BMC Software is releasing version 10.2.00 of the Database Administration for DB2 solution. This solution includes the following components:

- CATALOG MANAGER for DB2
- CHANGE MANAGER for DB2
- COPY PLUS for DB2
- LOADPLUS for DB2
- SNAPSHOT UPGRADE FEATURE of EXTENDED BUFFER MANAGER (XBM) for DB2
- UNLOAD PLUS for DB2

**NOTE**

Before you begin installation, BMC recommends that you check the Support Central website at [http://www.bmc.com/support](http://www.bmc.com/support) for:

- Updated product documentation (for example, flashes and technical bulletins)
- Product downloads, patches, and fixes (PTFs)
- Product availability and compatibility (PAC) data

These release notes supplement and supersede the product documentation and discuss product enhancements:

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  COPY PLUS version 11.1.00 .......................................... 17
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What’s new

These topics describe the changes or new features in this release.

Database Administration version 10.2.00

This version of the Database Administration solution includes a new release of the following components and technologies:

- CATALOG MANAGER
- CHANGE MANAGER
- COPY PLUS
- LOADPLUS
- SNAPSHOT UPGRADE FEATURE of EXTENDED BUFFER MANAGER (XBM)
- UNLOAD PLUS
- High-speed Apply Engine
- JCL Generation and Execution for DB2
- RECOVER PLUS for DB2

Copy Migration feature

The Copy Migration feature includes the COPY PLUS EXPORT command and RECOVER PLUS IMPORT command. With these commands, you can migrate an image copy or set of image copies within a DB2 subsystem or to another DB2 subsystem. The migration file that the EXPORT command creates homogeneously transfers all types of COPY PLUS and IBM image copies, and streamlines the recovery process.

End of support for DB2 8, DB2 9 CM, and DB2 10 CM8

Starting with this release, Database Administration does not support IBM® DB2 Version 8. Earlier releases will continue to support Version 8.
Future releases of Database Administration will not support the following modes:

- DB2 Version 9 CM
- DB2 Version 10 CM8

**Documentation changes**

This release includes the following documentation changes:

- All messages are now available in the BMC Documentation Center, which is accessible from the BMC Support Central site (http://www.bmc.com/support). A separate messages manual is no longer available.

- Installation and configuration information is now located in the following books:
  
  — *Installation System User Guide*
  
  — *BMC Products and Solutions for DB2 Configuration Guide*

- Revision bars in the documentation denote differences from earlier editions. To view the documentation, see the Support Central website at http://www.bmc.com/support.

- The names of the CHANGE MANAGER books have changed, as shown in the following table:

<table>
<thead>
<tr>
<th>Previous title</th>
<th>Current title</th>
</tr>
</thead>
<tbody>
<tr>
<td>ALTER and CHANGE MANAGER for DB2 Getting Started Guide</td>
<td>ALTER and CHANGE MANAGER for DB2 User Guide, Volume 1</td>
</tr>
</tbody>
</table>

- The installation options and product option file (POF) keywords are now documented in the *ALTER and CHANGE MANAGER for DB2 Reference Manual* and the *CATALOG MANAGER for DB2 User Guide*.

- The Catalog Help facility for CATALOG MANAGER now reflects accurate information for the current and previous release of DB2, based on the current DB2 documentation.

- The *COPY PLUS for DB2 Reference Manual* specifies updated items to consider when using cabinet copies.

- In the syntax diagrams in the *RECOVER PLUS for DB2 Reference Manual*, the Point-in-time recovery specification has been renamed to the TORBA/TOLOGPOINT specification.
Version 11.1.00 of the CATALOG MANAGER component includes the following changes.

**DB2 support**

CATALOG MANAGER supports or tolerates various features of the IBM DB2 Universal Database™ for z/OS subsystem.

**DB2 Version 10**

CATALOG MANAGER supports the following features of DB2 Version 10:

- DB2 security to provide more granular control over access to DB2 catalog data and user data through the use of DSNZPARMs
- Using a SET SCHEMA statement to set the creator when you are creating an unqualified alias, table, index, or view with a one-part name
- Options for the following utilities to support the creation of flashcopies (point-in-time copies of a volume) with the IBM FlashCopy® feature:
  - COPY
  - LOAD
  - REBUILD INDEX
  - REORG INDEX
  - REORG TABLESPACE
- DB2 Version 10 syntax in all IBM utilities and BMC utilities

**Earlier versions of DB2**

For earlier versions of DB2, CATALOG MANAGER also supports the following features:

- Using 128-byte object names in the DESCRIBE command for the following objects:
  - Aliases
  - Indexes
  - Storage groups
  - Stored procedures
  - Synonyms
- Using 128-byte object names in the DB2 START, STOP, and DISPLAY action commands
- Casting BINARY, VARBINARY, DECFLOAT, and TIMESTAMP WITH TIMEZONE values to a readable data type in the SELECT statement

- Displaying the key columns or the key-targets of extended indexes as appropriate for the index key columns in the Index Mixed List

**Options data set**

When you first invoke CATALOG MANAGER, you are prompted to create a data set in which to store the settings for your user options. If the data set is archived, you might have to wait for the data set to be restored before you can use the product. You now have the option to use the defaults that CATALOG MANAGER provides. By using the defaults, you no longer have to wait for an archived data set to be restored. However, if you use the defaults, any option that you set will not be saved. (To save your options, you must specify a data set.)

**Commands**

CATALOG MANAGER includes the following new commands:

<table>
<thead>
<tr>
<th>New command</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>SYNC</td>
<td>Lists the columns from the BMCSYNC table for the BMC utilities. SYNC is valid only from a BMCUTIL list or from rows for BMC utilities in a STATUS list.</td>
</tr>
<tr>
<td>TN</td>
<td>Lists the rows from SYSIBM.SYSTABLES. The command does not use a TBCREATOR.TBNAME qualifier for all values of TYPE. Instead, the command displays multiple types of CATALOG MANAGER objects in a single list.</td>
</tr>
<tr>
<td>XC</td>
<td>Lists copies from the BMCXCOPY table and the cabinet copies for COPY PLUS</td>
</tr>
<tr>
<td>XSR</td>
<td>Displays a mixed list of the rows from SYSIBM.XSROBJECTS and the related XML schema repository (XSR) catalog tables. XSR is a set of DB2 tables in which you can store XML schemas (sets of XML schema documents).</td>
</tr>
<tr>
<td>XX and Xnnn</td>
<td>Excludes a block or range of objects from a list</td>
</tr>
</tbody>
</table>

The following commands include additional functionality:

<table>
<thead>
<tr>
<th>Command</th>
<th>Now you can</th>
</tr>
</thead>
<tbody>
<tr>
<td>BINDDEPLOY</td>
<td>Use BINDDEPLOY on a list of native SQL stored procedures</td>
</tr>
<tr>
<td>BMCUHIST</td>
<td>Use BMCUHIST as a list command</td>
</tr>
<tr>
<td>BMCUTIL, DISUTIL, and STATUS</td>
<td>Include the userID/utilityID qualifier to limit the amount of information the commands provide</td>
</tr>
<tr>
<td>CASCADE</td>
<td>Execute CASCADE in batch mode</td>
</tr>
</tbody>
</table>
Planned deprecation of the HDESC and HPRINT commands

In the next release of CATALOG MANAGER, BMC plans to deprecate the HDESC and HPRINT commands.

Interface for DB2 commands

When you create a DB2 command, CATALOG MANAGER now provides a user-friendly interface with predefined input fields. These input fields correspond to the command’s keywords. The interface also provides an optional field in which you can specify additional keywords for the command.
Also, you can now save your customized syntax values for a DB2 command in a DB2 command profile. If you use the PROFILE command to save your syntax to the profile, CATALOG MANAGER stores the profile ID, the DB2 command keywords, and the keyword values in a utility profile. Using the profile can save time and limit errors: you no longer need to specify syntax every time you execute the command.

Interface for DSN commands

When you issue the DSN BIND, REBIND, or FREE command for a package or a plan, CATALOG MANAGER now displays your specifications and options on multiple panels. The panels provide the same functionality as they did in earlier releases of the product.

User commands table

A new user commands table in HLQ.CNTL(ACTCOMNU) contains commands for invoking the IBM DB2 data editor. You can add new commands to this table. This user commands table overrides the primary commands table, ACTCOMND.

Referenced VARCHAR columns in data editing function

In earlier releases, the data editing function did not enable you to reference VARCHAR columns that were greater than 254 bytes in the WHERE clause of the SELECT statement. For DB2 Version 9 and later, you can now reference those columns.

