

IBM DB2 Object Restore for z/OS



User's Guide

Version 2 Release 1

IBM DB2 Object Restore for z/OS



User's Guide

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Note:

Before using this information and the product it supports, read the information in “Notices” on page 153.

This edition applies to Version 2 Release 1 of IBM DB2 Object Restore for z/OS (product number 5697-I20) and to all subsequent releases and modifications until otherwise indicated in new editions.

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About this information

This user's guide provides instructions for using IBM® DB2® Object Restore for z/OS® (also referred to as Object Restore). To use the procedures in this user's guide, you must have already installed DB2 Object Restore using the SMP/E installation process that came with the product.

This user's guide is designed to help database administrators, system programmers, application programmers, and system operators perform the following tasks:

- Plan for the installation of DB2 Object Restore
- Install and operate DB2 Object Restore
- Configure your DB2 Object Restore environment
- Diagnose and recover from DB2 Object Restore problems

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

- The OS/390® or z/OS operating system
- ISPF
- SMP/E

Always check the DB2 and IMS™ Tools Library page for the most current version of this publication:

www.ibm.com/software/data/db2imstools/library.html

Service updates and support information

To find service updates and support information, including software fix packs, PTFs, Frequently Asked Question (FAQs), technical notes, troubleshooting information, and downloads, refer to the following Web page:

www.ibm.com/software/data/db2imstools/support.html

Highlighting conventions

This information uses the following highlighting conventions:

- **Boldface** type indicates commands or user interface controls such as names of fields, folders, icons, or menu choices.
- Monospace type indicates examples of text that you enter exactly as shown.
- *Italic* type indicates variables that you should replace with a value, to indicate the titles of other publication, and to emphasize significant terms.

How to look up message explanations

You can use any of the following methods to search for messages and codes:

Searching an information center

In the search box that is located in the top left toolbar of any Eclipse help system, such as the IBM Information Management Software for z/OS Solutions Information Center, enter the number of the message that you want to locate. For example, you can enter DFS1065A in the search field.

Use the following tips to help you improve your message searches:

- You can search for information on codes by entering the code; for example, enter -327.
- Enter the complete or partial message number. You can use wild cards (* or ?) in the message number to broaden your search; for example, DFS20???.l.

The information center contains the latest message information for all of the information management products that are included in the information center.

Using a Web search

You can use any of the popular search engines that are available on the Web to search for message explanations. When you type the specific message number or code into the search engine, you will be presented with links to the message information in IBM information centers.

Using LookAt

LookAt is an online facility that you can use to look up explanations for most of the IBM messages you encounter, as well as for some system abends and codes. Using LookAt to find information is faster than a conventional search because in most cases LookAt goes directly to the message explanation.

You can use LookAt from the following locations to find IBM message explanations for z/OS elements and features, z/VM[®], VSE/ESA[™], and Clusters for AIX[®] and Linux[®]:

- The Internet. You can access IBM message explanations directly from the LookAt Web site at <http://www.ibm.com/eserver/zseries/zos/bkserv/lookat/>.
- Your z/OS TSO/E host system. You can install code on your z/OS or z/OSe systems to access IBM message explanations, using LookAt from a TSO/E command line (for example, TSO/E prompt, ISPF, or z/OS UNIX[®] System Services running OMVS).
- Your Microsoft[®] Windows[®] workstation. You can install code to access IBM message explanations on the z/OS Collection (SK3T-4269) using LookAt from a Microsoft Windows command prompt (also known as the DOS command line).
- Your wireless handheld device. You can use the LookAt Mobile Edition with a handheld device that has wireless access and an Internet browser (for example, Internet Explorer for Pocket PCs, Blazer, or Eudora for Palm OS, or Opera for Linux handheld devices). Link to the LookAt Mobile Edition from the LookAt Web site.

You can obtain code to install LookAt on your host system or Microsoft Windows workstation from a disk on your z/OS Collection (SK3T-4269) or from the LookAt Web site (click **Download**, and select the platform, release, collection, and location that suit your needs). More information is available in the LOOKAT.ME files available during the download process.

How to send your comments

Your feedback is important in helping to provide the most accurate and high-quality information. If you have any comments about this book or any other DB2 or IMS Tools documentation, use either of the following options:

- Use the online reader comment form, which is located at:
www.ibm.com/software/data/rcf/

- Send your comments by e-mail to comments@us.ibm.com. Be sure to include the name of the book, the part number of the book, the version of Object Restore, and, if applicable, the specific location of the text you are commenting on (for example, a page number or table number).

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Chapter 1. Introduction to DB2 Object Restore

IBM DB2 Object Restore for z/OS (DB2 Object Restore) can restore dropped objects and all related dependencies automatically, even if they no longer exist in the DB2 catalog. This includes dropped databases, table spaces, tables, and indexes, table and column authorizations, data, synonyms, STOGROUPS, and aliases. From the selected catalog information, DB2 Object Restore generates the DDL to rebuild all grant privileges to the correct authorization IDs for database, system, collection, package plan, table, and view use.

This tool eliminates the need for a duplicate shadow copy of the catalog to recover objects. The result is that DB2 Object Restore saves DASD space. With this tool you can feel secure in cleaning up your DB2 system because you can now restore discarded DB2 objects if necessary. The SYSCOPY program will capture only three days worth of data, and then delete data 30 days old.

Topics:

- “What does DB2 Object Restore do?”
- “Backup and recovery solutions” on page 2
- “DB2 Object Restore features and benefits” on page 2
- “DB2 Object Restore Versioning Repository” on page 4
- “Performance, security, and restrictions” on page 4
- “Hardware and Software Requirements” on page 6
- “Accessibility features” on page 7
- “Summary of changes” on page 7

What does DB2 Object Restore do?

Some highlights to DB2 Object Restore include:

- DB2 Object Restore generates the DDL to recreate dropped DB2 objects. Specific objects may be selected for recovery; additionally, when an object is recreated, all dependent objects may be recreated as well.
- DB2 Object Restore maintains a Versioning Repository that it uses to generate the DDL required to recreate dropped objects. This utility also runs analyses on these repositories to map old DBID, PSID, and OBIDs to the new IDs for the recreated objects. DB2 Object Restore provides an “audit trail” of an object’s versions in case the object needs to be restored to a particular version.
- Move/copy object feature, which allows you to move the objects from one DB2 subsystem to another
- Save generated DDL to be executed at a later time
- Restore object hierarchy and rebuild DB2 objects at any level, depending on which objects were dropped. Some dropped objects are restored automatically if an object higher in the hierarchy is restored.

For example, a database is at the top of the hierarchy. If it is restored, so are the corresponding table spaces, tables, and indexes. The opposite is true; if a lower-level object is dropped, such as an index, it can be restored by itself.

- Object Restore automatically creates the JCL to recover data for dropped objects, but only if the dropped objects were recreated successfully. You will be prompted to identify where the JCL should be saved; you may subsequently submit the JCL to perform data recovery
- The SYSCOPY program captures only three days of data and deletes data after 30 days

- You can add a load job to the scheduler and schedule the job at whatever frequency you want (at least once a day or every hour). It is recommended that you schedule the load job to run at least once a day.

Backup and recovery solutions

IBM solutions help IT organizations maximize their investment in DB2 and IMS databases while staying on top of some of today's toughest IT challenges. Backup and recovery solutions can protect your data and lessen the negative impact that data loss can have on your business.

Backup and recovery is one of the most complicated areas of database management. Having the right resources to do a recovery is critical, and unfortunately in many cases, is not addressed until after data is already lost.

Database backup and recovery solutions include recovering from a dropped object to bouncing back from a major disaster, and everything in between. Recoveries that are done manually can be error prone, time consuming, and resource intensive.

Some of the questions you might face as a database administrator who is responsible for backup and recovery tasks include:

- Can a transaction be reversed or does the entire database have to be recovered?
- How can you determine which objects have been impacted?
- Do you have the necessary resources to recover to a point in time?
- Are you prepared for a disaster?
- Can you recover your subsystem?
- How much data are you willing to lose?

DB2 Object Restore allows recovery of valuable data assets even if they no longer exist in the DB2 catalog. DB2 Object Restore is an affordable, flexible, easy-to-use tool that provides faster recovery of data assets and keep lower database maintenance costs.

- Automatically restores dropped objects and related dependencies even if they no longer exist in DB2 catalog.
- Allows you to specify what types of objects and privileges will be maintained within the DB2 Object Restore Versioning Repository.
- Offers Single thread Versioning Repository update ensuring that your system's resources are available when they are needed most.
- Supports double-byte character set (DBCS) for input and output, allowing you to use DB2 Object Restore with DBCS object names.

DB2 Object Restore features and benefits

DB2 Object Restore provides solutions to many different types of problems.

IBM DB2 Object Restore Tool is an affordable, robust tool that enables you to recover valuable data assets by quickly restoring dropped objects without downtime, even if they no longer exist in the DB2 catalog. Such dropped objects may include databases, table spaces, tables, indexes and data, as well as table authorizations. Latest enhancements include double-byte (DBCS) support, single thread Versioning Repository update, partial Versioning Repository refresh, point-in-time SQL JCL recovery in one-step, and single table recovery.

- Offers Single thread Versioning Repository update, which prevents users from unnecessarily consuming valuable system resources from multiple, concurrent Versioning Repository updates, ensuring that your system's resources are available when they are needed most.
- Allows you to specify what types of objects and privileges will be maintained within the DB2 Object Restore Versioning Repository.
- Implements a method through which you can save time and system resources by performing a partial Versioning Repository refresh. You are no longer required to refresh the entire Versioning Repository if you know the individual database that contains the changes that you want to save.
- Displays a list of defined DB2 SSIDs from which you can select. You no longer need to remember numerous DB2 subsystems.
- Allows you to recover a single table from image copies, UNLOAD utility backups, and dropped tables in table space VSAM data sets. You can use DB2 High Performance Unload (if installed) when performing single-table recovery from an image copy, which is much more efficient than recovering an entire table space just to obtain one table.
- Restores a DB2 table to a point in time that you choose by using an interface to DB2 Log Analysis Tool, making the point-in-time restoration one step.
- Recovers any SYSCOPY rows that have been archived in the Versioning Repository. These rows are normally lost or recoverable only through a lengthy resource and time-intensive restore from backup resources.
- Automatically restores previously dropped objects and all related dependencies.
- Saves DASD space by eliminating the need for a duplicate shadow copy of the catalog to recover objects.
- Supports recreation of storage groups, databases, table spaces, tables, indexes, aliases, synonyms, views, plans and packages.
- Expands support to include the following privileges: user, system, database, table, view, collection, plan, package and column.
- Offers a user restore option that lets you select only the dependent object types desired instead of restoring all dependent objects.
- An expanded scope of recoverable objects and attributes, including triggers; RI foreign key, primary key, and unique key constraints; large object (LOB) table spaces; alter time stamp versioning, and UDTs.
- Enhanced repository management through new automated loading, cleanup, and update capabilities. Easier access to image copy functions and the ability to inspect image copy results.

DB2 Object Restore and other DB2 Tools

Many DB2 tools provide database management features that are not available in DB2 itself or provide enhancements to capabilities built into DB2.

DB2 Object Restore seamlessly integrates its processing with a number of other tools, increasing its capabilities:

Log Analysis Tool support

DB2 Object Restore version 2.1 supports DB2 Log Analysis Tool version 1.1 - 2.3. On DB2 V8 and above subsystems, Object Restore 2.1 only provides point-in-time table data recovery if Log Analysis Tool 2.1 or greater is installed.

DB2 Table Editor support

DB2 Object Restore version 2.1 supports DB2 Table Editor versions 4.2 - 4.3.

IBM DB2 High Performance Unload support

DB2 Object Restore version 2.1 supports all DB2 High Performance Unload versions. If you want to perform single table recovery from image copies on DB2 V5-V6 subsystems, then you will need the High Performance Unload product. DB2 Object Restore version 2.1 can perform single table recovery from image copies for DB2 V7-V8 using utilities supplied with DB2 V7 and V8. Using High Performance Unload with Object Restore version 2.1 on DB2 V7 and V8 subsystems will provide faster recoveries and generate fewer JCL jobs steps in the generated data recovery jobs.

Another DB2 tool with additional features that can assist with database or system recovery is:

- DB2 Recovery Expert for z/OS

DB2 Object Restore Versioning Repository

The DB2 Object Restore Versioning Repository is a database that is used to capture DB2 system catalog information. This information allows Object Restore to recreate object and authorization DDL. The Versioning Repository is not a shadow catalog. The information contained in the Versioning Repository consists of DB2 system catalog information and Object Restore object recovery information. Only DB2 system catalog information that is required to recreate object DDL is maintained in the Versioning Repository.

Note: You can run the DB2 Object Restore Versioning Repository load process multiple times a day. It is recommended that you run the Versioning Repository load at least once a day.

Performance, security, and restrictions

Performance improvements

Batch analysis jobs can impact the level of performance, especially on the first run when the object is empty. The job is expected to take a significant time to run, perhaps hours. Here are some ways to improve performance.

- The Table Authority Unload job and the System Copy Unload jobs can impede performance. The System Copy Unload job can take an especially heavy toll on its initial run and less so when it runs each day. You can minimize the impact of these jobs after their initial runs by limiting the Versioning Repository updates to only the added, or new, information.
- You can gain performance improvements when running AUOVRUPD by manually creating the following indexes on the systems on which you run the AUOVRUPD job, executing RUNSTATS, and then rebinding the AUO plans:

Table 1. Performance improvement indexes

Table Name	Column, Order	Uniqueness
SYSIBM.SYSFOREIGNKEYs	CREATOR,TBNAME	NOT UNIQUE
SYSIBM.SYSPLANDEP	DNAME, ASC	NOT UNIQUE
SYSIBM.SYSPLSYSTEM	NAME, ASC	NOT UNIQUE
SYSIBM.SYSPACKLIST	PLANNAME, ASC	NOT UNIQUE

Table 1. Performance improvement indexes (continued)

Table Name	Column, Order	Uniqueness
SYSIBM.SYSVIEWDEP	DNAME, ASC	NOT UNIQUE
SYSIBM.SYSVIEWDEP	DCREATOR, ASC	NOT UNIQUE

DB2 V8 NFM support

You can encounter problems with Object Restore when certain DB2 V8 setup conditions exist. The following conditions can have an impact on DB2 V8 NFM function support and AUO 2.1 recovery support:

1. DB2 V8 execution mode is NFM and the DSNHDECP new function mode indicator is N.
2. DB2 V8 execution mode is CM or ENFM and the DSNHDECP new function mode indicator is Y.

The causes for these conditions are:

- Not running the final DB2 V8 migration job that updates DSNHDECP (causes condition 1).
- Running with the wrong version of DSNHDECP (causes conditions 1 and 2).

Object Restore issues the following messages when these conditions are detected:

Condition 1

db2_ssid is executing in new function mode and the DSNHDECP new function mode indicator is set to N. This condition can cause this product and DB2 to limit some functions to compatibility mode service levels.

Condition 2

db2_ssid is executing in compatibility or enabling mode and the DSNHDECP new function mode indicator is set to Y. This condition may generate recoveries that contain DDL, SQL, or JCL that utilizes new function mode syntax or services.

Security

You must have DBADMIN authority, at a minimum, to install DB2 Object Restore.

You must also have the authority to bind the plans and read the DB2 Control File.

Restrictions

These are the restrictions for DB2 Object Restore.

DB2 9 does not support recovery of simple tables

A simple table that has been dropped cannot be recovered in DB2 version 9. DB2 version 9 does not support the recovery of simple tables.

Bind processing

DB2 Object Restore uses your system's TSO bind processor to perform online binds. Consequently, if your TSO bind processor does not support binds of DSN* prefixed plans and packages Object Restore will not bind them. Plans and packages prefixed by DSN* are generally IBM plans and packages.

Tables with DB2-managed IDENTITY columns

Object Restore cannot correctly recover tables that contain an IDENTITY column managed by DB2. The table can be recovered, but you will be unable to enter any more data into the table. When the table is recovered, the identity numbering attributes are automatically set back to 1 by DB2. Object Restore cannot reset the IDENTITY column numbering to start at the last_known_identity_value +1.

Not all FKEY Alter statements are created in the DDL

Any FKey Alter statements that place the table space in check pending are placed at the end of the data recovery JCL. In other words, only during table recovery, when the dropped table is a parent of another table (or tables), are there RI Alter statements added at the end of the data recovery JCL. Whenever these RI Alter statements are added to the end of the recovery JCL, there is also a check data step to take the table space out of check pending. These RI Alter statements (at the end of the data recovery JCL) are not present when the DDL is saved to a file. All other FKey Alter statements remain the same (in the DDL file) and get saved for execution later.

Additional restrictions

- Referential Integrity recovery across table spaces is not supported.
- COLUMN LABELS and TABLE LABELS are not supported.
- Recover to current of LOBs (DB2 large objects) is not supported.

Hardware and Software Requirements

DB2 version

DB2 Object Restore requires an installation of DB2 version 7 or later.

SMP/E

DB2 Object Restore requires SMP/E Version 1 for installation.

ISPF

ISPF--whatever version you support--is required for DB2 Object Restore.

DASD data sets

DB2 Object Restore requires the following data sets.

- SAUOLOAD
- SAUOPENU
- SAUOMENU
- SAUOSAMP
- SAUODBRM
- SAUOSLIB

Important: SAUOSLIB contains JCL skeletons that contain REGION=4M parameters. You may be required to update the REGION parameter values to meet your installation execution requirements.

Accessibility features

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

The major accessibility features in DB2 Object Restore enable users to:

- Use assistive technologies such as screen readers and screen magnifier software. Consult the assistive technology documentation for specific information when using it to access z/OS interfaces.
- Customize display attributes such as color, contrast, and font size.
- Operate specific or equivalent features by using only the keyboard. Refer to the following publications for information about accessing ISPF interfaces:
 - *z/OS ISPF User's Guide, Volume 1*
 - *z/OS TSO/E Primer*
 - *z/OS TSO/E User's Guide*

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

Summary of changes

DB2 Object Restore for z/OS, Version 2.1 makes it possible to quickly restore dropped objects. The following enhancements are provided in this release:

SC18-9135-03 - December 2008

Exclude SQL caused by triggers

Object Restore allows you to specify that you do not want to generate the SQL for a change that was caused by a trigger. The setting for this enhancement is on the User Recovery Generation Options panel.

Update only the SYSCOPY Versioning Repository table

Object Restore has a new control statement option for the VR update. You can use this control statement to update only the SYSCOPY VR table. This is much faster than a full VR update. See the *Utility JCL* section of the *Utilities* chapter.

Display only dropped objects

Object Restore now filters on and can display only those objects that have been dropped.

SC18-9135-02 - February 2008

Object Restore supports DB2 V9. This allows you to exploit the features available in DB2 V9. These features are only supported when the DB2 V9 PTF is applied and the schema level repository has been upgraded to DB2 V9 NFM structure level.

NOT LOGGED table spaces

DB2 V9 added LOGGED and NOT LOGGED to the CREATE TABLESPACE and ALTER TABLESPACE statements to reduce logging where absolute recovery was not required.

Clone Table Support

DB2 V9 added ADD CLONE and DROP CLONE to the ALTER TABLE statement, the EXCHANGE DATA statement, and CLONE to –START/–STOP commands and many utilities. Cloned objects receive the

additional syntax to distinguish them from the corresponding base objects. Object Restore treats cloned tables as new objects. You are required to select these objects for recovery.

Instead Of triggers

DB2 V9 added INSTEAD OF to the CREATE TRIGGER statement against a subject view. Previous trigger types against an existing subject table are dropped and recreated to skip activity during the data recovery phase. An INSTEAD OF trigger does not impact data recovery.

Rename Column

ALTER TABLE RENAME COLUMN does not set ALTEREDTS in either SYSTABLES or SYSCOLUMNS. The SLR update requires an updated ALTEREDTS to recognize and identify a new version. DB2 does not log the RENAME COLUMN event in the catalog. Rename column support is limited with the current functionality provided by DB2.

Log Manage Enhancements

Object Restore supports this via DB2 Log Analysis tool which added support for DSNTYPE=LARGE.

Increase size of WLM environment name

DDL Generation allows for the DB2 v9 change of a longer WLM environment name.

Support for ROLES

Support for DB2 ROLE authorization recovery has been added. ROLE recovery will only be supported at this time by using the ROLE recovery option from the main product menu. Recovery of dropped roles for recovery of dropped objects is not yet supported.

Partition By Growth

This is a new type of DB2 Object. Partition by growth is a new type of table space. Object Restore z/OS supports this new DB2 object.

Restriction: Recovery of partition by growth partitions is only available for all partitions at the table space level; partitions cannot be recovered individually.

Universal Table Space

This is a new type of DB2 Object. Object Restore z/OS supports this new DB2 object.

Automatic Creation of Objects and Support for recreated implicit space names

DB2 Object Restore supports recovery of implicitly created objects.

Rename Index

The Object Restore SLR update treats the renamed index as a new object. For recovery purposes the renamed object is treated as a new object. The reason for this is because DB2 renames the object in DB2 system catalog tables that do not track objects by object ID but by name only.

Important: For recovery purposes, Object Restore generates two CREATE statements, one for the original name of the index and another for the rename of the index. You must edit the DDL for the recovery to be successful.

SC18-9135-01 - April 2004

Support for DB2 V8

Object Restore supports DB2 V8. This allows you to exploit the features available in DB2 V8.

SC18-9135-00 - December 2003

Double-byte character set support

Object Restore now supports DBCS characters for both input and output. This allows you to use Object Restore with your DBCS object names.

Single thread Versioning Repository update

To prevent users from unnecessarily consuming valuable system resources, Object Restore now prevents multiple, concurrent Versioning Repository updates. This ensures that your system's resources are available when they are most needed.

Partial Versioning Repository refresh

Object Restore has implemented a method through which you can perform a partial Versioning Repository refresh. You are no longer required to refresh the entire Versioning Repository if you know the individual database that contains the changes that you want to save. This will save you valuable time and system resources that can be put to better use.

DB2 subsystem ID list

No longer do you have to remember all of the numerous DB2 subsystems at your site. Object Restore can assist you in selecting the DB2 subsystem IDs that have been defined to it by displaying a list of defined DB2 subsystem IDs. You can then select the DB2 SSID that you want to use.

Single table recovery

Object Restore now allows you to recover a single table from image copies, UNLOAD utility backups, and dropped tables in table space VSAM data sets. Additionally, if you have DB2 High Performance Unload installed, you can use that utility when doing single table recovery from an image copy. All of this is a much more efficient use of your time and system resources than recovering an entire table space when all you required was one table.

Point-in-time SQL JCL recovery

Object Restore can now restore a DB2 table to a point in time of your choosing using an interface with DB2 Log Analysis Tool. This makes the point-in-time restoration a one-step process rather than the multiple steps required in prior versions.

SYSCOPY recovery

Object Restore can recover any SYSCOPY rows that have been archived in the Versioning Repository. These rows would have been either irretrievably lost or recoverable only through a lengthy, resource- and time-intensive restore from backup resources.

Chapter 2. Customization summary

Complete the installation instructions found in the Program Directory. After you install DB2 Object Restore, you must tailor some files for your system according to these steps.

Topics:

- “Customizing DB2 Object Restore”
- “DB2 High Performance Unload product support” on page 31

Table 2. Overview of steps for configuring DB2 Object Restore

Step	Description	SAUOSAMP Member
1	Create required Versioning Repository.	AUO#DDL7 or AUO#DDL8
2	APF authorize the LOAD libraries.	None
3	Bind the SQL.	AUO#BKV7 and AUO#BPV7 or AUO#BKV8 and AUO#BPV8
4	Bind the SQL for all other subsystems to which you want to connect.	AUO#BKV7 and AUO#BPV7 or AUO#BKV8 and AUO#BPV8
5	Grant authorizations	AUO#GRNT
6	Create the control file.	AUOCNTFL
7	Authorize FEC\$TSOC.	None
8	Edit SAUOSAMP members AUOCONFIG or AUOCLIST and AUO	AUOCONFIG or AUOCLIST and AUO
9	<i>Optional.</i> Edit SAUOSAMP member AUOTERUN	AUOTERUN
10	Start DB2 Object Restore.	None
11	Configure DB2 subsystem information	None
12	<i>Optional.</i> Configure work data set allocation parameters.	None
13	Configure the DB2 Object Restore Versioning Repository.	None
14	Load the DB2 Object Restore Versioning Repository.	AUOVRUPD
15	<i>Optional.</i> Add DB2 Object Restore to the DB2 Administration Tool launchpad.	AUOADBI
16	<i>Optional.</i> Add DB2 Object Restore to the DB2 Administration Tool main menu.	None

Customizing DB2 Object Restore

You must complete the following steps before using DB2 Object Restore for the first time.

Create the required Versioning Repository

You must create the DB2 Object Restore Versioning Repository databases before using the product. For information on size requirements for this table space, refer to “Space calculations”, or information sent to you about the space calculator.

Note: If you are migrating to DB2 Object Restore Version 1.3 from Version 1.2, you can upgrade your Versioning Repository rather than dropping it and replacing it with a new Versioning Repository. Refer to the information in "Upgrade the Object Restore Versioning Repository". You will perform those steps instead of the ones found in this step.

The DB2 Object Restore product supports two distinct Versioning Repositories. For DB2 versions 5, 6, 7, and 8 CM, the Versioning Repository definition used with DB2 Object Restore 1.3 is used. For DB2 version 8 NFM, the Versioning Repository structure is not compatible with the 1.3 Versioning Repository.

Steps for DB2 versions 5, 6, 7, and 8 CM and ENFM

Follow these steps if you are creating the Versioning Repository for DB2 versions 5, 6, 7, and 8 CM and ENFM.

1. Edit SAUOSAMP member AUO#DDL7.
2. Change all occurrences of MYSTOGROUP to a valid DB2 storage group.
3. Change all occurrences of primary and secondary quantity values based on the results from the Space Calculator shipped with DB2 Object Restore.
4. Run AUO#DDL7.

Note: Use SPUFI to run this step.

Steps for DB2 version 8 NFM

Follow these steps if you are creating the Versioning Repository for DB2 version 8 NFM.

1. Edit SAUOSAMP member AUO#DDL8.
2. Change all occurrences of MYSTOGROUP to a valid DB2 storage group.
3. Change all occurrences of primary and secondary quantity values based on the results from the Space Calculator shipped with DB2 Object Restore.
4. Run AUO#DDL8.

Note: Use SPUFI to run this step.

Step 2: APF authorizing the Load libraries

To use DB2 Object Restore, you must APF authorize the Load libraries.

Step 3: Binding the SQL

In this step you edit an SAUOSAMP member to bind the SQL.

Using DB2 versions 5, 6, 7, and version 8 CM and ENFM

Follow these steps to bind the SQL if you are using DB2 versions 5, 6, 7, and version 8 CM and ENFM

1. Edit SAUOSAMP member AUO#BKV7. This member will bind the packages for the product.
2. Add the appropriate job card to AUO#BKV7.
3. Change DSN.SDSNLOAD in the STEPLIB DD to the appropriate DB2 load libraries.
4. Change the high level qualifier in the DBRMLIB DD to the high level qualifier of the installed DB2 Object Restore libraries.
5. Change SSID to a valid DB2 subsystem ID for your environment.

6. Change YYYYYYYY to a valid user ID for a package owner for all of the BIND PACKAGE statements.
7. Submit the AUO#BKV7 JCL to bind the product packages.

Important: Depending on the version of DB2 that you are running, you may encounter a return code of 4 indicating that one or more columns are not being referenced. This is a valid, acceptable condition when running AUO#BKV7. The JCL may return a return code of 12 if this is the first time the packages are being bound on target DB2 subsystem. The return code 12 will be generated by the FREE PACKAGE statement because there are no packages to be freed.

8. Edit SAUOSAMP member AUO#BPV7. This member will bind the plans for the product.
9. Add the appropriate job card to AUO#BPV7.
10. Change DSN.SDSNLOAD in the STEPLIB DD to the appropriate DB2 load libraries.
11. Change the high level qualifier in the DBRMLIB DD to the high level qualifier of the installed DB2 Object Restore libraries.
12. Change SSID to a valid DB2 subsystem ID for your environment.
13. Rename your plans with any names that are appropriate for your site. (Optional) The default plan names are AUO7PLN1, AUO7PLN2, and AUO7PLN3.

Using DB2 version 8 NFM, version 9 CM, or version 9 ENFM

Follow these steps to bind the SQL if you are using DB2 version 8 NFM, version 9 CM, or version 9 ENFM.

1. Edit SAUOSAMP member AUO#BKV8. This member will bind the packages for the product.
2. Add the appropriate job card to AUO#BKV8.
3. Change DSN.SDSNLOAD in the STEPLIB DD to the appropriate DB2 load libraries.
4. Change the high level qualifier in the DBRMLIB DD to the high level qualifier of the installed DB2 Object Restore libraries.
5. Change SSID to a valid DB2 subsystem ID for your environment.
6. Change YYYYYYYY to a valid user ID for a package owner for all of the BIND PACKAGE statements.
7. Submit the AUO#BKV8 JCL to bind the product packages.

Important: Depending on the version of DB2 that you are running, you may encounter a return code of 4 indicating that one or more columns are not being referenced. This is a valid, acceptable condition when running AUO#BKV8. The JCL may return a return code of 12 if this is the first time the packages are being bound on target DB2 subsystem. The return code 12 will be generated by the FREE PACKAGE statement because there are no packages to be freed.

8. Edit SAUOSAMP member AUO#BPV8. This member will bind the plans for the product.
9. Add the appropriate job card to AUO#BPV8.
10. Change DSN.SDSNLOAD in the STEPLIB DD to the appropriate DB2 load libraries.

11. Change the high level qualifier in the DBRMLIB DD to the high level qualifier of the installed DB2 Object Restore libraries.
12. Change SSID to a valid DB2 subsystem ID for your environment.
13. Rename your plans with any names that are appropriate for your site. (Optional) The default plan names are AUO8PLN1, AUO8PLN2, and AUO8PLN3.

Using DB2 version 9 NFM

Follow these steps to bind the SQL if you are using DB2 version 9 NFM.

1. Edit SAUOSAMP member AUO#BKV9. This member will bind the packages for the product.
2. Add the appropriate job card to AUO#BKV9.
3. Change DSN.SDSNLOAD in the STEPLIB DD to the appropriate DB2 load libraries.
4. Change the high level qualifier in the DBRMLIB DD to the high level qualifier of the installed DB2 Object Restore libraries.
5. Change SSID to a valid DB2 subsystem ID for your environment.
6. Change YYYYYYYY to a valid user ID for a package owner for all of the BIND PACKAGE statements.
7. Submit the AUO#BKV9 JCL to bind the product packages.

Important: Depending on the version of DB2 that you are running, you may encounter a return code of 4 indicating that one or more columns are not being referenced. This is a valid, acceptable condition when running AUO#BKV9. The JCL may return a return code of 12 if this is the first time the packages are being bound on target DB2 subsystem. The return code 12 will be generated by the FREE PACKAGE statement because there are no packages to be freed.

8. Edit SAUOSAMP member AUO#BPV9. This member will bind the plans for the product.
9. Add the appropriate job card to AUO#BPV9.
10. Change DSN.SDSNLOAD in the STEPLIB DD to the appropriate DB2 load libraries.
11. Change the high level qualifier in the DBRMLIB DD to the high level qualifier of the installed DB2 Object Restore libraries.
12. Change SSID to a valid DB2 subsystem ID for your environment.
13. Rename your plans with any names that are appropriate for your site. (Optional) The default plan names are AUO9PLN1, AUO9PLN2, and AUO9PLN3.

Step 4: Binding the SQL for other subsystems

Repeat Step 2 for each subsystem against which you plan to run. Use a unique subsystem identifier each time, SYSTEM(ssid), where SSID is the subsystem identifier. You can use the same plan names for all subsystems.

Step 5: Granting authorizations

1. Edit SAUOSAMP member AUO#GRNT.
2. Change PUBLIC in the GRANT statements to a valid USERID or SQLID.
3. Run AUO#GRNT.

Note: Use SPUFI to run this step.

Step 6: Creating the control file

You must complete this step if:

- You do not already have a control file created by another DB2 product, or
- You only have a control file for DB2 Audit Management Expert for z/OS (these products cannot share the control file), or
- You want to maintain a separate control file for DB2 Object Restore.

Important: If you intend to use DB2 Object Restore and DB2 Log Analysis Tool together to enable you to support point in time recoveries, the products must share the same product control file.

