG MANAGER on DB2 subsystem DBDB, and you want to use one CLIST, use the CLIST for version 9.2 of CATALOG MANAGER on DBDB.

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

<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>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>
</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.

---

<table>
<thead>
<tr>
<th>CLIST</th>
<th>Description</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<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>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>
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

The BMCDB2 CLIST invokes ALTER, CATALOG MANAGER, CHANGE MANAGER, and DASD MANAGER PLUS.

You might need to manually edit the CLIST to add components or to perform other tasks.

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 72).

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 73.

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)
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**

The display option parameters specify the following information:

- PGM--specifies the name of the *program*, as listed in the following table
Table 9: Program names

<table>
<thead>
<tr>
<th>Product</th>
<th>program</th>
</tr>
</thead>
<tbody>
<tr>
<td>ALTER</td>
<td>(versions 8.3 and later) ALUFRONT</td>
</tr>
<tr>
<td></td>
<td>(versions 8.2 and earlier) ALTRONT</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)'
```

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 8 subsystem in new-function mode, create the DB2 Version 8 indexes on the DB2 catalog.

- If you are running the products on a DB2 Version 8 subsystem in conversion mode or enabling-new-function mode, create the DB2 Version 7 indexes on the DB2 catalog.

To create indexes on the DB2 catalog tables

1. Execute the -AMS commands in the appropriate member in the HLQ.UDBCNTL data set to create VSAM data sets:
   - (DB2 Version 8 in new-function mode or DB2 Version 9) BMIDB2V8
   - (DB2 Version 8 in conversion mode or enabling-new-function mode) BMIDB2VC

2. Follow the instructions in the appropriate member in the HLQ.UDBCNTL data set to create the indexes:
   - (DB2 Version 8 in new-function mode or DB2 Version 9) BMIDB2I8
   - (DB2 Version 8 in conversion mode or enabling-new-function mode) BMIDB2IX

Note
When you migrate to DB2 Version 8 in new-function mode or DB2 Version 9, several indexes that are created with the BMIDB2IX member are duplicated. Manually drop the following duplicate indexes and rebind the product packages:

- <owner>.IXIFK1
- <owner>.IXIREL1
- <owner>.IXITAOB
- <owner>.IXICAOB

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
- *(ALTER, CHANGE MANAGER, DASD MANAGER PLUS)* 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.
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 10: Member names for jobs for BIND packages and plans**

<table>
<thead>
<tr>
<th>Member name</th>
<th>Job</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>prdssidP</code></td>
<td>package BIND jobs for direct access</td>
</tr>
<tr>
<td><code>prdssidB</code></td>
<td>plan BIND jobs (including CATALOG MANAGER plan BIND jobs for indirection)</td>
</tr>
<tr>
<td><code>prdssidZ</code></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 11: 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(ALUFRONT) CFUNC(ALLOC) +
          &tvdebug ssid(&ssidnm) libdef(&lbdefflg) +
          shrapp1(&shrappl) access(&catopt) +
          PROD(ALU) BASEID(&baseid) CLSTEXEC(IMPLICIT) +
          LOADEXEC(IMPLICIT) LOADLDEF(YES) ) +
          newappl passlib'
      ```
      
      ```
      ... 1.'CMD(EX ''&BMCDB2C''    +
          ''PGM(ALUFRONT) CFUNC(ALLOC) +
          &tvdebug ssid(&ssidnm) libdef(&lbdefflg) +
          shrapp1(&shrappl) access(&catopt) +
          PROD(ALU) BASEID(&baseid)' ) +
          newappl passlib'
      ```
   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 `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 85 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**

<table>
<thead>
<tr>
<th>SSID</th>
<th>D/I</th>
<th>DOPT</th>
<th>PLAN</th>
<th>APPL COLL_ID</th>
<th>NICKNAME</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACT</td>
<td>DBAP</td>
<td>D</td>
<td>ACTDOPD1</td>
<td>ACT ( vr )DG</td>
<td>ACTA</td>
</tr>
</tbody>
</table>

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 85, 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)**

<table>
<thead>
<tr>
<th>SSID</th>
<th>D/I</th>
<th>DOPT</th>
<th>PLAN</th>
<th>APPL COLL_ID</th>
<th>NICKNAME</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACT</td>
<td>DBAP</td>
<td>H</td>
<td>HLQ_for_ACT</td>
<td>*</td>
<td></td>
</tr>
</tbody>
</table>

In the example in Figure 5 on page 85, the lines indicate the location of the CATALOG MANAGER SMP/E libraries.

**Figure 26: Specifying the location of CATALOG MANAGER libraries (SMP/E environment)**

<table>
<thead>
<tr>
<th>SSID</th>
<th>D/I</th>
<th>DOPT</th>
<th>PLAN</th>
<th>APPL COLL_ID</th>
<th>NICKNAME</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACT</td>
<td>DBAP</td>
<td>T</td>
<td>HLQ_for_DB</td>
<td>*</td>
<td></td>
</tr>
<tr>
<td>ACT</td>
<td>DBAP</td>
<td>B</td>
<td>HLQ_for_BB</td>
<td>*</td>
<td></td>
</tr>
<tr>
<td>ACT</td>
<td>DBAP</td>
<td>X</td>
<td>HLQ_for_XX</td>
<td>*</td>
<td></td>
</tr>
<tr>
<td>ACT</td>
<td>DBAP</td>
<td>P</td>
<td>HLQ_for_password</td>
<td>*</td>
<td></td>
</tr>
</tbody>
</table>

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 86 in the *PROD section.
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)

<table>
<thead>
<tr>
<th>*DATA</th>
</tr>
</thead>
<tbody>
<tr>
<td>*PROD SSID D/I DOPT PLAN APPL COLL_ID</td>
</tr>
<tr>
<td>*----</td>
</tr>
<tr>
<td>ACT</td>
</tr>
<tr>
<td>ADDTNL.APFL.LOAD</td>
</tr>
</tbody>
</table>
* 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 87 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

<table>
<thead>
<tr>
<th>*DATA</th>
</tr>
</thead>
<tbody>
<tr>
<td>*PROD SSID D/I DOPT PLAN APPL COLL_ID</td>
</tr>
<tr>
<td>*----</td>
</tr>
<tr>
<td>ASU</td>
</tr>
<tr>
<td>ASU7</td>
</tr>
<tr>
<td>ACT</td>
</tr>
<tr>
<td>DBDB</td>
</tr>
<tr>
<td>ACM</td>
</tr>
<tr>
<td>ACM8</td>
</tr>
<tr>
<td>EXIT</td>
</tr>
<tr>
<td>LOAD</td>
</tr>
<tr>
<td>HLQ</td>
</tr>
</tbody>
</table>

3 Press END to exit.
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 88 to the control table.

  Figure 29: 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>----</td>
<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></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ACTA</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>*LIB</td>
<td>SSID Data Set Name</td>
<td></td>
<td></td>
<td>---------------</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>----</td>
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<td>------</td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>EXIT</td>
<td>DB91</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>'SYS3.DB91.DSNEXIT'</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LOAD</td>
<td>DB91</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>'SYS2.DB2V91M.DSNLOAD'</td>
<td></td>
<td></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 88 to the control table.

Figure 30: 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></td>
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<td></td>
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<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></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ACTB</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>*LIB</td>
<td>SSID Data Set Name</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>
<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 HLQ.JCL is used to invoke CATALOG MANAGER for both SSIDs, add the lines in Figure 10 on page 88 to the control table.

Figure 31: 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></td>
<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></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ACTB</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>*LIB</td>
<td>SSID Data Set Name</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>
<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>
<tr>
<td>HLQ</td>
<td>DB91</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The HLQ in Figure 10 on page 88 instructs the BMCDB2 CLIST to use BMC.DB91 as the HLQ for products that are installed on SSID DB10. Figure 11 on page 89 shows the updated control table.

Figure 32: Updated control table (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></td>
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<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></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ACTA</td>
<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></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ACTB</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>*LIB</td>
<td>SSID Data Set Name</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>
<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>
<tr>
<td>HLQ</td>
<td>DB91</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
In an SMP/E environment, if the BMCDB2 CLIST in HLQJCL is used to invoke CATALOG MANAGER for both SSIDs, add the lines in Figure 12 on page 89 to the control table.

**Figure 33: Running DB10 CATALOG MANAGER from the DB91 BMCDB2 CLIST (SMP/E environment)**

| DATA | PROD SSID D/I DOPT PLAN APPL COLL_ID NICKNAME |
|------|-------------------|-------------------|-------------------|-------------------|
| ---  | ACT DB10 D ACTDOPD1 ACTvrDG |
| ---  | EXIT DB91 'SYS3.DBAP.DSNEXIT' |
| ---  | LOAD DB91 |
| ---  | 'SYS2.DB2V91M.DSNLOAD' |
| DB   | DB91 |
| BB   | BMC.DB91.DBHLQ |
| XX   | BMC.DB91.XXHLQ |
| PSWD | BMC.DB91.PSWDHLQ |
| ---  | Exit DB10 'SYS3.DB10.DSNEXIT' |
| ---  | Load DB10 |
| ---  | 'SYS2.DB2V10M.DSNLOAD' |
| HLQ  | DB10 |
| BMC  | DB10 |

Figure 13 on page 90 shows the updated control table.

**Figure 34: Updated control table (SMP/E environment)**

| 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' |
| DB   | DB91 |
| BB   | BMC.DB91.DBHLQ |
| XX   | BMC.DB91.XXHLQ |
| PSWD | BMC.DB91.PSWDHLQ |
| ---  | Exit DB10 'SYS3.DB10.DSNEXIT' |
| ---  | Load DB10 |
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 92).

**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)**

```
*DATA
*PROD SSID D/I DOPT PLAN APPL COLL_ID NICKNAME
*----|----|--------|--------|----|------------------|---------------------
---
ALU  xxxx D ACMDOPD2 ACMvrDF   *
ALU#  *   *
ASU  xxxx D ASUDOPD1 ASUvrDJ   *
ASU#  *   *
ACT  xxxx D ACTDOPD1 ACTvrDM   ACT# ACTvr_D_MAIN
xxxx  *   *
ACM  xxxx D ACMDOPD1 ACMvrDF   *
ACM#  *   *
*LIB SSID Data Set Name
*----|----|-------------------------------|
EXIT  'DB2.DSNEXIT'   *
LOAD  'DB2.DSNLOAD'   *
HLQ  xxxx
BMCADMN.Vrvm.D81  *
VCAT  xxxx xxxx
CAT  *
DDF  xxxx
xxxx  *
APPL  xxxx ADMA#
```

In the sample shown in Figure 14 on page 92, 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 12: 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**.

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 ,**(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.

## 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:
   - 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.

2. (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.)

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

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

5. If you are executing the worklist for both CATALOG MANAGER and CHANGE MANAGER, repeat step Step 1.d on page 106.

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 106 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  SSID</th>
<th>S SERVER NAME</th>
<th>SSID_COLL_ID</th>
<th>NICKNAME</th>
</tr>
</thead>
<tbody>
<tr>
<td>*----------</td>
<td>---------------</td>
<td>--------------</td>
<td>------------------</td>
</tr>
<tr>
<td>ACT  DB2P S DB2A</td>
<td>DB2A ACTvr_D_MAIN</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DB2PDB2A</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ACT  DB2P S DB2B</td>
<td>DB2B ACTvr_D_MAIN</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DB2PDB2B</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ACT  DB2P S DB2C</td>
<td>DB2C ACTvr_D_MAIN</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DB2PDB2C</td>
<td></td>
<td></td>
<td></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.

Worklist execution

In CATALOG MANAGER, you can execute a worklist through the Execution component by using the plans provided with ALTER, CHANGE MANAGER, or DASD MANAGER PLUS.

The following requirements must be met to execute a worklist through the Execution component:

- ALTER, CHANGE MANAGER, or DASD MANAGER PLUS is installed.

- The CATALOG MANAGER AOPTS installation option or BOPTS installation option specifies the installation options module name for ALTER, CHANGE MANAGER, or DASD MANAGER PLUS, as follows:
  
  —To use the ALTER execution plans, in CATALOG MANAGER specify the name of the ALTER installation options module for the AOPTS installation option.

  —To use the CHANGE MANAGER execution plans, in CATALOG MANAGER specify the name of the CHANGE MANAGER installation options module for the AOPTS installation option.

  —To use the DASD MANAGER PLUS execution plans, in CATALOG MANAGER specify the name of the DASD MANAGER PLUS installation options module for the BOPTS installation option.

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 100) 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 99.

   **Figure 37: BMCDB2 CLIST--CATALOG MANAGER initial command**

   ```clist
   WHEN(ACTEMAIN) DO /* CATALOG MANAGER
   SET BMCFCPCNT= 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 100.

   **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,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.

```plaintext
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 101.

Figure 39: BMCDB2 CLIST--CATALOG MANAGER entry panel for locking options

```plaintext
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)
```

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 101 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 94), you must edit the AEXADMF1 and AEXADMF2 CLISTs and enable the CATALOG MANAGER locking options command as you did in Step 3 on page 102 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 103.

   *Figure 40: BMCDB2 CLIST--location for session profile command*

   ```
   /*---------------------------------------------*/
   ```
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 103), you can add, delete, or modify the data rows.

**Figure 41: CATALOG MANAGER CONNECT command servers**

```
*PROD SSID S SERVER NAME       SSID COLL_ID            NICKNAME
*----|----|-|-----------------|----|------------------|-------------------
      -----|-----|-----------------|-----|------------------|-------------------
ACT  DBBF S DBBA              DBBA ACT
DBBFDBBA               *
ACT  DBBF S DBBD              DBBD ACT
DBBFDBDB               *
```

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 104 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**

```
*PROD SSID S SERVER NAME       SSID COLL_ID            NICKNAME
*----|----|-|-----------------|----|------------------|-------------------
      -----|-----|-----------------|-----|------------------|-------------------
ACT  DBBF S DBBA              DBBA ACTvr_D_MAIN
DBBFDBBA               *
ACT  DBBF S DBBD              DBBD ACTvr_D_MAIN
DBBFDBDB               *
```
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 ALLCMD 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.UDBCLIB* data set. For more information about
customizing the CLIST, see the *System and SQL Performance for DB2 Installation
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
- or-
  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 158.

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
--------|----|-|--------|--------|----|------------------|----------------
-------
ASU  DBAP D ASUDOPD1 ASU930DC
ASUA                                           *
```

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 159.

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

*DATA
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 *, ASU*, and ATS* 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 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.

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 and components require above-the-bar memory and might abend if sufficient memory is not available.

This requirement affects the following BMC products and components:

- ALTER
- BMCSORT
- CATALOG MANAGER
- CHANGE MANAGER
- CHECK PLUS
COPY PLUS
■ DASD MANAGER PLUS
■ High-speed Apply Engine
■ LOADPLUS
■ Log Master
■ RECOVER PLUS
■ RECOVERY MANAGER
■ REORG PLUS
■ UNLOAD PLUS

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 13: 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 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 Security or CA-Top Secret Security).

- 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.

CA-ACF2 authorizations for RECOVER PLUS for DB2
To use CA-ACF2 for DB2 from Computer Associates for security validation, set the ACFORTSS installation option to YES.

CA-Top Secret authorizations for RECOVER PLUS for DB2
To use CA-Top Secret Security for DB2 from Computer Associates for security validation, set the ACFORTSS installation option to YES.

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
- 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.

---

**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 **ENVI** on the Command line.
   - In CATALOG MANAGER, on the Primary Menu panel, type **ENVI** 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 107 through Step 8 on page 108 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.

The following table presents an overview of these mechanisms.
Table 14: Authorization verification mechanisms

<table>
<thead>
<tr>
<th>Authorization mechanism</th>
<th>BMC product actions</th>
</tr>
</thead>
<tbody>
<tr>
<td>DB2 access control authorization exit</td>
<td>The BMC product uses the DSNX@XAC authorization exit to verify authorization for external access. The exit is available from the following sources:</td>
</tr>
<tr>
<td></td>
<td>■ IBM provides a sample exit with DB2 for the IBM Resource Access Control Facility (RACF) component.</td>
</tr>
<tr>
<td></td>
<td>■ CA Technologies provides the DSNX@XAC exit with CA-ACF2 Security for DB2 and CA-Top Secret Security for DB2.</td>
</tr>
<tr>
<td></td>
<td>BMC recommends this mechanism for implementing external security. The access control authorization exit must be available in the STEPLIB, JOBLIB,</td>
</tr>
<tr>
<td></td>
<td>linklist, or in the SYS3.DSN exit.</td>
</tr>
<tr>
<td>one of the following security products from CA</td>
<td>The BMC product uses either of these CA Technologies products with any version of DB2. The BMC product detects the presence of the CA Technologies</td>
</tr>
<tr>
<td>Technologies:</td>
<td>product in the DB2 subsystem where the BMC product is running.</td>
</tr>
<tr>
<td>■ CA-ACF2 Security for DB2</td>
<td>To use either of these CA Technologies products with the BMC product, you must meet the following requirements:</td>
</tr>
<tr>
<td>■ CA-Top Secret Security for DB2</td>
<td>■ You must be using a version of your security product that enables external security calls for DB2.</td>
</tr>
<tr>
<td></td>
<td>■ The value of the ACFORTSS installation option must be YES (the default).</td>
</tr>
<tr>
<td></td>
<td>Note: If you have one of these security products installed, but the version does not support external security, complete one of the following tasks:</td>
</tr>
<tr>
<td></td>
<td>■ Change the value of the ACFORTSS installation option to NO. The BMC product then uses the standard DB2 method to check security.</td>
</tr>
<tr>
<td></td>
<td>■ Contact your security vendor for the required APAR to enable external security calls for DB2. Then, ensure that the value of the ACFORTSS</td>
</tr>
<tr>
<td></td>
<td>installation option is YES.</td>
</tr>
</tbody>
</table>
RECOVERY MANAGER for DB2 user authorizations

The RECOVERY MANAGER for DB2 product requires certain user authorizations.

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

<table>
<thead>
<tr>
<th>Authorization mechanism</th>
<th>BMC product actions</th>
</tr>
</thead>
<tbody>
<tr>
<td>none are available</td>
<td>The BMC product uses the standard DB2 method to check security.</td>
</tr>
</tbody>
</table>
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 IKJ5650I 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.

CA-ACF2 authorizations for COPY PLUS for DB2

To use CA-ACF2 for DB2 from Computer Associates for security validation, set the ACFORTSS installation option to YES.

CA-Top Secret authorizations for COPY PLUS for DB2

To use CA-Top Secret Security for DB2 from Computer Associates for security validation, set the ACFORTSS installation option to YES.

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 Security or CA-Top Secret Security).

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.

**CA-ACF2 authorizations for RECOVER PLUS for DB2**

To use CA-ACF2 for DB2 from Computer Associates for security validation, set the ACFORTSS installation option to YES.

**CA-Top Secret authorizations for RECOVER PLUS for DB2**

To use CA-Top Secret Security for DB2 from Computer Associates for security validation, set the ACFORTSS installation option to YES.

**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 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.

**CA-ACF2 authorizations for Log Master for DB2**

Log Master can use the CA-ACF2 security package from Computer Associates.

To use CA ACF2 for DB2 from Computer Associates for security validation, set the
ACFORTSS installation option to YES. (See the *Log Master Reference Manual* for
more information about ACFORTSS.

If your security package is ACF2 for DB2 and your installation uses the Command
Limiting List, the product's online interface will not work correctly unless you add
the command ALPPRI to the list. The Command Limiting List is the portion of
ACF2's Global Systems Options that determines which programs can run as APF
authorized programs.

**CA-Top Secret authorizations for Log Master for DB2**

Log Master can use the CA-Top Secret for DB2 security package from Computer
Associates.

To use CA-Top Secret for DB2 from Computer Associates for security validation, set
the ACFORTSS installation option to YES. See the *Log Master Reference Manual* for
information about the ACFORTSS installation option.

**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.

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>
<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>Variable name</td>
<td>Description</td>
</tr>
<tr>
<td>----------------</td>
<td>-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td><code>collectionIDs</code></td>
<td>names of collections to which High-speed Apply Engine dynamically binds packages during processing. 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><code>databaseName</code></td>
<td>target database being changed by the apply request</td>
</tr>
<tr>
<td><code>tableNames</code></td>
<td>target tables being changed by the apply request</td>
</tr>
<tr>
<td><code>userid01</code></td>
<td>authorization ID of the user running the apply request</td>
</tr>
<tr>
<td></td>
<td>You can specify PUBLIC or a specific authorization ID.</td>
</tr>
<tr>
<td><code>userid02</code></td>
<td>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.</td>
</tr>
<tr>
<td><code>userPlan01</code></td>
<td>name of a pre-bound plan that is bound by using special bind options (optional, when the BindAction parameter is Use)</td>
</tr>
</tbody>
</table>

**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.

```
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 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>
<tr>
<td>PlanName</td>
<td>name of the specific prebound plan</td>
</tr>
</tbody>
</table>

**Note:** This value is required if the user ID that binds the plan has CREATE privileges only on specific collections.

**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 16: 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</td>
<td>EXECUTE privilege for High-speed Apply Engine plan (for example, APTBvnr)</td>
<td>primary authorization ID (user ID)</td>
</tr>
<tr>
<td>(if you do not specify any parameters in your configuration)</td>
<td></td>
<td>secondary authorization ID</td>
</tr>
<tr>
<td>EXECUTE privilege for restart table package (for example, APTBvnr.APTREB2)</td>
<td>primary authorization ID (user ID)</td>
<td></td>
</tr>
<tr>
<td>BINDADD authority</td>
<td>primary authorization ID (user ID)</td>
<td></td>
</tr>
<tr>
<td>PACKADM authority or CREATE IN privilege for collection</td>
<td>primary authorization ID (user ID)</td>
<td></td>
</tr>
<tr>
<td>SELECT, INSERT, UPDATE, and DELETE privileges on target tables</td>
<td>primary authorization ID (user ID)</td>
<td></td>
</tr>
<tr>
<td>[Bind] parameter usage method</td>
<td>DB2 authorization</td>
<td>Granted to one of listed IDs or to PUBLIC</td>
</tr>
<tr>
<td>-------------------------------</td>
<td>-------------------</td>
<td>------------------------------------------</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>EXECUTE privilege for restart table package (for example, APTBvvr.APTREB2)</td>
<td>secondary authorization ID</td>
</tr>
<tr>
<td></td>
<td>BINDADD authority</td>
<td>authorization ID specified by BindOwner parameter</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>EXECUTE privilege for restart table package (for example, APTBvvr.APTREB2)</td>
<td>secondary authorization ID</td>
</tr>
<tr>
<td></td>
<td>SYSADM or SYSCTRL authority</td>
<td>primary authorization ID (user ID)</td>
</tr>
<tr>
<td></td>
<td>SELECT, INSERT, UPDATE, and DELETE privileges on target tables</td>
<td>authorization ID specified by AuthID parameter</td>
</tr>
<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>EXECUTE privilege for restart table package (for example, APTBvvr.APTREB2)</td>
<td>secondary authorization 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>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.

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'
   ```

3. 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, you must migrate your groups to the new repository before using RECOVERY MANAGER version 9.2.00 and later. Migrating groups into the RMGR version 9.2.00 repository requires a great deal of processing. BMC recommends that you evaluate all groups and delete any that are unused, out of date, or incorrectly defined prior to invoking ARMBREP. ARMBREP will complete more efficiently if you perform the evaluation and deletion step.

The ARMBREP program reads groups from a RECOVERY MANAGER repository (version 9.1.00 and earlier) using the plans and synonyms that were in place for that repository. ARMBREP is the only RMGR program that accesses a repository created prior to RMGR version 9.2.00. After reading the groups from the old repository, ARMBREP saves the groups to the new repository based on the plan and synonyms defined for RMGR version 9.2.00.

For more information, see the details about the ARMBREP program.

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.

Before you begin

Ensure that you have MVS data set UPDATE authority to edit the ARM$OPTS member.

To set up data sharing for RECOVERY MANAGER

1. Add the following lines to the ARM$OPTS member in the control library of each DB2 subsystem:
   - `groupname.PROD.DSNLOAD=DB2.load.library`
   - `groupname.PROD.DSNEXIT=DB2.exit.library`
   - `groupname.TEST.DSNLOAD=DB2.load.library`
   - `groupname.TEST.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 ARM$OPTS member in the control library for each DB2 subsystem:
RECOVERY MANAGER for DB2 and DBC

RECOVERY MANAGER for DB2, which is also a part of the Recovery Management solution, uses DB2 component services (DBC) to display a list of available SSIDs.

For more information about DBC, see “Working with DB2 Component Services” on page 353.

ARMBREP repository migration program

The ARMBREP program migrates the RECOVERY MANAGER for DB2 repository.

You must migrate a RECOVERY MANAGER for DB2 version 9.1.00 and earlier repository to the new repository for RECOVERY MANAGER for DB2 version 9.2.00 and later.

About ARMBREP

The ARMBREP program reads groups from a RECOVERY MANAGER for DB2 repository (version 9.1.00 and earlier). After reading the groups from the old repository, ARMBREP saves the groups to the new repository. ARMBREP is the only RECOVERY MANAGER program that accesses a repository created prior to RECOVERY MANAGER version 9.2.00.

<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>
<tr>
<td>ssid.PROD. optionname=</td>
<td>production library information(^a) for each subsystem and data sharing member</td>
</tr>
</tbody>
</table>

\(^a\) The production library information (ssid.PROD= options) is ALWAYS used in RMGR batch processes.

3 For each DB2 subsystem that will be a data sharing member, use the Control information option on the RMGR main menu to update the work file database name and the group member name.
You must migrate your groups to the new repository before using RECOVERY MANAGER for DB2 version 9.2.00 and later to have your previously-defined groups available for use. Migrating groups into the RECOVERY MANAGER version 9.2.00 repository can be time consuming. BMC recommends that you delete any unnecessary groups prior to invoking ARMBREP so that the conversion process completes more quickly.

Note the following considerations when you run ARMBREP:

- Change accumulation groups are not migrated by RECOVERY MANAGER for DB2. R+/CHANGE ACCUM does not support the new repository in version 9.2.00.

- ARMBGPS and repository groups are not migrated by RECOVERY MANAGER for DB2. You will need to recreate the ARMBGPS and repository groups after you run ARMBREP.

  Note
  ARMBGPS and repository groups require the other products and synonyms to be installed and defined. Because this cannot be guaranteed at the time that ARMBREP runs, ARMBREP skips these groups to avoid generating incomplete groups.

- SAP groups are migrated as TS groups with the owner specified.

- When you run ARMBREP, any groups that had Dataset Sizing Repository are set to Dataset Sizing Catalog in the new repository. Dataset Sizing Repository is not supported in RECOVERY MANAGER for DB2 version 9.2.00 and later.

**Authorizations for ARMBREP**

The ARMBREP program requires certain authorizations.

The following authorizations are required to execute the ARMBREP program:

- APF authorization for the ARMBREP program and the RECOVERY MANAGER load library

- EXECUTE authority on the RECOVERY MANAGER DB2 plan
Building the JCL

Building your own ARMBREP 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:
  - RECOVERY MANAGER and DB2 load libraries
  - input data sets
  - output data sets

Specifying the JOB statement

The JOB statement for the ARMBREP 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 ARMBREP job is executed. If REGION=0M is not allowed at your company, specify REGION=4M.

Specifying the EXEC statement

The ARMBREP EXEC statement uses a specific format.

The EXEC statement for the ARMBREP program has the following format:

```
//stepname EXEC PGM=ARMBREP,
//             PARM='ssid',
//             REGION=0M
```

The variable ssid is the DB2 subsystem or group attach name where the RECOVERY MANAGER groups 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.

---

**Specifying the STEPLIB DD statement**

The ARMBREP STEPLIB DD statement identifies the load libraries.

The STEPLIB DD statement identifies the RECOVERY MANAGER load library and DB2 load libraries that you want ARMBREP 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 ARMBREP data set DD statements**

In the JCL, you specify each data set used by ARMBREP with a ddname (data definition name).

Following are the data sets (optional and required) that are used by ARMBREP:

- **ARMIN (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).

- **ARMPRINT (required)**

  This data set is the output for messages that are returned from RECOVERY MANAGER. RECOVERY MANAGER reports all groups found in the repository, displays their definitions, and indicates if they were migrated or not. RECOVERY MANAGER also echoes the contents of the ARMIN data set in the ARMPRINT output. ARMPRINT may be allocated to SYSOUT or to a data set with a data control block (DCB) of LRECL=121, RECFM=VBA.

  Because ARMPRINT can be large for a large number of groups, BMC recommends that you specify a data set.

- **ARMOPTS (required)**

  This data set contains the RECOVERY MANAGER control options data set created during RECOVERY MANAGER installation with the default name of `hilvl.RMGR.DBCNTL(ARM$OPTS)`. The data set must be allocated with DISP=SHR.
- **ARMMSGS (required)**
  
  This data set is the RECOVERY MANAGER messages data set created during RECOVERY MANAGER installation with the default name of hilvl.RMGR.DBCNTL(ARMMSGS). The data set must be allocated with DISP=SHR.

- **ARMERROR (optional)**
  
  This data set contains the output for compiler run time ARMBREP errors. If compiler errors are detected and ARMERROR is not present in the JCL, the errors are printed in the JES log. The data set may be allocated to SYSOUT or to a data set with a DCB of LRECL=121, RECFM=VBA.

- **ARMTRACE (optional)**
  
  This data set contains the output for the trace messages and should only be used when debugging a problem due to the large amount of output that could be produced. If you use ARMTRACE, because of the amount of output generated, BMC recommends that you specify a data set.

- **ARMSYSRO (optional)**
  
  This output data set is a report of the subsystem recover options from old repository.

- **ARMSYRSN (optional)**
  
  This output data set is a report of subsystem recover options from new repository.

- **ARMSYSCO (optional)**
  
  This output is a report of subsystem copy options from old repository.

- **ARMSYSCN (optional):**
  
  This output data set is a report of subsystem copy options from new repository.

---

**ARMBREP syntax and option descriptions**

The ARMBREP syntax and option descriptions in this section are the control statements that you use when you build ARMIN input.
For more information about syntax rules and wildcard support, see the RECOVERY MANAGER for DB2 documentation.

**Figure 45: ARMBREP control statement**

```
MODE UPDATE REPORT ;
```

**Table 17: ARMBREP 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 groups in the repository or to issue reports without updating the repository. UPDATE mode is the default value and results in the groups being created in the repository. REPORT mode prints all messages and reports in the ARMPRINT but does not alter the repository.</td>
</tr>
<tr>
<td>REPLACE</td>
<td>The REPLACE statement indicates whether to replace an existing group in the repository when you are migrating groups. NO is the default value and results in groups not being created in the new repository if a group name already exists. A message also prints in ARMPRINT stating that the group will not be migrated. YES deletes the group from the new repository if it already exists before migrating the group from the old repository.</td>
</tr>
</tbody>
</table>

**Sample JCL**

Following is an example of JCL for ARMBREP.

**Figure 46: Sample AMRBREP JCL**

```
//DAFBREP2 JOB (PARM),FRIEDEL,CLASS=A,MSGCLASS=X,NOTIFY=&SYSUID
//ARM001 EXEC PGM=ARMBREP,
//       PARM='DEDL',
//       REGION=0M
//STEPLIB DD DISP=SHR,DSN=PRODUCT.LOAD.LIBS
//       DD DISP=SHR,DSN=DSNEXIT
//       DD DISP=SHR,DSN=DSNLOAD
//ARMMGS DD DISP=SHR,DSN=PRODUCT.CNTL.LIBS(ARGMSGS)
//ARMOPTS DD DISP=SHR,DSN=PRODUCT.CNTL.LIBS(ARGOPTS)
//ARMSYSRO DD SYSOUT=* 
//ARMSYR RN DD SYSOUT=* 
```
Output files and sample output

The following output report files are only produced if you had some backup or recover subsystem options set on your old system that are migrated to the new system.

The reports show the before and after reports for the backup options and the recover options. These reports are not generated if no subsystem options are migrated, or if you have not specified a DD for them in the JCL.

- ARMSYSRO: subsystem recover options prior to migration
- ARMSYSRN: subsystem recover options after migration
- **ARMSYSRCO**: subsystem copy options prior to migration
- **ARMSYSRCN**: subsystem copy options after migration

For each ARMBREP run, text similar to the following, depending on the type of output, is placed into each of these files:

```plaintext
SUBSYSTEM COPY OPTIONS (NEW REPOSITORY)----> REPORT: 07/22/2009 13:38:16
```

The following sample shows the ARMSYSRO output (subsystem recover options from old repository).

**Figure 47: Sample output for ARMSYSRO**

```plaintext
SUBSYSTEM RECOVER OPTIONS (OLD REPOSITORY)----> REPORT: 09/10/2009 14:50:20
* ** ***   *** ** *
GENERAL RECOVERY OPTIONS:
  Rcvr Util: Recover Plus
  Copy Util: Copy Plus
  Use INDEX ALL Recover: No
  Redefine VCAT Objects: No
  Delete STOGROUP Objects: No
  Max concurrent jobs: 1
  Limit SYSCOPY: 0
  Mirroring: No
  What action when Check Pending: None
  Make copies after recovery for: Not specified
  RECOVER PLUS OPTIONS:
    CHECKPOINT: Not specified
    EARLYCAT: Yes
    LOGSCAN: No
    Dynamic sortworks: Yes
    XBMID: XBMN
    Alternate Resources: No
    KSORTSHARE: Not specified
  DB2 RECOVER OPTIONS:
    SORTKEYS: No
    REPORT: Yes
    KEYCARD: No
  WORK FILE OPTION DESCRIPTIONS:
    Work unit: SYSALLDA
    Allocation type: Cylinder
    Primary allocation: 10
* ** ***   *** ** *
GENERAL BACKUP OPTIONS:
  Copy Utility: Copy Plus
  Quiesce before: No
```

The following sample shows the ARMSYSCN output (subsystem copy options from new repository).

**Figure 48: Sample output for ARMSYSCN**

```plaintext
SUBSYSTEM COPY OPTIONS (NEW REPOSITORY)----> REPORT: 09/10/2009 14:50:20
* ** ***   *** ** *
GENERAL BACKUP OPTIONS:
  Copy Utility: Copy Plus
```

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<table>
<thead>
<tr>
<th>Setting</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quiesce after:</td>
<td>No</td>
</tr>
<tr>
<td>Quiesce write:</td>
<td>Yes</td>
</tr>
<tr>
<td>Copy Index Spaces:</td>
<td>No</td>
</tr>
<tr>
<td>Copy all indexes in a table space:</td>
<td>No</td>
</tr>
<tr>
<td>Scope Setting:</td>
<td>SCOPE Undefined</td>
</tr>
<tr>
<td>COPY PLUS SPECIFIC OPTIONS:</td>
<td></td>
</tr>
<tr>
<td>Full copy:</td>
<td>Yes</td>
</tr>
<tr>
<td>Cumulative:</td>
<td>Yes</td>
</tr>
<tr>
<td>Readtype:</td>
<td>Random</td>
</tr>
<tr>
<td>Maximum incremenitals:</td>
<td>Not specified</td>
</tr>
<tr>
<td>Maximum percent:</td>
<td>Not specified</td>
</tr>
<tr>
<td>Day of the week:</td>
<td>Not specified</td>
</tr>
<tr>
<td>DSSNAP:</td>
<td>Not specified</td>
</tr>
<tr>
<td>XBMID:</td>
<td>Not specified</td>
</tr>
<tr>
<td>Separate by partition:</td>
<td>No</td>
</tr>
<tr>
<td>Access:</td>
<td>OBSOLETE OPTION</td>
</tr>
<tr>
<td>Checktslevel:</td>
<td>Not specified</td>
</tr>
<tr>
<td>Maximum Tasks:</td>
<td>Not specified</td>
</tr>
<tr>
<td>Unit Count:</td>
<td>Not specified</td>
</tr>
<tr>
<td>Report Statistics:</td>
<td>No</td>
</tr>
<tr>
<td>Update BMCSTATS Table:</td>
<td>No</td>
</tr>
<tr>
<td>Support OUTSIZE option:</td>
<td>BIGDDN: Not specified</td>
</tr>
<tr>
<td>ON ERROR BADSTATUS:</td>
<td>Not specified</td>
</tr>
<tr>
<td>ON ERROR ICEXISTS:</td>
<td>Not specified</td>
</tr>
<tr>
<td>ACPGDG data set:</td>
<td>Not specified</td>
</tr>
<tr>
<td>After Initialize Phase:</td>
<td>Continue</td>
</tr>
<tr>
<td>Start message:</td>
<td>Not specified</td>
</tr>
<tr>
<td>Use COPY IMAGECOPY to make output type:</td>
<td>Not specified</td>
</tr>
<tr>
<td>DB2 COPY (DSNUTILB) OPTIONS:</td>
<td></td>
</tr>
<tr>
<td>Full copy:</td>
<td>Yes</td>
</tr>
<tr>
<td>Change limit Incremental percent:</td>
<td>Not specified</td>
</tr>
<tr>
<td>Change limit Full percent:</td>
<td>Not specified</td>
</tr>
<tr>
<td>Shrlevel: Reference:</td>
<td>Reference</td>
</tr>
<tr>
<td>Copy objects in parallel:</td>
<td>No</td>
</tr>
<tr>
<td>RECOVER PLUS OUTCOPY OPTIONS:</td>
<td></td>
</tr>
<tr>
<td>EARLYRECALL:</td>
<td>Yes</td>
</tr>
<tr>
<td>ANALYZE:</td>
<td>Yes</td>
</tr>
<tr>
<td>SORTDEVT:</td>
<td>Not specified</td>
</tr>
<tr>
<td>TOLOGPOINT:</td>
<td>Current</td>
</tr>
<tr>
<td>Alternate Resources:</td>
<td></td>
</tr>
<tr>
<td>Local primary:</td>
<td>Not specified</td>
</tr>
<tr>
<td>Recovery primary:</td>
<td>Not specified</td>
</tr>
<tr>
<td>Logs:</td>
<td></td>
</tr>
<tr>
<td>Active log copy 1:</td>
<td>Not specified</td>
</tr>
<tr>
<td>Archive log copy 1:</td>
<td>Not specified</td>
</tr>
<tr>
<td>Change accums:</td>
<td></td>
</tr>
<tr>
<td>Local primary:</td>
<td>Not specified</td>
</tr>
<tr>
<td>Recovery primary:</td>
<td>Not specified</td>
</tr>
<tr>
<td>OUTPUT DATA SET OPTION DESCRIPTIONS:</td>
<td></td>
</tr>
<tr>
<td>Local Primary Copy Options:</td>
<td></td>
</tr>
<tr>
<td>Data set name:</td>
<td>&amp;USERID.&amp;DB.&amp;TS.&amp;TYPE&amp;DATE.T&amp;TIME</td>
</tr>
<tr>
<td>Model data set name:</td>
<td>Not specified</td>
</tr>
<tr>
<td>Unit: SYSSALLDA</td>
<td>Tape: No</td>
</tr>
<tr>
<td>Volume count:</td>
<td>Not specified</td>
</tr>
<tr>
<td>Stack: No</td>
<td>Catalog: Yes</td>
</tr>
<tr>
<td>Max Primary allocation:</td>
<td>0</td>
</tr>
<tr>
<td>Primary allocation:</td>
<td>10</td>
</tr>
<tr>
<td>Allocation type:</td>
<td>Cylinder</td>
</tr>
<tr>
<td>SMS data class:</td>
<td>Not specified</td>
</tr>
</tbody>
</table>

ARMBREP repository migration program

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Note
On a rerun of ARMBREP, RECOVERY MANAGER does not delete the prior run report information in the output report files. RECOVERY MANAGER appends the new information from the rerun to the existing file with a line inserted to denote the date and time of the new report.