Referential constraint enforcement

The Foreign Key List and the Referential Integrity List panels now include a field to indicate whether the referential constraint is enforced.

Ability to limit retrieved rows for a SELECT statement

The data browsing function now adds a FETCH FIRST \( n \) ROWS ONLY clause to the SELECT statement to retrieve the specified number of rows. As a result, DB2 calculates the cost of the SELECT statement based on the user-specified number of rows and retrieves no more than that number of rows. This clause enables you to browse a table when DB2 will not execute the SELECT statement because the estimated processor cost exceeds the limit and the DSNZPARM site settings for the resource limit facility (RLF) component prohibit it. To omit the clause from the SELECT statement, specify 0 for \( n \).
**Additional information in cascade reports**

The following report panels now indicate the IDs of the current Installation System administrators and note whether the ID being revoked was previously an Installation System administrator:

- Cascade Report panel
- Confirm SQL for Revoke Reassign Grants panel
- Cascade list report for revoke/reassign panel

**Ability to switch catalog access**

The system administrator can set up CATALOG MANAGER to access either a real (direct) or indirect DB2 catalog at startup. In this release, you can enter `SET QUALIFIER synonymQualifier` on the Command line to switch from one access method to the other. (In earlier releases, you had to use the CONNECT command to switch the catalog access method.)

The indirect method reduces contention for the DB2 catalog and improves performance by letting you access the catalog indirectly through copies or views. Catalog indirection can also improve security by restricting access to specified columns within the catalog tables. The indirect access method is available to CATALOG MANAGER and other BMC Administrative products.

**Worklist execution**

In earlier releases of CATALOG MANAGER, you could execute a worklist via plans provided with the BMC ALTER for DB2, CHANGE MANAGER, or BMC DASD MANAGER PLUS for DB2 products when the following conditions existed:

- ALTER, CHANGE MANAGER, or DASD MANAGER PLUS was installed.
- The CATALOG MANAGER AOPTS or BOPTS installation option specified the installation options module name for ALTER, CHANGE MANAGER, or DASD MANAGER PLUS.

With this release, CATALOG MANAGER uses the `ACTvrDM` plan to execute a worklist. The plan name is now generated in the Execution JCL. You no longer need to have ALTER, CHANGE MANAGER, or DASD MANAGER PLUS installed, or to specify the AOPTS or BOPTS option.
CHANGE MANAGER version 11.1.00

Version 11.1.00 of the CHANGE MANAGER component includes the following changes.

**Support for DB2 objects**

You can now create, edit, drop, migrate, import, baseline, and compare the following IBM DB2 Universal Database for z/OS objects:

- External stored procedures and native SQL stored procedures
  
  CHANGE MANAGER allows you to create a procedure in which lines in the text are longer than 72 characters. In addition, CHANGE MANAGER allows you to view, alter, and copy procedures that were built in another product and that contain long lines.

- Clone tables

- System-period temporal tables and history tables

---

**NOTE**

You can only migrate the following types of stored procedures:

- External SQL stored procedures

- Stored procedures that contain a UDT data type or an SQL table function that defines a parameter for a transition table (TABLE LIKE ... AS LOCATOR syntax)

- All stored procedures on a DB2 subsystem that is in one of the following modes: Version 8 NFM, Version 9 CM or ENFM, or Version 10 CM8 or ENFM8

BMC displays these types of procedures in the Mixed List.

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**Dynamic allocation of reorg data sets**

CHANGE MANAGER now supports dynamically allocating data sets for the BMC REORG PLUS for DB2 and IBM REORG utilities. You can now use REORG PLUS for all reorganizations. You can enable or disable dynamic allocation by using the DYNREORG installation option, the DYNREORG or NODYNREORG ALUIN keywords, or an option on the Analysis Utility Dataset Options panel.
Support of SET SCHEMA

CHANGE MANAGER supports using a SET SCHEMA statement to set the CREATOR field to the value in the SET SCHEMA statement when you create an unqualified alias, table, index, view, or trigger with a one-part name. The new -SETA worklist command sets the schema creator for subsequent SQL statements.

Support of LOAD DATA RESUME YES INTO TABLE REPLACE

CHANGE MANAGER now supports using the LOAD DATA RESUME YES INTO TABLE REPLACE syntax for LOADPLUS. This change enables the products to migrate only the data for one or more tables in a segmented, multi-table table space. Using INTO TABLE REPLACE greatly improves performance by eliminating the need for -SQL DELETE statements in the worklist. To use the new syntax, you must include the FORCLOADREPLACE keyword in the ALUIN input stream.

Include parent objects in scope rules for tables

In an earlier release of CHANGE MANAGER, the CM/PILOT component of CHANGE MANAGER enabled you to migrate the parent objects of tables. Now, you can include parent objects of tables by specifying scope rules for outbound migrate profiles and catalog baseline profiles. You can also specify the database and table space dependencies in your migrate options for tables.

Ability to delete baselines in batch

You can now delete a specific baseline in a batch run.

Capture of statistical information

CHANGE MANAGER now uses the CM_HISTORY product table to capture the following statistics about analyzing work IDs:

- Date and time at which a work ID was analyzed
- DB2 SSID on which a work ID was analyzed
- Type of work ID (alter-type or migrate-type)
- Options specified in the work ID
- Number and type of objects modified by Specification, Import, or scope rules, and objects affected by the changes or scope rules
- Number and type of utilities generated for a worklist
CHANGE MANAGER also uses the CM_HISTORY product table to capture the following statistics about comparisons:

- Date and time of a comparison
- DB2 location on which a comparison was executed
- Compare1 and Compare2 input types
- Number of objects obtained for the input types
- Number of objects generated in CDL
- Final return code

**Excluded or included primary key constraints in scope rules**

When you exclude a unique constraint as a dependency of an object, CHANGE MANAGER excludes the unique key constraint and the primary key constraint. An earlier release of CHANGE MANAGER provided the OVERRIDE( KEEP-ALL-PRIMARY ) ALUIN keyword, which let you include the primary key constraint in the scope.

The following new options in this release let you control whether the primary key constraint is included or ignored in the scope:

<table>
<thead>
<tr>
<th>Keyword</th>
<th>Installation option</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>OVERRIDE( KEEP-ALL-PRIMARY )</td>
<td>UCPKPALL=Y</td>
<td>Includes the primary key constraint in a baseline or comparison when you exclude unique constraints</td>
</tr>
<tr>
<td>OVERRIDE( NO-PRIMARY-CONSTRAINTS )</td>
<td>UCPKPALL=N</td>
<td>Ignores the primary key constraint in a baseline or comparison when you exclude unique constraints</td>
</tr>
</tbody>
</table>

**Suppressed column order in a comparison**

You can now use the OVERRIDE( NOTBCOLORDER ) ALUIN keyword to ignore the differences in the order of the columns in a table during a comparison. In addition, when you specify the keyword and add a new column to the table, CHANGE MANAGER adds the column to the end of the table.

**Stop lists**

You can now create a list of tables that should not be analyzed (stop list). For example, you might want this list to include tables that are defined with the DATA CAPTURE CHANGES attribute. When you analyze a work ID, the Analysis component determines whether the tables to be modified or migrated are listed in a work ID for the work ID creator specified in the STOPLIST ALUIN keyword or
STOPLIST installation option. If the tables are included in the stop list for the creator work ID, and the NOSTOPLIST ALUIN keyword is not specified, Analysis will not produce a worklist. If the NOSTOPLIST keyword is specified, Analysis produces the worklist.

**SQL terminator**

The Baseline Report component uses the pound sign (#) as an alternate terminator to separate SQL statements. You can now change the value of the alternate terminator with the BLRTERMC installation option, or override the value with the TERMINATOR ALUIN keyword.

**Remote baseline profiles when comparing a DB2 catalog to a DB2 catalog**

When you compare a DB2 catalog to a DB2 catalog, you can now specify a remote SSID for a baseline profile that contains scope rules. You specify the remote SSID in the first part of a three-part name for the profile in the SCOPE1 and SCOPE2 ALUIN keywords.

**Preserved authorizations**

The Analysis component now preserves the authorizations that you grant to roles for various objects.

