IBM z/OS DFSMS Cloud Data Manager Version 1.2

Guide and Reference

GC28-3275-01

Note

Before using this information and the product it supports, read the information in Notices.

This edition applies to Version 1 Release 2 of IBM z/OS® DFSMS Cloud Data Manager (program number 5698-CDM) and to all subsequent releases and modifications until otherwise indicated in new editions.

Last updated: 13 December 2024

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About this information

This document contains information you need to configure and use IBM z/OS DFSMS Cloud Data Manager.

Who should use this information

This document is intended for use by anyone responsible for implementing and administering IBM z/OS DFSMS Cloud Data Manager. Information presented in one topic is often based on knowledge obtained in a preceding topic.

Publications and related information

This section lists available online IBM z/OS DFSMS Cloud Data Manager publications.

Publications

The following publications can be viewed or downloaded from IBM Documentation:

https://www.ibm.com/docs/zdcdm/1.2.0

Table 1. IBM z/OS DFSMS Cloud Data Manager 1.2 product publications

Title	Form number
IBM z/OS DFSMS Cloud Data Manager Guide and Reference	GC28-3275-01
IBM z/OS DFSMS Cloud Data Manager Japanese Guide and Reference	GC28-3446-01
IBM z/OS DFSMS Cloud Data Manager Program Directory English and Japanese	GI13-5574-01

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What's new in this edition (December 2024)

This information includes terminology, maintenance, and editorial changes. Technical changes or additions to the text and illustrations for the current edition are indicated in the PDF by a vertical line to the left of the change.

New information for DFSMScdm 1.2 hybrid cloud data management functions:

- “Hybrid cloud data management overview” on page 4
- “Setting up DFSMScdm for hybrid cloud data management” on page 13
- “Setting up DFSMScdm security” on page 15
- Chapter 4, “Hybrid cloud data management administration,” on page 51
- Chapter 5, “Batch utilities,” on page 81
- Chapter 6, “SMF record mapping,” on page 85
- Hybrid cloud data management messages “GBQ2000E” on page 104 to “GBQ3120E” on page 120

Chapter 1. Overview

IBM z/OS DFSMS Cloud Data Manager (also known as DFSMScdm) provides both DFSMShsm data movement and hybrid cloud data management.

DFSMShsm data movement
DFSMShsm data movement functions are used to migrate large amounts of data from DFSMShsm ML2 storage to cloud storage. For more information, see "DFSMShsm data movement overview" on page 1.

Hybrid cloud data management
Hybrid cloud data management functions are used to share data between z/OS and any cloud that uses the S3 API to communicate with connected devices or systems using IBM z/OS DFSMSdfp Cloud Data Access (CDA). For more information, see "Hybrid cloud data management overview" on page 4.

DFSMScdm can be customized to display messages and panels in English or Japanese.

DFSMShsm data movement overview

DFSMShsm data movement functions migrate large amounts of data from DFSMShsm ML2 storage to cloud storage.

In existing DFSMShsm environments, as data sets age, they are often migrated to tape (also known as migration level 2, or ML2 in DFSMShsm terms). DFSMShsm provides a recycle function to recover unused space on tape when a data set expires or is deleted. However, this consumes z/OS processor time. Cloud migration eliminates recycles and does not create contention issues when multiple applications need to access data on the same tape.

Data sets can be migrated to a specific cloud location, or to one or more destinations determined by the current SMS management class assignments.

Migrations can be planned around expected workloads. By using *migration groups* to organize data sets, you can pause and restart migrations from the same point as needed.

DFSMScdm migrations are performed through the following steps:

1. Configure the control data set and DFSMShsm libraries to be used by DFSMScdm.
2. Submit a simulation job to select which data sets are to be migrated.
3. Submit a migration job for DFSMScdm to migrate to cloud.

DFSMScdm performs migrations by first using the DFSMShsm RECALL command to bring selected ML2 data into a storage class used exclusively by DFSMScdm jobs.

Afterwards, the DFSMShsm MIGRATE STORAGEGROUP command is used to migrate the recalled data sets out to the cloud using an explicit cloud name, or using SMS management class definitions that have been defined on the system to control data set migration. The assumption is that the management class that directed the data sets to be migrated to ML2 at the time they were created has now been updated to migrate data sets to the cloud. Once the data sets have been recalled to disk from ML2, normal SMS processing moves these data sets to the required location.

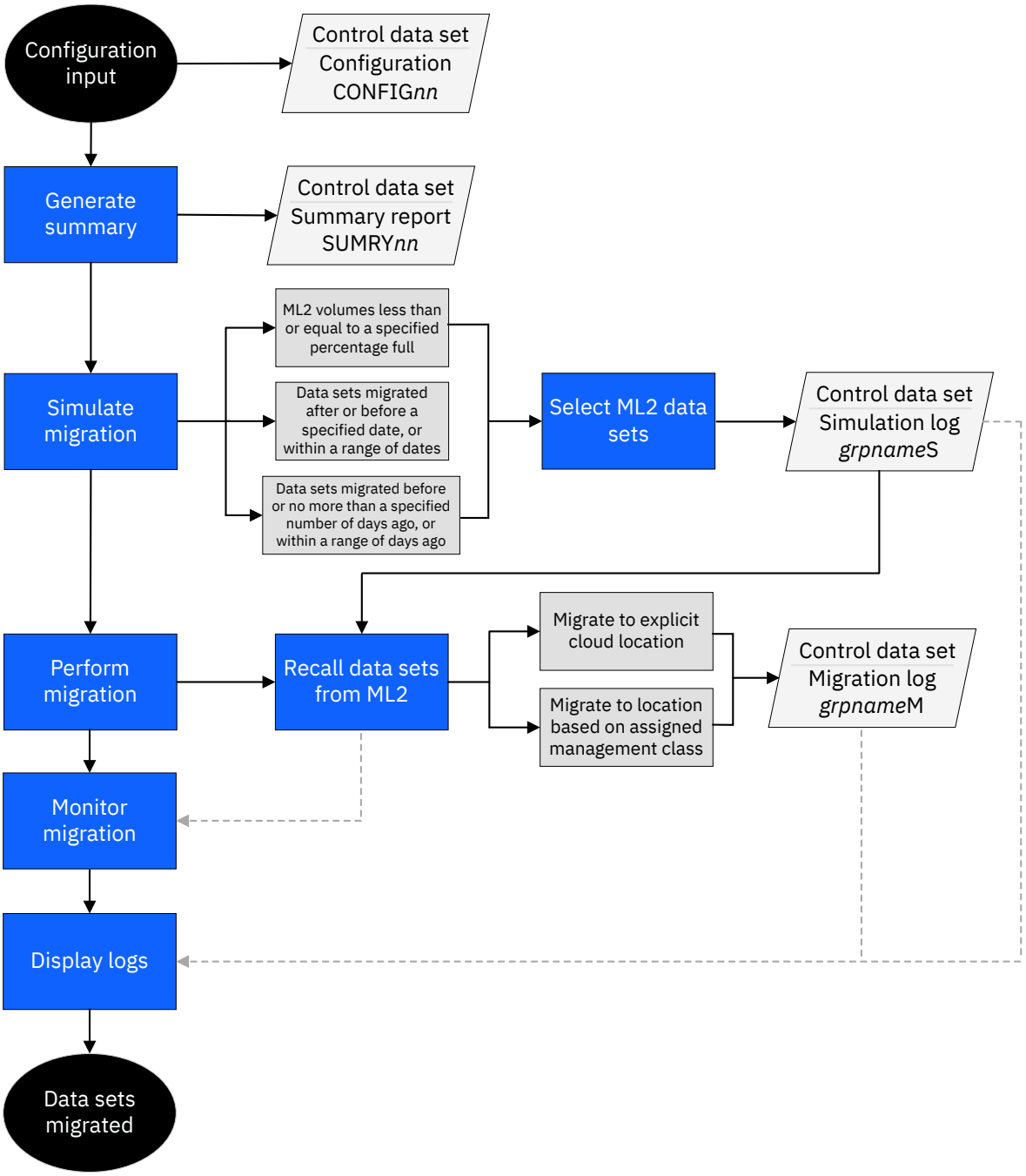

Figure 1. DFSMShsm data movement process

A migration group is a set of DFSMShsm ML2 data sets selected for cloud migration using one of the following selection criteria specified by the user:

- ML2 volumes less full than a specified percentage
- Data sets migrated to ML2 after or before a specified date, or within a range of dates
- Data sets migrated to ML2 before or no more than a specified number of days ago, or within a range of days ago

DFSMScdm is managed using a control data set PDSE allocated during setup. The control data set contains the following members:

- Configuration members to save user-defined configuration options
- Simulation and migration job JCL for migration groups
- Simulation and migration logs
- Status summary of ML2 data sets
- Placeholder information

DFSMShsm data movement usage scenarios

DFSMShsm data movement functions assist in your management of data storage in several scenarios.

To apply current SMS management policies to existing ML2 data sets
This data has management policies defined years or decades ago. Over time, the acquisition of new storage options such as cloud has resulted in the definition of new policies. DFSMScdm uses DFSMShsm to recall migrated data sets, and to remigrate them to long-term storage. The current management policies of the data sets determine the destination of the remigration.