The following figure shows an edited sample ARMPRINT for ARMBREP showing output for several of the 469 groups processed. The complete ARMPRINT lists every group from the old system and tells whether it migrated to the new repository. Notice that there are 381 groups--380 migrated and 1 new subsystem option group created--in the new repository. If this is the first run of ARMBREP and no groups have been created by running RECOVERY MANAGER for DB2 version 9.2.00, there will be 381 groups migrated.

At the very bottom of the ARMPRINT, you find a totals section that includes the following information:

- **IGNORED**—includes change accumulation groups
  You can search for the BMC80799E message to find the specific groups that were ignored.

- **SKIPPED**—includes repository groups and ARMBGPS groups
  You can search for the BMC80917E message to find the specific groups that were skipped.

- **SAVE FAILED**—includes any group containing a bad definition
  A scenario for when a group would show SAVE FAILED would be where you created a group by volume or exception in the old repository, but the group is empty. When RECOVERY MANAGER migrates groups created by volume or by exception, RECOVERY MANAGER creates a static group in the new repository. If the group is empty, RECOVERY MANAGER issues an error and does not create an empty group.
  You can search for the BMC80917E message with FAILED to find the specific groups that failed.

- **NEW SUBSYSTEM OPTION GROUP**—Starting with RECOVERY MANAGER version 9.2.00, if any backup or recovery subsystem options were set in the old repository, the migration program creates a new group in the new repository.
  The subsystem options are stored in BMCARM.SUBSYSTEM_OPTIONS.
  RECOVERY MANAGER issues message BMC80485I if a group has been saved.

  The formula for the total number of groups in the new repository is:
TOTAL GROUPS IN NEW REPOSITORY = GROUPS TO PROCESS - IGNORED - SKIPPED - SAVE FAILED + NEW SUBSYSTEM OPTION GROUP

Note
This calculation is valid only for the first run after migration. If you have been running RECOVERY MANAGER for DB2 version 9.2.00 and you have created and deleted groups, these counts might very likely not match the calculation, depending on your actions.

Figure 49: Sample ARMBREP output - Repository Migration report

** RECOVERY MANAGER FOR DB2 V9.2.00 - REPOSITORY MIGRATION 09/25/2009 08:04:36 **
** BMC80220I RECOVERY MANAGEMENT FOR DB2 V9.2.00 **
(c) COPYRIGHT 1994-2009 BMC SOFTWARE, INC.
RECOVERY MANAGER TECHNOLOGY IS PROTECTED BY U.S. PATENT NUMBERS 5625817 AND 5761676
RECOVERY MANAGEMENT TECHNOLOGY IS PROTECTED BY U.S. PATENT NUMBER 7133884
BMC80223I MAINT: NO RECOVERY MANAGER PTFS APPLIED
BMC80223I SOLUTION COMMON CODE V1.6.0
BMC80223I MAINT: NO SCC PTFS APPLIED
BMC80309I CONNECTED TO DB2 SSID = HE VERSION 0810
MODE UPDATE :
REPLACE YES :
BMC80485I SAVING SUB-SYSTEM PROFILE GROUP BMCARM.SUBSYSTEM_OPTIONS
SUB-SYSTEM OPTIONS PROCESSED
BMC80531I 469 GROUPS TO PROCESS
BMC80591I PROCESSING GROUP ARMQA.ARM52OT_PAK (#1)
Type       Indexes  RI  By Part LOBs XML Clone
PKG DEP    X
ARMB52OT.ARMQACA
ARMB52OT.ARMQCAT
ARMC52OT.ARMQAAA
ARMC52OT.ARMQASU
ARMC52OT.ARMQAUT
ARMC52OT.ARMQBQLD
ARMC52OT.ARMQCAT
ARMC52OT.ARMQCDR
ARMC52OT.ARMQDTC
ARMC52OT.ARMQGDL
ARMC52OT.ARMQGRP
ARMC52OT.ARMQGTV
ARMC52OT.ARMQSYN
ARMC52OT.ARMQUTL
ARMC52OT.ARMQWLD
ARML52OT.ARMQALP
ARML52OT.ARMQAUT
BMC80540I GROUP SAVED               THE GROUP WAS SAVED SUCCESSFULLY
BMC80591I PROCESSING GROUP ARMQA.DHE$GROUP01 (#2)
Type       Indexes  RI  By Part LOBs XML Clone
ARMBGPS
BMC80919E BGPS GROUP: OLD REPOSITORY OBJECTS INVALID FOR CURRENT RELEASE
EXCL TS
DSND806.* Part=* Owner=*
EXCL TS
DSNDB07.* Part=0 Owner=* 
EXCL TS
BMCARM.BMCARMCR Part=0 Owner=* 
EXCL TS
BMCARM.BMCARMGA Part=0 Owner=* 
EXCL TS
BMCARM.BMCARMGC Part=0 Owner=* 
EXCL TS
BMCARM.BMCARMGD Part=0 Owner=* 
EXCL TS
BMCARM.BMCARMGF Part=0 Owner=* 
EXCL TS
BMCARM.BMCARMGO Part=0 Owner=* 
EXCL TS
BMCARM.BMCARMGP Part=0 Owner=* 
EXCL TS
BMCARM.BMCARMGS Part=0 Owner=* 
EXCL TS
BMCARM.BMCARMOP Part=0 Owner=* 
EXCL TS
BMCARM.BMCAERMSF Part=0 Owner=* 
EXCL TS
BMCARM.BMCESTM Part=0 Owner=* 
EXCL TS
BMCASU7B.BMCRSIP Part=0 Owner=* 
EXCL TS
BMCASU7B.BMCRSTB Part=0 Owner=* 
EXCL TS
BMCASU7B.BMCRSTP Part=0 Owner=* 
EXCL TS
BMCASU7B.BMCRSTS Part=0 Owner=* 
EXCL TS
BMCUTIL.BMCLGRNX Part=0 Owner=* 
EXCL TS
BMCUTIL.BMCSYNC Part=0 Owner=* 
EXCL TS
BMCUTIL.BMCTRANS Part=0 Owner=* 
EXCL TS
BMCUTIL.BMCUTIL Part=0 Owner=* 
EXCL TS
BMCUTIL.BMCXCOPY Part=0 Owner=* 
EXCL TS
BMCA32.ACAREPOS Part=0 Owner=* 
EXCL TS
DHE1.* Part=0 Owner=* 
EXCL TS
DHE2.* Part=0 Owner=* 
EXCL TS
DHE3.* Part=0 Owner=* 
BMCB0917E GROUP SAVE SKIPPED: BGPS GROUP
BMCB0799W THIS GROUP WAS NOT MIGRATED TO NEW REPOSITORY

----------------------------------------------------------------

BMC80531I GROUPS TO PROCESS:                     469
BMC80531I   IGNORED:                              30   (SEE 80799E MSGS)
(IGNORE CHANGE ACCUM GROUPS)
BMC80531I   SKIPPED:                              57   (80917E AND SKIPPED)
(SKIP REPOSITORY AND BGPS GROUPS)
BMC80531I   SAVE FAILED:                           2   (80917E AND FAILED)
Executing the JCL

Consider the following information to run the ARMBREP JCL:

- Ensure that the job owner has the appropriate authorizations. For more information, see “Authorizations for ARMBREP” on page 198.

- No restart is available for ARMBREP. You must resubmit the job after correcting any error conditions.

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 (RMGR) and Log Master, Log Master must be installed and you must add some control information to the ARMSOPTS file.

To enable interaction between Log Master and RMGR

1. Add the following control information to the ARMSOPTS file:

<table>
<thead>
<tr>
<th>Control information</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>ssid.PROD.ALLOAD=load_library</td>
<td>Log Master production load library</td>
</tr>
<tr>
<td>ssid.PROD.ALPRSN=version</td>
<td>Log Master production load library version</td>
</tr>
</tbody>
</table>
Enabling interaction between COPY PLUS and RECOVERY MANAGER

Use the steps in this procedure to create COPY PLUS synonyms that enable COPY PLUS to work with the groups that are created and stored in RECOVERY MANAGER.

To enable interaction between COPY PLUS and RMGR

If you install COPY PLUS before or at the same time that you install RECOVERY MANAGER (RMGR), the Installation System prompts you to create the COPY PLUS synonyms that enable you to copy the RMGROUPs that are stored in RECOVERY MANAGER. If you install COPY PLUS at a later date, you must perform the steps in this procedure.

1. Determine the plan qualifier for the COPY PLUS plan.

2. Create the COPY PLUS synonyms using SQL statements similar to the following SQL statements:

   ```sql
   SET CURRENT SQLID='plan_qualifier'
   CREATE SYNONYM BMCACP_GROUPOBJ
   FOR creator.GROUPOBJ
   CREATE SYNONYM BMCACP_GROUPS
   FOR creator.GROUPS
   ```

   The variables creator.GROUP_OBJ and creator.GROUPS represent the names of each RMGR table. The variable `plan_qualifier` represents the plan qualifier specified for the COPY PLUS plan.

Enabling interaction between RECOVERY MANAGER and PACLOG

Use the steps in this procedure to enable PACLOG for DB2 to interact with RECOVERY MANAGER for DB2.

Before you begin

If RMGR coexists with PACLOG in the target DB2 subsystem, the two products should share the RMGR options file and archive history data set for the two products to interact. The options file name is set in the ARMCNTL variable in the product invocation CLIST.
To enable interaction between RECOVERY MANAGER for DB2 and PACLOG

1 Specify the new DB2 subsystem ID on the RMGR Main Menu, and then select Control Information.

2 Choose from the following options:

   ■ To view the options without making any changes, select Browse and then press Enter.
   ■ To make changes to the options, select Update and press Enter.

3 Select the DB2 Subsystem Resource Information, and press Enter.

   The Subsystem Information panel is displayed.

4 To move to the next Subsystem Information panel, press Enter.

5 From the displayed panel, verify that the Archive history DSN option correctly specifies the history file for the new DB2 subsystem.

   Note
   If you are not currently using the RMGR history file, you must specify a history data set name and create the data set. Refer to the PACLOG.DBCNTL data set member ALMHIST for a sample job that you can use to create the new history file.

6 Press Enter, and choose from the following options:

   ■ If you did not make any changes to the options, you do not need to perform any other steps.
   ■ If you made changes to the options, the Update Confirmation panel is displayed. Select 1, and then press Enter.

Enabling interaction between RECOVERY MANAGER and DB2 Component Services (DBC)

RECOVERY MANAGER for DB2 interacts with DBC to display available SSIDs.

To enable interaction between RECOVERY MANAGER and DBC, you must have a DBC started task running. For more information, see “Starting the DBC subsystem” on page 354.
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>
<thead>
<tr>
<th>Synonym</th>
<th>DASD MANAGER PLUS table a</th>
</tr>
</thead>
<tbody>
<tr>
<td>BMCACP_BMCXTBSP</td>
<td>BMCATS\textit{vr}.RS_TABLESPACE</td>
</tr>
<tr>
<td>BMCACP_BMCXTBPT</td>
<td>BMCATS\textit{vr}.RS_TABLEPART</td>
</tr>
<tr>
<td>BMCACP_BMCXTBLS</td>
<td>BMCATS\textit{vr}.RS_TABLES</td>
</tr>
</tbody>
</table>

\textit{a}The variable \textit{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.

**DASD MANAGER PLUS synonyms:** DASD MANAGER PLUS uses the following synonyms:

- BMC_UTILITY for the BMCUTIL table
- BMC_UTIL_SYNC and BMC_UTIL_SYNC2 for the BMCSYNC table

You must update your synonyms if either of the following cases are true:

- Your current synonyms do not point to the correct tables.
- DASD MANAGER PLUS accesses the utility tables during batch processing.
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 18 on page 212, 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 plan binds will complete with a return code 4.

To direct the DASD MANAGER PLUS synonyms to the utility tables

1. Drop the current utility synonyms for DASD MANAGER PLUS.

2. Create the new DASD MANAGER PLUS utility synonyms by using the same synonym names, but use the correct table names.

3. Bind the package AEEXECUTID into the main collection ID for DASD MANAGER PLUS.

   The HLQ:INSTALL member BMI#AEXU provides a sample worklist.

**Setting the MEMLIMIT system parameter**

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

This requirement affects the following BMC products and components:

- **ALTER**
- **BMCSORT**
- **CATALOG MANAGER**
- **CHANGE MANAGER**
- **CHECK PLUS**
- **COPY PLUS**
- DASD MANAGER PLUS
- High-speed Apply Engine
- LOADPLUS
- Log Master
- RECOVER PLUS
- RECOVERY MANAGER
- REORG PLUS
- UNLOAD PLUS

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 19: 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>
<tr>
<td><strong>LOADPLUS</strong></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><strong>REORG PLUS</strong></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><strong>UNLOAD PLUS</strong></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 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.

**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 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.BMCPSEW 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 and components require above-the-bar memory and might abend if sufficient memory is not available.

This requirement affects the following BMC products and components:

- ALTER
- BMCSORT
- CATALOG MANAGER
- CHANGE MANAGER
- CHECK PLUS
- COPY PLUS
- DASD MANAGER PLUS
- High-speed Apply Engine
- LOADPLUS
- Log Master
- RECOVER PLUS
- RECOVERY MANAGER
- REORG PLUS
- UNLOAD PLUS

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 20: 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>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>
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<td>Product or solution</td>
<td>Recommendation</td>
</tr>
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<td>-------------------------------</td>
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</tr>
<tr>
<td>Database Administration</td>
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<td></td>
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<td>Database Performance</td>
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<td></td>
<td>■ If you are unable to specify NOLIMIT:</td>
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<tr>
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<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>
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<td>■ Specify NOLIMIT to allow unlimited above-the-bar memory.</td>
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<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>Product or solution</td>
<td>Recommendation</td>
</tr>
<tr>
<td>--------------------</td>
<td>----------------</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.

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.

**CA-ACF2 authorizations for COPY PLUS for DB2**
To use CA-ACF2 for DB2 from Computer Associates for security validation, set the ACFORTSS installation option to YES.

**CA-Top Secret authorizations for COPY PLUS for DB2**
To use CA-Top Secret Security for DB2 from Computer Associates for security validation, set the ACFORTSS installation option to YES.

**Authorization verification mechanisms for Backup and Recovery products and Utility products**
Many BMC products for DB2 use the same mechanisms to verify authorization.

The following table presents an overview of these mechanisms.
### Table 21: Authorization verification mechanisms

<table>
<thead>
<tr>
<th>Authorization mechanism</th>
<th>BMC product actions</th>
</tr>
</thead>
<tbody>
<tr>
<td>DB2 access control authorization exit</td>
<td>The BMC product uses the DSNX@XAC authorization exit to verify authorization for external access. The exit is available from the following sources:</td>
</tr>
<tr>
<td></td>
<td>- IBM provides a sample exit with DB2 for the IBM Resource Access Control Facility (RACF) component.</td>
</tr>
<tr>
<td></td>
<td>- CA Technologies provides the DSNX@XAC exit with CA-ACF2 Security for DB2 and CA-Top Secret Security for DB2.</td>
</tr>
<tr>
<td></td>
<td>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.</td>
</tr>
<tr>
<td>one of the following security products from CA Technologies:</td>
<td>The BMC product uses either of these CA Technologies products with any version of DB2. The BMC product detects the presence of the CA Technologies product in the DB2 subsystem where the BMC product is running.</td>
</tr>
<tr>
<td>- CA-ACF2 Security for DB2</td>
<td>To use either of these CA Technologies products with the BMC product, you must meet the following requirements:</td>
</tr>
<tr>
<td>- CA-Top Secret Security for DB2</td>
<td>- You must be using a version of your security product that enables external security calls for DB2.</td>
</tr>
<tr>
<td></td>
<td>- The value of the ACFORTSS installation option must be YES (the default).</td>
</tr>
<tr>
<td></td>
<td>Note: If you have one of these security products installed, but the version does not support external security, complete one of the following tasks:</td>
</tr>
<tr>
<td></td>
<td>- Change the value of the ACFORTSS installation option to NO. The BMC product then uses the standard DB2 method to check security.</td>
</tr>
<tr>
<td></td>
<td>- Contact your security vendor for the required APAR to enable external security calls for DB2. Then, ensure that the value of the ACFORTSS installation option is YES.</td>
</tr>
</tbody>
</table>
LOADPLUS authorizations

LOADPLUS 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 LOADPLUS

LOADPLUS does not use DB2 to access, update, or define 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 LOADPLUS” on page 227.

Requirements when using RACF and OPNDB2ID=YES in LOADPLUS

If you use RACF and OPNDB2ID=YES in LOADPLUS, the user who is running LOADPLUS is not required to have the authorizations that the following sections describe. OPNDB2ID=YES tells LOADPLUS to use the DB2 RACF ID instead of the user’s RACF ID.

Requirements when OPNDB2ID=NO in LOADPLUS

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 the minimum levels of authority as shown in the following table:

Table 22: 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>

Requirements when checking referential constraints
To check referential constraints in a load job, users must also have READ privileges on the primary index of the parent table for the table being loaded.

**Requirements when using rename or FASTSWITCH processing**

If you establish authority at a node lower than the highest node, users must have the authority shown in Table 22 on page 227 for the following data sets. LOADPLUS uses these data sets during the rename or FASTSWITCH process for LOAD REPLACE SHRLEVEL CHANGE and LOAD REPLACE SHRLEVEL REFERENCE:

- 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.DSNDBD.database.object.I0001`
  - `VCAT.DSNDBC.database.object.I0001`
  - `VCAT.DSNDBD.database.object.J0001`
  - `VCAT.DSNDBC.database.object.J0001`

**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 LOADPLUS product program (AMUUMAIN) to the security group.
Grant the data set authorizations that are described in Table 22 on page 227 to AMUUMAIN.

**DB2 authorization requirements for LOADPLUS**

To run LOADPLUS for any type of load job, users must have certain basic authorizations. LOADPLUS requires additional authorizations for some types of load jobs.

For all load jobs, users must have 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

**Additional authorizations for load jobs on tables with identity columns**

To load into a table that contains an identity column, users must also have SELECT authority on the following DB2 tables:

- SYSIBM.SYSSEQUENCES
- SYSIBM.SYSSEQUENCESDEP

Additionally, to use UPDATESMAXA YES to update the MAXASSIGNEDVAL column of the SYSIBM.SYSSEQUENCES table, one of the following authorization IDs must have ALTER privileges on the table that is being loaded. The UPDATESMAXA_AUTHID installation option controls which ID must have these privileges:

- User ID of the job owner, when UPDATESMAXA_AUTHID=USER
- INSTALL SYSADM, when UPDATESMAXA_AUTHID=INSTALLSYSADM

These additional authorities might be implicit in the authority that you have.

**Additional authorizations for data sets that are created with DEFINE NO**

To load a table whose table space or index spaces are created with DEFINE NO, users must also have INSERT privileges on that table.

INSERT privileges might be implicit in the authority that you have.

**Additional authorizations for SQLAPPLY load jobs**

During 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 DBSAMP installation data set (where HLQ is the high-level qualifier that is set during installation) contains sample authorization statements.

**Note**
You can use secondary authorization IDs to limit access as necessary for your site.

You usually grant the following DB2 authorizations during High-speed Apply installation:

- 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

You usually grant the following DB2 authorizations after High-speed Apply installation:

- INSERT privileges on the tables that a user is loading
- 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

High-speed Apply 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.

### 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 375.
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
- 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.

**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
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 Security or CA-Top Secret Security).

- 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.

**CA-ACF2 authorizations for RECOVER PLUS for DB2**

To use CA-ACF2 for DB2 from Computer Associates for security validation, set the ACFORTSS installation option to YES.

**CA-Top Secret authorizations for RECOVER PLUS for DB2**

To use CA- Top Secret Security for DB2 from Computer Associates for security validation, set the ACFORTSS installation option to YES.

### 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 65, compile the SLIB member.

   For sample compile JCL, refer to member AJXCOMPS in the `HLQ.UDBCNTL` data set.
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:
  - BMCUTILITY 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 67.
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
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 CATALOG MANAGER and CHANGE MANAGER configuration tasks**

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

**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 9.1 of CATALOG MANAGER on DB2 subsystem DBDA and you installed version 9.2 of CATALOG MANAGER on DB2 subsystem DBDB, and you want to use one CLIST, use the CLIST for version 9.2 of CATALOG MANAGER on DBDB.
The Installation System generates the CLISTs for the Administrative products that are listed in the following table.

Table 23: 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>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>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>
Working with the BMCDB2 CLIST

The BMCDB2 CLIST invokes ALTER, CATALOG MANAGER, CHANGE MANAGER, and DASD MANAGER PLUS.

You might need to manually edit the CLIST to add components or to perform other tasks.

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/ */
   ```
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 72).

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 73.

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 50: 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.
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 51: 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 24: Program names**

<table>
<thead>
<tr>
<th>Product</th>
<th>program</th>
</tr>
</thead>
<tbody>
<tr>
<td>ALTER</td>
<td>(versions 8.3 and later) ALUFRONT</td>
</tr>
<tr>
<td></td>
<td>(versions 8.2 and earlier) ALTFRONT</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)
'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 8 subsystem in new-function mode, create the DB2 Version 8 indexes on the DB2 catalog.

- If you are running the products on a DB2 Version 8 subsystem in conversion mode or enabling-new-function mode, create the DB2 Version 7 indexes on the DB2 catalog.

To create indexes on the DB2 catalog tables

1. Execute the -AMS commands in the appropriate member in the `HLQ.UDBCNTL` data set to create VSAM data sets:

   - *(DB2 Version 8 in new-function mode or DB2 Version 9)* BMIDB2V8
   - *(DB2 Version 8 in conversion mode or enabling-new-function mode)* BMIDB2VC

2. Follow the instructions in the appropriate member in the `HLQ.UDBCNTL` data set to create the indexes:

   - *(DB2 Version 8 in new-function mode or DB2 Version 9)* BMIDB2I8
   - *(DB2 Version 8 in conversion mode or enabling-new-function mode)* BMIDB2IX
When you migrate to DB2 Version 8 in new-function mode or DB2 Version 9, several indexes that are created with the BMIDB2IX member are duplicated. Manually drop the following duplicate indexes and rebind the product packages:

- `<owner>.IXIFK1`
- `<owner>.IXIREL1`
- `<owner>.IXITAOB`
- `<owner>.IXICAOB`

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
- \((ALTER, CHANGE MANAGER, DASD MANAGER PLUS)\) 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.
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.

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 25: 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.

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

   - *(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.

   - 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 26: 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’,O,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 85 shows the line that adds the CATALOG MANAGER product to the table. \( vr \) represents the version and release of the product.

     **Figure 52: Adding CATALOG MANAGER to the control table**

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

   - 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 85, 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 53: 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 85, the lines indicate the location of the CATALOG MANAGER SMP/E libraries.

     **Figure 54: Specifying the location of CATALOG MANAGER libraries (SMP/E environment)**

     ```
     *DATA
     ```
■ 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 86 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 55: Specifying the location of the APF load library (runtime environment)**

<table>
<thead>
<tr>
<th>*DATA</th>
<th>*PROD SSID</th>
<th>D/I</th>
<th>DOPT</th>
<th>PLAN</th>
<th>APPL COLL_ID</th>
<th>NICKNAME</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ACT  DBAP A</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ADDTNL.APFLOAD</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>*</td>
</tr>
</tbody>
</table>

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 87 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 56: 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>ASU</td>
<td>DBDB</td>
<td>D</td>
<td>ASUDOPD1</td>
<td>ASUvrDC</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ASU7</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></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>DBDB</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ACM</td>
<td>DBDB</td>
<td>D</td>
<td>ACMDOPD1</td>
<td>ACMvrDF</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ACM8</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>EXIT</td>
<td>DBDB</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>'SYS3.DBDB.DSNEXIT'</td>
<td>*</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LOAD</td>
<td>DBDB</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>'SYS2.DB2V10M.DSNLOAD'</td>
<td>*</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>HLQ</td>
<td>DBDB</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BMCADMN.Vvrm.D10</td>
<td>*</td>
<td></td>
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<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>VCAT</td>
<td>DBDB</td>
<td></td>
<td></td>
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<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>DBDBCAT</td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>DDF</td>
<td>DBDB</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DBDB</td>
<td></td>
<td></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></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ASUG</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></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></td>
<td></td>
</tr>
<tr>
<td>GRP1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ACM</td>
<td>GRP1</td>
<td>D</td>
<td>ACMDOPD1</td>
<td>ACMvrDF</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ACMG</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>EXIT</td>
<td>GRP1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>'SYS3.DBDB.DSNEXIT'</td>
<td>*</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LOAD</td>
<td>GRP1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>'SYS2.DB2V10M.DSNLOAD'</td>
<td>*</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>HLQ</td>
<td>GRP1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BMCADMN.Vvrm.D10</td>
<td>*</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>VCAT</td>
<td>GRP1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DBDBCAT</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DDF</td>
<td>GRP1</td>
<td>D</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 *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 88 to the control table.

Figure 57: Adding CATALOG MANAGER to subsystem DB91

```plaintext
*DATA
*PROD SSID D/I DOPT PLAN APPL COLL_ID NICKNAME
*----|----|--|--------|--------|----|------------------|-------------------
-------
ACT  DB91 D ACTDOPD1 ACTvrDG
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 88 to the control table.

Figure 58: Adding CATALOG MANAGER to subsystem DB10

```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'
```

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 88 to the control table.

Figure 59: 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'
```
The HLQ in Figure 10 on page 88 instructs the BMCDB2 CLIST to use BMC.DB91 as the HLQ for products that are installed on SSID DB10. Figure 11 on page 89 shows the updated control table.

**Figure 60: Updated control table (runtime environment)**

```
*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 89 to the control table.

**Figure 61: Running DB10 CATALOG MANAGER from the DB91 BMCDB2 CLIST (SMP/E environment)**

```
*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 *
```
Figure 13 on page 90 shows the updated control table.

**Figure 62: Updated control table (SMP/E environment)**

<table>
<thead>
<tr>
<th>DATA</th>
<th>PROD SSID D/I DOPT</th>
<th>PLAN</th>
<th>APPL COLL_ID</th>
<th>NICKNAME</th>
</tr>
</thead>
<tbody>
<tr>
<td>----</td>
<td>----</td>
<td>--------</td>
<td>--------</td>
<td>--------</td>
</tr>
<tr>
<td>ACT</td>
<td>DB91 D ACTDOPD1 ACTvrDG</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ACTA</td>
<td>*</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ACT</td>
<td>DB10 D ACTDOPD1 ACTvrDG</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ACTB</td>
<td>*</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Lib SSID Data Set Name**

<table>
<thead>
<tr>
<th>EXIT</th>
<th>DB91</th>
</tr>
</thead>
<tbody>
<tr>
<td>EXIT</td>
<td>DB10</td>
</tr>
</tbody>
</table>

**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 92).

---

**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 63: Sample control table (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>*</td>
<td></td>
<td></td>
<td></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>
<td></td>
</tr>
<tr>
<td>ALU</td>
<td>xxxx</td>
<td>D</td>
<td>ACMDOPD2</td>
<td>ACMvrDF</td>
<td></td>
<td>*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ALU#</td>
<td>xxxx</td>
<td>D</td>
<td>ASUvrDJ</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ASU#</td>
<td>xxxx</td>
<td>D</td>
<td>ASUDOPD1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ASU</td>
<td>xxxx</td>
<td>D</td>
<td>ASUvrDJ</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ACT</td>
<td>xxxx</td>
<td>D</td>
<td>ACMDOPD2</td>
<td>ACMvrDF</td>
<td></td>
<td>*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ACT#</td>
<td>xxxx</td>
<td>D</td>
<td>ACMvrDF</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ACM#</td>
<td>xxxx</td>
<td>D</td>
<td>ACTDOPD1</td>
<td>ACTvrDM</td>
<td>ACT#</td>
<td>ACTvr_D_MAIN</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ACM</td>
<td>xxxx</td>
<td>D</td>
<td>ACMvrDF</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ACM#</td>
<td>xxxx</td>
<td>D</td>
<td>ACMvrDF</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<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>EXIT</td>
<td>xxxx</td>
<td>'DB2.DSNEXIT'</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>LOAD</td>
<td>xxxx</td>
<td>'DB2.DSNLOAD'</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

More CATALOG MANAGER and CHANGE MANAGER configuration tasks
In the sample shown in Figure 14 on page 92, 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.
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=AMUS$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
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 106.

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 106 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 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>DB2P</td>
<td>S</td>
<td>DB2A</td>
<td>DB2A ACTvr_D_MAIN</td>
<td></td>
</tr>
<tr>
<td>DB2PDB2A</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ACT</td>
<td>DB2P</td>
<td>S</td>
<td>DB2B</td>
<td>DB2B ACTvr_D_MAIN</td>
<td></td>
</tr>
<tr>
<td>DB2PDB2B</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ACT</td>
<td>DB2P</td>
<td>S</td>
<td>DB2C</td>
<td>DB2C ACTvr_D_MAIN</td>
<td></td>
</tr>
<tr>
<td>DB2PDB2C</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

More CATALOG MANAGER and CHANGE MANAGER configuration tasks
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.

Worklist execution

In CATALOG MANAGER, you can execute a worklist through the Execution component by using the plans provided with ALTER, CHANGE MANAGER, or DASD MANAGER PLUS.

The following requirements must be met to execute a worklist through the Execution component:

- ALTER, CHANGE MANAGER, or DASD MANAGER PLUS is installed.
- The CATALOG MANAGER AOPTS installation option or BOPTS installation option specifies the installation options module name for ALTER, CHANGE MANAGER, or DASD MANAGER PLUS, as follows:
To use the ALTER execution plans, in CATALOG MANAGER specify the name of the ALTER installation options module for the AOPTS installation option.

To use the CHANGE MANAGER execution plans, in CATALOG MANAGER specify the name of the CHANGE MANAGER installation options module for the AOPTS installation option.

To use the DASD MANAGER PLUS execution plans, in CATALOG MANAGER specify the name of the DASD MANAGER PLUS installation options module for the BOPTS installation option.

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 100) 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 99.

   **Figure 65: BMCDB2 CLIST--CATALOG MANAGER initial command**

   ```plaintext
   WHEN(ACTEMAIN) DO /* CATALOG MANAGER
   SET BMCFP_CNTL=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 */
   ```
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 100.

*Figure 66: BMCDB2 CLIST--CATALOG MANAGER entry panel*
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.

```clist
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 101.

Figure 67: 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=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)

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 101 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 94), you must edit the AEXADMF1 and AEXADMF2 CLISTs and enable the CATALOG MANAGER locking options command as you did in Step 3 on page 102 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 103.

Figure 68: BMCDB2 CLIST--location for session profile command

```c
/* 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:

   ```c
   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:

   ```c
   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 103), you can add, delete, or modify the data rows.

Figure 69: 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></td>
<td>DBBF</td>
<td>DBBA</td>
<td>DBB ACTvr_D_MAIN</td>
<td></td>
</tr>
<tr>
<td>DBBF</td>
<td>DBBA</td>
<td></td>
<td>DBB ACTvr_D_MAIN</td>
<td></td>
</tr>
<tr>
<td>DBBF</td>
<td>DBDB</td>
<td></td>
<td>DBB ACTvr_D_MAIN</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 104 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 70: Control table for multiple SSID installation

<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></td>
<td>DBBF</td>
<td>DBBA</td>
<td>DBB ACTvr_D_MAIN</td>
<td></td>
</tr>
<tr>
<td>DBBF</td>
<td>DBBA</td>
<td></td>
<td>DBB ACTvr_D_MAIN</td>
<td></td>
</tr>
<tr>
<td>DBBF</td>
<td>DBDB</td>
<td></td>
<td>DBB ACTvr_D_MAIN</td>
<td></td>
</tr>
<tr>
<td>DBBF</td>
<td>DBDA</td>
<td></td>
<td>DBB ACTvr_D_MAIN</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 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 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 *System and SQL Performance for DB2 Installation 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:
     \[\texttt{SKIP=(PROG=AMUUMAIN,CHECK=(EXCP))}\]
     
     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 \textit{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 EXTENDED BUFFER MANAGER and SNAPSHOT UPGRADE FEATURE” on page 375.

**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.

**More Cross-System Image Manager configuration tasks**

In addition to the configuration tasks for multiple components, the following 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 28 on page 281 describes authorization for XIM.

### Table 28: 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
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:

```
BMC95100I XIM STATUS Command Accepted, XIM STATUS in progress XIMACM
BMC95181I STATUS, 3 XIM Members(s)-active in XIM Group XIMACM XIMACM
BMC95159I Jobname Jobid Smfid Cvtsname Status
BMC95184I XIMACM STC01000 DB2A DB2A Active 16 inits 0 active
BMC95184I XIMACM STC08798 SYSN SYSN Active 16 inits 0 active
BMC95184I XIMACM STC08638 DB2B DB2B Active 16 inits 0 active```

**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:

   ```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 71 on page 286, the name of the member is XIMACMI.

2. Modify the INITIATORS variable.
   In the example shown in Figure 71 on page 286, 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 71: XIMACMI member

```
*   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
*   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
```
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 286 through Step 9 on page 287 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.
If necessary, specify the TRACE YES keyword in the AEXPIN input stream and run the job again.

For more information, see the *ALTER and CHANGE MANAGER for DB2 User Guide Volume 2*.

### 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 **ENVI** on the **Command** line.
   - In CATALOG MANAGER, on the Primary Menu panel, type **ENVI** 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 107 through Step 8 on page 108 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: `prdvrmnn`

The following table lists the variables for the plan names. An example of a DASD MANAGER PLUS 9.1.00 direct access Report Display plan is ASU910DR.

**Table 29: 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 30: 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`v`r`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`v`r`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>AEXvrvrDA (DASD MANAGER PLUS)</td>
<td>Execution Monitor Entry</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>
<tr>
<td></td>
<td>(Authorization)</td>
<td></td>
</tr>
<tr>
<td>Plan name</td>
<td>Function name</td>
<td>Plan description</td>
</tr>
<tr>
<td>-------------------------------</td>
<td>-------------------</td>
<td>------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
</tbody>
</table>
| AEXvrDM (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. |

**REORG PLUS authorizations**

REORG 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 REORG PLUS**

REORG PLUS does not use DB2 to access, update, or define 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 REORG PLUS” on page 295.

### Requirements when using RACF and OPNDB2ID=YES in REORG PLUS

If you use RACF and OPNDB2ID=YES in REORG PLUS, the user who is running REORG PLUS is not required to have the authorizations that the following section describes. OPNDB2ID=YES tells REORG PLUS to use the DB2 RACF ID instead of the user’s RACF ID.

**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.

### Requirements when OPNDB2ID=NO in REORG 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 the following minimum levels of authorization:

- ALTER or CONTROL to access, update, and define DB2 data sets
- UPDATE or CONTROL to access and update the ICF catalog

If you establish authority at a node lower than the highest node, users must have the same authorizations for the following data sets. REORG PLUS uses these data sets during the renaming process for SHRLEVEL CHANGE and SHRLEVEL REFERENCE. These data sets vary depending on whether you are using the BMC naming convention (STAGEDSN=BMC) or the I/J naming convention (STAGEDSN=DSN):

- **For STAGEDSN=BMC:**
  - $VCAT\_BMCDBC\_database\_object.I0001$
  - $VCAT\_BMCDBD\_database\_object.I0001$
  - $VCAT\_OLDDBC\_database\_object.I0001$
  - $VCAT\_OLDDBD\_database\_object.I0001$
  - $VCAT\_BMCDBD\_database\_object.J0001$
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 REORG PLUS product program (ARUUMAIN) to the security group.

3. Grant the minimum data set authority levels to ARUUMAIN, described in “Requirements when OPNDB2ID=NO in REORG PLUS” on page 295.

DB2 authorization requirements for REORG PLUS

To run REORG PLUS for any type of reorganization job, users must have certain basic DB2 authorizations. Additional authorizations are required for some types of reorganization jobs.

For all reorganization jobs, users must have 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.

**Additional authorizations for SHRLEVEL CHANGE**

To run a SHRLEVEL CHANGE reorganization, if users have DBADM, DBCTRL, or REORG authority, the following additional authorities are required:

- TRACE authority
- MONITOR2 authority
- DISPLAY authority (if not already granted to PUBLIC)

These privileges might be implicit in the authority that you have.