1. Edit SAUOSAMP member AUOCNTFL.
2. Add the appropriate job card to AUOCNTFL.
3. Change the data set name in the DELETE statement.
4. Change the:
 - data set name
 - data name
 - index namewithin the define cluster instruction.
5. Change the name of the OUTDATASET in the REPRO instruction.
6. Run AUOCNTFL to create the control file.

Step 7: Authorize the FEC\$TSOC program

Add the program FEC\$TSOC to the AUTHPGM and AUTHTSF sections of member IKJTSO00 in SYS1.PARMLIB. For more information on IKJTSO00, refer to the *IBM DB2 UDB for z/OS: Initialization and Tuning Guide*.

Step 8: Customizing product start-up REXX or CLIST modules

The DB2 Object Restore is shipped with two start up methods:

- REXX Exec start-up modules (preferred method).
- CLIST start-up modules.

The preferred method of product start-up is using the REXX exec modules. These modules require less customization and offer more flexibility.

Option 1: To use the REXX Exec start-up modules

There are three REXX Exec modules:

- AUOR
- AUOEXEC
- AUOCONFIG

Important: If you are using Object Restore with DB2 Log Analysis Tool version 2.3, then you must use the following REXX Exec modules and substitute their names in these instructions:

- AUORA

- AUOEXECA
- AUOCNFGA

Modules AUOR and AUOEXEC do not require you (or whoever installs the product) to make any changes. You are required to update the AUOCONFG module. You should follow the installation instructions included in that module.

You start DB2 Object Restore using the following TSO command:

```
EXEC 'AUO.IBMTAPE.SAUOSAMP(AUOR)' 'NONE NONE AUOCONFG'
```

You can create multiple configurations of the product by creating additional configuration exec modules. To create multiple configurations copy the AUOCONFG module. Modify the contents to the appropriate configuration settings. Replace the AUOCONFG member name with the new module name in the above TSO command.

Option 2: To use the CLIST start-up modules

Important:

1. If you are upgrading from DB2 Object Restore version 1.1 or 1.2 you must replace the start-up CLISTS shipped with those product versions with the AUO and AUOCLIST CLIST modules shipped in the 2.1 SAUOSAMP data set.
2. If you are upgrading from DB2 Object Restore version 1.3 you must replace the AUOCLIST module shipped with that product with the AUOCLIST shipped in the 2.1 SAUOSAMP data set.
3. If you are using Object Restore with DB2 Log Analysis Tool version 2.3, then you must use the following CLIST modules and substitute their names in these instructions:
 - AUOCLSTA
 - AUOA

Before you use the CLIST modules you are required to make modifications to them:

1. Edit SAUOSAMP member AUOCLIST.
 - a. Change AUOHLVL within the parentheses to the high-level qualifier of your DB2 Object Restore installed libraries in the PROC statement.
 - b. **(Optional)** Change ALAHLVL within the parentheses to the high-level qualifier of your DB2 Log Analysis Tool installed libraries in the PROC statement.
 - c. Change FECHLVL within the parentheses to the high-level qualifier of your Common Code installed libraries in the PROC statement.
 - d. Change AUO.DB2.CONTROL in the SET statement to the name of the control file that you created in Step 5 above, or your existing control file.
 - e. **(Optional)** If you intend to use the Log Analysis Tool 1.3 interface with DB2 Object Restore, then you must remove or comment out the following LIBDEF statement:

```
ISPEXEC LIBDEF ISPLLIB DATASET ID('&AUOHLVL..SAUOLOAD' +
'&FECHLVL..SFECLOAD') UNCOND
```

and uncomment the following LIBDEF statement:

```
ISPEXEC LIBDEF ISPLLIB DATASET ID('&AUOHLVL..SAUOLOAD' +
'&AL AHLVL..SALALOAD' +
'&FECHLVL..SFECLOAD') UNCOND
```


- f. **(Optional)** If you intend to use the Table Editor Interface with DB2 Object Restore, then you must change the statement `SET &AUOETI = &STR(N)` to `SET &AUOETI = &STR(Y)`.
- g. **(Optional)** To suppress the generation of object comment boxes in the DDL created by Object Restore, then you must ensure that the statement `SET &AUO0BJC = &STR(N)` remains set to N.
- h. Update the variable assignments with the names of the DB2 High Performance Unload product library names. If DB2 High Performance Unload is not available, then you must assign empty variables. The variable assignment statements are `SET &HPULOAD1 =` and `SET &HPULOAD2 =`. An example of the syntax is `SET &HPULOAD1 = &STR('DB2UNL.SINZLINK')`.
- i. Change the data set name created by the SET statement `SET &EXECDSN = &STR(&ZUSER..TMPEXEC.DATA)` to follow your installation's conventions. This data set is only used for the duration of a recovery session and is deleted when you exit DB2 Object Restore.
- j. Change the data set name created by the SET statement `SET &XRPTDSN = &STR(&ZUSER..TMPXRPT.DATA)` to follow your installation's conventions. This data set is only used for the duration of a recovery session and is deleted when you exit DB2 Object Restore.

2. Edit SAUOSAMP member AUO.

- a. In AUO, specify the libraries where AUOCLIST and the DB2 Log Analysis Tool CLIST are located (CLISTLIB AND ALACLIST, respectively). If you do not want to pass the CLIST library names when the CLIST is invoked, then remove the `CLISTLIB()` AND `ALACLIST()` references from the PROC statement. You must then change the references to CLISTLIB and ALACLIST to the appropriate CLIST library name.

Note: The libraries used in this step should match the names that you allocated during installation.

- b. **(Optional)** If the Log Analysis Tool 1.3 interface is to be used with DB2 Object Restore, then remove or comment out the following statement:

```
ALLOC FILE(AUOCLIST) DATASET('&CLISTLIB') SHR REU
```

and uncomment the following statement:

```
ALLOC FILE(AUOCLIST) DATASET('&CLISTLIB' +
'&ALACLIST') SHR REU
```

The ALACLIST variable must contain the name of the Log Analysis Tool v1.3 (or v2.1) CLIST library.

Step 9: (Optional) Editing SAUOSAMP member AUOTERUN

If you intend to use the Table Editor Interface with DB2 Object Restore, then you must make the following changes to the AUOTERUN CLIST:

1. Update the ETIVER variable assignment to reflect the DB2 Table Editor version (42 or 43).
2. Update the ETIMOD variable assignment to reflect the DB2 Table Editor startup CLIST or REXX module name.
3. Update the ETILIB variable assignment to reflect the data set name where the DB2 Table Editor startup CLIST or REXX module is located.

Step 10: Starting DB2 Object Restore

Use one of these methods to start DB2 Object Restore.

Start DB2 Object Restore:

REXX Exec

Issue the following TSO command:

```
EXEC 'AUO.IBMTAPE.SAUOSAMP(AUOR)' 'NONE NONE AUOCONFG'
```

CLIST Run the SAUOSAMP library member AUO. The member AUO can accept a DB2 subsystem parameter so that it starts with a subsystem connection. The parameter is SSID and is used in the following way:

```
AUO SSID(ssid)
```

where *ssid* is the DB2 subsystem to which you wish to connect. If you do not use the SSID parameter, then the last SSID value that you entered is used.

Remember: The example statements use AUO and AUOR. Remember that you must use the name of the start up module that you used in Customization Step 7:

CLIST names

AUO or AUOA

REXX names

AUOR or AUORA

The main menu for DB2 Object Restore opens.

Step 11: Configuring DB2 subsystem information

1. On the DB2 Object Restore main menu, type the subsystem identifier (SSID) for the DB2 subsystem that you want to configure. This field has a four-character maximum.
2. Type **PS** or **SETUP** on the command line to access the product setup for DB2 Object Restore. Press Enter and the Product Setup Options panel opens:

```
DB2 OR V2R1 ----- Product Setup Options ----- 2003/10/29 17:40
Option ==>
```

```
DB2 Subsystem ID: SS01
```

1. DB2 Subsystem Setup
2. Product ISPF Work Dataset Allocation Parameters
3. Recovery Dataset Allocation Parameters
4. Image Copy Dataset Allocation Parameters

- X. Return to Previous Menu

```
Enter END command to return to previous menu.
```

Figure 1. Product Setup Options panel

3. On the Product Setup Options panel, type **1** on the command line to access the product setup for DB2 Object Restore. The Enter DB2 System Parameters panel opens:

```
-----Enter DB2 System Parameters-----
Command ==>

DB2 Control Dataset   ==>
(Pre-allocated)

Enter DB2 Subsystem Info:

DB2 Subsystem ID     ==>          (1-4 Character Subsystem ID)

Valid command selection values are:
 1: ZPARM, BSDS, and Load Library Information
 2: DB2 Object Restore Parameters
```

Figure 2. Enter DB2 System Parameters panel

4. In the **DB2 Subsystem ID** field, type the subsystem identifier (SSID) for the DB2 subsystem that you want to configure. This field has a four-character maximum.
5. Type **1** on the Command line and press the Enter key. The Update Parameters for DB2 Subsystem panel opens.

```
----- Update Parameters for DB2 Subsystem SS01
Command ==>
```

```
Enter or Update Specific DB2 Parameters :
```

```
DB2 ZPARMs Member      ==>
DB2 Bootstrap DSN #01  ==>
DB2 Bootstrap DSN #02  ==>
DB2 Loadlib1           ==>
DB2 Loadlib2           ==>
DB2 Loadlib3           ==>
DB2 Loadlib4           ==>
DB2 Loadlib5           ==>
```

Figure 3. Update Parameters for DB2 Subsystem panel

6. In the Update Parameters for DB2 Subsystem panel, enter information specific to a particular DB2 subsystem, including ZPARM, BSDS, and load library.
 - a. In the **DB2 ZPARMs Member** field, type the ZPARM load module member name generated for this DB2 subsystem.
 - b. In the **DB2 Bootstrap DSN #01** and the **DB2 Bootstrap DSN #02** fields type the full dataset names of the two bootstrap datasets that are being used by this DB2 Subsystem.
 - c. In the **DB2 Loadlib1** to **DB2 Loadlib5** fields, type the names of the datasets that comprise the current loadlib concatenation for DB2. The loadlib usually consists of:
 - a subsystem-specific DSNEXIT library
 - the base DSNLOAD library for the current DB2 version
 - d. Press Enter to submit your changes. A message appears on the panel to indicate that your changes have been saved.
 - e. Press PF3 to return to the Enter DB2 System Parameters panel.
7. Type **2** on the Command line. The second DB2 Object Restore - Update Parameters for DB2 Subsystem panel opens.

```
-----DB2 Object Restore - Update Parameters for DB2 Subsystem SS01
Command ==>
```

```
Enter or Update Specific DB2 Parameters :
```

```
Plan #1 Name           ==>           Display Objects
Plan #2 Name           ==>           Execute Generated DDL
Plan #3 Name           ==>           Repository Load/Delete
```

Figure 4. Update Parameters for DB2 Subsystem panel

8. In the second Update Parameters for DB2 Subsystem panel, type information specific to the DB2 Object Restore parameters.
 - a. In the **Plan #1 Name** field, type the plan name used for DB2 Object Restore to display objects. This is the first plan name that was used in member AUO#BPVn in the SAUOSAMP library when the plan for DB2 Object Restore was bound.

- b. In the **Plan #2 Name** field, type the plan name used for DB2 Object Restore to execute the generated DDL. This is the second plan name that was used in member AUO#BPVn in the SAUOSAMP library when the plan for DB2 Object Restore was bound.
 - c. In the **Plan #3 Name** field, type the plan name used for DB2 Object Restore to load and delete data from the versioning repository. This is the third plan name that was used in member AUO#BPVn in the SAUOSAMP library when the plan for DB2 Object Restore was bound.
 - d. Press Enter to submit your changes. A message appears on the panel to indicate that your changes have been saved.
 - e. Press PF3 to return to the previous panel.
9. Press Enter to submit your changes.
 10. Repeat steps 2 - 8 for each subsystem against which you want to run DB2 Object Restore.

Note: You must configure subsystem information and DB2 Object Restore-specific information for each subsystem against which you want to run DB2 Object Restore. If you configure only for one subsystem, DB2 Object Restore will not work for the other subsystems.

11. Press PF3 until you return to the DB2 Object Restore main panel.

To set up a data sharing environment:

When setting up a data sharing environment, first, identify the subsystem ID (SSID). This will be used as the group name. For any required datasets, such as the bootstrap dataset (BSDS), you can use any one of the member's BSDS names. You only have to specify one member's BSDS name because each member's BSDS name contains the necessary information for the entire group.

Note: You can configure for each subsystem within the group, though the entire data sharing environment will still be used. You will spend less time setting up and save effort if you configure for a single group ID.

Step 12: (Optional) Configuring work data set allocation parameters

DB2 Object Restore has default values for the work data sets that it uses during processing. You can change these default values if you choose to do so by performing the following tasks.

1. On the DB2 Object Restore main menu, type the subsystem identifier (SSID) for the DB2 subsystem that you want to configure. This field has a four-character maximum.
2. Type **PS** on the command line to access the product setup for DB2 Object Restore. Press Enter and the Product Setup Options panel opens:

```
DB2 OR V2R1 ----- Product Setup Options ----- 2007/06/20 14:11
Option ==>
```

```
DB2 Subsystem ID: SS1A
```

- 1 DB2 Subsystem Setup
- 2 Product ISPF Work Dataset Allocation Parameters
- 3 Recovery Dataset Allocation Parameters
- 4 Image Copy Dataset Allocation Parameters
- 5 Log Analysis Service Options

```
Enter END command to return to previous menu.
```

Figure 5. Product Setup Options panel

To set session work data set parameters:

On the Product Setup Options panel, type **2** on the command line to access the product setup for DB2 Object Restore. The Session Work Dataset Parameters panel opens:

```
DB2 OR V2R1 ----- Session Work Dataset Parameters ----- 2003/10/29 17:51
Command ==>
```

```
Session Work Dataset Parameters:
```

Track or Cylinder	('T' for Tracks, 'C' for Cylinders)
Primary quantity	(1 to 9999)
Secondary quantity	(0 TO 9999)
Device Type	(1-8 characters, or blank)
SMS Data Class	(1-8 characters, or blank)
SMS Storage Class	(1-8 characters, or blank)
SMS Management Class ...	(1-8 characters, or blank)

```
Press END key to save changes and return to previous menu.
```

Figure 6. Session Work Dataset Parameters panel

On this panel, you specify the work dataset allocation parameters for DB2 Object Restore. You can specify the following parameters:

- Track or Cylinder
- Primary quantity
- Secondary quantity
- Device Type
- SMS Data Class

- SMS Storage Class
- SMS Management Class

Press PF3 to return to the Product Setup Options panel.

To set recovery data set parameters:

On the Product Setup Options panel, type **3** on the command line to access the product setup for DB2 Object Restore. The Recovery Dataset Parameters panel opens:

```

DB2 OR V2R1 ----- Recovery Dataset Parameters ----- 2003/10/29 17:53
Command ==>>

Recovery Work Dataset Allocation Parameters:

Unit ..... (DISK, CART, etc.)
Track or Cylinder ..... ('T' for Tracks, 'C' for Cylinders)
Primary quantity ..... (used in disk datasets only, 1 to 9999)
Secondary quantity ..... (Used in disk datasets only, 0 to 9999)
SMS Data Class ..... (1-8 characters, or blank)
SMS Storage Class ..... (1-8 characters, or blank)
SMS Management Class ... (1-8 characters, or blank)
Tape specific parameters (only needed if Unit is tape device)
Maximum volumes ..... (1 to 255)
Expiration date ..... (YYYYDDD)
Retention period ..... (1 to 999)
File Number ..... (1 to 9999)

Press END key to save changes and return to previous menu.

```

Figure 7. Recovery Dataset Parameters panel

On this panel, you specify the work dataset allocation parameters for DB2 Object Restore output files. You can specify the following parameters:

- Unit
- Track or Cylinder
- Primary quantity
- Secondary quantity
- Device Type
- SMS Data Class
- SMS Storage Class
- SMS Management Class

and if the Unit is a tape device, you can specify:

- Maximum volumes
- Expiration date
- Retention period
- File number

Press PF3 to return to the Product Setup Options panel.

To set image copy data set parameters:

On the Product Setup Options panel, type **4** on the command line to access the product setup for DB2 Object Restore. The Image Copy Dataset Parameters panel opens:

```
DB2 OR V2R1 ----- Image Copy Dataset Parameters ----- 2003/10/29 17:59
Command ==>
```

Image Copy Dataset Allocation Parameters:

```
Unit ..... (DISK, CART, etc.)
Track or Cylinder ..... ('T' for Tracks, 'C' for Cylinders)
Primary quantity ..... (used in disk datasets only, 1 to 9999)
Secondary quantity ..... (Used in disk datasets only, 0 to 9999)
SMS Data Class ..... (1-8 characters, or blank)
SMS Storage Class ..... (1-8 characters, or blank)
SMS Management Class ... (1-8 characters, or blank)
Tape specific parameters (only needed if Unit is tape device)
Maximum volumes ..... (1 to 255)
Expiration date ..... (YYYYDDD)
Retention period ..... (1 to 999)
File Number ..... (1 to 9999)
```

Press END key to save changes and return to previous menu.

Figure 8. Image Copy Dataset Parameters panel

On this panel, you specify the image copy dataset allocation parameters for DB2 Object Restore. You can specify the following parameters:

- Unit
- Track or Cylinder
- Primary quantity
- Secondary quantity
- SMS Data Class
- SMS Storage Class
- SMS Management Class

and if the Unit is a tape device, you can specify:

- Maximum volumes
- Expiration date
- Retention period
- File number

Press PF3 to return to the Product Setup Options panel.

To set log analysis service options:

On the Product Setup Options panel, type **5** on the command line to access the product setup for DB2 Object Restore. The Log Analysis Service Options panel opens:


```

DB2 OR V2R1 ----- Log Analysis Services Options ----- 2007/06/20 14:17
Option ==>

More:      +

Dynamic allocation device attributes:
DASD data set unit ..... SYSALLDA
Tape data set unit ..... CART

Temporary image copy data set attributes:
Device type ..... D          (D,T,I)
Unit ..... SYSALLDA        (DISK, CART, etc.)
Track or Cylinder ..... C    ('T' for Tracks, 'C' for Cylinders)
Primary quantity ..... 00010 (DASD only, 00001 to 99999)
Secondary quantity ..... 00050 (DASD only, 00000 to 99999)

ROWDATA VSAM data set attributes (leave blank for automatic sizing):
Volumes .....              (111111,222222, etc.)
Data component:
Track or Cylinder .... C    ('T' for Tracks, 'C' for Cylinders)
Primary quantity ..... 00050 (00001 to 99999)
Secondary quantity ... 00050 (00000 to 99999)

Enter END command to exit.

```

Figure 9. Log Analysis Service Options panel

On this panel, you specify the log analysis service options for DB2 Object Restore. You can specify the following parameters:

Dynamic allocation device attributes

DASD data set unit

Specify a UNIT name on disk (or DASD) for your file allocations. This field can be left blank if your system allows non-specification of unit type.

Tape data set unit

Specify a UNIT name on tape for your file allocations. If left blank, no retry to tape is attempted for failed DASD type allocations.

Temporary image copy data set attributes

The data requested for temporary image copies is required for log-forward applications. Supply the requested information for allocations of temporary datasets needed to process inline image copies, if any found during processing.

Device type

Type D if you want temporary image copy allocations to be forced to disk. Type T if you want temporary image copy allocations to be forced to tape. - Type I if you want temporary image copy allocations to be derived from the device type of the originating image copy.

Unit If Device Type was specified as either D or T, supply a unit name for the requested type. For example, if T, the unit name might be 3390.

Track or Cylinder

Specify either C for cylinders, or T for tracks.

Primary quantity

Specify primary space allocation.

Secondary quantity

Specify secondary space allocation.

ROWDATA VSAM data set attributes

The ROWDATA VSAM data set is dynamically created by log analysis services when creating SQL from the log. If you want automatic sizing, leave this section blank.

Volumes

Specify up to three comma-separated volume serial numbers for the VSAM file. If specified, the format must be: volser,volser,volser

Track or Cylinder

Specify either C for cylinders, or T for tracks.

Primary quantity

Specify primary space allocation.

Secondary quantity

Specify secondary space allocation.

Press PF3 to return to the Product Setup Options panel.

Step 13: Configuring the DB2 Object Restore Versioning Repository

The DB2 Object Restore Versioning Repository has some default settings, though you should perform the following steps to ensure that you have configured it to your specific recovery needs.

1. On the DB2 Object Restore main menu, type the subsystem identifier (SSID) for the DB2 subsystem that you want to configure. This field has a four-character maximum.
2. Type **RO** on the command line to access the recovery options for DB2 Object Restore. Press Enter and the Repository Options panel opens:

```
DB2 OR V2R1 ----- Repository Options ----- 2003/10/29 18:05
Option ==>
```

```
DB2 Subsystem ID:      Current SQLID      User:
```

```
----- Last Versioning Repository Update: 2003/10/29 16:07:38 -----
```

1. Versioning Repository Object Unload Options
2. Versioning Repository Authorization Unload Options
3. Recovery Image Copy Data Retention Options
4. Recovery Object Data Retention Options

X. Return to Previous Menu

Enter END command to return to previous menu.

Figure 10. Repository Options panel

This panel is the selection menu for the Versioning Repository recovery options. These options are global product options. The menu options are:

1. Versioning Repository Object Unload Options
This selection displays a list of object Versioning Repository options.
2. Versioning Repository Authorization Unload Options

This selection displays a list of authorization Versioning Repository options.

3. Recovery Image Copy Data Retention Options

This selection displays the SYSCOPY retention option panel.

4. Recovery Object Data Retention Options

This selection displays the object retention option panel.

Object recovery options

Select option **1** from the Repository Options panel and the Versioning Repository Object Unload Options panel appears:

On this panel you use the slash (/) to select the objects whose recovery information

```
DB2 OR V2R1 ----- IBM DB2 Object Restore Profile ----- 2003/10/29 18:08
Option ==>

                          Versioning Repository Object Unload Options

Object Recovery:
Enter "/" to select option
  Capture Storage Groups          Capture Distinct Types
  Capture Views                   Capture RI Information
  Capture Databases               Capture Triggers
  Capture Table Spaces            Capture Procedures
  Capture Tables                  Capture Sequences
  Capture Indexes
  Capture Synonyms
  Capture Aliases
  Capture Plan and Packages for Bind

Enter END command to save changes and return to previous menu.
```

Figure 11. Versioning Repository Object Unload Options panel

you want retained in the Versioning Repository.

Authorization recovery options

Select option **2** from the Repository Options panel and the Authorization Recovery panel appears:

```
DB2 OR V2R1 ----- IBM DB2 Object Restore Profile ----- 2003/10/29 18:09
Option ==>
```

Versioning Repository Privileges Unload Options

Privilege Recovery:

Enter "/" to select option	Enter "/" to select option
Capture System Privileges	Limit repository update to adds only
Capture Use Privileges	Limit repository update to adds only
Capture Database Privileges	Limit repository update to adds only
Capture Table/View Privileges	Limit repository update to adds only
Capture Column Privileges	Limit repository update to adds only
Capture Package Privileges	Limit repository update to adds only
Capture Plan Privileges	Limit repository update to adds only
Capture Collection Privileges	Limit repository update to adds only
Capture Sequence Privileges	Limit repository update to adds only

Enter END command to return to ISPF.

Figure 12. Versioning Repository Privileges Unload Options panel

On this panel you use the slash (/) to select the authorization recovery information that you want retained in the Versioning Repository. Additionally, you can limit the Versioning Repository updates to only the added or new privileges by selecting the options in the right-side column.

Note: By limiting the Versioning Repository updates to only the added or new privileges, you can lessen the impact of the AUOVRUPD job on your system performance.

Image Copy data retention options

Select option **3** from the Repository Options panel and the SYSCOPY data retention panel appears:

```
DB2 OR V2R1 ----- IBM DB2 Object Restore Profile ----- 2003/10/29 18:09
Option ==>
```

SYSCOPY Recovery Retention Period.. 999 (Retention Days, "001" - "999")

Notes:

Use a retention value of "999" if all data is to be retained.

Enter END command to return to ISPF.

Figure 13. SYSCOPY data retention panel

On this panel, you can specify the number of days that SYSCOPY rows will be retained in the versioning repository. You must enter a three-digit number between 001 and 999 to indicate the number of days that you want the recovery data retained. If you specify a value of 999, SYSCOPY rows will be retained indefinitely.

Object data retention options

Select option 4 from the Repository Options panel and the Versioning Repository Object Retention Options panel appears:

```
DB2 OR V2R1 ----- IBM DB2 Object Restore Options ----- 2003/10/29 18:10
Option ==>
```

Versioning Repository Object Retention Options

```
Number of object versions to be retained . . . 99999
Drop Expired versions during Load Process . . YES (YES or NO)
```

```
NOTE: Dropping expired object versions during the versioning repository
load process will add additional execution time to that process.
```

```
Enter END command to return to ISPF.
```

Figure 14. Versioning Repository Object Retention Options panel

On this panel, you must specify the number of object versions that you want retained in the versioning repository. Valid values are 00001-99999. You can also indicate that you want expired versions of objects dropped during the load process.

Note: Dropping expired object versions during the versioning repository load process will add additional execution time to that process.

Step 14: Loading the DB2 Object Restore Versioning Repository

To load the DB2 Object Restore Versioning Repository prior to its first use, tailor and run job AUOVRUPD from the SAUOSAMP library.

1. Edit SAUOSAMP member AUOVRUPD.
2. Add the appropriate job card to AUOVRUPD.
3. Change the SSID parameter, SSID, to the subsystem identifier against which you want to run.
4. Change the STEPLIB data set names, AU0.IBMTAPE.SAU0LOAD and AU0.IBMTAPE.SFECLoad, to their respective load libraries.
5. Change the DB2PARMS data set name, AU0.CONTROL.FILE, to the DB2 control file that you created in Step 5 above, or your existing control file.
6. Run AUOVRUPD.

Note: You must run AUOVRUPD at least once a day or each time you create an object.

Step 15: (Optional) Adding DB2 Object Restore to the DB2 Administration Tool Launchpad

You can add DB2 Object Restore to the DB2 Administration Tool Launchpad. This step is optional. DB2 Administration Tool, program number 5655-E64, adds launchpad support for installed IBM DB2 tools that have an ISPF interface through APAR PQ45029. This new function provides a central location to launch one or more DB2 tools. You must have applied APAR PQ45029 and created the Launchpad table.

To add DB2 Object Restore to the DB2 Administration Tool Launchpad:

1. Locate the sample install CLIST in the following library: (XXX.XXXX(AUOADBI)). Where XXX.XXXX is the library where DB2 Object Restore is stored.
2. Modify the sample CLIST (AUOADBI) according to the following instructions:
 - a. Change the hlq assignment value to the high level qualifier of the DB2 Administration Tool data sets in the statement `hlq = 'VNDR232.ADBE70'`.
 - b. Change the execlib assignment value to the name of the data set that contains the ADBDMTI EXEC in the statement `execlib = '''VNDR232.ADBE70.SADBEXEC'''`.
 - c. Change the AUO.IBMTAPE.SAUOSAMP data set name to the name of the data set that contains the Object Restore product start up CLIST (AUO) or REXX Exec (AUOR) in the statement:

DB2 Administration Tool V3 and lower

```
CLIST xcmd = 'SELECT MODE(FSCR) CMD(EX
            'AUO.IBMTAPE.SAUOSAMP(AUO)''')
```

REXX Exec

```
xcmd = 'SELECT MODE(FSCR) CMD(EX
        'AUO.IBMTAPE.SAUOSAMP(AUOR) NONE NONE AUOCONFIG''')
```

DB2 Administration Tool V4 and higher

```
CLIST xcmd = "SELECT MODE(FSCR)","CMD(EX
            'AUO.IBMTAPE.SAUOSAMP(AUO)',"',"SSID("DMTSSID")'")"
```

REXX Exec

```
xcmd = 'SELECT MODE(FSCR) CMD(EX
        'AUO.IBMTAPE.SAUOSAMP(AUOR) DMTSSID NONE AUOCONFIG''')
```

Remember: Throughout the AUOADBI member, the example statements use the CLIST AUO. Remember that you must change the name to the start up module name that you used in Customization Step 7:

CLIST names

AUO or AUOA

REXX names

AUOR or AUORA

3. Run the AUOADBI CLIST to add DB2 Object Restore to the launchpad.

Note: For detailed information on how to enable an IBM DB2 tool for the launchpad, see DB2 Administration User's Guide (SC27-0974).

Step 16: (Optional) Adding DB2 Object Restore to the DB2 Administration Tool main menu

You can add DB2 Object Restore to the DB2 Administration Tool V3.1, or later, main menu. Then, when you select DB2 Object Restore from the DB2 Administration Tool main menu, you initiate an Object Restore session and the DB2 SSID and SQLID selected in the DB2 Admin Tool are passed to the AUO dialog.

Note: DB2 Administration Tool is IBM program number 5655-E64.

To add DB2 Object Restore v2.1 (AUO) to the DB2 Administration Tool main menu:

1. Locate panel ADB2 in DB2 Administration Tool product panel library.
2. Edit panel ADB2 in ISPF EDIT.
3. Add option choice character for AUO to FUNCTION CHOICE CHARACTER DISPLAY SECTION. For example:
`&B = ' A'`
4. Add option choice character for AUO to FUNCTION CHOICE CHARACTER SECTION. For example:
`&BOPT = A`
5. Add product description to FUNCTION CHOICE DESCRIPTION SECTION. For example:
`&BDESCR = '- DB2 Object Restore V2R1'`
6. Add ISPF product execute statement to FUNCTION CHOICE ACTIONS SECTION. For example:

CLIST

```
&BISPF = 'SELECT CMD(%AUO SSID(&DB2SYS) SQLID(&DB2AUTH))'
```

REXX Exec

```
&BISPF = 'SELECT CMD(%AUOR &DB2SYS NONE AUOCONFG)'
```

Important: Remember to use the start up module name that you used in Customization Step 7:

CLIST names

AUO or AUOA

REXX names

AUOR or AUORA

DB2 High Performance Unload product support

DB2 Object Restore Version 2.1 supports all DB2 High Performance Unload versions. Unless otherwise noted the following information applies to DB2 versions 5, 6, 7, 8, and 9 (all configurations).

DB2 High Performance Unload

IBM DB2 High Performance Unload (DB2 HPU) is a high-speed DB2 utility for unloading DB2 tables from an image copy. DB2 HPU works outside of DB2, directly accessing the sequential files that contain the image copy data set. DB2 HPU provides superior performance, especially in terms of CPU and elapsed time.

Support for DB2 High Performance Unload

DB2 Object Restore has the ability to utilize DB2 HPU when providing single table recovery from an image copy data set. Without this utility, Object Restore cannot perform single table recovery from an image copy for DB2 versions 5 and 6.

The product installer must configure the Object Restore start up to access the DB2 HPU product library. After the Object Restore start up has been configured to access the DB2 HPU product libraries, the DB2 HPU utility will be used.

Chapter 3. Running DB2 Object Restore

Use DB2 Object Restore to recover a variety of DB2 objects, privileges, and data. This utility creates the SQL that, when executed, restores the objects on DB2 for z/OS.

Start DB2 Object Restore by running the SAUOSAMP library member AUO. The main menu for DB2 Object Restore opens.

Topics:

- “DB2 Object Restore main menu”
- “Primary commands” on page 36
- “Object list navigation commands and actions” on page 39

DB2 Object Restore main menu

This is the main menu for DB2 Object Restore:

```
DB2 OR ----- IBM DB2 Object Restore ----- 2007/06/15 16:04
Option ==>                                     Scroll:

DB2 Subsystem: SS14A Current SQLID:             Recovery: L User: TWUSER

----- System: RS25 -----

                                         More:  +
Object Recovery          Binds          Utilities
G Storage Groups        P Plans          ES Execute Saved DDL
D Databases             K Packages       IC Image Copies
S Table Spaces          L Collections    UJ Utility JCL
T Tables
X Indexes               Privileges       Product Settings
V Views
Y Synonyms              RA Resources     UR User Recovery Options
A Aliases               UA System Privileges
                       PP Plans          RO Repository Options
E Data Types            KP Packages      PS Product Setup
J Triggers
F Functions
O Stored Procedures

Enter END command to exit DB2 Object Restore.
```

Figure 15. DB2 Object Restore main menu

Attention: Since this is a scrollable panel, not all options are visible in this figure.

The header fields and menu options are described briefly below.

