
Updating the Object Restore Versioning Repository In IBM DB2 Object Restore V1.3

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1 Updating the Object Restore Versioning Repository

1.1 Overview

1.1.1 Object Restore

Object Restore provides the ability to recover DB2 objects, privileges, plans and packages that no longer exist due to DROP, REVOKE and FREE activity. Whether this activity occurred intentionally or accidentally, there is no facility within DB2 to easily restore these missing objects, including lost data, if necessary. Object Restore supplies the “UNDO” or “UNDROP” feature for DB2. Objects can be re-created, privileges can be re-granted, plans and packages can be re-bound, and data can be recovered.

1.1.2 The Versioning Repository

In order to provide this capability, Object Restore maintains a repository of object definitions, privileges, plan and package definitions, and locations of data backups. Object Restore can easily and quickly recover any object that exists in this Versioning Repository. This Versioning Repository is populated and updated periodically by the Repository Load job, AUO#LOAD, that is supplied with Object Restore. The AUO#LOAD job must be executed in each DB2 subsystem for which recovery is desired. For most environments, this is a quick and unobtrusive procedure. However, in certain subsystems, due to activity or size of the DB2 catalog, the process of maintaining the Repository can be prohibitively long. The following topics address the issue of reducing the elapsed time for executing the AUO#LOAD job.

1.2 Reducing Repository Load Time

1.2.1 Frequency and Time of Execution

The frequency and time of execution for AUO#LOAD is highly dependent on the CREATE, GRANT, and BIND activity in any given subsystem. Typically, daily execution is most beneficial and desirable. Also, execution of AUO#LOAD should be scheduled at a time when there is the least amount of activity in a subsystem to avoid contention with normal processing.

1.2.2 *Volume of Information*

As mentioned earlier, Object Restore can collect all the information necessary to recover lost objects, privileges, plans and packages due to DROP, REVOKE and FREE activity. However, you can control the type, and thus the amount, of information collected with the Object Restore ISPF Interface.

Option R on the Object Restore Main Menu provides access to setting the Repository Unload options.

Enter option R.1 on the Main Menu to set the Recovery Repository Object Unload Options. This will determine which object types, including plans and packages, will be processed by the AUO#LOAD job. Select each object type desired. Omit the object types for which recovery is not needed, thus reducing the amount of information and the execution time for AUO#LOAD.

Enter option R.2 on the Main Menu to set the Recovery Repository Authorization Unload Options. This will determine which privilege types will be processed by the AUO#LOAD job. Again, select the privileges desired and omit the types not needed. Additionally, you can choose to update the Repository with added privileges only. Otherwise, privilege type information must be completely reconstructed each time AUO#LOAD is run, which can significantly increase the execution time for AUO#LOAD.

1.2.3 *Repository Cleanup*

Object Restore v1.3 added the ability to cleanup the Versioning Repository by removing obsolete versions of object definitions. This can be done during Repository Load with AUO#LOAD, or separately with the AUO#CLNR program. Performing cleanup during Repository Load can increase the execution time for AUO#LOAD. Therefore, it is recommended to perform Repository cleanup separately with AUO#CLNR at less frequent intervals.

1.2.4 *Object Restore Maintenance*

It is important to keep Object Restore maintenance current to take advantage of code changes that improve performance of the Repository Load process. While each Object Restore PTF usually contains some performance improvement, a few are worth mentioning specifically and are particularly important to apply.

1.2.4.1 *APAR PQ59424 PTF UQ65523 (v1.2 only)*

This APAR enhances the AUO#LOAD job by improving the performance of modules that collect information for plan and package recovery. Selected internal cursors have been modified to use “WITH UR” to reduce lock contention on the DB2 Catalog. Additionally, it recommends creating indexes on selected catalog tables, which will be addressed in the Index topic. This maintenance is included in subsequent releases of Object Restore.

1.2.4.2 APAR PQ61004 PTF UQ66745 (v1.2 only)

This APAR reduces CPU usage while running the AUO#LOAD job by reducing the instruction path in the module that collects information for table authorizations. Also, it adds indexes to the RS.SYSTABAUTH Repository table. These indexes will be listed in the Index topic. The job that creates the Repository, AUO#DDL, was updated to include these new indexes. This maintenance is included in subsequent releases of Object Restore.

1.2.5 Additional Indexes

The elapsed time to run the AUO#LOAD job is directly affected by the size of the DB2 Catalog. The steps that collect information for table authorizations, plans and packages generally take the longest amount of time to execute. This is because the catalog tables that contain this information are usually the largest in the DB2 Catalog. Also, indexes typically don't exist that benefit the AUO#LOAD job. Additional indexes on selected DB2 Catalog tables and Repository tables can improve the performance of the Repository Load process. Once the indexes have been created, it is important to execute RUNSTATS for them, and rebind the Object Restore plans.

1.2.5.1 DB2 Catalog Tables

The following indexes on selected DB2 Catalog tables are recommended:

Table	Columns	Order
SYSIBM.SYSPLANDEP	DNAME	ASC – NOT UNIQUE
SYSIBM.SYSPLSYSTEM	NAME	ASC – NOT UNIQUE
SYSIBM.SYSPACKLIST	PLANNAME	ASC – NOT UNIQUE
SYSIBM.SYSVIEWDEP	DNAME, DCREATOR	ASC – NOT UNIQUE

1.2.5.2 Versioning Repository Tables

The following index on the selected Repository table is recommended:

Table	Columns	Order
RS.SYSPLANDEP	DNAME	ASC – NOT UNIQUE

APAR PQ61004 (v1.2) adds the following indexes (subsequent releases of Object Restore will create these indexes, too):

Index	Table	Columns	Order
RS.SYSTABAUTH_IX2	RS.SYSTABAUTH	GRANTOR	ASC
		GRANTEE	ASC
		SCREATOR	ASC
		STNAME	ASC
		TCREATOR	ASC
		TTNAME	ASC
		TB_CREATEDTS	ASC
RS.SYSTABAUTH_IX3	RS.SYSTABAUTH	GRANTEE	ASC
		SCREATOR	ASC
		STNAME	ASC
		TCREATOR	ASC
		TTNAME	ASC

1.3 Summary

There are several options available to improve the performance of the Repository Load job and reduce its execution time. It should be scheduled to run when it causes the least interference with normal processing. It should collect only the information that is needed for the desired recovering object and privilege types. It is important to keep Object Restore maintenance current. And finally, additional indexes on DB2 Catalog tables and Repository tables can be added.

2. Special Notices

The information contained in this document has not been submitted to any formal IBM test and is distributed AS IS. The use of this information or the implementation of any of these techniques is a customer responsibility and depends on the customer's ability to evaluate and integrate them into the customer's operational environment. While IBM may have reviewed each item for accuracy in a specific situation, there is no guarantee that the same or similar results will be obtained elsewhere. Customers attempting to adapt these techniques to their own environments do so at their own risk.

For more information on IBM DB2 Object Restore and other IBM DB2 Data Management Tools, visit the IBM Web site at:

<http://www.ibm.com/software/data/db2imstools/>