**Additional authorizations for XML reorganizations**

When reorganizing base table spaces that contain XML columns, users must have SELECT privileges on the following DB2 tables:

- SYSIBM.SYSSEQUENCES
- SYSIBM.SYSSEQUENCESDEP

When reorganizing user-defined XML indexes, users must have SELECT privileges on the SYSIBM.SYSXMLRELS DB2 table.

These privileges might be implicit in the authority that you have.

**Additional authorizations for using DSRSEXIT**

To use the DSRSEXIT user exit with a default of YES for the BMC_ALTER_DB2_CATALOG variable (to have REORG PLUS update the DB2 catalog), the following additional requirements apply:

- For the ALTER TABLESPACE statement, users need one of the following privileges:
  - Ownership of the table space
— DBADM authority for the database that contains the table
— SYSADM or SYSCTRL authority

■ For the ALTER INDEX or ALTER TABLE statement, users need 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

Additional authorizations for using XBM or SUF

To enhance performance, during portions of the reorganization process, REORG PLUS uses several features of the EXTENDED BUFFER MANAGER (XBM) product or SNAPSHOT UPGRADE FEATURE (SUF) component of XBM. For information about security levels and authorizations for XBM, see the XBM authorization information in this configuration guide.

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 375.

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 344.
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 and components require above-the-bar memory and might abend if sufficient memory is not available.

This requirement affects the following BMC products and components:

- ALTER
- BMCSORT
- CATALOG MANAGER
- CHANGE MANAGER
- CHECK PLUS
- COPY PLUS
- DASD MANAGER PLUS
- High-speed Apply Engine
- LOADPLUS
- Log Master
- RECOVER PLUS
- RECOVERY MANAGER
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 31: 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>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>Product or solution</td>
<td>Recommendation</td>
</tr>
<tr>
<td>----------------------------</td>
<td>---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</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>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>Product or solution</td>
<td>Recommendation</td>
</tr>
<tr>
<td>--------------------</td>
<td>----------------</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>
| 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.

**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 EXTENDED BUFFER MANAGER and SNAPSHOT UPGRADE FEATURE” on page 375.
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).

Note

BMC strongly recommends that you take the following actions:

- If you are running the products on a DB2 Version 8 subsystem in new-function mode, create the DB2 Version 8 indexes on the DB2 catalog.
- If you are running the products on a DB2 Version 8 subsystem in conversion mode or enabling-new-function mode, create the DB2 Version 7 indexes on the DB2 catalog.

To create indexes on the DB2 catalog tables

1. Execute the -AMS commands in the appropriate member in the HLQ.UDBCNTL data set to create VSAM data sets:

   - (DB2 Version 8 in new-function mode or DB2 Version 9) BMIDB2V8
When you migrate to DB2 Version 8 in new-function mode or DB2 Version 9, several indexes that are created with the BMIDB2IX member are duplicated. Manually drop the following duplicate indexes and rebind the product packages:

- `<owner>.IXIFK1`
- `<owner>.IXIREL1`
- `<owner>.IXITAOB`
- `<owner>.IXICAOB`

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 9.1 of CATALOG MANAGER on DB2 subsystem DBDA and you installed version 9.2 of CATALOG MANAGER on
DB2 subsystem DBDB, and you want to use one CLIST, use the CLIST for version 9.2 of CATALOG MANAGER on DBDB.

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

Table 32: 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>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. 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. The FIXSQNUM 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. The READREPO CLIST is used outside the Installation System.</td>
<td></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.

---

<table>
<thead>
<tr>
<th>CLIST</th>
<th>Description</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<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>
Copy the CLISTs from the \textit{HLQ.UDBCLIB} library to a library in your SYSPROC concatenation.

**Working with the BMCDB2 CLIST**

The BMCDB2 CLIST invokes ALTER, CATALOG MANAGER, CHANGE MANAGER, and DASD MANAGER PLUS.

You might need to manually edit the CLIST to add components or to perform other tasks.

**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.

\textbf{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 \textit{HLQ.JCL} library or the \textit{HLQ.UDBCLIB} library to a library in your SYSPROC concatenation.

2. Edit the BMCDB2 CLIST.

3. If you copied the BMCDB2 CLIST from the \textit{HLQ.JCL} library or the \textit{HLQ.UDBCLIB} library to a library in your SYSPROC concatenation, modify the \textbf{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 \textit{HLQ.JCL} library or the \textit{HLQ.UDBPLIB} library to another library, modify the \textbf{BMCDB2P} variable in the BMCDB2 CLIST. Set this variable to the library in which the panels were copied.
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.DB2ADMIN.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 72).

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

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 73.

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

   - 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 72: 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.
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 73: BMCDB2 command--display options**

![Syntax diagram](image)

The display option parameters specify the following information:

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

**Table 33: Program names**

<table>
<thead>
<tr>
<th>Product</th>
<th>program</th>
</tr>
</thead>
<tbody>
<tr>
<td>ALTER</td>
<td>(versions 8.3 and later) ALUFRONT</td>
</tr>
<tr>
<td></td>
<td>(versions 8.2 and earlier) ALTFRONT</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:

```bash
%BMCD2 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:

```bash
%BMCD2 LIBDEF(YES) LOADLDEF(NO)
```

**To invoke the CLIST implicitly**

To invoke the CLIST implicitly, use the following command:

```bash
%BMCD2 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 291.

**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 LNKLST 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 72.

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 PLUS documentation.
   - 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, 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 80.

---

**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.

   ```
   *DATA
   *PROD SSID D/I DOPT PLAN APPL COLL_ID NICKNAME
   ---|----|-|--------|--------|----|------------------|----------------
   ASU DBAP D ASUDOPD1 ASU711DC
   ASUA
   **```

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 (ASU
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 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.

   |  |  |  |   |   |  |  |  |  |
   +---+---+---+---+---+---+---+---+---|
   1  2  3  4  5  6  7  8  9
   +---+---+---+---+---+---+---+---+---|
   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 321).
- Create JCL Generation POFs for each DB2 subsystem within each system (see “Creating additional JCL Generation POFs” on page 328).

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 321
2  “To create a started task procedure” on page 322
3  “To allocate the HFS data set” on page 325
4  “To initialize the HFS data set” on page 326
5  “To enable or disable password caching” on page 327

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 74: Startup configuration member

```
<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 34: 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 339</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 75: #UIMx member**

```
//uimx  PROC M=uimx,  <-- name of configuration member
//              ENV=
/*---------------------------------------------*/
//uimx  EXEC PGM=UIMMAIN,  +
//             ACCT=(acct),  <-- specify accounting info +
//             REGION=OK,  <-- specify region size +
//             TIME=1440,  +
//             PARM=('"-C &M &ENV -L =B =CNFTRACE =VERSION"')
/*
** - - - - - - - - - - - - - - - - - - - - - - - - - -
** COMMON COMMAND-LINE PARAMETERS:
**
** -C MNNN M CONFIGURATION FILE MEMBERNAME
**
** -P 9999 TCP LISTENER PORT NUMBER
**
** -L LOG MESSAGES AND TRACE VIA SUBTASK
**
** =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=HLQ.LOAD  <--from new product installation
/*
** SAS/C DD's
*/
//SYSTEM DD SYSOUT=*  //SYSPRINT DD SYSOUT=*  //STGRPT DD SYSOUT=*  //MSGLOG DD SYSOUT=*  //TRCLOG DD SYSOUT=*  //HTTPCONT DD DISP=SHR,DSN=HLQ.XXCONT  <--new UIM server content library
// DD DISP=SHR,DSN=HLQ.CONT  <--from new product installation
/*
** HTTPPARAM DD DISP=SHR,DSN=HLQ.UIMCNFG  <--library from UIM configuration panel to write out
```
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 35: #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><em>uimx</em> 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>HLQ*XXLINK</td>
<td><em>HLQ</em> 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><em>HLQ</em> is the high-level qualifier for the library that contains your product code</td>
<td></td>
</tr>
<tr>
<td>HLQ*XXCONT</td>
<td><em>HLQ</em> is the high-level qualifier for the library that contains content information for the UIM server</td>
<td></td>
</tr>
<tr>
<td>HLQ*XXCNFG</td>
<td><em>HLQ</em> 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>HLQ*UIMCNFG</td>
<td><em>HLQ</em> 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.

3. 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 76: Default #DEFHFS member

   ```
   //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 36: #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 77: Default #LOADHFS member

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.
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 78: Default member #UPDADM

```/*-----------------------------------------------*/
/* Load the BMC HFS PDSE with SAMP library member to update the */
/* Password Caching setting. */
/*-----------------------------------------------*/
#UPDADM EXEC PGM=UIMHFSL,REGION=0K,
/* memname Sample 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 */
/* SYSTERM 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 */
/*-----------------------------------------------*/
```

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.

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 79: Consolidated #UIM member**

```plaintext
//DFDUIM09 PROC M=DFDUIM09, <--- name of configuration member
// ENV=
/**---------------------------------------------------**
/** DFDUIM9 EXEC PGM=UIMMAIN,                                          +
/** REGION=OK, <--- specify region size +
/** TIME=1440,ACCT=(5210),  +
/** PARM=(' -C &M &ENV -L =B =CNFTRACE =S =U =VERSION')     +
/**---------------------------------------------------**
/** COMMON COMMAND-LINE PARAMETERS:  **
/** -C MMMMM CONFIGURATION FILE MEMBERNAME  **
/** -P 9999 TCP LISTENER PORT NUMBER  **
/** -L LOG MESSAGES AND TRACE VIA SUBTASK  **
/**---------------------------------------------------**
/** ENVIRONMENT VARIABLES TO CONTROL EXECUTION: **
/** =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  **
```
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
- *(ALTER, CHANGE MANAGER, DASD MANAGER PLUS)* 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.
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 37: Member names for jobs for BIND packages and plans**

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

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.
For information about changing UIM server options, see “Changing UIM server options” on page 339.

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 38 on page 336, 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 38 on page 336, 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. (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 84.)

   d. Rerun the bind job.

   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 313.
### Table 38: Bind jobs

<table>
<thead>
<tr>
<th>Product</th>
<th>Bind job ³²</th>
</tr>
</thead>
<tbody>
<tr>
<td>ALTER</td>
<td>ACM ssidB²</td>
</tr>
<tr>
<td>BMCDSN</td>
<td>ABU ssidB²</td>
</tr>
<tr>
<td>CATALOG MANAGER</td>
<td>ACT ssidB²</td>
</tr>
<tr>
<td>CHANGE MANAGER</td>
<td>ACM ssidB²</td>
</tr>
<tr>
<td>CHECK PLUS</td>
<td>ACK ssidB²</td>
</tr>
<tr>
<td>DASD MANAGER PLUS</td>
<td>ASU ssidB²</td>
</tr>
<tr>
<td>LOADPLUS</td>
<td>AMU ssidB²</td>
</tr>
<tr>
<td>REORG PLUS</td>
<td>ARU ssidB²</td>
</tr>
<tr>
<td>UNLOAD PLUS</td>
<td>ADU ssidB²</td>
</tr>
</tbody>
</table>

³² The ssid variable represents the ID of the DB2 subsystem where you will run the job.

### 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 95.

### 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 ,**(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.

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 339)
- authorization security timeout ("To change the security authorization timeout feature permanently" on page 340)
- affinity timeout ("To change the idle timeout for affinity tasks" on page 341)
- server-side storage (HFS) data set ("To change the HFS server-side storage data set name" on page 341)
- tracing ("To change the overall tracing option permanently" on page 342)
- enable/disable network browser command interface ("To enable or disable the network browser command interface" on page 342)

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 74 on page 322 and Table 34 on page 322.

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.
2 In your startup configuration member, find the PORT variable.

The default port number is 9999.

The PORT variable is displayed as follows:

```xml
<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:

```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 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 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 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.

   **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 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:

   ```xml
   <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

```xml
<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" -->
  </TRACE>
</BMCHTTP>
```
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:

     ```xml
     <TRACE VALUE="ON">
     ```

   - To disable the overall tracing option, type OFF inside the quotation marks, as shown in the following example:

     ```xml
     <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:

```xml
<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:

```xml
<!--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:

```xml
<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:

```xml
<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:

```xml
<!--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 348.

**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 39: 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_DATAC=</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>
<tr>
<td>ASU_XP_UIMSRVTIMEOUT=300</td>
<td>specifies the UIM timeout parameter that determines how long the Export utility should wait for a response from the UIM server before timing out</td>
</tr>
</tbody>
</table>

### 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 40: Authorization to edit the ECL

<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 Computer Associates 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:

   BMC340290I UIM Server, Level v.r.mm mm,dd.yy, initialization complete!
   BMC340122I 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 41: 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.
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 42: 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.
Working with DB2 Component Services

This chapter provides instructions for working with the BMC DB2 Component Services (DBC) technology.

BMC DB2 Component Services (DBC)

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

- 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.

Working with the DBC subsystem

To use the DBC technology, you must start and manage a DBC subsystem.

This section explains how to

- start a DBC subsystem
- specify DBCPARMS parameters
- stop a DBC subsystem

### Starting the DBC subsystem

Normally, you start the DBC subsystem as a z/OS started task.

You should add the JCL procedure for the started task into a system procedure library.

**Note**

For testing or trial installations, you can also start the DBC subsystem as a batch job. However, the JES initiator will be busy for the life of the DBC subsystem. BMC does not recommend this approach for non-trial installations.

Figure 80 on page 354 shows an example of the started task for DBC.

**Figure 80: JCL procedure for the DBC started task**

```plaintext
//*********************************************************************
//*
//* Description:
//*   BMC Software DBC subsystem JCL procedure for the started task.
//*
//* Customization Steps:
//*   - Modify the DBC subsystem initialization parameters in the
//*     member DBC$PARM that the DBCPARMS DD statement identifies.
//*   - Modify the DBC subsystem security parameters in the member
//*     DBC$SECU that the DBCSECUR DD statement identifies.
//*   - Allocate Registry data set for products running under DBC
//*     Sample define:
//*       DEFINE CLUSTER (NAME(BMCDBC.ssid.REGISTRY) -
//*        LINEAR CYL(25 10) SHAREOPTIONS(1,3) STORCLAS(xxxxxx))
//*   - Add this JCL procedure to a system procedure library.
//*   - APF authorize the DBC STEPLIB data set.
//*
//* Notes:
//*   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.
//*
//*********************************************************************

DBC      PROC VER=1010,SSID=,GRP=
//DBCEXEC EXEC PGM=DBCMAIN,PARM='SSID=&SSID,GROUP=&GRP'
//STEPLIB DD DISP=SHR,DSN=BMC.DBC&VER..DBCLINK
//DBCPARMS DD DISP=SHR,DSN=BMC.DBC&VER..DBCSAMP(DBC$PARM)
//DBCSECUR DD DISP=SHR,DSN=BMC.DBC&VER..DBCSAMP(DBC$SECU)
//REGISTRY DD DISP=SHR,DSN=BMC.DBC&VER..REGISTRY
//SYSPRINT DD SYSOUT=*,RECFM=VA
//SYSTERM  DD SYSOUT=*,RECFM=VA
```
Table 43 on page 355 describes DD statements that you define within the started task.

<table>
<thead>
<tr>
<th>DD statement</th>
<th>Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td>STEPLIB</td>
<td>identifies the DBC load library</td>
</tr>
<tr>
<td></td>
<td><strong>Note:</strong> The DBC STEPLIB load library must be APF authorized.</td>
</tr>
<tr>
<td>DBCPRINT</td>
<td>identifies the data set to dynamically write DBC messages</td>
</tr>
<tr>
<td>SYSPRINT</td>
<td>identifies the data set to write potential non-DBC product application messages</td>
</tr>
<tr>
<td>DBCPARMS</td>
<td>identifies the location of the DBC initialization parameters file</td>
</tr>
<tr>
<td></td>
<td>For more information, see “Specifying DBC startup parameters” on page 355.</td>
</tr>
<tr>
<td>DBCSECUR</td>
<td>identifies the security parameters file</td>
</tr>
<tr>
<td></td>
<td>For more information, see “Specifying DBC security parameters” on page 368.</td>
</tr>
<tr>
<td>REGISTRY</td>
<td>identifies the registry file (used by the Next Generation Logger (NGL) component)</td>
</tr>
</tbody>
</table>

**Specifying DBC startup parameters**

The DBC subsystem has the following sets of logically discrete startup parameters:

- **DBCPARMS** parameters include the required DBC subsystem ID (SSID) and optional parameters, such as the XCF group name and repository data set name. You specify this general set of control parameters through the DBCPARMS DD statement. For more information, see “DBCPARMS” on page 356.

- **DBCSECUR** parameters relate specifically to security customization. You identify these parameters through the DBCSECUR DD statement. DBC maintains the security parameters as a discrete set of parameters so you can implement a different level of data set security to these parameters, if needed. For more information, see “Managing DBC Security” on page 363.

**Note**

The only required DBC initialization parameter is the SSID; along with the XCF group name, you can also specify the SSID via the EXEC PGM=DBCMAIN,PARM=’parms’ JCL statement. If you specify the DBC SSID or GROUP through the JCL PARM= override statement, these values take precedence over any <SSID> or <GROUP> XML element values specified in DBCPARMS statement.

Figure 81 on page 355 shows an example of the started task JCL with parameters.

**Figure 81: Started task for DBC**

```
//DBC      PROC
//DBCEXEC  EXEC PGM=DBCMAIN,PARM='SSID=DBC1,GROUP=DBCGROUP'
```
DBCPARMS

The DBCPARMS DD JCL statement identifies the initialization parameters file for the DBC started task.

**Note**

Initialization parameters are separated from the DBC security startup parameters that you specify in the DBCSECUR DD statement. This separation allows you to manage the security parameters separately from other DBC parameters by implementing data set name security through your External Security Manager (ESM).

For more information about the started task, see “Starting the DBC subsystem” on page 354.

For more information about security parameters, see “Specifying DBC security parameters” on page 368.

Sharing DBCPARMS across multiple DBC subsystems

If you want to share a single DBCPARMS parameters file across all DBC subsystems, consider the following guidelines:

- The DBC SSID must be unique within an XCF group and unique on a single LPAR. You must specify the required DBC SSID by using the JCL parameter override statement (`EXEC PGM=DBCMAIN,PARM='SSID=ssid'`).

- By default, the DBC starts an XCF group based on the name of the DBC group. The DBC group name can be specified by using the JCL parameter override statement (`EXEC PGM=DBCMAIN,PARM='GROUP=group'`). The XCF group name can be specified by using the `<XCFGROUP>` element in the DBCPARMS member.

- You can specify the DBC repository data set name in the DBCPARMS parameters file by using one or more DBC system variables. Doing so ensures a unique repository data set name for each DBC subsystem instance. Table 44 on page 356 lists the DBC system variables that you can use to create a unique data set name.

**Table 44: DBC system variables**

<table>
<thead>
<tr>
<th>Variable</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>&amp;SSID.</td>
<td>4-byte subsystem ID of the current DBC subsystem</td>
</tr>
<tr>
<td>&amp;SMFID.</td>
<td>4-byte SMF ID of the current host system</td>
</tr>
</tbody>
</table>
For more information about the individual DBC initialization parameters, see “DBCPARMS elements” on page 357.

**Structure of the XML stream**

Figure 81 on page 355 shows a sample parameters file.

```xml
<-- ************************************************************** -->
<-- Description: -->
<-- This required control file contains the DBC subsystem -->
<-- initialization parameters. The DBC subsystem locates this -->
<-- parameter file via the DBCPARMS JCL DD statement. See the -->
<-- sample DBC JCL procedure 'DBC$STC' for details. -->
<-- ************************************************************** -->

<DBCPARMS>
  <OPTIONS>
    <SSID>SSID</SSID>
    <GROUP>BMCGROUP</GROUP>
    <XCFGROUP>DBCXCF</XCFGROUP>
    <WTOUPPERCASE>YES</WTOUPPERCASE>
    <DPRREPOS>
      <NAME>BMC.DBC1010.DPRREPOS</NAME>
      <STORCLAS>SMSCLASS</STORCLAS>
      <VOLUMES>VOLSER1,VOLSER2,...</VOLUMES>
    </DPRREPOS>
  </OPTIONS>
</DBCPARMS>
```

For JCL sample files, see the files in *HLQ.BBSAMP* or *HLQ.DBCSAMP*, depending on your installation path.

**DBCPARMS elements**

*(required)* The `<DBCPARMS>` element is the root-level element in the XML stream that is used to define DBC parameters.

**Data type:** not applicable

**Child elements:** `<OPTIONS>`

**OPTIONS**

*(required)* The `<OPTIONS>` element contains the DBCPARMS values.

**Data type:** not applicable
Parent element: <DBCPARMS>

Child elements: <SSID>, <GROUP>, <WTOUPPERCASE>, <DPRREPOS>

SSID

(*optional*) The <SSID> element specifies the SSID of the DBC subsystem. The SSID is a required DBC startup parameter. You must specify the SSID either through the DBCPARMS XML document or in the EXEC statement; otherwise, initialization fails.

Consider the following requirements for the value of the <SSID> element:

- The SSID value must not conflict with any MVS command verbs. If it does, DBC issues an error message and terminates.
- The SSID value can contain A-Z, 0-9, #, or $. Any other characters are invalid and cause the DBC subsystem to issue an error message and terminate.
- Because you can use the SSID to issue system commands to the DBC subsystem, do not specify a value for the SSID that begins with a numeric character (0-9). This restriction prevents the system from misinterpreting a system command issued to the DBC subsystem as specifying the short form of the REPLY system command. (For more information about issuing system commands, see “Stopping the DBC subsystem” on page 362.)
- BMC recommends that you do not specify an SSID value that conflicts with any JES commands. This recommendation ensures that only the DBC subsystem processes system commands that are issued to the DBC subsystem by using the DBC SSID value.

Data type: VARCHAR(4)

Parent element: <OPTIONS>

Child elements: none

GROUP

(*optional*) The <GROUP> element specifies the name of the DBC XCF group that relates DBC subsystems on different LPARs within the SYSPLEX.

Note
You can also specify the DBC XCF group through the EXEC PGM=DBCMAIN,PARM='parms' JCL statement.
Consider the following requirements for the value of the `<GROUP>` element:

- The GROUP value must not conflict with any MVS command verbs. If it does, DBC issues an error message and terminates.

- The GROUP value must not contain embedded blank characters.

- Because you can use the group name to issue system commands to the DBC subsystem, do not specify a GROUP value that begins with a numeric character (0-9). This requirement prevents the system from misinterpreting a system command issued to the DBC subsystem as specifying the short form of the REPLY system command. (For more information about issuing system commands, see *Stopping the DBC subsystem* on page 362.)

- BMC recommends that you do not specify a GROUP value that conflicts with any JES commands. This recommendation ensures that only the DBC subsystem processes system commands issued to the DBC subsystem by using the GROUP value.

**Note**
A DBC XCF group can only contain one DBC subsystem per LPAR.

The default value is DBCGROUP.

**Data type:** VARCHAR(8)

**Parent element:** `<OPTIONS>`

**Child elements:** none

**XCFGROUP**

*(optional)* By default, DBC uses the `<GROUP>` element as the name of an XCF group to join at startup. In rare situations, this behavior might not be desired. Use the `<XCFGROUP>` element to specify a different XCF group for DBC to join.

**Data type:** VARCHAR(8)

**Parent element:** `<OPTIONS>`

**Child elements:** none
WTUUPPERCASE

(optional) The `<WTUUPPERCASE>` element indicates whether to convert console messages to uppercase. Printed messages remain in mixed case.

The default value is YES. Valid values are YES and NO.

Data type: VARCHAR(3)

Parent element: `<OPTIONS>`

Child elements: none

DPRREPOS

(optional) The `<DPRREPOS>` element contains the DPR repository name and allocation options. If you do not specify this element, the repository services of the DPR component are unavailable and the DBC issues a warning message during initialization; however, DBC subsystem services function normally with the exception of the `<AUTOEXEC>` features that require a persistent repository data set.

Data type: not applicable

Parent element: `<OPTIONS>`

Child elements: `<NAME>`, `<STORCLAS>`, `<VOLUMES>`

NAME

(optional) The `<NAME>` element specifies the data set name for the DPR repository VSAM cluster. This value must specify a valid data set name:

- If the value specifies the name of an existing DPR repository VSAM cluster, DPR repository services use that cluster for the repository.

- If the specified data set does not exist, DPR repository services define the new cluster automatically by using the `<STORCLAS>` or `<VOLUMES>` options to determine physical allocation attributes.

- If you do not provide a value in the `<NAME>` element, DBC issues a warning message during initialization, and the repository services are unavailable.

Only one active DBC subsystem can use a given DPR repository VSAM cluster.
You can share a single DBCPARMS parameters file for multiple DBC instances. To do so, specify DBC system variables within the `<NAME>` element to ensure that each DBC subsystem uses a unique repository data set name. DBC resolves the variables to their symbolic values. To enable variable substitution, prefix the system variables with an ampersand (`&`) and suffix them with a period (`.`).

**Example**

Assume that you use the system variables in a `<NAME>` element as shown in the following statement:

```
<BMC.&SSID..&SMFID..&MVSNAME..REPOS></NAME>
```

Also, assume that the symbolic values of SSID, SMFID, and MVSNAME are **DBC1**, **SYSP**, and **MVSPROD**, respectively. The variable substitution resolves to the following data set name:

```
BMC.DBC1.SYSP.MVSPROD.REPOS
```

**Data type:** VARCHAR(44)

**Parent element:** `<DPRREPOS>`

**Child elements:** none

**STORCLAS**

_(optional)_ The `<STORCLAS>` element specifies the SMS storage class to be used for the DPR repository VSAM cluster when the DPR defines the cluster. The DPR defines the cluster automatically if the `<NAME>` element specifies the name of a cluster that has not yet been defined. Specify this element only if SMS is active and the cluster is to be SMS-managed. For more information, see the STORAGECLASS parameter of the DEFINE CLUSTER command in the IBM DFSMS Access Method Services documentation.

**Data type:** VARCHAR(8)

**Parent element:** `<DPRREPOS>`

**Child elements:** none

**VOLUMES**

_(optional)_ The `<VOLUMES>` element specifies the volumes on which the DPR repository VSAM cluster is to be defined when the DPR defines the cluster. The DPR defines the cluster automatically if the `<NAME>` element specifies the name of a cluster that has not yet been defined.
**Note**
This element is required only if you do not specify if a value for `<STORCLAS>`.

The `<VOLUMES>` value can specify up to 59 volumes, where each volume is delimited by a comma (,). The value can specify a volume serial number or, if the cluster is to be SMS-managed, an asterisk (*), which lets SMS choose the volume. For more information, see the VOLUMES parameter of the DEFINE CLUSTER command in the IBM DFSMS Access Method Services documentation.

**Data type:** VARCHAR(412)

**Parent element:** `<DPRREPOS>`

**Child elements:** none

### Stopping the DBC subsystem

You can stop the DBC subsystem by using the STOP command or the MODIFY command through MVS.

You identify the DBC subsystem to stop through the subsystem ID (ssid) or XCF group value (group).

#### To stop the DBC subsystem by using the STOP command

1. To stop the DBC subsystem by issuing the STOP command, use one of the following command formats:

   ```plaintext
   ssid STOP
   group STOP
   ```

#### To stop the DBC subsystem by using the MODIFY command

1. To stop the DBC subsystem by issuing the MODIFY command, use one of the following command formats:

   ```plaintext
   MODIFY ssid,STOP
   F group,STOP
   ```

**Example**

For example, assume that a DBC subsystem has an SSID of DBC1. You can stop this subsystem by issuing the STOP command as a MODIFY command, as follows:

```plaintext
F DBC1,STOP
```
Managing DBC Security

This section introduces security for DBC.

Consider the following features of DBC security:

- DBC uses the standard System Authorization Facility (SAF) interface to communicate with an External Security Manager (ESM). DBC is compatible with ESMs that support the SAF interface (including Computer Associates eTrust CA-ACF2 Security and eTrust CA-Top Secret Security products).

  The DBC security interface is compatible with the IBM Resource Access Control Facility (RACF) version 1.9 or later. DBC issues security calls directly to the SAF interface.

  For more information, see “Configuring RACF security for the DBC subsystem” on page 364.

- DBC does not require you to define resources (that is, internal control points) to an ESM. However, if the security parameter <ALLOW_SAF_RC4> is set to NO and no resource names have been defined, all DBC requests fail with an authorization error. If <ALLOW_SAF_RC4> is set to NO, you must define DBC resource names so that access can be granted or denied as appropriate.

  DBC security control points include commands that are issued from a z/OS system console and from the IBM System Display and Search Facility (SDSF). The DBC subsystem command processor extracts the user ID from the ACEE that is associated with the console address space and propagates this value through the system. Appropriate ESM customization is required to allow operator authorization to DBC commands.

- DBC stores its security parameters in the DBCSECUR data set.

  DBC security parameters are independent of all other DBC parameters. This physical separation allows the security administrator to implement independent and discrete access to the security parameters (DBCSECUR) and potentially more general access to the subsystem parameters (DBCPEMBS).  

  For more information about security parameters, see “Specifying DBC security parameters” on page 368.

Access control to DBC resources

The DBC subsystem always issues an SAF security call for internal resource names. By default, if those resource names are not defined to an ESM, access to undefined DBC resources (internal functional control points) is granted for all users who can communicate to the DBC service address space. This behavior occurs because the value of the DBC <ALLOW_SAF_RC4> security parameter defaults to YES.
If you want to restrict access to DBC services that have not been defined as a resource to the Security Access Facility (SAF), you must set the value of the `<ALLOW_SAF_RC4>` security parameter to **NO**. Doing so denies access to all undefined resources.

**Figure 82 on page 364** shows an example of the ALLOW_SAF_RC4 value.

**Figure 82: Example of the ALLOW_SAF_RC4 value**

```xml
<DBCSECUR>
  <RESOURCE_NAME>
  
  </RESOURCE_NAME>
  <ALLOW_SAF_RC4>NO</ALLOW_SAF_RC4>
</DBCSECUR>
```

You control this value through DBC security parameters defined in a file identified through the DBCSECUR DD statement in the JCL procedure for the DBC started task.

- To specify the location of the DBC security parameters, see Specifying DBC startup parameters on page 355.
- To change the value of the `<ALLOW_SAF_RC4>` security parameter, see “Specifying DBC security parameters” on page 368.

**Configuring RACF security for the DBC subsystem**

The security administrator for a site should perform the following tasks to authorize the DBC subsystem:

- “Authorizing the DBC started task procedure” on page 364
- “Authorizing a user with access to the DBC services” on page 365
- “Creating a SAF resource class (optional) ” on page 366
- “Defining a DBC control point resource profile” on page 367

**Authorizing the DBC started task procedure**

The DBC subsystem acquires security authorization from the USERID associated with the started task procedure that starts the DBC subsystem. Users must authorize the DBC started task.
To authorize the DBC started task

1. Associate the DBC started task with a USERID that has the appropriate security access. The DBC address space requires access to z/OS UNIX System Services (USS). Consequently, you must associate an OMVS segment with the USERID for the DBC subsystem. Also, if the RACF FACILITY class profile BPX.DEFAULT.USER has not been defined, the USERID profile that authorizes the DBC started task must have a z/OS UNIX user identifier (UID) and group identifier (GID) in the current connect group profile.

The following example uses a RACF command to define a GROUP of DBCGRP:

```
ADDUSER DBCGRP OMVS(GID(groupIdentifier))
```

The following example uses a RACF command to define a USERID of DBCUSR:

```
ADDUSER DBCUSR DFLTGRP(SYSMGMT) OWNER(SYSPROG)
```

2. Associate the USERID with the procedure name for the DBC started task. In the following example, the RACF command uses procedure name DBCSTC:

```
RDEFINE STARTED DBCSTC.* STDATA(USER(DBCUSR) GROUP(DBCGRP))
```

3. To ensure that RACF recognizes these security updates, issue the following command:

```
SETROPTS RACLIST(STARTED) REFRESH
```

Authorizing a user with access to the DBC services

To access DBC services, batch and TSO users require access to z/OS UNIX System Services (USS).

Also, their USERIDs require association with an OMVS segment. If the RACF FACILITY class profile BPX.DEFAULT.USER has not been defined, the user's profile must have a z/OS UNIX user identifier (UID) and group identifier (GID) in the current connect group profile.

The following example uses a RACF command to modify the appropriate group for a user:

```
ALTGROUP groupName OMVS(GID(groupIdentifier))
```

The following example uses a RACF command to modify the user's profile:

```
ALTUSER userName OMVS(UID(userIdentifier))
```
Creating a SAF resource class (optional)

This section explains how to create a new RACF resource class. Performing this task is not necessary if the predefined RACF FACILITY class is appropriate for all DBC resource definitions.

This section provides general instructions. Your site might have additional considerations.

Note

BMC recommends consulting your security administrator when creating your SAF resource class.

To update the RACF resource class descriptor table (ICHRRCDE)

1 Code the ICHERCDE macro for each required resource class.

```
TITLE 'RACF RESOURCE CLASS DESCRIPTOR TABLE - ICHRRCDE'
*
class    ICHERCDE CLASS=class,                                     X
   ID=id,                                                    X
   POSIT=posit,                                              X
   FIRST=ANY,                                                X
   OTHER=ANY,                                                X
   MAXLNTH=44, or larger, if necessary                      X
   RACLIST=ALLOWED,                                          X
   OPER=NO                                                  X
END
```

2 Assemble the source and link edit the resulting object module to replace the current ICHRRCDE load module.

To update the RACF router table (ICHRFR01)

1 Code the ICHRFRTB macro for each required resource class.