To accommodate an IBM z/OS environment moving from disk and tape to disk only
Regulatory or business considerations require existing data on ML2 data sets to be retained. Before removing the tape subsystem, these ML2 data sets must be moved to new storage.

To move infrequently accessed ML2 data sets to cloud objects
Cloud migration eliminates recycles for infrequently accessed data, avoiding CPU processing and reduces tape storage resources needed. DFSMScdm can select ML2 data sets by the last migration date to prioritize which data to move. When DFSMScdm migrates a data set to a cloud object, the date last referenced and the migration date remain unchanged, retaining critical historical accuracy about the data set. DFSMScdm provides user-customizable parameters to set the pace of migration to avoid bottlenecks with other DFSMShsm work on the system.

DFSMShsm data movement functions

DFSMShsm data movement functions consist of three main types: summary, simulate, and migrate. The functions are batch jobs submitted by the user and monitored using the ISPF interface.

Summary function

The summary function creates a report that summarizes the status of your ML2 environment.

The report lists the number of ML2 data sets and volumes, the oldest and average age of those data sets, the number and percentage of data sets never recalled, and the number of cloud objects that have been created. This job is optional.

For more information, see “Summary job” on page 19.

Simulate function

You can simulate the migration process from DFSMShsm ML2 to the cloud by selecting data sets that meet the selection criteria.

Specify one of the following selection criteria:

- ML2 volumes less full than a specified percentage
- Data sets migrated to ML2 after or before a specified date, or within a range of dates
- Data sets migrated to ML2 before or no more than a specified number of days ago, or within a range of days ago

When selecting by date or number of days, you can use data set filtering to select only certain data sets. You may enter fully qualified data set names or masks and specify whether to include or exclude them in the selection.

The simulate function must be run before the migrate function is started; the log output is recorded in a member in the control data set, and that member is used as input to the migrate function.

For more information, see "Simulate job" on page 20.

Migrate function

You can bring selected ML2 data sets back to disk, then either migrate these data sets to the specified cloud, or to a location determined by the management class for each data set.

The migrate function ensures that the data sets in a migration group are the same between the simulation and migration run times. If a volume identified in the simulate no longer meets the specified criteria, it is skipped from the migration.

While the migrate function is running, you can use MODIFY commands to stop the recall process, or display the status of the migrate job on the operator console. The status, such as the elapsed time or the number of data sets recalled, is periodically saved in the CSA. You can view status information for a running migration job in "Option 4 Monitor - Monitor active DFSMScdm migration jobs" on page 35.

It is recommended to run the migrate function during low DFSMShsm migration activity, and not when DFSMShsm space management functions are running. You can use pacing parameters to better share resources and allow other jobs on the system to acquire resources as required. For example, you can define the number of data sets in a batch so that a migration group is recalled in batches for segmented processing. You can also implement intervals between processing individual data sets and wait times between whole batches of migration processing.

Note: DFSMScdm uses the DFSMShsm migration control data set (MCDS) and offline control data set (OCDS) on your system. The MCDS may consist of up to 4 large volumes of data, so the MCDS is read in segments during the simulation process. After a simulation job has been run, a placeholder member is saved. To provide an initial estimate of the amount of ML2 data sets that can be migrated to the cloud, a summary job reads through the entire MCDS and generates a report summarizing the amount of data currently migrated to ML2.

For more information, see "Migrate job" on page 22.

Hybrid cloud data management overview

Hybrid cloud data management functions share data between z/OS and any cloud that uses the S3 API to communicate with connected devices or systems using z/OS DFSMSdfp Cloud Data Access (CDA).

The CDA component provides an environment that other z/OS products utilize to communicate with cloud object storage. For more information about CDA, see Introduction to DFSMSdfp Cloud Data Access (CDA) (www.ibm.com/docs/en/zos/3.1.0?topic=services-introduction-dfsmsdfp-cloud-data-access-cda). The CDA ISPF panel manages storage of the cloud credentials, but not the application data. The S3 API provides the capability to store, retrieve, list, and delete objects. S3 provides object-level management and manipulation where you can describe how you want to store, encrypt, and present objects.

DFSMScdm uses a set of commands that can be invoked directly at a terminal, in batch, or via the DFSMScdm ISPF panels. These commands send a request to the DFSMScdm started task address space which then processes the requests to:

- Upload data to the cloud.
- Download data from the cloud.

- Display requests that you have submitted to DFSMScdm.
- Cancel requests that you have submitted to DFSMScdm.
- List objects in the cloud.

You can use the DFSMScdm ISPF panels as a convenient interactive means of entering these commands as required, and you can use a batch step to execute them as part of a scheduled application cycle. The JCL created by the requests can be saved for reuse.

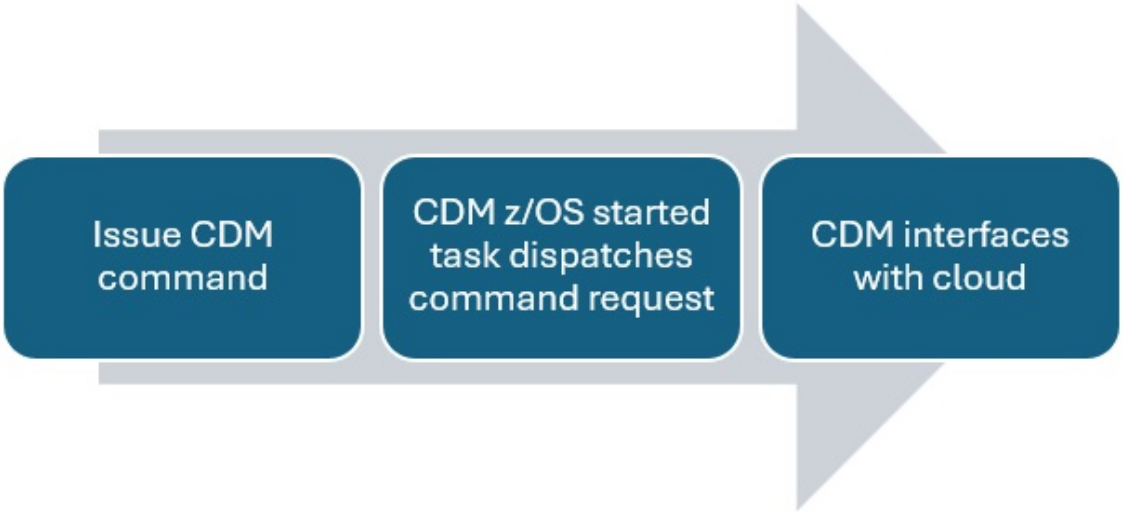

Figure 2. DFSMScdm started task process

There are two roles with different levels of authorization to perform hybrid cloud data management functions:

Administrator
: An administrator can submit requests on behalf of others, as well as control the hybrid cloud data management by querying or canceling any DFSMScdm request. The administrator also has the authority to use MODIFY commands to change hybrid cloud data management settings.

User
: A user can only act upon requests they have submitted for data sets to which they have ALTER access.

DFSMScdm has access to the cloud providers via CDA configuration, and operates as a RACF TRUSTED address space so that it does not need specific access to every resource it uses. For information on adding DFSMScdm to the started procedures table as TRUSTED, see "Managing DFSMScdm access" on page 15.

Hybrid cloud data management usage scenario

DFSMScdm assists in your sharing of application data.

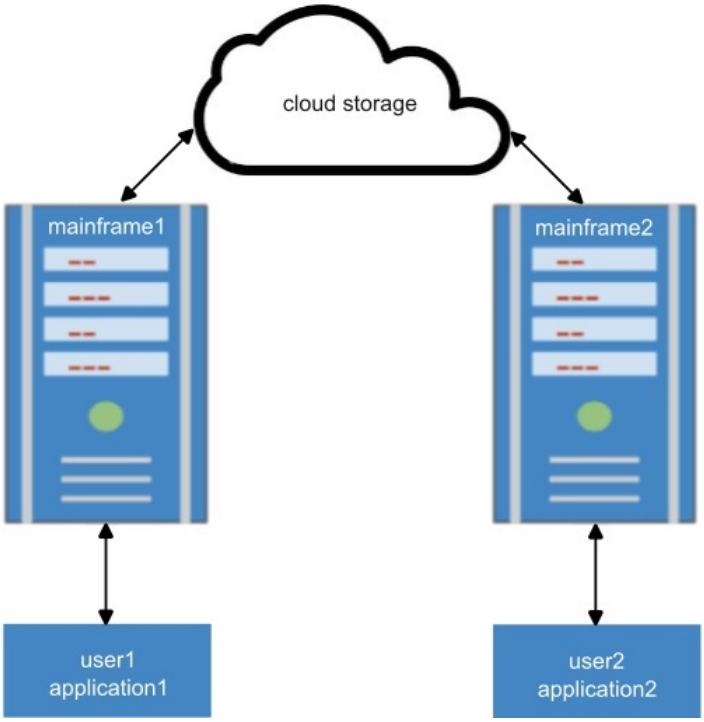

Figure 3. DFSMScdm data sharing process

Sharing application data among users and applications across sysplexes using cloud object storage
Cloud object storage for the purpose of sharing z/OS data with business partners and clients requires secure access for authorized users only and provides multiple options for managing cloud data movement.