Header fields

DB2 Subsystem

Enter 1-4 character DB2 Subsystem ID. This value is commonly known as the SSID. Enter a question mark (?) to display a list of DB2 Subsystem IDs that are defined in the product control file.

Current SQLID

Enter 1-128 character current SQLID.

This is a scrollable data field. Scrollable field commands apply when the the cursor has been placed within the field. An indicator to the right of the field will be displayed to indicate if left (<) or right (>) scrolling can be performed.

The recovery session current SQLID will be set to the non-blank value. A "SET CURRENT SQLID" statement will be generated containing the value when object recovery DDL is generated.

Recovery

- Type **L** to limit data recoveries to local and remote image copies.
- Type **R** to limit data recoveries to remote image copies.

User The current user ID.

Object Recovery**Storage Groups**

Use the Storage Groups option to work with a dropped storage group. Alternatively, you can use this option to copy this object to another subsystem.

Databases

Use the Databases option to work with a dropped database. Alternatively, you can use this option to copy this object to another subsystem.

Table Spaces

Use the Table Spaces option to work with a dropped table space. Alternatively, you can use this option to copy this object to another subsystem.

Tables

Use the Tables option to work with a dropped table. Alternatively, you can use this option to copy this object to another subsystem.

Indexes

Use the Indexes option to work with a dropped index. Alternatively, you can use this option to copy this object to another subsystem.

Views Use the Views option to work with a dropped view. Alternatively, you can use this option to copy this object to another subsystem.

Synonyms

Use the Synonyms option to work with a dropped synonym. Alternatively, you can use this option to copy this object to another subsystem.

Aliases

Use the Aliases option to work with a dropped alias. Alternatively, you can use this option to copy this object to another subsystem.

Data Types

Use the Data Types option to work with a dropped data type. Alternatively, you can use this option to copy this object to another subsystem.

Triggers

Use the Triggers option to work with a dropped trigger. Alternatively, you can use this option to copy this object to another subsystem.

Functions

Use the Functions option to work with a dropped function. Alternatively, you can use this option to copy this object to another subsystem.

Stored Procedures

Use the Stored Procedures option to work with a dropped stored procedure. Alternatively, you can use this option to copy this object to another subsystem.

Sequences

Use the Sequences option to work with a dropped sequence. Alternatively, you can use this option to copy this object to another subsystem.

Roles Use the Roles option to work with a dropped role. Alternatively, you can use this option to copy this object to another subsystem.

Restriction:

- The Sequences option only applies to DB2 Version 8 NFM (New Function Mode) and DB2 Version 9.
- The Roles option only applies to DB2 Version 9 NFM (New Function Mode).

Binds

Plans Use the Plans option to work with a dropped plan. Alternatively, you can use this option to copy this plan to another subsystem.

Packages

Use the Packages option to work with a dropped package. Alternatively, you can use this option to copy this package to another subsystem.

Collections

Use the Collections option to work with a dropped collection. Alternatively, you can use this option to copy this collection to another subsystem.

Privileges

Resources

Use the Resources option to work with dropped resource privileges. Alternatively, you can use this option to copy the resource privileges to another subsystem.

System Privileges

Use the System Privileges option to work with dropped user privileges. Alternatively, you can use this option to copy the user privileges to another subsystem.

Plans Use the Plans option to work with a dropped plan privileges. Alternatively, you can use this option to copy the plan privileges to another subsystem.

Packages

Use the Packages option to work with dropped package privileges. Alternatively, you can use this option to copy the package privileges to another subsystem.

Utilities

Execute Saved DDL

Use the Execute Saved DDL option to retrieve saved DDL that you can modify and then submit.

Image Copies

Use the Image Copies option to work with image copies. You can review the TSO Listcat output for the selected image copy or review the recovery details for a selected table space.

Utility JCL

Use the Utility JCL option to generate JCL to load the Versioning Repository or to clean the Versioning Repository.

Product Settings

User Recovery Options

Use this option to set the user-level options for recovery. You can set the recovery options for objects and privileges as well as bind recovery options.

Repository Options

Use this option to set the global options for the information that is stored in the DB2 Object Restore Versioning Repository.

Product DB2 Setup

Use this option to configure the DB2 subsystem information for DB2 Object Restore and to set the allocation parameters for the required datasets. For more information on this option, see "Customizing DB2 Object Restore".

Primary commands

There are several primary commands that are available from the Option line in DB2 Object Restore.

ABOUT

The ABOUT command displays information about the DB2 Object Restore product.

```
----- About DB2 Object Restore -----  
Option ==>  
  
          IBM DB2 Object Restore V2R1  
  
          Licensed Materials - Property of IBM  
          5697-I20 (C) Copyright IBM Corp. 1999,2003  
          Copyright (C) Rocket Software, Inc. 1999-2003  
          All rights reserved  
          IBM is a registered trademark of International Business Machines Co.  
          Rocket is a registered trademark of Rocket Software, Inc.  
  
Option Description  
1   Display ISPF Environment Information  
2   Display Product Information  
x   Exit  
  
Enter END key to return to previous menu.
```

Figure 16. Product information panel

There are options on the ABOUT information panel to display ISPF terminal/environment settings and display product version information.

To display ISPF environment information:

Type **1** on the About DB2 Object Restore panel to display the ISPF environment settings.

```

----- About DB2 Object Restore V2R1 -----
Option ==>

                ISPF Environment Settings

Execution Environment .. ISPF 5.2MVS      TSO   DBCS ..... NO
Session Language ..... ENGLISH          HiLite .... YES
Operating System ..... Z/OS   01.03.00   PFKeys .... 24
Application id ..... AU0                Screen ... 1
Terminal ..... 3278                    Width ..... 0080
Colors ..... 0007                       Depth ..... 0024

Press END or ENTER keys to return to previous menu.

```

Figure 17. ISPF Environment Settings panel

To display product information:

Type **2** on the About DB2 Object Restore panel to display the product version information.

```

----- About DB2 Object Restore V2R1 -----
Option ==>

                Product Version Information

Product Name ..... DB2 Object Restore
IBM Product Code ..... 5697-I20
IBM SMP/E FMID ..... H23L210
IBM Group Code ..... 100
Product Code ..... AU0
Maintenance Level ..... M000
Repository Level ..... D
DB2 Max Version ..... 0810
DB2 Min Version ..... 0510
Table Point-In-Time Recovery.. Log Analysis Tool (ALA) 2.1 Interface
Table Edit Command..... Activated

Press END or ENTER to return to previous menu.

```

Figure 18. Product Version Information panel

- Product Name**
The product name.
- IBM Product Code**
The IBM product code.
- IBM SMP/E FMID**
The SMP/E product FMID.
- IBM Group Code**
The IBM product group code.
- Product Code**
The product code.
- Maintenance Level**
The product internal maintenance level.
- Repository Level**
The Versioning Repository level.
- DB2 Max Version**
The maximum DB2 version support.

DB2 Min Version

The minimum DB2 version support.

Table Point-In-Time Recovery

The Log Analysis Tool interface status.

Table Edit Command

The table edit line command status.

OPTIONS

Use the OPTIONS command to display the Recovery Options menu. When you exit the Recovery Options menu you will be returned to the panel from which you entered the OPTIONS command.

RRL

Use the RRL command to invoke the on-line versioning repository update. This update process will only update the DB2 Object Restore versioning repository for a single database. To archive all updates for the DB2 system catalog use the batch versioning repository update job.

SETUP

Use the SETUP command to display the Product Setup Options menu. When you exit the product setup options menu you will be returned to the panel from which you entered the SETUP command.

JUMP

Use the JUMP command to invoke another DB2 Tool product. Type

```
JUMP xxxx
```

where xxxx is the tool start up CLIST or REXX EXEC. Jumping to the DB2 Object Restore product from within the DB2 Object Restore product may produce undesirable results and should not be done.

CANCEL

Use the CANCEL command to exit a DB2 Object Restore option. Any changes made to information on the current panel prior to issuing the CANCEL command are not saved.

EXIT

Use the EXIT command to exit a DB2 Object Restore option. Any changes made to information on the current panel prior to issuing the EXIT command are saved.

UNLOAD

Use the UNLOAD command to display the Repository Options menu. When you exit the Repository Options menu you will be returned to the panel from which you entered the UNLOAD command.

Note: Not all of the commands are available on all of the panels.

Object list navigation commands and actions

DB2 Object Restore is a TSO/ISPF application, that responds to standard TSO/ISPF commands. In addition to the standard TSO/ISPF commands special data navigation commands are provided.

SORT (or CSORT)

Typing SORT on the Option line with no parameters specified brings up a list of columns that can be selected for sorting. For example:

```
SORT ----- Define Sort Columns ----- 2003/09/18 23:52:09
Option ==>                               Scroll ==> PAGE
-----+-----
                                         ROW 1 OF 15

Column Function ==> 4 (1-Fix/Unfix, 2-Order, 3-Size, 4-Sort)
Permanent View ==> N (Y-Perm, N-Temp)  Reset View ==> N (Y,N)
Stop Sorting    ==> N (Y,N)

Cmd Dir New Old Column_Name
-----
-- --      NAME
-- --      CREATOR
-- --      DROPPED
-- --      I
-- --      LOB
-- --      DATABASE
-- --      DBID
-- --      OBID

Enter: Process selections; PF3: Exit and save; CAN: Exit without save
Cmd: 1-9 Dir: A Asc D Desc
```

Figure 19. Define Sort Columns panel

A maximum of 9 columns can be selected for sorting at one time. You can also issue SORT x y where x is the column number, and y is A or D for ascending or descending. The column number is relative to the current panel and is limited to the panel.

CORDER

This command allows you to rearrange the horizontal positioning of the columns on the panel. One restriction is that an unfixed column cannot be moved to a position before a fixed one. Likewise, a fixed column cannot be moved to a position after an unfixed column. Sample CORDER panel:

```

CORDER ----- Define Column Display Order ----- 2003/09/18 23:57:24
Option ==>                                         Scroll ==> PAGE
-----+-----
                                         ROW 1 OF 15

Column Function ==> 2 (1-Fix/Unfix, 2-Order, 3-Size, 4-Sort)
Permanent View ==> N (Y-Perm, N-Temp) Reset View ==> N (Y,N)

Cmd Fix New Old Column_Name
___ P      1  CMD
___ P      2  NAME
___       3  CREATOR
___       4  DROPPED
___       5  I
___       6  LOB
___       7  DATABASE
___       8  DBID
___       9  OBID
___      10  PSID

Enter: Process selections; PF3: Exit and save; CAN: Exit without save
Line Cmds: Specify number for column position

```

Figure 20. Define Column Display Order panel

CFIX

This command allows you to FIX or UNFIX a column in its position. If the column is fixed by the DB2 Object Restore display software, it cannot be unfixed. Sample CFIX panel:

```

CFIX ----- Define Fixed Columns ----- 2003/09/18 23:59:55
Option ==>                                         Scroll ==> PAGE
-----+-----
                                         ROW 1 OF 15

Column Function ==> 1 (1-Fix/Unfix, 2-Order, 3-Size, 4-Sort)
Permanent View ==> N (Y-Perm, N-Temp) Reset View ==> N (Y,N)

Device_Width : 80
Old_Fixed_Width: 13      Old_Unfixed_Width: 67
New_Fixed_Width:         New_Unfixed_Width:

-----+-----

Cmd New Old Len Column_Name
P  P  P   4  CMD
P  P  P   9  NAME
-      9  CREATOR
-      8  DROPPED
-      2  I
-      4  LOB

Enter: Process selections; PF3: Exit and save; CAN: Exit without save
Line Cmds: F Fix U Unfix

```

Figure 21. Define Fixed Columns panel

CEXPAND

This command allows you to place the cursor on a row-column data element, issue CEXPAND, and see a display of that data element (only).

COLS

The COLS command displays a ruler line just below the data heading.

CREMOVE

This command removes all customizations that were created via CSET commands. All user changes to column size, order, fix status, and sorting order are removed. The panel is reset to its default display settings and all columns sizes are set to the maximum size.

CRESET

The CRESET command provides the same functionality as the CREMOVE command except that the column sizes are reset to the initial product default sizes.

FIND

Use the FIND command to find a unique string within a panel of data. The command structure for FIND is: FIND ABC

If the specified string is found, the cursor moves to the first position of the found string. If the specified string is not found, the message Find string not found is displayed.

Scrolling by column

The panel can be scrolled by column. Column scrolling commands are CRIGHT (abbreviated CR) and CLEFT (abbreviated CL). Additionally, these commands can be assigned to PF keys.

Scrolling data within a column

Data within a column can be scrolled with commands ICRIGHT (abbreviated ICR) and ICLEFT (abbreviated ICL). Column data scrolling is only allowed in columns that can be resized. Columns that can be resized are indicated by yellow column heading text. Columns with white column heading text are not resizable and therefore do not support column data scrolling.

Scrolling a panel

When data exceeds the size of the panel, indicators alert you that additional data exists outside the visible panel. There are four character spaces on the third line of the upper right-hand corner of the panel that are used to indicate a scrollable page. Pages may be scrollable horizontally, vertically, or both.

A plus sign (+) and/or a minus sign (-) indicates that there is additional data vertically.

- The plus sign (+) indicates there is data below; use PF8 to scroll down.
- The minus sign (-) indicates there is data above; use the PF7 key to scroll up.

The less-than sign (<) and/or the greater-than sign (>) means there is additional data horizontally.

- The less-than sign (<) means there is additional data to the left; use PF10 to scroll to the left.
- The greater-than sign (>) indicates that there is additional data to the right, use PF11 to scroll to the right.

Scrolling within an input or output field

When using DB2 Object Restore with a DB2 version 8 NFM (or ENFM) or higher subsystem, the object name display and input fields provide the ability to display and input data larger than the display area. The LEFT, RIGHT, and EXPAND commands are active when the cursor is positioned within the variable on the panel. These enable left and right scrolling and expansion of the variable into a popup window.

A scroll indicator is displayed at the end of each scrollable field. This indicator will indicate whether left and / or right scrolling can be performed. The indicator values:

- <> -- Indicates that you can scroll left and right.
- < -- Indicates that you can only scroll left.
- > -- Indicates that you can only scroll right.

Color coding

DB2 Object Restore uses color to convey information. If you are working on a terminal or other panel that does not support color displays, you will not see this feature, however, there is a **DROPPED** column to indicate object status.

Object status is indicated as follows:

- Dropped items display in red and the **DROPPED** column indicates **YES**.
- Undropped items display in normal color, typically aqua and the **DROPPED** column indicates **NO**.
- Items that have been dropped and subsequently restored display in yellow, because their version no longer matches the version of related objects and the **DROPPED** column indicates **REC**.

Printing

You can print the contents of any panel.

Type PRINTX at any Option line. There is no system feedback, however, the current panel is written to the RSCPRINT DD of your TSO session.

Chapter 4. Product Settings

The DB2 Object Restore Product Settings are where you work with the administrative tasks related to Object Restore.

You can set options that control the recovery according to an individual user's profile, you can set options that control the Versioning Repository at a global level, and you can specify a time period for SYSCOPY data retention in the Versioning Repository.

Topics:

- "User Recovery Options"
- "Repository options" on page 46
- "Product DB2 Setup" on page 47

User Recovery Options

Select option **UR** from the DB2 Object Restore main menu. The Recovery Options panel appears, as shown below.

```
DB2 OR V2R1 ----- Recovery Options ----- 2003/10/31 01:55
Option ==>

DB2 Subsystem ID:      Current SQLID      User:

-----

1. User Recovery Generation Options
2. Bind Generation Options

X. Return to Previous Menu

Enter END command to return to previous menu.
```

Figure 22. Recovery Options panel

This panel is the selection menu for the user recovery options profile. These options are saved for the individual user and are not global product options. The menu options are:

1. User Recovery Generation Options
This selection displays a list of Versioning Repository options.
2. Bind Generation Options
This selection displays a list of bind recovery options.

User recovery generation options

Select option **1** from the Recovery Options panel and your Object Restore profile appears:

```
DB2 OR V2R1 ----- IBM DB2 Object Restore Profile ----- 2008/11/15 16:42
Command ==>
```

User Recovery Generation Options

Enter "/" to select option - * indicates recovery option not available

Object Recovery:	Bind Recovery:	Privilege Recovery:
Storage Groups	Plans	User Privileges
Databases	Packages	System Privileges
Table Spaces		Database Privileges
Tables		Table Privileges
Indexes		View Privileges
Aliases		Collection Privileges
Synonyms		Plan Privileges
Views		Package Privileges
Referential Integrity		
Distinct Types	Additional Settings	
Triggers	Point in Time Recovery	
Procedures	Continue on SQL Warnings	
Sequences	Generate Column Alter Adds	
Roles	Exclude Trigger caused SQL	

Enter END comand to save changes and return to previous menu.

Figure 23. User Recovery Generation Options panel

On this panel you use the backward slash (/) to select the DB2 objects and privileges whose recovery information you want retained in the Versioning Repository.

Important: If you select Storage groups, the DDL for storage groups other than SYSDEFLT are automatically generated when you are recovering a table space, database, or table regardless of whether the storage groups have been dropped. You must turn off storage group generation on this panel if the storage groups were not dropped, or the DDL will fail.

The options on this panel are self-explanatory, with the exception of Referential Integrity, Point in Time Recovery, Generate Column Alter Adds, and Exclude Trigger caused SQL. These options are explained in the following sections.

Restriction:

- The Sequences option only applies to DB2 Version 8 NFM (New Function Mode) and DB2 Version 9.
- The Roles option only applies to DB2 Version 9 NFM (New Function Mode).

Referential integrity

DB2 Object Restore normally recovers all objects included in a cascading DB2 hierarchy, regardless of whether you selected Referential Integrity.

For example, if you drop a table space and then recover it, you will recover the table space and any tables, indexes, views, synonyms, grants, and anything else that was part of that table space. This is assuming that you selected all of those objects and authorizations on the profile panel.

If you select Referential Integrity on the profile panel, Object Restore generates the DDL statements to recreate foreign keys for the tables you are restoring. This allows you to recreate the referential integrity of the restored objects to other objects that have not been dropped.

Important: DB2 Object Restore with Referential Integrity selected does not generate the DDL to recreate objects outside of the cascading DB2 hierarchy. Under no circumstances will you restore tables from different table spaces using the RI option--even if the tables are related referentially.

Point in Time Recovery

The Point in Time Recovery option allows you to recover objects and their data up to a specified point in time. This option is only available if you have IBM DB2 Log Analysis Tool installed at your site. To determine the status of point in time recovery, use the ABOUT primary command. To see how Object Restore and Log Analysis Tool combine to provide the ability to recover to a point in time, see the Log Analysis Tool interface information.

Generate Column Alter Adds

The Generate Column Alter Adds option allows you to recover foreign keys on dropped tables that exist somewhere in the recovery set. This option is not for recovering foreign keys on undropped tables.

Exclude Trigger caused SQL

The Exclude Trigger caused SQL option controls what SQL is generated when using Log Analysis tool to generate SQL to restore the object to a point in time after the image copy. When selected, SQL that was the result of a trigger is not included in the SQL phase of object recovery. The default is unselected and all SQL is included.

Bind generation options

Select option **2** from the Recovery Options panel and the Bind Recovery panel appears:

```
DB2 OR V2R1 ----- Bind Recovery ----- 2003/10/31 02:01
Command ==>
```

```
Bind Recovery Options:
Enter "/" to select option
  Generate Binds for DB2 Object Dependencies
  Use Supplied DBRM Library
/  Generate Related Package Binds  /  Generate Related Plan Binds
/  Generate ACTION REPLACE          /  Generate ACTION ADD
```

```
DBRM Libraries:
DBRM Library 1 . . .
DBRM Library 2 . . .
DBRM Library 3 . . .
DBRM Library 4 . . .
DBRM Library 5 . . .
```

```
Notes: Do not use single quotes on library names. Library 1 will only
       be used for packages. Library 1 - 5 will be used for plans.
```

```
Enter END command to return to ISPF.
```

Figure 24. Bind Recovery panel

On this panel you use the backward slash (/) to select the bind recovery options. These options are explained following:

Generate Binds for DB2 Object Dependencies

Generates bind controls that are dependent on the objects being recovered.

Use Supplied DBRM Library

Indicates that Object Restore should use your DBRM library names in the Plan LIBRARY bind control parameter. Type your DBRM library names in the DBRM Libraries section of the Bind Recovery panel. If a package is being bound, then only the first library specified is used; package binds allow only one data set name.

Generate Related Package Binds

Generates package bind controls for packages that are bound to plans that are being recovered.

Generate Related Plan Binds

Generates plan bind controls for plans that contain the package being recovered.

Generate ACTION REPLACE

Generates a bind command with the ACTION(REPLACE) control statement.

Generate ACTION ADD

Generates a bind command with the ACTION(ADD) control statement.

DBRM Libraries

You can specify up to five DBRM libraries to be used when the Use Supplied DBRM Library field is selected.

Note: Do not use single quotes on library names. Library 1 will only be used for packages. Library 1 - 5 will be used for plans.

Repository options

DB2 Object Restore Versioning Repository options are discussed under Customization.

Product DB2 Setup

DB2 Object Restore product setup is discussed under Customization.

Chapter 5. Object recovery

You can use DB2 Object Restore either to recover a DB2 data object that has been dropped (deleted) or to drop a DB2 object.

Object Restore creates the DDL that can be executed to restore the object on DB2. The DDL, which is created from the versioning repositories of the DB2 catalogs, recreates the object. Another function of this DDL is to copy the object from one DB2 subsystem to another.

DB2 Object Restore can also generate JCL to recover table space and table data from an image copy backups and UNLOAD utility backups. DB2 Object Restore can recover a dropped table from the table space VSAM file if the table space has not been updated after the table was dropped.

Note: Since DB2 Object Restore object recovery works through the same workflow and series of panels, this document uses storage group recovery as the example of workflow and process. All other sections of DB2 Object Restore object recovery address only the differences from storage group recovery. Refer to "Storage group recovery" to continue with the workflow for restoring any object, substituting that object for storage group where applicable.

Topics:

- "Object list panels"
- "Storage Group Recovery" on page 50
- "Database recovery" on page 56
- "Table space recovery" on page 60
- "Table recovery" on page 62
- "Index recovery" on page 65
- "View recovery" on page 67
- "Synonym recovery" on page 70
- "Alias recovery" on page 71
- "Data type recovery" on page 73
- "Trigger recovery" on page 74
- "Function recovery" on page 76
- "Stored procedure recovery" on page 77
- "Sequence recovery" on page 77
- "Role recovery" on page 79

Object list panels

Many object list panels distinguish dropped and undropped objects by color. Dropped objects display in red; whereas, undropped objects display as normal, typically aqua. Additionally, objects that have been previously dropped, and subsequently restored appear in yellow because the object's version no longer matches the version of its related objects. There is also a **DROPPED** column that indicates an object's status.

For many objects, DB2 Object Restore uses the ALTER timestamp when updating the Versioning Repository. This permits Object Restore to recover any version of a dropped object. These objects are:

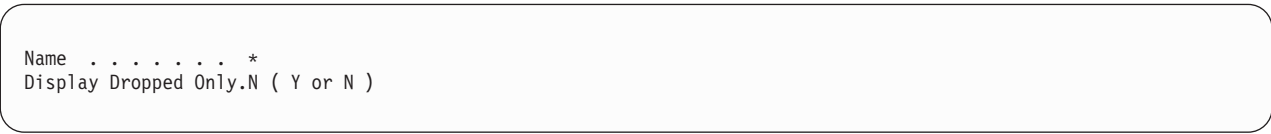
- Storage Groups
- Databases

- Table Spaces
- Tables
- Indexes
- Views
- Synonyms
- Aliases
- Data Types
- Triggers
- Functions
- Stored Procedures
- Sequences

If an object has been altered, you will see multiple version of that object in the object list. These multiple versions appear as not dropped, the **DROPPED** column value is **NO** and appear in the normal color. If the object is dropped all versions are flagged as dropped and appear in red.

Storage Group Recovery

Select option G from the DB2 Object Restore menu. You are prompted with the Enter Storage Group Like window to identify the storage group with which you want to work, as shown below.



```
Name . . . . . *
Display Dropped Only.N ( Y or N )
```

Figure 25. Storage Group Like window

This message prompts you to enter a storage group, if known. Otherwise, you can enter a few letters and the wildcard character (*) to conduct a search for the storage group or press Enter to view all storage groups within the subsystem. The default is all (*).

You can also indicate whether you want to display only dropped objects. If you specify N you will see all objects that match your selection criteria. If you specify Y you will see only objects that have been dropped.

The storage group name field will accept DBCS (Mixed) data values. The dropped field only accepts SBCS EBCDIC Y and N.

If the DB2 subsystem version is 8 or higher the storage group input field allows entry of a 128-character storage group name. Data scrolling within the data field is allowed using the scroll right and left commands. An indicator is displayed to the right of the input field to indicate the data field scroll status.

Line Command Options

A list of the frequently used commands is displayed at the bottom of the panel. A line command is entered in the command field of the target object version. After a

line command has been processed (and the target line has not been removed from the list) the target object line is displayed with the line command preceded with an asterisk (*).

To view a list of all possible line commands that can be entered on this list along with a description of the commands enter a "?" in the command field on any storage group list line.

The line command field only accepts SBCS EBCDIC character values.

The following is a list of the most frequently used line commands:

- S** Select object version to be recovered.
- D** Select object version to be dropped.
- ?** Display list of valid line commands.

When you select an object to be dropped or recovered DB2 Object Restore may display a confirmation window asking you to confirm the requested action.

Storage group recovery information

- When a storage group is selected for recovery, DB2 Object Restore generates a SET CURRENT SQLID statement preceding and following the storage group CREATE DDL statement. If the SQLID field on the DB2 Object Restore main menu is blank, the leading SET CURRENT SQLID statement is generated with the storage group creator value. If the SQLID field on the DB2 Object Restore main menu is non-blank then that field value will be used.
- The trailing SET CURRENT SQLID statement will reset the current SQLID value back to the current user id or to the SQLID value entered on the DB2 Object Restore main options menu.
- DB2 Object Restore will automatically generate the DDL required to recover a storage group required by objects being recovered. If the object selected for recovery was a dropped object, then DB2 Object Restore will only generate the storage group recovery DDL if the storage group is not cataloged. If the object selected for recovery is currently cataloged, DB2 Object restore will generate DDL to recover required storage groups even if the storage group is cataloged.
- DB2 Object Restore will always generate the DDL to recover storage groups preceding all other object recovery DDL.

Select Group for Recovery

When you enter an **S** for the Line Command next to a storage group, you are specifying that you want Object Restore to generate the DDL required to restore the object. If the selected object has been dropped, the DDL is generated immediately; however, if the storage group has not been dropped, the following message appears:

```

Name...: CJBSG201

Object not dropped on current subsystem.

Enter a "Y" to generate the DDL and data
recovery for another subsystem.

Confirm Recovery Generation N

```

Figure 26. Storage group message

Once you type **Y** and press Enter, Object Restore generates the DDL and displays it in the Generated DDL panel as shown below:

```

DB2 OR V2R1 ----- Generated DDL ----- Row 1 of 11
Command ==>                                     Scroll ==> PAGE
-----
-- *****
-- *
-- * IBM DB2 Object Restore V2R1
-- * (C) Copyright IBM Corp./Rocket Software, 1999, 2003.
-- *
-- * DDL Generated on: 2003-10-15-17.14.17.467913
-- *****
-- *
-- * Objects Generated:
-- * Stogroup [name]
-- *
-- *****

-- *****
-- *
-- * Create Storage Group: [name]
-- *

Press PF3/END to continue

```

Figure 27. Generated DDL panel

Use PF8 to scroll down to see the rest of the DDL. You can make any changes to the DDL at this point before proceeding. When you are ready to continue, press PF3. The Enter Execution Option windows displays as shown below:

```

Execution Options:
5 1. Execute DDL on DB2 Subsystem SS01
   2. Execute DDL on DB2 Subsystem ____
   3. Save DDL to file and exit
   4. Return to DDL Display
   5. Exit without executing DDL

```

Figure 28. Execution Options panel

This window provides you with five options for the generated DDL:

- Execute the DDL on the current subsystem (use this option only if the object was dropped).
- Execute the DDL on another subsystem.
- Save the DDL to a file and exit.
- Return to the DDL Panel.

- Exit without executing the DDL. This is the default.

Important: You can generate JCL for objects that have not been dropped without the requirement to run the DDL for those objects, if you perform the following steps first:

1. After the DDL is generated and displayed, type COMMENT ALL in the command line. This command comments out all of the DDL.
2. You can run the DDL normally using options 1 or 2 from Execution Options. The result is that the recovery JCL is generated without the DDL actually building any objects.

Executing the DDL

1. If you select options 1 or 2 to execute the DDL and the recovery DDL executes with no errors, you are presented with a panel prompting you for a location to save the recovery JCL.

```

Save in DSN ... _____
Member. _____ (Required if DSN is a PDS)

Job Cards:
//JOB CARD JOB userid,CLASS=A,NOTIFY=&SYSUID
//*
//*
//*

Press Enter to process request or PF3 to cancel

```

Figure 29. Save JCL panel

2. Press Enter to save the Object Restore JCL. A message displays to confirm that the JCL was saved.
3. Press End. Object Restore prompts you to save the DDL execution results.
4. Specify Y or N and press Enter.
5. Execute the data recovery JCL.
 - The object data is recovered by the Object Restore-generated job steps.
 - An SQL file is generated by the Log Analysis Tool-generated job steps.
6. You must then execute the table update SQL by using Log Analysis Tool or a DB2 SQL execution utility of your choice (for example, SPUFI, QMF, DSNTEP2).

Save DDL to a file

If you select Option 3, Save DDL to a file and exit, the following window appears:

```

Save in DSN ... _____
Member. _____ (Required if DSN is a PDS)

Press Enter to process request or PF3 to cancel

```

Figure 30. Save DDL panel

Enter a valid data set name and press Enter. This saves the generated DDL in the data set that you specified.

Drop Group

When you enter a **D** for the Line Command next to a storage group, you are specifying that you want Object Restore to generate the DDL required to drop the object. After pressing Enter, the following message appears:

```
Name: stogroup
Enter a "Y" to generate DROP.
Confirm Storage Group Drop N
```

Figure 31. Confirmation message

Once you type **Y** and press Enter, Object Restore generates the DDL and displays it in the Generated DDL panel as shown previously. Using PF3 to exit, the Execution Options panel displays as shown previously.

This window provides you with five options for the generated DDL:

- Execute the DDL on the current subsystem.
- Execute the DDL on another subsystem.
- Save the DDL to a file and exit.
- Return to the DDL Display.
- Exit without executing the DDL. This is the default.

If you select Option 3, Save DDL to a file and exit, the following window appears:

```
Save in DSN ... _____
Member. _____ (Required if DSN is a PDS)
Press Enter to process request or PF3 to cancel
```

Figure 32. Save DDL panel

Enter a valid data set name and press Enter. This saves the generated DDL in the data set that you specified.

Work with Storage Groups

Describes the Storage Groups panel.

After pressing Enter, the Storage Groups panel opens, as shown below.

|

```

DB2 OR V2R1 ----- SS1A Storage Groups ----- Row 1 of 76
Command ==>                                           Scroll ==> PAGE
-----+>

Storage Group . . . *
Display Dropped Only.N

-----

Cmd Group    Creator  VCATName Dropped Created
CJBSG201 PDUSER  SS01     NO    2002-11-01-16.50.50.449313
CQMSAMPG PDUSER  SS01     REC   2003-10-21-12.24.01.194337
CQMSAMPG PDUSER  SS01     YES   2003-08-13-14.02.18.925051
CQMSAMPG PDUSER  SS01     YES   2003-07-15-16.33.32.714793
CQMSAMPG PDUSER  SS01     YES   2003-04-28-12.35.49.741584
CQMSG001 PDUSER  SS01     NO    2001-10-18-11.27.10.050213
CSEDGA   PDUSER  SS01     NO    2003-07-08-16.35.45.405068
CSFENNSG PDUSER  SS01     NO    2001-10-11-10.07.06.886631
CSSULLG  PDUSER  SS01     NO    2001-11-16-09.44.07.449055
DB2T     PDUSER  SS01     NO    2002-05-31-17.22.03.200231

Line Commands: (Select group, Drop group, ? Help)

```

Figure 33. Storage Groups panel

Fields

The filter fields work the same way as the Storage Group Like filter window fields. The input fields can be used to expand or contract the scope of objects displayed in the list. The wild card character (*) can be used.