```
TITLE 'RACF ROUTER TABLE - ICHRFR01'
*
class     ICHRFRTB CLASS=class,                              X
   ACTION=RACF                                             X
END
```

2 Assemble the source and link edit the resulting object module to replace the current ICHRFR01 load module.

3 If necessary to activate the RACF table changes, perform an IPL of the system.

4 Issue the following RACF command for each new resource class:

```
SETROPTS CLASSACT(class)
```
5  *(optional)* If you use generic profiles, issue the following RACF commands for each new resource class:

```
SETROPTS GENERIC(class)
SETROPTS GENCMD(class)
```

### Defining a DBC control point resource profile

The DBC subsystem and its components automatically call the SAF router to check user authorization to various services. These services are identified by internal functional control points and are externally associated with a resource name. You control user access to the DBC component services by granting or denying authorization to the resource names that are associated with these internal functional control points. To control access to these services, you must define these resource names to the ESM.

1  Define the resource profile (that is, the resource name) to the RACF ESM by using one or more RDEFINE FACILITY commands.

The following examples illustrate different methods:

- **Figure 83 on page 367** protects access to various resource categories for a DBC subsystem for a system context of PROD.

  **Figure 83: Defining a resource profile with product codes**

  ```
  RDEFINE FACILITY (BMC.DBC.PROD.*) UACC(NONE)
  RDEFINE FACILITY (BMC.DPR.PROD.*) UACC(NONE)
  RDEFINE FACILITY (BMC.ABC.PROD.*) UACC(NONE)
  ```

  In this example, the profile applies to LPARs named PROD. You set the PROD value through the `<CONTEXT>` XML element in the DBC security parameters.

  The profile also applies to product codes DBC, DPR, and ABC. Product codes DBC and DPR are inherent components of the DBC subsystem, but product code ABC relates to a DPR-initialized product with the 3-byte product code ABC.

  For example, for the BMC System and SQL Performance products for DB2, the product codes used are DBC, DPR, LGC, and NGL.

- **Figure 84 on page 367** defines a generic profile that protects all currently defined subsystem resources and future resources associated with products that you have not yet defined to the DPR component of DBC.

  **Figure 84: Defining a resource profile with wildcards**

  ```
  RDEFINE FACILITY (BMC.*.PROD.*) UACC(NONE)
  ```

2  Activate the resource class:

```
SETROPTS CLASSACT(FACILITY)
```

3  *(optional)* Maintain the FACILITY class profiles in memory:

```
SETROPTS CLASSACT(FACILITY)
```
4 (optional) Enable generic profile checking for the FACILITY class:

```
SETROPTS GENERIC(FACILITY)
```

## Specifying DBC security parameters

The DBCSECUR DD statement, which is specified in the startup JCL for the DBC subsystem, identifies the security parameters data set for the DBC subsystem. The security parameters are optional. Each security parameter has a default value that applies if you do not specify the DBCSECUR DD statement, or if you omit a particular security option from the parameters file. Thus, you are not required to specify these parameters to use the DBC security features.

You do not specify the security parameters with the main DBC startup parameters identified in the DBCPARMS DD statement. You can choose to administer and secure the security parameters separately from the main DBC startup parameters by implementing RACF data set name security. For more information about the started task, see “Starting the DBC subsystem” on page 354

### Structure of the XML stream

Figure 85 on page 368 shows a sample security parameters file.

**Figure 85: Structure of the DBCSECUR XML stream**

```xml
<DBCSECUR>
  <RESOURCE_NAME>
    <HLQ>BMC</HLQ>
    <CONTEXTS>
      <CONTEXT>
        <SMFID>MVSA</SMFID>
        <TO_VALUE>PROD</TO_VALUE>
      </CONTEXT>
      <CONTEXT>
        <SMFID>MVSB</SMFID>
        <TO_VALUE>TEST</TO_VALUE>
      </CONTEXT>
    </CONTEXTS>
  </RESOURCE_NAME>
  <RESOURCE_CLASS>
    <COMPONENT>DBC
      <COMMAND>MYCLASS</COMMAND>
    </COMPONENT>
    <COMPONENT>DPR
      <COMMAND>MYCLASS</COMMAND>
    </COMPONENT>
  </RESOURCE_CLASS>
  <SUBSYS>DBCS</SUBSYS>
  <ALLOW_SAF_RC4>NO</ALLOW_SAF_RC4>
</DBCSECUR>
```
**<DBCSECUR> elements**

*optional* The `<DBCSECUR>` element is the root-level element of the DBCSECUR structure.

**Data type:** not applicable

**Child elements:** `<RESOURCE_NAME>`, `<RESOURCE_CLASS>`, `<SUBSYS>`, `<ALLOW_SAF_RC4>`, and `<DB2AUTH>`

**<RESOURCE_NAME>**

*optional* The `<RESOURCE_NAME>` element contains the options for the customizable resource name nodes.

**Data type:** not applicable

**Parent element:** `<DBCSECUR>`

**Child elements:** `<HLQ>` and `<CONTEXTS>`

**<HLQ>**

*optional* The `<HLQ>` element specifies a value for the HLQ node of the resource name structure. This value defaults to *BMC*.

**Data type:** VARCHAR(8)

**Parent element:** `<RESOURCE_NAME>`

**Child elements:** none

**<CONTEXTS>**

*optional* The `<CONTEXTS>` element contains one or more context specifications.

**Data type:** not applicable

**Parent element:** `<RESOURCE_NAME>`

**Child elements:** `<CONTEXT>`
<CONTEXT>

(required) The <CONTEXT> element specifies a value for the context node of the resource name structure. This option defaults to the SMFID that is associated with the z/OS image on which the DBC subsystem is active. The <CONTEXT> element must specify a <SMFID> and <TO_VALUE> element.

Data type: not applicable

Parent element: <RESOURCE_NAME>

Child elements: <SMFID> and <TOVALUE>

<SMFID>

(required) The <SMFID> element specifies the SMFID that is associated with the z/OS image on which the DBC subsystem is active.

Data type: VARCHAR(4)

Parent element: <CONTEXT>

Child elements: none

<TO_VALUE>

(required) The <TO_VALUE> element specifies the value that the DBC subsystem uses for the context node of the resource name.

Data type: VARCHAR(4)

Parent element: <CONTEXT>

Child elements: none
Example

Consider the following XML:

```xml
<CONTEXT>
  <SMFID>LPR1</SMFID>
  <TO_VALUE>PROD</TO_VALUE>
</CONTEXT>
```

If the DBC subsystem is started on the z/OS image with an SMFID of **LPR1**, the DBC subsystem uses **PROD** as the context node of the resource name. If the DBC subsystem is not started on this z/OS image, it ignores the `<CONTEXT>` specification. This behavior allows you to define a single SAF options file for multiple DBC subsystems that run on different z/OS images. By modifying the `<CONTEXT>` element to point a specific LPAR to a logical name, you can define RACF resource names that are consistent across multiple LPARs.

### `<RESOURCE_CLASS>`

*(optional)* The `<RESOURCE_CLASS>` element allows you to customize the SAF resource class that is associated with internal DBC security control points. If omitted, the RACF resource class for all DBC commands (and associated components) defaults to the FACILITY class.

**Note**

This value does not affect the SAF resource class for DPR-initialized product objects. You can customize those classes by using the `<SAFCLASS>` XML tag in the product definition XML document.

In the sample shown in Figure 85 on page 368, all DBC and DPR command resource profiles must be defined in RACF resource class **MYCLASS**.

The `<COMPONENT>` and `<COMMAND>` subelements are required only if you use the `<RESOURCE_CLASS>` element.

**Data type:** Not applicable

**Parent element:** `<DBCSECUR>`

**Child elements:** `<COMPONENT>`

### `<COMPONENT>`

*(required)* The `<COMPONENT>` element identifies the specific component for which you are defining the resource class.

**Data type:** CHAR(3)

**Parent element:** `<RESOURCE_CLASS>`
Child elements: <COMMAND>

<COMMAND>

(required) The <COMMAND> element identifies the SAF resource class name that is used in all SAF security calls for commands issued from the associated component.

Data type: VARCHAR(8)

Parent element: <COMPONENT>

Child elements: none

<SUBSYS>

(optional) The <SUBSYS> element specifies the value to be passed to SAF on each authorization check to the SUBSYS parameter on the RACROUTE macro.

The value defaults to DBCS.

Data type: VARCHAR(8)

Parent element: <DBCSECUR>

Child elements: none

Note

DBC uses BMCDBC as the application name that is passed to SAF through the APPL parameter on the RACROUTE REQUEST=AUTH macro call. This parameter specifies the name of the application that is making the authorization request. The RACROUTE service makes the parameter available to the installation exit routine, or any routines that the service invokes.

<ALLOW_SAF_RC4>

(optional) The <ALLOW_SAF_RC4> element specifies whether the DBC subsystem allows access to a given resource if SAF returns return code 4. SAF returns 4 if a security decision could not be made.

Valid values are YES and NO:

- YES (the default) tells the DBC subsystem to allow user access to a resource if SAF returns return code 4.
- NO tells the DBC subsystem not to allow user access to the resource.
Data type: VARCHAR(3)

Parent element: <DBCSECUR>

Child elements: None

Note
The IBM RACROUTE Macro Reference documentation (SA22-7692-04) documents the SAF return codes.

<DB2AUTH>

(optional) The <DB2AUTH> element contains the DB2 authorization options for the DBC subsystem.

Data type: not applicable

Parent element: <DBCSECUR>

Child elements: <AUTO> and <USERID>

<AUTO>

(optional) The <AUTO> element indicates whether the DBC DB2 command services can acquire DB2 authorization automatically. Valid values are YES (default) and NO.

Automatic DB2 authorization allows the DBC to automatically authorize each DB2 command processor agent (DBCDB2CP) by changing the authorization ID of the agent’s DB2 thread to an authorized user ID. You can specify the user ID by using the <USERID> element. If you do not specify a user ID, the agent uses the installation SYSADM user ID of the DB2 subsystem.

Note
If you do not use automatic DB2 authorization, you must ensure that the DBC subsystem runs with a user ID that has a sufficient DB2 authority level to issue DB2 commands. This requires that you grant authorization to the DBC subsystem for each DB2 subsystem to which the DBC will issue DB2 commands.

Data type: VARCHAR(3)

Parent element: <AUTO>

Child elements: none
<USERID>

(optional) The <USERID> element specifies the user ID that will be used by the DBC DB2 command services to acquire DB2 authorization automatically. See the <AUTO> element for more information about automatic DB2 authorization.

If the <AUTO> element specifies NO, the DBC ignores the <USERID> element.

Data type: VARCHAR(8)

Parent element: <AUTO>

Child elements: none

Authorizing the DBC DB2 command services

The DBC DB2 command services provide an interface for BMC products to issue DB2 commands. By default, these services acquire DB2 authorization automatically. For more information about automatic DB2 authorization, see the <DB2AUTH> element in the XML structure for the DBC security parameters.

If automatic DB2 authorization is disabled, you must ensure that the DBC subsystem runs with a user ID that has a sufficient DB2 authority level to issue DB2 commands. This requires that you grant authorization to the DBC subsystem for each DB2 subsystem to which the DBC will issue DB2 commands.

You can use the DBC security features to restrict unwanted access to the DBC DB2 command services.
Configuring EXTENDED BUFFER MANAGER and SNAPSHOT UPGRADE FEATURE

After you finish installing the product, you must configure EXTENDED BUFFER MANAGER (XBM) and SNAPSHOT UPGRADE FEATURE (SUF) to operate in your environment.

Table 45 on page 375 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>“Configuring e Trust CA-ACF2 security” on page 376</td>
</tr>
<tr>
<td>2</td>
<td>“Configuring XBM subsystems” on page 384</td>
</tr>
<tr>
<td>3</td>
<td>“Configuring XBM components” on page 394</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 Computer Associate’s e Trust CA-ACF2 or e Trust CA-Top Secret.

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 382.

The security interface is optional for RACF users and e Trust 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 e Trust CA-ACF2, the security interface is not optional. By default, e Trust 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 e Trust CA-ACF2 security

You can use e Trust CA-ACF2 to secure XBM by defining resource rules for access to XBM functions.

This procedure explains how to use resource rules.

**To configure e Trust 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:

   \[
   \text{CHANGE INFODIR TYPES(R-RFAC)}
   \]

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:

\[
\text{%KEY(BMCXBM, ssid, action, object**********)TYPE(FAC)}
\]

The variables represent the following values:

- \text{ssid} represents the XBM subsystem ID.
- \text{action} represents the XBM action.
- \text{object} represents the XBM object or resource name.

See “RACF resource profiles” on page 379 for more information about defining a resource profile.

5 Rebuild the FAC resource rule by performing an initial program load (IPL) of MVS, or by issuing the following MVS modify command:

\[
\text{F ACF2,REBUILD(FAC)}
\]

For more information about eTrust CA-ACF2, see the vendor-provided user documentation for that product.

**Configuring e Trust CA-Top Secret security**

You can use e Trust CA-Top Secret to secure XBM by defining resource profiles for access to XBM functions.

**To configure e Trust 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 \text{ssid}):

\[
\text{TSS ADD( departmentACID) IBMFAC(BMCXBM)}
\]

3 Permit access to the XBM resource profile BMCXBM and the XBM subsystem:

\[
\text{TSS PER(userID or profile) IBMFAC(BMCXBM, ssid, action, object) ACCESS(Control or higher)}
\]
Resource profiles for XBM require the following form:

BMCXBM. ssid. 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, see “RACF resource profiles” on page 379. For more information about e Trust 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.

**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.

For more information about RACF, see the IBM RACF documentation. A list of RACF documentation is provided in the Resource Access Control Facility General Information manual.
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.

For more information about RACF, see the IBM RACF documentation. A list of RACF documentation is provided in the *Resource Access Control Facility General Information* manual.

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 46 on page 379 defines the values for action and object.

<table>
<thead>
<tr>
<th>Action</th>
<th>Object</th>
<th>Action description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ADMIN</td>
<td>CONFIG</td>
<td>activate a configuration</td>
</tr>
<tr>
<td></td>
<td>MS</td>
<td>activate or deactivate a management set or group</td>
</tr>
<tr>
<td>Action</td>
<td>Object</td>
<td>Action description</td>
</tr>
<tr>
<td>----------</td>
<td>------------</td>
<td>-----------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>COPY</td>
<td>EMCSYMM</td>
<td>split a Business Continuance Volume (BCV) device</td>
</tr>
<tr>
<td></td>
<td>PPRC</td>
<td>split a Peer-to-Peer Remote Copy (PPRC) device</td>
</tr>
<tr>
<td>MAINT</td>
<td>CONFIG</td>
<td>add, update, delete, or rename a configuration</td>
</tr>
<tr>
<td></td>
<td>MS</td>
<td>add, update, delete, or rename a management set or group</td>
</tr>
<tr>
<td></td>
<td>OPTION</td>
<td>change XBM, IMS, PSS, SSI, and VSAM options</td>
</tr>
<tr>
<td>PROTECT</td>
<td>EMCSYMM</td>
<td>control the hold or release a BCV device</td>
</tr>
<tr>
<td>RESET</td>
<td>DATASET</td>
<td>reset data set statistics</td>
</tr>
<tr>
<td>RESTORE</td>
<td>EMCSYMM</td>
<td>restore or incrementally restore a standard volume from a BCV</td>
</tr>
<tr>
<td>SNAP</td>
<td>DATASET</td>
<td>control Instant Snapshot support for utility jobs</td>
</tr>
<tr>
<td></td>
<td>VVOLUME</td>
<td>control hardware snapshot support for virtual volumes</td>
</tr>
<tr>
<td>SSIALLOW</td>
<td>LMIIRROR</td>
<td>control 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>control the SSI option to make remote mirrors available for EMC SRDF snapshots</td>
</tr>
<tr>
<td></td>
<td>SYNC@REG</td>
<td>control the SSI option to synchronize EMC BCVs at snapshot registration</td>
</tr>
<tr>
<td>SYNC</td>
<td>EMCSYMM</td>
<td>establish or reestablish a BCV from a standard volume</td>
</tr>
<tr>
<td></td>
<td>PPRC</td>
<td>establish or reestablish a PPRC volume from a standard volume</td>
</tr>
<tr>
<td>Action</td>
<td>Object</td>
<td>Action description</td>
</tr>
<tr>
<td>------------</td>
<td>----------</td>
<td>----------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>SYSTEM</td>
<td>COMPONENT</td>
<td>start or stop the XBM, DB2, IMS, PSS, SSI, and VSAM components</td>
</tr>
<tr>
<td>SENDCMD</td>
<td></td>
<td>explicitly or implicitly issue the XBM SEND command to communicate with a utility job that is connected to the utility monitor</td>
</tr>
<tr>
<td>SIMULATE</td>
<td></td>
<td>set simulate mode</td>
</tr>
<tr>
<td>STOPXBM</td>
<td></td>
<td>terminate XBM Processing</td>
</tr>
<tr>
<td>SNAPSHOT</td>
<td></td>
<td>run jobs that use XBM snapshot utilities</td>
</tr>
<tr>
<td>UTILJOB</td>
<td></td>
<td>connect to the utility monitor (for users of snapshot utilities)</td>
</tr>
<tr>
<td>ZIIP</td>
<td></td>
<td>use zIIP feature</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:
  
  `BMCXBM.XBMP.MAINT.CONFIG`
  
  To control access to all XBM maintenance actions for configurations, management sets, groups, and options, use the following profile:
  
  `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:
  
  `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:
  
  `BMCXBM.XBMP.COPY.*` (to control mirror split)
  `BMCXBM.XBMP.SYNC.*` (to control mirror establish)
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:

  ```
  BMCXBM.ssid.SNAP.VVOLUME
  ```

  In this profile, `ssid` indicates the XBM subsystem. `SNAP` and `VVOLUME` 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:

  ```
  BMCXBM. ssid.MAINT.CONFIG
  BMCXBM. 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 any way that you want, 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.

The protected action and object pairs are described in “RACF resource profiles” on page 379.

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:

```
BMCXBM.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 47 on page 383* describes the required 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 385 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)'

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 392.

**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 a single or multiple procedure members. To create an XBM procedure in your system library, complete the following steps.

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.

The figure below shows an example of the JCL for the procedure.

**Figure 86: Sample of JCL for XBM started task**

//XBM         PROC
CONFIG='*',MS=,GRP=,XBMGRP=,SYS=,XSSI=
//***===================================================================
//***           (C)COPYRIGHT 1993 - 2009 BMC SOFTWARE
//***           AS AN UNPUBLISHED WORK.
//***===================================================================
//XBM         EXEC PGM=XBMXMAIN,REGION=0M,TIME=1440,
//            PARM=('CONFIG=&CONFIG MS=&MS GROUP=&GRP ',
//            ' XBMGROUP=&XBMGRP SYS=&SYS SSI=&XSSI')
//********************************************************************
//STEPLIB     DD DISP=SHR,DSN=hlq.XBMLINK            (xbm/Solution
//            DD DISP=SHR,DSN=hlq.BBLINK             (BMC Security
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 BMCPSWD 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 and GROUP

The first time that you start XBM, you do not have a management set (MS) or GROUP to specify. Because MS and GROUP do not have default values, neither of these structures activate automatically. During subsequent restarts, XBM activates these structures only if you specify them 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.

   For more information about the PSS component, see Setting up the PSS component on page 396.

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.

XBM requires that this subsystem name:

- 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 $ SYSCLOSE symbolic from MVS system symbols. For more information, see Defining PROCS for use with multiple XBM subsystems on page 390.
You can use the same XBM SSID on multiple XBM subsystems in a non-data-sharing environment.

XBM does systems-wide enqueue 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 XBMID on each LPAR/JES SSID. To do so, you must update the GRSRNL xx 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 ID of XBMP. You would update the SYSTEMS EXCLUSION LIST in SYS1.PARMLIB(GRSRNL xx) 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)
```

TYPE(SPECIFIC) will only work 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 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.

Note
If you do not have BPE0313 applied to XBM 5.6.00, the default behavior is that the components always attempt to start when you start the XBM subsystem. BPE0313 changed the behavior to attempt to resume components to their previous state.

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 to bypass the device discovery phase and to reduce startup times.

DD statements

The start procedure includes DD statements that you should define.

Table 48 on page 389 describes the DD statements.

Table 48: DD statements for XBM started task

<table>
<thead>
<tr>
<th>DD statement</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>XBMREP nn</td>
<td>This statement is required. It references the XBM repository data sets; nn 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 Figure 86 on page 385, two repository data sets are allocated.</td>
</tr>
<tr>
<td>DD statement</td>
<td>Description</td>
</tr>
<tr>
<td>--------------</td>
<td>-------------</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 if BMCPSWD library is not used, within the XBM STEPLIB or LINKLIST. If XBM cannot find the authorization modules, XBM component activation will fail. <strong>Note:</strong> If you specify both the BMCPSWD statement in the PROC and include authorization modules within your STEPLIB or LINKLIST, XBM will only use the authorization modules specified 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. For more information, see <em>EXTENDED BUFFER MANAGER and SNAPSHOT UPGRADE FEATURE User Guide</em>.</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. This 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= 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. Doing so 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. Defining PROCS for use with multiple XBM subsystems on page 390 provides examples of using &SYSCLONE with other characters to produce unique identifiers.

Table 49: Using &SYSCLONE in the SYS= parameter

<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 |
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$OPTS member. Doing so allows you to use the ISPF interface to access all XBM subsystems that match the pattern using only a single CLIST and XBM$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 XBMC, you can specify the pattern XBM* as the value of XBMSSID in the XBM$OPTS member to access all of these subsystems. For an example of the XBM$OPTS member, see Configuring XBM$OPTS for data sharing environments on page 392.

#### Figure 87: Sample of XBM$OPTS member

```plaintext
/* REXX */
/* XBM(TM) VERSION 5.6.XX */
XBMSSID = 'XBM*' /* XBM SUBSYSTEM ID */
XBMLLIB = 'HLQ.XXLINK'
XBMLDO = 'HLQ.XXLINK'
XBMDLIB = 'HLQ.XXLIB'
XBMTLIB = 'HLQ.XXLIB'
ADDRESS ISPEXEC "VPUT (XBMSSID) SHARED"
ADDRESS ISPEXEC "VPUT (XBMLLIB) SHARED"
ADDRESS ISPEXEC "VPUT (XBMLDO) SHARED"
ADDRESS ISPEXEC "VPUT (XBMDLIB) SHARED"
ADDRESS ISPEXEC "VPUT (XBMTLIB) SHARED"
```
Where to go from here

Depending on the XBM components you plan to use, you might have 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 that you create which lists the commands that you want to execute. An example of an XBM initialization command file is shown in Figure 88 on page 393.

![Figure 88: XBM initialization command file](image)

The command file in Figure 88 on page 393 supports the comment operator command, "* " (asterisk followed by a space). You can include the comment command in the file to provide any descriptive text that is required. Comments are echoed to SYSPRINT and the MVS console. For a list of commands that you can use in the command file, see the *EXTENDED BUFFER MANAGER and SNAPSHOT UPGRADE FEATURE User Guide*.

Note

BMC does not recommend activating a configuration 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 50 on page 394.

Table 50: 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>
</tbody>
</table>
### Storage device | Required software
--- | ---
EMC Symmetrix<sup>a</sup> | - EMC Symmetrix Control Facility<sup>b</sup> (SCF) subsystem  
- EMC TimeFinder<sup>c</sup>

Hitachi ShadowImage | - Version of MVS that supports PPRC operations  
- Remote Copy (HRC)  
- IBM DFSMS/MVS Remote Copy Support  
- IBM FlashCopy version 2 (if applicable)

IBM Enterprise Storage Subsystem (Shark) | - IBM FlashCopy version 2

IBM RVA<sup>d</sup> | - IBM Extended Facilities Product

StorageTek SVA<sup>d</sup> | - IBM Extended Facilities Product (IXFP)  
- StorageTek SVA Administrator

---

<sup>a</sup> 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.

<sup>b</sup> To use the SCF subsystem, you must reference the location of the subsystem in the XBM STEPLIB or in the MVS link list.

<sup>c</sup> 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.

<sup>d</sup> 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 86 on page 385. 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 398
2. “Invoking the OPERTUNE CLIST or the common BMCDISPN panel” on page 399
3. “Creating an OPERTUNE system profile” on page 401
4. “Defining security for OPERTUNE” on page 401
5. “Starting the OPERTUNE started task” on page 403
6. “Preparing ISPF for OPERTUNE diagnostics” on page 404
7. “Establishing OPERTUNE communications” on page 405
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) DAT('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 *LLQ*SAMP (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 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.
When the Miscellaneous Selection Menu is displayed again, select option 3 (Security Profiles).

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.

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 402. 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.

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.

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.

The following table presents an overview of these mechanisms.
<table>
<thead>
<tr>
<th>Authorization mechanism</th>
<th>BMC product actions</th>
</tr>
</thead>
<tbody>
<tr>
<td>DB2 access control authorization exit</td>
<td>The BMC product uses the DSNX@XAC authorization exit to verify authorization for external access. The exit is available from the following sources:</td>
</tr>
<tr>
<td></td>
<td>• IBM provides a sample exit with DB2 for the IBM Resource Access Control Facility (RACF) component.</td>
</tr>
<tr>
<td></td>
<td>• CA Technologies provides the DSNX@XAC exit with CA-ACF2 Security for DB2 and CA-Top Secret Security for DB2.</td>
</tr>
<tr>
<td></td>
<td>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.</td>
</tr>
<tr>
<td>one of the following security products from CA Technologies:</td>
<td>The BMC product uses either of these CA Technologies products with any version of DB2. The BMC product detects the presence of the CA Technologies product in the DB2 subsystem where the BMC product is running.</td>
</tr>
<tr>
<td>• CA-ACF2 Security for DB2</td>
<td>To use either of these CA Technologies products with the BMC product, you must meet the following requirements:</td>
</tr>
<tr>
<td>• CA-Top Secret Security for DB2</td>
<td>• You must be using a version of your security product that enables external security calls for DB2.</td>
</tr>
<tr>
<td></td>
<td>• The value of the ACFORTSS installation option must be YES (the default).</td>
</tr>
<tr>
<td></td>
<td>Note: If you have one of these security products installed, but the version does not support external security, complete one of the following tasks:</td>
</tr>
<tr>
<td></td>
<td>• Change the value of the ACFORTSS installation option to NO. The BMC product then uses the standard DB2 method to check security.</td>
</tr>
<tr>
<td></td>
<td>• Contact your security vendor for the required APAR to enable external security calls for DB2. Then, ensure that the value of the ACFORTSS installation option is YES.</td>
</tr>
</tbody>
</table>
The BMC 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.

#### 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 IKJ5650I 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 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.

---

**CA-ACF2 authorizations for COPY PLUS for DB2**

To use CA-ACF2 for DB2 from Computer Associates for security validation, set the ACFORTSS installation option to YES.

**CA-Top Secret authorizations for COPY PLUS for DB2**

To use CA-Top Secret Security for DB2 from Computer Associates for security validation, set the ACFORTSS installation option to YES.

---

**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 Security or CA-Top Secret Security).

---

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.

**CA-ACF2 authorizations for RECOVER PLUS for DB2**

To use CA-ACF2 for DB2 from Computer Associates for security validation, set the ACFORTSS installation option to YES.

**CA-Top Secret authorizations for RECOVER PLUS for DB2**

To use CA-Top Secret Security for DB2 from Computer Associates for security validation, set the ACFORTSS installation option to YES.

**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 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.

CA-ACF2 authorizations for Log Master for DB2
Log Master can use the CA-ACF2 security package from Computer Associates.

To use CA ACF2 for DB2 from Computer Associates for security validation, set the ACFORTSS installation option to YES. (See the Log Master Reference Manual for more information about ACFORTSS.

If your security package is ACF2 for DB2 and your installation uses the Command Limiting List, the product's online interface will not work correctly unless you add the command ALPPRI to the list. The Command Limiting List is the portion of ACF2's Global Systems Options that determines which programs can run as APF authorized programs.

CA-Top Secret authorizations for Log Master for DB2
Log Master can use the CA-Top Secret for DB2 security package from Computer Associates.

To use CA-Top Secret for DB2 from Computer Associates for security validation, set the ACFORTSS installation option to YES. See the Log Master Reference Manual for information about the ACFORTSS installation option.

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 375.
**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.

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 52: 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>Variable name</td>
<td>Description</td>
</tr>
<tr>
<td>----------------</td>
<td>-----------------------------------------------------------------------------</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. |
| 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.

```
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 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>
<tr>
<td>PlanName</td>
<td>name of the specific prebound plan</td>
</tr>
</tbody>
</table>

**Note:** This value is required if the user ID that binds the plan has CREATE privileges only on specific collections.

**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 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 53: 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>BINDADD authority</td>
<td>primary authorization ID (user ID)</td>
<td></td>
</tr>
<tr>
<td>PACKADM authority or CREATE IN privilege for collection</td>
<td>primary authorization ID (user ID)</td>
<td></td>
</tr>
<tr>
<td>SELECT, INSERT, UPDATE, and DELETE privileges on target tables</td>
<td>primary authorization ID (user ID)</td>
<td></td>
</tr>
<tr>
<td>[Bind] parameter usage method</td>
<td>DB2 authorization</td>
<td>Granted to one of listed IDs or to PUBLIC</td>
</tr>
<tr>
<td>-------------------------------</td>
<td>------------------</td>
<td>------------------------------------------</td>
</tr>
</tbody>
</table>
| Specify value for BindOwner (APOWNER) parameter | EXECUTE privilege for High-speed Apply Engine plan (for example, APTB
vv7) | ■ primary authorization ID (user ID)  
■ secondary authorization ID |
| | EXECUTE privilege for restart table package (for example, APTB
vv7.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
vv7) | ■ primary authorization ID (user ID)  
■ secondary authorization ID |
| | EXECUTE privilege for restart table package (for example, APTB
vv7.APTREB2) | primary authorization ID (user ID) |
| | SYSADJM or SYSCTRL authority | authorization ID specified by AuthID parameter |
| | SELECT, INSERT, UPDATE, and DELETE privileges on target tables | primary authorization ID (user ID) |
| Specify value for AuthID and BindOwner (APOWNER) parameters | EXECUTE privilege for High-speed Apply Engine plan (for example, APTB
vv7) | ■ primary authorization ID (user ID)  
■ secondary authorization ID |
| | EXECUTE privilege for restart table package (for example, APTB
vv7.APTREB2) | authorization ID specified by BindOwner parameter |
| | SYSADJM or SYSCTRL authority | authorization ID specified by AuthID parameter |
| | SELECT, INSERT, UPDATE, and DELETE privileges on target tables | authorization ID specified by BindOwner parameter |
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.

Customizing the Recovery Management for DB2 solution

When you install the Recovery Management solution, the installation options are already set in the installation option modules. If you want to customize the installation options for the COPY PLUS, Log Master, or RECOVER PLUS components, use the customization program as described in the following steps. To customize the RECOVERY MANAGER product, use the RECOVERY MANAGER interface or edit the ARM$OPTS file.

Note

The customization program generates JCL to assemble a new installation options module for the specified component. Unless an option is specified in a particular job, the options in the new module are used when the component is invoked.

To customize the Recovery Management for DB2 solution

1. Invoke the customization program by using one of the following methods:
   - From the main menu of the RECOVERY MANAGER (RMGR) interface, select Customize Options (option 8)
     
     Note
     
     You must be authorized for the Recovery Management solution to use this method.

   - If you want to use the customization program outside of RMGR, invoke the BMCOPTM CLIST that is located in the HLQ.CLIST data set.
     
     The HLQ variable represents the high-level qualifier that you specified to unload the files for the Recovery Management solution.

2. To modify the installation options module, select one of the following components from the Customize Options panel:
COPY PLUS

Log Master

RECOVER PLUS

A panel listing the options and their current values is displayed.

3 Modify the options that you want to change.

**Note**
You can also clear out the value for any option, which generates "<keyword=>" in the JCL job. The specified option is set to the default value for that option or is given no value, depending on how the macro handles that particular option.

4 To step through the panels and modify the displayed options, press **Enter**.

When you have finished modifying the options on the last panel, the JCL Specification panel is displayed.

5 Follow the displayed instructions:

a Type an output data set name. This data set is used for saving the JCL and **must** be cataloged.

**Note**
If the name is not enclosed in quotes, the output data set that is used for saving the JCL is prefixed by your TSO prefix.

b Verify that the job statement is correct and contains a symbolic variable (&#) for the job number.

**Note**
The job name **must** contain a symbolic variable for the job number. For more information, see the *RECOVERY MANAGER for DB2 User Guide*.

c Press **Enter** to display the customization JCL.

If an error occurs that prevents the JCL from being placed in the data set, follow the displayed instructions to try again.

6 Choose from the following options:

- Submit the job by using the SUBMIT command.
Note
The job generates an installation options module with the standard module name (AFR$OPTS, ACP$OPTS, or ALP$OPTS). You can change the job name before submitting the job.

- To exit press F3.
  The Customize Options panel is displayed.

7 From the Customize Options panel, choose from the following options:

- Select another component to customize. Go to step 3.
- To exit the program, press F3.

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:

   ```plaintext
   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:

   ```plaintext
   WHEN (&DSN = DSNDXW.DXW2.ARCLG1L.Z0*)
   SET &DATACLAS = 'DCLARGE'
   ```

3. 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:

   ```plaintext
   WHEN (&DATACLAS = 'DCLARGE')
   SET &STORCLAS = 'DXWSMS'
   ```

   and

   ```plaintext
   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, you must migrate your groups to the new repository before using RECOVERY MANAGER version 9.2.00 and later. Migrating groups into the RMGR version 9.2.00 repository requires a great deal of processing. BMC recommends that you evaluate all groups and delete any that are unused, out of date, or incorrectly defined prior to invoking ARMBREP. ARMBREP will complete more efficiently if you perform the evaluation and deletion step.

The ARMBREP program reads groups from a RECOVERY MANAGER repository (version 9.1.00 and earlier) using the plans and synonyms that were in place for that repository. ARMBREP is the only RMGR program that accesses a repository created prior to RMGR version 9.2.00. After reading the groups from the old repository, ARMBREP saves the groups to the new repository based on the plan and synonyms defined for RMGR version 9.2.00.

For more information, see the details about the ARMBREP program.

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.

Before you begin

Ensure that you have MVS data set UPDATE authority to edit the ARM$OPTS member.

To set up data sharing for RECOVERY MANAGER

1 Add the following lines to the ARM$OPTS member in the control library of each DB2 subsystem:

```
groupname.PROD.DSNLOAD=DB2.load.library
groupName.PROD.DSNEXIT=DB2.exit.library
groupName.TEST.DSNLOAD=DB2.load.library
groupName.TEST.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 ARM$OPTS member in the control library for each DB2 subsystem:

<table>
<thead>
<tr>
<th>Option</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>optionname</em></td>
<td>options common to all subsystems</td>
</tr>
<tr>
<td><em>ssid. optionname</em></td>
<td>options for each subsystem and data sharing member</td>
</tr>
<tr>
<td><em>ssid.PROD. optionname</em></td>
<td>production library information(^a) for each subsystem and data sharing member</td>
</tr>
</tbody>
</table>

\(^a\) The production library information (*ssid.PROD= options*) is ALWAYS used in RMGR batch processes.

3 For each DB2 subsystem that will be a data sharing member, use the **Control information** option on the RMGR main menu to update the work file database name and the group member name.

**RECOVERY MANAGER for DB2 and DBC**

RECOVERY MANAGER for DB2, which is also a part of the Recovery Management solution, uses DB2 component services (DBC) to display a list of available SSIDs.

For more information about DBC, see “Working with DB2 Component Services” on page 353.

**ARMBREP repository migration program**

The ARMBREP program migrates the RECOVERY MANAGER for DB2 repository.

You must migrate a RECOVERY MANAGER for DB2 version 9.1.00 and earlier repository to the new repository for RECOVERY MANAGER for DB2 version 9.2.00 and later.
About ARMBREP

The ARMBREP program reads groups from a RECOVERY MANAGER for DB2 repository (version 9.1.00 and earlier). After reading the groups from the old repository, ARMBREP saves the groups to the new repository. ARMBREP is the only RECOVERY MANAGER program that accesses a repository created prior to RECOVERY MANAGER version 9.2.00.

You must migrate your groups to the new repository before using RECOVERY MANAGER for DB2 version 9.2.00 and later to have your previously-defined groups available for use. Migrating groups into the RECOVERY MANAGER version 9.2.00 repository can be time consuming. BMC recommends that you delete any unnecessary groups prior to invoking ARMBREP so that the conversion process completes more quickly.

Note the following considerations when you run ARMBREP:

- Change accumulation groups are not migrated by RECOVERY MANAGER for DB2.
  R+/CHANGE ACCUM does not support the new repository in version 9.2.00.

- ARMBGPS and repository groups are not migrated by RECOVERY MANAGER for DB2.
  You will need to recreate the ARMBGPS and repository groups after you run ARMBREP.

  **Note**
  ARMBGPS and repository groups require the other products and synonyms to be installed and defined. Because this cannot be guaranteed at the time that ARMBREP runs, ARMBREP skips these groups to avoid generating incomplete groups.

- SAP groups are migrated as TS groups with the owner specified.

- When you run ARMBREP, any groups that had Dataset Sizing Repository are set to Dataset Sizing Catalog in the new repository. Dataset Sizing Repository is not supported in RECOVERY MANAGER for DB2 version 9.2.00 and later.

Authorizations for ARMBREP

The ARMBREP program requires certain authorizations.

The following authorizations are required to execute the ARMBREP program:
Building the JCL

Building your own ARMBREP 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:
  - RECOVERY MANAGER and DB2 load libraries
  - input data sets
  - output data sets

Specifying the JOB statement

The JOB statement for the ARMBREP 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 ARMBREP job is executed. If REGION=0M is not allowed at your company, specify REGION=4M.

Specifying the EXEC statement

The ARMBREP EXEC statement uses a specific format.

The EXEC statement for the ARMBREP program has the following format:

```
//stepname EXEC PGM=ARMBREP,
//            PARM='ssid',
//            REGION=0M
```
The variable *ssid* is the DB2 subsystem or group attach name where the RECOVERY MANAGER groups 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.

### Specifying the STEPLIB DD statement

The ARMBREP STEPLIB DD statement identifies the load libraries.

The STEPLIB DD statement identifies the RECOVERY MANAGER load library and DB2 load libraries that you want ARMBREP 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 ARMBREP data set DD statements

In the JCL, you specify each data set used by ARMBREP with a ddname (data definition name).

Following are the data sets (optional and required) that are used by ARMBREP:

- **ARMIN (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).

- **ARMPRINT (required)**

  This data set is the output for messages that are returned from RECOVERY MANAGER. RECOVERY MANAGER reports all groups found in the repository, displays their definitions, and indicates if they were migrated or not. RECOVERY MANAGER also echoes the contents of the ARMIN data set in the ARMPRINT output. ARMPRINT may be allocated to SYSOUT or to a data set with a data control block (DCB) of LRECL=121, RECFM=VBA.

  Because ARMPRINT can be large for a large number of groups, BMC recommends that you specify a data set.
- **ARMOPTS (required)**

  This data set contains the RECOVERY MANAGER control options data set created during RECOVERY MANAGER installation with the default name of `hilvl.RMGR.DBCNTL(ARM$OPTS)`. The data set must be allocated with DISP=SHR.

- **ARMMSGS (required)**

  This data set is the RECOVERY MANAGER messages data set created during RECOVERY MANAGER installation with the default name of `hilvl.RMGR.DBCNTL(ARMMSGS)`. The data set must be allocated with DISP=SHR.

- **ARMERROR (optional)**

  This data set contains the output for compiler run time ARMBREP errors. If compiler errors are detected and ARMERROR is not present in the JCL, the errors are printed in the JES log. The data set may be allocated to SYSOUT or to a data set with a DCB of LRECL=121, RECFM=VBA.

- **ARMTRACE (optional)**

  This data set contains the output for the trace messages and should only be used when debugging a problem due to the large amount of output that could be produced. If you use ARMTRACE, because of the amount of output generated, BMC recommends that you specify a data set.

- **ARMSYSRO (optional)**

  This output data set is a report of the subsystem recover options from old repository.

- **ARMSYSRN (optional)**

  This output data set is a report of subsystem recover options from new repository.

- **ARMSYSCO (optional)**

  This output is a report of subsystem copy options from old repository.

- **ARMSYSCN (optional):**

  This output data set is a report of subsystem copy options from new repository.

### ARMBREP syntax and option descriptions

The ARMBREP syntax and option descriptions in this section are the control statements that you use when you build ARMIN input.
For more information about syntax rules and wildcard support, see the RECOVERY MANAGER for DB2 documentation.

**Figure 89: ARMBREP control statement**

![ARMBREP control statement diagram]

**Table 54: ARMBREP 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 groups in the repository or to issue reports without updating the repository. UPDATE mode is the default value and results in the groups being created in the repository. REPORT mode prints all messages and reports in the ARMPRINT but does not alter the repository.</td>
</tr>
<tr>
<td>REPLACE</td>
<td>The REPLACE statement indicates whether to replace an existing group in the repository when you are migrating groups. NO is the default value and results in groups not being created in the new repository if a group name already exists. A message also prints in ARMPRINT stating that the group will not be migrated. YES deletes the group from the new repository if it already exists before migrating the group from the old repository.</td>
</tr>
</tbody>
</table>

**Sample JCL**

Following is an example of JCL for ARMBREP.

**Figure 90: Sample AMRBREP JCL**

```plaintext
//DAFBREP2 JOB (PARM),FRIEDEL,CLASS=A,MSGCLASS=X,NOTIFY=&SYSUID
//ARM0001 EXEC PGM=ARMBREP,
//       PARM='DEDL',
//       REGION=0M
//STEPLIB DD DISP=SHR,DSN=PRODUCT.LOAD.LIBS
//       DD DISP=SHR,DSN=DSNEXIT
//       DD DISP=SHR,DSN=DSNLOAD
//ARMMSGS DD DISP=SHR,DSN=PRODUCT.CNTL.LIBS(ARMMSGS)
// ARMOPTS DD DISP=SHR,DSN=PRODUCT.CNTL.LIBS(ARM$OPTS)
//ARMSYSRO DD SYSOUT=* 
//ARMSYSRN DD SYSOUT=* 
```
ARMSYSRO: subsystem recover options prior to migration

ARMSYSRSN: subsystem recover options after migration
- ARMSYSCO: subsystem copy options prior to migration
- ARMSYSCN: subsystem copy options after migration

For each ARMBREP run, text similar to the following, depending on the type of output, is placed into each of these files:

```
SUBSYSTEM COPY OPTIONS (NEW REPOSITORY)---> REPORT: 07/22/2009 13:38:16
```

The following sample shows the ARMSYSRO output (subsystem recover options from old repository).