Hybrid cloud data management functions

Hybrid cloud data management consists of two main functions: send and retrieve. DFSMScdm supports sending and retrieving sequential (DSORG=PS) z/OS data sets.

Send function

The CDMSEND option sends one or more z/OS data sets to a cloud.

Specify a data set name or a mask for multiple data sets to send to the cloud, a name or mask for the corresponding cloud object, and the names of the cloud and container where the object is to be saved.

When DFSMScdm uploads a z/OS data set to a cloud object, it saves the data set name and other characteristics in the object's metadata. Use the CDMLIST command to display the metadata for the uploaded data set.

For more information, see “Option 1 CDMSEND - Send data sets from z/OS to cloud storage” on page 60.

Retrieve function

The CDMRET option retrieves an object from the cloud and places the data in a z/OS data set.

When DFSMScdm retrieves a cloud object, it uses information previously saved in the object metadata to name and allocate the downloaded z/OS data set. If the data set already exists on the z/OS system that the data is downloading to, you select whether to replace the existing data set, or to create a new data set by appending a suffix to the existing data set name.

For more information, see “Option 2 CDMRET - Retrieve z/OS data sets from cloud storage” on page 61.

Chapter 2. Installation and setup

Installation and setup of DFSMScdm is outlined in this chapter. Some steps are optional depending on which features you intend to utilize.

Install and set up DFSMScdm

Role: System programmer

Review these topics and then perform the steps after SMP/E installation:

- "System requirements" on page 9
- "Setting up DFSMScdm" on page 10

Configure DFSMScdm for DFSMShsm data movement

Role: System administrator

Perform these steps to configure DFSMScdm for DFSMShsm data movement. If you do not plan to use DFSMShsm data movement functions, you can skip this section: "Configuring DFSMScdm for DFSMShsm data movement" on page 11

Configure DFSMScdm for hybrid cloud data management

Perform these steps to configure DFSMScdm for hybrid cloud data management. If you do not plan to use hybrid cloud data management functions, you can skip this section.

Role: System programmer

Perform these steps to configure DFSMScdm to enter TSO commands: "Configuring DFSMScdm to enter TSO commands" on page 14

Role: System administrator

Perform these steps to configure DFSMScdm for hybrid cloud data management: "Configuring DFSMScdm for hybrid cloud data management" on page 14

Set up DFSMScdm security

Role: System administrator

Perform these steps to provide DFSMScdm administrators and users appropriate access and ensure security: "Setting up DFSMScdm security" on page 15

System requirements

The following requirements are post-Shopz installation.

Hardware requirements

To move data to the cloud, the following support is required for IBM Transparent Cloud Tiering:

- IBM DS8900 9.2.x or later
- Feature code 5283

For IBM Transparent Cloud Tiering with a TS7700 as a target, TS7770 VED 5.3 or later is required.

For implementation instructions, see IBM Redbooks® publication *DS8000 Transparent Cloud Tiering*, SG24-8381. (https://www.redbooks.ibm.com/redbooks/pdfs/sg248381.pdf)

Software requirements

The following are required for the duration of their availability and IBM support:

- IBM z/OS 2.4 (5650-ZOS) or later
- If you plan to use DFSMShsm data movement functions, z/OS DFSMS Hierarchical Storage Manager component of a supported release of z/OS is required. For DFSMShsm on z/OS 2.4, APAR OA59904 (PTF UJ04709) is required.
- If you plan to use hybrid cloud data management functions, z/OS DFSMSdfp Cloud Data Access (CDA) of a supported release of z/OS with APAR OA65990 is required.

Setting up DFSMScdm

Set up and start the DFSMScdm ISPF dialog by following the procedure outlined in this topic. This setup is required for both DFSMShsm data movement and hybrid cloud data management functions.

Before you begin

Complete the SMP/E installation process described in the *IBM z/OS DFSMS Cloud Data Manager Program Directory*. Successful SMP/E installation generates the following DFSMScdm product libraries on your system:

Table 2. DFSMScdm product libraries created during SMP/E installation

DFSMScdm product library	Description
hlq.IBM.HGBQ120.SGBQLLIB	Load library
hlq.IBM.HGBQ120.SGBQELIB	REXX library
hlq.IBM.HGBQ120.SGBQPENU	English panel library
hlq.IBM.HGBQ120.SGBQPJPN	Japanese panel library
hlq.IBM.HGBQ120.SGBQSAMP	Sample library
hlq.IBM.HGBQ120.SGBQTLIB	Table library
hlq.IBM.HGBQ120.SGBQMLIB	English message library
hlq.IBM.HGBQ120.SGBQMJPN	Japanese message library
hlq.IBM.HGBQ120.SGBQSLIB	Skeleton library

If a terminal is set up to support double-byte character set (DBCS) with code page 939 (cp939), you can customize DFSMScdm to display in Japanese. For more information, see the *IBM z/OS DFSMS Cloud Data Manager Program Directory*.

Procedure

1. APF-authorize the load library data set *hlq*.IBM.HGBQ120.SGBQLLIB used by the Shopz installation.
2. Execute the following TSO command to start DFSMScdm and enter the configuration panel:

   ```
   EX 'hlq.IBM.HGBQ120.SGBQELIB(GBQCDM)' 'hlq.IBM.HGBQ120'
   ```

   The configuration panel manages DFSMScdm actions. You can enter and update configuration values to customize DFSMShsm data movement and hybrid cloud data management as specified in the upcoming setup sections.
3. Optional: To use DFSMScdm in Japanese, in the configuration panel, change the values of the panel library and message library to *hlq*.IBM.HGBQ120.SGBQPJPN and *hlq*.IBM.HGBQ120.SGBQMJPN, respectively.
   a) Press **F3** to save the values and exit the configuration panel.

b) Exit DFSMScdm and start DFSMScdm again by executing the TSO command in step "2".

Setting up DFSMScdm for DFSMShsm data movement

Set DFSMScdm up to use DFSMShsm data movement by following the procedures outlined in this section.

Remember: If you do not plan to use DFSMShsm data movement functions, you can skip this section.

Configuring DFSMScdm for DFSMShsm data movement

The system administrator must configure DFSMScdm to use DFSMShsm data movement functions.

Before you begin

All DFSMScdm DFSMShsm data movement recall and migration functions are executed in the GBQUTILM cloud migration program and fundamentally rely on DFSMShsm functionality. Therefore, it is recommended that the system administrator fully test the DFSMShsm environment and the ability to migrate data sets to the cloud prior to completing the DFSMScdm configuration.

DFSMScdm depends on DFSMShsm being properly configured to run the MIGRATE command more than once per day. For information on DFSMShsm maintenance, such as supported patches, see Running MIGRATE STORAGEGROUP command multiple times a day (www.ibm.com/docs/en/zos/3.1.0?topic=dfsmshsm-running-migrate-storagegroup-command-multiple-times-day).

Procedure

1. On the configuration panel, customize DFSMShsm data movement functions to suit your needs.
   You can enter and update the following configuration values:
   - Control data set used for DFSMScdm that you allocated during setup
   - Member name of the configuration member which configuration parameters are saved into
   - DFSMScdm product libraries
   - DFSMShsm MCDS and OCDS names
   - Name of the cloud location to migrate to
   - Storage class, placeholder volser, and storage group used strictly for DFSMShsm recalls
   - Date format used in DFSMScdm reports and dialog panel displays
   - Default JOB statement for DFSMScdm batch jobs

   Multiple configurations are allowed. Each configuration is stored as a member in the control data set as CONFIG*nn*, where *nn* is any value from 00 to 99 that you specify in the configuration panel. The following configurations are saved in CONFIG*nn*.

```
* CDM Configuration file *
CLOUD_NAME=CLOUD01
MCDS=DFHSMT.MCDS1
MCDS2=DFHSMT.MCDS2
MCDS3=DFHSMT.MCDS3
OCDS=DFHSMT.OCDS
STORCLAS=CDUWRKSC
STORGRP_VOL=CDUW01
STORGRP=CDUWRKSG
DATEFMT=YYYY/MM/DD
```

Figure 4. Sample configuration file CONFIGnn

CLOUD_NAME
Name of the cloud to migrate the data out to; otherwise, a management class controls the migration destination. This name can be overridden on a per-job basis.

MCDS, MCDS2, MCDS3, MCDS4
DFSMShsm migration control data set name for your installation. You can specify up to 4 MCDS clusters.

OCDS
DFSMShsm offline control data set name for your installation.

STORCLAS
Storage class used for DFSMShsm RECALL to prevent using standard day-to-day production DFSMShsm resources.

STORGRP_VOL
Placeholder volser associated with the storage group associated with the storage class specified by the **STORCLAS** parameter. The migrate function issues DFSMShsm RECALL commands using this volser to allow the recalls to be directed by SMS to the specified storage group.

STORGRP
Storage group associated with the storage class specified by the **STORCLAS** parameter for DFSMScdm recalls. In the migrate function, data sets are moved from volumes in this storage group to the cloud.