If the DB2 subsystem version is 8 or higher the storage group input field appears larger and allows entry of a 128-character storage group name. Data scrolling within the data field is allowed using the scroll right and left commands. An indicator is displayed to the right of the input field to indicate the data field scroll status. The storage group name data entry field can be expanded to view or edit all 128 characters by typing EXPAND on the option line, placing the cursor on the storage group name field, and pressing Enter.

The fields on the Storage Groups panel are discussed following:

Storage Group

Controls the list of storage groups displayed. Enter one or more letters and the wildcard character (*) to limit the list of names displayed. Use only the wildcard character to display all of the storage groups in the DB2 subsystem.

Display Dropped Only

Controls whether the panel displays all objects in the DB2 subsystem, or only those that have been dropped. Valid values are:

- Y** Display only those objects that have been dropped.
- N** Display all objects.

Columns

Input column fields like the command line column (Cmd) are displayed in the color red and underscored. Fixed length columns are displayed with a heading text colored white. Columns that have adjustable display lengths are displayed with column heading text colored yellow. The column display can be scrolled left and right. The columns are discussed following:

Group The name of the storage group.

Creator

The ID of the person who created the storage group.

VCATName

The high-level qualifier of the storage group.

Dropped

Indicates whether the storage group was dropped from this subsystem.

- A value of **YES** indicates that the storage group does not exist in DB2 system catalog.
- A value of **NO** indicates that the storage group is still cataloged.
- A value of **REC** indicates that the storage group exists in the DB2 system catalog. The new object version has not been recorded in DB2 Object Restore Versioning Repository.

Created Timestamp

A seven-part value that consists of a date and time expressed in years, months, days, hours, minutes, seconds, and microseconds. The date and time at which the storage group was created is captured automatically.

Altered Timestamp

A seven-part value that consists of a date and time expressed in years, months, days, hours, minutes, seconds, and microseconds. The date and time at which the storage group was changed (updated, dropped, added to, etc.) is captured automatically.

Database recovery

Select option D from the DB2 Object Restore menu. You are prompted with the Enter Database Like window to identify the database with which you want to work.



```
Name Like . . . . . *
Display Dropped Only.N ( Y or N )
```

Figure 34. Databases Like window

This window prompts you to enter a database, if known. Otherwise, you can enter a few letters and the wildcard character (*) to conduct a search for the database or press Enter to view all databases within the subsystem. The default is all (*).

You can also indicate whether you want to display only dropped objects. If you specify N you will see all objects that match your selection criteria. If you specify Y you will see only objects that have been dropped.

The database name field will accept DBCS (Mixed) data values. The dropped field only accepts SBCS EBCDIC Y and N.

For all versions of DB2 the database input field will only allow entry of an 8-character database name.

Work with databases

Describes the Databases panel.

After pressing Enter, the Databases panel opens, as shown below:

```
DB2 OR V2R1 ----- SS01 Databases ----- Row 1 of 200
Command ==>                               Scroll ==> PAGE
-----+>

Name . . . . . *
Display Dropped Only.N
-----

Cmd Database Creator  DBID  Dropped Stogroup Bufferp1 ROSHARE Type Member
-----
ADBCH   ADB      00332  NO     SYSDEFLT BP0
ALIASDB1 PDUSER  00268  NO     SYSDEFLT BP0
ANLDBASE PDUSER  00295  NO     SYSDEFLT BP0
AUOALADB PDUSER  00383  REC   SYSDEFLT BP0
AUOALADB PDUSER  00383  YES   SYSDEFLT BP0
AUOVRCAT PDUSER  00359  NO     SYSDEFLT BP0
BCTDB   PDUSER  00340  NO     SYSDEFLT BP0
BJTQBASE PDUSER  00291  NO     SYSDEFLT BP0
CARLATST PDUSER  00288  NO     SYSDEFLT BP0
CC390   PDUSER  00304  REC   SYSDEFLT BP0

Line Commands: (Select, Drop, Table spaces, List structure, ? Help)
```

Figure 35. Databases panel

Filter fields

The filter fields work the same way as the Database Like filter window fields. The input fields can be used to expand or contract the scope of objects displayed in the list. The wild card character can be used. For all versions of DB2 the database input field will only allow entry of a maximum of 8 characters.

Columns

Input column fields like the command line column (Cmd) are displayed in the color red and underscored. Fixed length columns are displayed with a heading text colored white. Columns that have adjustable display lengths are displayed with column heading text colored yellow. The column display can be scrolled left and right.

The columns on the Databases panel are discussed following:

Database

The name of the database.

Creator

The ID of the person who created the database.

DBID The database identifier.

Dropped

Indicates whether the database was dropped from this subsystem.

- A value of **YES** indicates that the database does not exist in DB2 system catalog.
- A value of **NO** indicates that the database is still cataloged.
- A value of **REC** indicates that the database exists in the DB2 system catalog. The new object version has not been recorded in DB2 Object Restore Versioning Repository.

Stogroup

The name of the storage group to which the database belongs.

Bufferpl

The name of the bufferpool to which the database belongs.

ROSHARE

A read-only share indicator on the database.

Type Indicates the type of database:

blank Database is not a work file database.

W Database is a work file database. The database is DSNDB07 or it was created with the WORKFILE clause and used as a work file database by a member of a DB2 sharing group.

Member

The name of the data sharing group to which the database belongs, if applicable.

Created Timestamp

A seven-part value that consists of a date and time expressed in years, months, days, hours, minutes, seconds, and microseconds. The date and time at which the database was created is captured automatically.

Altered Timestamp

A seven-part value that consists of a date and time expressed in years, months, days, hours, minutes, seconds, and microseconds. The date and time at which the database was changed (updated, dropped, added to, etc.) is captured automatically.

Encoding

Default encoding scheme for the database:

E EBCDIC.

A ASCII.

blank For DSNDB04 and work file databases.

Line Commands

A list of the frequently used commands is displayed at the bottom of the panel. A line command is entered in the command field of the target object version. After a line command has been processed (and the target line has not been removed from the list) the target object line is displayed with the line command preceded with an asterisk (*).

To view a list of all possible line commands that can be entered on this list along with a description of the commands enter a ? in the command field on any database list line.

The line command field only accepts SBCS EBCDIC character values.

The following is a list of the most frequently used line commands:

S Select object version to be recovered.

D Select object version to be dropped.

T Display list of table space versions belonging to the selected database version.

- L** List the structure of the selected database.
- ?** Display list of valid line commands.

When you select an object to be dropped or recovered DB2 Object Restore may display a confirmation window asking you to confirm the requested action.

Database recovery information

- Selecting a database for recovery could generate DDL to recover the storage group assigned to the database. Storage group recovery for SYSDEFLT is suppressed. The storage group DDL that is generated may or may not reflect a valid storage group. DB2 does not verify that a storage group assignment is valid when the database was created.
- When a database is selected for recovery, all objects subordinate to the database are recovered. Specific types of objects can be suppressed from the recovery by using the user recovery options.
- DB2 Object Restore will automatically generate the DDL required to recover a storage group required by objects being recovered. If the object selected for recovery was a dropped object then DB2 Object Restore will only generate the storage group recovery DDL if the storage group is not cataloged. If the object selected for recovery is currently cataloged DB2 Object restore will generate DDL to recover required storage groups even if the storage group is cataloged.
- DB2 Object Restore will always generate the DDL to recover storage groups preceding all other object recovery DDL.

List database structure

When you enter an **L** for the Line Command next to a database, the Database Structure panel appears:

```

DB2 OR V2R1 ----- R71A Database Structure ----- Row 1 of 4
Command ==>                               Scroll ==> PAGE
----- >

Name...: ADBDCH
Version: 2002-11-20-14.12.26.708845

-----

Cmd Type Object          Owner    Vers  DBID  PSID  ISOBID
  D   ADBDCH             ADB      1    332    0     0
  S   ADBSCH             ADB      1    332    2     1
  T   ADBCHKPT           ADB      1    332    0     3
  I   ADBCKPTX           ADB      1    332    0     1
***** Bottom of Data *****

Press END key to exit.

```

Figure 36. Database Structure panel

The Database Structure panel displays the structure of the selected database, identifying the D2 objects related to and contained in the database. This panel also includes the following information:

Type The type of DB2 object. The type codes are indented to show the subordinate relationships. Valid types are:

- D Database
- S Table space
- T Table
- X Auxiliary table
- I Index

Object Name
The name of the object. The object names are indented to show the subordinate relationships.

Owner
The owner of the object.

Version
The version of the object. This indicates that multiple versions exist if numbers greater than 1 are displayed in this column.

DBID Database object ID.

PSID The page set ID.

OBID/ISOBID
The object ID.


Created Timestamp
The time when the CREATE statement was executed.

Altered Timestamp
The time when the last ALTER statement was executed. This timestamp is used by DB2 Object Restore to track the object versions.

Attention: Since DB2 Object Restore object recovery works through the same workflow and series of panels, this document uses storage group recovery as the example of workflow and process. All other sections of DB2 Object Restore object recovery address only the differences from storage group recovery. Refer to storage group recovery documentation to continue with the workflow for restoring a database, substituting database for storage group where applicable.

Table space recovery

Select option S from the DB2 Object Restore menu. You are prompted with the Enter Tablespace Like window to identify the table space with which you want to work.



```
Name Like . . . . . *
Database Like . . . *
Display Dropped Only.N ( Y or N )
```

Figure 37. Table Spaces Like window

This message prompts you to enter a table space and a database, if known. Otherwise, you can enter a few letters and the wildcard character (*) to conduct a search for them or press Enter to view all table spaces and databases within the

subsystem. The default is all (*). You can also indicate whether you want to display only dropped objects. If you specify N you will see all objects that match your selection criteria. If you specify Y you will see only objects that have been dropped.

Note: Since DB2 Object Restore object recovery works through the same workflow and series of panels, this document uses storage group recovery as the example of workflow and process. All other sections of DB2 Object Restore object recovery address only the differences from storage group recovery. Refer to the storage group documentation to continue with the workflow for restoring a table space, substituting table space for storage group where applicable.

Work with table spaces

Describes the Tablespaces panel.

After pressing Enter, the Tablespaces panel opens, as shown below:

```

DB2 OR V2R1 ----- SS01 Table Spaces ----- Row 1 of 3487
Command ==>                               Scroll ==> PAGE
-----+>
Name . . . . . *
Database . . . . . *
Display Dropped Only.N
-----

Cmd Name      Creator  Dropped I LOB Database DBID  OBID  PSID  Tables Parts
A            PDUSER   NO    Y NO  DSND04  00004  00463  00464  000001  000
ABCD        PDUSER   NO    Y NO  DSND04  00004  00422  00423  000001  000
ABCDEFGH    ABCDN    NO    Y NO  DSND04  00004  00001  00002  000001  000
ACCTSNTS    PDUSER   NO    N NO  SCDM00DB 00320  00001  00002  000001  000
ACCTSNTS    PDUSER   NO    N NO  SOPLANTS 00321  00001  00002  000000  000
ADBSCH      ADB      NO    N NO  ADBDCH   00332  00001  00002  000001  000
ALIASTS1    PDUSER   NO    N NO  ALIASDB1 00268  00001  00002  000001  000
ALMA        ALMA     NO    Y NO  DSND04  00004  00076  00077  000001  000
ANLSPACE    PDUSER   NO    N NO  ANLDBASE 00295  00001  00002  000021  000

Line Commands: (Select table space, Drop table space, Tables, ? Help)

```

Figure 38. Tablespaces panel

Columns

The columns on the Tablespaces panel are discussed following:

Name The name of the table space.

Creator

The ID of the person who created the table space.

Dropped

Indicates whether the table space was dropped from this subsystem.

- A value of **YES** indicates that the table space does not exist in DB2 system catalog.
- A value of **NO** indicates that the table space is still cataloged.
- A value of **REC** indicates that the table space exists in the DB2 system catalog. The new object version has not been recorded in DB2 Object Restore Versioning Repository.

LOB Indicates whether this is a LOB table space.

Database

The name of the database.

DBID The database identifier. If there were 32511 databases or more when this database was created, the DBID is a negative number.

OBID Data object identifier.

PSID Internal identifier of the table space page set descriptor.

Parts A portion of a page set. Each partition corresponds to a single, independently extendable data set. Partitions can be extended to a maximum size of 1, 2, or 4 gigabytes, depending upon the number of partitions in the partitioned page set. All partitions of a given page set have the same maximum size.

Note: It is important to note that when a partitioned table space is recovered, DB2 Object Restore Generates recovery JCL for all of the partitions.

Bufferpl

The name of the bufferpool to which the database belongs.

Created Timestamp

The time when the CREATE statement was executed.

Altered Timestamp

The time when the last ALTER statement was executed. This timestamp is used by DB2 Object Restore to track the object versions.

Line Commands


There are three valid line commands that you can enter on the **Cmd** line to the left of a table space on the Tablespace panel. Two of the commands, Select and Drop, are the same as the storage group commands discussed thus far. The line command unique to table spaces is discussed below:

Tables

Type **T**, then press Enter to display a list of tables for the selected table space version. See the Tables documentation for a description of the table display panel.

Table recovery

Select option T from the DB2 Object Restore menu. You are prompted with the Enter Table Like window to identify the table with which you want to work.



```

Databases Like . . . *
Table Spaces Like . . *
Name Like . . . . . *
Creator Like . . . . *
Display Dropped Only. N ( Y or N )

```

Figure 39. Tables Like window

This message prompts you to enter a database, table space, table, and creator, if known. Otherwise, you can enter a few letters and the wildcard character (*) to conduct a search for them or press Enter to view all tables within the subsystem.

The default is all (*). You can also indicate whether you want to display only dropped objects. If you specify N you will see all objects that match your selection criteria. If you specify Y you will see only objects that have been dropped.

Work with tables

Describes the Tables panel.

After pressing Enter, the Tables panel opens, as shown below:

```
DB2 OR V2R1 ----- SS01 Tables ----- Row 1 of 5384
Command ==>>                               Scroll ==>> PAGE
-----+>

Creator . . . . . *
Name . . . . . *
Database . . . . . *      Table space . . *
Display Dropped Only.N

-----

Cmd Name      Creator  Type  Dropped DBname  TSname  DBID  OBID
A             PDUSER          NO   DSND04  A        00004 00465
ABCD          PDUSER          NO   DSND04  ABCD     00004 00424
ABCDEFG      PDUSER          NO   DBQAETI  TSDBLOB2 00327 00005
ABCDEFGHIJKLMN ABCDN          NO   DSND04  ABCDEFGH 00004 00003
ACT           PDUSER          NO   CSSULLA  CSSULLP  00312 00031
ADBCHKPT     ADB             NO   ADBDCH  ADBSCH  00332 00003
ADDRESS      PDUSER          YES  DBCBSEG2 TSSEG2   00382 00004
ADT006       JCP             NO   DSND04  JPTS1   00004 00450

Line Commands: (Select, Drop, Aliases, sYnonyms, Indexes, Views, Edit, ? Help)
```

Figure 40. Tables panel

Columns

The columns on the Tables panel are discussed following:

Name The name of the table.

Creator

The ID of the person who created the table.

Type The type of table:

G Created Global Temporary

T Table

X Auxilliary Table

Dropped

Indicates whether the table was dropped from this subsystem.

- A value of **YES** indicates that the table does not exist in DB2 system catalog.
- A value of **NO** indicates that the table is still cataloged.
- A value of **REC** indicates that the table exists in the DB2 system catalog. The new object version has not been recorded in DB2 Object Restore Versioning Repository.

DBname

The name of the database to which this table belongs.

TSname

The name of the table space to which this table belongs.

DBID The database identifier. If there were 32511 databases or more when this database was created, the DBID is a negative number.

OBID Data object identifier.

Created Timestamp

The time when the CREATE statement was executed.

Altered Timestamp

The time when the last ALTER statement was executed. This timestamp is used by DB2 Object Restore to track the object versions.

Line Commands

There are eight valid line commands that you can enter on the **Cmd** line to the left of a table on the Tables panel. Two of the commands, Select and Drop, are the same as the storage group commands discussed thus far. The line commands unique to tables are discussed below:

Aliases

Type **A**, then press Enter to display the aliases belonging to that version of the table.

Synonyms

Type **Y**, then press Enter to display the synonyms belonging to that version of the table.

Indexes

Type **I**, then press Enter to display the indexes belonging to that version of the table.

Views Type **V**, then press Enter to display the views belonging to that version of the table.

Edit Type **E**, then press Enter to access the table editor. This line command can only be used on tables that are not dropped. If the table edit option is not activated a message will be displayed.

Column

Type **C**, then press Enter to display a list of columns in the selected table.

Table Columns

When you enter a **C** for the Line Command next to a table, the Table Column List appears:


```

DB2 OR V2R1 ----- SS01 Table Columns ----- Row 1 of 1
Command ==>                               Scroll ==> PAGE
----->
Creator: PDUSER
Name...: A
Version: 2003-06-24-10.35.46.817284

Cmd *   Name           Col No Col Type Length Scale  Null Def KeySeq
      COLUMN_1         1 CHAR      10    0  N   N    0
***** Bottom of Data *****

Press END key to return to table list.

```

Figure 41. Table Column panel

The Table Column List panel displays the columns of the selected table. There are no valid commands for this panel. This panel also includes the following information:

Name The column name.

Col No
The column number.

Col Type
The column type.

Length
The column length.

Scale Identifies the number of digits after the decimal point.

Null Identifies whether the column can contain nulls.

Def The column default indicator.

KeySeq
Identifies the column's numeric position within the table's primary key.

Created Timestamp
The time when the CREATE statement was executed.

Index recovery

Select option 5 from the DB2 Object Restore menu. You are prompted with the Enter Indexes Like window to identify the index with which you want to work.

```
Name Like . . . . . *
Creator Like . . . . . *
Display Dropped Only.N ( Y or N )
```

Figure 42. Indexes Like window

This message prompts you to enter an index and a creator, if known. Otherwise, you can enter a few letters and the wildcard character (*) to conduct a search for them or press Enter to view all indexes and creators within the subsystem. The default is all (*). You can also indicate whether you want to display only dropped objects. If you specify N you will see all objects that match your selection criteria. If you specify Y you will see only objects that have been dropped.

Work with indexes

Describes the Indexes panel

After pressing Enter, the Indexes panel opens, as shown below:

```
DB2 OR V2R1 ----- SS01 Indexes ----- Row 1 of 1039
Command ==>>                               Scroll ==>> PAGE
-----+>

Creator . . . . . *
Name . . . . . *
Display Dropped Only.N

-----

Cmd Name          Creator  Dropped  TBName          TBOwner  DBID  OBID
ACCAGX01         SYSIBM  REC      SYSRESAUTH      SYSIBM   00006 00400
ACCAGX01         SYSIBM  YES      SYSRESAUTH      SYSIBM   00006 00400
ADBCKPTX         ADB     NO       ADBCHKPT        ADB      00332 00004
ADI00601         JCP     NO       ADT006          JCP      00004 00451
ADI40101         JCP     NO       ADT401          JCP      00004 00459
ADI40102         JCP     NO       ADT401          JCP      00004 00461
ALIASIX1         PDKURTA NO       ALIASTB1        PDUSER   00268 00004
AUTHID_INDEX     RDBI   NO       AUTHID_TABLE    RDBI    00285 00004
AUTHID_INDEX_X   RDBI   NO       AUTHID_TABLE_X  RDBI    00271 00016

Line Commands: (Select index, Drop index, ? Help)
```

Figure 43. Indexes panel

Columns

The columns on the Indexes panel are discussed following:

Name The name of the index.

Creator

The ID of the person who created the index.

Dropped

Indicates whether the index was dropped from this subsystem.

- A value of **YES** indicates that the index does not exist in DB2 system catalog.
- A value of **NO** indicates that the index is still cataloged.

- A value of **REC** indicates that the index exists in the DB2 system catalog. The new object version has not been recorded in DB2 Object Restore Versioning Repository.

Table name

The name of the table associated with the index.

TBOWNER

The ID of the system or person that owns the table associated with the index.

DBID

The database identifier. If there were 32511 databases or more when this database was created, the DBID is a negative number.

OBID

Data object identifier.

Created Timestamp

The time when the CREATE statement was executed.

Altered Timestamp

The time when the last ALTER statement was executed. This timestamp is used by DB2 Object Restore to track the object versions.

Note: Since DB2 Object Restore object recovery works through the same workflow and series of panels, this document uses storage group recovery as the example of workflow and process. All other sections of DB2 Object Restore object recovery address only the differences from storage group recovery.

View recovery

Select option V from the DB2 Object Restore menu. You are prompted with the Enter View Like window to identify the view with which you want to work.

```
Name Like . . . . . *
Creator Like . . . . *
Display Dropped Only.N ( Y or N )
```

Figure 44. Views Like window

This message prompts you to enter a view and a creator, if known. Otherwise, you can enter a few letters and the wildcard character (*) to conduct a search for them or press Enter to view all views and creators within the subsystem. The default is all (*). You can also indicate whether you want to display only dropped objects. If you specify N you will see all objects that match your selection criteria. If you specify Y you will see only objects that have been dropped.

Work with views

Describes the Views panel.

After pressing Enter, the Views panel opens, as shown below:

```

DB2 OR V2R1 ----- SS01 Views ----- Row 1 of 212
Command ==>                               Scroll ==> PAGE
-----+>

Creator . . . . . *
Name . . . . . *
Display Dropped Only.N
-----

Cmd Name          Creator Dropped Created
ADMIN_VIEW        RDBI    NO    2001-09-04-11.38.58.056449
ADMIN_VIEWTEST    PDUSER  NO    2002-10-30-14.25.10.584833
AUTHID_VIEW       RDBI    NO    2001-10-22-11.27.48.240201
AUTHID_VIEW_X     RDBI    NO    2001-12-13-12.12.03.718629
AWARDSV           CQMSAMP REC    2003-10-21-12.24.14.693295
AWARDSV           CQMSAMP YES    2003-08-13-14.02.26.479366
AWARDSV           CQMSAMP YES    2003-07-15-16.33.42.139253
AWARDSV           CQMSAMP YES    2003-04-28-12.35.58.471146
AWARDSV           IBM151  NO    2003-04-01-15.09.40.703344

Line Commands: (Select view, Drop view, View dependencies, Columns, ? Help)

```

Figure 45. Views panel

Columns

The columns on the Views panel are discussed following:

View name

The name of the view.

Creator

The ID of the person who created the view.

Dropped

Indicates whether the view was dropped from this subsystem.

- A value of **YES** indicates that the view does not exist in DB2 system catalog.
- A value of **NO** indicates that the view is still cataloged.
- A value of **REC** indicates that the view exists in the DB2 system catalog. The new object version has not been recorded in DB2 Object Restore Versioning Repository.

Created Timestamp

The time when the CREATE statement was executed.

Altered Timestamp

The time when the last ALTER statement was executed. This timestamp is used by DB2 Object Restore to track the object versions.

Line Commands

There are four valid line commands that you can enter on the **Cmd** line to the left of a view on the Views panel. Two of the commands, Select and Drop, are the same as the storage group commands discussed thus far. The line commands unique to views are discussed below:

View dependencies

Type **V**, then press Enter to display the tables and views on which the selected view is dependent.

Columns

Type **C**, then press Enter to display a list of columns on which the selected view is dependent.

View Dependencies

When you enter a **V** for the Line Command next to a view, the View Dependencies panel appears:

```
DB2 OR V2R1 ----- SS01 View Dependencies ----- Row 1 of 1
Command ==>>                               Scroll ==> PAGE
----->
Creator: RDBI
Name...: AUTHID_VIEW
Version: 2001-10-22-11.27.48.240201

Cmd Name      Creator  Type      Dropped  Created
AUTHID_TABLE  RDBI    Table     NO       2001-10-22-11.27.40.349621
***** Bottom of Data *****

Press END key to return to View List.
```

Figure 46. View Dependencies panel

This panel displays the DB2 objects that are dependent upon the view that you selected. You can continue to use the **V** line command to list further dependencies if they exist. This panel also includes the following information:

Name The name of the object.

Creator

The ID of the person who created the object.

Type Identifies the type of DB2 object.

Dropped

Indicates whether the object was dropped from this subsystem.

- A value of **YES** indicates that the object does not exist in DB2 system catalog.
- A value of **NO** indicates that the object is still cataloged.
- A value of **REC** indicates that the object exists in the DB2 system catalog. The new object version has not been recorded in DB2 Object Restore Versioning Repository.

Created Timestamp

The time when the CREATE statement was executed.

Altered Timestamp

The time when the last ALTER statement was executed. This timestamp is used by DB2 Object Restore to track the object versions.

Remember: Since DB2 Object Restore object recovery works through the same workflow and series of panels, this document uses storage group

recovery as the example of workflow and process. All other sections of DB2 Object Restore object recovery address only the differences from storage group recovery.

Synonym recovery

Select option Y from the DB2 Object Restore menu. You are prompted with the Enter Synonym Like window to identify the synonym with which you want to work.

```
Name Like          *
Creator Like       *
Display Dropped Only.N ( Y or N )
```

Figure 47. Synonyms Like window

This message prompts you to enter a synonym and a creator, if known. Otherwise, you can enter a few letters and the wildcard character (*) to conduct a search for them or press Enter to view all synonyms and creators within the subsystem. The default is all (*). You can also indicate whether you want to display only dropped objects. If you specify N you will see all objects that match your selection criteria. If you specify Y you will see only objects that have been dropped.

Work with synonyms

Describes the synonyms panel.

After pressing Enter, the Synonyms panel opens, as shown below:

```
DB2 OR V2R1 ----- SS01 Synonyms ----- Row 1 of 131
Command ==>>                               Scroll ==>> PAGE
-----+>

Creator . . . . . *
Name . . . . . *
Display Dropped Only.N

-----

Cmd Name          Creator  Dropped  TBName          TBOwner
SHAWN_S          PDUSER   YES      STAFF           Q
SVBROWN1         CSBROW   NO       VBROWN1         CSBROW
SYN_BIRTH        CSBROW   REC      CUSTOMER_BIRTHDAYS CSBROW
SYN_BIRTH        CSBROW   YES      CUSTOMER_BIRTHDAYS CSBROW
SYN_BIRTH        CSBROW   YES      CUSTOMER_BIRTHDAYS CSBROW
SYN_BIRTH        CSBROW   YES      CUSTOMER_BIRTHDAYS CSBROW
SYN_BIRTH        CSBROW   YES      CUSTOMER_BIRTHDAYS CSBROW
SYN_BIRTH        CSBROW   YES      CUSTOMER_BIRTHDAYS CSBROW
SYN_BIRTH        CSBROW   YES      CUSTOMER_BIRTHDAYS CSBROW
SYN_BIRTH        CSBROW   YES      CUSTOMER_BIRTHDAYS CSBROW

Line Commands: (Select synonym, Drop synonym, ? Help)
```

Figure 48. Synonyms panel

Columns

The columns on the Synonyms panel are discussed following:

Name The name of the synonym.

Creator

The ID of the person who created the synonym.

Dropped

Indicates whether the synonym was dropped from this subsystem.

- A value of **YES** indicates that the synonym does not exist in DB2 system catalog.
- A value of **NO** indicates that the synonym is still cataloged.
- A value of **REC** indicates that the synonym exists in the DB2 system catalog. The new object version has not been recorded in DB2 Object Restore Versioning Repository.

Table Name

The name of the table associated with the synonym.

TBOwner

The ID of the system or person that owns the table associated with the synonym.

Created Timestamp

The time when the CREATE statement was executed.

Remember: Since DB2 Object Restore object recovery works through the same workflow and series of panels, this document uses storage group recovery as the example of workflow and process. All other sections of DB2 Object Restore object recovery address only the differences from storage group recovery.

Alias recovery

Select option A from the DB2 Object Restore menu. You are prompted with the Enter Alias Like window to identify the alias with which you want to work.

```
Name Like . . . . . *
Creator Like . . . . . *
Display Dropped Only. N ( Y or N )
```

Figure 49. Aliases Like window

This message prompts you to enter an alias and a creator, if known. Otherwise, you can enter a few letters and the wildcard character (*) to conduct a search for them or press Enter to view all aliases and creators within the subsystem. The default is all (*). You can also indicate whether you want to display only dropped objects. If you specify N you will see all objects that match your selection criteria. If you specify Y you will see only objects that have been dropped.

Work with aliases

Describes the Aliases panel

After pressing Enter, the Aliases panel opens, as shown below:

```

DB2 OR V2R1 ----- SS01 Aliases ----- Row 1 of 20
Command ==>                               Scroll ==> PAGE
-----+>

Creator . . . . . *
Name . . . . . *
Display Dropped Only.N

-----

Cmd Name          Creator Dropped TBName          TBOwner
AGES_ALIAS       CSBROW REC  BIRTHDAYS         CSBROW
AGES_ALIAS       CSBROW YES  BIRTHDAYS         CSBROW
AGES_ALIAS       CSBROW YES  BIRTHDAY_LIST     CSBROW
ALIAS            TEST  NO   STAFF              Q
ALIAS1           PDUSER NO   STAFF              Q
BUD              PDUSER NO   JKTABCP4          PDUSER
GAK              TWSHAWN NO  STAFF              Q
KURTTB_ALIAS    PDUSER NO   KURTTB            PDUSER
PRFSTR_0402     PDUSER NO   PTPRFSTR_0402    PDUSER

Line Commands: (Select alias, Drop alias, ? Help)

```

Figure 50. Aliases panel

Columns

The columns on the Aliases panel are discussed following:

Name The name of the alias.

Creator

The ID of the person who created the alias.

Dropped

Indicates whether the alias was dropped from this subsystem.

- A value of **YES** indicates that the alias does not exist in DB2 system catalog.
- A value of **NO** indicates that the alias is still cataloged.
- A value of **REC** indicates that the alias exists in the DB2 system catalog. The new object version has not been recorded in DB2 Object Restore Versioning Repository.

Table Name

The name of the table associated with the alias.

TBOwner

The ID of the system or person that owns the table associated with the alias.

Created Timestamp

The time when the CREATE statement was executed.

Attention: Since DB2 Object Restore object recovery works through the same workflow and series of panels, this document uses storage group recovery as the example of workflow and process. All other sections of DB2 Object Restore object recovery address only the differences from storage group recovery.

Data type recovery

Select option E from the DB2 Object Restore menu. You are prompted with the Enter Distinct Types Like window to identify the data types with which you want to work.

```
Name Like . . . . . *
Schema Like . . . . . *
Display Dropped Only.N ( Y or N )
```

Figure 51. Types Like window

This message prompts you to enter a type, if known. Otherwise, you can enter a few letters and the wildcard character (*) to conduct a search for them or press Enter to view all types within the subsystem. The default is all (*). You can also indicate whether you want to display only dropped objects. If you specify N you will see all objects that match your selection criteria. If you specify Y you will see only objects that have been dropped.

Working with distinct types

Describes the Distinct Types panel.

After pressing Enter, the Distinct Types panel opens, as shown below:

```
DB2 OR V2R1 ----- SS01 Distinct Types ----- Row 1 of 8
Option ==>                               Scroll ==> PAGE
----->
Schema . . . . . *
Name . . . . . *
Display Dropped Only.N

-----

Cmd Name          Creator  Dropped Source Type          Length Scale
A_CHAR1          PDUSER  NO      CHAR                    1
AGE              PDUSER  NO      SMALLINT
CANADIAN_DOLLAR  PDUSER  NO      DECIMAL                  9      2
CANADIAN_DOLLAR  PDUSER  NO      DECIMAL                  9      2
CHARLIE          PDUSER  NO      DECIMAL                  9      2
HATSIZE          PDUSER  NO      INTEGER
MONEY            PDUSER  NO      DECIMAL                  9      2
US_DOLLAR        PDUSER  NO      DECIMAL                  9      2
***** Bottom of Data *****

Line Commands: (Select distinct type, Drop distinct type, ? Help)
```

Figure 52. Distinct Types panel

Columns

The columns on the Distinct Types panel are discussed following:

Name The name of the distinct type.

Creator

The ID of the person who created the type.

Dropped

Indicates whether the type was dropped from this subsystem.

- A value of **YES** indicates that the type does not exist in DB2 system catalog.
- A value of **NO** indicates that the type is still cataloged.
- A value of **REC** indicates that the type exists in the DB2 system catalog. The new object version has not been recorded in DB2 Object Restore Versioning Repository.

Source Type

The name of the source type.

Length

The length of the distinct type.

Scale The scale of the distinct type, if a decimal data type.

Subtype

The subtype of the distinct type. Valid values are:

- B** Bit
- S** SBCS
- M** Mixed

Encoding

The encoding scheme of the distinct type.