**Figure 91: Sample output for ARMSYSRO**

```
SUBSYSTEM RECOVER OPTIONS (OLD REPOSITORY)---> REPORT: 09/10/2009 14:50:20
* *** ***   *** ** *
GENERAL RECOVERY OPTIONS:
Rcvr Util: Recover Plus                Check Util: DB2 Check (DSNUTILB)
Copy Util: Copy Plus                   Repair Copy Pending: OBSOLETE OPTION
Use INDEX ALL Recover: No             Always rebuild indexes: No
Redefine VCAT Objects: No             Allocate in Records: No
Delete STOGROUP Objects: No           REUSE: Yes
Max concurrent jobs: 1                Data set sizing: Catalog
Limit SYSCOPY: 0                       Mirroring: No
What action when Check Pending: None   Make copies after recovery for: Not specified
Make copies after recovery for: Not specified
RECOVER PLUS OPTIONS:
CHECKPOINT: Not specified             EARLYRECALL: Yes
EARLYCAT: Yes                           MAXLOGS: 0
Unloadkeys/Buildindex: No             MSGLEVEL: Object Summary
LOGSCAN: No                             NULL LOGS: 0
Dynamic sortworks: Yes                 MAXLOGS: 0
XBMID: XBMN                           OUTCOPY by Recover: ASCODED
Alternate Resources: No                Max Key Sort: Not specified
KSORTSHARE: Not specified             Max Log Sort: Not specified
DB2 RECOVER OPTIONS:
SORTKEYS: No                          STATISTICS: No
REPORT: Yes                           UPDATE: NONE
KEYCARD: No                           DSNUTILB site type: Not specified
WORK FILE OPTION DESCRIPTIONS:
Work unit: SYSALLDA                    WORKDDN: No
Allocation type: Cylinder             Max Primary allocation: 0
Primary allocation: 10                Secondary allocation: 20
```

The following sample shows the ARMSYSCN output (subsystem copy options from new repository).

**Figure 92: Sample output for ARMSYSCN**

```
SUBSYSTEM COPY OPTIONS (NEW REPOSITORY)---> REPORT: 09/10/2009 14:50:20
* *** ***   *** ** *
GENERAL BACKUP OPTIONS:
Copy Utility: Copy Plus                Quiesce before: No
```
Quiesce after: No  Quiesce group: No
Quiesce write: Yes
Copy Index Spaces: No
Copy all indexes in a table space: No
Scope Setting: SCOPE Undefined

COPY PLUS SPECIFIC OPTIONS:
Full copy: Yes
Cumulative: Yes
Readtype: Random
Maximum Incrementals: Not specified
Day of the week: Not specified
DSSNAP: Not specified
XBMID: Not specified
Separate by partition: No
Access: OBSOLETE OPTION
Checktslevel: Not specified
ReSync: Not specified
Maximum Tasks: Not specified
Full percent: Not specified
Readtype: Random
Auto read percent: Not specified
Incremental percent: Not specified
Minimum pages: Not specified
NACTIVE: Not specified
Shrlevel: Reference
Group: No
Resetmod: Not specified
Checkerror: Not specified
Squeeze: Not specified
# of read/write buffers: Not specified
ON ERROR BADSTATUS: Not specified
ON DUPLICATEDS: Not specified
ON ERROR ICExISTS: Not specified
ON ERROR NOTSUPPORTED: Not specified
ACPGDG data set: Not specified
After Initialize Phase: Continue
Start message: Not specified
Use COPY IMAGECOPY to make output type: Not specified

DB2 COPY (DSNUTILB) OPTIONS:
Full copy: Yes
Changelimit Incremental percent: Not specified
Changelimit Full percent: Not specified
Shrlevel: Reference
Copy objects in parallel: No
Max parallel objects: Not specified

RECOVER PLUS OUTCOPY OPTIONS:
EARLYRECALL: Yes
ANALYZE: Yes
SORTDEVT: Not specified
TOLOGPOINT: Current
Alternate Resources:
Image copies:
Local primary: Not specified
Recovery primary: Not specified
Logs:
Active log copy 1: Not specified
Archive log copy 1: Not specified
Change accums:
Local primary: Not specified
Recovery primary: Not specified

OUTPUT DATA SET OPTION DESCRIPTIONS:
Local Primary Copy Options:
Data set name: &USERID.&DB.&TS.&TYPE&DATE.T&TIME
Model data set name: Not specified
Unit: SYSALLDA
Volume count: Not specified
Stack: No
Max Primary allocation: 0
Primary allocation: 10
Allocation type: Cylinder
SMS data class: Not specified
On a rerun of ARMBREP, RECOVERY MANAGER does not delete the prior run report information in the output report files. RECOVERY MANAGER appends the new information from the rerun to the existing file with a line inserted to denote the date and time of the new report.

The following figure shows an edited sample ARMPRINT for ARMBREP showing output for several of the 469 groups processed. The complete ARMPRINT lists every group from the old system and tells whether it migrated to the new repository. Notice that there are 381 groups—380 migrated and 1 new subsystem option group created—in the new repository. If this is the first run of ARMBREP and no groups have been created by running RECOVERY MANAGER for DB2 version 9.2.00, there will be 381 groups migrated.

At the very bottom of the ARMPRINT, you find a totals section that includes the following information:

- **IGNORED**—includes change accumulation groups
  You can search for the BMC80799E message to find the specific groups that were ignored.

- **SKIPPED**—includes repository groups and ARMBGPS groups
  You can search for the BMC80917E message to find the specific groups that were skipped.

- **SAVE FAILED**—includes any group containing a bad definition
  A scenario for when a group would show SAVE FAILED would be where you created a group by volume or exception in the old repository, but the group is empty. When RECOVERY MANAGER migrates groups created by volume or by exception, RECOVERY MANAGER creates a static group in the new repository. If the group is empty, RECOVERY MANAGER issues an error and does not create an empty group.
  You can search for the BMC80917E message with FAILED to find the specific groups that failed.

- **NEW SUBSYSTEM OPTION GROUP**—Starting with RECOVERY MANAGER version 9.2.00, if any backup or recovery subsystem options were set in the old repository, the migration program creates a new group in the new repository.
  The subsystem options are stored in BMCARM.SUBSYSTEM_OPTIONS. RECOVERY MANAGER issues message BMC80485I if a group has been saved.

The formula for the total number of groups in the new repository is:
TOTAL GROUPS IN NEW REPOSITORY = GROUPS TO PROCESS - IGNORED - SKIPPED - SAVE FAILED + NEW SUBSYSTEM OPTION GROUP

**Note**
This calculation is valid only for the first run after migration. If you have been running RECOVERY MANAGER for DB2 version 9.2.00 and you have created and deleted groups, these counts might very likely not match the calculation, depending on your actions.

Figure 93: Sample ARMBREP output - Repository Migration report

**RECOVERY MANAGER FOR DB2 V9.2.00 - REPOSITORY MIGRATION 09/25/2009 08:04:36**

**BMC80220I** RECOVERY MANAGEMENT FOR DB2 V9.2.00

(c) COPYRIGHT 1994-2009 BMC SOFTWARE, INC.
RECOVERY MANAGER TECHNOLOGY IS PROTECTED BY U.S. PATENT NUMBERS 5625817 AND 5761676
RECOVERY MANAGEMENT TECHNOLOGY IS PROTECTED BY U.S. PATENT NUMBER 7133884

BMC80223I MAINT: NO RECOVERY MANAGER PTFS APPLIED
BMC80223I SOLUTION COMMON CODE V1.6.0
BMC80223I MAINT: NO SCC PTFS APPLIED

BMC80309I CONNECTED TO DB2 SSID = HE VERSION 0810

**MODE UPDATE**
**REPLACE YES**

**BMC80485I** SAVING SUB-SYSTEM PROFILE GROUP BMCARM.SUBSYSTEM_OPTIONS

**SUB-SYSTEM OPTIONS PROCESSED**

**BMC80531I** 469 GROUPS TO PROCESS

**BMC80591I** PROCESSING GROUP ARMQA.ARMCS20T_PAK (#1)

<table>
<thead>
<tr>
<th>Type</th>
<th>Indexes</th>
<th>RI</th>
<th>By Part</th>
<th>LOBs</th>
<th>XML</th>
<th>Clone</th>
</tr>
</thead>
<tbody>
<tr>
<td>PKG DEP</td>
<td>X</td>
<td>ARMB520T.ARMQAACA</td>
<td>ARMB520T.ARMQCAT</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>ARMC520T.ARMQQAAA</td>
<td>ARMC520T.ARMQASU</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>ARMC520T.ARMQAUT</td>
<td>ARMC520T.ARMQBLD</td>
<td></td>
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<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>ARMC520T.ARMQCAT</td>
<td>ARMC520T.ARMQCDR</td>
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<tr>
<td></td>
<td></td>
<td>ARMC520T.ARMQDTC</td>
<td>ARMC520T.ARMQGDL</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>ARMC520T.ARMQGRP</td>
<td>ARMC520T.ARMQGSV</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>ARMC520T.ARMQSYN</td>
<td>ARMC520T.ARMQUTL</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>ARMC520T.ARMQWLD</td>
<td>ARML520T.ARMQALP</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>ARML520T.ARMQAUT</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**BMC80540I** GROUP SAVED               THE GROUP WAS SAVED SUCCESSFULLY

**BMC80591I** PROCESSING GROUP ARMQA.DHE$GROUP01 (#2)

<table>
<thead>
<tr>
<th>Type</th>
<th>Indexes</th>
<th>RI</th>
<th>By Part</th>
<th>LOBs</th>
<th>XML</th>
<th>Clone</th>
</tr>
</thead>
<tbody>
<tr>
<td>PKG DEP</td>
<td>X</td>
<td>ARMBGPS</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**BMC80919E** BGPS GROUP: OLD REPOSITORY OBJECTS INVALID FOR CURRENT RELEASE
**EXCL TS**

DSNDB06.* Part=0 Owner=*
**ARMBREP repository migration program**

---

<table>
<thead>
<tr>
<th>EXCL TS</th>
<th>DSNDB07.* Part=0 Owner=*</th>
</tr>
</thead>
<tbody>
<tr>
<td>EXCL TS</td>
<td>BMCARM.BMCARMCR Part=0 Owner=*</td>
</tr>
<tr>
<td>EXCL TS</td>
<td>BMCARM.BMCARMGA Part=0 Owner=*</td>
</tr>
<tr>
<td>EXCL TS</td>
<td>BMCARM.BMCARMGC Part=0 Owner=*</td>
</tr>
<tr>
<td>EXCL TS</td>
<td>BMCARM.BMCARMGD Part=0 Owner=*</td>
</tr>
<tr>
<td>EXCL TS</td>
<td>BMCARM.BMCARMGF Part=0 Owner=*</td>
</tr>
<tr>
<td>EXCL TS</td>
<td>BMCARM.BMCARMGO Part=0 Owner=*</td>
</tr>
<tr>
<td>EXCL TS</td>
<td>BMCARM.BMCARMGP Part=0 Owner=*</td>
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<td>BMCARM.BMCARMGS Part=0 Owner=*</td>
</tr>
<tr>
<td>EXCL TS</td>
<td>BMCARM.BMCARMOP Part=0 Owner=*</td>
</tr>
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<td>BMCARM.BMCARMSF Part=0 Owner=*</td>
</tr>
<tr>
<td>EXCL TS</td>
<td>BMCARM.BMCESTM Part=0 Owner=*</td>
</tr>
<tr>
<td>EXCL TS</td>
<td>BMCASU7B.BMCRSIP Part=0 Owner=*</td>
</tr>
<tr>
<td>EXCL TS</td>
<td>BMCASU7B.BMCRSTB Part=0 Owner=*</td>
</tr>
<tr>
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<td>BMCASU7B.BMCRSTP Part=0 Owner=*</td>
</tr>
<tr>
<td>EXCL TS</td>
<td>BMCASU7B.BMCRSTS Part=0 Owner=*</td>
</tr>
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<td>BMCUTIL.BMCLGRNX Part=0 Owner=*</td>
</tr>
<tr>
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<td>BMCUTIL.BMCSYNC Part=0 Owner=*</td>
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<td>EXCL TS</td>
<td>BMCUTIL.BMCTRANS Part=0 Owner=*</td>
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<td>EXCL TS</td>
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</tr>
<tr>
<td>EXCL TS</td>
<td>BMCCACA32.ACAREPOS Part=0 Owner=*</td>
</tr>
<tr>
<td>EXCL TS</td>
<td>DHE1.* Part=0 Owner=*</td>
</tr>
<tr>
<td>EXCL TS</td>
<td>DHE2.* Part=0 Owner=*</td>
</tr>
<tr>
<td>EXCL TS</td>
<td>DHE3.* Part=0 Owner=*</td>
</tr>
</tbody>
</table>

**BMCB0917E GROUP SAVE SKIPPED: BGPS GROUP**

**BMCB0799W THIS GROUP WAS NOT MIGRATED TO NEW REPOSITORY**

---

<table>
<thead>
<tr>
<th>BMCB0531I GROUPS TO PROCESS:</th>
<th>469</th>
</tr>
</thead>
<tbody>
<tr>
<td>BMCB0531I IGNORED: (IGNORE CHANGE ACCUM GROUPS)</td>
<td>30 (SEE 80799E MSGS)</td>
</tr>
<tr>
<td>BMCB0531I SKIPPED: (SKIP REPOSITORY AND BGPS GROUPS)</td>
<td>57 (80917E AND SKIPPED)</td>
</tr>
<tr>
<td>BMCB0531I SAVE FAILED:</td>
<td>2 (80917E AND FAILED)</td>
</tr>
</tbody>
</table>
Executing the JCL

Consider the following information to run the ARMBREP JCL:

- Ensure that the job owner has the appropriate authorizations. For more information, see “Authorizations for ARMBREP” on page 198.

- No restart is available for ARMBREP. You must resubmit the job after correcting any error conditions.

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 EXTENDED BUFFER MANAGER and SNAPSHOT UPGRADE FEATURE” on page 375.

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 (RMGR) and Log Master, Log Master must be installed and you must add some control information to the ARM$OPTS file.
To enable interaction between Log Master and RMGR

1. Add the following control information to the ARM$OPTS file:

<table>
<thead>
<tr>
<th>Control information</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>ssid.PROD.ALLOAD=load_library</td>
<td>Log Master production load library</td>
</tr>
<tr>
<td>ssid.PROD.ALVRSN=version</td>
<td>Log Master production load library version</td>
</tr>
</tbody>
</table>

Enabling interaction between COPY PLUS and RECOVERY MANAGER

Use the steps in this procedure to create COPY PLUS synonyms that enable COPY PLUS to work with the groups that are created and stored in RECOVERY MANAGER.

To enable interaction between COPY PLUS and RMGR

If you install COPY PLUS before or at the same time that you install RECOVERY MANAGER (RMGR), the Installation System prompts you to create the COPY PLUS synonyms that enable you to copy the RMGROUPs that are stored in RECOVERY MANAGER. If you install COPY PLUS at a later date, you must perform the steps in this procedure.

1. Determine the plan qualifier for the COPY PLUS plan.

2. Create the COPY PLUS synonyms using SQL statements similar to the following SQL statements:

```sql
SET CURRENT SQLID='plan_qualifier'
CREATE SYNONYM BMCACP_GROUPOBJ
  FOR creator.GROUPOBJ
CREATE SYNONYM BMCACP_GROUPS
  FOR creator.GROUPS
```

The variables creator.GROUP_OBJ and creator.GROUPS represent the names of each RMGR table. The variable plan_qualifier represents the plan qualifier specified for the COPY PLUS plan.

Enabling interaction between RECOVERY MANAGER and PACLOG

Use the steps in this procedure to enable PACLOG for DB2 to interact with RECOVERY MANAGER for DB2.
Before you begin

If RMGR coexists with PACLOG in the target DB2 subsystem, the two products should share the RMGR options file and archive history data set for the two products to interact. The options file name is set in the ARMCNTL variable in the product invocation CLIST.

To enable interaction between RECOVERY MANAGER for DB2 and PACLOG

1 Specify the new DB2 subsystem ID on the RMGR Main Menu, and then select Control Information.

2 Choose from the following options:
   - To view the options without making any changes, select Browse and then press Enter.
   - To make changes to the options, select Update and press Enter.

3 Select the DB2 Subsystem Resource Information, and press Enter.

   The Subsystem Information panel is displayed.

4 To move to the next Subsystem Information panel, press Enter.

5 From the displayed panel, verify that the Archive history DSN option correctly specifies the history file for the new DB2 subsystem.

   Note

   If you are not currently using the RMGR history file, you must specify a history data set name and create the data set. Refer to the PACLOG.DBCNTL data set member ALMHIST for a sample job that you can use to create the new history file.

6 Press Enter, and choose from the following options:
   - If you did not make any changes to the options, you do not need to perform any other steps.
   - If you made changes to the options, the Update Confirmation panel is displayed. Select 1, and then press Enter.
Enabling interaction between RECOVERY MANAGER and DB2 Component Services (DBC)

RECOVERY MANAGER for DB2 interacts with DBC to display available SSIDs.

To enable interaction between RECOVERY MANAGER and DBC, you must have a DBC started task running. For more information, see “Starting the DBC subsystem” on page 354.

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 55: 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(v_r).RS_TABLESPACE</td>
</tr>
<tr>
<td>BMCACP_BMCXTBPT</td>
<td>BMCATS(v_r).RS_TABLEPART</td>
</tr>
<tr>
<td>BMCACP_BMCXTBLS</td>
<td>BMCATS(v_r).RS_TABLES</td>
</tr>
</tbody>
</table>

The variable \(v_r\) 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.

DASD MANAGER PLUS synonyms: DASD MANAGER PLUS uses the following synonyms:
You must update your synonyms if either of the following cases are true:

- Your current synonyms do not point to the correct tables.
- DASD MANAGER PLUS accesses the utility tables during batch processing.

**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 18 on page 212, 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 plan binds will complete with a return code 4.

**To direct the DASD MANAGER PLUS synonyms to the utility tables**

1. Drop the current utility synonyms for DASD MANAGER PLUS.
2. Create the new DASD MANAGER PLUS utility synonyms by using the same synonym names, but use the correct table names.
3. Bind the package AEXEUTID into the main collection ID for DASD MANAGER PLUS.

The HLQ.INSTALL member BMI#AEXU provides a sample worklist.

### Setting the MEMLIMIT system parameter

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

This requirement affects the following BMC products and components:

- ALTER
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>Product or solution</td>
<td>Recommendation</td>
</tr>
<tr>
<td>--------------------------</td>
<td>-----------------------------------------------------------------------------------------------------------------------------------------------</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>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</td>
</tr>
<tr>
<td></td>
<td>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</td>
</tr>
<tr>
<td></td>
<td>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</td>
</tr>
<tr>
<td></td>
<td>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</td>
</tr>
<tr>
<td></td>
<td>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>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*.  

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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 chapter applies to all System and SQL Performance products except OPERTUNE.

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 94 on page 456 is an example of the main menu for a single product.

**Figure 94: APPTUNE Main Menu**

<table>
<thead>
<tr>
<th>Command</th>
<th>APPTUNE Main Menu</th>
<th>16:55:14</th>
</tr>
</thead>
<tbody>
<tr>
<td>Current Data Collector : DOMO</td>
<td>Status : ACTIVE</td>
<td>Data Collection : N/A</td>
</tr>
</tbody>
</table>

Select one of the following options. Then press Enter.

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
6. DOMPLEXes - Select a different DOMPLEX
7. User Options - View/modify user options
8. Log Operations - View/print logged screens and reports
9. Administration - Create and maintain product and user parameters
D. Archive Directory - View/manage the directory of archives
H. Help | Y. Summary of Changes
X. Exit | Z. About APPTUNE

Figure 95 on page 456 is an example of the main menu that is displayed when all System and SQL Performance products and solutions are installed and active.

**Figure 95: System and SQL Performance for DB2 common main menu**

<table>
<thead>
<tr>
<th>Command</th>
<th>System and SQL Performance</th>
<th>10:17:46</th>
</tr>
</thead>
<tbody>
<tr>
<td>Current Data Collector : DC32</td>
<td>Status : ACTIVE</td>
<td></td>
</tr>
</tbody>
</table>

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 | Y. Summary of Changes
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.

Some procedures and tasks in this chapter 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. All instructions that apply to Pool Advisor also apply to System Performance.
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.

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 464.

VSAM data sets

The installation process creates VSAM data sets.

Table 57 on page 457 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 57: 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. The user record contains the parameters for session characteristics and function keys.</td>
</tr>
<tr>
<td>Data set</td>
<td>What the data set stores</td>
</tr>
<tr>
<td>---------------</td>
<td>------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>SECURITY</td>
<td>User Profile security records&lt;br&gt;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 a</td>
<td>trace records gathered from DB2 and BMC Software products</td>
</tr>
<tr>
<td>DCC$VARS1 a</td>
<td>default parameter variable values and user-coded overrides to variable values&lt;br&gt;(Pool Advisor and System Performance only).</td>
</tr>
<tr>
<td>PMD$HIST a</td>
<td>long-term history records--daily, page sets, and objects&lt;br&gt;(Pool Advisor and System Performance only).</td>
</tr>
</tbody>
</table>

a Do not make the name of this data set version sensitive. This data set is migrated forward when you install a new release and is used by the new release Data Collector.

**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 58 on page 459 lists RACF access authorization requirements for product data sets and Table 59 on page 460 lists 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 DBC security” on page 463.

---

**Table 58: 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 c</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 d</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>PMD$HIST</td>
<td>U a</td>
<td>NA</td>
<td>A a</td>
<td>U a</td>
<td>NA</td>
</tr>
<tr>
<td>DCC$VARS</td>
<td>U a</td>
<td>NA</td>
<td>A a</td>
<td>U a</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 b</td>
<td>R b</td>
<td>R b</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>
</tbody>
</table>
Authorization is required if System Performance or Pool Advisor is installed. Otherwise, authorization is NA.

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.

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.

All users need UPDATE authority to their own report log data sets.

### Table 59: ACF2 access to product data sets

<table>
<thead>
<tr>
<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>WA</td>
<td>W</td>
<td>W</td>
</tr>
<tr>
<td>Security</td>
<td>R</td>
<td>WA</td>
<td>W</td>
<td>R</td>
</tr>
<tr>
<td>Help</td>
<td>NA</td>
<td>WA</td>
<td>R</td>
<td>R</td>
</tr>
<tr>
<td>Report log</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>
</tr>
<tr>
<td>Archives</td>
<td>NA</td>
<td>WA</td>
<td>R</td>
<td>R</td>
</tr>
<tr>
<td>COPYDIR</td>
<td>W</td>
<td>WA</td>
<td>W</td>
<td>R</td>
</tr>
<tr>
<td>PMD$HIST</td>
<td>W&lt;sup&gt;a&lt;/sup&gt;</td>
<td>WA&lt;sup&gt;a&lt;/sup&gt;</td>
<td>W&lt;sup&gt;a&lt;/sup&gt;</td>
<td>NA</td>
</tr>
<tr>
<td>DCC$VARS</td>
<td>W&lt;sup&gt;a&lt;/sup&gt;</td>
<td>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>
</tr>
<tr>
<td>BBTMPLT</td>
<td>R</td>
<td>NA</td>
<td>WA</td>
<td>NA</td>
</tr>
<tr>
<td>DB2MSTR</td>
<td>R</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>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>
</tr>
</tbody>
</table>
DBC

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 DBC 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.

### Table: Controlling access to the System and SQL Performance products for DB2

<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>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

**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 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.
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 on SYSUSERAUTH if both 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 483).
- 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 both 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.

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, 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 DBC security” on page 463.

Managing DBC security

If you use CA ACF2, CA Top Secret for DB2, or RACF to control access to DB2, the additional 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 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 following commands:

<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 viewing product reports</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 (Pool Advisor and System Performance)</td>
</tr>
<tr>
<td>DMDRJCL1</td>
<td>invoke ISPF Edit to allow editing of the JCL member created in the Configuration Advisor analysis process (Pool Advisor and System Performance)</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>PSSATI</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 for DB2

If you are using CA Top Secret for DB2 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 Security for DB2 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 Security for DB2, and RACF

If you use CA ACF2 security, define the following grants to CA ACF2. If you use RACF or CA Top Secret for DB2, define the following grants to DB2:

```
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;
```

The names in this 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.

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:

- N use only product security (default value)
- Y use both DB2 security and product security

For an explanation of DOMPLEX options, see “Verifying or customizing the DOMPLEX option set” on page 485.

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 499.

■ 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 504 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.
(DISPLAYAUTH for DISPLAY commands and SYSOPRAUTH, SYSADMAUTH, or TRACEAUTH to start and stop traces, for example).

You must perform these GRANTs before the user begins a product session with a DBC. The user ID that is granted authority in DB2 can be the user ID or, in the TSO environment, a secondary authorization ID within the user’s security group.

You can use the DOMEXIT4 user exit to override these default user ID selections. This exit is invoked once at the start of each user’s product session. For more information about DOMEXIT4, see the System and SQL Performance for DB2 Administrator Guide.

The product does not detect the GRANTs and REVOKEs that are issued in a DB2 subsystem until DB2 updates the SYSIBM.SYSUSERAUTH catalog table. If the update is in a DB2 buffer, it might not be written immediately on low-activity DB2 subsystems. If you are using a low-activity DB2 subsystem, you can expedite this update to the catalog table by restarting the DB2 subsystem or by executing the QUIESCE utility against the DSNDB06.SYSUSER table space. If the product is executing when a GRANT or REVOKE command is issued, the Data Collector does not recognize the change until you restart the Data Collector or issue a REFRESH command from the Data Collector Command Interface panel or the console.

---

**Reverting to an older level of a System and SQL Performance product**

At times, you might need to cancel the installation process or revert to an older level of a product during or after installation.

**To revert to an older level of a System and SQL Performance product**

1. Stop all DBC subsystems that are monitoring the same DB2 subsystems.

2. Restore the following previously saved data sets by using IEBCOPY:

   The previously saved data sets for APPTUNE, Pool Advisor, SQL Performance, System Performance, and MainView for DB2 - Data Collector are

   - **LLQ LINK**
   - **LLQ DBRM**
   - **LLQ PLIB**
   - **LLQ MLIB**
   - **LLQ PARM**
Reverting to an older level of a System and SQL Performance product

- LLQTMPLT
- LLQSAMP
- install JCL data sets

The previously saved data sets for SQL Explorer and SQL Performance are

- LLQCLIB
- LLQSAMP
- LLQDBRM
- LLQLINK
- LLQMLIB
- LLQPLIB
- LLQSLIB
- LLQTLIB
- install JCL data sets

LLQ represents DB, XX, BB, or UBB.

3 Restore the following previously saved VSAM data sets by using IDCAMS:
   CUSTOM, STATUS, PROFILE, SECURITY, HELP, COPYDIR, PMDHIST and DCC$VARS.

4 (APPTUNE, SQL Explorer, MainView for DB2 - Data Collector, SQL Performance, and System Performance) If you have already dropped the objects from the previous install, re-create them and run the binds by running the $C40INST job from the install JCL.

5 Restore the trace data sets that were used with the previous version or use the DOMPLEX option set panel to redefine the data sets.

6 Restore the DOMCLIST and the DOMPROC.

7 Check the names of the load library and the data sets that are restored in the DOMDMDSN load module.

If the names in the load module do not match the names of the restored data sets, you must modify and submit the JCL in the DOMSOPTS member in the DOMSAMP, BBSAMP, or your runtime SAMP data set.
Performing post-installation tasks

When you finish using the OS/390 and z/OS Installer 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. \(^a\)

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). \(^a\)

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 selection of System and SQL Performance products, select Administration.

   **Note**
   You can also define a DOMPLEX from the Installation System from the Runtime Enablement (RTE) Process menu by selecting Additional customization options and then Customize product options using DB2 Product Configuration.

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 Administration 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 $STRT job. The Data Collector name should match the DBC subsystem ID.

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 488 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.

Adding 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 96 on page 473.

The format of the data is as follows where *ssid* is your subsystem identifier:

```
ssid keyword value
```

Table 60 on page 472 lists the keywords that you can specify, with a description of each keyword and an example for each value.

**Table 60: 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\textit{vvr}D1 \textsuperscript{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.DB2\textit{vrm}.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>
<tr>
<td>DLIB</td>
<td>LOAD library for DB2 common code ((HLQ.LLQLINK))</td>
<td>BMCPERF.LLQLINK</td>
</tr>
<tr>
<td>TLIB</td>
<td>ISPF table library for SSID ((HLQ.LLQTLIB))</td>
<td>BMCPERF.LLQTLIB</td>
</tr>
<tr>
<td>XLIB</td>
<td>((HLQ.LLQXLIB))</td>
<td>BMCPERF.DBXLIB</td>
</tr>
<tr>
<td>PSWD</td>
<td>Password data set ((HLQ.BMCPSWD))</td>
<td>BMCPERF.BMCPSWD</td>
</tr>
</tbody>
</table>
**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.

*Note*

BMC Software strongly recommends that you create indexes on the DB2 catalog if you are running the products on a DB2 Version 8 subsystem.

**To create indexes on the DB2 catalog tables**

1. Execute the -AMS commands in the BMIDB2V8 member in the HLQ.UBBSAMP data set to create the underlying VSAM data sets.
2 Follow the instructions in the BMIDB2I8 member in the HLQUBBSAMP data set to create the indexes on the catalog.

If you are migrating to DB2 Version 8 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 DAADDB2IX member in the HLQLQSAMP 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:

```plaintext
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.

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$STC). Figure 97 on page 475 shows an example of the DBC$STC job generated by the Installation System.

**Figure 97: 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
//  // 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.

*********************************************************************
DBC
EXEC PGM=DBCMAIN,REGION=0M,ACCT=&ACC,TIME=&TIM,
PARM='SSID=&SSID,GROUP=&G,TRACE=&T'
STEPLIB DD DSN=BMCPERF.BMCLINK,
   DISP=SHR
BMCPWD DD DISP=SHR,
   DSN=BMCPERF.BMCPSWD
DBCPRINT DD SYSOUT=*,RECFM=VA
SYSPRINT DD SYSOUT=*,RECFM=VA
SYSTSPRT DD SYSOUT=*
SYSTERM DD SYSOUT=*,RECFM=VA
DBCPARMS DD DISP=SHR,
   DSN=BMCPERF.BMCSAMP($DBC&SSID)
DBCSECUR DD DISP=SHR,
   DSN=BMCPERF.BMCSAMP($SEC&SSID)
REGISTRY DD DISP=SHR,
   DSN=BMCPERF.DC01.REGISTRY
DOMTMPLT DD DISP=SHR,
   DSN=BMCPERF.BMCTMPLT
DOMPARMS DD DISP=SHR,
   DSN=BMCPERF.BMCPARM

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 Working with the DBC subsystem on page 353.

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 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):

```plaintext
// PEND
// EXEC PROC=DOMssid
```

The following example starts DBC subsystem DC01.

```plaintext
// MONITOR EXEC PROC=DOMPROC,SYS=DC01.
```

5 Press F3 (End) 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 485.

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.

1 This task varies, depending on whether you used the Installer to modify and submit the JCL:
If you used the Installer 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 Installer 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.

2 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 98 on page 478 shows the CLIST for executing a product.

**Figure 98: 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                                      
**                        Q  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(PRD=QPS)'                             
**                                                                   
**                        SPECIFYING 'PRD()' WILL CAUSE ALL FILE TYPES TO BE ALLOCATED
```

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/*    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 ENCLOSURE 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 BMCD2PR PANEL TO THE SQL EXPLORER MAIN MENU.  
/*    */

/**********************************************************************
CONTROL MSG NOSYM LIST NOCONLIST NOLIST NOFLUSH 
IF &SYSISPF ¬= ACTIVE THEN DO 
  WRITE THIS CLIST REQUIRES ISPF TO BE ACTIVE 
  EXIT CODE(12) 
END 

SET &PRDL EN = &LENGTH(&PRD) 
IF &PRDL EN GT 0 THEN + 
  SET &P = &STR(PRD=&PRD,&P) 
ALLOC F(DOMPLIB) + 
  DA('BMCPERF.BMCLIB') SHR REU 
ALLOC F(DOMTLIB) + 
  DA('BMCPERF.BMCTLIB') SHR REU 
ALLOC F(DOMLOAD) + 
  DA('BMCPERF.BMCLINK') SHR REU 
ALLOC F(BMCPSWD) + 
  DA('BMCPERF.BMCPSWD') SHR REU 
ALLOC F(DOMCUST) + 
  DA('BMCPERF.BMCCLIB') SHR REU 
ALLOC F(DOMBARC) + 
  DA('BMCPERF.BMCCLIB') 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.BMCMLIB') SHR REU 
ALLOC F(PSSSLIB) + 
  DA('BMCPERF.BMCCLIB') SHR REU 
ALLOC F(PSSCLIB) + 
  DA('BMCPERF.BMCCLIB') SHR REU 
ALLOC F(PSSCNTL) + 
  DA('BMCPERF.BMCCLIB') SHR REU 
ISPSEX EC LIBDEF ISPLIB LIBRARY ID(PSSMLIB) 
ISPSEX EC LIBDEF ISPSLIB LIBRARY ID(PSSSLIB) 
ALTLIB ACTIVATE APPLICATION( CLIST ) FILE(PSSCLIB) UNCOND 
PSSSKIP: CONTROL MSG 

/*************************************************************************/
/* REMOVE COMMENT ON SYSOUT ALLOCATION IF SORT MESSSAGES 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. */
/*************************************************************************/
/* ALLOC F(SYSOUT) DUMMY SHR REU */
/* ALLOC F(UU00WK01) UNIT(SYSALLDA) SPACE(10,5) CYL NEW REU */
/* ALLOC F(UU00WK02) UNIT(SYSALLDA) SPACE(10,5) CYL NEW REU */
/* ALLOC F(UU00WK03) UNIT(SYSALLDA) SPACE(10,5) CYL NEW REU */
/* ALLOC F(U000WK04) UNIT(SYSALLDA) SPACE(10,5) CYL NEW REU
/* ALLOC F(U000WK05) UNIT(SYSALLDA) SPACE(10,5) CYL NEW REU
/* ALLOC F(U000WK06) UNIT(SYSALLDA) SPACE(10,5) CYL NEW REU
ISPEXEC LIBDEF ISPPLIB LIBRARY ID(DOMPLIB)
ISPEXEC LIBDEF ISPTLIB LIBRARY ID(DOMTLIB)
ISPEXEC LIBDEF ISPMLIB LIBRARY ID(DOMLOAD)
CONTROL NOMSG
FREE FI(SYSIN SYSPRINT)
CONTROL MSG
SET &PVSSID = &SSID
ISPEXEC VPUT (PVSSID) PROFILE
ISPEXEC SELECT CMD(DOMDOMAIN &P) MODE(FSCR) NEWAPPL(DOM2) PASSLIB
ISPEXEC LIBDEF ISPLLIB
ISPEXEC LIBDEF ISPPPLIB
ISPEXEC LIBDEF ISPTLIB
ISPEXEC LIBDEF ISPMLIB
ISPEXEC LIBDEF ISPSLIB
ALTLIB DEACTIVATE APPLICATION(CLIST)
EXIT: +
   FREE F(DOMLOAD DOMPLIB DOMTLIB BMCPSWD)
   FREE F(DOMCUST DOMPROF DOMAUTH DOMHELP DOMBARC)
   FREE F(PSSMLIB PSSSLIB PSSCLIB PSSCNTL)
   CONTROL NOFLUSH NOMSG
/******************************************************************
/* REMOVE SLASHES AND ASTERISKS TO UNCOMMENT OPERTUNE FREE STATEMENT
/******************************************************************
/* FREE F(DDTPROFS DDTLOAD) */
/******************************************************************
/* REMOVE COMMENT ON FREE STATEMENT TO FREE SORT WORK FILES
/******************************************************************
/* FREE F(U000WK01 U000WK02 U000WK03 U000WK04 U000WK05 U000WK06)
EXIT CODE(0)

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:

```bash
%P + SYSTEM AND SQL PERFORMANCE PRODUCTS FOR DB2
```

2 In the )PROC area, add the following line:

```bash
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 DOMDMAIN, DMDQIED2, PSSQLX, PSSATI, 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 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 BMC Software 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:

   ```
   SET P = &STR('PRD=pp,DP=dc,PLEX')
   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>
### Option and Product Table

<table>
<thead>
<tr>
<th>Option</th>
<th>Product</th>
</tr>
</thead>
<tbody>
<tr>
<td>O</td>
<td>OPERTUNE for DB2</td>
</tr>
<tr>
<td>D</td>
<td>System Performance for DB2 (includes B, P, and O)</td>
</tr>
<tr>
<td>Q</td>
<td>APPTUNE for DB2</td>
</tr>
<tr>
<td>S</td>
<td>SQL Explorer for DB2</td>
</tr>
<tr>
<td>I</td>
<td>SQL Performance for DB2 (includes Q and S)</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 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 485
- “Verifying or changing DOMPLEX parameters” on page 499
- “Checking the default User Profile” on page 504

An IPL might be needed to install and use these products under the following circumstances:

- The products are being installed in a library that is not yet APF authorized.
- You are using RACF.

Add your product user ID to table ICHRIN03 even if RACF is not controlling access to DB2.
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 agents with the DBC subsystem.

Each DBC subsystem in a DOMPLEX must run on a separate z/OS image and can monitor all of the DB2 subsystems on that 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 457) 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 Collectors 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 485
- “Checking the values in the DOMPLEX option set” on page 486
- “Checking or modifying the DB2 subsystems to monitor” on page 488
- “Checking or modifying the output groups” on page 492

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 477).

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 99 on page 486). Only active products are listed on the menu.

--- Figure 99: System and SQL Performance for DB2 main menu ---

DDOMESETLT/I  System and SQL Performance  10:17:46  
Command =========>

Current Data Collector : DC32    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 Y. Summary of Changes
- X. Exit Z. About the System and SQL Performance Products

--- Checking the values in the DOMPLEX option set ---

You can view the DOMPLEX option set within the interface.