DATEFMT
Date format on panels where a date can be entered or where logs are listed. Specify either MM/DD/YYYY, DD/MM/YYYY, or YYYY/MM/DD.

For more information about configuration, see "Option C Configure - Configure control data set and session options" on page 39.

2. Define a PDSE to be used as the control data set with the following parameters: **RECFM=FB, LRECL=80, DSORG=PO**.

   The GBQCONFG member of the SAMPLIB data set provides an example of doing this allocation.

3. Update the ACS routines by completing these steps. An SMS storage class and group must be defined for use only by DFSMScdm. DFSMScdm requests DFSMShsm RECALLS for data sets that will be migrated to the cloud. An update to the ACS routine is required to direct the DFSMShsm RECALL to the DFSMScdm storage group.

   a. Define a storage class, placeholder volser, and if necessary, a storage group in ISMF to be used for recalls and migrates.

   b. Update ACS routines for the DFSMScdm storage class, storage group, and optionally, the management class.

      SMS change
      The following Storage Management Subsystem (SMS) definitions are required for DFSMScdm processing:

      - Storage class *cdmclass* to be used only for DFSMShsm recalls. The storage class and storage group ACS routines must be defined such that a recall to the volser uses the storage class and storage group reserved for use by DFSMScdm.
      - Placeholder volser *placeholdervol* associated with the storage class *cdmclass*. Data sets are recalled to a specific volser *placeholdervol*. The migrate function issues DFSMShsm RECALL commands using this volser to allow the recalls to be directed by SMS to the specified storage group.
      - Storage group *cdmgroup* to be used only for DFSMShsm recalls. The storage class and storage group ACS routines must be defined such that a recall to the volser uses the storage class and storage group reserved for use by DFSMScdm. The storage group must be defined with **Auto Migrate=No** or **(AM=N)**, so that data set migrations from the storage group are triggered only by DFSMShsm MIGRATE commands.
      - One or more management classes that control where data sets that have been recalled by DFSMScdm are subsequently migrated by DFSMShsm. This is used when the DFSMScdm job does not specify an explicit cloud location. These management classes normally already exist on your system to control data set migration for new data sets.

Update to storage class

This routine recalls data sets to volume *placeholdervol*, and sets the storage class for these recalled data sets to *cdmclass*.

```
IF (&&ACSENVIR EQ 'RECALL' AND &&ANYVOL EQ 'placeholdervol') THEN
  DO
    SET &&STORCLAS = 'cdmclass'
    EXIT
  END
```

Update to storage group

This routine checks for the storage class *cdmclass* set by the storage class ACS routine, and sets the storage group for these recalled data sets to *cdmgroup*. DFSMScdm migrates all the data sets in *cdmgroup* to a cloud specified in the DFSMScdm job.

```
IF (&ACSENVIR EQ 'RECALL' AND &STORCLAS EQ 'cdmclass') THEN
  DO
    SET &STORGRP EQ 'cdmgroup'
    EXIT
  END
```

Optional update to management class

This routine recalls data sets to storage class *cdmclass*, and allows recalled data sets to be managed by management class *hsmmc*. If this is omitted, the movement of data sets are managed according to the management class assignments in your existing management class routine. For example, if your management class routine assigns management classes based on the data set name, then different data sets may be migrated to different clouds based on those management class assignments.

```
IF (&STORCLAS EQ 'cdmclass') THEN
  DO
    SET &MGMTCLAS EQ 'hsmmc'
    EXIT
  END
```

Additional ACS routine updates

Data sets being recalled from ML2 by DFSMScdm for remigration to the cloud require that the ACS routines set the STORCLAS and STORGRP variables based on the ANYVOL variable that DFSMScdm passes to the ACS routines, as defined in your DFSMScdm configuration. This ensures that all data sets recalled on behalf of DFSMScdm are recalled to the storage group that has been reserved for use by DFSMScdm.

Important: If you are using class transitions in DFSMShsm, perform one of the following actions:

- Turn off class transitions so that the DFSMShsm recalls initiated by DFSMScdm are directed to the correct storage group.
- Update your ACS routines to nullify the STORCLAS assignment during the class transition call for DFSMShsm recalls being done on behalf of DFSMScdm. For example, use this in the STORCLAS routine:

  ```
  IF &ACSENVIR = 'SPMGCLTR' THEN SET &STORCLAS = ''
  ```

Setting up DFSMScdm for hybrid cloud data management

Set DFSMScdm up to use hybrid cloud data management by following the procedures outlined in this section.

Remember: If you do not plan to use hybrid cloud data management functions, you can skip this section.

Configuring DFSMScdm to enter TSO commands

The system programmer must configure DFSMScdm to enter the TSO commands.

Procedure

1. Add the DFSMScdm REXX library (*hlq*.IBM.HGBQ120.SGBQELIB) to the SYSEXEC concatenation.
2. Add the DFSMScdm load library (*hlq*.IBM.HGBQ120.SGBQLLIB) to the system linklist.

Configuring DFSMScdm for hybrid cloud data management

The system administrator must configure DFSMScdm for hybrid cloud data management.

Before you begin

You must complete the CDA component configuration before configuring DFSMScdm to utilize hybrid cloud data management. For CDA configuration information, see Cloud Data Access configuration (www.ibm.com/docs/en/zos/3.1.0?topic=services-cloud-data-access-configuration).

Procedure

1. Configure CDA for a cloud connection. The IBM utility GDKUTIL can be used to test the cloud connection.
2. On the configuration panel, customize DFSMScdm to suit your needs. You can enter and update the DFSMScdm product libraries.
3. Modify DFSMScdm started task JCL in the SAMPLIB and copy to a PROCLIB so that it can be started at IPL with a START command.
4. Copy the sample initialization parameters to a data set, and then specify that data set name in the GBQMAIN proc.
5. Customize the hybrid cloud data management configuration using the configuration parameters:

   STCID
   Started task ID used to define multiple address spaces on a system. It must be unique on the LPAR. It consists of 4–8 characters. The first character must be alphabetic or # $ @. The remaining characters can be alphanumeric or # $ @. The default is GBQ1.

   SMFREC
   A user SMF record number used to audit DFSMScdm cloud usage and determine DFSMScdm performance. Enter a value from 1152 to 2047. The default is 1155.

   MAX_IN_REQUEST
   Maximum number of data sets to be returned by a mask in a CDMSEND command. Enter a value from 1 to 9999. The default is 256.

   Limiting the number of data sets in a CDMSEND request can prevent creating a request that uses a large amount of DFSMScdm resources. If at any time it is determined that you require a larger number of data sets in one logical request, the DFSMScdm administrator can increase the MAX_IN_REQUEST value.

   MAX_HVCOMMON_USAGE
   Threshold of common high virtual (in megabytes) at which point DFSMScdm stops taking requests. Enter a value from 1M to 999M. The default is 100M. For example:

   ```
   MAX_HVCOMMON_USAGE=900M
   ```

   Hybrid cloud data management is driven by requests using commands like CDMSEND. These cloud requests are queued in high virtual common storage as they are being processed by DFSMScdm. The MAX_HVCOMMON_USAGE parameter sets the maximum amount of high virtual common storage that DFSMScdm can use for all queued cloud requests. To understand the impact of this parameter on your system, you can use a product that shows a z/OS virtual storage map to display

the amount of high virtual common storage set aside at system initialization, and the amount currently used.

The default high virtual common storage size on z/OS is 66 GB, and the default DFSMScdm usage is 100 MB (.1% of a GB). As an example, if you are copying 500,000 data sets to the cloud using 10,000 cloud requests each containing 50 data sets, as the requests are either being processed by DFSMScdm or waiting in the queue, roughly 50% of the 100 MB default high virtual common storage is used. Therefore, the 100 MB default is adequate for most configurations.

CELL_POOL_UNIT_SIZE
Size of the underlying virtual storage cells that make up a logical cloud request. Enter a value from 512 to 32764. The default is 2048.

The number of data sets in a cloud request determines the size of the request. For example, using approximations for lengths, consider a cloud request fixed length of 256, plus 100 data sets of 35 bytes per name, plus 100 cloud objects of 60 bytes per name, plus a 40-byte container name. That logical cloud request is 9796 bytes and uses five 2048-byte high virtual common storage cells, or 10,240 bytes of the MAX_HVCOMMON_USAGE parameter value, which at the 100 MB default is .01%.

CDA_TASKS
Maximum number of concurrent uploads and downloads to the cloud. Enter a value from 1 to 32. The default is 16.

TRACE_BUFFER_SIZE
Internal problem determination trace buffer size (in megabytes). Enter a value from 1M to 999M. For example:

```
TRACE_BUFFER_SIZE=100M
```

MAX_CDMLIST_BUFFER_SIZE
Maximum buffer size (in kilobytes) returned with a CDMLIST of cloud objects with wildcards. Enter a value from 32K to 512K. The default is 256K. For example:

```
MAX_CDMLIST_BUFFER_SIZE=200K
```

This value is added to the cloud request fixed size and object name size. Using the default MAX_CDMLIST_BUFFER_SIZE value of 16,000 bytes, plus the fixed size results in a logical cloud request of approximately 17,000 bytes, consuming nine 2048-byte high virtual common storage cells, or .017 % of the 100 MB default high virtual common storage size.