**Limit key validation installation option**

When you alter the limit key values for an index- or table-controlled partitioned object, the Analysis component must alter each partition in a specific sequence. Each altered limit key cannot exceed the value of the existing limit key of the next partition. Analysis sorts the limit key values so that ALTER TABLE ALTER PARTITION statements can be executed in the correct sequence. Analysis also validates the limit key values to ensure that partition ranges do not overlap, and that the values are correct for the data types and lengths of the partitioning columns. This release provides a new installation option, LKVALID, to indicate whether to sort and validate the limit key values, or to ignore errors.

**Delimited identifiers**

CHANGE MANAGER now supports delimited identifiers for collection IDs and names in the REBIND TRIGGER PACKAGE commands.
New sample DML statements

With CHANGE MANAGER, you can import files that contain CM/PILOT DML statements. CHANGE MANAGER can process these files, whether they were received from the same or another subsystem, and apply the changes. Sample DML statements that you can import with CHANGE MANAGER are provided in several members in the HLQ.CNTL data set.

The following members are new for this release:

<table>
<thead>
<tr>
<th>Member</th>
<th>Purpose</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACMDMLP1</td>
<td>Migrates stored procedures</td>
</tr>
<tr>
<td>ACMDMLP2</td>
<td>Updates attributes for native SQL stored procedures</td>
</tr>
<tr>
<td>ACMDMLP3</td>
<td>Updates parameters for native SQL stored procedures</td>
</tr>
</tbody>
</table>

APARs for DB2 Version 10

CHANGE MANAGER now supports the following APARs for DB2 Version 10:

- In an ALTER TABLE ALTER COLUMN SET DATA TYPE statement, if the transition variable for the column being altered is used in a trigger action, IBM now issues SQLCODE -750 (reference IBM PM40141). If you perform an action that causes the product to generate an ALTER TABLE ALTER COLUMN SET DATA TYPE command for a table on which a trigger is based, the Analysis component will drop the trigger, alter the table, and rebuild the trigger.

- You can now add a column that is defined as TIMESTAMP(6) WITH TIME ZONE in a partitioning key for an index or a table. The column must be the last column in the partitioning key. IBM added this feature with APAR PM37611. You must have the IBM PTF applied to obtain this functionality.

- You can now make the MAXPARTITIONS value lower than the value that was set previously for a partition-by-growth universal table space. (IBM added this capability with APAR PM57001. You must have the IBM PTF applied to obtain this functionality.) However, DB2 will not allow you to reduce the value of MAXPARTITIONS to a value that is less than the actual number of active partitions.

- With APAR PM67642, IBM modified DB2 to invalidate packages that are dependent upon a table space during a reorganization. The packages require invalidation when a partitioned table space is altered to a universal table space by changing the SEGSIZE. After the packages are invalidated, ALTER and CHANGE MANAGER rebind the packages. (You must have the IBM PTF applied to obtain this functionality.)
Product tables

The following CHANGE MANAGER product tables changed for this release:

- BL_ALIAS
- BL_AUTH
- BL_INDEX
- BL_TABLE
- BL_VIEW
- CD_ALIAS
- CD_INDEX
- CD_ROUTINES
- CD_TABLE
- CD_VIEW
- CM_BASELINE
- CM_SCOPE
- CM_SYNC

The following CHANGE MANAGER product tables are new for this release:

- BL_PACKAGE
- BL_PARMS
- BL_ROUTINES
- BL_ROUTINETEXT
- BL_RTAUTH
- BL_SQAUTH
- CD_PACKAGE
- CD_PARMS
- CD_ROUTINES2
- CD_ROUTINES2NEWTEXT
- CD_ROUTINES2TEXT
- CM_HISTORY
- CM_XML
- CM_XML_AUX

Restrictions

In some situations, CHANGE MANAGER cannot use BMC utilities to complete specific tasks. The following table summarizes the situations that BMC has identified to date and indicates the restrictions as follows:

- For a given situation, X means CHANGE MANAGER cannot use the specified utility.
- R means CHANGE MANAGER can use the utility in the given situation *on a restricted basis* (that is, under certain circumstances, as explained by the table footnotes).

- Blank (gray) cells indicate that the situation is not relevant to the specified utility.

<table>
<thead>
<tr>
<th>Situation</th>
<th>BASIC UNLOAD</th>
<th>UNLOAD PLUS</th>
<th>UNLOAD PLUS from image copies</th>
<th>RECOVER PLUS from image copies</th>
<th>LOADPLUS</th>
<th>BMCFASTLOAD feature with UNLOAD PLUS and LOADPLUS</th>
<th>RECOVER PLUS REBUILD INDEX</th>
<th>BMCSTATS feature of DASD MANAGER PLUS</th>
<th>COPY PLUS EXPORT / RECOVER PLUS IMPORT</th>
<th>Space estimation</th>
</tr>
</thead>
<tbody>
<tr>
<td>A base table includes a LOB column.</td>
<td>X</td>
<td>R&lt;sup&gt;1&lt;/sup&gt;</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>R&lt;sup&gt;1&lt;/sup&gt;</td>
<td>X</td>
<td>R&lt;sup&gt;1&lt;/sup&gt;</td>
<td></td>
</tr>
<tr>
<td>A table contains an inline LOB.</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>The size of the LOB column was decreased.</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>You are converting a LOB column from NULL to NOT NULL.</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>A LOB or an XML auxiliary object is defined as DEFINE NO.</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td><em>(DB2 Version 10)</em> A base table includes an XML column.</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>The encoding scheme is defined as Unicode, and a new GRAPHIC column that is being loaded is defined as NOT NULL and NO DEFAULT.</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>You are converting a Unicode GRAPHIC or VARGRAPHIC data type from or to another data type.</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>You are converting from a VARCHAR data type to BLOB or DBCLOB.</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>A table includes an index that is created on an expression.</td>
<td>X&lt;sup&gt;e&lt;/sup&gt;</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>A table that is being loaded includes an index with a key stored in random order.</td>
<td>X&lt;sup&gt;e&lt;/sup&gt;</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>A temporal table defines a BUSINESS_TIME or a SYSTEM_TIME period.</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>A table space exists in an implicitly created database.</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>A table space is a range-partitioned universal table space.</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>A table space is a simple table space.</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
</tbody>
</table>
### Situation

<table>
<thead>
<tr>
<th>Situation</th>
<th>BASIC UNLOAD</th>
<th>UNLOAD PLUS</th>
<th>UNLOAD PLUS from image copies</th>
<th>RECOVER PLUS</th>
<th>LOADPLUS</th>
<th>BMCFASTLOAD feature with UNLOAD PLUS and LOADPLUS</th>
<th>RECOVER PLUS REBUILD INDEX</th>
<th>BMCSTATS feature of DASD MANAGER PLUS</th>
<th>COPY PLUS EXPORT/ IMPORT</th>
<th>RECUP PLUS IMPORT</th>
</tr>
</thead>
<tbody>
<tr>
<td>A partitioning key column in a table is a ROWID column.</td>
<td></td>
<td></td>
<td></td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A table contains a column that is defined as a row change timestamp column with GENERATED ALWAYS.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**a** You can use UNLOAD PLUS to unload and LOADPLUS to load if none of the following conditions exists:
- The table space is a partition-by-growth universal table space.
- Analysis requires multiple SELECT statements to unload the data.
- A two-phase load is required to load the data.
- A table that is being loaded contains a column that is defined as ROWID GENERATED ALWAYS, and a unique index is not defined for the column.

**b** If more than 256 file reference output data sets are open, Analysis disables multitasking and generates the worklist.

**c** You can estimate space for a base table space, but not for a LOB table space.

**d** You must define both the source LOB table space and the target LOB table space as DEFINE YES, or define both as DEFINE NO.

**e** You cannot use BASIC UNLOAD to unload the data and LOADPLUS to load the data.

**f** You cannot use UNLOAD PLUS to unload the data and LOADPLUS to load the data.

Additional restrictions are as follows:

- On DB2 Version 9 or later subsystems, the Analysis component of CHANGE MANAGER has disabled the use of the BMC CHECK PLUS for DB2 utility. The products use the IBM CHECK utility, instead.

- You cannot use the LOB DATA MOVER to unload and load tables that include an XML column.

- The CM/PILOT component of CHANGE MANAGER does not allow you to estimate space if DB2 created the table space implicitly in a Version 9 or later subsystem.

- CHANGE MANAGER does not support INSTEAD OF triggers.

- With APAR PK51752, IBM modified the CREATE TABLE statement to support implicitly creating table spaces for range-partitioned tables. However, CHANGE MANAGER does not support this feature.
The JCL Generation component of the products constructs a JCL file for running the Analysis, Import, Compare, Baseline, Baseline Report, and CM/PILOT components in batch. The batch JCL that you generated in product version 9.1.01 or earlier might not work with version 11.1.00. You should regenerate the JCL by using version 11.1.00.