1 Display the Administration menu (Figure 100 on page 487).
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 100: 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 101 on page 487**) is displayed.

**Figure 101: DOMPLEX Option Sets panel**

```
File  Filter  Help
DOMPLEX Option Sets
Command ===>                                                  Scroll ===> PAGE
Solution/Product                        Version Changed            More:   +
- System and SQL Performance DOMPLEX Prof V10.1.0
  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 102 on page 488) is displayed.

**Figure 102: DOMPLEX option set panel**

![DOMPLEX option set panel](image)

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 **Output Groups** 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 Output Group 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.
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 103 on page 489.

   **Figure 103: DOMPLEX object set - Expanded DB2 Monitor List**

<table>
<thead>
<tr>
<th>File</th>
<th>Filter</th>
<th>Help</th>
</tr>
</thead>
<tbody>
<tr>
<td>Command ===&gt;</td>
<td>DCO1PLEX - Test Option Set</td>
<td>Scroll ===&gt; PAGE</td>
</tr>
<tr>
<td>Filter: Off</td>
<td>More:</td>
<td></td>
</tr>
<tr>
<td>+ DOMPLEX Parameters</td>
<td>Parameters that apply to entire DOMPLEX</td>
<td></td>
</tr>
<tr>
<td>- Data Collector List</td>
<td>Data Collector(DB2) subsystem SSIDs in DOMP</td>
<td></td>
</tr>
<tr>
<td>+ DC01</td>
<td>Data Collector SSID</td>
<td></td>
</tr>
<tr>
<td>- DB2 Monitor List</td>
<td>DB2 Sub-systems to be monitored</td>
<td></td>
</tr>
<tr>
<td>- DB2A</td>
<td>DB2 SSID</td>
<td></td>
</tr>
<tr>
<td>Is this a production DB2?</td>
<td>N (Y=Yes,N=No)</td>
<td></td>
</tr>
<tr>
<td>Monitor with MAINVIEW. for DB2 - DC</td>
<td>Y (Y=Yes,N=No)</td>
<td></td>
</tr>
<tr>
<td>Monitor with Pool Advisor/System Perf.</td>
<td>Y (Y=Yes,N=No)</td>
<td></td>
</tr>
<tr>
<td>Monitor with APPTUNE</td>
<td>Y (Y=Yes,N=No)</td>
<td></td>
</tr>
<tr>
<td>Dynamic Explain plan name</td>
<td>DAA101D1</td>
<td></td>
</tr>
<tr>
<td>&gt; DB2 IFCIDs to be traced automatically</td>
<td></td>
<td></td>
</tr>
<tr>
<td>&gt; DB2 IFCIDs to be discarded</td>
<td></td>
<td></td>
</tr>
<tr>
<td>&gt; BMC IFCIDs to be discarded</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Class 2-In-DB2 elapsed timing info</td>
<td>Y (Y=Yes,N=No)</td>
<td></td>
</tr>
<tr>
<td>Class 3-DB2 suspend timing info</td>
<td>Y (Y=Yes,N=No)</td>
<td></td>
</tr>
<tr>
<td>Class 5-Time spent doing IFI requests</td>
<td>Y (Y=Yes,N=No)</td>
<td></td>
</tr>
<tr>
<td>Class 7-DB2 events (packages, DBRMs)</td>
<td>Y (Y=Yes,N=No)</td>
<td></td>
</tr>
<tr>
<td>Class 8-Wait time for packages</td>
<td>Y (Y=Yes,N=No)</td>
<td></td>
</tr>
<tr>
<td>Class 10-Optional package detail data</td>
<td>Y (Y=Yes,N=No)</td>
<td></td>
</tr>
<tr>
<td>Collect dynamic SQL stats in stmt cache</td>
<td>Y (Y=Yes,N=No)</td>
<td></td>
</tr>
<tr>
<td>Collect static SQL stats in stmt cache</td>
<td>Y (Y=Yes,N=No)</td>
<td></td>
</tr>
<tr>
<td>+ SQL Performance/APPTUNE options</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

5. Check or set the values that define the DB2 subsystem, as described in Table 61 on page 490.
### Table 61: DB2 Monitor List fields

<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>Note:</strong></td>
<td>This field applies only to APPTUNE and SQL Performance for DB2.</td>
</tr>
<tr>
<td><strong>Dynamic Explain plan name</strong></td>
<td>Specify the name of the plan used by DB2 for Dynamic Explain.</td>
</tr>
<tr>
<td></td>
<td>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.</td>
</tr>
<tr>
<td></td>
<td>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. Note: Pool Advisor does not use a plan.</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> Class 10-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>
### 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 Administration 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**.
Expand the Output Groups section on the DOMPLEX option set panel (as shown in Figure 104 on page 493).

Figure 104: DOMPLEX option set panel - Expanded Output Group

<table>
<thead>
<tr>
<th>Command ====&gt;</th>
<th>DCOIPLEX - Test Option Set</th>
<th>Scroll ====&gt; PAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>File Filter</td>
<td>Help</td>
<td></td>
</tr>
<tr>
<td>Filter: Off</td>
<td></td>
<td></td>
</tr>
<tr>
<td>+ DOMPLEX Parameters</td>
<td>Parameters that apply to entire DOMPLEX</td>
<td></td>
</tr>
<tr>
<td>+ Data Collector List</td>
<td>Data Collector(DCB) subsystem SSIDs in DOMP</td>
<td></td>
</tr>
<tr>
<td>+ DB2 Monitor List</td>
<td>DB2 Sub-systems to be monitored</td>
<td></td>
</tr>
<tr>
<td>- Output Groups</td>
<td>Historical data output group definitions</td>
<td></td>
</tr>
<tr>
<td>- 001</td>
<td>Group Number (Valid range: 001-128)</td>
<td></td>
</tr>
<tr>
<td>Data Collector SSID... * Blank=auto-switch, *=store DL specific data</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Data space size... . . . 20 (1-2000 MB)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>+ Data Classes</td>
<td>Specify the IFCIDs captured and stored by this group</td>
<td></td>
</tr>
<tr>
<td>+ NGL LOGSET Parameters</td>
<td>LOGSET attributes used by this group</td>
<td></td>
</tr>
<tr>
<td>&gt; Subsystems supported by this group</td>
<td></td>
<td></td>
</tr>
<tr>
<td>+ 002</td>
<td>Group Number (Valid range: 001-128)</td>
<td></td>
</tr>
<tr>
<td>+ 003</td>
<td>Group Number (Valid range: 001-128)</td>
<td></td>
</tr>
<tr>
<td>+ 004</td>
<td>Group Number (Valid range: 001-128)</td>
<td></td>
</tr>
</tbody>
</table>

End of List

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 001-128 over the 001 group number and pressing Enter.

6 Specify the following values:

In the Group Number field, specify the number of the corresponding output group. Possible values are numbers in the range 001-128. 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.

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:

Expand the Data Classes section. Specify the values for the parameters shown in Table 62 on page 494. The valid values for each parameter are Y (Yes) or N (No).
<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
<th>Related IFCIDs</th>
</tr>
</thead>
<tbody>
<tr>
<td>AERROR</td>
<td>Specify whether to collect APPTUNE error data.</td>
<td>APPTUNE/SQL Performance BMC IFCID: 007--SQL Errors</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: 004--SQL Exceptions, 005--SQL Statement Text, 010--Host Variables, 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: 003--Accounting, 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: 140--Audit Authorization Failures, 141--Audit GRANTs and REVOKEs, 142--Audited Object DDL, 143--Audited Object First Write Attempt, 144--Audited Object First Read Attempt, 145--Audited Object DML at BIND, 146--User-Defined Audit Trace, 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) MainView for DB2 - Data Collector IFCIDs: 023-025--Utility Processing 7.a 090--Text of DB2 Command 173--ASUTIME Exceeded 125--RID List Processing 225--Storage Summary</td>
</tr>
<tr>
<td>DCSYSTEM</td>
<td>Specify whether to collect DATA Collector events data.</td>
<td>Data Collector events. BMC IFCIDs: 241--Command Response 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 63: NGL LOGSET parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<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>Parameter</td>
<td>Description</td>
</tr>
<tr>
<td>-------------------------------</td>
<td>--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</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>Min LOGSET datasets</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>Max LOGSET datasets</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 (total)</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>Volume</td>
<td><em>(optional)</em> Specify the volume for the LOGSET.</td>
</tr>
<tr>
<td>DFSMS Data class</td>
<td><em>(optional)</em> Specify the DFSMS Data class for the LOGSET.</td>
</tr>
<tr>
<td>DFSMS Management class</td>
<td><em>(optional)</em> Specify the DFSMS Management class for the LOGSET.</td>
</tr>
<tr>
<td>DFSMS Storage class</td>
<td><em>(optional)</em> Specify the DFSMS Storage class for the LOGSET.</td>
</tr>
<tr>
<td>DSN prefix</td>
<td>Specify the DSN prefix for the LOGSET log file data sets.</td>
</tr>
<tr>
<td>Enable Archiving</td>
<td>Specify whether to enable LOGSET data set archiving. Valid values are <em>Y</em> (Yes) and <em>N</em> (No). For more information about archiving, see “Additional information about archiving and the NGL” on page 498.</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 498.</td>
</tr>
<tr>
<td>Days Archive data sets retained</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>Num Archived data sets retained</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>Size Archived data sets retained</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>Archive Volume</td>
<td><em>(optional)</em> Specify the volume for the archive.</td>
</tr>
<tr>
<td>Parameter</td>
<td>Description</td>
</tr>
<tr>
<td>-------------------------------</td>
<td>-----------------------------------------------------------------------------</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 DSN prefix</td>
<td><em>(optional)</em> Specify the DSN prefix for the archive.</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.

**Additional information about archiving and the NGL**

If **Enable Archiving** is set to Y, the Data Collector will initiate a procedure to create an archive of a log file when any of the following conditions occur:

- A log file is full.
- The DBC is shut down.
- The SWITCH command is issued.

The default name of this procedure is NGLARCH. Copy the NGLARCH member from SAMPLIB into your SYS1.PROCLIB (or equivalent) started task library.

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**
- **System Performance for DB2 User Guide**
- **MainView for DB2 Performance Reporter User Guide**.
You also can use an archive post-processing job that is automatically submitted each time an archive procedure finishes. You must set up the job as a member of the DOMPARMS PDS, and you must supply the member name in the archive section of the output group definition.

The System and SQL Performance products provides the symbols shown in Table 64 on page 499 for use in the optional archive post-processing job. The product replaces the symbols in the JCL with the appropriate values when the job is submitted for execution.

### Table 64: Symbols used in archive post-processing jobs

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Substituted value</th>
</tr>
</thead>
<tbody>
<tr>
<td>$DOMSSN</td>
<td><em>(optional)</em> current DBC subsystem ID</td>
</tr>
<tr>
<td>$DOMDSN</td>
<td>current trace data set name</td>
</tr>
<tr>
<td>$DOMDATE</td>
<td><em>(optional)</em> current date in the format Dyyddd, where yy is the year (00-99) and ddd is the day of the year (000-365)</td>
</tr>
<tr>
<td>$DOMTIME</td>
<td><em>(optional)</em> 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>$DOMLSET</td>
<td><em>(optional)</em> LOGSET name</td>
</tr>
<tr>
<td>$DOMPLX</td>
<td>current DOMPLEX name (specified on the PARM parameter of the EXEC statement)</td>
</tr>
<tr>
<td>$DOMARC</td>
<td>archive data set name</td>
</tr>
</tbody>
</table>

You can specify substrings for the substitution symbols to tailor the values to:

$\texttt{SUBSTR(ss, ll, vvvvvvv)}$

The variables are defined as follows:

- The *ss* value represents the starting position (a value between 1 and the length of the substitution symbol).
- The *ll* value represents the length [a value between 1 and (length of symbol plus 1 minus *ss*)].
- The *vvvvvvv* value represents the substitution symbol.

A sample post-processing job (#DOMPOST) can be found in the DOMSAMP, BBSAMP, or runtime SAMP data set, along with a REXX EXEC (POSTSAMP) that you can use to display these symbolics.

### 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 105 on page 500.

**Figure 105: DOMPLEX option set panel -- Expanded DOMPLEX parameters**

5. Specify the parameters, as described in Table 65 on page 500.

**Table 65: 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 <strong>Y</strong> (Yes) and <strong>N</strong> (No). The default is <strong>Y</strong>.</td>
</tr>
<tr>
<td>Field</td>
<td>Description</td>
</tr>
<tr>
<td>-------------------------------------------</td>
<td>-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</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. See “Data transfer limit calculations” on page 503 for more information on data transfer limits.</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. See “Data transfer limit calculations” on page 503 for more information on data transfer limits.</td>
</tr>
<tr>
<td>(MainView for DB2 only) 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>- (default) 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 106 on page 504) is displayed.

   **Figure 106: User Profile Administration panel**

   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           | 1998-10-14 07:58 | 9DEFAULT   |
   _   | 9DEFAULT  | DEFAULT PROFILE           | 1998-10-08 11:03 | BMCSftwr   |

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 107 on page 505) is displayed.

**Figure 107: User Profile Data Menu**

3 Press F3 (End) 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 504 through Step 4 on page 505, 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.

**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.

- 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.

1 *(All products except SQL Explorer and OPERTUNE)*: “Starting the DBC subsystem” on page 507.

- “Invoking the DBC subsystem as a started task” on page 507

- “Invoking the DBC subsystem as a batch Job” on page 508
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 475):

```
S DBC$STC
```
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 475).

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 108 on page 509) are displayed.

---

Note

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
   ```

   **Note**

   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 108: JES job log and SYSPRINT messages report**

```
14.47.40 STC28147 ---- MONDAY, 21 MAR 2011 ----
14.47.40 STC28147 IEF695I START DBCDK04 WITH JOBNAME DBCDK04 IS ASSIGNED TO USER STCUSER, GROUP STCGROUP
14.47.40 STC28147 $HASP373 DBCDK04 STARTED
14.47.40 STC28147 APFL001 THE FOLLOWING DATASET IS ALREADY IN THE 771
14.47.40 STC28147 APFL001 DSN: DIS.IVP1014M.D91.UBBLINK
14.47.40 STC28147 APFL001 THE FOLLOWING DATASET IS ALREADY IN THE 772
14.47.40 STC28147 APFL001 DSN: DIS.IVP1014M.D91.XXLINK
14.47.41 STC28147 APFL001 THE FOLLOWING DATASET IS ALREADY IN THE 773
14.47.41 STC28147 APFL001 DSN: DIS.IVP1014M.D91.BBLINK
14.47.41 STC28147 APFL001 THE FOLLOWING DATASET IS ALREADY IN THE 774
14.47.41 STC28147 APFL001 DSN: DIS.IVP1014M.D91.DBLINK
14.47.44 STC28147 BMCDBC0088I 14.47.44 DK04 DBC VERSION 10.1.00 INITIALIZATION COMPLETE
14.47.48 STC28147 BMC24907 DK04 SQL PERFORMANCE LICENSE VERIFIED FOR THIS PROCESSOR
14.48.07 STC28147 BMCGNGL59009I NGLOAGNT: MESSAGE RECEIVED - PR=Y,NGLID=DK04
14.48.08 STC28147 BMCGNGL59002I NEXT GENERATION LOGGER DK04 BEING STARTED AT V1.1.00
14.48.08 STC28147 BMCGNGL59001I CONNECTION MADE TO DBC SSID(DK04) GROUP(DK4PLEX ) V10.R
14.48.08 STC28147 OSZ0145I VSAM LINEAR DATA SET ALLOCATED TO DDNAME=REGISTRY 811
```
Verifying the installation

BMC Products and Solutions for DB2 Configuration Guide
Chapter 12 Configuring the System and SQL Performance products for DB2
Verifying the installation

<table>
<thead>
<tr>
<th>Time</th>
<th>Log Entry</th>
</tr>
</thead>
<tbody>
<tr>
<td>14.48.48</td>
<td>BMCNGL595481 ACTIVE LOGFILE FOR LOGSET(DK04L001) IS NOW DSN(DEDK4.IVP101.DEDK4.LOGSET.D0000002)</td>
</tr>
<tr>
<td>14.48.48</td>
<td>BMCNGL59691I ACTIVE LOGFILE FOR LOGSET(DK04L001) IS NOW DSN(DIS.IVP101.DEDK4.LOGSET.D0000002)</td>
</tr>
<tr>
<td>14.48.48</td>
<td>BMCNGL59691I CLIENT CONNECTED FOR JOB(DBCDK04) ASID(0X0032)</td>
</tr>
<tr>
<td>14.48.48</td>
<td>BMCNGL59691I LOGSET MEMBER USED - DK04L001</td>
</tr>
<tr>
<td>14.48.48</td>
<td>BMCNGL59691I LOGSET WAS BUILT FROM DK04L001</td>
</tr>
<tr>
<td>14.48.48</td>
<td>BMCNGL59691I STRUCTURE MEMBER USED - DOMKEYS</td>
</tr>
<tr>
<td>14.48.48</td>
<td>BMC24561 DK04 LOGSET DK04L001 Successfully defined and connected to NGL agent DK04</td>
</tr>
<tr>
<td>14.48.48</td>
<td>BMC24534 DK04 Outgrp 001 transitioning to active mode</td>
</tr>
<tr>
<td>14.48.48</td>
<td>BMC24524 DK04 Outgrp 001 trk 1 of 420 in DATASPACE</td>
</tr>
<tr>
<td>14.57.28</td>
<td>BMC23018 DK04 Data collector status for DK04</td>
</tr>
<tr>
<td>14.57.28</td>
<td>BMC23034 DK04 DB2=DEDK DSGROUP=N/A VERSION=0910 STATUS=ACTIVE 675</td>
</tr>
<tr>
<td>14.57.28</td>
<td>BMC23035 COLLECTION=ACTIVE ENTRIES=227 FILTER=!BMCTEST 675</td>
</tr>
<tr>
<td>14.57.28</td>
<td>BMC23071 Option and key settings for Pgm=<em>, Plan=</em>, User=<em>, CorrID=</em> 675</td>
</tr>
<tr>
<td>14.57.28</td>
<td>(Y=Yes, N=No, S=Static, D=Dynamic) 675</td>
</tr>
<tr>
<td>14.57.28</td>
<td>BMC23073 Exception settings for Pgm=<em>, Plan=</em>, User=<em>, CorrID=</em> 675</td>
</tr>
<tr>
<td>14.57.28</td>
<td>Elapsed time... 0 msecs A. Deadlocks... 675</td>
</tr>
<tr>
<td>14.57.28</td>
<td>CPU time... 0 msecs B. Timeouts... 675</td>
</tr>
<tr>
<td>14.57.28</td>
<td>Getpage requests... 0 C. Show host variables... 675</td>
</tr>
<tr>
<td>14.57.28</td>
<td>Synchronous I/Os... 0 D. Issue Exception WTOs... 675</td>
</tr>
<tr>
<td>14.57.28</td>
<td>Efficiency Filtering 0 E. Exception-only roll-ups 675</td>
</tr>
</tbody>
</table>

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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.

To stop this DBC subsystem at a later time, use the MVS STOP command as follows:

P ssid

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

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 485 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.

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 109 on page 514).

   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 109: DOMPLEX Selection panel**

<table>
<thead>
<tr>
<th>Command</th>
<th>DOMPLEX Selection</th>
<th>Scroll</th>
</tr>
</thead>
<tbody>
<tr>
<td>DOMEQSSS/P</td>
<td>domplex_selection</td>
<td>CSR_</td>
</tr>
</tbody>
</table>

   - Current Data Collector: Status:
   - Select a DOMPLEX from the following list to be the data source for future requests. Press Enter to process the new selection.

<table>
<thead>
<tr>
<th>Sel</th>
<th>DOMPLEX</th>
<th>DC SSID</th>
<th>Description</th>
<th>Status</th>
<th>Compatibility</th>
</tr>
</thead>
<tbody>
<tr>
<td>_</td>
<td>DOMDC01</td>
<td>DC01</td>
<td>DEFAULT PROFILE</td>
<td>ACTIVE</td>
<td>COMPATIBLE</td>
</tr>
<tr>
<td>_</td>
<td>LOCAL_DB2S: DB2S DB21</td>
<td></td>
<td></td>
<td></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 506 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 110 on page 515).
   - 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 110: 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: COLLID Name . .
   Version
   DBRM: Plan Name . .
   DBRMLIB: (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 111 on page 516).

**Figure 111: Ad hoc SQL Explain edit session**

3 In the edit window, type `SELECT * FROM SYSTABLES WHERE NAME = :H` and press `F3`.

The Explain or Execute Parameters panel (Figure 112 on page 516) is displayed.

**Figure 112: Explain or Execute Parameters panel (PSSPA117)**

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 113 on page 516).

**Note**

Actions shown in bold in Figure 113 on page 516 are available only if you have applied the SQL Performance solution password. They will not be displayed for an SQL Explorer-only installation.

**Figure 113: Explain Results panel (PSSPE200)**

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.

**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 may 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.

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 114 on page 519), select option Q (APPTUNE and Index Component) and press Enter.

Figure 114: System and SQL Performance for DB2 main menu (DOMESELT)

The APPTUNE and Index Component Main Menu (Figure 115 on page 519) is displayed.

Figure 115: APPTUNE and Index Component Main Menu (DOMEPLN3)

2. Select option 1 (SQL Workload) and press Enter.
The SQL Workload Analysis Menu (Figure 116 on page 520) is displayed.

Figure 116: SQL Workload Analysis Menu (ASQEWM1)

ASQEWM1/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 118 on page 521 is displayed.

Figure 117: 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 (DS group or SSID)
17. Requesting Location
18. Implicit Qualifier

Index Component Reports:
21. Subsystem Getpage Volume
22. Table Getpage Volume
23. Index Getpage Volume
24. Application Group Getpage Volume

4 Select option 21 (Subsystem Getpage Volume) and press Enter.
The SQL Workload Analysis Menu (Figure 118 on page 521) is displayed.

**Figure 118: SQL Workload Analysis Menu (ASQEWAM1)**

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. 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 119 on page 521) is displayed.

**Figure 119: Subsystem Getpage Volume report**

Command ====> Scroll ===>

<table>
<thead>
<tr>
<th>Logical DB2 Name</th>
<th>Index%</th>
<th>Change</th>
<th>Stmt %</th>
<th>Stmt</th>
<th>Logical</th>
<th>Stmt</th>
<th>Sync I/O</th>
<th>Async I/O</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>+ DECA</td>
<td>8.0%</td>
<td>36.0</td>
<td>10488252</td>
<td>0.00001</td>
<td>2617</td>
<td>0.00472</td>
<td>460</td>
<td>8861</td>
<td>291152</td>
</tr>
<tr>
<td>162789</td>
<td>55.9</td>
<td>DECA</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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

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.

■ The plan name was specified correctly in the PSS2 ssid member in the UBBSSAMP or your runtime SAMP data set that is allocated to the PSSCNTL DD.

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 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.

---

8 If one or more of these conditions were not met, correct them and repeat Step 6 on page 523. If you cannot determine why the command failed, contact BMC Software Customer Support for assistance.

**Testing Impact Analysis**

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 120 on page 525) is displayed.

**Figure 120: Impact Analysis Object Specification panel (PSSPI010)**

<table>
<thead>
<tr>
<th>Command</th>
<th>Process Mode</th>
<th>Objects to Analyze (Case-Sensitive)</th>
<th>Creator</th>
<th>Name</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>O (O=Online, B=Batch)</td>
<td>(Table, View, Alias, and Synonym)</td>
<td>. . .</td>
<td>BMCPSS_BASE</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Columns: (Comma-Delimited List)</td>
<td>. .</td>
<td>APPLNAME</td>
</tr>
<tr>
<td></td>
<td></td>
<td>For the specified table objects, search only these DBRMs and packages:</td>
<td>. . .</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Type (1=DBRM, 2=Package, 3=DBRMs and Packages)</td>
<td>. . .</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>DBRM:</td>
<td>. .</td>
<td>. . %</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Package:</td>
<td>. . .</td>
<td>Name . .</td>
</tr>
<tr>
<td></td>
<td></td>
<td>COLLID . . %</td>
<td>Name . .</td>
<td>PSSXSQL</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Version %</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

_ 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 the following conditions:

- The subsystem on which the Impact Analysis was run has a database defined as Type=T and contains at least one table space. The table space must be defined in a buffer pool with a page size of 8 KB or higher.

- The plan name was specified correctly in the PSS2ssid member in the LLQ SAMP (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**

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 110 on page 515. 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.

  **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 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.

--- 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. BMCUPBLAN is the default tablespace name.

8 If one or more of these conditions were not met, correct them and repeat Step 5 on page 527. 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 121 on page 528).

Figure 121: DB2 Pools Status Monitor report (PMDMAIN)
The Sysplex DB2 Monitor report (SPDMAIN) is displayed for System Performance (Figure 122 on page 529).

### Figure 122: Sysplex DB2 Monitor report (SPDMAIN)

```
SPDEQRPN/P  System Performance for DB2  LINE 1 OF 6
Command ===> __________________________________________ Scroll ===> CSR_
BMCSftwr.SPDMAIN  --  SYSPLEX DB2 MONITOR  --  09/28 14:00:06
---<        >-------------------<         >----------------------<        >---
Actions: S- Details  Z- ZPARMS    M- MainView O- Opertune P- Pool Advisor

<table>
<thead>
<tr>
<th>DB2</th>
<th>DBM1</th>
<th>DBM1</th>
<th>GetPg</th>
<th>Curr</th>
</tr>
</thead>
<tbody>
<tr>
<td>7.1</td>
<td>DSNDBI</td>
<td>SYSO</td>
<td>1 69M</td>
<td>0 0</td>
</tr>
<tr>
<td></td>
<td>GOOD</td>
<td>GOOD</td>
<td>FAIR</td>
<td>GOOD</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.

The following table presents an overview of these mechanisms.
Table 66: Authorization verification mechanisms

<table>
<thead>
<tr>
<th>Authorization mechanism</th>
<th>BMC product actions</th>
</tr>
</thead>
<tbody>
<tr>
<td>DB2 access control authorization exit</td>
<td>The BMC product uses the DSNX@XAC authorization exit to verify authorization for external access. The exit is available from the following sources:</td>
</tr>
<tr>
<td></td>
<td>■ IBM provides a sample exit with DB2 for the IBM Resource Access Control Facility (RACF) component.</td>
</tr>
<tr>
<td></td>
<td>■ CA Technologies provides the DSNX@XAC exit with CA-ACF2 Security for DB2 and CA-Top Secret Security for DB2.</td>
</tr>
<tr>
<td></td>
<td>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.</td>
</tr>
<tr>
<td>one of the following security products from CA Technologies:</td>
<td>The BMC product uses either of these CA Technologies products with any version of DB2. The BMC product detects the presence of the CA Technologies product in the DB2 subsystem where the BMC product is running.</td>
</tr>
<tr>
<td>■ CA-ACF2 Security for DB2</td>
<td>To use either of these CA Technologies products with the BMC product, you must meet the following requirements:</td>
</tr>
<tr>
<td>■ CA-Top Secret Security for DB2</td>
<td>■ You must be using a version of your security product that enables external security calls for DB2.</td>
</tr>
<tr>
<td></td>
<td>■ The value of the ACFORTSS installation option must be YES (the default).</td>
</tr>
<tr>
<td></td>
<td>Note: If you have one of these security products installed, but the version does not support external security, complete one of the following tasks:</td>
</tr>
<tr>
<td></td>
<td>■ Change the value of the ACFORTSS installation option to NO. The BMC product then uses the standard DB2 method to check security.</td>
</tr>
<tr>
<td></td>
<td>■ Contact your security vendor for the required APAR to enable external security calls for DB2. Then, ensure that the value of the ACFORTSS installation option is YES.</td>
</tr>
</tbody>
</table>
CHECK PLUS authorizations

Because CHECK PLUS does not run as part of the DB2 subsystem, users must have system authorization equivalent to the authorization required by DB2 in order to use CHECK PLUS.

Data set authorization requirements for CHECK PLUS

CHECK PLUS does not use DB2 to access the data sets that it uses. Therefore, users must have system authorization that is equivalent to the authorization that is required by DB2.

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

- If you use RACF, specify OPNDB2ID=YES in your installation options module.
- Establish authorization as described in “Requirements when OPNDB2ID=NO in CHECK PLUS” on page 533

Requirements when using RACF and OPNDB2ID=YES in CHECK PLUS

If you use RACF and OPNDB2ID=YES in CHECK PLUS, the user who is running CHECK PLUS is not required to have the authorizations that the following section describes. OPNDB2ID=YES tells CHECK PLUS to use the DB2 RACF ID instead of the RACF ID of the user.

Requirements when OPNDB2ID=NO in CHECK PLUS

If RACF (or a similar system security package) protects both the underlying data sets and the Integrated Catalog Facility (ICF) catalog of a table or index space, users must have the minimum levels of authority as shown in Table 67 on page 533.

Table 67: Minimum levels of authority that CHECK PLUS requires
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 CHECK PLUS product program (ACKUMAIN) to the security group.

3  Grant the data set authorizations that are described in Table 67 on page 533 to the CHECK PLUS product program.

DB2 authorization requirements for CHECK PLUS

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

For all check jobs, users must have 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.

LOADPLUS authorizations

LOADPLUS 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 LOADPLUS

LOADPLUS does not use DB2 to access, update, or define 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 LOADPLUS” on page 227.

Requirements when using RACF and OPNDB2ID=YES in LOADPLUS

If you use RACF and OPNDB2ID=YES in LOADPLUS, the user who is running LOADPLUS is not required to have the authorizations that the following sections describe. OPNDB2ID=YES tells LOADPLUS to use the DB2 RACF ID instead of the user’s RACF ID.

Requirements when OPNDB2ID=NO in LOADPLUS

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 the minimum levels of authority as shown in the following table:

Table 68: 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>

Requirements when checking referential constraints

To check referential constraints in a load job, users must also have READ privileges on the primary index of the parent table for the table being loaded.

Requirements when using rename or FASTSWITCH processing

If you establish authority at a node lower than the highest node, users must have the authority shown in Table 22 on page 227 for the following data sets. LOADPLUS uses these data sets during the rename or FASTSWITCH process for LOAD REPLACE SHRLEVEL CHANGE and LOAD REPLACE SHRLEVEL REFERENCE:

- 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.DSNDBD.database.object.J0001
— VCAT.DSNDBC.database.object.J0001
— VCAT.DSNDBD.database.object.J0001
— VCAT.DSNDBC.database.object.J0001

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 LOADPLUS product program (AMUUMAIN) to the security group.
3. Grant the data set authorizations that are described in Table 22 on page 227 to AMUUMAIN.

DB2 authorization requirements for LOADPLUS

To run LOADPLUS for any type of load job, users must have certain basic authorizations. LOADPLUS requires additional authorizations for some types of load jobs.

For all load jobs, users must have 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
Add additional authorizations for load jobs on tables with identity columns

To load into a table that contains an identity column, users must also have SELECT authority on the following DB2 tables:

- SYSIBM.SYSSEQUENCES
- SYSIBM.SYSSEQUENCESDEP

Additionally, to use UPD MAXA YES to update the MAXASSIGNEDVAL column of the SYSIBM.SYSSEQUENCES table, one of the following authorization IDs must have ALTER privileges on the table that is being loaded. The UPD MAXA_AUTHID installation option controls which ID must have these privileges:

- User ID of the job owner, when UPD MAXA_AUTHID=USER
- INSTALL SYSADM, when UPD MAXA_AUTHID=INSTALL SYSADM

These additional authorities might be implicit in the authority that you have.

Additional authorizations for data sets that are created with DEFINE NO

To load a table whose table space or index spaces are created with DEFINE NO, users must also have INSERT privileges on that table.

INSERT privileges might be implicit in the authority that you have.

Additional authorizations for SQLAPPLY load jobs

During 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.DBSAMP installation data set (where HLQ is the high-level qualifier that is set during installation) contains sample authorization statements.

Note

You can use secondary authorization IDs to limit access as necessary for your site.

You usually grant the following DB2 authorizations during High-speed Apply installation:

- 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

You usually grant the following DB2 authorizations after High-speed Apply installation:

- INSERT privileges on the tables that a user is loading
- 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

High-speed Apply 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.

**REORG PLUS authorizations**

REORG 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 REORG PLUS**

REORG PLUS does not use DB2 to access, update, or define 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 REORG PLUS” on page 295.

**Requirements when using RACF and OPNDB2ID=YES in REORG PLUS**

If you use RACF and OPNDB2ID=YES in REORG PLUS, the user who is running REORG PLUS is not required to have the authorizations that the following section
describes. OPNDB2ID=YES tells REORG PLUS to use the DB2 RACF ID instead of the user’s RACF ID.

**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.

### Requirements when OPNDB2ID=NO in REORG 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 the following minimum levels of authorization:

- ALTER or CONTROL to access, update, and define DB2 data sets
- UPDATE or CONTROL to access and update the ICF catalog

If you establish authority at a node lower than the highest node, users must have the same authorizations for the following data sets. REORG PLUS uses these data sets during the renaming process for SHRLEVEL CHANGE and SHRLEVEL REFERENCE. These data sets vary depending on whether you are using the BMC naming convention (STAGEDSN=BMC) or the I/J naming convention (STAGEDSN=DSN):

- For STAGEDSN=BMC:
  - `VCAT.BMCDBC.database.object.I0001`
  - `VCAT.BMCDBD.database.object.I0001`
  - `VCAT.OLDDBC.database.object.I0001`
  - `VCAT.OLDDBD.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.DSNDBC.database.object.I0001`
  - `VCAT.DSNDBD.database.object.I0001`
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 REORG PLUS product program (ARUUMAIN) to the security group.

3. Grant the minimum data set authority levels to ARUUMAIN, described in “Requirements when OPNDB2ID=NO in REORG PLUS” on page 295.

DB2 authorization requirements for REORG PLUS

To run REORG PLUS for any type of reorganization job, users must have certain basic DB2 authorizations. Additional authorizations are required for some types of reorganization jobs.

For all reorganization jobs, users must have 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.
Additional authorizations for SHRLEVEL CHANGE

To run a SHRLEVEL CHANGE reorganization, if users have DBADM, DBCTRL, or REORG authority, the following additional authorities are required:

- TRACE authority
- MONITOR2 authority
- DISPLAY authority (if not already granted to PUBLIC)

These privileges might be implicit in the authority that you have.

Additional authorizations for XML reorganizations

When reorganizing base table spaces that contain XML columns, users must have SELECT privileges on the following DB2 tables:

- SYSIBM.SYSSEQUENCES
- SYSIBM.SYSSEQUENCESDEP

When reorganizing user-defined XML indexes, users must have SELECT privileges on the SYSIBM.SYSXMLRELS DB2 table.

These privileges might be implicit in the authority that you have.

Additional authorizations for using DSRSEXIT

To use the DSRSEXIT user exit with a default of YES for the BMC_ALTER_DB2_CATALOG variable (to have REORG PLUS update the DB2 catalog), the following additional requirements apply:

- For the ALTER TABLESPACE statement, users need one of the following privileges:
  - Ownership of the table space
  - DBADM authority for the database that contains the table
  - SYSADM or SYSCTRL authority

- For the ALTER INDEX or ALTER TABLE statement, users need 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

Additional authorizations for using XBM or SUF

To enhance performance, during portions of the reorganization process, REORG PLUS uses several features of the EXTENDED BUFFER MANAGER (XBM) product or SNAPSHOT UPGRADE FEATURE (SUF) component of XBM. For information about security levels and authorizations for XBM, see the XBM authorization information in this configuration guide.

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
- 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
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.)

```
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 and components require above-the-bar memory and might abend if sufficient memory is not available.

This requirement affects the following BMC products and components:

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

### 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 108.
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 549, 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 BMCUTIL, 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:
  - BMCUTILITY 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 551.

- 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 551.
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 ACT\(vrm\)DH, 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 551.

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
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 AJXSTEPU.
6 If you added load libraries in Step 5 on page 552, 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.

**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
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>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>For information about support for DB2 versions, review your BMC product release notes.</td>
</tr>
</tbody>
</table>
Table 70: Minimum BMC versions that run on DB2 Versions 8, 9, or 10

<table>
<thead>
<tr>
<th>BMC product</th>
<th>DB2 Version 8</th>
<th>DB2 Version 9</th>
<th>DB2 Version 10</th>
</tr>
</thead>
<tbody>
<tr>
<td>ALTER or CHANGE MANAGER</td>
<td>9.2.00 (in DB2 new-function mode)</td>
<td>9.2.00</td>
<td>10.1.00</td>
</tr>
<tr>
<td></td>
<td>7.4.03 (in DB2 conversion mode or enabling-new-function mode)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>APPTUNE</td>
<td>6.1.00</td>
<td>6.1.00</td>
<td>10.1.00</td>
</tr>
<tr>
<td>CATALOG MANAGER</td>
<td>9.1.00</td>
<td>9.1.00</td>
<td>10.1.00</td>
</tr>
<tr>
<td>CHECK PLUS</td>
<td>8.3.00</td>
<td>9.1.00</td>
<td>10.1.00</td>
</tr>
<tr>
<td>COPY PLUS</td>
<td>7.3.00</td>
<td>8.1.00</td>
<td>10.1.00</td>
</tr>
<tr>
<td>DASD MANAGER PLUS</td>
<td>8.1.00</td>
<td>9.1.00</td>
<td>10.1.00</td>
</tr>
<tr>
<td>High-speed Apply Engine</td>
<td>7.3.00</td>
<td>8.1.00</td>
<td>10.1.00</td>
</tr>
<tr>
<td>LOADPLUS</td>
<td>8.3.00</td>
<td>9.1.00</td>
<td>10.1.00</td>
</tr>
<tr>
<td>Log Master</td>
<td>7.3.00</td>
<td>8.1.00</td>
<td>10.1.00</td>
</tr>
<tr>
<td>MainView</td>
<td>9.1.00</td>
<td>9.1.00</td>
<td>10.1.00</td>
</tr>
<tr>
<td>PACLOG</td>
<td>1.4.00</td>
<td>1.4.00</td>
<td>10.1.00</td>
</tr>
<tr>
<td>R+/CHANGE ACCUM</td>
<td>7.3.00</td>
<td>8.1.00</td>
<td>10.1.00</td>
</tr>
<tr>
<td>RECOVER PLUS</td>
<td>7.3.00</td>
<td>8.1.00</td>
<td>10.1.00</td>
</tr>
<tr>
<td>RECOVERY MANAGER</td>
<td>7.3.00</td>
<td>8.1.00</td>
<td>10.1.00</td>
</tr>
<tr>
<td>REORG PLUS</td>
<td>8.1.00</td>
<td>9.1.00</td>
<td>10.1.00</td>
</tr>
<tr>
<td>SQL Explorer</td>
<td>6.1.00</td>
<td>6.1.00</td>
<td>10.1.00</td>
</tr>
<tr>
<td>SQL Performance</td>
<td>6.1.00</td>
<td>6.1.00</td>
<td>10.1.00</td>
</tr>
<tr>
<td>UNLOAD PLUS</td>
<td>8.3.00</td>
<td>9.1.00</td>
<td>10.1.00</td>
</tr>
</tbody>
</table>

**Supported DB2 Version 10 modes**

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 71: 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>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>

a 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 8 new-function mode

Complete the appropriate procedures to migrate your Administrative products to DB2 Version 8 new-function mode.