Setting up DFSMScdm security

Setting up DFSMScdm security is vital. Without the appropriate setup, administrator-level access may be available to all users with read access to the DFSMScdm libraries.

Managing DFSMScdm access

DFSMScdm maintains the security of DFSMScdm operations through the use of RACF FACILITY class profiles.

About this task

Administrators and users have different authority when using DFSMScdm.

Table 3. DFSMScdm administrator authority vs. user authority

Function	Administrators	Users
Security	Authority to provide DFSMScdm administrator and user access	No authority to provide administrator or user access

Table 3. DFSMScdm administrator authority vs. user authority (continued)		
Function	**Administrators**	**Users**
MODIFY commands	Authority to use MODIFY commands to change hybrid cloud data management settings	No authority to use MODIFY commands

Procedure

1. For all DFSMScdm administrators and users:
   a) If you plan to use DFSMShsm data movement functions, provide read access to these RACF FACILITY classes:
      - STGADMIN.ARC.RECALL
      - STGADMIN.ARC.MIGRATE
   b) Specify `UACC(NONE)` to prevent usage of commands before they are identified and properly defined. This ensures security when commands are implemented in future releases.
   c) Provide read access to the control data set.
2. Add the DFSMScdm load library *hlq*.IBM.HGBQ120.SGBQLLIB to the LNKLST and APF-authorize it on any systems where it should run. For more information on LNKLST, see Updating LNKLST concatenations (www.ibm.com/docs/en/zos/3.1.0?topic=command-updating-lnklst-concatenations). For more information on APF, see APF authorization for LNKLST data sets (www.ibm.com/docs/en/zos/3.1.0?topic=statement-apf-authorization-lnklst-data-sets).
3. If you plan to use hybrid cloud data management functions, define DFSMScdm with its own RACF user ID profile and add it to the started procedures table as TRUSTED. For more information, see Assigning the RACF TRUSTED attribute (www.ibm.com/docs/en/zos/3.1.0?topic=tailoring-assigning-racf-trusted-attribute).

Managing hybrid cloud data management access

Administrators and users have different authority when using hybrid cloud data management functions. Set up hybrid cloud data management function administrators and users with these steps.

About this task

Remember: If you do not plan to use hybrid cloud data management functions, you can skip this section.

Table 4. Hybrid cloud data management command administrator authority vs. user authority		
Command	**Administrators**	**Users**
CDMSEND	Can send any data set, including those that they do not have access to via RACF **Important:** Administrators can also delete any data set after upload.	Must have ALTER access to send a data set
CDMRET	Can retrieve any data set	Must have ALTER access to retrieve a data set
CDMQUERY	Can query all requests in the queue	Can query only their own queued requests
CDMMOD	Can cancel any request in the queue	Can cancel only their own queued requests

Table 4. Hybrid cloud data management command administrator authority vs. user authority (continued)		
Command	**Administrators**	**Users**
CDMLIST	Can display information about all cloud object data	Can display information about only their own cloud object data
CDMDEL	Can delete any cloud object	Can delete only objects that are copies of data sets to which they have ALTER access

For more information on the hybrid cloud data management commands, see "TSO and batch commands" on page 68.

Procedure

1. For each DFSMScdm command that performs hybrid cloud data management, authorize administrators by providing read access to the DFSMScdm administrator RACF FACILITY class profile:

   ```
   STGADMIN.GBQ.ADMIN.cdmcommand
   ```

   Important: When authorizing administrators for the CDMSEND command, keep in mind that this command includes the capability to delete data sets after upload. Using this option, administrators can delete data sets that they do not have access to via RACF.
2. For each DFSMScdm command that performs hybrid cloud data management, authorize users by providing read access to the DFSMScdm user RACF FACILITY class profile:

   ```
   STGADMIN.GBQ.USER.cdmcommand
   ```

Chapter 3. DFSMShsm data movement administration

DFSMScdm consists of three DFSMShsm data movement functions to perform migrations. The control data set specified during installation of DFSMScdm contains members that are output by a function.

Members in the control data set

The control data set contains members detailing user-specified configurations; summary, simulation and migration jobs; and the status summary of ML2 data sets.

CONFIG*nn*
Member defining a DFSMScdm configuration.

SUMRY*nn*
Summary report log output for configuration CONFIG*nn*. This is overwritten if another summary job is run for the same configuration.

SUMRY*nn*J
Summary job JCL to create the summary report log output SUMRY*nn*.

grpname
Migration group name defined by the user during configuration. Each migration group has five members in the control data set.

***grpname*1**
Simulation job JCL

***grpname*2**
Migration job JCL

***grpname*S**
Simulation job log output

***grpname*M**
Migration job log output

***grpname*B**
Bookmark file for simulations that select by migration date. If the control statement that limits the number of data sets to be selected is specified, resubmitting the simulation job reads this bookmark file to resume from where the previous job for the migration group left off (instead of returning the data sets that were already previously selected).

Summary job

Display a summary report of data sets that have been migrated to ML2.

The summary job is built, saved, and automatically submitted using **Option 1 Submit batch job to generate report**. The summary report is displayed using **Option 2 View most recently generated report**.

The summary job is optional. The job reads through the entire DFSMShsm MCDS to gather general statistics about the migrated data sets. If the job is submitted again, the output from any previous run of the summary job is overwritten.

For more information, see “Option 1 Summary - Generate/display summary report of migrated data sets” on page 27.

Simulate job

Select which DFSMShsm ML2 data sets are to be migrated to the cloud based on the specified selection criteria.

The simulate job is built, displayed, and saved using “Option 2 Simulate - Create a job to simulate a cloud migration” on page 28. You can submit the job when it is displayed, or submit the saved job later as the job is stored in the control data set.

Important: You must run a simulation job for a migration group before a migration job can be built and run for that migration group.

The simulate job selects data sets to be migrated based on the specified selection criteria.

A) ML2 volumes less than a specified percentage
A simulate reads through the DFSMShsm OCDS and MCDS. The simulate job uses the DFSMShsm OCDS as input and scans until the specified number of volumes or data sets are returned. All of the data sets on volumes with less than the specified percentage of valid data are recalled from ML2 and moved to the cloud, freeing up those tape volumes. This option always starts selection at the beginning of the OCDS.

B) Data sets migrated to ML2 after or before a specified date, or within a range of dates
The entire MCDS is read sequentially, looking for data sets that were migrated after or before a specified date, or within a range of dates. Since an MCDS can be a very large file, DFSMScdm uses a bookmark technique so that any simulate using this method resumes from where the previous job for the migration group left off. The simulate bookmark corresponding to migration group *grpname* is named *grpname*B, and is stored in the control data set.

C) Data sets migrated to ML2 before or no more than a specified number of days ago, or within a range of days ago
Similar to the method of selecting data sets migrated to ML2 based on a specified date or dates, except DFSMScdm calculates the job run date minus the specified number of days, and works exactly as if a date was specified for option B. A bookmark is written based on the date calculated. A simulation using this method can be resumed from where the previous simulation for the migration group ended, continuing to select data sets based on the date calculated by the first simulation.

Simulation and migration job logs are saved using the migration group name. If you reuse a migration group name for another simulation job, the previous simulation and migration logs for that migration group are deleted. However, if the specified selection criteria is based on data sets migrated to ML2 before a specified date or number of days, and you select the option to resume the previous simulation, the simulation results are appended to the previous simulation log, and any existing migration log is retained.

Recommendation: To help avoid errors, use the dialog panels to generate jobs rather than directly writing the JCL.

The simulation job output can be viewed and analyzed, and is used as input to the execution of a migrate job.

For information about usage and parameters, see “Option 2 Simulate - Create a job to simulate a cloud migration” on page 28.

View a summary of the simulation results using “Option 5 Display - Display cloud simulate/migrate logs” on page 36.

Simulate control statements

Control statements limit the number of data sets to be selected.

After building a job using the ISPF dialog panels, you can make changes to the values of the control statements by editing the JCL stored in the control data set.

Selection criteria

ML2_PERCENT_USED_LESS_OR_EQUAL=*nnn*
Select data sets less than or equal to *nnn*% full.

DATA_SETS_MIGRATED_BEFORE=*date*
DAYS_SINCE_MIGRATED=*nnnn*
Select data sets migrated to ML2 before *date* or if they were migrated to ML2 at least *nnnn* days ago. You can pause the simulate and have the progress saved, then resume the job later. An MCDS can contain large volumes of data, so it is often desirable for DFSMScdm to start from where it left off.

DATA_SETS_MIGRATED_AFTER=*date*
MAX_DAYS_SINCE_MIGRATED=*nnnn*
Select data sets migrated to ML2 after *date* or if they were migrated to ML2 no more than *nnnn* days ago. You can pause the simulate and have the progress saved, then resume the job later. An MCDS can contain large volumes of data, so it is often desirable for DFSMScdm to start from where it left off.

DSN_EXCLUDE=*datasetmask*
DSN_INCLUDE=*datasetmask*
datasetmask is either a fully qualified data set name, or a data set name mask using standard mask rules (% representing any single character, * representing zero or more characters, and ** representing zero or more qualifiers). These values are used to filter the list of data sets that satisfy the migration date or days specification.