COPY PLUS version 11.1.00

Version 11.1.00 of the COPY PLUS component includes the following changes.

Extended RBA and LRSN support

All COPY PLUS output (such as the output in Chapter 5, “Examples of COPY PLUS jobs” in the COPY PLUS for DB2 Reference Manual) has been converted to show 10-byte RBAs and LRSNs. The BMC utilities database has also changed to support extended RBAs and LRSNs.

New EXPORT command for the Copy Migration feature

For the Recovery Management Copy Migration feature, COPY PLUS adds the EXPORT command for use in migrating a copy or set of copies to another DB2 subsystem. The EXPORT command creates a sequential file that contains BMCXCOPY and SYSCOPY table information about all selected table spaces. The RECOVER PLUS MIGRATE and IMPORT commands use this file to move data from one or more table spaces to another.

**NOTE**

This feature requires one of the following valid passwords:

- Recovery Management solution password
- Database Administration solution password

This release also includes the following changes:

- Adds the EXPOUT option to the OUTPUT command
- Adds new EXPSSID, EXPSLRSN, and EXPTLRSN columns to the BMCXCOPY table to accommodate the EXPORT, MIGRATE, and IMPORT commands
- Adds ICTYPE column value m, and COPY_TYPE column values X and I
In addition to the *COPY PLUS for DB2 Reference Manual*, see the following resources for more information:

- MIGRATE and IMPORT command descriptions in the *RECOVER PLUS for DB2 Reference Manual*
- Chapter 11, “Moving data with a migration file,” in *Recovery Management for DB2 User Guide*

**COPY IMAGECOPY support for system-level backups**

COPY IMAGECOPY can now create the following types of copies from a system-level backup on disk:

- Standard image copies on disk or tape
- Cabinet copies if you have the Recovery Management solution

COPY PLUS can register these copies in the SYSCOPY or BMCXCOPY tables.

**COPY IMAGECOPY support for multitasking**

COPY PLUS now supports multitasking when you use COPY IMAGECOPY.

**Support for VSAM output on nonsnappable disks**

COPY PLUS can now make VSAM copies, even if the data set is not on a snappable disk. To provide this new functionality, COPY PLUS adds the new installation option SNAP. SNAP is also available on the OPTIONS command. When the SNAP value is VSAM, COPY PLUS uses conventional VSAM I/O to copy a VSAM data set.

Additionally, COPY PLUS adds the new FCPPRC installation option. You can use FCPPRC to control what happens if you specify SNAP=VSAM and the data sets are on a disk that is capable of IBM FlashCopy.

**New GENSYSPAGES option**

COPY PLUS can now automatically materialize system pages before making a copy to use for migration. To accommodate this feature, this release adds GENSYSPAGES as an installation option, and as an option for the COPY command. Valid values for GENSYSPAGES are AUTO and NO.
New SUMMARY value for HISTORY option

You can now use SUMMARY as a value for the HISTORY installation option. HISTORY=SUMMARY provides summary information about each execution of COPY PLUS. In contrast, HISTORY=YES provides more detailed information, and HISTORY=NO (the default) provides no information.

New MAXRECDAYS option

The MAXRECDAYS option for the DELETE subcommand on the MODIFY command provides an alternative method for SYSCOPY or BMCXCOPY cleanup. You specify the number of whole calendar days for which you want to ensure recoverability, and COPY PLUS retains that recovery information in SYSCOPY or BMCXCOPY. COPY PLUS deletes SYSCOPY or BMCXCOPY rows that are not needed for recovery based on your specification.

New symbolic variables

COPY PLUS adds the &UNIQ (or &UQ) symbolic variable to generate unique names for image copy data sets. For example, you can use this variable with the DSNAME parameter on the OUTPUT command.

If you use &UNIQ, COPY PLUS generates a 1- to 8-character value that is based on the system clock. The first character is always an uppercase letter. Each remaining character is either an uppercase letter or a numeral from 0 through 9.

---

**NOTE**

Support for &UNIQ is available by PTF for COPY PLUS version 10.1 (BPU3449) and COPY PLUS version 9.2 (BPU3347).

COPY PLUS also adds the &PART5 symbolic variable that you can use for any data set. COPY PLUS generates 5-character partition numbers as follows:

- Partition 1 = 00001
- Partition 10 = 00010
- Partition 100 = 00100
- Partition 1000 = 01000
- Nonpartitioned = 00000
Version 10.2.00 of the LOADPLUS component includes the following changes.

**Temporal tables**

In most cases, LOADPLUS now natively loads temporal tables.

**NOTE**

LOADPLUS continues to invoke DSNUTILB when you specify INDEX UPDATE while loading temporal tables.

This support changes the following options:

- The PERIODOVERRIDE option is now valid for both native LOADPLUS jobs and DSNUTILB load jobs. This option tells LOADPLUS to load column values from an input file into a system period start or end column that is defined as GENERATED ALWAYS.

- The TRANSIDOVERRIDE option is now valid for both native LOADPLUS jobs and DSNUTILB load jobs. This option tells LOADPLUS to load column values from an input file into a transaction start column that is defined as GENERATED ALWAYS.

**XML binary data**

LOADPLUS now natively supports XML binary data. This support includes the ability to natively load XML data from a BLOB referenced file (by using the BLOBF keyword on the CHAR or VARCHAR data type).

The AVGSIZE keyword on the CHAR or VARCHAR data type and the XMLAVGSIZE global option now apply when you are loading XML data from a BLOB referenced file.

**XML indexes**

LOADPLUS now natively supports user-defined XML indexes for which the indexed values are stored as SQL DATE or TIMESTAMP values.

**Timestamp columns defined with a precision other than 6**

LOADPLUS now natively supports timestamp columns that are defined with a precision (number of microseconds) other than 6.
This change makes the TSPREC installation option obsolete. If your installation options module contains the TSPREC option, the module compiles successfully but completes with return code 4 and a message indicating that the option is obsolete.

**TIMESTAMP WITH TIME ZONE data**

LOADPLUS now natively supports TIMESTAMP WITH TIME ZONE data. This enhancement includes support for both of the following capabilities:

- Loading TIMESTAMP WITH TIME ZONE input data
- Loading columns that are defined as TIMESTAMP WITH TIME ZONE

As part of this enhancement, the definition for the IMPLICIT_TZ option has changed. LOADPLUS now uses IMPLICIT_TZ natively. Use IMPLICIT_TZ to specify the implicit time zone to use when loading a TIMESTAMP WITH TIME ZONE column with timestamp values that do not contain a time zone. For more information, see the description of this option in the *LOADPLUS for DB2 Reference Manual*.

This change makes the TSTZ installation option obsolete. If your installation options module contains the TSTZ option, the module compiles successfully but completes with return code 4 and a message indicating that the option is obsolete.

**Clone tables**

LOADPLUS now natively loads clone tables and base tables that participate (or have participated) in a clone relationship. Base table spaces are now supported regardless of instance number.

As part of this support, LOADPLUS has added the EXCHANGE syntax option to enable you to exchange the base and clone objects after the load process completes. For more information, see the description of this option in the *LOADPLUS for DB2 Reference Manual*.

This change makes the CLONE installation option obsolete. If your installation options module contains the CLONE option, the module compiles successfully but completes with return code 4 and a message indicating that the option is obsolete.

**Indexes that contain non-key columns**

LOADPLUS now natively supports indexes that contain non-key columns.

This change makes the IXINCLCOL installation option obsolete. If your installation options module contains the IXINCLCOL option, the module compiles successfully but completes with return code 4 and a message indicating that the option is obsolete.
Universal tables spaces defined with MEMBER CLUSTER

LOADPLUS now natively loads universal table spaces that are defined with MEMBER CLUSTER.

This change makes the UTSMEM installation option obsolete. If your installation options module contains the UTSMEM option, the module compiles successfully but completes with return code 4 and a message indicating that the option is obsolete.

Indexes on an expression

LOADPLUS now natively supports indexes that contain a key that is derived from certain expressions. For more information, see the LOADPLUS for DB2 Reference Manual.

LOADPLUS currently supports expressions that use the following functions:

- UPPER
- LOWER
- SUBSTR
- DATE
- DAY
- MONTH
- YEAR

**NOTE**

PTFs BPU3684, BPJ0470, and BPJ0507 provided this functionality for version 10.1.00. For more information, see the technical bulletin dated April 6, 2012.