**To migrate ALTER or CHANGE MANAGER version 7.4.03--toleration mode**

1. Migrate the DB2 catalog.

2. Run one of the following sets of upgrade jobs from HLQUDBCNTL:
   - (ALTER) ALUUP8NF and ACSUP8NF
To migrate ALTER or CHANGE MANAGER version 7.4.03--exploitation mode

1. Install version 10.1.00 of ALTER or CHANGE MANAGER.
2. Create indexes on the DB2 catalog.

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

1. Migrate the DB2 catalog.
2. Run one of the following upgrade jobs:
   - *(CATALOG MANAGER 9.1.01 or later)* \texttt{HLQ.UDBCNTL(ACTUP8NF)}
   - *(CATALOG MANAGER 9.1.00)* \texttt{HLQ.CNTL(ACTUP7#8)}

   **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.

To migrate DASD MANAGER PLUS

1. Migrate the DB2 catalog.
2. Run one of the following sets of upgrade jobs:
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 HLQ.UDBCNTL:
   - 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 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.

```sql
BIND PACKAGE(ACS101_D_MAIN) MEMBER(ACSCQEX) + 
OWNER(RDADQL2) QUALIFIER(ACS101S) + 
ISOLATION (CS) CURRENTDATA(NO) + 
VALIDATE(RUN) ENCODING(EBCDIC) RELEASE(COMMIT) 
/
```

```sql
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.

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.

3. *(DASD MANAGER PLUS version 10.1.00 and later)* 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.

```plaintext
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 **DASD MANAGER PLUS version 10.1.00 and later** 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*:

<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>
</tbody>
</table>
### Version 10 ENFM8

<table>
<thead>
<tr>
<th>From</th>
<th>To</th>
</tr>
</thead>
<tbody>
<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
   - ACSssid P

### 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)
/*
-- 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.

**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.

```
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 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>

**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.

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:

<table>
<thead>
<tr>
<th>*LIB SSID Data Set Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>*----</td>
</tr>
<tr>
<td>EXIT DB10 'SYS3.DB10.DSNEXIT'                              *</td>
</tr>
<tr>
<td>LOAD DB10 'SYS2.DB2V10M.DSNLOAD'                           *</td>
</tr>
</tbody>
</table>

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.

### Enabling long-name support in CHECK PLUS

After migrating to DB2 Version 8 NFM, complete one of the procedures in this topic to enable long name support in CHECK PLUS.

**Note**
For the CHECK PLUS database to support long names, CHECK PLUS must be installed on a subsystem running DB2 Version 8 NFM, or a later version of DB2.

#### To use the ACKUP7#8 job to enable CHECK PLUS long name support

The ACKUP7#8 customization job alters existing columns to provide support for long names and reorganizes CHECK PLUS table spaces using REORG PLUS version 8.1.00 or later, if installed. Alternatively, you can use the IBM REORG utility.

1. Back up your CHECK PLUS database.
2. Run the ACKUP7#8 job.
3. After running the ACKUP7#8 job, back up your CHECK PLUS database again.
4. Run the $C70IVP job to complete the verification procedure.

#### To manually enable CHECK PLUS long name support

Use this manual process to create a new CHECK PLUS database and also retain the old database format for fallback capability.
1 Locate the V8NFMDDL member of the HLQ.DBSAMP library, and change the names of the CHECK PLUS database and creator to new names.

2 Use the updated DDL from V8NFMDDL to create the new CHECK PLUS database for long name support.

3 Load your existing data into the new CHECK PLUS database.
   You can INSERT into the new tables from the old tables.

4 Drop the existing CHECK PLUS synonyms.
   For the appropriate DROP and SET CURRENT SQLID statements, see the ACKINIT4 member of your HLQ.INSTALL library.

5 Recreate the CHECK PLUS synonyms to point to the new CHECK PLUS RI rules tables.
   For the appropriate CREATE and SET CURRENT SQLID statements, see the ACKINIT5 member of your HLQ.INSTALL library. Ensure that you point the synonyms to the new CHECK PLUS tables.

6 Run the $C70IVP job to complete the verification procedure.

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 8 enabling-new-function mode from DB2 Version 8 new-function mode

Complete the appropriate procedures to enable the Administrative products to execute after falling back to DB2 Version 8 enabling-new-function mode.
To enable fallback for ALTER or CHANGE MANAGER version 7.4.03--toleration mode

1 Rebind all ALTER or CHANGE MANAGER packages and plans by running one of the following sets of bind jobs from HLQ.UDBCNTL:
   - *(ALTER)* ALUssid P and ALUssid B
   - *(CHANGE MANAGER)* ACMssid P and ACMssid B

To enable fallback for ALTER or CHANGE MANAGER version 7.4.03--exploitation mode

1 Provided that the earlier version of ALTER or CHANGE MANAGER still exists in toleration mode, complete the fallback procedures in “To enable fallback for ALTER or CHANGE MANAGER version 7.4.03--toleration mode” on page 571.

2 Remove the product in exploitation mode.

   **Note**
   Any data that you added in exploitation mode will not be available in toleration mode.

To enable fallback for ALTER, CHANGE MANAGER, or CATALOG MANAGER and catalog indirection

1 Rebind all indirect packages or plans for the earlier version of indirection by running one of the following sets of bind jobs from HLQ.UDBCNTL:

   **Note**
   The earlier version of indirection must still exist.

   - *(ALTER)* ALUssid Z and ALUssid B
   - *(CHANGE MANAGER)* ACMssid Z and ACMssid B
   - *(CATALOG MANAGER)* ACTssid Z

To enable fallback for CATALOG MANAGER

1 Rebind all CATALOG MANAGER packages and plans by running the following bind jobs from HLQ.UDBCNTL:

   - ACTssid P
   - ACTssid B
To enable fallback for DASD MANAGER PLUS

1. Rebind all packages and plans by running the following bind jobs from HLQ.UDBCNTL:
   - ASUssid P
   - ASUssid B
   - ACSssid P
   - *(DASD MANAGER 9.3.00 and later)* ATSssid P

**Falling back to DB2 Version 8 from Version 9 conversion mode**

Complete the appropriate procedures to enable the Administrative products to execute after falling back to DB2 Version 8 from DB2 Version 9 conversion mode.

**To enable fallback for ALTER or CHANGE MANAGER version 9.3 or later**

1. To rebind all of the packages and plans, run the following bind jobs from HLQ.UDBCNTL:
   - ACMssid P
   - ACMssid B
   - ACSssid P

**To enable fallback for ALTER or CHANGE MANAGER version 9.2**

1. To rebind all ALTER or CHANGE MANAGER packages and plans, run one of the following sets of bind jobs from HLQ.UDBCNTL:
   - *(ALTER)* ALUssid P and ALUssid B
   - *(CHANGE MANAGER)* ACMssid P and ACMssid B

2. To rebind all Common SQL (ACS) packages, run the HLQ.UDBCNTL(ACSssid P) bind job.
**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 version 9.3 and later, or CHANGE MANAGER version 9.2) ACMssid Z and ACMssid B
   - (ALTER version 9.2) ALUssid Z and ALUssid B
   - (CATALOG MANAGER) ACTssid Z

**To enable fallback for CATALOG MANAGER version 9. x or later**

1. To rebind all CATALOG MANAGER packages and plans, run the following bind jobs from HLQ.UDBCNTL:

   - ACTssid P
   - ACTssid B

**To enable fallback for DASD MANAGER PLUS version 9. x or later**

1. To rebind all of the packages and plans, run the following bind jobs from HLQ.UDBCNTL:

   - ASUssid P
   - ASUssid B
   - ACSssid P
   - (version 9.3.00 and later) ATSssid P

**Falling back to DB2 Version 8 new-function mode from Version 10 conversion mode (CM8)**

Complete the appropriate procedures to enable the Administrative products to execute after falling back to DB2 Version 8 new-function mode from DB2 Version 10 conversion mode (CM8).
**Note**
For information about falling back to Version 8 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`:
   - `ACMssid P`
   - `ACMssid B`
   - `ACSssid P`

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) ACMssid Z` and `ACMssid B`
   - `(CATALOG MANAGER) ACTssid Z`

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`:
   - `ACTssid P`
   - `ACTssid B`

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`:
   - `ASUssid P`
   - `ASUssid B`
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:
   - ACMssid P
   - ACMssid B
   - ACSssid P

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) ACMssid Z and ACMssid B
   - (CATALOG MANAGER) ACTssid Z

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:
   - ACTssid P
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:
   - ASussid P
   - ASussid B
   - ACSssid P
   - ATSssid P

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.

**Note**
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

When you fall back to an earlier version of DB2, you must perform certain tasks to ensure that the Utility products continue to execute.

To fall back to an earlier version of DB2, run the $C70IVP job.

Migration to a different version of DB2 for the System and SQL performance products

This section applies only to SQL Explorer, APPTUNE, SQL Performance, and the MainView for DB2 component of System Performance.

If you are installing only Pool Advisor, you can ignore this section. This section describes:

- “Supported DB2 versions” on page 577
- “Reusing product tables from previous releases” on page 578
- “Migrating between versions of DB2” on page 578

Supported DB2 versions

Ensure that the versions of the products or components that you installed support the version of DB2 to which you are migrating.

The following table provides this information.

Table 72: Minimum supported release levels required for DB2 support

<table>
<thead>
<tr>
<th>BMC Software product or component</th>
<th>DB2 Version 8 support</th>
<th>DB2 Version 9 support</th>
<th>DB2 Version 10 support</th>
</tr>
</thead>
<tbody>
<tr>
<td>APPTUNE</td>
<td>6.1.00</td>
<td>6.1.00</td>
<td>10.1.00</td>
</tr>
<tr>
<td>BMC Password Security System</td>
<td>3.2.00</td>
<td>3.2.00</td>
<td>3.2.00</td>
</tr>
<tr>
<td>Common Data Collector</td>
<td>5.4.00</td>
<td>5.4.00</td>
<td>10.1.00</td>
</tr>
<tr>
<td>Common Infrastructure Component</td>
<td>6.1.00</td>
<td>6.1.00</td>
<td>10.1.00</td>
</tr>
<tr>
<td>DB2 Assist Services</td>
<td>6.1.00</td>
<td>6.1.00</td>
<td>10.1.00</td>
</tr>
</tbody>
</table>
Reusing product tables from previous releases

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.

Migrating between versions of DB2

This section provides guidelines that help you to maintain the product when you migrate from DB2 Version 8 to DB2 Version 9 or from DB2 Version 9 to Version 10.

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.

To maintain the product when you migrate to a new version of DB2 or when you fall back to a previous version of DB2, use the guidelines in the following table.

Note
Review the release notes and any technical bulletins or flashes for these products or components for information about support for DB2 versions.

<table>
<thead>
<tr>
<th>BMC Software product or component</th>
<th>DB2 Version 8 support</th>
<th>DB2 Version 9 support</th>
<th>DB2 Version 10 support</th>
</tr>
</thead>
<tbody>
<tr>
<td>DB2 Solution Common Code</td>
<td>1.4.00</td>
<td>1.5.00</td>
<td>1.6.00</td>
</tr>
<tr>
<td>Install Execution Code</td>
<td>3.1.01</td>
<td>3.1.01</td>
<td>3.1.01</td>
</tr>
<tr>
<td>MainView for DB2</td>
<td>9.1.00</td>
<td>9.1.00</td>
<td>10.1.00</td>
</tr>
<tr>
<td>SAS Runtime Library Support</td>
<td>7.1.01</td>
<td>7.1.00</td>
<td>7.1.00</td>
</tr>
<tr>
<td>SQL Explorer</td>
<td>6.1.00</td>
<td>6.1.00</td>
<td>10.1.00</td>
</tr>
<tr>
<td>SQL Performance</td>
<td>6.1.00</td>
<td>6.1.00</td>
<td>10.1.00</td>
</tr>
</tbody>
</table>
### Table 73: Migrating between versions of DB2

<table>
<thead>
<tr>
<th>Products</th>
<th>Migrate action</th>
<th>Fall back action</th>
</tr>
</thead>
</table>
| Migrating to DB2 Version 9| Before you migrate to Version 9, stop the DBC. Perform the following steps only after you migrate to Version 9 compatibility mode or NFM mode:  
1. Update the PSS2* members in HLQ.BBSAMP to reflect the Version 9 libraries.  
2. Update ACTPSS in HLQ.CLIST 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. If Automatic Rebind (ABIND) is set to NO on your subsystem, rebind all packages by using DAAssidP or DAAUP8#9 (bind packages) and then bind the plan by running DAAssidB (bind plan) in UBBSAMP, where ssid is the subsystem ID. If Automatic Rebind is set to YES or COEXIST, you do not need to perform the rebind.  
Then you will be operating in exploitation mode. | 1. Update the PSS2* members in HLQ.BBSAMP to reflect the Version 8 libraries.  
2. Update ACTPSS in HLQ.CLIST or UDBCLIB to reflect the Version 8 libraries for the CATALOG MANAGER interface to SQL Explorer.  
3. Update the SQLX edit macro in your SYSPROC concatenation to reflect the Version 8 libraries.  
4. Ensure that a type T database exists on the subsystem and that it has at least one table space in a buffer pool with a page size of at least 8 KB.  
5. Rebind all packages and plans by using DAAssidP (bind packages) and DAAssidB (bind plans) in UBBSAMP, where ssid is the subsystem ID. |
<table>
<thead>
<tr>
<th>Products</th>
<th>Migrate action</th>
<th>Fall back action</th>
</tr>
</thead>
<tbody>
<tr>
<td>Migrating to DB2 Version 10</td>
<td>Before you migrate to Version 10, stop the DBC. Perform the following steps only after you migrate to Version 10 compatibility mode or NFM mode:</td>
<td>1 Update the PSS2* members in HLQ.BBSAMP to reflect the Version 9 libraries.</td>
</tr>
<tr>
<td>1 Update the PSS2* members in HLQ.BBSAMP to reflect the Version 10 libraries.</td>
<td>2 Update ACTPSS in <em>HLQ</em>.CLIST or UDBCLIB to reflect the Version 9 libraries for the CATALOG MANAGER interface to SQL Explorer.</td>
<td></td>
</tr>
<tr>
<td>2 Update ACTPSS in <em>HLQ</em>.CLIST to reflect the Version 10 libraries for the CATALOG MANAGER interface to SQL Explorer.</td>
<td>3 Update the SQLX edit macro in your SYSPROC concatenation to reflect the Version 9 libraries.</td>
<td></td>
</tr>
<tr>
<td>3 Update the SQLX edit macro in your SYSPROC concatenation to reflect the Version 10 libraries.</td>
<td>4 Ensure that a type T database exists on the subsystem and that it has at least one table space in a buffer pool with a page size of at least 8 KB.</td>
<td></td>
</tr>
<tr>
<td>4 As soon as SYSIBM.SYSPACKSTMT has been converted to the new Version 10 format, 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 or DAAUP9#A (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. Then you will be operating in exploitation mode.</td>
<td>5 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.</td>
<td></td>
</tr>
</tbody>
</table>

a ENFM mode is not supported by these products.
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 74 on page 581 lists the tables that each utility uses and each table’s default name and synonym.

Table 74: 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>
</tbody>
</table>
## Overview of 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>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, 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

**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 581):

```
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:

   ```
   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:

   ```
   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:

   ```
   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:

     ```
     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 75 on page 586 describes the BMCDICT table.

**Table 75: 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>TSNNAME</td>
<td>CHAR(8)</td>
<td>Table space name</td>
</tr>
<tr>
<td>PARTITION</td>
<td>SMALLINT</td>
<td>Partition number</td>
</tr>
<tr>
<td></td>
<td></td>
<td>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 76 on page 588 describes the BMCHIST table.

The following 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 an installation option), the utility inserts rows into the BMCHIST table during the UTILTERM phase.

Table 76: 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>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>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>

**BMCHIST table considerations for COPY PLUS**

COPY PLUS uses the BMCHIST table to record completed COPY and COPY IMAGECOPY command executions.
HISTRETN is available as a COPY PLUS installation option or as an option on the OPTIONS command. HISTRETN tells COPY PLUS the number of days to keep entries in the BMCHIST table.

**WARNING**

If you want to use BMCHIST, allocate adequate space for the table. COPY PLUS makes an entry in the table *for every copied space*. If you are copying a large number of partitions, you might need to increase the size of the BMCHIST table space from the standard size that was allocated during installation.

**BMCHIST table considerations for RECOVER PLUS**

For each execution of AFRMAIN, RECOVER PLUS writes a single row to the BMCHIST table.

DBNAME, SPNAME, and OBJNAME columns will always be blank.

RECOVER PLUS accumulates elapsed time for each of the following phases using the RECOVER PLUS phase shown:

- PHASE_1: LOGSORT
- PHASE_2: MERGE (includes RESTORE phase)
- PHASE_3: SNAP
- PHASE_4: REBUILD (includes UNLOAD phase)
- PHASE_5: DB2UTIL (the time spent in DSNUTILB)

The elapsed time for each of the phases is a sum for all objects. The utility elapsed time, ELAPSED, is the duration from the start of the utility to until it finishes. Because RECOVER PLUS multitasks, the sum of the phases might be greater than the total elapsed time of the utility. The elapsed time columns have a limit of 24 hours.

**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 77 on page 591 describes the contents of the BMCLGRNX table.

**Table 77: 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 (hhmmssth)</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>
<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>
</tbody>
</table>
The BMCSYNC table contains information about the status of the objects that the currently executing utilities are accessing.

Table 78 on page 592 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>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>Column name</td>
<td>Data type</td>
<td>Description</td>
</tr>
<tr>
<td>-------------</td>
<td>-----------</td>
<td>-------------</td>
</tr>
<tr>
<td>NAME2</td>
<td>CHAR(18)</td>
<td>Space, table, or index name. (DASD MANAGER PLUS) The BMCSTATS utility always inserts the space name (limited to a maximum of 8 characters). (CHECK PLUS, LOADPLUS, REORG PLUS, and UNLOAD PLUS) 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>KIND</td>
<td>CHAR(2)</td>
<td>Type of object: ■ IP (index partition) ■ IX (index) ■ TB (table) ■ TP (table space partition) ■ TS (table space) ■ DD, DW (dynamic work file allocation) ■ CI (copy information) ■ RD (restart data set block)</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>SMALLINT</td>
<td>Partition number:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>■ Null or 0 for a single data set nonpartitioned space</td>
</tr>
<tr>
<td></td>
<td></td>
<td>■ Data set number for a multi-data-set, nonpartitioned space</td>
</tr>
<tr>
<td></td>
<td></td>
<td>■ Partition number for a partitioned space</td>
</tr>
<tr>
<td></td>
<td></td>
<td><em>(CHECK PLUS, COPY PLUS, DASD MANAGER PLUS, LOADPLUS, REORG PLUS, and UNLOAD PLUS)</em> The value is null or 0 for any nonpartitioned space.</td>
</tr>
<tr>
<td>BMCID</td>
<td>SMALLINT</td>
<td>Internal identifier of the object DASD MANAGER PLUS does not use this column.</td>
</tr>
<tr>
<td>UTILNAME</td>
<td>CHAR(8)</td>
<td>Name of the executing 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>■ STATS</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>Column name</td>
<td>Data type</td>
<td>Description</td>
</tr>
<tr>
<td>-------------</td>
<td>------------</td>
<td>-------------</td>
</tr>
</tbody>
</table>
| 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 599. |
| STATUS      | CHAR(1)    | Status of the utility or object:  
  - Blank (indicates no processing has been done)  
  - C (for CHECK PLUS, indicates checked)  
  - L (for LOADPLUS, indicates loaded)  
  - U (for UNLOAD PLUS, indicates unloaded)  
  - R (for REORG PLUS, indicates reloaded)  
  DASD MANAGER PLUS does not use this column. |
| XCOUNT      | INTEGER    | Number of rows or keys processed in the current phase  
  DASD MANAGER PLUS does not use this column. |
| DDNAME      | CHAR(8)    | Check, load, unload, or work ddname  
  DASD MANAGER PLUS does not use this column. |
<table>
<thead>
<tr>
<th>Column name</th>
<th>Data type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>BLOCKS</td>
<td>INTEGER</td>
<td>Number of blocks for the check, load, unload, or work data set. 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. DASD MANAGER PLUS does not use this column.</td>
</tr>
<tr>
<td>EXTRBA</td>
<td>CHAR(6)</td>
<td>(RECOVER PLUS) Log point at which this space was externalized. RECOVER PLUS serialization logic uses this column. The other utilities do not use this column.</td>
</tr>
<tr>
<td>STATE</td>
<td>LONG VARCHAR</td>
<td>Restart information for the space. For example, the STATE indicates the object state and sync information. DASD MANAGER PLUS does not use this column.</td>
</tr>
<tr>
<td>INSTANCE</td>
<td>SMALLINT</td>
<td>(RECOVERY MANAGER and RECOVER PLUS) Instance number of the current base objects (table and index). The default value is 1. The other utilities do 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 exist:
  - 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 604.

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 79 on page 599. For additional serialization and concurrency issues for each utility, see that utility’s reference manual.

The "Access level" column in Table 79 on page 599 refers to the value of the "SHRLEVEL" column name in the BMCSYNC table (“BMCSYNC table” on page 592).

**Table 79: 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 (BMCMYSQL)</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 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 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 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 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>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 on which 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 80 on page 601* 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 80: 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>
</tbody>
</table>
| STATE            | SMALLINT NOT NULL                  | Level of recovery analysis performed:  
|                  |                                    | ■ 0 (only UNDO analysis has been performed)  
|                  |                                    | ■ 1 through 9999 (UNDO and PIT analysis have been performed)  
<p>|                  |                                    | ■ Greater than 10000 (UNDO, PIT, and REDO analysis have been performed)  |
| PITTIME          | TIMESTAMP NOT NULL WITH DEFAULT    | Timestamp for the PIT RBA                                                                                                                  |
| SEQNO            | SMALLINT NOT NULL                  | Sequence number of the filter text                                                                                                           |
| PITWKEST         | FLOAT NOT NULL                     | Work estimate                                                                                                                             |
| FILTERLINE       | VARCHAR(1040) NOT NULL             | Text of the filter (may span more than one row)                                                                                           |
| UNDONUMROWSUPD   | FLOAT                              | Number of unique rows (RIDs) that are selected by the filter of the log scan                                                               |
| UNDOSUBSEQUPDROWS| FLOAT                              | Total number of anomaly log records relating to one of the rows (RIDs) selected by the log scan                                           |
| UNDOLOGRECROWS   | FLOAT                              | Number of unique rows (RIDs) that are affected by an anomaly log record                                                                   |</p>
<table>
<thead>
<tr>
<th>Column Name</th>
<th>Data type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<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 81 on page 604 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 81: 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>
</tbody>
</table>

*(DASD MANAGER PLUS)* The value for this column is always X.
<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  |
| 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. |
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.
- 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:

```
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 82 on page 608 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 82: 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 version 8.1 and later, 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>ICDATE</td>
<td>CHAR(6)</td>
<td>Date of the entry (yymmd)</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>
| START_RBA   | CHAR(6)   | 48-bit positive integer containing the relative byte location of a point in the DB2 recovery log. The indicated point as follows:  
- For ICTYPE F, the starting point for all updates since the image copy was taken  
- For COPY_TYPE O, the minimum of the consistent point and the oldest inflight URID  
- (RECOVERY MANAGER) For ICTYPE C, the consistent log point for the copy  
  — RBA for non-data-sharing systems  
  — LRSN for data sharing systems |
| FILESEQNO   | INTEGER   | Tape file sequence number of the copy |
| DEVTYPE     | CHAR(8)   | Type of device on which the copy resides |
| IBMREQD     | CHAR(1)   | Whether the row came from the basic machine-readable material (MRM) tape:  
- N (NO)  
- Y (YES) |
| DSNAME      | CHAR(44)  | Name of the data set. If STYPE V, DSNAME is the name of the VSAM data component. |
| ICTIME      | CHAR(6)   | Time at which this row was inserted (hhmmss). The insertion takes place after the completion of the operation that the row represents. |
### BMXCOPY table

<table>
<thead>
<tr>
<th>Column name</th>
<th>Data type</th>
<th>Description</th>
</tr>
</thead>
</table>
| SHRLEVEL    | CHAR(1)   | SHRLEVEL parameter on COPY if ICTYPE F:  
  ■ C (change)  
  ■ R (reference) |
| DSVOLSER    | VARCHAR(1784) | Volume serial numbers of the data set  
Commas separate items in a list of 6-byte numbers. This column is blank if the data set is cataloged. |
| TIMESTAMP   | TIMESTAMP | Date and time when the row was inserted  
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. |
| ICBACKUP    | CHAR(2)   | Type of image copy contained in the data set:  
■ LB (data set contains local backup data)  
■ RP (data set contains recovery system main data)  
■ RB (data set contains recovery system backup data)  
■ Blank (data set contains local system main data or is not one of multiple copies) |
<table>
<thead>
<tr>
<th>Column name</th>
<th>Data type</th>
<th>Description</th>
</tr>
</thead>
</table>
| ICUNIT         | CHAR(1)     | Media on which the image copy data set is stored:  
|                |             | ▶ D (DASD) |
|                |             | ▶ T (tape) |
|                |             | ▶ Blank (medium is neither tape nor DASD) |
| STYPE          | CHAR(1)     | Type of copy:  
|                |             | ▶ Blank (for ICTYPE=F) |
|                |             | ▶ V (Instant Snapshot or a VSAM data set) |
|                |             | ▶ e (encrypted copy) |
| PIT_RBA        | CHAR(6)     | Point-in-time recovery:  
|                |             | ▶ X'000000000000' (for ICTYPE=F) |
|                |             | ▶ consistent point (for COPY_TYPE=O) |
| GROUP_MEMBER   | CHAR(8)     | Data-sharing group member (the name of the SSID where the copy was made)  
|                |             | This column is blank if you are not using data sharing. |
| OTYPE          | CHAR(1)     | Type of object:  
<p>|                |             | ▶ T (table) |
|                |             | ▶ I (index) |
|                |             | ▶ i (compressed index) |
| LOWDSNUM       | INTEGER     | Not used |
| HIGHDSNUM      | INTEGER     | Not used |
| COPYPAGESF     | FLOAT(8)    | Number of pages written to the copy data set |</p>
<table>
<thead>
<tr>
<th>Column name</th>
<th>Data type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<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 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 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>■ 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(6)</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>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>
</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.

Note

Note that synonyms cannot be different and tables names may be different at your site based upon options chosen during product installation.

<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_GRPOPTS</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>
</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>Column name</td>
<td>Data type</td>
<td>Description</td>
</tr>
<tr>
<td>---------------</td>
<td>-----------------</td>
<td>-----------------------------------------------------------------------------</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>
<tr>
<td>OPTION_TYPE</td>
<td>CHAR(10) NOT NULL</td>
<td>option type</td>
</tr>
<tr>
<td>OPTION</td>
<td>VARCHAR(200) NOT NULL</td>
<td>option name</td>
</tr>
<tr>
<td>OPT_VALUE</td>
<td>VARCHAR(200) NOT NULL</td>
<td>value for named option</td>
</tr>
</tbody>
</table>

- backup--ARMOPTBKUP
- recover --ARMOPTRCVR

These are the option types currently used by RECOVERY MANAGER. The option type is defined by the product, so this list is product-dependent.
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>DATE_GRANTED</td>
<td>TIMESTAMP NOT NULL WITH DEFAULT</td>
<td>timestamp of when authorization was granted</td>
</tr>
</tbody>
</table>
Deploying System and SQL Performance products

This example illustrates how to deploy the System and SQL Performance products to additional IBM DB2 subsystems and LPARs.

Intended only as a general guide, this example addresses the high-level tasks shown in Table 83 on page 621.

Table 83: Task summary for deploying products

<table>
<thead>
<tr>
<th>High-level task</th>
<th>How to complete the task (individual procedures)</th>
</tr>
</thead>
<tbody>
<tr>
<td>“Installing and deploying products in a TEST environment” on page 623</td>
<td>1 “Installing products on an initial subsystem in the TEST environment” on page 623</td>
</tr>
<tr>
<td></td>
<td>2 “Propagating the installation to multiple subsystems in the TEST environment” on page 632</td>
</tr>
<tr>
<td></td>
<td>3 “Verifying that the new DBC started task is running properly in the TEST environment” on page 631</td>
</tr>
<tr>
<td></td>
<td>4 “Deploying the products to the user community in the TEST environment” on page 633</td>
</tr>
</tbody>
</table>
### High-level task

<table>
<thead>
<tr>
<th>Task</th>
<th>How to complete the task (individual procedures)</th>
</tr>
</thead>
<tbody>
<tr>
<td>“Propagating the changes to your PROD environment” on page 634</td>
<td><strong>1</strong> “Defining the TDS instances for the PROD environment” on page 634</td>
</tr>
<tr>
<td></td>
<td><strong>2</strong> “Transporting runtime data sets from the TEST environment to the PROD environment” on page 635</td>
</tr>
<tr>
<td></td>
<td><strong>3</strong> “Customizing the TDS Instances in the PROD environment” on page 636</td>
</tr>
<tr>
<td></td>
<td><strong>4</strong> “Generating the JCL to propagate the installation to multiple subsystems in the PROD environment” on page 639</td>
</tr>
<tr>
<td></td>
<td><strong>5</strong> “Verifying that the new DBC started task is running properly in the PROD environment” on page 640</td>
</tr>
<tr>
<td></td>
<td><strong>6</strong> “Deploying the products to the user community in the PROD environment” on page 641</td>
</tr>
</tbody>
</table>

**Note**

This example uses runtime enablement (RTE) to create runtime data sets, which are then deployed to the additional systems. In addition, using aliases for runtime data sets makes rolling out releases to the user community faster and easier.

This example describes the process for the System and SQL Performance *for DB2* products. If you are installing and deploying other products in the same install, review the documentation for those products.

---

### Before you begin

Ensure that you have shared DASD between the IBM MVS images that are defined to the DOMPLEX (the set of DBC started tasks, typically one per MVS image).

You will have one DOMPLEX for TEST and one for PROD.

**Note**

BMC recommends that you deploy the new release as a unit for DB2 subsystems that are defined to the same DBC subsystem and output groups.

For SQL Explorer *for DB2* and OPERTUNE *for DB2*, disregard all steps in the example that refer to the VSAM data sets and Data Collector.

---

In this example, the products are invoked with the following CLIST names:
Installing and deploying products in a TEST environment

This section illustrates how to deploy products in a TEST environment by completing the following procedures:

1. “Installing products on an initial subsystem in the TEST environment” on page 623
2. “Verifying that the new DBC started task is running properly in the TEST environment” on page 631
3. “Propagating the installation to multiple subsystems in the TEST environment” on page 632
4. “Deploying the products to the user community in the TEST environment” on page 633

Installing products on an initial subsystem in the TEST environment

This task is broken into the following subtasks.

Perform these subtasks in the order given.

- “To start the installation” on page 624
- “To complete OZI customization” on page 625
- “To complete MainView customization” on page 627 (not applicable if you are installing only SQL Explorer and OPERTUNE)
To create initial runtime libraries” on page 628

“To configure DB2 Product Configuration” on page 628 (not applicable if you are installing only SQL Explorer and OPERTUNE)

---

**Note**

In System and SQL Performance products earlier than version 10.1, the Data Collector had its own started task. Starting with version 10.1, the products will use the DBC started task to provide a common address space for the Data Collector, as well as for other common components that the System and SQL Performance products use.

---

**To start the installation**

1. From the Installation System Main Menu, select **Product Install**.

2. Follow the online instructions until you generate the $B jobs.

3. Execute the $B jobs.

   **Note**

   If you are installing products other than SQL Explorer or OPERTUNE, you must run the $B jobs before you launch MainView customization.

4. From the Installation System Main Menu, customize the product as needed:
   1. Select **Product Customization** and press **Enter**.
   2. From the Product Customization Methods menu, select **Customize products to execute from runtime data sets**.

5. Specify runtime system values:
   1. From the Runtime Enablement (RTE) Process menu, select Specify runtime system values.
      
      **Note**

      If you choose the Create an alias relationship to the runtime data sets option, the Installation System appends the &SYSNAME variable to the alias high-level qualifier (HLQ) that you provide.

      2. At the Runtime Customization Values panel, select the RTE001 row and press **Enter**.

      3. At the Runtime Customization Instance panel, specify the RTE high-level qualifier and data set values and press **Enter**.
BMC recommends that you specify SMS values or a specific volume on this panel.

d From the Runtime Customization Instance RTE001-Data Set Allocation Values panel, specify the VSAM library prefix, data set VOLSER, and product data set HLQ to use on the TEST environment and press Enter.

Tip
If you choose on the BMC System and SQL Performance Products Options Verification panel to use new VSAM data sets, consider specifying an HLQ for the VSAM data sets that is not version specific. Doing so ensures that names in future migrations will remain version independent if you choose to reuse the VSAM data sets.

e On the Runtime Customization Instance - DBC and NGL Component Services panel, provide the values to customize the DBC and NGL components and press Enter.

Note
If you are migrating from version 6.2 or earlier, BMC recommends that you specify your current Data Collector ID for the DBC SSID and your current DOMPLEX name for the DBC group name.

When the Runtime Customization Values panel returns, the Runtime Setup Status field indicates that the status of the RTE001 row is Reviewed.

After supplying the system values for the RTE001 row, you can replicate the row for each TDS instance upon which you plan to deploy. Repeat steps Step 5.d on page 625 and Step 5.e on page 625 for each TDS.

Note
BMC strongly recommends that you specify the TDS instances at this point. However, you can skip this step until you are defining your PROD environment. If you do so, you must redo any MainView customization if you add a new TDS instance after the initial RTE and any initial TDS instances that have been configured.

Press Enter to accept your values and exit the Runtime Customization Values panel.

6 Continue with “To complete OZI customization” on page 625.

To complete OZI customization

Specify product customization values for the runtime instance:
a At the Runtime Enablement Process (RTE) menu, select Specify product customization values for initial runtime instance.

b On the Installation System Product Customization Path panel, specify 1 (OZI Customization).

---

**Note**

You can specify the customization path in any order (OZI Customization or MainView Customization). However, you must complete both customization paths before creating the RTE data sets. MainView Customization configures and installs RTCS, which is required by the NGL component that APPTUNE uses to archive data sets. If you are installing only SQL Explorer or OPERTUNE, you do not need to do MainView customization.

---

c At the Specify RTE or TDS Customization System Options, select the RTE instance. (The TDS for non-shared DASD will be customized on the remote system.)

d Follow the online instructions until you reach the Install System Previous Release of Product menu.

e From the previous release menu, select the previous version from which you want to upgrade or select N (None), and press Enter.

f (If you specified a previous release from which to upgrade) On the BMC System and SQL Performance Products Options Verification panel, specify whether to reuse existing VSAM data sets or to use new ones. Enter the names of your previous VSAM data sets for migration and press Enter.

2 Enter product and solution passwords, or ensure that you have the password modules in the appropriate locations.

*If you prefer to enter (or copy) product and solution passwords*, you can do so as follows:

a From the Install System Final Tasks menu, select **Product Authorization** and press Enter.

b Copy or enter your passwords for the products that you are installing and press Enter.

The Installation System generates the $C15PSWD and $C20APF jobs: $C15PSWD copies password modules into the HLQ.BMCPSWD data set, and $C20APF copies them to the runtime HLQ.BMCLINK data set or the APF-authorized data set that you specified in the installation panels.
If you prefer to ensure that your password modules are in the appropriate locations, review the concatenation of the DBC started task and the invoking CLISTS (DOMCLIST, SPDCLIST, or PSSCLIST).

3 Execute the $C jobs.

   **Note**
   You must execute the $C jobs before creating RTE data sets.

4 Return to the Installation System Product Customization Path panel.

5 If you are installing only the SQL Explorer for DB2 or OPERTUNE product, continue with “To create initial runtime libraries” on page 628. Otherwise, continue to “To complete MainView customization” on page 627.

**To complete MainView customization**

You do not need to complete this procedure if you are installing only SQL Explorer or OPERTUNE and no other Performance products.

1 At the Installation System Product Customization Path panel, select **MainView Customization** and press **Enter**.

2 At the MainView Customization panel, select **Specify Information** and press **Enter**.

3 Follow the online instructions to specify RTCS information.

   **Note**
   RTCS is installed by using the BMC Installation System. During the installation, you also customize RTCS by using MainView Customization, which performs the configuration of RTCS.

   - BMC recommends using MainView Customization to configure RTCS.
   - If you need to modify the RTCS configuration after using MainView Customization, *Runtime Component System Configuration and Administration Guide*.

   If you already have RTCS installed in your environment, accept the default values in the Installation System.

4 Select **Generate** and follow the online instructions. After submitting the job (either online or in batch), a checklist will be written to member $CHEKLIST in the STGSAMP data set. These steps should be followed to set up the RTCS environment.
5 When you finish, continue with “To create initial runtime libraries” on page 628.