- If **DSN_INCLUDE** statements are used, a data set must match at least one of those masks, and not any **DSN_EXCLUDE** mask, to be selected.
- If **DSN_INCLUDE** statements are not used, a data set is selected unless it matches any **DSN_EXCLUDE** mask.

Rules for using control statements

Only certain combinations of these control statements are allowed.

- If **ML2_PERCENT_USED_LESS_OR_EQUAL** is used, none of the control statements that select by date, number of days, or data set name filter can be used.
- To specify a range of dates, use **DATA_SETS_MIGRATED_BEFORE** and **DATA_SETS_MIGRATED_AFTER** in the same job.
- To specify a range of days, use **DAYS_SINCE_MIGRATED** and **MAX_DAYS_SINCE_MIGRATED** in the same job.
- To filter data sets by names or using masks, use **DSN_EXCLUDE** and **DSN_INCLUDE**. These control statements can be used in the same job as the control statements that select either by date or days, or a range of dates or days.
- Multiple instances of **DSN_EXCLUDE** and **DSN_INCLUDE** can be used in the same job.

Optional control statements

Optional control statements stops the simulate after the specified value is reached and limits the number of data sets moved to the cloud by the subsequent migration job:

MAX_NUMBER_OF_ML2_VOLUMES=*nnnnn*
Maximum number of ML2 volumes to be migrated. This control statement is only used for the parameter **ML2_PERCENT_USED_LESS_OR_EQUAL**.

MAX_DATA_SETS_MIGRATED=*nnnnnnn*
Maximum number of data sets to be migrated.

Resuming a simulation

This parameter is only used when selecting data sets by a date or number of days. If the simulation ends because it reaches a limit on the number of data sets to be selected, you can run another simulation for the same migration group with the same selection date or number of days.

RESUME_FROM_LAST_SIMULATED_DSN=YES|NO

YES - Resumes selection of data sets from where the previous simulation ended. Simulation results are appended to the previous simulation log, and any existing migration log is retained.

Note that the same selection date must be used; the **DATA_SETS_MIGRATED_BEFORE** or **DAYS_SINCE_MIGRATED** value must be the same as the previous run. In the latter case, the resumed simulation uses the same selection date that was calculated by the first simulation job run for that migration group; the program does not calculate *nnnn* days subtracted from the date the resume job is run.

NO - Selection of data sets starts at the beginning of the MCDS. Simulation results overwrite any previous simulation results for the migration group, and any previous migration log for the migration group is deleted.

For more information on the simulate job parameters, see Table 5 on page 29.

Migrate job

Migrate data sets that have been recalled to disk by DFSMShsm to either a specific cloud location, or to one or more cloud locations determined by the management classes of the data sets.

The migrate job is built, displayed, and saved using “Option 3 Migrate - Create a cloud migration job from a simulated group” on page 31. You can submit the job when it is displayed, or submit the saved job later as the job is stored in the control data set.

Important: You must run a simulation job for a migration group before a migration job can be built and run for that migration group.

The migration job uses the results from the corresponding simulation to determine which data sets have been recalled from ML2 and migrates them to the cloud. Selected ML2 data sets are brought back to disk using the DFSMShsm RECALL command. The destination for the migration is specified by either a cloud name, or a location determined by the management class for each data set. If you specify a cloud name, DFSMScdm recalls data sets from ML2 to the DFSMScdm storage class, and then migrates all data sets from the DFSMScdm storage group to the cloud.

Recommendation: To help avoid errors, use the dialog panels to generate jobs rather than directly writing the JCL.

Migration considerations

It is recommended to schedule migration jobs during a time when they will not be competing with high levels of production DFSMShsm activity. Define pacing parameters to allow DFSMScdm migrations to have limited impact on production DFSMShsm jobs.

Batches

Recalls from ML2 are done in batches to limit the impact that DFSMScdm has on other jobs on the system. A single migration job recalls data sets in a series of batches. You can specify options to control the pacing of batches:

- Number of data sets in each batch.
- Interval between each data set within a batch. A value of 0 seconds is recommended.
- Interval between batches.

Runtime

You can specify options to control the runtime of a migration job to:

- Limit the processing time of a migration job to stop at a certain time of day.
- Limit the processing time of a migration job to stop after a certain number of hours if all of the data sets in the simulate list have not been completed.
- Limit capacity using a percentage-full threshold for the storage group to pause the recall process and start migration from disk to cloud. The percentage of storage of the ML2 volumes in the recall

storage group are checked at the end of each batch, and when the specified threshold is met, recalls are paused and migration starts. As this migration runs and frees up space in the storage group, recalls resume when the disk space usage drops to half of the specified threshold value.

Migration process

The migration process starts when the migration job is submitted. Data sets are recalled from disk to either the specified cloud location, or to the location determined by the data set management class.

The migrate function ensures that the data sets in a migration group are the same between the simulation and migration run times. If an ML2 data set identified in the simulate no longer meets the specified criteria, it is skipped from the migration.

During this recall process, you can use MODIFY commands to stop the recalls or query the status of the migration. For more information, see "MODIFY commands to interact with a migrate job" on page 24.

The job stops when all data sets have been recalled, when one of the specified time limits is reached, or if the job was stopped by an operator command.

Note: To continue a migration that has been interrupted, resubmit the same JCL as the original job. The resubmitted job continues from where the previous job left off.

For information about usage and parameters, see "Option 3 Migrate - Create a cloud migration job from a simulated group" on page 31.

View the status of the migration process using "Option 4 Monitor - Monitor active DFSMScdm migration jobs" on page 35.

View a summary of the migration results using "Option 5 Display - Display cloud simulate/migrate logs" on page 36.

Migrate control statements

Control statements manage the pacing of batches and process runtimes.

After building a job using the ISPF dialog panels, you can make changes to the values of the control statements by editing the JCL stored in the control data set.

Recommendation: To help avoid errors, use the dialog panels to generate jobs rather than directly writing the JCL.

MIGRATE_TO_CLOUD_NAME=*cldname*
Explicit cloud name where recalled data sets are migrated to.

When specifying a cloud name, you must also specify **MIGRATE_TO_DEFAULT_MGMTCLAS=NO**.

MIGRATE_TO_DEFAULT_MGMTCLAS=YES|NO
The destination for the migration of recalled data sets may be determined by the management class for each data set.

YES - Each data set recalled from ML2 is migrated to a destination determined by the management class assigned by the ACS routines on the system.

NO - The migration destination is specified by the **MIGRATE_TO_CLOUD_NAME** parameter, which is required when **NO** is used.

RECALL_TIME_OF_DAY_TO_STOP=*hh:mm:ss*
Time of day at which DFSMScdm stops issuing DFSMShsm recall commands.

RECALL_MAXIMUM_TIME_FOR_RECALLS=*hh:mm*
Maximum amount of time that a DFSMScdm job is allowed to spend doing DFSMShsm recalls.

RECALL_BATCH_SIZE=*nnnn*
Number of data sets that DFSMScdm recalls in a single batch. You must specify a value from 1 to 9999.

RECALL_WAIT_BETWEEN_DATA_SET=*nn*
Number of seconds between each data set recall within a single batch. A value of 0 is strongly recommended to avoid slowing utility processing.

RECALL_WAIT_BETWEEN_BATCHES=*mm:ss*
Number of minutes and seconds between each batch of recalls.

PERCENT_FULL_START_CLOUD_MIGRATE=*nn*
Percentage-full threshold for when recalls are paused and a cloud migration is started.

For more information on the migrate job parameters, see Table 6 on page 33.

MODIFY commands to interact with a migrate job

Use z/OS console commands to interact with a running migrate job.

During an active migration job, you can use MODIFY commands to display the status of the job, or stop the recall process:

F *jobname*,STATUS
Displays the status of the migrate job in a WTO message to the system console.

F *jobname*,STOP
Stops the recall process. However, DFSMShsm will still continue to process any recalls queued or in process. Once any recalls are complete, the MIGRATE STORAGEGROUP command is issued to migrate any data sets already recalled.

F *jobname*,NOMIGRATESTOP
Similar to the STOP command, except the MIGRATE STORAGEGROUP command is not invoked.

If a migrate job has been interrupted by a console command, the migration can be continued by resubmitting the migration job. The resubmitted job reads the simulation and migration logs to determine which data sets still need to be migrated. Resubmitted jobs append a new section to the existing migration log.

Usage sequence

A typical usage of DFSMScdm for DFSMShsm data movement functions is described in this topic.

Before you begin

Complete the installation and setup described in Chapter 2, “Installation and setup,” on page 9.

About this task

The DFSMScdm primary interface method is using ISPF panels. The **SMF ID** on the ISPF panels is the system ID of the system that the TSO user is logged into.

```
                          DFSMS Cloud Data Manager
Option ===>

SMF ID : SYSA                                                Version : 1.2.0
                                                             24/04/27  10:49:39

                             DFSMScdm - Main Menu

         1 HSM          DFSMShsm MLx -> MLC
         2 HCDM         Hybrid Cloud Data Management
         C Configure    Configure session options
         H Help         Message help
         X Exit         Exit

 F1=Help    F2=Split   F3=Exit    F7=Up      F8=Down    F9=Swap    F12=Cancel
```

Figure 5. DFSMScdm main menu

Tip: To display help text on any given field, place the cursor on the field and press **F1**.