LOAD RESUME YES SHRLEVEL REFERENCE

LOADPLUS now supports LOAD RESUME YES SHRLEVEL REFERENCE. This option uses the hardware snapshot capability of the BMC EXTENDED BUFFER MANAGER (XBM) product or its SNAPSHOT UPGRADE FEATURE (SUF) technology. For more information, see the description of SHRLEVEL REFERENCE in Chapters 2 and 3 of the LOADPLUS for DB2 Reference Manual.

As part of the changes for this feature, the SHRLEVEL installation option has changed. You can now specify a value of REFERENCE for either parameter of this option.
LOAD RESUME YES SHRLEVEL CHANGE

LOADPLUS now supports LOAD RESUME YES SHRLEVEL CHANGE (without the SQLAPPLY keyword) for PART \( n \) REPLACE. For more information, see the description of SHRLEVEL CHANGE in Chapters 2 and 3 of the \textit{LOADPLUS for DB2 Reference Manual}.

\textbf{NOTE}

When you specify LOAD RESUME YES SHRLEVEL CHANGE without PART \( n \) REPLACE, LOADPLUS runs an SQLAPPLY load as it did in earlier versions.

As part of the changes for this feature, the SHRLEVEL installation option has changed. You can now specify a value of CHANGE for either parameter of this option.

Statistics

LOADPLUS has enhanced statistics collection:

- For UPDATEDB2STATS YES, BMCSTATS YES, and BMCSTATS REPORT, LOADPLUS now collects statistics for the following objects:
  - LOB table spaces
  - Partition-by-growth partitions that were added during the load job
- For UPDATEDB2STATS YES, LOADPLUS now updates additional DB2 catalog statistics by passing the following options to the Common Statistics component:
  - UPDATEDB2 ALL (instead of UPDATEDB2 ACCESSPATH)
  - HISTORY ALL (instead of HISTORY ACCESSPATH)
  - KEYCARD Y (instead of KEYCARD N)

For information about how these options affect which statistics are updated in the DB2 catalog, see the DASD MANAGER PLUS documentation.

\textbf{NOTE}

You cannot change these statistics options.
Ability to cancel threads

You can now tell LOADPLUS to cancel threads in DB2 that might prevent a successful drain. You must have the following authorizations to use this functionality. (These additional authorizations might be implicit in the authority that you have.)

- DISPLAY privileges
- One of the following authorities:
  - SYSADM
  - SYSOPR
  - SYSCTRL

A new command option, FORCE, enables this functionality; corresponding installation options FORCE, FORCE_AT, and FORCE_RPT provide default values for this option.

You can also specify a new DD statement, BMCFORCE DD, to contain the thread cancelation report.

For more information, see the descriptions of the FORCE options and the BMCFORCE DD statement in the LOADPLUS for DB2 Reference Manual.

Additional output messages data set

You can now send LOADPLUS output messages to a second output data set by specifying a SYSPRIN2 DD statement in your JCL. The content of this optional data set is identical to the content of the SYSPRINT data set.

SYSPRIN2 is not a substitute for SYSPRINT. If you include a SYSPRIN2 DD statement in your JCL, you must still include a SYSPRINT DD statement.

In a worklist environment, you can specify SYSPRIN2 DD SYSOUT=* to view output in real time from any of the BMC Utility products that run in that worklist.

**NOTE**

PTF BPU3886 provided this functionality for version 10.1.00.

Compressed versioned indexes

LOADPLUS fully supports compressed indexes that have been versioned.
Data set type specification

You can use the new DSNTYPE installation or command option to specify the type of data set that you want LOADPLUS to create during dynamic allocation. For more information, see the description of this option in the *LOADPLUS for DB2 Reference Manual*.

&JDATE variable

When you specify the &JDATE variable with the DSNPAT option and you are running a DSNUTILB load, LOADPLUS now translates this variable to the IBM &JDATE(3,5) variable.

ACFORTSS removal

This release removes the ACFORTSS option. Now, if the following conditions exist, you must ensure that the DB2 external security exit (DSNX@XAC) from Computer Technologies is implemented:

- You use the Computer Technologies CA-ACF2 or CA-Top Secret security product for DB2.
- You previously used ACFORTSS=Y.

System and software requirements

This version of LOADPLUS has the following changes to minimum requirements from version 10.1 of LOADPLUS:

- BMCSORT version 2.4.01
- DB2 Solution Common Code (SCC) version 11.1.00
- DB2 Utilities Common Code (D2U) version 10.2.00
- High-speed Apply Engine version 11.1.00 (for SQLAPPLY load)
- BMC Common Statistics component version 11.1.00 (to update DB2 catalog statistics or the DASD MANAGER PLUS database statistics)

**NOTE**

PTFs BPU4280 and BPJ0506 provided this functionality for version 10.1.00. For more information, see the technical bulletin dated April 6, 2012.
Known issue

When loading LOB data, LOADPLUS might write invalid LOB pages, but complete without an indication of the problem.

Known symptoms of this problem include the following results from subsequent IBM utility operations:

- Broken-page messages
- Failure with reason code 00C200FD

PTF BPU5692 resolves this issue.

SNAPSHOT UPGRADE FEATURE of XBM version 6.1.00

Version 6.1.00 of the EXTENDED BUFFER MANAGER (XBM) product and its associated SNAPSHOT UPGRADE FEATURE technology includes the following changes.

Changes to snapshot support for EMC devices

XBM now includes the following changes in its support of EMC devices:

- XBM now supports IBM FlashCopy for EMC devices, depending on the availability of the EMC SYMMETRIX CONTROL FACILITY (EMCSCF) and FlashCopy-enabled EMC devices in the environment.
  - If EMCSCF software is enabled, XBM uses the EMC TimeFinder functionality for snapshot processing.
  - If EMCSCF software is not enabled and the EMC devices support FlashCopy, XBM uses the FlashCopy functionality for snapshot processing.
- If a snapshot initially fails on an EMC storage device in an environment where the EXTENTALLOCATION parameter is set to AUTO, XBM now automatically retries the snapshot with the EXTENTALLOCATION parameter set to Y (yes).

Coupling Facility (CF) statistics

XBM was enhanced to update the Coupling Facility (CF) statistics (including the HWM — High Water Mark for Storage and Directories value) whenever a snapshot fails due to the coupling facility being full. When a CF full error occurs, XBM now generates an error with reason code 2128.
The following new message is displayed in the DISPLAY XBM output:

```
BMC73833ICF Structure structureName storage: used = amountUsed K, HWM = highWaterMarkUsed K, total allocation = totalAlloc K.
```

Explanation: This message summarizes usage information for the Coupling Facility (CF) cache. The message indicates the name of the structure, how much storage is currently being used, the highest historical usage, and the total space allocated for the cache.

User Response: No response is required.

### Additional DISPLAY COMPONENT output

When you issue the DISPLAY COMPONENT command, the output now displays a message if the component is not active. XBM also checks the status of component hooks and issues a message if any are disabled.

```
| BMC73050I | 15.19.09 XBMN ROU * DIS COMP VSAM |
| BMC73050I | 15.19.09 XBMN DIS COMP VSAM        |
| BMC73055I | 15.19.09 XBMN VSAM component not active |
| BMC73050I | 15.19.09 ACP3 DIS COMP VSAM        |
| BMC73055I | 15.19.09 ACP3 VSAM component not active |
| BMC73050I | 15.19.09 ACP2 DIS COMP VSAM        |
```

### Incorporation of SPEs

This release incorporates changes that were introduced in the following small programming enhancements (SPEs):

<table>
<thead>
<tr>
<th>Original SPE date</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>April 2010</td>
<td>Provided a new XBM component that enables use of IBM System z® Integrated Information Processors (zIIPs)</td>
</tr>
<tr>
<td></td>
<td>The new component gives supported BMC products the option to use enclave service request blocks (SRBs) to enable zIIP processing while running jobs.</td>
</tr>
<tr>
<td>August 2009</td>
<td>Enabled support of EMC virtual devices</td>
</tr>
<tr>
<td></td>
<td>To use virtual volumes, you must configure XBM and set Storage Systems Integration (SSI) options to recognize these devices.</td>
</tr>
</tbody>
</table>

### Removal of obsolete functionality

This release streamlines the XBM product and interface by removing obsolete functionality.
Version 10.2.00 of the UNLOAD PLUS component includes the following changes.