Attention: Since DB2 Object Restore object recovery works through the same workflow and series of panels, this document uses storage group recovery as the example of workflow and process. All other sections of DB2 Object Restore object recovery address only the differences from storage group recovery.

Trigger recovery

Select option J from the DB2 Object Restore menu. You are prompted with the Enter Triggers Like window to identify the triggers with which you want to work.

```
Name Like . . . . . *
Owner Like . . . . . *
Tables Like . . . . . *
Creator Like . . . . . *
Display Dropped Only.N ( Y or N )
```

Figure 53. Triggers Like window

This message prompts you to enter a trigger, if known. Otherwise, you can enter a few letters and the wildcard character (*) to conduct a search for them or press Enter to view all triggers within the subsystem. The default is all (*). You can also indicate whether you want to display only dropped objects. If you specify N you will see all objects that match your selection criteria. If you specify Y you will see only objects that have been dropped.

Work with triggers

Describes the Triggers panel.

After pressing Enter, the Triggers panel opens, as shown below:

```
DB2 OR V2R1 ----- SS01 Trigger ----- Row 1 of 26
Command ==>                               Scroll ==> PAGE
-----+>

Owner . . . . . *
Name . . . . . *
Table Creator . . . *           Table Name . . *
Display Dropped Only.N

-----

Cmd Name      Schema  Owner  Dropped TBName      TBOwner
CITYADD      CQMSAMP PDUSER REC  RESTAURANTS CQMSAMP
CITYADD      CQMSAMP PDUSER YES  RESTAURANTS CQMSAMP
CITYADD      CQMSAMP PDUSER YES  RESTAURANTS CQMSAMP
CITYADD      CQMSAMP PDUSER YES  RESTAURANTS CQMSAMP
CITYADD      IBM151  PDUSER NO   RESTAURANTS IBM151
CITYSUBT     CQMSAMP PDUSER REC  RESTAURANTS CQMSAMP
CITYSUBT     CQMSAMP PDUSER YES  RESTAURANTS CQMSAMP
CITYSUBT     CQMSAMP PDUSER YES  RESTAURANTS CQMSAMP

Line Commands: (Select trigger, Drop trigger, ? Help)
```

Figure 54. Triggers panel

Columns

The columns on the Triggers panel are discussed following:

Name The name of the trigger.

Schema

The name of the schema to which the trigger belongs.

Owner

The ID of the person who owns the trigger.

Dropped

Indicates whether the trigger was dropped from this subsystem.

- A value of **YES** indicates that the trigger does not exist in DB2 system catalog.
- A value of **NO** indicates that the trigger is still cataloged.
- A value of **REC** indicates that the trigger exists in the DB2 system catalog. The new object version has not been recorded in DB2 Object Restore Versioning Repository.

Table The name of the table to which the trigger is attached.

TBOwner

The ID of the person who owns the table.

Attention: Since DB2 Object Restore object recovery works through the same workflow and series of panels, this document uses storage group recovery as the example of workflow and process. All other sections of DB2 Object Restore object recovery address only the differences from storage group recovery.

Function recovery

Select option F from the DB2 Object Restore menu. You are prompted with the Enter Routine Like window to identify the routines with which you want to work.

```
Name Like . . . . . *
Schema Like . . . . . *
Owner Like . . . . . *
Routine Type . . . . .
Display Dropped Only.N ( Y or N )
```

Figure 55. Routine Like window

This message prompts you to enter a routine or a schema, if known. Otherwise, you can enter a few letters and the wildcard character (*) to conduct a search for them or press Enter to view all routines within the subsystem. The default is all (*). You can also indicate whether you want to display only dropped objects. If you specify N you will see all objects that match your selection criteria. If you specify Y you will see only objects that have been dropped.

Working with functions

Describes the Routines panel.

After pressing Enter, the Routines panel opens, as shown below:

```
DB2 OR V2R1 ----- SS01 Routines ----- Row 1 of 22
Command ==>                               Scroll ==> PAGE
----- +>

Name . . . . . *
Schema . . . . . *
Owner . . . . . *
Display Dropped Only.N

-----

Cmd Schema Name Type Dropped Created
PDUSER ADDIT F-ES NO 2002-04-05-20.02.10.158110
ICM USER_GROUPS F-ET NO 2003-09-22-23.20.42.377403
ICM USER_GROUPS F-ET NO 2003-07-29-13.34.19.091699
PDUSER AVE F-S NO 2002-03-18-12.11.56.583867
PDUSER AVEJNAM F-S NO 2002-03-18-14.13.13.948104
PDUSER DOCMATCH F-ET NO 2002-03-19-11.41.01.758108
PDUSER ESFTST01 F-ES NO 2002-03-19-15.57.12.566258
PDUSER ESFTST02 F-ES NO 2002-03-19-15.57.12.693186

Line Commands: (Select routine, Drop routine)
```

Figure 56. Routines panel

Columns

The columns on the Routines panel are discussed following:

Schema

The name of the schema to which the routine belongs.

Name The name of the routine.

Type The type of routine.

Dropped

Indicates whether the routine was dropped from this subsystem.

- A value of **YES** indicates that the routine does not exist in DB2 system catalog.
- A value of **NO** indicates that the routine is still cataloged.
- A value of **REC** indicates that the routine exists in the DB2 system catalog. The new object version has not been recorded in DB2 Object Restore Versioning Repository.

Created Timestamp

The time when the CREATE statement was executed.

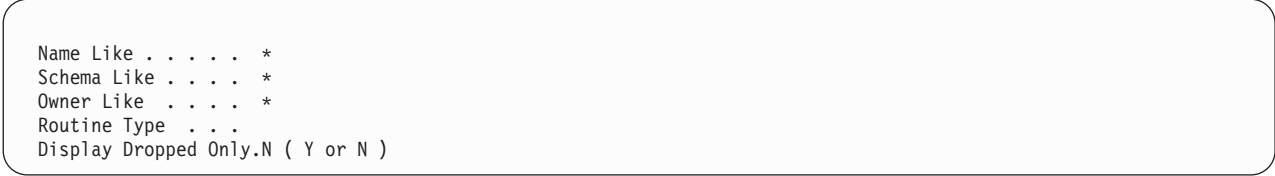
Altered Timestamp

The time when the last ALTER statement was executed. This timestamp is used by DB2 Object Restore to track the object versions.

Attention: Since DB2 Object Restore object recovery works through the same workflow and series of panels, this document uses storage group recovery as the example of workflow and process. All other sections of DB2 Object Restore object recovery address only the differences from storage group recovery.

Stored procedure recovery

Select option O from the DB2 Object Restore menu. You are prompted with the Enter Routine Like window to identify the routines with which you want to work.



```
Name Like . . . . . *
Schema Like . . . . . *
Owner Like . . . . . *
Routine Type . . .
Display Dropped Only.N ( Y or N )
```

Figure 57. Routine Like window

This message prompts you to enter a routine or a schema, if known. Otherwise, you can enter a few letters and the wildcard character (*) to conduct a search for them or press Enter to view all routines within the subsystem. The default is all (*). You can also indicate whether you want to display only dropped objects. If you specify N you will see all objects that match your selection criteria. If you specify Y you will see only objects that have been dropped.

Work with stored procedures

Stored procedures use the same series of panels as do functions. Refer to the functions documentation for more information on the panels related to stored procedures.

Sequence recovery

Select option **Q** from the DB2 Object Restore menu. You are prompted with the Enter Sequence Like window to identify the sequence with which you want to work.

```

Grantor Like . . . . .
Grantee Like . . . . .
Schema Like . . . . .
Name Like . . . . .
Display Dropped Only. ( Y or N )

```

Figure 58. Sequences Like window

This message prompts you to enter identifying information, if known. Otherwise, you can enter a few letters and the wildcard character (*) to conduct a search for them or press Enter to view all sequences within the subsystem. The default is all (*). You can also indicate whether you want to display only dropped objects. If you specify N you will see all objects that match your selection criteria. If you specify Y you will see only objects that have been dropped.

The sequence name field will accept DBCS (Mixed) data values. The dropped field only accepts SBCS EBCDIC Y and N.

For all versions of DB2 the sequence input field will only allow entry of an 8-character name.

Work with sequences

Describes the Sequences Privileges panel

After pressing Enter, the Sequences panel opens, as shown below:

```

DB2 OR V2R1 ----- SS1A Sequence Privileges ----- Row 1 of 200
-----+>

Grantor . . . . .          Grantee . .
Schema . . . . .          Name . . .
Display Dropped Only.

-----

Line Commands: (Select sequence, Revoke sequence, ? Help)
Option ==>>                               Scroll ==> PAGE

```

Figure 59. Sequence Privileges panel

Filter fields

The filter fields work the same way as the Sequences Like filter window fields. The input fields can be used to expand or contract the scope of objects displayed in the list. The wild card character can be used. For all versions of DB2 the database input field will only allow entry of a maximum of 8 characters.

Columns

Input column fields like the command line column (Cmd) are displayed in the color red and underscored. Fixed length columns are displayed with a heading text colored white. Columns that have adjustable display lengths are displayed with column heading text colored yellow. The column display can be scrolled left and right.

Line Commands

A list of the frequently used commands is displayed at the bottom of the panel. A line command is entered in the command field of the target object version. After a line command has been processed (and the target line has not been removed from the list) the target object line is displayed with the line command preceded with an asterisk (*).

To view a list of all possible line commands that can be entered on this list along with a description of the commands enter a ? in the command field on any database list line.

The line command field only accepts SBCS EBCDIC character values.

The following is a list of the most frequently used line commands:

- S** Select object version to be recovered.
- R** Select object version to be revoked.
- ?** Display list of valid line commands.

When you select an object to be dropped or recovered DB2 Object Restore may display a confirmation window asking you to confirm the requested action.

Attention: Since DB2 Object Restore object recovery works through the same workflow and series of panels, this document uses storage group recovery as the example of workflow and process. All other sections of DB2 Object Restore object recovery address only the differences from storage group recovery.

Role recovery

Select option **B** from the DB2 Object Restore menu. You are prompted with the Enter Role Like window to identify the role with which you want to work.

```
Name Like . . . . . *
Creator Like . . . . . *
Display Dropped Only.N ( Y or N )
```

Figure 60. Role Like window

This message prompts you to enter a role and a creator, if known. Otherwise, you can enter a few letters and the wildcard character (*) to conduct a search for them or press Enter to view all roles and creators within the subsystem. The default is all (*). You can also indicate whether you want to display only dropped objects. If you specify N you will see all objects that match your selection criteria. If you specify Y you will see only objects that have been dropped.

Work with roles

Describes the Roles panel.

After pressing Enter, the Roles panel opens, as shown below:

```
DB2 OR V2R1 ----- SS01 Roles ----- Row 1 of 5
Command ==>                               Scroll ==> PAGE
-----+>

Definer . . . . . *
Name . . . . . *
Display Dropped Only.N
-----

Cmd Name          Definer  Dropped  Created
role1             PDUSER   NO       2007-02-23-11.23.59.72811
role2             PDUSER   NO       2007-02-24-09.12.15.45372
role3             PDUSER   NO       2007-02-24-09.17.56.32623
role4             PDUSER   NO       2007-02-25-07.22.05.44631
role5             PDUSER   NO       2007-02-27-12.05.33.14352

Line Commands: (Select, Drop, ? Help)
```

Figure 61. Roles panel

Columns

The columns on the Roles panel are discussed following:

Name The name of the role.

Definer

The ID of the person who defined the role.

Dropped

Indicates whether the alias was dropped from this subsystem.

- A value of **YES** indicates that the alias does not exist in DB2 system catalog.
- A value of **NO** indicates that the alias is still cataloged.
- A value of **REC** indicates that the alias exists in the DB2 system catalog. The new object version has not been recorded in DB2 Object Restore Versioning Repository.

Created

The time when the CREATE statement was executed.

Attention: Since DB2 Object Restore object recovery works through the same workflow and series of panels, this document uses storage group recovery as the example of workflow and process. All other sections of DB2 Object Restore object recovery address only the differences from storage group recovery.

Chapter 6. Bind recovery

You can use DB2 Object Restore to recover the binds for plans, packages, and collections that have been dropped (deleted) or to generate those binds for propagation to another subsystem.

Topics:

- “Plan bind recovery”
- “Package bind recovery” on page 87
- “Collection bind recovery” on page 90

Plan bind recovery

Select option **P** from the DB2 Object Restore menu. You are prompted with the Enter Plan Like window to identify the plan with which you want to work.

```
Name Like . . . *
Creator Like . . *
```

Figure 62. Plans Like window

This message prompts you to enter a plan and creator, if known. Otherwise, you can enter a few letters and the wildcard character (*) to conduct a search for them or press Enter to view all plans and creators within the subsystem. The default is all (*).

Package list

When you enter a **P** for the Line Command next to a plan, Object Restore displays the packages that are in the selected plan. The Package List panel appears: This panel conveys the following information:

```
DB2 OR V2R1 ----- SS01 Package List ----- Row 1 of 2
Command ==>>                               Scroll ==> PAGE
-----
Creator: PDUSER
Plan...: ADBTEPA
-----
Cmd Plan      SeqNo Location      Collection      Name      Timestamp
  ADBTEPA      1 *           ADBL           ADBASW      2003-09-04-16.5
  ADBTEPA      2 *           ADBL           ADBTEP2     2003-09-04-16.5
***** Bottom of Data *****

Line Commands: (K = Local Packages, ? Help)
```

Figure 63. Package List panel

Plan The name of the plan to which the package is attached.

SeqNo

The sequence number of the package.

Location

The location of the package.

Collection

The name of the collection to which the package belongs.

Name The name of the package.

Timestamp

The time at which the plan was bound to the package.

There are no valid line commands for this panel.

DBRM list

When you enter a **B** for the Line Command next to a plan, Object Restore displays the DBRMs that are bound to the selected plan. The Plan DBRM List panel appears:

This panel conveys the following information:

```
DB2 OR V2R1 ----- SS01 Plan DBRM List ----- No rows to display
Command ==>                               Scroll ==> PAGE
```

```
-----
Plan Creator: PDUSER
Plan Name...: ADBTEPA
```

```
-----
          Q C H C M 3
Cmd Name  Creator  PL Name  T O L S X 1  Timestamp
```

```
Press END to return to previous screen.
```

Figure 64. Plan DBRM List panel

Name The name of the DBRM.

Creator

The ID of the person who created the DBRM.

PL Name

The plan to which the DBRM is bound.

Version

The version of the DBRM.

There are no valid line commands for this panel.

Work with plans

Describes the Plan Bind panel.

After pressing Enter, the Plans panel opens, as shown below.

```
DB2 OR V2R1 ----- SS01 Plans ----- Row 1 of 319
Command ==>                               Scroll ==> PAGE
-----+-----
Creator . . *
Name . . . *

-----+-----
Cmd Name      Creator  Timestamp      V I V O Bound  Quali-   Pack A R E D
              PDUSER  2003-10-29-13.36 R S Y Y PDUSER  PDUSER   0 U C N Y
ABXCAF
ABXD2LEX      PDUSER  2003-10-29-16.04 R S Y Y PDUSER  PDUSER   0 U C N Y
ABXUTIL       PDUSER  2003-10-22-16.19 R S Y Y PDUSER  PDUSER   0 U C N N
ADB           PDUSER  2003-04-15-15.33 B S Y Y PDUSER  PDUSER   1 U C N N
ADBTEPA       PDUSER  2003-04-15-15.33 B S Y Y PDUSER  PDUSER   2 U C N N
ADBTEP2       PDUSER  2003-04-15-15.33 B S Y Y PDUSER  PDUSER   1 U C N N
ADB2GEN       PDUSER  2003-04-15-15.33 B S Y Y PDUSER  PDUSER   1 U C N N
ADB2RIP       PDUSER  2003-04-15-15.33 B S Y Y PDUSER  PDUSER   1 U C N N
ADB2WCL       PDUSER  2003-04-15-15.33 B S Y Y PDUSER  PDUSER   1 U C N N

Line Commands: (Select plan, Dependencies, Packages, B DBRMs, ? Help)
```

Figure 65. Plan Bind panel

Fields

The fields on the Plans panel are discussed following:

Creator

Controls the list of plans displayed by creator name. Enter one or more letters and the wildcard character (*) to limit the list of names displayed. Use only the wildcard character to allow all creators of plans in the DB2 subsystem.

Name Controls the list of plans displayed by plan name. Enter one or more letters and the wildcard character (*) to limit the list of plans displayed. Use only the wildcard character to allow all of the plans in the DB2 subsystem.

Columns

The columns on the Plans panel are discussed following:

Name The name of the plan.

Creator

The ID of the person who created the plan.

Timestamp

The time when the plan was bound.

VD Indicates if validity checking can be deferred until run time. Refer to DB2 SQL Reference Guide for values.

IS Isolation level for the plan. Refer to DB2 SQL Reference Guide for values.

VA Indicates if the application plan is valid. Refer to DB2 SQL Reference Guide for values.

OP Indicates if the application plan can be allocated. Refer to DB2 SQL Reference Guide for values.

Bound By
Primary auth id of binder of the plan.

Qualifier
The ID of the person who qualified the plan.

Pack Lists
The number of package list entries for plan.

AQ Indicates when resources are required. Refer to DB2 SQL Reference Guide for values.

RL Indicates when resources are released. Refer to DB2 SQL Reference Guide for values.

EX Explain option specified for the plan. Refer to DB2 SQL Reference Guide for values.

DR Indicates if the plan was last bound with DEFER(PREPARE). Refer to DB2 SQL Reference Guide for values.

Plan dependencies

When you enter a **D** for the Line Command next to a plan, Object Restore displays the DB2 objects that are dependent upon the selected plan. The Plan Dependencies panel appears:

This panel conveys the following information:

```
DB2 OR V2R1 ----- SS01 Plan Dependencies ----- Row 1 of 5
Command ==>                               Scroll ==> PAGE
-----
```

```
Plan Creator: PDDAY
Plan Name...: ABXCAF
```

```
Cmd PL Name      Creator  Type
DSNDCX01        SYSIBM  I - Index
DSNDTX01        SYSIBM  I - Index
SYSCOLUMNS     SYSIBM  T - Table
SYSDBASE        DSND806 R - Table Space
SYSTABLES       SYSIBM  T - Table
***** Bottom of Data *****
```

Press END to return to previous screen.

Figure 66. Plan Dependencies panel

PL Name
The name of the object.

Creator
The ID of the person who created the object.

Type The type of DB2 object.

There are no valid line commands for this panel.

Plan Line Command Options

There are four valid line command options that you can enter on the Cmd line to the left of a plan name on the Plans panel.

Select plan

Type **S**, then press Enter to create the bind controls that can be used to restore the bind on the DB2 subsystem.

Dependencies

Type **D**, then press Enter to view the dependencies for the selected plan.

Package list

Type **P**, then press Enter to view the package list for the selected plan.

Bound DBRM list

Type **B**, then press Enter to view the list of DBRMs bound to the plan.

Select plan

When you enter an **S** for the Line Command next to a plan, you are specifying that you want Object Restore to generate the bind controls required to restore the bind. Object Restore generates the control statements and displays them in the Generated Bind Controls panel as shown below:

```
DB2 OR V2R1 ----- Generated Bind Controls ----- Row 1 of 8
Command ==>                                           Scroll ==> PAGE
-----
-- *****
-- *
-- * IBM DB2 Object Restore                               *
-- * (C) Copyright IBM Corp./Rocket Software, 1999, 2002. *
-- *
-- * Binds Generated on: 2003-10-31-12.47.34.259360      *
-- *****
-- *
-- * Plan: [planname]                                     *
-- *
-- *****

BIND PLAN          ([planname])                          -
OWNER              ([userid])                            -

Press PF3/END to continue
```

Figure 67. Generated Bind Controls panel

Use PF8 to scroll down to see the rest of the bind control cards. You can make any changes to them at this point before proceeding. When you are ready to continue, press PF3. The Enter Execution Option windows displays as shown below:

Execution Options:

- 5 1. Generate JCL for DB2 Subsystem _____
2. Execute Bind on DB2 Subsystem _____
3. Save Bind Statements to file and exit
4. Return to Bind Control Display
5. Exit without executing Binds

Figure 68. Execution Options panel

This window provides you with five options for the generated DDL:

- Generate the JCL for the current subsystem (use this option only if the object was dropped).
- Execute the Bind on another subsystem.
- Save the Bind statements to a file and exit.
- Return to the Bind Control Display.
- Exit without executing the Binds. This is the default.

Generate the JCL

If you select Option 1, which generates the JCL for the specified subsystem, the Generate Bind Job to a File window appears:

On this panel, you must enter the following information:

Save in DSN ... _____
Member. _____ (Required if DSN is a PDS)

Job Cards:
//JOB CARD JOB
//*
//*
//*

Edit Generated JCL: N (Y or N)

Press Enter to process request or PF3 to cancel

Figure 69. Generate Bind Job to a File window

- A valid data set name (and member name if the data set is a PDS).
- A valid job card for your site.

You can also specify if you want to edit the generated JCL before saving it. Press Enter to proceed.

Execute the bind

If you select Option 2, which executes the bind for the specified subsystem, the bind is executed on the specified subsystem.

Save bind statements

If you select Option 3, which saves the bind statements to a file and then exits, the Save Statements to a File window appears:

```
Save in DSN ... _____  
Member. _____ (Required if DSN is a PDS)  
  
Press Enter to process request or PF3 to cancel
```

Figure 70. Save Statements to a File window

On this panel, you must enter a valid data set name (and member name if the data set is a PDS).

Return to the Bind Control Display

If you select Option 4, you return to the Bind Control Display.

Exit

If you select Option 5, which exits without saving, the Plan Bind panel appears.

Package bind recovery

Select option **K** from the DB2 Object Restore menu. You are prompted with the Enter Package Like window to identify the package with which you want to work.

```
Location Like . . . *  
Collection Like . . *  
Name Like . . . . . *
```

Figure 71. Package Like window

This message prompts you to enter a location, collection, and a package, if known. Otherwise, you can enter a few letters and the wildcard character (*) to conduct a search for them or press Enter to view all locations, collections, and packages within the subsystem. The default is all (*).

Work with packages

Describes the Packages panel.

After pressing Enter, the Packages panel opens, as shown below.

```

DB2 OR V2R1 ----- SS01 Packages ----- Row 1 of 3702
Command ==>                               Scroll ==> PAGE
-----+>

Location . . . *
Collection . . *
Name . . . . . *

-----

Cmd Name      Location      Collection      Owner      Creator
  ADBASW      ADBL          ADBL          PDUSER    PDUSER
  ADBMAIN      ADBL          ADBL          PDUSER    PDUSER
  ADBTEP2      ADBL          ADBL          PDUSER    PDUSER
  ADB2CON      ADBL          ADBL          PDUSER    PDUSER
  ADB2GEN      ADBL          ADBL          PDUSER    PDUSER
  ADB2GET      ADBL          ADBL          PDUSER    PDUSER
  ADB2PRP      ADBL          ADBL          PDUSER    PDUSER
  ADB2REE      ADBL          ADBL          PDUSER    PDUSER
  ADB2REE      ADBL          ADBL          PDUSER    PDUSER

Line Commands: (Select package, Dependencies, Plan list, ? Help)

```

Figure 72. Packages panel

Fields

The fields on the Package Bind panel are discussed following:

Location

Controls the list of packages displayed by location. Enter one or more letters and the wildcard character (*) to limit the list of packages displayed. Use only the wildcard character to allow all locations of the packages in the DB2 subsystem.

Collection

Controls the list of packages displayed by collection. Enter one or more letters and the wildcard character (*) to limit the list of packages displayed. Use only the wildcard character to allow all collections of packages in the DB2 subsystem.

Name Controls the list of packages displayed by package name. Enter one or more letters and the wildcard character (*) to limit the list of packages displayed. Use only the wildcard character to allow all of the packages in the DB2 subsystem.

Columns

The columns on the Packages panel are discussed following:

Name The name of the package.

Location

The location of the package.

Collection

The name of the collection to which the package belongs.

Owner

The ID of the owner of the package.

Creator

The ID of the person who created the package.

Bound Timestamp

A seven-part value that consists of a date and time expressed in years, months, days, hours, minutes, seconds and microseconds. The date and time at which the package was bound is captured automatically.

Package Line Command Options

There are three valid line command options that you can enter on the **Cmd** line to the left of a package name on the Package Bind panel.

Select package

Type **S**, then press Enter to create the bind controls that can be used to restore the bind on the DB2 subsystem.

Dependencies

Type **D**, then press Enter to view the dependencies for the selected plan.

Plan list

Type **P**, then press Enter to view the package list for the selected plan.

Select package

The process and panels for the select package process are the same as those used for a plan. Refer to those to continue with the workflow for restoring package binds, substituting package for plan where applicable.

Package dependencies

The Package Dependencies panel is nearly identical to the Plan Dependencies panel, the only difference being the filter fields in the header on the panel. Refer to that for information on the Package Dependencies panel, substituting package for plan where applicable.

Plan list

When you enter a **P** for the Line Command next to a package, Object Restore displays the plans that have bound the package that you selected. The Plan List panel appears:

```
DB2 OR V2R1 ----- SS01 Plan List ----- Row 1 of 8
Command ==>                               Scroll ==> PAGE
-----
```

```
Location..:
Collection: ADBL
Package...:
```

```
Cmd Plan      Timestamp
ADB27AC 2003-09-04-16.52.43.622665
ADB2WCL 2003-09-04-16.52.46.078926
ADB2RIP 2003-09-04-16.52.45.973509
ADB2GEN 2003-09-04-16.52.43.604730
ADB      2003-09-04-16.52.43.587935
ADBTPEPA 2003-09-04-16.52.43.655324
ADBTPE2 2003-09-04-16.52.43.638310
ADBTPEPA 2003-09-04-16.52.43.655324
***** Bottom of Data *****
```

Press END to return to previous screen.

Figure 73. Plan List panel

This panel conveys the following information:

Plan The name of the plan.

Timestamp

A seven-part value that consists of a date and time expressed in years, months, days, hours, minutes, seconds and microseconds. The date and time at which the package was bound is captured automatically.

There are no valid line commands for this panel.

Collection bind recovery

Select option **L** from the DB2 Object Restore menu. You are prompted with the Enter Collection Like window to identify the collection with which you want to work.

```
Collection Like * _____
```

Figure 74. Collection Like window

This message prompts you to enter a collection, if known. Otherwise, you can enter a few letters and the wildcard character (*) to conduct a search for them or press Enter to view all collections within the subsystem. The default is all (*).

Working with collections

Describes the Collections panel.

After pressing Enter, the Collections panel opens, as shown below.

```

DB2 OR V2R1 ----- SS01 Collections ----- Row 1 of 293
Command ==>                               Scroll ==> PAGE
-----+
Name . . *
-----

Cmd Collection      Packages
ADBL                16
ADBL31              8
ARYTV110            6
ARYT110             6
ARYV110             6
AUOV130             119
AUOV721H            129
AUOV721P            129
AUOV7210            245
AUSSIE              5
BCTCATL             2

Line Commands: (B = Generate Bind, K = Package List, P = Plans, ? Help)

```

Figure 75. Collections panel

Fields

The fields on the Collection Bind panel are discussed following:

Name Controls the list of collections displayed. Enter one or more letters and the wildcard character (*) to limit the list of collections displayed. Use only the wildcard character to allow all collections in the DB2 subsystem.

Columns

The columns on the Collection Bind panel are discussed following:

Collection
The name of the collection.

Packages
The number of packages in the collection.

Collection Line Command Options

There are three valid line command options that you can enter on the Cmd line to the left of a collection name on the Collection Bind panel.

B Generate Bind. Type **B**, then press Enter to generate the bind controls that can be used to restore the bind on the DB2 subsystem.

K Package List. Type **K**, then press Enter to view the package list for the selected collection.

P Plan List. Type **P**, then press Enter to view the plan list for the selected collection.

Generate Bind

The process and panels used to generate collection bind controls are the same as those used for a plan. Refer to plan documentation to continue with the workflow for restoring collection binds, substituting collection for plan where applicable.

Package list

The panels and commands used to display the package list were discussed previously in the Bind recovery documentation.

Plan list

The panels and commands used to display the package list were discussed previously in the Bind recovery documentation..

Chapter 7. Privilege recovery

You can use DB2 Object Restore to recover use privileges, system privileges, plan privileges, and package privileges. You can also use Object Restore to revoke, or drop, those same privileges.

Topics:

- “DB2 resources”
- “User privileges recovery” on page 96
- “Plan privileges recovery” on page 99
- “Package privileges recovery” on page 100

DB2 resources

Follow these steps to determine the available DB2 resources.

Select option **RA** from the DB2 Object Restore main menu. You are prompted with the Enter User Like window to identify the user with whom you want to work.

This message prompts you to enter a grantee (user), type, and resource, if known.

```
Grantor Like . . . *
Grantee Like . . . *
Type Like . . . . . *
Resource Like . . . *
Display Dropped Only.N ( Y or N )
```

Figure 76. User Like window

Otherwise, you can enter a few letters and the wildcard character (*) to conduct a search for them or press Enter to view all users, types, and resources within the subsystem. The default is all (*). You can also indicate whether you want to display only dropped objects. If you specify N you will see all objects that match your selection criteria. If you specify Y you will see only objects that have been dropped.

Work with use privileges

Describes the Resource Privileges panel

After pressing Enter, the Resource Privileges panel opens. This panel distinguishes dropped and undropped use privileges by color as well as using the **Dropped** column. Dropped privileges display in red; whereas, undropped privileges display as normal, typically aqua. Additionally, privileges that have been previously dropped, and subsequently restored appear in yellow because the privileges' version no longer matches the version of its related objects.

```

DB2 OR V2R1 ----- SS01 Resource Privileges ----- Row 1 of 18
Command ==>                                           Scroll ==> PAGE
-----+>

Grantor . . . . . *           Grantee . . *
Name . . . . . *             Type . . *
Display Dropped Only.N

-----

Cmd User      Grantee  Grantor  Dropped  Qual      Name
PDUSERA PDUSER   NO       NO       SYSDEFLT  Storage
PDUSERA PDUSER   NO       NO       DG00M710  Collecti
PDUSERA PDUSER   NO       NO       BP0        Buffer P
PDUSERA PDUSER   NO       NO       BP1        Buffer P
PDUSERA PDUSER   NO       NO       BP16K0     Buffer P
PDUSERA PDUSER   NO       NO       BP2        Buffer P
PDUSERA PDUSER   NO       NO       BP3        Buffer P
PDUSERA PDUSER   NO       NO       BP32K     Buffer P
PDUSERA PDUSER   NO       NO       BP4        Buffer P

Line Commands: (Select resource, Revoke privilege, ? Help)

```

Figure 77. Resource Privileges panel

Fields

The fields on the Resource Privileges panel are discussed following:

Grantor

Controls the list of grantors displayed. Enter one or more letters and the wildcard character (*) to limit the list of names displayed. Use only the wildcard character to display all of the users in the DB2 subsystem.

Grantee

Controls the list of grantees displayed. Enter one or more letters and the wildcard character (*) to limit the list of names displayed. Use only the wildcard character to display all of the users in the DB2 subsystem.

Name Controls the list of names displayed. Enter one or more letters and the wildcard character (*) to limit the list of names displayed. Use only the wildcard character to display all of the users in the DB2 subsystem.

Type Controls the list of types displayed. Enter one or more letters and the wildcard character (*) to limit the list of names displayed. Use only the wildcard character to display all of the types in the DB2 subsystem.

Display Dropped Only

Controls whether the panel displays all privileges in the DB2 subsystem, or only those that have been dropped. Valid values are:

- Y** Display only those privileges that have been dropped.
- N** Display all privileges.

Columns

The columns on the Resource Privileges panel are discussed following:

User The name of the user or resource.

Grantee

The ID of the person who was granted the use privileges.

Grantor

The ID of the person who granted the use privileges.

Dropped

Indicates whether the use privileges have been revoked on this subsystem.

- A value of **YES** indicates that the privileges do not exist in DB2 system catalog.
- A value of **NO** indicates that the privileges are still cataloged.
- A value of **REC** indicates that the privileges exist in the DB2 system catalog. The new object version has not been recorded in DB2 Object Restore Versioning Repository.

Database

The name of the database on which the user has privileges.

Object

The name of the object on which the user has privileges.

Type The type of object. Valid types are:

- Buffer Pool
- Collection
- Storage Group
- Table Space

Authority

Identifies the authority granted. Valid types are:

- Use
- PackAdm
- Create In

Privilege

Identifies the privilege that the user holds.

Granted Timestamp

A seven-part value that consists of a date and time expressed in years, months, days, hours, minutes, seconds, and microseconds. The date and time at which the use privilege was granted is captured automatically.