From the DFSMScdm main menu, access the DFSMShsm functions with **Option 1 HSM**. The DFSMShsm MLx -> MLC functions menu displays.

```
                          DFSMS Cloud Data Manager
Option ===>

SMF ID : SYSA                                              Version : 1.2.0
                                                           24/04/27  10:49:39

                     DFSMScdm - DFSMShsm MLx -> MLC Menu

     1 Summary     Generate/display summary report of migrated data sets
     2 Simulate    Create a job to simulate a cloud migration
     3 Migrate     Create a cloud migration job from a simulated group
     4 Monitor     Monitor active DFSMScdm migration jobs
     5 Display     Display cloud simulate/migrate logs
     C Configure   Configure control data set and session options
     H Help        Message help

 F1=Help    F2=Split   F3=Exit    F7=Up      F8=Down    F9=Swap   F12=Cancel
```

Figure 6. DFSMScdm DFSMShsm MLx -> MLC functions menu

Procedure

1. Execute the following TSO command to start DFSMScdm and enter the configuration panel:

   ```
   EX 'hlq.IBM.HGBQ120.SGBQELIB(GBQCDM)' 'hlq.IBM.HGBQ120'
   ```

   The configuration panel manages DFSMScdm actions. You can enter and update configuration values to customize DFSMShsm data movement and hybrid cloud data management as specified in the upcoming setup sections.
2. Specify configurations using “Option C Configure - Configure control data set and session options” on page 39. You can specify a new configuration member or use the values of an existing configuration member.

   To specify a new configuration member:

   a) Enter values in the fields.

   b) Save the values:

   - To save the values and exit the panel, press **F3** or enter **EXIT** on the command line.
   - To save the values without exiting the panel, press **F5** or enter **SAVE** on the command line.

   To read the contents of an existing configuration member or switch between configurations:

   a) Enter the control data set and configuration member names then press **F6**.

      Important: Pressing **F3** or **F5** saves the configuration with the currently-displayed values. To use values for another configuration, press **F6**. If you change the control data set or configuration member name on the panel and press **Enter**, you are given the option to read values from that configuration member if the member already exists.
3. Submit a batch job to generate and view a report of the status of DFSMShsm data sets using “Option 1 Summary - Generate/display summary report of migrated data sets” on page 27.
4. Create and run a simulation job to simulate which ML2 data sets are selected to be migrated using “Option 2 Simulate - Create a job to simulate a cloud migration” on page 28:

   a) Enter values in the appropriate fields according to your chosen selection criteria and other optional parameters.

   b) Submit the job using one of the following methods:

   - To submit the job with the current values, press **F3** or enter **EXIT** on the command line. This saves the member and displays the job in the ISPF editor where you can examine, modify, and submit the job.

- To submit the job at a later time, press **F5** or enter **SAVE** on the command line. This saves the values in the panel as a member in the control data set.

5. Create and run a migration job for the migration group using “Option 3 Migrate - Create a cloud migration job from a simulated group” on page 31.

   Similar to the simulation job step, enter values in the appropriate fields and submit the job.
6. Optional: Enter **S** next to the group name to display the status of the running migration job using “Option 4 Monitor - Monitor active DFSMScdm migration jobs” on page 35.
7. Optional: Enter **S** or **M** to the left of the group name to review the simulation and migration log using “Option 5 Display - Display cloud simulate/migrate logs” on page 36.

Related concepts

“Members in the control data set ” on page 19
The control data set contains members detailing user-specified configurations; summary, simulation and migration jobs; and the status summary of ML2 data sets.

“ISPF dialog panels” on page 26
The ISPF panel interface is the principal tool for interacting with DFSMScdm. Information on the usage of DFSMShsm function panels is outlined in the subtopics here.

Related reference

“MODIFY commands to interact with a migrate job” on page 24
Use z/OS console commands to interact with a running migrate job.

ISPF dialog panels

The ISPF panel interface is the principal tool for interacting with DFSMScdm. Information on the usage of DFSMShsm function panels is outlined in the subtopics here.

The **SMF ID** on the ISPF panels is the system ID of the system that the TSO user is logged into.

```
                          DFSMS Cloud Data Manager
Option ===>

SMF ID : SYSA                                              Version : 1.2.0
                                                           24/04/27  10:49:39

                            DFSMScdm - Main Menu

         1 HSM          DFSMShsm MLx -> MLC
         2 HCDM         Hybrid Cloud Data Management
         C Configure    Configure session options
         H Help         Message help
         X Exit         Exit

 F1=Help    F2=Split   F3=Exit    F7=Up      F8=Down    F9=Swap   F12=Cancel
```

From the DFSMScdm main menu, access the DFSMShsm data movement functions with **Option 1 HSM**. The DFSMShsm MLx -> MLC functions menu displays.

```
                          DFSMS Cloud Data Manager
Option ===>

SMF ID : SYSA                                              Version : 1.2.0
                                                           24/04/27  10:49:39

                     DFSMScdm - DFSMShsm MLx -> MLC Menu

     1 Summary      Generate/display summary report of migrated data sets
     2 Simulate     Create a job to simulate a cloud migration
     3 Migrate      Create a cloud migration job from a simulated group
     4 Monitor      Monitor active DFSMScdm migration jobs
     5 Display      Display cloud simulate/migrate logs
     C Configure    Configure control data set and session options
     H Help         Message help

 F1=Help    F2=Split   F3=Exit    F7=Up      F8=Down    F9=Swap   F12=Cancel
```

Tip: Each option can be directly reached from the DFSMScdm main menu or DFSMShsm MLx -> MLC functions menu by entering the option numbers sequentially separated by periods.

Option 1 Summary - Generate/display summary report of migrated data sets

Generate and display a summary report of data sets that have been migrated to ML2, using the DFSMShsm control data sets specified by the currently active DFSMScdm configuration. The summary report job is optional.

Output

The JCL and output log are stored in the DFSMScdm control data set. For a template of the JCL and a sample of a job output, see "Summary job output" on page 43. For configuration name CONFIG*nn*, the JCL and output log are as follows:

SUMRY*nnJ*
JCL for the summary job

SUMRY*nn*
Output log

```
            Generate/Display Summary Report of Migrated Data Sets
Option ===>

         Migration Summary Report for DFSMScdm Configuration CONFIGnn

                 1  Submit  Submit batch job to generate report
                 2  View    View most recently generated report

 F1=Help    F2=Split   F3=Exit    F7=Up      F8=Down    F9=Swap   F12=Cancel
```

Figure 7. Option 1 Summary - Generate/display summary report of migrated data sets panel

- **Option 1 Submit** submits a batch job that generates the report.
- **Option 2 View** displays the summary report for the specified DFSMScdm configuration after the batch job has completed.

The summary report is based on the DFSMShsm control data sets specified in the DFSMScdm configuration CONFIG*nn*. The summary output is overwritten if another summary job is run for the same configuration.

Option 2 View displays the summary report for the specified DFSMScdm configuration:

```
                     Migrated Data Sets Summary Statistics
Command ===>

                  Summary for DFSMScdm Configuration CONFIG01

Total number of data sets migrated to ML2  . : 8,939
Total amount of data migrated to ML2 . . . . : 88,692 TB
Average age of data sets migrated to ML2 . . : 224 Days
Oldest ML2 data set  . . . . . . . . . . . . : 2021/08/24
ML2 data sets never recalled . . . . . . . . : 8,673
Percent ML2 never recalled . . . . . . . . . : 97%
Total number of ML2 volumes  . . . . . . . . : 399
Total number of cloud objects  . . . . . . . : 204

Date above statistics calculated . . . . . . : 2023/08/11

 F1=Help    F2=Split   F3=Exit    F7=Up      F8=Down    F9=Swap   F12=Cancel
```

Figure 8. Option 1 Summary - Migrated data sets summary statistics panel

The age of a data set refers to the number of days between the migration date of the data set recorded by DFSMShsm, and the date the summary job was run. All days are added and the average age calculated.

Option 2 Simulate - Create a job to simulate a cloud migration

Build a batch job to perform a simulation of a DFSMScdm migration.

Important: You must run a simulation job for a migration group before a migration job can be built and run for that migration group.

The simulation job determines which ML2 data sets are selected to be migrated with the given selection criteria. The subsequent migration job recalls the selected data sets from ML2 and migrates them to the cloud. You can also use this option to continue a previous simulation that was interrupted by the specified data set limit threshold.

A summary of the results is viewed using "Option 5 Display - Display cloud simulate/migrate logs" on page 36.

Output

The JCL and output log are stored in the DFSMScdm control data set. For more information, see "Simulate job output" on page 44. For migration group *grpname*, the JCL and output log are as follows:

***grpname*1**
JCL for the simulation job

***grpname*S**
Output log. The output can be viewed and analyzed, and is used as input to the execution of a migrate job.

UI controls

F3 | EXIT
Save the member and display the job in the ISPF editor, where you can examine, modify, and submit the job using the **SUBMIT** command.