**Clone tables**

UNLOAD PLUS now unloads clone tables and base tables that participate (or have participated) in a clone relationship. In UNLOAD PLUS version 10.1, this feature required that you specify DIRECT NO. You can now use this feature with either DIRECT YES or DIRECT NO.

The new CLONE option on the UNLOAD TABLESPACE command enables this feature. For more information, see the *UNLOAD PLUS for DB2 Reference Manual*.

**Universal table spaces defined with MEMBER CLUSTER**

UNLOAD PLUS now supports universal table spaces that are defined with MEMBER CLUSTER. In UNLOAD PLUS version 10.1, this feature required that you specify DIRECT NO. You can now use this feature with either DIRECT YES or DIRECT NO.

**Temporal tables**

UNLOAD PLUS now supports temporal tables. In UNLOAD PLUS version 10.1, this feature required that you specify DIRECT NO. You can now unload temporal tables with either DIRECT YES or DIRECT NO.

The following enhancements are part of this support:

- You can use either DIRECT YES or DIRECT NO to unload history tables.
- When unloading temporal tables, UNLOAD PLUS generates control cards for the following CNTLCARDS values:
  - DB2LOAD
  - BMLOAD
  - DB2
  - DB2DDL

For specific information about which control cards UNLOAD PLUS generates for temporal tables, see the individual CNTLCARDS values in Chapter 3 of the *UNLOAD PLUS for DB2 Reference Manual*. 
**Timestamp columns defined with a precision other than 6**

UNLOAD PLUS now supports timestamp columns that are defined with a precision (number of microseconds) other than 6. In UNLOAD PLUS version 10.1, this feature required that you specify DIRECT NO. You can now use this feature with either DIRECT YES or DIRECT NO.

You can now specify a precision other than 6 when including a timestamp constant in a predicate.

**TIMESTAMP WITH TIME ZONE data**

UNLOAD PLUS now supports timestamp columns that are defined as TIMESTAMP WITH TIME ZONE. In UNLOAD PLUS version 10.1, this feature required that you specify DIRECT NO. You can now use the following functions with either DIRECT YES or DIRECT NO:

- Specify the TIMESTAMP WITH TIME ZONE data type on your field specification. For more information, see the *UNLOAD PLUS for DB2 Reference Manual*.

- Use the new IMPLICIT_TZ command option to specify a time zone to use in any of the following situations:
  - You are unloading a TIMESTAMP column (without a time zone) and the field specification for the column is TIMESTAMP WITH TIME ZONE.
  - You include a SELECT statement on a TIMESTAMP WITH TIME ZONE field, and the SELECT statement specifies a timestamp constant that does not include a time zone.
  - You include a WHERE clause on a TIMESTAMP WITH TIME ZONE column, and the WHERE clause specifies a timestamp constant that does not include a time zone.

For more information, see the description of this option in the *UNLOAD PLUS for DB2 Reference Manual*.

You cannot include WITH TIME ZONE on a CURRENT TIMESTAMP specification.

**Binary XML data**

When DIRECT YES is in effect, UNLOAD PLUS now unloads binary XML data to referenced files. You can specify the BINARYXML keyword with the CHAR and VARCHAR BLOBF data types. For more information, see the descriptions of these keywords in the *UNLOAD PLUS for DB2 Reference Manual*. 
Logical partitions

When DIRECT YES is in effect, you can now specify the LOGICAL keyword with the PART option to tell UNLOAD PLUS which logical partitions you want to unload instead of having to specify the corresponding physical partitions. For more information, see the description of the PART keyword in the UNLOAD PLUS for DB2 Reference Manual.

DSNTYPE option

The DSNTYPE installation and command options have been expanded to enable you to specify the type of output data set that you want UNLOAD PLUS to create during dynamic allocation. For more information, see the description of the DSNTYPE installation option or command option in the UNLOAD PLUS for DB2 Reference Manual.

Cabinet copies

UNLOAD PLUS now unloads from cabinet copies that have been created by the BMC Recovery Management for DB2 solution. To unload from a cabinet copy, specify INFILE IMAGECOPY.

Ability to cancel threads

You can now tell UNLOAD PLUS to cancel threads in DB2 that might prevent a successful drain. You must have the following authorizations to use this functionality. (These additional authorizations might be implicit in the authority that you have.)

- DISPLAY privileges
- One of the following authorities:
  — SYSADM
  — SYSOPR
  — SYSCTRL

A new command option, FORCE, enables this functionality; corresponding installation options FORCE, FORCE_AT, and FORCE_RPT provide default values for this option.

You can also specify a new DD statement, BMCFORCE DD, to contain the thread cancelation report.

For more information, see the descriptions of the FORCE options and the BMCFORCE DD statement in the UNLOAD PLUS for DB2 Reference Manual.
Additional output messages data set

You can now send UNLOAD PLUS output messages to a second output data set by specifying a SYSPRIN2 DD statement in your JCL. The content of this optional data set is identical to the content of the SYSPRINT data set.

SYSPRIN2 is not a substitute for SYSPRINT. If you include a SYSPRIN2 DD statement in your JCL, you must still include a SYSPRINT DD statement.

In a worklist environment, you can specify SYSPRIN2 DD SYSOUT=* to view output in real time from any of the BMC Utility products that run in that worklist.

---

**NOTE**

PTF BPU3886 provided this functionality for version 10.1.00.

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ON FAILURE option

The ON FAILURE option has changed: UNLOAD PLUS now always terminates the unload job on failure. If your job includes the now-obsolete syntax STOP UTILITY, UNLOAD PLUS changes it to TERMINATE UTILITY.

VSAM ddname prefix

You can now specify a ddname prefix instead of the default VSAMDD when unloading from VSAM data sets. The new VSAMDDPREFIX keyword of the INFILE option enables this functionality, allowing you to unload from more than 99 data sets. For more information, see the description of this keyword in the *UNLOAD PLUS for DB2 Reference Manual*.

ACFORTSS removal

This release removes the ACFORTSS option. Now, if the following conditions exist, you must ensure that the DB2 external security exit (DSNX@XAC) from Computer Technologies is implemented:

- You use the Computer Technologies CA-ACF2 or CA-Top Secret security product for DB2.
- You previously used ACFORTSS=Y.
System and software requirements

This version of UNLOAD PLUS has the following changes to minimum requirements from version 10.1 of UNLOAD PLUS:

- BMCSORT version 2.4.01
- DB2 Solution Common Code (SCC) version 11.1.00
- DB2 Utilities Common Code (D2U) version 10.2.00

Known issue

UNLOAD PLUS might not unload all rows when the following conditions exist:

- You are running UNLOAD PLUS on a data sharing system.
- You are unloading a table space that is defined with MEMBER CLUSTER.
- DIRECT YES is in effect.

PTF BPU5780 resolves this issue.

Cross-system Image Manager (XIM) version 1.3.02

The XIM component has not changed since version 3.2.00 of the Database Administration solution. For a list of features and functions that were new in version 1.3.02 of the XIM component, see the release notes for version 3.2.00 of the Database Administration solution.

High-speed Apply Engine version 11.1.00

Version 11.1.00 of the High-speed Apply Engine component includes the following changes.

Extended RBA/LRSN support

High-speed Apply Engine now supports extended RBAs and LRSNs. All output and repository tables have been changed to provide this support.
**High-speed Apply Engine without binds**

You can now pre-generate and bind an application plan and base package to use in subsequent runs of High-speed Apply Engine. High-speed Apply Engine can then run without any binds, but all statements will be executed dynamically. To accommodate this feature, this release adds `PackageName` to the Bind configuration parameters.

**Enhanced retry conflict resolution**

The apply job can now terminate or abort so that you can resolve a timeout conflict and restart the apply job when appropriate. To expand the action set that you can define after a failed retry, this release:

- Adds `Defer` and `Skip` to the `RetryFail` configuration parameter
- Adds `MaxFailedRetries` to the Conflict configuration parameters to define the maximum number of retries allowed
- Adds `MaxRetryFail` to the Conflict configuration parameters to define the action that High-speed Apply Engine takes when the value of `MaxFailedRetries` is exceeded

**Aliases for distribution of work**

Distribution by object is now based on the base table when an alias or single table view is used to identify the `table_name` in the SQL statement. An example follows:

```
INSERT INTO table_name (col1, col2) values ("xxx", "yyy");
```

**LOADPLUS APMULTIROW option**

High-speed Apply Engine now supports the LOADPLUS option APMULTIROW with the configuration parameters `MultiRowInsert` and `MaxRows`.

