

Are IBM Going to Cause you Catalog Pain?

IBM withdrew the ability to define VSAM datasets and Catalogs using certain attributes several years ago because they had been made redundant by the advances in Disk Technology. While defining datasets with these attributes was no longer possible, IBM maintained support for using existing datasets and catalogs that were previously defined using these attributes. IBM has now announced that this support will be discontinued from z/OS version 1.8.

OVERVIEW

So why is that going to cause you pain?

Catalogs are vital to the fast and efficient access of any data on z/OS systems. In many environments each application may have a dedicated catalog which was probably defined when the application was first created. As many applications have been running on the mainframe for a significant number of years, it is possible that you may well have a number of catalogs that were defined using attributes that will no longer work with z/OS v1.8.

If you have any catalogs that are still using any of these attributes, they must be re-organised prior to implementing z/OS v1.8. Using the IBM supplied tools to re-organise a catalog requires the catalog to be unavailable to the system for a significant time; therefore the application or applications whose data is accessed through the catalog will need to be unavailable.

Having to make an application unavailable will usually incur penalties, unless it is within a planned maintenance window. In today's 24/7 working environment, the planned maintenance windows are usually reserved months in advance for major projects, such as hardware upgrades.

CIM to the Rescue!

Catalog Information Management (CIM) incorporates a *Re-organise While Open* feature which provides the option of re-organising your catalogs while your applications are still active, therefore keeping you planned system outages for your major project work.

DETAILED VIEW

What is being removed?

IBM announced some years ago that, due to the move from single physical volumes, such as the 3390, to using modern disk arrays for storage, it is no longer considered that any benefit can be gained from the IMBED, REPLICATE and KEYRANGE attributes of VSAM datasets or catalogs.

Having initially only withdrawn support for defining new datasets using these attributes, IBM have now confirmed that support for existing data sets that use these attributes will be withdrawn with the release of z/OS v1.8.

If any of your catalogs were defined using these attributes, they will have to be re-organised to remove these attributes before the migration to z/OS v1.8 can be undertaken.

How do you establish which catalogs may need re-organising?

Using IDCAMS:

The first step is to compile a list of all catalogs known to your systems by using the LISTC UCAT command on all systems. Once you have this list of catalogs you will need to issue the LISTC ENT(catalog.name) ALL CAT(Catalog.name) against all of the catalogs. The listing produced for each catalog will be about 60 lines, from which you will need to check the attributes settings of both the data and index element of each catalog.

Using CIM:

Using the CIM Catalog Centre it is easy to display all the catalogs known to each system. Then scrolling to the right to columns 11 and 12 allows you to easily see if any catalogs are currently defined with these attributes.

```

                                catalog listing
Command ==> _____ Scroll ==> PAGE
Use S to select actions                      Rows 1 to 11 of 11
*=possible Mcat, **=current Mcat           Columns 9 to 14 of 24
Cat: **                                     Mcat: CATALOG.MASTER.S39T
Catalog                                     CIsplit CAsplit Imb Rep Wck Shr
---(1)----- --(9)-- --(10)-- (11) (12) (13) (14)
-- **CATALOG.MASTER.S39T                    6      0    N   N   N   Y
-- *CATALOG.MASTER.S39D                    8      0    N   N   N   Y
-- *CATALOG.MASTER.S39G                   139     0    Y   Y   N   Y
-- CATALOG.ADABAS.S39T                     1      0    N   N   N   Y
-- CATALOG.DATABASE.S39T                   0      0    N   N   N   Y
-- CATALOG.ISV.S39T                       0      0    N   N   N   Y
-- CATALOG.MASTER.NAV3                     0      0    -   -   -   -
-- CATALOG.MSG.NAV3                       0      0    -   -   -   -
-- CATALOG.MSG.S39T                       1      0    N   N   N   Y
-- CATALOG.USERDATA.S39T                   5      0    N   N   N   Y
-- UCAT.OS39TN                             24     0    N   N   N   Y
***** Bottom of data *****

```

If the status of the attributes is not showing (as illustrated in the screen shot above on catalog.master.nav3) then the catalog either no longer exists on the volume, or the volume is not available to the system. Checking this display on all systems will allow you to quickly and easily compile a list of catalogs for re-organisation.

Re-organising a Catalog using IDCAMS.