To create initial runtime libraries

1 From the Runtime Enable (RTE) Process menu, select Create initial runtime data sets.

   a From the Customization System RTE Options panel, type Y to indicate that all product customization tasks have been completed for the products or solutions that you are installing.

   b At the Modify user options for the runtime enabled JCL prompt, type Y.

   c From the Runtime Enablement (RTE) User Options panel, type Y or N.

   The Runtime Enablement job will copy the contents of the target datasets to the runtime datasets. Sort/break content copy step by data type. Y (Y/N)

   ■ Type Y to group data sets by types of libraries (such as LINK, MLIB, and PLIB).

   ■ Type N to group data sets by product libraries (such as BBLINK, BBMLIB, BBPLIB, DBLINK, DBMLIB, and DBPLIB).

2 Follow the online instructions and generate the $R05RTEC job.

3 Run the $R05RTEC job to copy data sets from the target libraries to the runtime libraries.

   Note

   If you chose the option to create alias names, the $R05RTEC job contains steps to delete and define the aliases. Consider delaying running these steps if the alias names already exist on the product version that is currently in use. However, subsequent jobs and CLISTs reference the aliases, so the aliases must exist.

4 If you are installing only SQL Explorer for DB2 or OPERTUNE, continue with “Verifying that the new DBC started task is running properly in the TEST environment” on page 631. Otherwise, continue with “To configure DB2 Product Configuration” on page 628.

To configure DB2 Product Configuration

You do not need to complete this procedure if you are installing only SQL Explorer or OPERTUNE and no other Performance products.

1 On the Runtime Enablement (RTE) Process menu, select Additional customization options and press Enter.
2 Select Specify product execution values for BMC Product Management (BPM).
   a Follow the online instructions to complete panels.
   b Execute $U10MTFS.

   **Note**
   You must run the $U10MTFS job from a user ID that is USS UID 0 or has READ access to the RACF facility class of BPXSUPERUSER.

   c Start the DBC started task that is generated into the JCL data set as DBC$STC. Copy this task to PROCLIB. Data sets listed in the STEPLIB must be APF-authorized.

   **Note**
   If you migrated from a previous release and the previous Data Collector used the same SSID, run the #$SSIDMIG job in the SAMP data set to convert the SSID for use by the new DBC subsystem.

   d Review messages to ensure that the DBC subsystem started successfully:

   *BMCDBC0123I* 10.30.48 DC01 CMD component activation complete, rc=0
   *BMCDBC0123I* 10.30.48 DC01 XCF component activation complete, rc=0
   *BMCDBC0142I* 10.30.49 DC01 XCF local member BMCDBC@DC01@DB2B joined group DCPLEX on system DB2B on MAR 09,2011 10:30:49
   *BMCDBC0228I* 10.30.49 DC01 DPR repository='DIS.IVP101.DEDK1. RNTM.DC01.DBCREPOS' successfully allocated
   *BMCDBC0088I* 10.30.49 DC01 DBC version 10.1.00 initialization complete

   e Execute $U20INIT.

3 Select Customize product options using BPM and use the online instructions to complete the panels.

   **Note**
   By default, only the required options are shown. To see all options, type FILTOFF on the command line. If you are migrating, select the DOMPLEX name for this LPAR. Otherwise, insert a new DOMPLEX with the same name as the one you added to the DBC panel.

   a Expand the **Data Collector List** section and perform one of the following actions:
Tip
To expand sections on the DOMPLEX option set panel, place the cursor on the + sign next to a section on the panel and press Enter. The major sections are DOMPLEX Parameters, Data Collector List, DB2 Monitor List, and Output Groups.

- If you are migrating from a previous release, ensure that the Data Collector ID matches the DBC ID that you entered in step Step 5.e on page 625. BMC recommends that you migrate from a previous release. When you do so, the Installation System automatically reuses the same DOMPLEX configuration for Data Collectors and output groups.

- If you are not migrating, type I next to the Data Collector List section to insert one. Specify the DBC ID that you entered in step Step 5.e on page 625.

b Expand the DB2 Monitor List section and perform one of the following actions:

- If you are migrating from the previous release, review the settings for the subsystem for which you did the install.

- If you are not migrating, type I next to DB2 Monitor List to insert a DB2 subsystem. Specify the subsystem for which you did the installation. You may replicate the row and enter other DB2 subsystems for which you did MSSID installations.

c For each DB2 subsystem listed, review the following information:

- (For SQL Performance and APPTUNE) Expand the SQL Performance / APPTUNE options section and review the APPTUNE Filter Set name. The name must match a defined filter option set. A default name is provided. Each DB2 subsystem must have a filter associated with it. For more information about filter option sets, see the System and SQL Performance for DB2 Administration Guide.

- If you are not ready to enable monitoring of these DB2 subsystems with the new release as soon as the DOM agent is started, set the following commands to N (No): -- Monitor with MainView for DB2 - DC-- Monitor with Pool Advisor/System Perf-- Monitor with APPTUNE

- Review the Dynamic Explain plan name. The default name for the plan name is DAA vnrd1 (for example, DAA101D1 for version 10.1).

Tip
If you do not see these options, you must set the FILTOFF option to show non-required fields. To do so, type FILTOFF on the command line.
d  Expand the **Output Groups** section and perform one of the following actions:

- If you are migrating, review the settings for each output group.

- If you are not migrating, type I next to the **Output Groups** section and press **Enter** to insert a new output group. You can replicate the row to add other output groups. By default, the Data Collector SSID for an output group is specified with * (wildcard) and the subsystems supported by this group is also * (wildcard). If you add more output groups, change these settings so that each output group is associated with a unique set.

   **Note**
   For each DB2 subsystem that is started on a different MVS image at different times, BMC recommends that you specify an asterisk (*) for the Data Collector SSID in the output group configuration and have separate LOGSET files for the subsystem supported by that output group. Doing so allows any Data Collector to monitor those subsystems.

e  Expand the **NGL LOGSET parameters** section and review the following information:

- Specify the volume or SMS parameters for NGL.

- Specify the DSN prefix for LOGFILES that will be allocated dynamically.

   **Note**
   You can zoom on the DSN prefix by positioning the cursor on > and pressing **Enter**.
   In previous releases of the SQL and System Performance products (version 6.2 and earlier), trace data sets were used for collected data. When migrating, the HLQ of the trace data sets is applied to the new LOGSET files (linear data sets) used by NGL.

f  From the task bar, select HELP and choose to look at both the General Help and Product Help options. Doing so caches the help files from the data sets.

4  Press **F3** to exit and save your changes. Continue with “**Verifying that the new DBC started task is running properly in the TEST environment**” on page 631.

**Verifying that the new DBC started task is running properly in the TEST environment**

1  From the Runtime Enablement (RTE) Process Menu, select **Additional customization options** and press **Enter**.
2 From the Additional Customization Options menu, select **Start DB2 Component Service (DBC) Agents** and press **Enter**.

**Note**
After DOM$STRT starts, the DOM agent within the DBC subsystem, data collection begins for any Data Collector in the DBC group (DOMPLEX) that is set to monitor the DB2 subsystem for System and SQL Performance products.

3 Ensure that the product agents are monitoring the correct set of DB2 subsystems as defined in the associated DOMPLEX option set.

**Figure 123 on page 632** shows an example of the messages that appear if data collection is occurring normally.

**Figure 123: Example of messages when data collecting occurs**

<table>
<thead>
<tr>
<th>Message</th>
<th>Date</th>
<th>Time</th>
<th>Subsystem</th>
<th>Product</th>
<th>Message ID</th>
</tr>
</thead>
<tbody>
<tr>
<td>BMC24561 DC01 LOGSET DC01L0001 Successfully defined and connected to NGL agent FU</td>
<td>2011-03-08</td>
<td>00.00.00</td>
<td>DC01</td>
<td>Product</td>
<td></td>
</tr>
<tr>
<td>BMC24952 DC01 Data Collector successfully initialized DC0100F7 (175F1000)</td>
<td>2011-03-08</td>
<td>00.00.00</td>
<td>DC01</td>
<td>Product</td>
<td></td>
</tr>
<tr>
<td>BMC24960 DC01 DB2 trace collector acquired for DC01, RC=00</td>
<td>2011-03-08</td>
<td>00.00.00</td>
<td>DC01</td>
<td>Product</td>
<td></td>
</tr>
<tr>
<td>BMC24820 DC01 DOMPLEX member DOMOC10DB2B01 joined XCF group DCPLEX successful</td>
<td>2011-03-08</td>
<td>00.00.00</td>
<td>DC01</td>
<td>Product</td>
<td></td>
</tr>
<tr>
<td>BMC24453 DC01 <em>PSS</em> RC=0000 - Product initialization commencing</td>
<td>2011-03-08</td>
<td>00.00.00</td>
<td>DC01</td>
<td>Product</td>
<td></td>
</tr>
<tr>
<td>BMC24453 DC01 <em>PSS</em> RC=0000 - Product Initialization SUCCESSFUL</td>
<td>2011-03-08</td>
<td>00.00.00</td>
<td>DC01</td>
<td>Product</td>
<td></td>
</tr>
<tr>
<td>BMC24453 DC01 <em>AFD</em> RC=0000 - Product INITIALIZATION SUCCESSFUL</td>
<td>2011-03-08</td>
<td>00.00.00</td>
<td>DC01</td>
<td>Product</td>
<td></td>
</tr>
<tr>
<td>BMC23100 DC01 Product is using 64 bit code</td>
<td>2011-03-08</td>
<td>00.00.00</td>
<td>DC01</td>
<td>Product</td>
<td></td>
</tr>
<tr>
<td>BMC23300 DC01 SQL Performance Solution version 10.01.00 (2011/03) now active</td>
<td>2011-03-08</td>
<td>00.00.00</td>
<td>DC01</td>
<td>Product</td>
<td></td>
</tr>
<tr>
<td>BMC24524 DC01 Outgrp 001 trk 1 of 420 in DATASPACE</td>
<td>2011-03-08</td>
<td>00.00.00</td>
<td>DC01</td>
<td>Product</td>
<td></td>
</tr>
<tr>
<td>BMC24951 DC01 DB2=DEFU Rel=1010 CM9 Char=*DEFU Status=UP Plan=DAA101D1</td>
<td>2011-03-08</td>
<td>00.00.00</td>
<td>DC01</td>
<td>Product</td>
<td></td>
</tr>
<tr>
<td>BMC24330 DC01 DSNW130I *DEFU MON TRACE STARTED, ASSIGNED TRACE NUMBER 03</td>
<td>2011-03-08</td>
<td>00.00.00</td>
<td>DC01</td>
<td>Product</td>
<td></td>
</tr>
<tr>
<td>BMC24330 DC01 DSN9022I *DEFU DSNWVCM1 'STA TRACE' NORMAL COMPLETION</td>
<td>2011-03-08</td>
<td>00.00.00</td>
<td>DC01</td>
<td>Product</td>
<td></td>
</tr>
<tr>
<td>BMC24330 DC01 DSNW130I *DEFU MON TRACE STARTED, ASSIGNED TRACE NUMBER 03</td>
<td>2011-03-08</td>
<td>00.00.00</td>
<td>DC01</td>
<td>Product</td>
<td></td>
</tr>
<tr>
<td>BMC24330 DC01 DSN9022I *DEFU DSNWVCM1 'STA TRACE' NORMAL COMPLETION</td>
<td>2011-03-08</td>
<td>00.00.00</td>
<td>DC01</td>
<td>Product</td>
<td></td>
</tr>
<tr>
<td>BMC24330 DC01 DSNW130I *DEFU ACCTG TRACE STARTED, ASSIGNED TRACE NUMBER 04</td>
<td>2011-03-08</td>
<td>00.00.00</td>
<td>DC01</td>
<td>Product</td>
<td></td>
</tr>
<tr>
<td>BMC24330 DC01 DSN9022I *DEFU DSNWVCM1 'STA TRACE' NORMAL COMPLETION</td>
<td>2011-03-08</td>
<td>00.00.00</td>
<td>DC01</td>
<td>Product</td>
<td></td>
</tr>
<tr>
<td>BMC24330 DC01 DSNW130I *DEFU A TRACE STARTED, ASSIGNED TRACE NUMBER 04</td>
<td>2011-03-08</td>
<td>00.00.00</td>
<td>DC01</td>
<td>Product</td>
<td></td>
</tr>
<tr>
<td>BMC24330 DC01 DSN9022I *DEFU DSNWVCM1 'STA TRACE' NORMAL COMPLETION</td>
<td>2011-03-08</td>
<td>00.00.00</td>
<td>DC01</td>
<td>Product</td>
<td></td>
</tr>
<tr>
<td>BMC24960 DC01 DB2 trace collector active for DEFU, RC=00</td>
<td>2011-03-08</td>
<td>00.00.00</td>
<td>DC01</td>
<td>Product</td>
<td></td>
</tr>
<tr>
<td>BMC24314 DC01 AUTH refresh ignored: using Data Collector security</td>
<td>2011-03-08</td>
<td>00.00.00</td>
<td>DC01</td>
<td>Product</td>
<td></td>
</tr>
<tr>
<td>BMC24321 DC01 Command completed RC=0004 <em>REFRESH AUTH DEFU</em></td>
<td>2011-03-08</td>
<td>00.00.00</td>
<td>DC01</td>
<td>Product</td>
<td></td>
</tr>
<tr>
<td>BMC23200 DC01 Unload task enabled for DEFU (7EA42E70 28F24200)</td>
<td>2011-03-08</td>
<td>00.00.00</td>
<td>DC01</td>
<td>Product</td>
<td></td>
</tr>
<tr>
<td>BMC23034 DC01 DB2=DEFU DSGROUP=N/A VERSION=1010 STATUS=ACTIVE 559</td>
<td>2011-03-08</td>
<td>00.00.00</td>
<td>DC01</td>
<td>Product</td>
<td></td>
</tr>
<tr>
<td>BMC23035 COLLECTION=ACTIVE ENTRIES=0 FILTER=IBMCTEST</td>
<td>2011-03-08</td>
<td>00.00.00</td>
<td>DC01</td>
<td>Product</td>
<td></td>
</tr>
</tbody>
</table>

Next scheduled unload: 2011-03-08 00.00.00

4 Invoke the new DOMLIST, SPDCLIST, or PSSCLIST.

5 Follow the instructions in **Verifying the installation on page 506** for each product.

**Propagating the installation to multiple subsystems in the TEST environment**
1 From the Runtime Enablement (RTE) Process Menu, select **Additional customization options** and press **Enter**.

2 From the Additional Customization Options menu, select **Customize for multiple similar DB2 subsystems (MSSID)** and press **Enter**.

3 Follow the online instructions for the RTE001 row.

   **Note**
   The installer cautions against using MSSID for different versions of DB2. The binds for the System and SQL Performance products are the same for DB2 Version 8 and Version 9. You can enter all remaining subsystems through the MSSID installations. The binds for DB2 Version 10 differ as soon as SYSIBM.SYSPACKSTMT has been converted to the new format. You can continue to use MSSID install, but then you must run the DAAUP9#A job to run the binds needed for DB2 Version 10.

4 On the Install System JCL Generation Option panel, select **Generate JCL** and generate the $S00JCL job.

5 Execute the $S00JCL job.

   When executed, the $S00JCL job will generate a separate JCL data set containing the correct DB2 libraries and job card for each subsystem specified in the MSSID installation.

6 Run all $C jobs for each subsequent DB2 subsystem from its separate JCL data set.

   **Note**
   In an SSID or MSSID installation, the Installation System generates only the jobs that are related to that subsystem.

---

**Deploying the products to the user community in the TEST environment**

1 Replace the old DOMCLIST, PSSCLIST, or SPDCLIST with the new one.

2 *(SQL-Explorer only)* Edit the SQLX member in the SYSPROC concatenation or the CLIB data set:
   - Change the data sets (the ones that are associated with the subsystems being deployed) to the new runtime names, or ensure that the alias names are referenced.
Check the plan name for each subsystem being deployed.

To check for changes to the SQLX edit macro in the new release, review member #SQLX in the LLQSAMP data set.

If you edited the SQLX member in the CLIB data set, copy the customized SQLX member from the CLIB data set to SYSPROC.

3 Follow the instructions in Verifying the installation on page 506 for each product.

Propagating the changes to your PROD environment

This section illustrates how to use a copy of the runtime data sets from TEST to propagate the changes to the PROD environment on non-shared DASD.

A separate DOMPLEX for PROD ensures that product maintenance is applied in a controlled manner. The installation on PROD will not access the installation tape but might need to access the Installation System. Only customization jobs will be run.

This example propagates the changes to PROD by completing the following procedures:

1 “Defining the TDS instances for the PROD environment” on page 634

2 “Transporting runtime data sets from the TEST environment to the PROD environment” on page 635

3 “Customizing the TDS Instances in the PROD environment” on page 636

4 “Generating the JCL to propagate the installation to multiple subsystems in the PROD environment” on page 639

5 “Verifying that the new DBC started task is running properly in the PROD environment” on page 640

6 “Deploying the products to the user community in the PROD environment” on page 641

Defining the TDS instances for the PROD environment

BMC recommends that you define your TDS instances on the TEST environment.
If you have not, you can follow the steps detailed in “Installing products on an initial subsystem in the TEST environment” on page 623 to define the instances in the PROD environment. If you do so, you must redo any MainView customization for the TDS instances that have been configured.

**Transporting runtime data sets from the TEST environment to the PROD environment**

1. On the TEST environment, select Transport runtime data sets for target destination systems (TDS) instances from the Runtime Enablement (RTE) Process menu.

2. From the Generate TDS Transport JCL panel, select Generate transport JCL for ALL TDS instances.

3. From the Edit TDS Transport JCL panel, select each TDS instance.

   The Installation System displays a member list that includes each TDS instance and $TRA0010 job.

4. In each $TRA0010 job, locate the FTPSTEP and make the following changes:

   **Note**

   $TRA0010 contains the FTPSTEP only if you specified N to shared DASD.

   a. Change ?FTPHOST to the host name for the TDS.

   b. Change ?FTPID to your user ID on that system.

   c. Change ?PASSWORD to the password for your user ID.

5. Locate the comment in the $TRA0010 job that indicates the data set name that will be created on the PROD environment, and record the data set name for later.

   **Example**

   ```
   //********************************************************
   //* WHEN THE JOB IS COMPLETE, SUBMIT THE JCL FOUND IN
   //* BMCPERF.RNTM.T001.RJCL
   //* ON THE TARGET DESTINATION SYSTEM TO COMPLETE THE PROCESS
   //********************************************************
   //*****************************************************************************
   ```

   This data set name uses the HLQ that you specified as the TDS HLQ with T nnn.RJCL as the low-level qualifier (where T nnn is the TDS instance number, such as T001).
6 Submit the $TRA0010 job from the TEST environment.

---
**Note**
If you receive data set contention errors while this job runs, you can ignore them.

7 Exit the Installation System on TEST.

---

## Customizing the TDS Instances in the PROD environment

1 On the PROD environment, locate the data set that was identified in the comment of the $TRA0010 job that ran on the TEST environment. (For information about identifying the data set, see Step 5 on page 636.)

---
**Note**
If you did not previously specify SMS, you might need to edit the job card and the volume specified in the OUTDYNAM parameter. OUTDYNAM requires a specific volume.

If you chose the option to create aliases, this job contains steps to delete and define the aliases. Consider delaying running these steps if the alias names already exist on the product version that is currently in use. However, the aliases must exist on the correct data sets before you run any of the jobs.

---

2 Submit the job on PROD.

3 In the RESTORE2 step of the job, locate the name of the installation data set that will be created on PROD. This step has a mapping from the name on the TEST system to the name on the PROD system.

4 Execute TDSINSTL from the installation data set on the PROD system.

---
**Example**
If the $HLQ.INSTALL file is named `installationSystem$HLQ.INST.T001`, start the installation system (TDS installation) on the PROD environment by using the following command line:

```
EX ‘installationSystem$HLQ . INST.T001(TDSINSTL)’
```

The Installation System displays the Installation System Main Menu with two active options: Product Customization and Additional Options.

5 On the main menu, select Product Customization and press **Enter**.

6 On the Runtime Enablement (RTE) Process menu, select Specify product customization values for TDS instances.
7 On the Runtime Customization Instance panel, select and customize the appropriate TDS instance.

8 On the Installation System Product Customization Path panel, specify 1 for O ZI Customization.

9 As you navigate through the customization panels, change the following values for your PROD system, as necessary:
   - DB2 libraries
   - VSAM library prefix
   - APF data set name
   - DB2 subsystem name and data sharing members

10 Enter product and solution passwords, or ensure that you have the password modules for PROD in the appropriate locations.

   *If you prefer to enter (or copy) product and solution passwords,* you can do so as follows:

   a From the Install System Final Tasks menu, select **Product Authorization** and press **Enter**.

   b Copy or enter your passwords for the products that you are installing and press **Enter**.

      The Installation System generates the $C15PSWD job, which copies the password modules into the PROD runtime HLQ.BMCLINK data set.

      *If you prefer to ensure that your password modules are in the appropriate locations,* review the concatenation of the DBC started task and the invoking CLISTS (DOMCLIST, PSSCLIST, or SPDCLIST).

11 On the Installation System - Final Tasks menu, select Review Customization. Review the values for PROD and, if necessary, change the routing information in the job card that will be used for running the jobs on PROD.

12 Generate the $C jobs for PROD, and record the name of the JCL library.

   **Note**

   You do not need to generate the $R05RTEC job for PROD because you are using the runtime enablement customization option (Deployment) in which the Installation System generates the $C jobs with the runtime data sets.
13 On PROD, edit the $C jobs in the PROD JCL data set and execute them as indicated in Table 84 on page 638.

**Note**

Table 84 on page 638 lists the jobs that are relevant for the System and SQL Performance products. You might have other jobs that are generated, depending on your selection of products to install. Refer to the documentation for those other products for deployment instructions, or contact BMC Support.

<table>
<thead>
<tr>
<th>Job</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>$C05ALOC</td>
<td>Do not execute this job. Runtime data sets from the TEST environment include the userlib members. When generated for PROD, this job contains only comments.</td>
</tr>
<tr>
<td>$C10VSAM</td>
<td>Execute this job (if generated).</td>
</tr>
<tr>
<td>$C15PSWD</td>
<td>Execute this job (if generated) only if you need to copy passwords for PROD from different data sets than you used for TEST. The passwords are copied to the runtime BMCLINK data set for PROD.</td>
</tr>
<tr>
<td>$C20APF</td>
<td>Do not execute this job (if generated). As generated for PROD, this job contains only comments.</td>
</tr>
<tr>
<td>$C35BNDI</td>
<td>Ensure that the data sets in the STEPLIB are APF authorized and then execute this job.</td>
</tr>
<tr>
<td>$C40ALTR</td>
<td>Execute this job (if generated)</td>
</tr>
<tr>
<td>$C40INST</td>
<td>Execute this job.</td>
</tr>
<tr>
<td>$C45CNTL</td>
<td>Execute this job.</td>
</tr>
<tr>
<td>$C45COPY</td>
<td>Execute this job (if generated).</td>
</tr>
<tr>
<td>$C60GRNT</td>
<td>Execute this job (if generated).</td>
</tr>
<tr>
<td>$C63MIGP</td>
<td>Execute this job (if generated).</td>
</tr>
<tr>
<td>$C68DOM</td>
<td>Execute this job (if generated).</td>
</tr>
<tr>
<td>$C79TMPD</td>
<td>Execute this job (if generated).</td>
</tr>
<tr>
<td>$C81PERF</td>
<td>Execute this job.</td>
</tr>
</tbody>
</table>

14 If you are installing products other than SQL Explorer and OPERTUNE, return to the Installation System Product Customization Path panel and choose 2 (MainView Customization). Follow the steps listed in “To complete MainView customization” on page 627.

15 Press F3 until you return to the Runtime Enablement (RTE) Process menu.
16 On the Runtime Enablement (RTE) Process menu, select **Additional customization** options and press **Enter**.

17 If you are installing products other than SQL Explorer and OPERTUNE, complete the configuration of the DB2 Product Configuration component as described in “To configure DB2 Product Configuration” on page 628.

**Generating the JCL to propagate the installation to multiple subsystems in the PROD environment**

1 Execute TDSINSTL from the installation data set on the PROD system.

**Example**

If the **HLQ.INSTALL** file is named *installationSystemHLQ.INST.T001*, start the installation system (TDS installation) on the PROD environment by using the following command line:

```
EX 'installationSystemHLQ.INST.T001(TDSINSTL)'
```

The Installation System displays the Installation System Main Menu with two active options: Product Customization and Additional Customization Options.

2 On the main menu, select Product Customization and press **Enter**.

3 On the Product Customization Methods panel, select products to execute from runtime data sets and press Enter.

4 On the Runtime Enablement (RTE) Process menu, select **Additional customization** options and press **Enter**.

5 From the Additional Customization Options panel, select **Customize for multiple similar DB2 subsystems (MSSID)** and press Enter.

6 From the Multiple SSID Customization Menu, select the TDS instance and press **Enter**.

7 Follow the online instructions.
Note
The installer cautions against using MSSID for different versions of DB2.
The binds for the System and SQL Performance products are the same for DB2
Version 8 and Version 9. You can enter all remaining subsystems through the
MSSID installations.
The binds for DB2 Version 10 differ as soon as SYSIBM.SYSPACKSTMT has been
converted to the new format. You can continue to use MSSID install, but then you
must run the DAAUP9#Ajob to run the binds needed for DB2 Version 10.

8 On the Install System JCL Generation Option panel, select Generate JCL and
generate the $S00JCL job.

Note
You do not have to complete the product authorization procedures for installation
on subsequent systems because the systems share the product data sets.

9 Execute the $S00JCL job.

$S00JCL generates a separate JCL data set that contains the correct DB2 libraries
and job card for each subsystem that the MSSID installation specified.

Verifying that the new DBC started task is running properly
in the PROD environment

1 From the Runtime Enablement (RTE) Process Menu, select Additional
customization options and press Enter.

2 From the Additional Customization Options menu, select Start DB2 Component
Service (DBC) Agents and press Enter.

Note
After DOM$STRT starts, the DOM agent within the DBC subsystem, data
collection begins for any Data Collector in the DBC group (DOMPLEX) that is set
to monitor the DB2 subsystem for System and SQL Performance products.

3 Ensure that the product agents are monitoring the correct set of DB2 subsystems
as defined in the associated DOMPLEX option set.

Figure 123 on page 632 shows an example of the messages that appear data
collection is occurring.

4 Invoke the new DOMCLIST, SPDCLIST, or PSSCLIST.
5  Follow the instructions in Verifying the installation on page 506 for each product.

Deploying the products to the user community in the PROD environment

1  Replace the old DOMCLIST, PSSCLIST, or SPDCLIST with the new one.

2  (SQL-Explorer only) Edit the SQLX member in the SYSPROC concatenation or the CLIB data set:

   ■ Change the data sets (the ones that are associated with the subsystems being deployed) to the new runtime names, or ensure that the alias names are referenced.

   ■ Check the plan name for each subsystem being deployed.

   ■ To check for changes to the SQLX edit macro in the new release, review member #SQLX in the SAMP data set.
     If you edited the SQLX member in the CLIB data set, copy the customized SQLX member from the CLIB data set to SYSPROC.

3  Follow the instructions in Verifying the installation on page 506 for each product.
Propagating the changes to your PROD environment
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 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://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 tape.
BMC products for DB2 and their components overview

Table 85: 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
A B C D E

ALTER for DB2 a

X

APPTUNE for DB2

X

CATALOG
MANAGER for DB2

X

X

CHANGE
MANAGER for DB2 a

X

X

CHECK PLUS fpr
DB2

X

COPY PLUS for DB2

X

DASD MANAGER
PLUS for DB2
EXTENDED BUFFER
MANAGER for DB2
LOADPLUS for DB2

X X

X

F

G H I

X

J

X
X X

X

M N O P

Q R S

X

X X

X X

X X X X

X

X

T

U V W X Y
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X X X X

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Log Master for DB2

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X X X

X

X X

MainView for DB2 b

X

X

X

OPERTUNE for DB2

X

PACLOG for DB2

X X

Pool Advisor for DB2

X

R+/CHANGE
ACCUM for DB2 c

X

RECOVER PLUS for
DB2 c

X

RECOVERY
MANAGER for DB2

X

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Appendix E Overview of BMC products and solutions for DB2 645


### 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.


| 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 |
| REORG PLUS for DB2                          | X | X | X |   |   |   |   |   | X | X | X | X |   |   |   |   |   |   |   |   |   |   |   |   |   |
| SNAPSHOT UPGRADE FEATURE for DB2            |   | X |   |   |   |   |   |   |   | X |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| SQL Explorer for DB2                        | X | X | X | X | X | X |   |   |   | X | X | X |   |   |   |   |   |   |   |   |   |   |   |   |   |
| UNLOAD PLUS for DB2                         | X | X | X | X | X | X | X | X | X |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |

*a* ALTER and CHANGE MANAGER use some of the functionality of RECOVER PLUS and UNLOAD PLUS. RECOVER PLUS and UNLOAD PLUS are automatically installed with ALTER and CHANGE MANAGER. (ALTER and CHANGE MANAGER also receive BMCSORT and D2U at installation time because these components are installed with RECOVER PLUS, UNLOAD PLUS, or both.

*b* MainView for DB2 includes the CATALOG MANAGER for DB2 Browse component.

*c* R+/CHANGE ACCUM is automatically installed with the 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.
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.

Similar information is located on file 5 on each of the product installation tapes.
### Table 86: BMC solutions for DB2 and their components

<table>
<thead>
<tr>
<th>Product or technology name</th>
<th>Solution name</th>
<th>Administrative Assistant</th>
<th>Database Administration</th>
<th>Database Performance</th>
<th>Recovery Management</th>
<th>SQL Performance</th>
<th>System Performance</th>
</tr>
</thead>
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<tr>
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<tr>
<td><strong>Product components</strong></td>
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<td>CATALOG MANAGER for DB2</td>
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<td>Log Master for DB2</td>
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<td>X</td>
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<td>Pool Advisor for DB2</td>
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<td>RECOVERY MANAGER for DB2</td>
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<tr>
<td>Product or technology name</td>
<td>Solution name</td>
<td>Administrative Assistant</td>
<td>Database Administration</td>
<td>Database Performance</td>
<td>Recovery Management</td>
<td>SQL Performance</td>
<td>System Performance</td>
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<td>SNAPSHOT UPGRADE FEATURE for DB2</td>
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<tr>
<td>SQL Explorer for DB2</td>
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<tr>
<td>UNLOAD PLUS for DB2</td>
<td>Xe</td>
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</tr>
</tbody>
</table>

**Technology components**

| BMC Common Statistics (ATS)            | X          | X          |             |             |             | X          | X          |
| BMC Password Security System           | X          | X          | X          | X          |             | X          | X          |
| BMC Space Estimation Common Code (ASH) | X          | X          | X          |             |             | X          | X          |
| BMCSORT                                 | X          | X          | X          |             |             | X          | X          |
| Common Explain                         |             |             | X          |             |             | X          | X          |
| Common Infrastructure                  |             |             |             | X          |             | X          | X          |
| Common SQL (ACS)                       | X          | X          | X          |             |             |             | X          |
| Cross-System Image Manager (XIM)       |             |             | X          |             |             |             |             |
| DB2 Assist Services                    |             |             |             |             | X          |             | X          |
| DB2 Common Code (SCC)                  | X          | X          | X          | X          |             | X          | X          |

**Appendix E Overview of BMC products and solutions for DB2**
<table>
<thead>
<tr>
<th>Product or technology name</th>
<th>Solution name</th>
<th>Administrative Assistant</th>
<th>Database Administration</th>
<th>Database Performance</th>
<th>Recovery Management</th>
<th>SQL Performance</th>
<th>System Performance</th>
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<tbody>
<tr>
<td>DB2 Component Services (DBC)</td>
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<td>DB2 Product Configuration</td>
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<td>DB2 Utilities Common Code (D2U)</td>
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<td>X</td>
<td>X</td>
<td></td>
<td></td>
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<tr>
<td>Dignus C runtimes and C++ objects</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>DNA Host Services (DHS) and DNA Core</td>
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<tr>
<td>High-speed Apply Engine</td>
<td></td>
<td>X</td>
<td></td>
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<td>X</td>
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<tr>
<td>Install Execution Code (AIN)</td>
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<td>X</td>
<td>X</td>
<td></td>
<td>X</td>
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<td>JCL Generation and Execution</td>
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<td></td>
<td>X</td>
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<tr>
<td>Next Generation Logger (NGL)</td>
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<td>Option Value Migration</td>
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<td>X</td>
<td></td>
<td></td>
<td>X</td>
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<tr>
<td>Rules Engine</td>
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<td>X</td>
<td>X</td>
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<tr>
<td>Runtime Component System (RTCS)</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>X</td>
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<tr>
<td>SAS Runtime Library Support</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
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</table>
### 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.

#### Table: BMC technology components for DB2 and their products and solutions overview

<table>
<thead>
<tr>
<th>Product or technology name</th>
<th>Solution name</th>
<th>Administrative Assistant</th>
<th>Database Administration</th>
<th>Database Performance</th>
<th>Recovery Management</th>
<th>SQL Performance</th>
<th>System Performance</th>
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</thead>
<tbody>
<tr>
<td>System Performance component</td>
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<tr>
<td>User Interface Middleware (UIM) Common Services</td>
<td></td>
<td></td>
<td></td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>User Interface Middleware (UIM) server</td>
<td></td>
<td></td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Notes:</th>
</tr>
</thead>
<tbody>
<tr>
<td>a MainView for DB2 includes the Data Collector and the CATALOG MANAGER for DB2 (Browse).</td>
</tr>
<tr>
<td>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.</td>
</tr>
<tr>
<td>c These components provide value as part of the indicated solutions and their product components (not as stand-alone components).</td>
</tr>
<tr>
<td>d The full functionality of RECOVER PLUS is not available when it is installed with Administrative Assistant.</td>
</tr>
<tr>
<td>e The full functionality of UNLOAD PLUS and BASIC UNLOAD is not available when they are installed with Administrative Assistant.</td>
</tr>
<tr>
<td>f The full functionality of RECOVER PLUS is not available when it is installed with Database Administration.</td>
</tr>
</tbody>
</table>
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. Similar information is located on File 5 on each of the product installation tape.

---

### Table 87: BMC technologies for DB2 and their products and solutions

<table>
<thead>
<tr>
<th>Product or solution name</th>
<th>Technology components: CA=BMC Common Statistics (ATS), CB=BMC Password Security System, CD=BMC Primary Subsystem, CD=BMC Space Estimation Common Code (ASH), CE=BMC Subsystem, CF=BMCSORT, G=Common Explain, CH=Common Infrastructure, CI=Common SQL (ACS), J=Cross-System Image Manager (XIM) CK=DATA ACCELERATOR Compression, CL=DB2 Assist Services, CM=DB2 Component Services (DBC), CN=DB2 Product Configuration, CO=DB2 Solution Common Code (SCC), CP=DB2 Utilities Common Code (D2U), CQ=Dignus C runtimes and C++ objects, R=High-speed Apply Engine, CS=Install Execution Code (AIN), CT=JCL Generation and Execution, CU=Mainframe Host Services (DHS) CV=Next Generation Logger, W=Option Value Migration, CX=Rules Engine, CY=Runtime Component System (RTCS), CZ=RECOVER PLUS, CA=ASAS Runtime Library Support, CB=System Performance component, CE=CC=UNLOAD PLUS, CD=UI=Interface Middleware Common Services (USC), CE=EE=User Interface Middleware server (UIM)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Administrative Assistant for DB2</td>
<td>X</td>
</tr>
<tr>
<td>ALTER for DB2^a</td>
<td>X</td>
</tr>
<tr>
<td>APPTUNE for DB2</td>
<td>X</td>
</tr>
<tr>
<td>CATALOG MANAGER for DB2</td>
<td>X</td>
</tr>
<tr>
<td>CHANGE MANAGER for DB2^a</td>
<td>X</td>
</tr>
</tbody>
</table>
### Product or solution name

| CHECK PLUS for DB2     | X | X |   |   |   | X | X | X | X | X | X |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| COPY PLUS for DB2      | X |   |   |   |   | X | X | X | X | X | X |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| DASD MANAGER PLUS for DB2 | X | X | X | X | X | X | X | X | X | X |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| Database Administration for DB2 | X | X | X | X | X | X | X | X | X | X |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| Database Performance for DB2 | 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 |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| Log Master for DB2     | X | X | X | X | X | X | X | X | X | X |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| MainView for DB2       | X | X |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| OPERTUNE for DB2       | X |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| PACLOG for DB2         | X | X | X | X | X | X | X | X | X | X |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| Pool Advisor for DB2   | X | X | X | X | X | X | X | X | X | X |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
### Product or solution name

**Technology components:**

| 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 |
| R+/CHANGE ACCUM for DB2 b                  | X   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| RECOVER PLUS for DB2 b                     | X   | X |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| Recovery Management for DB2                | X   | X |   |   |   |   |   | X | X | X | X | X | X |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| RECOVERY MANAGER for DB2                   | X   |   |   |   |   |   |   | X | X | X | X | X | X |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| REORG PLUS for DB2                         | X   |   |   |   |   |   |   | X | X | X | X | X | X |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| SNAPSHOT UPGRADE FEATURE for DB2           | X   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| SQL Explorer for DB2                       | X   |   |   |   |   |   |   | X | X | X | X | X | X |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| SQL Performance for DB2                    | X   |   |   |   |   |   |   | X | X | X | X | X | X |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| System Performance for DB2                 | X   |   |   |   |   |   |   | X | X | X | X | X | X |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| UNLOAD PLUS for DB2                        | X   |   |   |   |   |   |   | X | X | X | X | X | X |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |

a MainView for DB2 includes the CATALOG MANAGER for DB2 Browse component.
b R+/CHANGE ACCUM is automatically installed with the 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.

e UNLOAD PLUS is installed with versions of ALTER and CHANGE MANAGER that run on DB2 Version 8 or later.
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