**JCL Generation and Execution version 11.1.00**

Version 11.1.00 of the JCL Generation and Execution components includes the following changes.
**DSNTIAD plan name**

The JCL Generation component now lets you specify the name of the DB2 plan that will run the IBM DSNTIAD program. You can specify the name in either of the following locations:

- JCL Generation Debugging, Display and Execution Options panel
- DSNTIAD_PLAN keyword in the POF

**JCL members before job steps**

The JCL Generation component now lets you include a JCL member before each job step in JCL. You can specify the name of the member in either of the following locations:

- JCL Generation Debugging, Display and Execution Options panel
- PRE_JOBSTEP_INCLUDE keyword in the POF

**SYSPRIN2 output data set**

The JCL Generation component offers a new SYSPRIN2 data set for viewing a BMC utility’s SYSPRINT output while the utility is running or when the utility’s execution is canceled. You can use either of the following locations to include the SYSPRIN2 DD in the JCL:

- JCL Generation Static Data Set Options panel
- INCLUDE_SYSPRIN2 keyword in the POF

**Suppressed DD names**

The JCL Generation component offers the following POF keywords to suppress adding DD names to prefixes for the unload (SYSREC) data sets:

- UNLD_FREF_SUPPR_SUFF
- UNLD1_SUPPRESS_SUFF
- UNLD2_SUPPRESS_SUFF
- UNLD3_SUPPRESS_SUFF
- UNLD4_SUPPRESS_SUFF

**Omitted unit names for data sets**

Your shop standards might require that you omit the UNIT parameter from your JCL. The JCL Generation component now lets you omit the parameter by specifying a value of NONE for the unit name.
Use of symbolic variables

The BMC REORG PLUS and IBM REORG utilities use a mapping table to map row IDs (RIDs) between source and target tables. ALTER and CHANGE MANAGER now allow you to include the symbolic variable &ZUSER or &USERID in the mapping table’s name. You can add the symbolic variable in either of the following location:

- REORG MAPPING TABLE field on the Online Reorg Utility Options panel
- REORG_MAPTAB keyword in the POF

ALTER and CHANGE MANAGER can also use the &WKOWN and &WKOWNER symbolic variables in the prefixes for data sets that are dynamically allocated.

New command for resetting POF variables

You can now enter one of the following commands on the Command line of the product to easily reset all of the ISPF variables in the ISPF profile with the variables in the POF:

- To reset the variables in the initial POF, enter TSO POFRESET.
- To reset the variables in a specified initial or user POF, enter TSO POFRESET POF(dataSetName(POFMember)).

To enable these commands, you must modify the POFRESET CLIST. The CLIST is located in the HLQ.DBCLIB library.

Options for ALTER and CHANGE MANAGER Analysis

For ALTER and CHANGE MANAGER, JCL Generation now provides a panel for specifying options that the Analysis component uses. From the ALTER and CHANGE MANAGER Analysis Options panel, you can specify the following items:

- Number of dynamically allocated sortwork data sets that the BMC REORG PLUS or IBM REORG utility uses
- The unit for the dynamically allocated sortwork data sets
- The option to include the name of the mapping table in the syntax for the IBM REORG utility

Options for COPY PLUS EXPORT data sets

For CHANGE MANAGER, JCL Generation supports the specifications for the EXPORT data set that the COPY PLUS EXPORT command creates to migrate data. You can specify the values on the JCL Generation Data Set Options for COPY EXPORT panel.
Version 11.1.00 of the RECOVER PLUS component includes the following changes.

**Extended RBA and LRSN support**

All RECOVER PLUS output (such as the output in Chapter 5, “Examples of RECOVER PLUS jobs” in the *RECOVER PLUS for DB2 Reference Manual*) has been converted to show 10-byte RBAs and LRSNs. The BMC utilities database has also changed to support extended RBAs and LRSNs.

**New IMPORT and MIGRATE commands for migrating data**

New IMPORT and MIGRATE commands allow you to move data from one or more table spaces to another via a migration file that the COPY PLUS EXPORT command creates. The IMPORT command uses copies as input; the MIGRATE command uses copies and log. For more information, see the IMPORT and MIGRATE command descriptions in the *RECOVER PLUS for DB2 Reference Manual*.

---

**NOTE**

This feature requires one of the following valid passwords:

- Recovery Management solution password
- Database Administration solution password

This release also includes the following changes:

- Adds new EXPSSID, EXPSLRSN, and EXPTLRSN columns to the BMCXCOPY table to accommodate the EXPORT, MIGRATE, and IMPORT commands
- Adds ICTYPE column value `m`, and COPY_TYPE column values `X` and `I`

In addition to the *RECOVER PLUS for DB2 Reference Manual*, see the following resources for more information:

- EXPORT command description in the *COPY PLUS for DB2 Reference Manual*
- Chapter 11, “Moving data with a migration file,” in *Recovery Management for DB2 User Guide*

---

**NOTE**

For the beta release, do not use IMPORT or MIGRATE with any set of objects that includes cloned objects. IMPORT and MIGRATE of cloned objects is not supported at this time. Use of the CLONE keyword will result in message BMC40613E and the recovery will be terminated.
Transformation restrictions removed

Transformation restrictions have been removed from High-speed Structure Change, as follows:

- Multi-table table space transformations are now allowed. Previously, the source table space could contain only one table.

- BRF to RRF and RRF to BRF transformations are now allowed. Previously, the source and target table space had to have the same row format. You could not transform a table space with basic row format (BRF) into a table space that had reordered row format (RRF), or vice versa.

**NOTE**
The rows are not transformed, but the DB2 catalog is changed to reflect the row format from the source.

- Transformations to and from MEMBER CLUSTER are now allowed. Previously, Recovery Management was unable to handle transformations related to the MEMBER CLUSTER attribute.


Additional DSSIZE values

The following values are now valid for DSSIZE:

- 128G
- 256G

Estimation improvements

Estimation has been improved to better account for current hardware and multitasking. Additionally, the following new installation options accommodate estimation:

- DISKIORATE specifies the number of megabytes per second that RECOVER PLUS reads from disk. The default value is 100.

- CPUMIPS specifies the rate at which a CPU executes instructions, in millions of instructions per second (MIPS). The default value is 200.
Many of the performance factors used in estimation are derived from DISKIORATE and CPUMIPS.

Estimation requires a Recovery Management for DB2 solution password. For more information, see Chapter 8, “Recovery simulation and estimation,” in the Recovery Management for DB2 User Guide.

**Use of symbolics in INCOPY MODEL `dataSetName` syntax**

The data set specified with INCOPY MODEL syntax supports the use of symbolics.

**New symbolic variables**

RECOVER PLUS adds the &UNIQ (or &UQ) symbolic variable to generate unique data set names. For example, you can use this variable with the DSNAME parameter on the OUTPUT command.

If you use &UNIQ, RECOVER PLUS generates a 1- to 8-character value that is based on the system clock. The first character is always an uppercase letter. Each remaining character is either an uppercase letter or a numeral from 0 through 9.

RECOVER PLUS also adds the &PART5 symbolic variable that you can use for any data set. RECOVER PLUS generates 5-character partition numbers as follows:

- Partition 1 = 00001
- Partition 10 = 00010
- Partition 100 = 00100
- Partition 1000 = 01000
- Nonpartitioned = 00000

**Allow INCOPY with OBJECTSET**

The restrictions that did not allow INCOPY with OBJECTSET have been removed.

**Automatic sizing of dynamically allocated output copies on DASD**

RECOVER PLUS now automatically sizes dynamically allocated output copies on DASD when the primary allocation quantity is not specified by the SPACE option.

To accomplish automatic sizing, RECOVER PLUS adds the MAXPRIM option to the OUTPUT command. MAXPRIM lets you set a maximum amount of disk space (in the units specified by SPACE) to allocate as primary space. Valid values are 0 through 65535. A nonzero value for MAXPRIM establishes an upper limit for primary space allocation; 0 specifies no limit.
New EXCLUDE clause for OBJECTSET

For the RECOVER and REBUILD INDEX commands, RECOVER PLUS adds the EXCLUDE option to the OBJECTSET specification.

Support for VSAM data sets on nonsnappable disks

When you use the new installation option SNAP, RECOVER PLUS can now recover VSAM copies, even if the data set is not on a snappable disk. SNAP is also available on the OPTIONS command.