Use Privileges Line Command Options

There are two valid line command options that you can enter on the Cmd line to the left of a user on the Drop Use Privilege Restore panel.

Select resource

Type **S**, then press Enter to create the DDL that will be executed to restore the revoked privilege on the DB2 subsystem.

Revoke privilege

Type **R**, then press Enter to create the DDL that will be executed to revoke the use privilege from the DB2 subsystem.

Select resource for recovery

When you enter an **S** for the Line Command next to a user, you are specifying that you want Object Restore to generate the DDL required to restore the use privilege. If the selected privilege has been revoked, the DDL is generated immediately; however, if the use privilege has not been revoked, the following message appears:

```

Grantee..: DG0USR
Qualifier:
Name.....: SYSDEFLT
Type..... S

Privileges not revoked on current subsystem.

Enter a "Y" to generate the DDL.

Confirm Recovery Generation N

```

Figure 78. Use privilege message

Once you type **Y** and press Enter, Object Restore generates the DDL and displays it in the Generated DDL panel as discussed previously.

Revoke privilege

When you enter an **R** for the Line Command next to a user, you are specifying that you want Object Restore to generate the DDL required to revoke the use privilege. After pressing Enter, the following message appears:

```

Grantee: grantee
Name...:

Enter a "Y" to generate REVOKE.

Confirm Revoke of Use Privilege N

```

Figure 79. Revoke use privileges message

Once you type **Y** and press Enter, Object Restore generates the DDL and displays it in the Generated DDL panel as discussed previously.

User privileges recovery

Select option **UA** from the DB2 Object Restore menu. You are prompted with the Enter User Like window to identify the user with whom you want to work.

```

Grantor . . . . . *
Grantee . . . . . *
Display Dropped Only.N ( Y or N )

```

Figure 80. User Like window

This message prompts you to enter a grantor or grantee (user), if known. Otherwise, you can enter a few letters and the wildcard character (*) to conduct a search for the user or press Enter to view all users within the subsystem. The default is all (*). You can also indicate whether you want to display only dropped objects. If you specify N you will see all objects that match your selection criteria. If you specify Y you will see only objects that have been dropped.

Working with user privileges

Describes the System Privileges panel.

After pressing Enter, the System Privileges panel opens.

```
DB2 OR V2R1 ----- SS01 System Privileges ----- Row 1 of 268
Command ==>                               Scroll ==> PAGE
-----+>

Grantor . . . . . *
Grantee . . . . . *
Display Dropped Only.N

-----

          A B B  CREATE... D M M R S S S S S
          R N N  A      S O O E T T Y Y Y T
          C D D B L      M P N N C P O S S S R
          H A A S I D D  T L T T V A S A C O A
          I D G D A B B S A A R R E L P D T P C
Cmd Grantee  Grantor  Dropped V D N S S A C G B Y 1 2 R L C M L R E
PDUSER  PDUSER    NO          Y
PDUSER  PDUSER    NO          Y
PDUSER  PDUSER    NO          G
PDUSER  PDUSER    NO          G

Line Commands: (Select user, Revoke privileges)
```

Figure 81. System Privileges panel

Columns

The columns on the Drop System Privilege Restore panel are discussed following:

Grantee

The name of the user or resource.

Grantor

The ID of the person who granted the system privileges.

Dropped

Indicates whether the system privileges have been revoked on this subsystem.

- A value of **YES** indicates that the system privileges do not exist in DB2 system catalog.
- A value of **NO** indicates that the system privileges are still cataloged.
- A value of **REC** indicates that the system privileges exist in the DB2 system catalog. The new object version has not been recorded in DB2 Object Restore Versioning Repository.

ARCHIV

Indicates whether the user can issue the ARCHIVE LOG command.

BNDADD

Indicates whether the user can create plans and packages using the BIND subcommand with the ADD option.

BNDAGN

Indicates whether the user can issue the BIND, FREE PACKAGE, or REBIND subcommands for plans and packages and the DROP PACKAGE statement on behalf of the grantor.

BSDS

Indicates whether the user can issue the RECOVER BSDS command.

CREATE...ALIAS

Indicates whether the user can issue the CREATE ALIAS command.

CREATE...DBA

Indicates whether the user can issue the CREATE DATABASE command and acquire DBADM authority over those databases.

CREATE...DBC

Indicates whether the user can issue the CREATE DATABASE statement and acquire DBCTRL authority over those databases.

CREATE...SG

Indicates whether the user can create new storage groups.

CREATE...MTAB

Indicates whether the user can issue the CREATE GLOBAL TEMPORARY TABLE statement.

DSPLAY

Indicates whether the user can issue the DISPLAY command.

MONITOR1

Indicates whether the user can obtain IFC data that does not contain potentially secure data.

MONITOR2

Indicates whether the user can obtain IFC data that does contain potentially secure data.

RECOVER

Indicates whether the user can issue the RECOVER INDOUBT command.

STPALL

Indicates whether the user can issue the STOP DB2 command.

STOSPC

Indicates whether the user can use the STOSPACE utility.

SYSADM

Indicates whether the user has all system privileges.

SYSCTL

Indicates whether the user has system control privileges.

SYSRPR

Indicates whether the user has system operator authority privileges.

TRACE

Indicates whether the user can issue the TRACE commands.

Granted Timestamp

The date and time at which the last system privileges were granted.

Important: Since DB2 Object Restore privilege recovery works through the same workflow and series of panels, this document uses use privileges recovery as the example of workflow and process. All other sections of DB2 Object Restore privilege recovery address only the differences from use privileges recovery.

Plan privileges recovery

Select option **PP** from the DB2 Object Restore menu. You are prompted with the Enter Plan Like window to identify the plan with which you want to work.

```
Grantor Like . . . *
Grantee Like . . . *
Name Like . . . . . *
Display Dropped Only.N ( Y or N )
```

Figure 82. Plan Like window

This message prompts you to enter a grantor, grantee (user), and plan, if known. Otherwise, you can enter a few letters and the wildcard character (*) to conduct a search for the user and plan or press Enter to view all users and plans within the subsystem. The default is all (*). You can also indicate whether you want to display only dropped objects. If you specify N you will see all objects that match your selection criteria. If you specify Y you will see only objects that have been dropped.

Working with plan privileges

Describes the Plan Privileges panel.

After pressing Enter, the Plan Privileges panel opens.:

```
DB2 OR V2R1 ----- SS01 Plan Privileges ----- Row 1 of 215
Command ==>                               Scroll ==> PAGE
-----+-----
Grantor . . . . . *           Grantee . . *
Name . . . . . *
Display Dropped Only.N

-----

          B E
Cmd Grantee Grantor Dropped Plan  A A  Granted
PDUSERA PDUSER   NO    PGM02001 G G 2003-04-28-12.50.46.464029
PDUSERA PDUSER   NO    PGM02002 G G 2003-04-28-12.50.46.518715
PDUSERA PDUSER   NO    PGM02003 G G 2003-04-28-12.50.46.567637
PDUSERA PDUSER   NO    PGM02004 G G 2003-04-28-12.50.46.617907
PDUSERA PDUSER   NO    PGM02005 G G 2003-04-28-12.50.46.667216
PDUSERA PDUSER   NO    PGM02006 G G 2003-04-28-12.50.46.716933
PDUSERA PDUSER   NO    PGM02007 G G 2003-04-28-12.50.46.771810
PDUSERA PDUSER   NO    PGM02008 G G 2003-04-28-12.50.46.821073

Line Commands: (Select privileges, Revoke privileges)
```

Figure 83. Plan Privileges panel

Columns

The columns on the Plan Privileges panel are discussed following:

Grantee

The name of the user or resource.

Grantor

The ID of the person who granted the plan privileges.

Dropped

Indicates whether the plan privileges have been revoked on this subsystem.

- A value of **YES** indicates that the plan privileges do not exist in DB2 system catalog.
- A value of **NO** indicates that the plan privileges are still cataloged.
- A value of **REC** indicates that the plan privileges exist in the DB2 system catalog. The new object version has not been recorded in DB2 Object Restore Versioning Repository.

Plan The name of the plan.

BA Indicates whether the user can BIND the plan. (BINDAUTH)

EA Indicates whether the user can EXECUTE the plan. (EXECUTEAUTH)

Granted

The date and time at which the last plan privileges were granted.

Important: Since DB2 Object Restore privilege recovery works through the same workflow and series of panels, this document uses use privileges recovery as the example of workflow and process. All other sections of DB2 Object Restore privilege recovery address only the differences from use privileges recovery.

Package privileges recovery

Select option **KP** from the DB2 Object Restore menu. You are prompted with the Enter Package Like window to identify the package with which you want to work.

```
Grantor Like . . . *
Grantee Like . . . *
Location Like . . . *
Collection Like . . . *
Name Like . . . . *
Display Dropped Only.N ( Y or N )
```

Figure 84. Package Like window

This message prompts you to enter a grantor, grantee (user), location, collection, and package, if known. Otherwise, you can enter a few letters and the wildcard character (*) to conduct a search for them or press Enter to view all users and packages within the subsystem. The default is all (*). You can also indicate whether you want to display only dropped objects. If you specify N you will see all objects that match your selection criteria. If you specify Y you will see only objects that have been dropped.

Working with package privileges

Describes the Package Privileges panel.

After pressing Enter, the Package Privileges panel opens, as shown below:

```

DB2 OR V2R1 ----- SS01 Package Privileges ----- Row 1 of 3613
Command ==>                               Scroll ==> PAGE
-----+>

Grantor . . . . . *           Grantee . . *
Location . . . . . *
Collection . . . . . *
Name . . . . . *
Display Dropped Only.N

-----

Cm Grantee Grantor Dropped Package Location      Collection      B C
PDUSER PDUSER YES RAARDBII NULLID          G G
PDUSER PDUSER YES RAARDBII NULLID          G G
PDUSER PDUSER NO ETI@CONN ETIPACK         G G
PDUSER PDUSER NO ETI@IOCT ETIPACK         G G
PDUSER PDUSER NO ETI@IOID ETIPACK         G G
PDUSER PDUSER NO ETI@IOSC ETIPACK         G G

Line Commands: (Select privileges, Revoke privileges, ? Help)

```

Figure 85. Package Privileges panel

Columns

The columns on the Package Privileges panel are discussed following:

Grantee

The name of the user or resource.

Grantor

The ID of the person who granted the package privileges.

Dropped

Indicates whether the package privileges have been revoked on this subsystem.

- A value of **YES** indicates that the package privileges do not exist in DB2 system catalog.
- A value of **NO** indicates that the package privileges are still cataloged.
- A value of **REC** indicates that the package privileges exist in the DB2 system catalog. The new object version has not been recorded in DB2 Object Restore Versioning Repository.

Package

The name of the package.

Location

Indicates the location of the package.

Collection

Indicates the collection to which the package belongs.

BA Indicates whether the user can BIND the package. (BINDAUTH)

CA Indicates whether the user can COPY the package. (COPYAUTH)

EA Indicates whether the user can EXECUTE the package. (EXECUTEAUTH)

Granted

A seven-part value that consists of a date and time expressed in years, months, days, hours, minutes, seconds, and microseconds. The date and time at which the last package privileges were granted is captured automatically.

Important: Since DB2 Object Restore privilege recovery works through the same workflow and series of panels, this document uses use privileges recovery as the example of workflow and process. All other sections of DB2 Object Restore privilege recovery address only the differences from use privileges recovery.

Chapter 8. Utilities

The DB2 Object Restore Utilities are where you can work with the necessary tasks related to Object Restore. You can execute saved DDL, view a listing of your image copies, and you can generate the JCL required to load or clean the Versioning Repository.

Attention: Unless otherwise noted, this information applies to DB2 versions 5, 6, 7, 8, and 9 (all configurations).

Topics:

- “Running saved DDL”
- “Locating Image Copies”
- “Utility JCL” on page 106

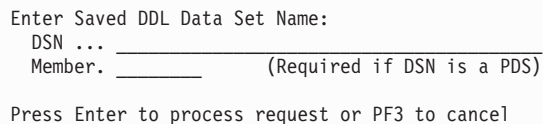
Running saved DDL

Follow these steps to run saved DDL.

Select option **ES** from the DB2 Object Restore main menu.

You are prompted with the Retrieve Generated DDL window to specify the DDL data set that you want to run.

You must type in the fully qualified data set name (and member name if it is a PDS)



```
Enter Saved DDL Data Set Name:
DSN ... _____
Member. _____ (Required if DSN is a PDS)
Press Enter to process request or PF3 to cancel
```

Figure 86. Retrieve Generated DDL window

of the DDL that you want to run. Once you have typed the data set name, press Enter to run the DDL or PF3 to cancel.

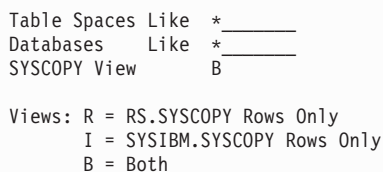
Locating Image Copies

Follow these steps to locate image copies with which you want to work.

Select option **IC** from the DB2 Object Restore main menu.

You are prompted with the Enter SYSCOPY Like window to identify the table spaces and databases with which you want to work.

This message prompts you to enter a table space and database, if known.



```
Table Spaces Like * _____
Databases Like * _____
SYSCOPY View B
Views: R = RS.SYSCOPY Rows Only
       I = SYSIBM.SYSCOPY Rows Only
       B = Both
```

Figure 87. SYSCOPY Like window

Otherwise, you can enter a few letters and the wildcard character (*) to conduct a search for them or press Enter to view all table spaces and databases within the

subsystem. The default is all (*). You can also specify whether you want to view image copies that exist in RS.SYSCOPY only, SYSIBM.SYSCOPY only, or both.

Working with image copies

Describes the Image Copy List panel.

After pressing Enter, the Image Copy List (SYSCOPY) panel opens, as shown below. This panel distinguishes image copies by color. SYSIBM.SYSCOPY only image copies display in white; RS.SYSCOPY only image copies display in yellow; and image copies that exist in both display in green.

```
DB2 OR V2R1 ----- SS01 Image Copy List (SYSCOPY) ----- Row 1 of 2283
Command ==>                                           Scroll ==> PAGE
-----+-----
Table Space . . * _____
Database . . . * _____                               View: BOTH

----- Image Copies Expiration Set To 999 Days -----

Cmd DBname  TSname  Exp T File DSName
  DSNRTSDB DSNRTSTS NO F   R71A.IMAGCOPY.DSNRTSTS.G0059V00
  DSNDB06  SYSJAUXB NO F   R71A.IMAGCOPY.SYSJAUXB.G0059V00
  DSNDB06  SYSJAUXA NO F   R71A.IMAGCOPY.SYSJAUXA.G0059V00
  DSNDB06  SYSJAVA  NO F   R71A.IMAGCOPY.SYSJAVA.G0059V00
  DSNDB06  SYSGRTNS NO F   R71A.IMAGCOPY.SYSGRTNS.G0059V00
  DSNDB06  SYSHIST  NO F   R71A.IMAGCOPY.SYSHIST.G0059V00
  DSNDB06  SYSSEQ2  NO F   R71A.IMAGCOPY.SYSSEQ2.G0059V00
  DSNDB06  SYSSEQ   NO F   R71A.IMAGCOPY.SYSSEQ.G0059V00
  DSNDB06  SYSOBJ   NO F   R71A.IMAGCOPY.SYSOBJ.G0059V00

Valid Line Command: (Listcat, Information, S Recover IC)
Colors: White - SYSIBM.SYSCOPY only, Yellow - DB2 OR VR only, Green - Both
```

Figure 88. Image Copy List (SYSCOPY) panel

Fields

The fields on the Image Copy List (SYSCOPY) panel are discussed following:

Table Space and Database

Table Space and Database fields display the value that was entered in the previous Enter SYSCOPY Like window. These fields can be used to control the list of image copies displayed. Enter one or more letters and the wildcard character (*) to limit the list of names displayed. Use only the wildcard character to display all of the table spaces in the DB2 subsystem.

Informational fields

View Identifies whether you are viewing image copies that exist in SYSIBM.SYSCOPY only, RS.SYSCOPY only, or both.

Image Copies Expiration Set To nnn Days

Identifies the image copy retention period. The image copy retention period was set during product customization.

Columns

The columns on the Image Copy List (SYSCOPY) panel are discussed following:

Cmd Line command. These are discussed below.

DBname

The name of the database.

TSname

The name of the table space

Exp Indicates if the image copy version has expired. A value of YES indicates that the image copy version exceeds the expiration time limit.

T Image copy type.

File Data set file number.

DSname

Image copy data set name.

Timestamp

The date and time of the image copy.

Image Copy Line Command Options

These are the valid line command options that you can enter on the **Cmd** line to the left of a database on the Image Copy List (SYSCOPY) panel.

L Display the LISTCAT output for the selected row

I Display expanded Image Copy information for the selected row.

S Select the Image Copy to be copied back into SYSIBM.SYSCOPY from the DB2 Object Restore Versioning Repository. Use this option with caution because it updates the DB2 system catalog.

U Update selected SYSIBM.SYSCOPY data set name.

? Display list of available line commands.

LISTCAT output

Selecting a row with line command **L** displays the following panel if the image copy data set is cataloged:

```

DB2 OR V2R1 ----- TSO LISTCAT Output Display ----- 00:52
Command ==>                                           Scroll ==> PAGE

***** Top of Data *****
IDCAMS SYSTEM SERVICES                                TIME: 00:52:58
NONVSAM ----- SS01.IMAGCOPY.SPT01.G0061V00
IN-CAT --- ICF.RSPLEX01.DB2.CAT1
HISTORY
  DATASET-OWNER----(NULL)      CREATION-----2003.255
  RELEASE-----2             EXPIRATION-----0000.000
  ACCOUNT-INFO-----          (NULL)
  STATUS-----ACTIVE
SMSDATA
  STORAGECLASS ----DEVBKP      MANAGEMENTCLASS----NOACT
  DATACLASS -----(NULL)     LBACKUP ---0000.000.0000
VOLUMES
  VOLSER-----DKP103          DEVTYP-----X'3010200F'   FSEQN-----
ASSOCIATIONS
  GDG-----SS01.IMAGCOPY.SPT01
ATTRIBUTES
***** Bottom of Data *****

```

Figure 89. TSO LISTCAT Output Display panel

Pressing the END key will return to the image copy list.

If the image copy data set is not cataloged, the LISTCAT Output Display is displayed showing the return code returned by the IDCAMS LISTCAT service.

Information

Selecting a row with line command **I** displays the following panel:

```

DB2 OR V2R1 ----- Image Copy Information ----- 2003/09/19 00:55:27
Option ==> _____

DB2 Subsystem ID: SS01      Current SQLID:           User: PDUSER

Recovery details for table space: SPT01   In database: DSNDB01

Data set number in TS .: 0
Image Copy Type .....: COPY FULL YES
Created Timestamp .....: 2003-09-12-14.34.48.663882
Log RBA .....: 0005F138FDCE (Hex)
Data set name .....: SS01.IMAGCOPY.SPT01.G0061V00
Data set device .....: 3390
DATA SET MEDIA TYPE ...: D - DASD (CATALOGED)

```

Figure 90. Image Copy Information panel

Utility JCL

Select option **UJ** from the DB2 Object Restore main menu. The Utility JCL Options panel appears.

This panel is the selection menu for the Versioning Repository JCL options. The menu options are:

1. Generate JCL to Load Versioning Repository
2. Generate JCL to Clean Versioning Repository

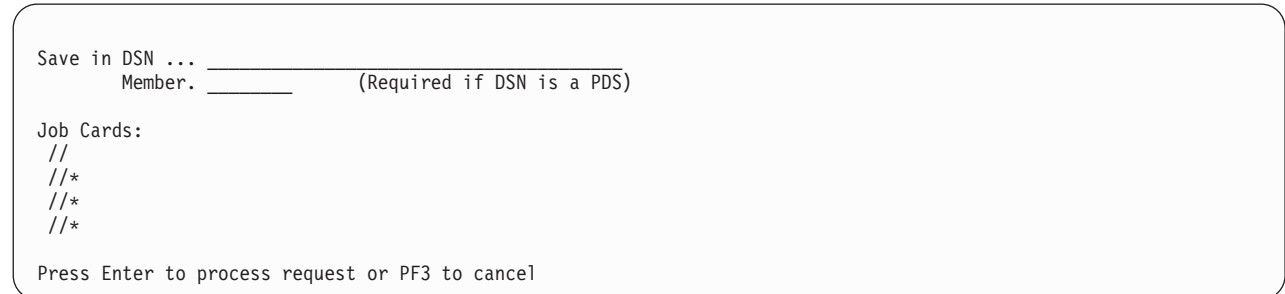
Generating JCL to Load Versioning Repository

Follow these steps to generate JCL to load the Versioning Repository.

Select option **1** from the Utility JCL Options panel.

The Generate Repository Load JCL panel appears.

You must type in the fully qualified data set name (and member name if it is a PDS)



```
Save in DSN ... _____  
Member. _____ (Required if DSN is a PDS)  
  
Job Cards:  
//  
//*  
//*  
//*  
  
Press Enter to process request or PF3 to cancel
```

Figure 91. Generate Repository Load JCL panel

for the JCL that you want to save. You must also type valid job card information to be generated at the top of the generated JCL. Once you have typed the information, press Enter to save the JCL or PF3 to cancel.

The generate Versioning Repository update JCL will be displayed in an ISPF edit session. You can edit, save the changes, or submit the JCL for processing. Type END to exit the JCL edit and return to the Utility JCL Options menu.

DB2 version processing considerations

The Versioning Repository update automatically detects target DB2 subsystem version and configuration. The Versioning Repository, where archived object information is stored, is determined by DB2 version and configuration.

The DB2 version archiving schemas are described below:

- For DB2 versions 5, 6, 7, and 8 CM (Compatibility Mode) objects are archived in the DB2 OBJECT RESTORE (1.3) Level "C" Versioning Repository.
- For DB2 version 8 running in ENFM (Enabling New Function Mode) object types that have been migrated to a Unicode format will be archived in the DB2 Object Restore (2.1) Level "D" Versioning Repository. Objects not migrated will be archived in the DB2 Object Restore (1.3) Level "C" Versioning Repository.
- For DB2 version 8 NFM and higher, all object types will be archived in the DB2 Object Restore (2.1) Level "D" Versioning Repository.

The DB2 Object Restore Level "D" Versioning Repository is Unicode encoded. The DB2 Object Restore Level "C" Versioning Repository is EBCDIC encoded.

Versioning Repository update processing

The Versioning Repository update process requires that the value of DSNZPARM IDBACK be at least 30. If you receive a max thread connection error:

The maximum number of concurrent threads has been exceeded Connection aborting.

increase the DSNXPARM IDBACK value.

Update control statements

The Versioning Repository update process can be altered using control statements supplied via the SYSIN DDName in the JCL. Control statement values start in

column 2 with a blank in column 1. Placing an asterisk (*) in column 1 indicates a comment statement.

UPDATE=[ON/OFF]

Use this control statement to turn on or off the Versioning Repository updates. Turning off the updates suppresses any Versioning Repository updates and report update counts are generated. The default value is UPDATE=ON.

COMMIT_AFTER=[#####]

The default COMMIT interval during the Versioning Repository update process is to issue a COMMIT at the end of each object update task. This default COMMIT strategy will back out all updates made by an update task during the current load process if an error occurs. This can cause DB2 to roll back many thousands of updates if the Versioning Repository update process is terminated. To avoid the roll back issues you can use the COMMIT_AFTER control statement to specify a 6-digit number that identifies the update commit interval.

DATABASE=database_name

Coding this control captures only the information related to the specified database. Only one DATABASE= statement can be coded. The following object types are not updated using this option:

- Plans
- Packages
- DBRMs
- Plan Auths
- Package Auths

SYSCOPYONLY=[ON/OFF]

Use this control to update only the SYSCOPY VR table. This is much faster than a full VR update. It is important to keep the VR SYSCOPY table up to date to ensure that you can restore dropped objects.

Product setup options

The Versioning Repository update process updates only the object types selected using main menu option **RO** and sub-options 1 and 2.

When updating privileges, if the **Limit repository update to adds only** option is selected, the update process examines all rows in the corresponding DB2 System Catalog tables. For installations that grant all privileges to users or revoke all privileges prior to granting new or updated privileges, selecting the **Limit repository update to adds only** option will improve the update processing time.

If the option to remove expired versions of objects during the repository update process is selected, then the update process may take longer to complete. If update performance is a consideration, then do not select the expired version clean-up to be done during the repository update job. Run the repository clean-up job once a week to remove expired versions.

Attention: Creating the suggested indexes on the DB2 System Catalog improves the performance of the repository update process.

Sample Versioning Repository update JCL

Sample JCL to update and clean the Versioning Repository is provided in the samples data set, SAUOSAMP, shipped with Object Restore. The JCL members are as follows:

AUOVRCLN

Sample Versioning Repository clean-up JCL.

AUOVRUPD

Sample Versioning Repository update JCL.

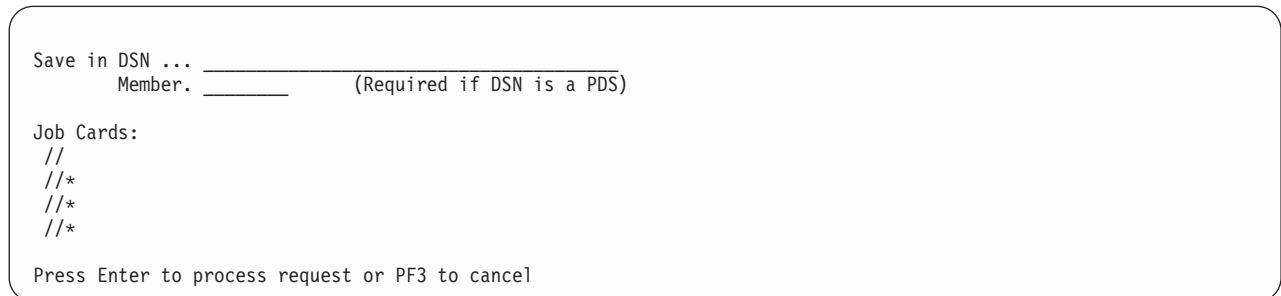
Generating JCL to clean Versioning Repository

Follow these steps to generate JCL to clean the Versioning Repository.

Select option **2** from the Utility JCL Options panel.

The Generate Repository Clean JCL panel appears.

You must type in the fully qualified data set name (and member name if it is a PDS)



```
Save in DSN ... _____  
Member. _____ (Required if DSN is a PDS)  
  
Job Cards:  
//  
//*  
//*  
//*  
  
Press Enter to process request or PF3 to cancel
```

Figure 92. Generate Repository Clean JCL panel

for the JCL that you want to save. You must also type valid job card information to be generated at the top of the generated JCL. Once you have typed the information, press Enter to save the JCL or PF3 to cancel.

The generate Versioning Repository clean JCL will be displayed in an ISPF edit session. You can edit, save the changes, or submit the JCL for processing. Type END to exit the JCL edit and return to the Utility JCL Options menu.

Chapter 9. Upgrade the Object Restore Versioning Repository

This appendix describes how to upgrade a DB2 Object Restore Versioning Repository (VR) used with a previous version of the product so you can use it with DB2 Object Restore v2.1.

Topics:

- “Scenario summaries”
- “Upgrading the Versioning Repository from V1.2 to V1.3” on page 112
- “Upgrading V1.2 to V2.1 for DB2 versions 5, 6, 7, and 8 (CM)” on page 112
- “Upgrading V1.2 to V2.1 for DB2 version 8 NFM” on page 112
- “Upgrading V1.3 to V2.1 for DB2 Version 8 NFM” on page 113
- “Migrating the VR from DB2 V7 to DB2 V8” on page 114
- “Migrating the SLR from DB2 V8 to DB2 V9” on page 115
- “Edit SAUOSAMP members” on page 116

Scenario summaries

These are the various scenarios that you might encounter when you want to upgrade the Versioning Repository.

Currently using DB2 Object Restore v1.1

There is no upgrade supported for DB2 Object Restore v1.1 to DB2 Object Restore v2.1. V1.1 users will not be able migrate the data recorded in the v1.1 Versioning Repository.

Moving from DB2 Object Restore v1.2

Users of DB2 Object Restore v1.2 upgrading to DB2 version 8 (NFM) subsystems will be required to upgrade the Versioning Repository to the v1.3 level prior to starting the migration to the v2.1 DB2 V8 NFM Versioning Repository.

Moving from DB2 Object Restore v1.3 to v2.1

No upgrade or data migration is required for users currently using DB2 Object Restore v1.3 and moving to v2.1. DB2 Object Restore v2.1 uses the same Versioning Repository created by v1.3 without any data migration--Versioning Repository (Level "C") for DB2 version 5, 6, 7, and 8 (running in Compatibility Mode (CM)).

There are no extra DASD requirements for migration to v2.1.

Moving from DB2 Object Restore v1.3 to v2.1 on DB2 version 8 (NFM)

Upgrading and data migration is only required for users moving from DB2 Object Restore v1.2 or migrating to DB2 version 8 New Function Mode (NFM).

By following the steps in this appendix, DB2 Object Restore v1.2 and v1.3 users can avoid dropping the old repository and creating a new one which results in the loss of previously captured data.

Attention: The procedures required to create a new Versioning Repository using DDL member AUO#DDL are documented in the customization chapter.

Upgrading the Versioning Repository from V1.2 to V1.3

Follow these steps to upgrade the Versioning Repository.

To upgrade the Object Restore v1.2 Versioning Repository to a v1.3 Versioning Repository, you must:

1. Edit and run a sample DDL member (AUO#12#13) that upgrades tables and adds new tables and indexes.
2. Edit and run a sample JCL member (AUO13INX) that rebuilds new and updated table indexes.

The DB2 Object Restore v2.1 Versioning Repository update process can recognize that a v1.2 to v1.3 conversion occurred and makes any required internal data structure updates that are required.

Upgrading V1.2 to V2.1 for DB2 versions 5, 6, 7, and 8 (CM)

Follow these steps to upgrade version 1.2 to version 2.1.

If you are migrating to DB2 Object Restore Version v2.1 from Version 1.2, you must first install DB2 Object Restore Version 2.1. You must follow these steps instead of those found in Steps 1 and 2 of the customization procedure. When you have completed the steps below, continue with the customizations steps at Step 3, Bind the SQL.

Important: All DB2 Object Restore V1.3 PTFs must be applied before upgrading the Versioning Repository.

To upgrade the v1.2 Versioning Repository to work with v1.3

1. Back up data in the v1.2 Versioning Repository. If the conversion process fails or is performed incorrectly, you must restore the v1.2 Versioning Repository from the backup copy.
2. Update the v1.2 Versioning Repository by executing the upgrade DDL in SAUOSAMP library member AUO12#13.
3. You should REORG the Versioning Repository table space so that table data rows match the updated table structures. A sample REORG job is in the SAUOSAMP library in member AUO#RORG.
4. The REORG leaves the table space in a copy pending status. You should make an image copy to clear the status.
5. Rebuild the Versioning Repository indexes by executing JCL in SAUOSAMP library member AUO13INX.
6. Run v1.3 product DB2 bind JCL. This is where you return to the customization procedure.

Remember: The 1.3 Versioning Repository load process will run longer than usual when first executed after the repository update. This increase in execution time is the result of the load process scanning and adjusting the internal data structures.

Upgrading V1.2 to V2.1 for DB2 version 8 NFM

The v1.2 Versioning Repository must be upgraded to the v1.3 level prior to migrating the data to the v2.1 DB2 V8 NFM Versioning Repository.

Follow all of the steps outlined in this user guide to migrate from v1.2 to v2.1 for DB2 versions 5, 6, 7, and 8 CM. Once the v1.2 repository has been upgraded to the v1.3 level complete the following steps:

1. Back up data in the v1.3 Versioning Repository. If the conversion process fails or is performed incorrectly, you must restore the v1.3 Versioning Repository from the backup copy.
2. Copy the data from the v1.3 Versioning Repository by executing the upgrade JCL in SAUOSAMP library member AUO13#V8. See the section on editing SAUOSAMP members for information on editing member AUO13#V8.
3. Submit the job for AUO13#V8. The v1.3 data will be migrated to the new v2.1 Versioning Repository.

Upgrading V1.3 to V2.1 for DB2 Version 8 NFM

Follow these steps to upgrade from Object Restore version 1.3 to version 2.1.