Using the IBM supplied tools to remove these attributes would mean using IDCAMS to follow the process:

- Make the catalog unavailable to the system
- Export the catalog to a flat file
- Deleting the catalog
- Defining a new catalog
- Import the flat file in to the new catalog
- Make the catalog available to the system

Using this method requires a reasonable knowledge of the IDCAMS commands, and requires the catalog to be unavailable for a period of time. Therefore the data that is accessed via the catalog is unavailable, so the application will need to be stopped for the duration of the process.

Re-organising a Catalog using CIM.

In order to cater for all situations CIM provides both a *Standard Re-Org* and a *Re-org While Open*.

The *Standard Re-org* follows the same methodology as IDCAMS, but the CIM ISPF panels guides the user through the relevant steps to produce all the JCL and definition statements that are required, thus removing the need to research IDCAMS syntax.

The CIM *Re-org While Open* provides the ability to re-organise a catalog while it is in use, so long as the catalog remains on the current volume, and free space exists on the volume to allocate a temporary dataset the same size as the re-organised catalog. As with the *Standard Re-org*, the CIM ISPF panels guide the user through the process, and produce all the required JCL and definition statements.

Deciding which Re-org to use

As both the CIM *Standard Re-org* and *Re-org While Open* provide significant performance advantages over the IDCAMS method the decision of which re-organisation to use falls between the “Standard Re-org” and the *Re-org While Open*. In order to maintain full systems availability, it would be ideal to always use the CIM *Re-org While Open* for all catalog re-organisations.

Unfortunately there are some considerations which mean that not all catalogs can be re-organised using this option. The considerations are:

- Enough space must be available on the current disk to allocate a temporary file the size of the re-organised catalog
- The CIM *Re-org While Open* places a shared enqueue on the catalog while it is running

Evaluating if enough space exists on the volume for the allocation of the temporary dataset may be simple to do, if you are not attempting to increase the size of the catalog. Firstly, use TSO option 3.4 to see the number of tracks current allocated to the catalog, then use 3.4 to look at the VTOC information of the volume to see the size, in tracks, of the largest free extent. If the largest free extent is greater than the number of tracks allocated to the catalog, the catalog is a candidate for using *Re-org While Open*.

Once it has been established that the catalog is a candidate for *Re-org While Open* you must then consider the workload that uses the catalog. As *Re-org While Open* places a shared enqueue on the catalog, the catalog is available for read access while the re-organisation takes place until the first update access is attempted. Once an update request has been made, all subsequent access

attempts, both read and update, will be queued until the re-organisation is complete. Therefore, the profile of the workload will dictate if, or when, a *Re-org While Open* can be considered.

If the catalog is used by many active TSO development programmers, many update requests will be made during the developers working day, so scheduling the re-organisation during the day may result in TSO users experiencing a long wait between responses. Therefore, scheduling the re-organisation for a quiet period, lunch time or overnight would be preferable.

If the catalog is used mainly by batch jobs, then many catalog updates will be made during the batch window, but during the on-line day the data is mostly only accessed by read requests. Therefore, scheduling the re-organisation of the catalog during the day is preferable.

Re-organising the Catalog

Once you have established which re-organisation method you intend to use, simply select the catalog to be re-organised from the CIM Catalog Centre and follow the process detailed under the chosen reorganisation (illustrated below).

```
Reorganize catalog while open and accessed

Use PF1 to get additional info.

Catalog to be reorganized:
  Cat: CATALOG.ISV.S39T                               Vol: TUCAT1

It is highly recommended to have a backup of the catalog.

Steps to perform to reorganize an active catalog:
=> 1  (1) Define new temporary catalog on same volume
      (2) Reorganize source catalog
      (3) Delete temporary catalogname

Supply a new temporary catalog name:
=> CATALOG.ISV.S39T.fTEMP

. . . . .
4B  @:00.1  11/15
```

Conclusion

Using IDCAMS to re-organise a catalog is an acceptable method, but will probably require an application to be unavailable for a significant period. CIM has been designed to at the very least reduce the time application will be unavailable, and in many cases completely remove the need for the application to be unavailable.

Due to CIM's user friendly ISPF interface the task of re-organising your catalogs can be undertaken without the need for in-depth knowledge of IDCAMS, and helps to reduce the possibility of errors, thus reducing the possibility of application outage.