When the SNAP=VSAM and the data set is not on a snappable disk, RECOVER PLUS uses the following syntax to read a VSAM data set:

```
INCOPY FULL SNAPSHOT DSNAMES dataSetName
```

RECOVER PLUS can also recover by using a VSAM data set registered in BMCXCOPY or SYSCOPY.

Additionally, RECOVER PLUS adds the FCPPRC installation option. You can use FCPPRC to control what happens if you specify VSAM=SNAP and the data sets are on a disk that is capable of using IBM FlashCopy.

New AFRPRn data sets to eliminate deferred messaging

This release removes deferred messaging for subtasks. Now, each execution phase has its own AFRPRn print file, and messages are displayed in the print file as soon as they are issued. The maximum number of print files allowed by RECOVER PLUS is calculated by the following formula:

\[
\text{value of MAXKSORT + value of MAXLSORT + 1} = \text{maximum number of AFRPRn files}
\]

The print files are named AFRPR001, AFRPR002, AFRPR003, and so on. AFRPRINT now displays the name of the AFRPRn file used by each phase for each object.

New USELOGS installation option

The new USELOGS installation option lets you specify the order in which to read active and archive log files. USELOGS=(ACT1,ACT2,ARC1,ARC2) is the default value.

You can override this installation option by using the RESOURCE SELECTION LOGS syntax on the OPTION command.
Better handling of partition-by-growth migrations

This release provides better handling for partition-by-growth (PBG) migrations. This release removes the warning against PBG migrations that have a different number of source and target data sets.

Recovery of an individual space from a system-level volume backup

To recover an individual space from a system-level volume backup, you can use COPY IMAGECOPY in COPY PLUS to make a standard copy of the space. Then use RECOVER PLUS to recover the space from the standard copy.

Installation


NOTE

To request physical shipments, contact your BMC sales representative. Contact information is available on the BMC website.

Database Administration is installed by using the BMC Installation System. This section contains installation information that supplements or supersedes the information in the Installation System User Guide.

Requirements

For software, hardware, and other requirements, see the Installation System User Guide.

Installation changes

For information about installation changes, see the Installation System release notes.
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.

  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.

Known installation issue

If both of the following conditions exist at your site, contact BMC Customer Support before attempting to use the Installation System to customize your BMC products:

- Your subsystem is using DB2 Version 10.
- The DSNZPARM SEPARATE_SECURITY subsystem parameter is set to YES.
This release of Database Administration uses version 2.3.60 or later of the Installation System and installation media.

**NOTE**

If you have a later version of the Installation System or the installation media, use that version to install the solution, product, or component.

During installation, the following versions and SMP/E FMIDs are installed:

<table>
<thead>
<tr>
<th>FMID</th>
<th>Component</th>
<th>Version</th>
</tr>
</thead>
<tbody>
<tr>
<td>ASAR71C</td>
<td>SAS/C Resident Library</td>
<td>7.1.00</td>
</tr>
<tr>
<td>BBAPW32</td>
<td>BMC Password Security System</td>
<td>3.2.00</td>
</tr>
<tr>
<td>BBASC70</td>
<td>SAS/C Transient Library</td>
<td>7.0.00</td>
</tr>
<tr>
<td>BBYXM13</td>
<td>Base Technology</td>
<td>1.3.00</td>
</tr>
<tr>
<td>ZACMB10</td>
<td>CHANGE MANAGER</td>
<td>11.1.00</td>
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<tr>
<td>ZACPB10</td>
<td>COPY PLUS</td>
<td>11.1.00</td>
</tr>
<tr>
<td>ZACSB10</td>
<td>CATALOG MANAGER Common SQL</td>
<td>11.1.00</td>
</tr>
<tr>
<td>ZACTB10</td>
<td>CATALOG MANAGER</td>
<td>11.1.00</td>
</tr>
<tr>
<td>ZADUA20</td>
<td>UNLOAD PLUS</td>
<td>10.2.00</td>
</tr>
<tr>
<td>ZAEXB10</td>
<td>JCL Generation and Execution</td>
<td>11.1.00</td>
</tr>
<tr>
<td>ZAFRB10</td>
<td>RECOVER PLUS</td>
<td>11.1.00</td>
</tr>
<tr>
<td>ZAIN031</td>
<td>Install Execution Code</td>
<td>3.1.00</td>
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<td>ZAMUA20</td>
<td>LOADPLUS</td>
<td>10.2.00</td>
</tr>
<tr>
<td>ZAPTB10</td>
<td>High-speed Apply Engine</td>
<td>11.1.00</td>
</tr>
<tr>
<td>ZASHB10</td>
<td>BMC Space Estimation Common Code</td>
<td>11.1.00</td>
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<td>ZATSB10</td>
<td>BMCSTATS API</td>
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<td>ZAUP241</td>
<td>BMCSORT</td>
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<tr>
<td>ZBMR15E</td>
<td>ISR External Routines</td>
<td>1.5.00</td>
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<tr>
<td>ZBST100</td>
<td>BMC Support Tool</td>
<td>1.0.00</td>
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<tr>
<td>ZDIG190</td>
<td>Dignus C runtimes and C++ objects</td>
<td>1.9.01</td>
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<tr>
<td>ZD2UA20</td>
<td>DB2 Utilities Common Code (D2U)</td>
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<tr>
<td>ZMRE110</td>
<td>Rules Engine “C” code</td>
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<td>ZPSSB10</td>
<td>SQL Explorer for DB2</td>
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<tr>
<td>ZSCCB10</td>
<td>DB2 Solution Common Code (SCC)</td>
<td>11.1.00</td>
</tr>
<tr>
<td>ZXBMM610</td>
<td>EXTENDED BUFFER MANAGER</td>
<td>6.1.00</td>
</tr>
<tr>
<td>ZZIOI160</td>
<td>Option value migration</td>
<td>1.6.00</td>
</tr>
</tbody>
</table>
The preceding table contains the FMIDs for Database Administration only. You can also obtain product, solution, and component information (FMIDs, codes, and versions) in the following ways:

- View the $B76APLF JCL member.
  
  To search the file, search on the word FORFMID.

- View one of the following reports:
  
  - bxx_ozi_tape_product_list.txt lists products and components for the B-series installation (shared and infrastructure products).
  
  - cxx_ozi_tape_product_list.txt lists products and components for the C-series installation (DB2 products).
  
  - ixx_ozi_tape_product_list.txt lists products and components for the I-series installation (IBM IMS™ products).
  
  - mxx_ozi_tape_product_list.txt lists products and components for the M-series installation (MainView products).

To access the reports on the BMC electronic software distribution (ESD) site, take the following steps:

2. Click Electronic Downloads.
3. Click readme.
4. In the “Before you begin” section, click a product media listing.

**Maintenance**

After you install Database Administration, you can download any additional SMP/E maintenance by using either BMC Internet Service Retrieval (ISR) or eFix PTF Distribution Services (http://apps.bmc.com/support/efix.cgi). BMC ISR is available for all products that you install via the Installation System. For more information, see the *Installation System User Guide*.

**NOTE**

Before applying maintenance, ensure that you have completed the $B76APLF job to set up your maintenance environment.
BMC provides fixes for Database Administration at the component level. To apply fixes for this solution, you must apply fixes for each component of the solution.

Support status

You can find the support status for specific product versions on the Support Central website. Selecting a product from the “A – Z Supported Product List” shows:

- All versions of the product and their current support levels (full or limited)
- Dates on which support ends

For more information about the latest support policies, see the Support Central website at [http://www.bmc.com/support](http://www.bmc.com/support).

Product documentation

From the Support Central website ([http://www.bmc.com/support](http://www.bmc.com/support)), you can:

- Link to the BMC Documentation Center ([https://webapps.bmc.com/infocenter/index.jsp](https://webapps.bmc.com/infocenter/index.jsp)) to browse documentation sets
- View BMC Quick Course Demos (short overviews of selected product concepts, tasks, or features), which are included in the BMC Documentation Center
- View individual product documents (books and notices) within the “A – Z Supported Product List”

You can order hardcopy documentation from your BMC sales representative or from the support site. You can also subscribe to proactive alerts to receive e-mail messages when notices are issued.

Customer support

If you have problems with or questions about a BMC product, see the support website at [http://www.bmc.com/support](http://www.bmc.com/support). You can view or download product documents, find answers to frequently asked questions, and download products and maintenance. If you do not have access to the web and you are in the United States or Canada, contact Customer Support at 1 800 537 1813. Outside the United States or Canada, contact your local BMC office or agent.