The DB2 Object Restore v2.1 migration process works by copying data from the DB2 Object Restore v1.3 repository when it detects that the corresponding data in the DB2 system catalog has been converted to Unicode and the corresponding DB2 Object Restore v2.1 table(s) are empty. The DB2 Object Restore migration job is run after the successful completion of each DB2 version 8 catalog table migration (v7 to v8) job.

Important:

- There are no extra DASD requirements for migration to Object Restore v2.1.
 - You must be current on all Object Restore v2.1 maintenance releases to use this process.
1. Back up data in the DB2 v7 Versioning Repository. If the conversion process fails or is performed incorrectly, you must restore the Versioning Repository from the backup copy.
 2. Create the Object Restore v2.1 DB2 V8 Versioning Repository. DDL is provided in SAUOSAMP data set member AUO#DDL8. SPUFI or a compatible utility can be used to execute the DDL. The Object Restore DB2 V8 Versioning Repository can coexist with the Object Restore DB2 V7 Versioning Repository. Do not drop the Object Restore DB2 V7 Versioning Repository until you have verified that the Object Restore v2.1 DB2 V8 data migration was successful.
 3. Bind Object Restore v2.1 DB2 V8 packages. Sample JCL is provided in SAUOSAMP data set member AUO#BKV8. Complete the JCL edits that are indicated in the JCL comments. Do not continue with the next step until this step completes successfully.
 4. Bind Object Restore v2.1 DB2 V8 plans. Sample JCL provided in SAUOSAMP data set member AUO#BPV8. Complete the JCL edits that are indicated in the JCL comments. Do not continue with the next step until this step completes successfully.
 5. Update the Object Restore v2.1 product plan names and DB2 subsystem information using option PS from the Object Restore v2.1 main product menu. Do not attempt to access other features of the product until the product plan names and DB2 subsystem information is updated. Failure to update the product plan names and DB2 subsystem information could result in product errors. Trying to access other product features and options at this point will result in empty object displays because the Object Restore DB2 V8 Versioning Repository has not been populated yet.

6. Migrate Object Restore DB2 V7 Versioning Repository to Object Restore 2.1 DB2 V8 Versioning Repository. Sample JCL is provided in SAUOSAMP data set member AUO13#V8. Do not run the Object Restore VR update JCL until the DB2 V8 data migration is completed. Do not run the Object Restore data migration JCL until you complete Step 5. If the migration process fails, then correct the problem and start over from Step 1. Messages are written to the job log to indicate migration status and errors.
7. Run the Object Restore 2.1 Versioning Repository update JCL.
8. Run Object Restore. Object Restore is now executing in DB2 V8 NFM mode and the object list displays, DDL generation, and JCL generation will reflect new DB2 V8 features. Object Restore v2.1 running in DB2 V8 NFM mode will only interface with Log Analysis Tool version 2.1 or higher.

Once Object Restore v2.1 is working in DB2 V8 NFM mode, several cycles of VR updates runs have worked with no errors, and all the functions of the product are working, you can free the Object Restore DB2 V7 packages and plans. The Object Restore DB2 V7 Versioning Repository can be dropped.

Migrating the VR from DB2 V7 to DB2 V8

This process migrates the DB2 V7 NFM Versioning Repository to the DB2 V8 NFM structure (SLR).

You must run a series of batch jobs that will migrate the DB2 V8 NFM SLR structure to the DB2 V9 NFM structure. During this migration process the DB2 Object Restore product is not available.

To prepare for the DB2 V9 NFM SLR migration you must complete the DB2 V8 NFM product migration process (if migrating from DB2 V7) or currently be at the DB2 V8 NFM support level. After applying the DB2 V9 PTF, you then perform the following migration process.

1. Ensure that you have Object Restore V2.1 installed on the subsystem that you are migrating.
2. Take image copies of the DB2 V7 Versioning Repository table spaces. Sample image copy JCL is not shipped with the product. You will not change anything until after you switch from enabling new function mode (ENFM) to new function mode (NFM). The Object Restore repository and binds for DB2 V7 are used through the DB2 migration process.
3. After you are in NFM, you must build the Versioning Repository for DB2 V8 (sample member AUO#DDL8).
4. Rebind with the Object Restore binds for DB2 V8 binds (sample members AUO#BKV8 and AUO#BPV8).
5. Migrate the data from the DB2 V7 Versioning Repository to the new one (sample member AUO13#V8). You should not delete the old Versioning Repository until the migration process is complete and there is no need for fallback.
6. After DB2 V8 NFM is running and the Object Restore data has been migrated to the new Versioning Repository, you may then delete the old Versioning Repository for DB2 V7.

Migrating the SLR from DB2 V8 to DB2 V9

This process migrates the DB2 V8 NFM schema level repository (also called the Versioning Repository) to the DB2 V9 NFM structure (SLR). At the DB2 V9 NFM support level Object Restore can share the schema level repository with the DB2 Recovery Expert for z/OS product.

You must be at the DB2 Object Restore V8 NFM schema level repository structure level before migrating to the DB2 V9 NFM structure level.

You must run a series of batch jobs that will migrate the DB2 V8 NFM SLR structure to the DB2 V9 NFM structure. During this migration process the DB2 Object Restore product is not available.

The migration process consists of 2 sample JCL members that are shipped in the sample data set. These new members are:

- AUOMIG91 – Adds new columns to the existing SLR objects.
- AUOMIG92 – Add new SLR objects and views on new DB2 V9 system catalog tables.

To prepare for the DB2 V9 NFM SLR migration you must complete the DB2 V8 NFM product migration process (if migrating from DB2 V7) or currently be at the DB2 V8 NFM support level. After applying the DB2 V9 PTF, you then perform the following migration process.

1. Ensure that you have Object Restore V2.1 installed on the subsystem that you are migrating.
2. Prior to applying the DB2 V9 support PTF, perform image copies of the DB2 V8 NFM schema level repository table spaces. Sample image copy JCL is not shipped with the product. You will not change anything until after you switch to new function mode (NFM). The Object Restore repository and binds for DB2 V8 are used through the DB2 migration process.
3. Prior to starting the SLR migration process, modify AUOMIG91 and AUOMIG92.
4. Modify and execute sample JCL member AUOMIG91. This member adds new columns to the existing SLR.
5. Modify and execute sample JCL member AUOMIG92. This member adds new indexes and tables.
6. This optional step is to run the REORG utility on SLR table spaces after the migration process is completed. This step is not required but it reformats table rows of updated tables and improves space management. Sample REORG JCL is not shipped with the product.
7. This optional step is to run a RUNSTATS on the SLR tables. Sample RUNSTATS JCL is not shipped with the product.
8. Update authorizations for new objects added to the SLR. If required, update authorizations to access new DB2 V9 system catalog objects.
9. Run product package and plan sample JCL members.
 - a. Run package bind sample JCL member AUO#BKV9
 - b. Run plan bind sample JCL member AUO#BPV9.

Important: New objects are being added to the SLR and new DB2 system catalog tables are being referenced. The product administrator must ensure that:

- object authorizations have been updated for all product users

- the SLR is properly backed up for recovery purposes

Edit SAUOSAMP members

The SAUOSAMP members that you must edit to perform data migration and a Versioning Repository upgrade are discussed here.

Editing SAUOSAMP member AUO12#13

Follow these steps to edit SAUOSAMP member AUO12#13.

1. Change all occurrences of MYSTOGROUP and RSSGUTIL to valid DB2 storage groups. An example statement:

```
USING STOGROUP MYSTOGROUP
```

2. Change the Primary and Secondary quantity values (PRIQTY and SECQTY) to values that are based on the results of the Space Calculator shipped with Object Restore. An example statement:

```
PRIQTY 100
```

```
SECQTY 100
```

Editing SAUOSAMP member AUO#RORG

Follow these steps to edit SAUOSAMP member AUO#RORG.

1. Change the STEPLIB DSN to the DB2 LOAD library in the following statement:

```
//STEPLIB DD DSN=DB2.LOAD.LIBRARIES,DISP=SHR
```

2. Change the SSID parameter to the subsystem ID against which you want to run in the following statement:

```
//AUOREORG EXEC PGM=DSNUTILB,REGION=8M,PARM=(SSID)
```

Editing SAUOSAMP member AUO13INX

Follow these steps to edit SAUOSAMP member AUO13INX.

1. Change all occurrences of the SSID parameter statement to the subsystem ID against which you want to run. An example statement://IXUPDT01 EXEC

```
PGM=DSNUTILB,PARM='SSID,USER.IBMVR'
```

2. Change all occurrences of the USER parameter to the user ID with which you want to run. An example statement:

```
//IXUPDT01 EXEC PGM=DSNUTILB,PARM='SSID,USER.IBMVR'
```

3. Change all occurrences of the STEPLIB DSN to the DB2 LOAD library. An example statement:

```
//STEPLIB DD DSN=DB2.LOAD.LIBRARIES,DISP=SHR
```

4. Ensure that you have a REGION SIZE statement in your job card.

Attention: You may encounter a return code = 4 from the AUO13INX job because of an empty index. This is not an error condition and you can continue with the upgrade process.

Editing SAUOSAMP member AUO13#V8

Follow these steps to edit SAUOSAMP member AUO13#V8.

1. Update the job control statements.
2. Change all occurrences of the SSID parameter statement to the subsystem ID against which you want to run.
3. Ensure that you have a REGION SIZE statement in your job card.

Editing SAUOSAMP member AUOMIG91

Follow these steps to edit SAUOSAMP member AUOMIG91.

1. Update the job control statements.
2. Change #SSID to the target DB2 version 9 subsystem ID.
3. Change #DSNTEP2 to the plan name for DSNTEP2 on your DB2 system.
4. Change #SDSNLOAD to the DB2 V9 load library.
5. Change #SDSNRUNL to the DB2 V9 library that contains DSNTEP2.

Editing SAUOSAMP member AUOMIG92

Follow these steps to edit SAUOSAMP member AUOMIG92.

1. Update the job control statements.
2. Change #SSID to the target DB2 version 9 subsystem ID.
3. Change #DSNTEP2 to the plan name for DSNTEP2 on your DB2 system.
4. Change #SDSNLOAD to the DB2 V9 load library.
5. Change #SDSNRUNL to the DB2 V9 library that contains DSNTEP2.
6. Change MYSTOGROUP to the storage group being used.

Chapter 10. Generated DDL

This appendix provides additional information about the DDL generated by DB2 Object Restore recovery functions.

Topics:

- “Object names”
- “Data recovery section”

Object names

When using DB2 Object Restore and targeting DB2 version 8 new function mode or higher subsystems, long object names will be generated in the object recovery DDL statements. The object names contained in DDL comments will be truncated to the DB2 version 7 object name size. Each truncated object name component that is truncated will be suffixed with a percent (%) character.

For example:

ABCEDFGH%

ABCEDFGHIJKLMNOPQR%

Data recovery section

This section of comments is placed at the end of the generated DDL. This section of comments is used by DB2 Object Restore to control generation of the data recovery JCL.

The Data Recovery DDL section has two formats. The formats are:

1. DB2 version 5, 6, 7, and 8 CM recovery.
2. DB2 version 8 NFM and higher recovery.

Data recovery section for DB2 version 5, 6, 7, and 8 CM

This data recovery section format is identified by the first text comment line containing the text:AU00001 - Data Recovery.

The following is a description of the formats of each data recovery comment statement. In column 7 is the 2-character statement identifier. The format of the statement differs for each unique statement identifier.

Database recovery information - ID: DB

This statement is generated for each recovered database.

Table 3. Database recovery information

Column	Length	Description
7	2	DB
14	8	Database Name
47	5	OBID for database version recovered

Table space recovery information - ID: TS

This statement is generated for each recovered table space.

Table 4. Table space recovery information

Column	Length	Description
7	2	TS
10	1	Single table recovery indicator (Y,N)
11	1	Image copy indicator. Y = IC recovery
12	1	Single table recovery type (A,B,C,N)
14	8	Database name
23	8	Table space name
33	3	Partition number
38	1	Table space type
40	1	Implicit TS generated by DB2, no TS DDL generated
41	1	Single table recovery, DDL suppression (Y,N)
42	1	Single table recovery, TS data recovery suppression (Y,N)
43	5	DBID for TS version being recovered
49	5	PSID for TS version being recovered
57	5	OBID for TS version being recovered
47	5	OBID for database version recovered

Table Space recovery image copy information - ID: SC

This statement is generated for each recovered table space.

Table 5. Table Space recovery image copy information

Column	Length	Description
7	2	SC
14	44	Image copy data set name. Blank if no IC.

Table space recovery image copy volume information - ID: VS

This statement is generated for each recovered table space.

Table 6. Table space recovery image copy volume information

Column	Length	Description
7	2	VS
14	20	First 20 bytes of volser list. Blank if no IC.

Table space recovery image copy timestamp - ID: IT

This statement is generated for each recovered table space.

Table 7. Table space recovery image copy timestamp

Column	Length	Description
7	2	IT
14	44	Image copy timestamp. Blank if no IC.

Table space recovery REORG timestamp - ID: RT

This statement is generated for each recovered table space. Only generated if TS REORG is detected.

Table 8. Table space recovery REORG timestamp

Column	Length	Description
7	2	RT
14	44	Timestamp of last TS REORG.

Table recovery information - ID: TB

This statement is generated for each recovered table.

Table 9. Table recovery information

Column	Length	Description
7	2	TB
10	1	Single table recovery indicator: <ul style="list-style-type: none">• Y = Single table recovery• N = Not single table recovery
11	1	Image copy indicator: <ul style="list-style-type: none">• Y = IC available for recovery• N = IC is not available for recovery
12	1	Single table recovery type: <ul style="list-style-type: none">• A = Recover table data from image copy• B = Recover table data using UNLOAD files• C = Recover dropped table from TS VSAM file
14	8	Table creator.
23	18	Table name.
43	5	OBID for TB version being recovered.

Table UNLOAD backup recovery information - ID: BD

This statement is generated for each table being recovered from a UNLOAD backup data set.

Table 10. Table UNLOAD backup recovery information

Column	Length	Description
7	2	BD

Table 10. Table UNLOAD backup recovery information (continued)

Column	Length	Description
10	56	UNLOAD backup data set name

Table UNLOAD controls recovery information - ID: PD

This statement is generated for each table being recovered from a UNLOAD backup data set.

Table 11. Table UNLOAD controls recovery information

Column	Length	Description
7	2	PD
10	56	UNLOAD control statement data set name.

Index recovery information - ID: IX

This statement is generated for each recovered index.

Table 12. Index recovery information

Column	Length	Description
7	2	IX
14	8	Index creator.
23	18	Index name.
42	1	Index recovery type.
43	5	OBID for index version being recovered.

Data recovery section for DB2 version 8 NFM and higher

This data recovery section format is identified by the first text comment line containing the text:AU00210 - Data Recovery.

The following is a description of the formats of each data recovery comment statement. Columns 1-2 contain dashes. Columns 5 and 68 contain asterisks. Columns 2-67 contain object data recovery information. The format of the object data recovery information area differs for each unique statement identifier.

Database recovery information - ID: DB

This statement is generated for each recovered database.

Table 13. Database recovery information

Column	Length	Description
7	2	DB
10	1	N
12	8	Database name.
21	5	OBID for database version recovered.

Table space recovery information - ID: TS

This statement is generated for each recovered table space.

Table 14. Table space recovery information

Column	Length	Description
7	2	TS or TI
10	1	N
12	1	Single table recovery indicator: <ul style="list-style-type: none">• Y = Single table recovery• N = Not single table recovery
13	1	Image copy indicator: <ul style="list-style-type: none">• Y = Image copy available for recovery• N = Image copy not available
14	1	Single table recovery type: <ul style="list-style-type: none">• A = Recovery from image copy• B = Recovery from UNLOAD data sets• C = Recover dropped table in TS VSAM file
16	8	Database name.
25	8	Table space name.
34	4	Partition number.
40	1	Table space type.
41	1	Y = Implicit TS created by DB2.
42	1	Y = TS DDL generation suppressed.
46	5	DBID for TS version being recovered.
52	5	PSID for TS version being recovered.
58	5	OBID for TS version being recovered.

Table space recovery image copy information - ID: IC

This statement is generated for each recovered table space.

Table 15. Table space recovery image copy information

Column	Length	Description
7	2	IC
10	1	D
12	1	Image copy type.
13	1	Y = Image copy available.
15	44	Image copy data set name. Blank if no IC.

Table space recovery image copy volume information - ID: IV

This statement is generated for each recovered table space.

Table 16. Table space recovery image copy volume information

Column	Length	Description
7	2	IV
10	1	D
12	20	First 20 bytes of volser list. Blank if no IC.

Table space recovery image copy timestamp - ID: IT

This statement is generated for each recovered table space.

Table 17. Table space recovery image copy timestamp

Column	Length	Description
7	2	IT
10	1	T
12	26	Image copy timestamp. Blank if no IC.
39	26	Last TS REORG timestamp. Blank if no REORG.

Table recovery information - ID: TB

This statement is generated for each recovered table.

Table 18. Table recovery information

Column	Length	Description
7	2	TB
9	1	Record Type: <ul style="list-style-type: none">• N = Table recovery information
10	1	Y = Single table recovery.
11	1	Single table recovery type: <ul style="list-style-type: none">• A = Recover table data from image copy• B = Recover table data using UNLOAD files• C = Recover dropped table from TS VSAM file
12	5	OBID for TB version being recovered.
17	54	Table creator.name.
71	1	X = table name continued on next TB statement.

Table UNLOAD backup recovery information - ID: TB

This statement is generated for each table being recovered from an UNLOAD backup data set.

Table 19. Table UNLOAD backup recovery information

Column	Length	Description
7	2	TB

Table 19. Table UNLOAD backup recovery information (continued)

Column	Length	Description
9	1	Record Type: • B = UNLOAD table data backup DSName
10	1	Y = Single table recovery.
11	1	Single table recovery type: • A = Recover table data from image copy • B = Recover table data using UNLOAD files • C = Recover dropped table from TS VSAM file
12	5	OBID for TB version being recovered.
17	44	UNLOAD backup data set name

Table UNLOAD controls recovery information - ID: TB

This statement is generated for each table being recovered from an UNLOAD backup data set.

Table 20. Table UNLOAD controls recovery information

Column	Length	Description
7	2	TB
9	1	Record Type: • B = UNLOAD table data backup DSName
10	1	Y = Single table recovery.
11	1	Single table recovery type: • A = Recover table data from image copy • B = Recover table data using UNLOAD files • C = Recover dropped table from TS VSAM file
12	5	OBID for TB version being recovered.
17	44	UNLOAD backup data set name

Index recovery information - ID: IX

This statement is generated for each recovered index.

Table 21. Index recovery information

Column	Length	Description
7	2	IX
10	1	N
11	5	OBID for index version being recovered
17	54	Index creator.name
71	1	X = Index name continued on next IX statement.

Chapter 11. Use Object Restore to copy data

Follow these steps to use DB2 Object Restore to copy data from one DB2 subsystem to another.

Topics:

- “Restoring data without using log analysis”
- “Restoring data using log analysis” on page 128

Restoring data without using log analysis

Follow these steps to restore data to a different subsystem without using log analysis.

On the source DB2 subsystem:

Turn off the point in time recovery using **User Recovery Options (UR) > User Recovery Generation Options (1)** and deselecting **Point in Time Recovery**.

This prevents generating SQL and execution JCL from log analysis.

If the objects on the target DB2 subsystem have been dropped:

1. Object Restore must be installed and configured on both the source and the target DB2 subsystems.
2. Select objects on the source systems that are to be copied to the target system.
At this point DDL is generated.
3. Perform the following steps:
 - a. Execute the DDL on the target subsystem. (Use Option 2.)
 - b. When the **Generate recovery job to file** screen appears, cancel the JCL generation by pressing F3.
 - c. Press F3 and enter **Y** to save the DDL execution results to a data set (PDS member).

On the target DB2 subsystem:

Turn off the point in time recovery using **User Recovery Options (UR) > User Recovery Generation Options (1)** and deselecting **Point in Time Recovery**. This prevents generating SQL and execution JCL from log analysis.

4. Select **Execute Saved DDL (ES)** from the main menu.
5. Type the PDS information for the saved DDL from Step 3c.
6. Execute the DDL. If the DDL was executed on the target subsystem (Step 3a option 2), then the DDL will be all comments. However, you still must execute it. The execution process scans the object data recovery section (located at the bottom of the generated DDL) to build a set of recovery JCL. The generated JCL contains DSN1COPY SYSXLAT statements with the proper OBID values.
7. Execute the generated JCL.

If the target objects are not dropped:

Use all of the same procedures listed previously, except that you must substitute the following steps 3a-1 and 3a-2 for Step 3a:

- 3a-1** Type **COMMENT ALL** on the DDL display screen command line to convert the generated DDL to comments.

- 3a-2** After the DDL is converted to comments, execute it (using Option 1 or 2). The commented DDL execution results in no DDL execution errors and allows the DDL to be saved. Continue with Step 3b.

Restoring data using log analysis

Follow these steps to restore data to a different subsystem using log analysis.

On the source DB2 subsystem:

Turn on the point in time recovery using **User Recovery Options (UR) > User Recovery Generation Options (1)** and selecting **Point in Time Recovery**.

This generates SQL and execution JCL from log analysis.

If the objects on the target DB2 subsystem have been dropped:

1. Object Restore must be installed and configured on both the source and the target DB2 subsystems.
2. Select objects on the source systems that are to be copied to the target system. At this point DDL is generated.
3. Perform the following steps:
 - a. Execute the DDL on the target subsystem. (Use Option 2.)
 - b. You must modify the generated JCL to execute the SQL generation steps only.
 - 1) Record the SQLIN dataset name listed in step EXECSQL.
 - 2) Remove all jobs steps except for those steps starting with LASR*.
 - 3) Execute the JCL. The SQL is built and saved to the SQLIN dataset.
 - c. Save the DDL execution results to a data set (PDS member).

On the target DB2 subsystem:

Turn off the point in time recovery using **User Recovery Options (UR) > User Recovery Generation Options (1)** and deselecting **Point in Time Recovery**. This prevents generating SQL and execution JCL from log analysis.

4. Select **Execute Saved DDL (ES)** from the main menu.
5. Type the PDS information for the saved DDL from Step 3c.
6. Execute the DDL. If the DDL was executed on the target subsystem (Step 3a option 2), then the DDL will be all comments. However, you still must execute it. The execution process scans the object data recovery section (located at the bottom of the generated DDL) to build a set of recovery JCL. The generated JCL contains DSN1COPY SYSXLAT statements with the proper OBID values.
7. Execute the generated JCL.
8. Execute the SQLIN dataset recorded in Step 3.

If the target objects are not dropped:

Use all of the same procedures listed previously, except that you must substitute the following steps 3a-1 and 3a-2 for Step 3a:

- 3a-1** Type COMMENT ALL on the DDL display screen command line to convert the generated DDL to comments.
- 3a-2** After the DDL is converted to comments, execute it (using Option 1 or 2). The commented DDL execution results in no DDL execution errors and allows the DDL to be saved. Continue with Step 3b.

Chapter 12. Space calculations in DB2 V7

When using DB2 V7, the DDL to build the required objects requires some calculations for space prior to creating the objects. This is not necessary if you are using DB2 V8 or higher.

DB2 objects (DATABASE, TABLE SPACE, etc.) are built in DB2 during DB2 Object Restore installation to store the DB2 Object Restore Versioning Repository data collected by the AUOVRUPD job. The DDL to build these objects requires some calculations for space prior to creating the objects. In particular, the table spaces RSDBUTIL.RSTSRD01 and databasename.tablespace will be used to store several DB2 tables for the Versioning Repository. The size of these table spaces is determined at install time, based on certain estimates provided by the installer. Coincidental to these calculations are the space calculations necessary for the indexspaces for the accompanying Versioning Repository indexes.

Below is a discussion of the sizing issues related to the table spaces mentioned above and their corresponding indexspaces.

As with all DB2 objects, the accuracy of the provided estimates dictates the degree to which the DB2 Object Restore objects are successfully space-managed. As with all DB2 objects, these sizes can be altered as new information is made available for space management.

Note: These objects require the same DBA administration required by all DB2 objects for optimal management.

The following discussion and guidelines are intended as an installation starting point in the space management of the DB2 Object Restore objects to be created in the installation of the product.

Topics:

- “Sizing the RSDBUTIL.RSTSRD01 table space”
- “Sizing the indexspaces” on page 131

Sizing the RSDBUTIL.RSTSRD01 table space

There are a number of tables in the RSDBUTIL.RSTSRD01 table space. Each table stores the information required to restore a specific type of DB2 object. The AUOVRUPD job populates these tables with information. For example, a row is stored in the SYSDATABASE table for each occurrence of a database in a DB2 catalog table SYSDATABASE when the AUOVRUPD job is run. A row is stored in the SYSTABLESPACE table for each occurrence of a table space in the DB2 catalog table SYSTABLESPACE at the time the AUOVRUPD job is run. This is also true for all of the remaining DB2 Object Restore tables located in RSDBUTIL.RSTSRD01, that is, a row is created in a specific table for each occurrence of a correlating DB2 object.

The installer should allow for the appropriate number of bytes of data per row in each DB2 Object Restore table, based on the volume of data in the DB2 catalog, when calculating space for this table space. The installer should try to place all data in the PRIQTY allocation, with a SECQTY equal to at least 20% of the PRIQTY. Free space considerations should be made when defining the RSDBUTIL.RSTSRD01 table space, based on expected growth of the volume of

data in the DB2 catalog. The final calculation for PRIQTY should also take into account the free pages, pageset header page, spacemap page (or pages), and dictionary pages if data compression is employed.

The following table may help you determine the PRIQTY and SECQTY size for the RSDBUTIL.RSTSRD01 table space. The table below shows the maximum row length and the maximum number of rows that 4K holds for each DB2 table. The information is based on the fact that 1K = 1024 bytes, and the expectation that the table space will employ 4K pages. In all cases, you should make adjustments for page overhead, (such as page header data), and anticipated free space requirements. In all cases, changes based on site standards should be incorporated into this space calculation.

Table 22. Table space calculation table

Table name	Maximum row length	Maximum number of rows in 4K
SYSAUXRELS	151	27
SYSCHECKS	3999	1
SYSCOLAUTH	121	33
SYSCOLUMNS	739	5
SYSCOPY	1958	2
SYSDATABASE	92	44
SYSDATATYPES	360	11
SYSDBAUTH	68	60
SYSDBRM	167	24
SYSFIELDS	1881	2
SYSFORIGNKEYS	77	53
SYSINDEXES	137	29
SYSINDEXPART	601	6
SYSKEYS	72	56
SYSLOADS	53	77
SYSPACKAGE	257	15
SYSPACKAUTH	88	46
SYSPACKDEP	88	46
SYSPACKLIST	71	57
SYSPARMS	162	25
SYSPKSYSTEM	88	46
SYSPLAN	98	41
SYSPLANAUTH	45	91
SYSPLANDEP	46	89
SYSPLSYSTEM	34	120
SYS PROCEDURES	3375	1
SYSRELS	134	30
SYSRESAUTH	63	65
SYSROUTINES	1901	2
SYSSTOGROUP	61	67

Table 22. Table space calculation table (continued)

Table name	Maximum row length	Maximum number of rows in 4K
SYSSYNONYMS	93	44
SYSTABAUTH	140	29
SYSTABLEPART	619	6
SYSTABLES	418	9
SYSTABLESPACE	107	38
SYSTRIGGERS	3545	1
SYSUSERAUTH	54	75
SYSVIEWDEP	86	47
SYSVIEWS	306	13
SYSVOLUMES	41	99

Notes:

1. The tables you are sizing here are your tables, not the system tables.
2. For each table, calculate the minimum number of 1K blocks you must allocate in the CREATE TABLESPACE PRIQTY parm using the following calculation and rounding up:

$$(\text{number of expected rows}) / (\text{Max Number of Rows in 4K}) \times 4$$
3. Several of these tables contain substantial VARCHAR data. If each VARCHAR column reaches maximum size, 4K will hold the maximum number of rows that is listed in the table. If the installer has knowledge that the VARCHAR columns will not reach maximum size, adjustments should be made accordingly. These adjustments may dramatically increase the estimate of the number of rows per 4K page, and change the subsequent space requirements for the table.

Sizing the indexespaces

There are a number of indexes for all of these tables, and consequently indexespaces to size. The indexes and their key sizes (plus RID) are displayed in the table below.

Table 23. Index space calculation table

Index name	KEY LENGTH plus RID (TYPE 2 IDX)
SYSAUXRELS_IX	31
SYSAUXRELS_IX2	41
SYSAUXRELS_IX3	31
SYSAUXRELS_IX4	41
SYSCHECKS_IX	59
SYSCOLAUTH_IX	67
SYSCOLAUTH_IX2	41
SYSCOLAUTH_IX3	57
SYSCOLUMNS_IX	59
SYSCOLUMNS_IX2	41

Table 23. Index space calculation table (continued)

Index name	KEY LENGTH plus RID (TYPE 2 IDX)
SYSCOLUMNS_IX3	51
SYSCOLUMNS_IX4	53
SYSCOLUMNS_IX5	41
SYSCOPY_IX	37
SYSCOPY_IX3	36
SYSCOPY_IX4	38
SYSCOPY_IX5	21
SYSDATABASE_IX	23
SYSDATABASE_IX2	33
SYSDATABASE_IX3	13
SYSDATAT_IX	41
SYSDATAT_IX2	9
SYSDATAT_IX3	33
SYSDBAUTH_IX	31
SYSDBAUTH_IX2	31
SYSDBRM_IX	13
SYSDBRM_IX2	21
SYSFIELDS_IX	41
SYSFK_IX1	49
SYSFK_IX2	41
SYSINDEXES_IX	41
SYSINDEXES_IX2	41
SYSINDEXES_IX3	31
SYSINDEXPART_IX	43
SYSINDEXPART_IX2	41
SYSKEYS_IX	59
SYSKEYS_IX2	41
SYSLOADS_IX	7
SYSPACKAGE_IX	55
SYSPACKAGE_IX2	47
SYSPACKAGE_IX3	23
SYSPACKAUTH_IX1	55
SYSPACKAUTH_IX2	63
SYSPACKDEP_IX1	55
SYSPACKDEP_IX2	32
SYSPACKDEP_IX3	81
SYSPACKDEP_IX4	47
SYSPACKLIST_IX1	13
SYSPACKLIST_IX2	47
SYSPACKLIST_IX3	55

Table 23. Index space calculation table (continued)

Index name	KEY LENGTH plus RID (TYPE 2 IDX)
SYSPACKLIST_IX4	23
SYSPARMS_IX	19
SYSPARMS_IX2	41
SYSPARMS_IX3	20
SYSPKSYSTEM_IX	55
SYSPLAN_IX	13
SYSPLAN_IX2	21
SYSPLANAUTH_IX	21
SYSPLANAUTH_IX2	29
SYSPLANDEP_IX	32
SYSPLANDEP_IX2	31
SYSPLANDEP_IX3	13
SYSPLSYSTEM_IX	13
SYSPROCEDURES_IX	23
SYSPROCEDURES_IX2	41
SYSPROCEDURES_IX3	33
SYSRELS_IX	41
SYSRELS_IX2	43
SYSRESAUTH_IX	40
SYSRESAUTH_IX2	32
SYSRESAUTH_IX3	58
SYSRESAUTH_IX4	24
SYSROUTINES_IX	32
SYSROUTINES_IX2	41
SYSROUTINES_IX3	20
SYSROUTINES_IX4	19
SYSROUTINES_IX5	33
SYSSTOGROUP_IX	23
SYSSTOGROUP_IX2	13
SYSSYNONYMS_IX	41
SYSSYNONYMS_IX2	41
SYSSYNONYMS_IX3	31
SYSTABAUTH_IX	49
SYSTABAUTH_IX2	41
SYSTABLEPART_IX	33
SYSTABLEPART_IX2	31
SYSTABLES_IX	41
SYSTABLES_IX2	42
SYSTABLES_IX3	42
SYSTABLES_IX4	42

Table 23. Index space calculation table (continued)

Index name	KEY LENGTH plus RID (TYPE 2 IDX)
SYSTABLES_IX5	32
SYSTABLES_IX6	32
SYSTABLES_IX7	48
SYSTABLES_IX8	41
SYSTABLES_IX9	21
SYSTABLESPACE_IX	31
SYSTABLESPACE_IX2	23
SYSTRIGGERS_IX1	41
SYSTRIGGERS_IX2	67
SYSTRIGGERS_IX3	31
SYSTRIGGERS_IX4	49
SYSUSERAUTH_IX	21
SYSUSERAUTH_IX2	13
SYSVIEWDEP_IX	41
SYSVIEWDEP_IX2	41
SYSVIEWS_IX	43
SYSVIEWS_IX2	41
SYSVOLUMES_IX	37
SYSVOLUMES_IX2	23

Each index is UNIQUE so there will be one entry in the index for each row in the associated table. You can calculate the number of 1K blocks allocated in the PRIQTY for each index as follows:

$$(\text{number of rows}) \times (\text{KEY LENGTH plus RID}) = (X)$$

The number of 1K blocks in PRIQTY would then be the result of X divided by 1024, with the result rounded up. The final determination for PRIQTY for each index must include consideration for index overhead (such as pageset header page).

Chapter 13. DB2 Object Restore messages

All messages generated by DB2 Object Restore have a severity code printed as the last character of the message ID. The severity codes are described in the following table.

Table 24. Message severity codes

Severity Code	Description
I	Information only. No user action required.
W	Warning message. Results may not be as expected.
E	Error message. Some may be user-correctable, read the User Response to determine the course of action.

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Explanation:

License and copyright information.

User response:

None required.

AUO002E A valid DB2 subsystem is required.

Explanation:

You entered an invalid DB2 subsystem.

User response:

Please enter a valid DB2 subsystem.

AUO004E User is not authorized to enter DB2 Object Restore.

Explanation:

User does not have the authority to use Object Restore.

User response:

Verify the user's authority with your system administrator.

AUO005E Invalid line command entered.

Explanation:

You entered an invalid line command.

User response:

Enter a valid line command.

AUO006E Display Dropped only indicator is invalid. Enter a "Y" to display only dropped objects or an "N" to display all objects.

Explanation:

Display Dropped only indicator is invalid.

User response:

Enter a "Y" to display only dropped objects or an "N" to display all objects.

AUO007W No data matches the specified like criteria.

Explanation:

No data matches the specified like criteria.

User response:

Change your like criteria.

AUO008E Invalid response - Please enter a "Y" to generate the DDL or an "N" to bypass this object.

Explanation:

You entered an invalid response.

User response:

Enter a "Y" to generate the DDL or an "N" to bypass this object.

AUO009E Invalid command - The command you entered is not valid for this screen.

Explanation:

You entered an invalid line command.

User response:

Enter a valid line command.

AUO010E Invalid Response - Please enter a "1" to execute the DDL on DB2 subsystem & SSID now, "2" to execute the DDL on another DB2 subsystem, "3" to save the DDL to a file or "4" to cancel out of DDL execution.

Explanation:

You entered an invalid response.

User response:

Enter a valid response.

AUO011E Invalid Subsystem - Please enter a valid DB2 subsystem on which you want to execute the generated DDL.

Explanation:

You entered an invalid DB2 subsystem.

User response:

Enter a valid DB2 subsystem.

AUO012E Invalid Subsystem - The subsystem *ssid* Object Restore control record was not found in the Control File. Enter option "S" from Object Restore main menu and enter options 1 and 2 for SSID *ssid*.

Explanation:

The subsystem you entered is not found in the control file.

User response:

Follow the instructions in the message to correct the situation.

AUO013E Dataset not found - Dataset *dsname* was not found in the MVS catalog. Please enter a valid dataset that is cataloged.

Explanation:

The data set you entered was not found in the MVS catalog.

User response:

Enter a valid dataset that is cataloged.

AUO014E A problem was encountered in allocating the files necessary for ISPF file tailoring. Please try again.

Explanation:

A problem was encountered in allocating the files necessary for ISPF file tailoring. This problem is often caused because you have entered an invalid work file

device type or you have one or more of the 3 ISPF file tailoring services DDNames preallocated to other files.

User response:

Ensure that you do not have:

- ISPF FILE DDName preallocated to another data set.
- An incorrect device name entered for ISPF file tailoring work files in the product setup.

After you have made any necessary corrections, retry the operation.

AUO015I DDL was successfully saved in dataset *dsname*

Explanation:

Your DDL was successfully saved.

User response:

None required.

AUO016W Some tablespaces / partitions are not recoverable. The Objects Generated report at the top of the list will show which spaces could not be recovered.

Explanation:

Some tablespaces / partitions are not recoverable. The Objects Generated report at the top of the list will show which spaces could not be recovered.

User response:

None required.

AUO017E Enter Required Field - A fully qualified dataset name is required to save the DDL to a file.

Explanation:

You did not enter a fully qualified data set name.

User response:

Enter a fully qualified data set name.

AUO018E Invalid Subsystem - The subsystem *ssid* Object Restore control record was not found in the Control File. Enter option "S" from Object Restore main menu and enter option 2 for SSID *ssid*.

Explanation:

The subsystem you entered is not found in the control file.

User response:

Follow the instructions in the message to correct the situation.

AUO019E Invalid Subsystem - The subsystem *ssid* Control Record was not set up in the Control File. Enter option "S" from Object Restore main menu and enter option 1 for SSID *ssid*

Explanation:

The subsystem you entered is not found in the control file.

User response:

Follow the instructions in the message to correct the situation.

AUO020E Invalid Value - Please enter "YES" or "NO"

Explanation:

You entered an invalid value.

User response:

Enter "YES" or "NO".

AUO021E Invalid Value - Please enter "ADD", "FULL", or "NO"

Explanation:

You entered an invalid value.

User response:

Enter "ADD", "FULL", or "NO".

AUO022E Required Value - Field must not be blank

Explanation:

You failed to complete a required field.

User response:

Verify that you have completed all required fields.

AUO023E Invalid Return Code of *code*, Reason Code *code* returned accessing the Control File. Please make sure you are authorized to update the control file.

Explanation:

You do not have the authority to access the control file.

User response:

Ensure you are authorized to update the control file.

AUO024I Changes Saved

Explanation:

Changes made to profile have been saved.

User response:

None required.

AUO025W Recovery Data Capture Option Not Activated. Recovery Not Allowed.

Explanation:

The Recovery Data Capture option for the object you attempted to recover is not selected.

User response:

None required.

AUO026I JCL was successfully saved in dataset *dsname*

Explanation:

Your JCL was successfully saved in the specified data set.

User response:

None required.

AUO027I Statements successfully saved in dataset *dsname*

Explanation:

Your statements were successfully saved in the specified data set.

User response:

None required.

AUO028I Selected Plan contains no packages.

Explanation:

The selected Plan contains no packages.

User response:

None required.

AUO029I Selected Plan contains no DBRMs

Explanation:

The selected Plan contains no DBRMs.

User response:

None required.

AUO030I Log Analysis Tool Interface Controls Saved

Explanation:

You saved the Log Analysis Tool Interface Controls.

User response:

AUO031E • AUO042E

None required.

AUO031E File open error

Explanation:

A file open failed.

User response:

Contact IBM Customer Support.

AUO032E Allocation Error - The AUOLFILE DD is already allocated and cannot be deallocated - Process not completed

Explanation:

The AUOLFILE DD is already allocated and cannot be deallocated.

User response:

Contact IBM Customer Support.

AUO033E Field Required - The dataset entered is a partitioned dataset and the member name is required

Explanation:

You entered a partitioned data set and the member name is required

User response:

Enter the member name.

AUO034E Allocation Error - Error allocating AUOLFILE DD - Process not completed

Explanation:

There was an error allocating AUOLFILE DD.

User response:

Contact IBM Customer Support.

AUO035E Allocation Error - Error encountered allocating AUOBX01 DD

Explanation:

There was an error encountered allocating AUOBX01 DD.

User response:

Contact IBM Customer Support.

AUO036E Allocation Error - Error encountered allocating AUOBR01 DD

Explanation:

There was an error encountered allocating AUOBR01 DD.

User response:

Contact IBM Customer Support.

AUO037E Error encountered in TSO/E environment initialization

Explanation:

There was an error encountered in TSO/E environment initialization.

User response:

Contact IBM Customer Support.

AUO038E Error encountered in TSO/E service

Explanation:

There was an error encountered in TSO/E service.

User response:

Contact IBM Customer Support.

AUO039E Error encountered in TSO/E environment termination

Explanation:

There was an error encountered in TSO/E environment termination.

User response:

Contact IBM Customer Support.

AUO040I All binds completed successfully.

Explanation:

All binds completed successfully.

User response:

None required.

AUO041E Bind errors detected, one or more binds not successful

Explanation:

There were some bind errors detected; one or more binds were not successful.

User response:

Contact IBM Customer Support.

AUO042E Dataset not found - Dataset was not found in the MVS catalog. Please enter a valid dataset that is cataloged.

Explanation:

You entered a data set that was not found in the MVS catalog.

User response:

Enter a valid dataset that is cataloged.

AUO043E Member specified for sequential dataset
Explanation:

You specified a member for sequential dataset.

User response:

Remove the member name and try again.

AUO044E Volume not mounted
Explanation:

A required or requested volume is not mounted.

User response:

Contact your system administrator.

AUO045E Member not found in dataset
Explanation:

The specified member was not found in the data set.

User response:

Verify the accuracy of the member name.

AUO046E Catalog error occurred during dataset verification
Explanation:

A catalog error occurred during dataset verification.

User response:

Contact IBM Customer Support.

AUO047E Member missing for Partitioned Data Set
Explanation:

A member of the PDS is missing.

User response:

Contact IBM Customer Support.

AUO048E Unable to allocate DB2 Control File
Explanation:

Object Restore was unable to allocate the DB2 Control File.

User response:

Contact IBM Customer Support.

AUO049E Error encountered invoking requested command
Explanation:

There was an error encountered invoking the requested command.

User response:

Contact IBM Customer Support.

AUO050E Recursive call to DB2 Object Restore is not allowed
Explanation:

You attempted to make a recursive call to Object Restore using the JUMP command.

User response:

You must use the PF3 key to return to Object Restore.

AUO051E DDL Dataset LRECL is not 80
Explanation:

You entered a data set that has a record length not equal to 80.

User response:

Enter a different data set that has a record length equal to 80.

AUO052E Log Analysis interface data set LRECL is not 200
Explanation:

You entered a data set that has a record length not equal to 200.

User response:

Enter a different data set that has a record length equal to 200.

AUO053I Table spaces not recoverable, JCL not generated
Explanation:

None of the table spaces being recovered have any image copy information.

User response:

None required.

AUO054E SQLID not valid for user
Explanation:

The specified SQLID is not valid for the user or the user is not authorized to use the specified SQLID.

User response:

Ensure that proper authorizations exist.

AUO055I DB2 Object Restore does not support the recovery of data for a single table contained in a segmented table space containing multiple tables. Data recovery JCL will not be generated for the selected table.

Explanation:

Explanation in message.

User response:

None required.

AUO056E Log Analysis Interface dataset LRECL is not 80

Explanation:

Log Analysis Tool Parameter Control data set LRECL is not 80. This data set must be defined with LRECL=80.

User response:

Redefine the data set with an LRECL=80.

AUO057E Object type not available on DB2 Version 5

Explanation:

This DB2 object type is not available on DB2 Version 5.

User response:

None required.

AUO058E Table Edit feature not available

Explanation:

The Table Edit feature is not available.

User response:

None required.

AUO059E Dropped table cannot be edited

Explanation:

A dropped table cannot be edited.

User response:

You can recover the object to edit it.

AUO060E Select and Drop cannot be requested at same time

Explanation:

You cannot request Select and Drop at the same time.

User response:

Remove one of the commands and try again.

AUO061E Command not allowed when Select or Drop requested

Explanation:

You entered a line command that cannot be used when the Select or Drop commands are entered.

User response:

Either remove the Select and Drop commands and enter the line command again or do not attempt to use the line command.

AUO062W One or more tables were selected for recovery that contain columns added by ALTER TABLE ADD. A REORG was not detected after the last table alter and before the recovery image copy. After the data recovery JCL is run the table data may not be accessible.

Explanation:

Explanation in message.

User response:

None required.

AUO063I Database entry colors are: Turquoise = Single version - object not dropped, Yellow = Multiple versions - object not dropped, Red = Object is dropped.

Explanation:

Explanation in message.

User response:

None required.

AUO064E Implicitly defined table spaces cannot be selected for recovery.

Explanation:

You selected an implicitly defined table space for recovery.

User response:

None required.

AUO065E Implicitly defined table spaces cannot be selected for drop.

Explanation:

You selected an implicitly defined table space to be dropped.

User response:

None required.

AUO066W One or more tables were selected for recovery that contain columns added by ALTER TABLE ADD. DB2 Object Restore could not locate a registered image copy to recover data from.

Explanation:

Explanation in message.

User response:

None required.

AUO067E Image copy already exists in SYSIBM.SYSCOPY.

Explanation:

Explanation in message.

User response:

Select a different image copy and continue.

AUO068E Backup version of image copy does not exist.

Explanation:

Explanation in message.

User response:

Select a different image copy and continue.

AUO069I Requested Image Copy copied to SYSIBM.SYSCOPY

Explanation:

Explanation in message.

User response:

None required.

AUO070E Option only available with DB2 Version 8 New Function Mode

Explanation:

Explanation in message.

User response:

None required.

AUO071E The data recovery JCL cannot be generated. One or more of the objects being recovered are not defined.

Explanation:

Explanation in message.

User response:

None required.

AUO072W All of the generated DDL has been converted to comments. To ensure that the proper data recovery JCL is generated all of the generated DDL must be successfully executed. If one or more objects do not exist JCL may not be generated or it may be generated improperly.

Explanation:

Explanation in message.

User response:

None required.

AUO073E Invalid SQLID length for DB2 version. SQLID length must be 1 to 8 characters in length.

Explanation:

Explanation in message.

User response:

Enter a valid SQLID.

AUO074I Data set name of selected image copy updated

Explanation:

Explanation in message.

User response:

None required.

AUO075E Single table recovery of tables containing LOBS from image copies or UNLOAD backups is not currently supported.

Explanation:

Explanation in message.

User response:

None required.

AUO076I The DB2 system catalog has been converted to UNICODE and DSNHDECP new function mode indicator is set to N. This condition can impact generated recoveries by limiting DDL/SQL generation to compatibility mode syntax.

Explanation:

Explanation in message.

User response:

None required.

AUO077I DSNHDECP new function mode indicator is set to Y for a DB2 subsystem executing in compatibility mode or enabling new function mode. This condition may cause this product to generate inaccurate DDL, SQL, or recovery JCL.

Explanation:

Explanation in message.

User response:

None required.

AUO078I DB2 Object Restore does not support the recovery of data for a single table contained in a segmented range partitioned table space. Data recovery JCL will not be generated for the selected table.

Explanation:

Explanation in message.

User response:

None required.

AUO079E Option only available with DB2 Version 9 New Function Mode

Explanation:

This option is only available when the DB2 subsystem version is DB2 version 9 New Function Mode.

User response:

None required.

AUO801E AN INVALID SQLCODE OF *code* WAS ENCOUNTERED. *messages*.

Explanation:

An invalid SQLCODE was encountered.

User response:

If you cannot resolve this issue using the messages displayed, contact IBM Customer Support.

AUO802E AN INVALID RETURN CODE OF *code* WAS ENCOUNTERED ON *function* FUNCTION. THE ERROR MESSAGE TEXT FOLLOWS: *messages*

Explanation:

An invalid return code was encountered.

User response:

If you cannot resolve this issue using the messages displayed, contact IBM Customer Support.

AUO803E THE FIRST CHARACTER OF THE COMMAND IS NOT A DASH. CORRECT THE SYNTAX OF THE DB2 COMMAND AND RESUBMIT.

Explanation:

You entered a command with using a dash as the first character.

User response:

Correct the syntax of the DB2 command and resubmit.

AUO901E Dataset not found

Explanation:

The Rocket Software default load library could not be located.

User response:

Contact IBM Customer Support.

AUO902E No DB2 system name

Explanation:

A DB2 subsystem ID has to be entered for processing.

User response:

Enter a valid DB2 subsystem name.

AUO903E Dataset not found

Explanation:

The default GDG base dataset name could not be located.

User response:

Ensure that GDG base dataset name is correct and that it exists.

AUO904E VSAM open error

Explanation:

The specified dataset could not be opened for I/O.

User response:

Contact IBM Customer Support.

AUO905E VSAM read error

Explanation:

An unexpected return code from VSAM was encountered while doing a read of the control file. RC=*code*.

User response:

Contact IBM Customer Support.

AUO906I Record updated

Explanation:

The control file record for DB2 subsystem ssid has been successfully updated.

User response:

None required.

AUO907E Error in VSAM update

Explanation:

An unexpected return code from VSAM was encountered while doing an update operation of the control file. RC1=*code* RC2=*code*

User response:

Contact IBM Customer Support.

AUO908I Record added

Explanation:

The control file record for DB2 subsystem *ssid* has been successfully added.

User response:

None required.

AUO909E Invalid value

Explanation:

The range of valid values is 1 to 3 and 5.

User response:

Enter a valid value.

AUO910E Error in VSAM add

Explanation:

An unexpected return code from VSAM was encountered while doing an add operation to the control file. RC1=*code* RC2=*code*

User response:

Contact IBM Customer Support.

AUO911E No Find string specified

Explanation:

The (F)IND command was entered but no parameters were specified.

User response:

Enter a FIND parameter.

AUO912I Find string not found

Explanation:

The requested find string was not found.

User response:

None required.

AUO913E Invalid Primary Command Entered

Explanation:

An unknown primary command has been entered.

User response:

Enter a valid primary command.

AUO914E Unknown Column Entered

Explanation:

An unknown column was specified using the SORT command.

User response:

Verify that you correctly typed the name of the column or select another column.

AUO915E Column Unsortable

Explanation:

SORT is not supported for the specified column.

User response:

You must select a different column.

AUO916E Column Not Specified

Explanation:

Sort column not entered. Column name or number must be specified.

User response:

Contact IBM Customer Support.

AUO920E File tailor error

Explanation:

File tailoring open returned a file tailoring already in progress condition.

User response:

Contact IBM Customer Support.

AUO921E File tailor error

Explanation:

File tailoring open returned the output file already in use condition -- ENQ failed.

User response:

Contact IBM Customer Support.

AUO922E File tailor error

Explanation:

File tailoring open returned the skeletal file or output file not allocated condition.

User response:

Contact IBM Customer Support.

AUO923E File tailor error

Explanation:

File tailoring open returned a severe error condition.

User response:

Contact IBM Customer Support.

AUO924E File tailor error

Explanation:

File tailoring open returned an unknown code -- severe error.

User response:

Contact IBM Customer Support.

AUO925E File tailor error

Explanation:

File tailoring close returned a file not open condition -- severe error.

User response:

Contact IBM Customer Support.

AUO926E File tailor error

Explanation:

File tailoring close returned an output file in use condition.

User response:

Contact IBM Customer Support.

AUO927E File tailor error

Explanation:

File tailoring close returned a skeletal file or output file not allocated condition.

User response:

Contact IBM Customer Support.

AUO928E File tailor error

Explanation:

File tailoring close returned a severe error.

User response:

Contact IBM Customer Support.

AUO929E File tailor error

Explanation:

File tailoring close returned an unknown code -- severe error.

User response:

Contact IBM Customer Support.

AUO930E File tailor error

Explanation:

File tailoring close returned a output member exists in the output library and NOREPL was specified.

User response:

Contact IBM Customer Support.

AUO931E File tailor error

Explanation:

File tailoring include returned a skeleton does not exist condition.

User response:

Contact IBM Customer Support.

AUO932E File tailor error**Explanation:**

File tailoring include returned a skeleton in use -- ENQ failed condition.

User response:

Contact IBM Customer Support.

AUO933E File tailor error**Explanation:**

File tailoring include returned a data truncation or skeleton library or output file not allocated condition.

User response:

Contact IBM Customer Support.

AUO934E File tailor error**Explanation:**

File tailoring include returned a severe error condition.

User response:

Contact IBM Customer Support.

AUO935E File tailor error**Explanation:**

File tailoring include returned an unknown condition -- severe error.

User response:

Contact IBM Customer Support.

AUO936E Allocation Error**Explanation:**

Allocation Error - The ISPF DD is already allocated and can not be deallocated - Process not completed.

User response:

Contact IBM Customer Support.

AUO937E Allocation Error**Explanation:**

Allocation Error - An error was encountered allocating the ISPWRK1 or ISPWRK2 DD - Process not completed.

User response:

Contact IBM Customer Support.

AUO938E Field Required - The dataset entered is a partitioned dataset and the member name is required.**Explanation:**

The data set that you entered is a partitioned data set and you did not enter a member name.

User response:

Enter a member name and retry.

AUO939E Invalid value**Explanation:**

The only valid values are "T" for tracks and "C" for cylinders

User response:

Enter a valid value.

AUO940E Dataset not found**Explanation:**

The specified dataset could not be found in the MVS catalog.

User response:

Ensure that the dataset name is correct.

AUO941E Invalid Quantity**Explanation:**

The quantity fields must be numeric.

User response:

Type a numeric quantity.

AUO942E Invalid Volumes**Explanation:**

The Maximum number of volumes field is only valid when the device type is a tape device.

User response:

You can clear this field or specify a valid tape device.

AUO943E Invalid Value**Explanation:**

This value can only be specified when the device type is a disk device.

User response:

Type a different value or specify a valid disk device.

AUO944E Invalid Device

Explanation:

The specified device could not be found in MVS.

User response:

Ensure that you specified the device correctly.

AUO945E Must Be Blank

Explanation:

Expiration Date and Retention Period are mutually exclusive.

User response:

Ensure that you have one of the fields blank.

FEC801E AN INVALID SQLCODE OF *code* WAS ENCOUNTERED. *messages*.

Explanation:

An invalid SQLCODE was encountered.

User response:

If you cannot resolve this issue using the messages displayed, contact IBM Customer Support.

FEC802E AN INVALID RETURN CODE OF *code* WAS ENCOUNTERED ON *function* FUNCTION. THE ERROR MESSAGE TEXT FOLLOWS: *messages*

Explanation:

An invalid return code was encountered.

User response:

If you cannot resolve this issue using the messages displayed, contact IBM Customer Support.

FEC803E The first character of the command is not a dash. Correct the syntax of the DB2 command and resubmit.

Explanation:

You entered a command without using a dash as the first character.

User response:

Correct the syntax of the DB2 command and resubmit.

FEC901E The Rocket Software default load library could not be located.

Explanation:

Explanation in message.

User response:

The data set name entered for the DB2 Tools Load Library was not found. Enter a valid loadlib data set name and continue.

FEC902E A DB2 subsystem ID has to be entered for processing.

Explanation:

Explanation in message.

User response:

Enter a valid DB2 subsystem name and continue.

FEC903E The default GDG base dataset name could not be located.

Explanation:

Explanation in message.

User response:

Enter a valid model data set name and continue.

FEC904E The specified dataset could not be opened for I/O.

Explanation:

Explanation in message.

User response:

Verify that the VSAM data set is accessible and continue.

FEC905E An unexpected return code from VSAM was encountered while doing a read of the control file. RC=*code*.

Explanation:

A VSAM READ error occurred while attempting to access the data set specified for the DB2 Control Dataset.

User response:

The RC (VSAM return code) is provided for investigation. Refer to DB2 Messages and Codes documentation to resolve and then continue.

FEC906I The control file record for DB2 subsystem ssid has been successfully updated.

Explanation:

Explanation in message.

User response:

None required.

FEC907E An unexpected return code from VSAM was encountered while doing an update operation of the control file. RC1=code RC2=code

Explanation:

A VSAM update error occurred while attempting to update the data set specified for the DB2 Control Dataset.

User response:

The RC1 and RC2 (VSAM return codes) are provided for investigation. Refer to DB2 Messages and Codes documentation to resolve and then continue.

FEC908I The control file record for DB2 subsystem ssid has been successfully added.

Explanation:

Explanation in message.

User response:

None required.

FEC909E The range of valid values is 1 to 3 and 5.

Explanation:

Explanation in message.

User response:

Enter a valid value.

FEC910E An unexpected return code from VSAM was encountered while doing an add operation to the control file. RC1=code RC2=code

Explanation:

A VSAM error occurred while attempting to perform an add operation to the specified DB2 Control Dataset.

User response:

The RC1 and RC2 (VSAM return codes) are provided for investigation. Refer to DB2 Messages and Codes documentation to resolve and then continue.

FEC911E No Find string specified

Explanation:

The (F)IND command was entered but no parameters were specified.

User response:

Enter a FIND parameter.

FEC912I Find string not found

Explanation:

The requested find string was not found.

User response:

None required.

FEC914E An unknown column was specified using the SORT command.

Explanation:

Explanation in message.

User response:

Verify that you correctly typed the name of the column or select another column. Ensure that SORT criteria includes an underscore in place of any spaces when attempting to SORT by name.

FEC915E SORT is not supported for the specified column.

Explanation:

Explanation in message.

User response:

You must select a different column.

FEC916E Sort column not entered. Column name or number must be specified.

Explanation:

Explanation in message.

User response:

Specify the column name or number for SORT. Ensure that if column name is used, that spaces in the name are replaced with underscores.

FEC918I Bottom of data reached

Explanation:

The search function has reached the bottom of the data.

User response:

Press PF5 to continue searching from the top.

FEC919I Top of data reached

Explanation:

The search function has reached the top of the data.

User response:

Press PF5 to continue searching from the bottom.

FEC920E File tailoring open returned a file tailoring already in progress condition.

Explanation:

An attempt to perform file tailoring for utility customization failed. There was file tailoring session already in progress. File tailoring sessions cannot be performed concurrently.

User response:

Contact IBM Customer Support.

FEC921E File tailoring open returned the output file already in use condition -- ENQ failed.

Explanation:

An attempt to open the DB2 Control Data Set failed with an ENQ error. The data set is already open for output.

User response:

Verify that you are the only user attempting to access this file.

FEC922E File tailoring open returned the skeletal file or output file not allocated condition.

Explanation:

An attempt to perform file tailoring failed because either the tailoring skeleton file or output file is not allocated.

User response:

Verify that all required files are allocated prior to performing file tailoring.

FEC923E File tailoring open returned a severe error condition.

Explanation:

An attempt to perform file tailoring failed because a severe error condition was encountered on open.

User response:

Verify that all required files are allocated and accessible prior to performing file tailoring.

FEC924E File tailoring open returned an unknown code -- severe error.

Explanation:

An attempt to perform file tailoring failed because a severe error condition was encountered on open.

User response:

Verify that all required files are allocated and accessible prior to performing file tailoring.

FEC925E File tailoring close returned a file not open condition -- severe error.

Explanation:

An attempt to perform file tailoring failed because a File-Not-Open condition was encountered on close.

User response:

Verify that all required files are allocated and accessible, and that there are no other tailoring sessions running concurrently with your session.

FEC926E File tailoring close returned an output file in use condition.

Explanation:

An attempt to perform file tailoring failed because an Output-File-Inuse condition was encountered on close.

User response:

Verify that all required files are allocated and accessible, and that there are no other tailoring sessions running concurrently with your session.

FEC927E File tailoring close returned a skeletal file or output file not allocated condition.

Explanation:

An attempt to close file tailoring failed because either a tailoring skeleton file or output file was not allocated.

User response:

Verify that all required files are allocated and accessible, and that there are no other tailoring sessions running concurrently with your session.

FEC928E File tailoring close returned a severe error.

Explanation:

An attempt to perform file tailoring failed because a severe error condition was encountered on close.

User response:

Verify that all required files are allocated and accessible prior to performing file tailoring.

FEC929E File tailoring close returned an unknown code -- severe error.

Explanation:

An attempt to perform file tailoring failed because a severe error condition was encountered on close.

User response:

Verify that all required files are allocated and accessible prior to performing file tailoring.

FEC930E File tailoring close returned a output member exists in the output library and NOREPL was specified.

Explanation:

An attempt to perform file tailoring failed because the close process could not replace the pre-existing tailored member in the output file.

User response:

Change the output member name to a new name or ensure that the output library allows for member replacement.

FEC931E File tailoring include returned a skeleton does not exist condition.

Explanation:

An attempt to perform file tailoring failed because the tailoring process could not locate a required tailoring skeleton.

User response:

Verify that all required files are allocated to perform file tailoring.

FEC932E File tailoring include returned a skeleton in use -- ENQ failed condition.

Explanation:

An attempt to access a tailoring skeleton failed with an ENQ error (member-in-use).

User response:

Verify that all required tailoring files are allocated, and that there are no other tailoring sessions running concurrently.

FEC933E File tailoring include returned a data truncation or skeleton library or output file not allocated condition.

Explanation:

An attempt to perform file tailoring failed because either the tailoring skeleton file or output file is not allocated.

User response:

Verify that all required files are allocated prior to performing file tailoring.

FEC934E File tailoring include returned a severe error condition.

Explanation:

An attempt to perform file tailoring failed because a severe error condition was encountered on an include operation.

User response:

Verify that all required files are allocated and accessible prior to performing file tailoring.

FEC935E File tailoring include returned an unknown condition -- severe error.

Explanation:

An attempt to perform file tailoring failed because a severe error condition was encountered on an include operation.

User response:

Verify that all required files are allocated and accessible prior to performing file tailoring.

FEC936E Allocation Error - The ISPF DD is already allocated and can not be deallocated - Process not completed.

Explanation:

The ISPF DD allocation failed. The DD is already allocated and cannot be deallocated for this TSO session. The process did not complete successfully.

User response:

Contact IBM Customer Support.

FEC937E Allocation Error - An error was encountered allocating the ISPWRK1 or ISPWRK2 DD - Process not completed.

Explanation:

Explanation in message.

User response:

Verify TSO session parameters are set correctly for your site prior to allocation of these DD statements.

FEC938E The dataset entered is a partitioned dataset and the member name is required.

Explanation:

A required field was not entered. The data set entered is a PDS (partitioned data set) and a member in this PDS must be referenced.

User response:

Enter a member name and retry.

FEC939E The only valid values are "T" for tracks and "C" for cylinders.

Explanation:

Explanation in message.

FEC940E • FEC941E

User response:

Enter a valid value.

FEC940E **The specified dataset could not be found in the MVS catalog.**

Explanation:

Explanation in message.

User response:

Ensure that the dataset name is correct.

FEC941E **Enter a FIND command**

Explanation:

A Repeat FIND was issued before a FIND command was issued. You must issue FIND before Repeat FIND will work.

User response:

Enter a FIND command before attempting to use RFIND.

Glossary

A

abend. Abnormal end of task.

address space. A range of virtual storage pages that is identified by a number (ASID) and a collection of segment and page tables that map the virtual pages to real pages of the computer's memory.

application server. The target of a request from a remote application. In the DB2 environment, the application server function is provided by the distributed data facility and is used to access DB2 data from remote applications.

B

bind. The process by which the output from the SQL precompiler is converted to a usable control structure, often called an access plan, application plan, or package. During this process, access paths to the data are selected and some authorization checking is performed. The types of bind are:

- **automatic bind.** (More correctly, *automatic rebind*) A process by which SQL statements are bound automatically (without a user issuing a BIND command) when an application process begins execution and the bound application plan or package it requires is not valid.
- **dynamic bind.** A process by which SQL statements are bound as they are entered.
- **incremental bind.** A process by which SQL statements are bound during the execution of an application process, because they could not be bound during the bind process, and VALIDATE(RUN) was specified.
- **static bind.** A process by which SQL statements are bound after they have been precompiled. All static SQL statements are prepared for execution at the same time.

D

database. A collection of tables, or a collection of table spaces and index spaces.

S

schema level repository. A collection of DB2 tables that are used to archive DB2 object meta data and recovery information. Also referred to as SLR. Formerly called the Versioning Repository.

V

Versioning Repository. The former name of the schema level repository. A collection of DB2 tables that are used to archive DB2 object meta data and recovery information.

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Bibliography

You might need to refer to other sources of information when you are using DB2 Object Restore for z/OS.

This section lists the documentation that supports DB2 Object Restore for z/OS. Use the appropriate library for the version of IMS/DB2 that you are using.

Tip: To quickly locate a specific book, use the IBM Publications Center, which is located at www.elink.ibm.com/public/applications/publications/cgibin/pbi.cgi. After you enter your country information, click **Search for publications**, and enter the publication number (xxxx-xxxx) of the book that you want.

DB2 Version 9.1 for z/OS product information

- *DB2 Version 9.1 for z/OS Administration Guide*, SC18-9840
- *DB2 Version 9.1 for z/OS Application Programming and SQL Guide*, SC18-9841
- *DB2 Version 9.1 for z/OS Application Programming Guide and Reference for Java*, SC18-9842
- *DB2 Version 9.1 for z/OS Codes*, GC18-9843
- *DB2 Version 9.1 for z/OS Command Reference*, SC18-9844
- *DB2 Version 9.1 for z/OS Data Sharing: Planning and Administration*, SC18-9845
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