F5 | SAVE
Save the currently displayed values in the panel as a member in the DFSMScdm control data set without exiting the panel.

F6 | FILTER
Display a panel where you can specify data set names or masks used for filtering data sets that meet the date selection criteria. Used only when a value of YES is specified in the **`Filter by DSN?`** parameter.

F12 | CANCEL
Exit the panel without saving the job in the library.

Tip: To display help text on any given field, place the cursor on the field and press **F1**.

```
                Create a Job to Simulate a Cloud Migration
Command ===>


Name of migration group to simulate . . . . . _______

Choose ONE method of selection (A, B, or C):
 ------------------------------------------------------------------------------
A) Select ML2 volumes less than or equal to . . ___  percent full
   Maximum number of ML2 volumes (optional) . . _____
 ------------------------------------------------------------------------------
B) Select data sets migrated to ML2 after . . . __________ (YYYY/MM/DD)
     and/or data sets migrated before . . . . . __________ (YYYY/MM/DD)
   Resume from last simulated DSN?  . . . . . ___        (Yes/No)
   Filter by DSN? (F6 to show/edit list)  . . ___        (Yes/No)
 ------------------------------------------------------------------------------
C) Select data sets migrated to ML2 at least  . ____ days ago
     and/or data sets migrated no more than . . ____ days ago
   Resume from last simulated DSN?  . . . . . ___        (Yes/No)
   Filter by DSN? (F6 to show/edit list)  . . ___        (Yes/No)
 ------------------------------------------------------------------------------

Optional for all selection methods:
Maximum number of migrated data sets  . . . . .  _______

Active DFSMScdm Configuration . . . . . : CONFIGnn

 F1=Help    F2=Split   F3=Exit    F5=Save    F6=Filter  F7=Up      F8=Down
 F9=Swap   F12=Cancel
```

Figure 9. Option 2 Simulate - Create a job to simulate a cloud migration panel

Table 5. Simulate job parameters

Parameter	Value	Description
Name of migration group to simulate	*grpname*	Name of a migration group (up to 7 characters) to be used by the simulation job and the subsequent migration job. Simulation and migration job logs are saved using this name. If you enter a migration group name for which a simulation or a migration log already exists, running the simulation job deletes any existing logs for the specified migration group. However, if you select data sets by migration date (option B) or days since migrated (option C), and you choose to resume from the last simulated DSN, simulation results are appended to the previous simulation log, and any existing migration log is retained. If you enter a migration group name for which a simulation job JCL *grpname*1 already exists in the control data set, you are given the following options: • Use a different migration group name for the job. • Reuse this migration group name. The existing simulation job in the library is overwritten when you save the job. • Use the existing job. Instead of the values currently displayed on the panel, the existing parameter values from the JCL job are used.
Select ML2 volumes less than or equal to *nnn* percent full	*nnn*	A method of selecting a migration group. This allows you to select under-utilized volumes for cloud migration, freeing up those volumes.

Table 5. Simulate job parameters (continued)		
Parameter	**Value**	**Description**
Maximum number of ML2 volumes	*nnnnn*	Maximum number of ML2 volumes to be migrated.
Maximum number of migrated data sets	*nnnnnnn*	Maximum number of data sets to be migrated.
Select data sets migrated to ML2 before Select data sets migrated to ML2 after	MM/DD/YYYY | DD/MM/YYYY | YYYY/MM/DD	A method of selecting a migration group. This allows you to select data sets that may be less likely to be recalled to disk in the near future. The date format can be changed in "Option C Configure - Configure control data set and session options" on page 39.
Select data sets migrated to ML2 *nnnn* or more days ago Select data sets migrated to ML2 no more than *nnnn* days ago	*nnnn*	A method of selecting a migration group. *nnnn* days are subtracted from the job run date, and data sets migrated to ML2 are selected based on that date.
Filter by DSN?	YES | NO	**YES** - Press **F6** to display a panel where you can specify data set names or masks used for filtering data sets that meet the date selection criteria. If you have not specified whether to include or exclude data sets according to certain names or masks, any data set matching the selection criteria are selected. If you have specified to include data sets according to certain names or masks, any data set matching at least one of those values are selected. Data sets matching an exclude value are not selected. If you have specified to exclude data sets according to certain names or masks, any data set matching at least one of those values are not selected. **NO** - Do not use filtering.

Table 5. Simulate job parameters (continued)		
Parameter	**Value**	**Description**
Resume from last simulated DSN?	YES | NO	Resume or overwrite a previous simulation. If the simulation ends because it reaches a limit on the number of data sets to be selected, you can run another simulation for the same migration group with the same selection date or number of days. **YES** - Resumes selecting from where the previous simulation ended. Simulation results are appended to the previous simulation log, and any existing migration log is retained. Note that the same selection date must be used; the selection date or the number of days must be the same as the previous run. In the latter case, the resumed simulation uses the same selection date that was calculated by the first simulation job run for that migration group; the program does not calculate *nnnn* days subtracted from the date the resume job is run. **NO** - Simulation results overwrite any previous simulation results for the migration group, and any previous migration log for the migration group is deleted.

Option 3 Migrate - Create a cloud migration job from a simulated group

Build and submit a batch job to migrate select data sets to the cloud for which you have previously run a simulation.

You can submit the job when it is displayed, or submit the saved job later as the job is stored in the control data set.

Important: You must run a simulation job for a migration group before a migration job can be built and run for that migration group.

It is recommended to schedule migration jobs when DFSMShsm recall activity is low. Define pacing parameters to allow DFSMScdm migrations to have limited impact on production DFSMShsm jobs. For example, you can specify options for batches and the runtimes of a job.

During this recall process, you can use MODIFY commands to stop the recalls or query the status of the migration. For more information, see "MODIFY commands to interact with a migrate job" on page 24.

The job stops when all data sets have been recalled, when one of the specified time limits is reached, or if the job was stopped by an operator command.

View the status of the migration process using "Option 4 Monitor - Monitor active DFSMScdm migration jobs" on page 35.

View a summary of the migration results using "Option 5 Display - Display cloud simulate/migrate logs" on page 36.

Important: All DFSMScdm recall and migration functions are executed in the GBQUTILM cloud migration program and depend on DFSMShsm processing. Therefore, it is imperative that you are proficient with DFSMShsm and able to locate DFSMShsm activity logs for the commands that DFSMScdm sends to DFSMShsm to diagnose any issues discovered after GBQUTILM completes the process. DFSMScdm issues two commands to DFSMShsm:

RECALL
Though DFSMScdm summarizes the results of the RECALL commands, it may be necessary to examine DFSMShsm activity logs to diagnose certain issues encountered by DFSMShsm.

MIGRATE
Typically, a single MIGRATE STORAGEGROUP command is issued by DFSMScdm before the GBQUTILM program completes. In some instances, DFSMScdm issues multiple MIGRATE commands before completing. If an issue is encountered by DFSMShsm after the GBQUTILM program completes, you must locate the DFSMShsm activity log for a DFSMShsm MIGRATE command issued by DFSMScdm to diagnose the problem.

Output

The JCL and output log are stored in the DFSMScdm control data set. For more information, see "Migrate job output" on page 45. For migration group *grpname*, the JCL and output log are as follows:

***grpname*2**
JCL for the migrate job

***grpname*M**
Output log

Restarting an interrupted migration job

A migration that has been interrupted when one of the specified time limits is reached, or if the job was stopped by an operator command can be continued by resubmitting the same JCL as the original job.

1. Enter the same migration group name and press **Enter**.
2. Select **Resubmit existing job** to display the JCL, and then submit the job.

UI controls

F3 | EXIT
Save the member and display the job in the ISPF editor, where you can examine, modify, and submit the job using the **SUBMIT** command.

F5 | SAVE
Save the currently displayed values in the panel as a member in the DFSMScdm control data set without exiting the panel.

F6 | FILTER
Display a panel where you can specify data set names or masks used for filtering data sets that meet the date selection criteria. Used only when a value of YES is specified in the **`Filter by DSN?`** parameter.

F12 | CANCEL
Exit the panel without saving the job in the library.

Tip: To display help text on any given field, place the cursor on the field and press **F1**.

```
              Create a Cloud Migration Job from a Simulated Group
Command ===>


Name of migration group  . . . . . _______

Migrate to specific cloud named  . . . . . _______________________________
                  OR
Migrate using assigned management class    ___        (Yes/No)

 -- Parameters to create migrate job --
Time of day to stop recall processing  . . ________   (hh:mm:ss)
Maximum amount of time to recall . . . . . _____      (hh:mm)

-- DFSMShsm recall pacing parameters --
Number of data sets in recall batch  . . . ____
Seconds to wait between data sets  . . . . __
Minutes:seconds between batches  . . . . . _____      (mm:ss)
Percent STORGRP full before remigrate  . . __

Active DFSMScdm Configuration  . . . . . : CONFIGnn

 F1=Help    F2=Split   F3=Exit    F5=Save    F7=Up      F8=Down    F9=Swap
F12=Cancel
```

Figure 10. Option 3 Migrate - Create a cloud migration job from a simulated group panel

Table 6. Migrate job parameters

Parameter	Value	Description
Name of migration group	*grpname*	Name of the migration group for which a corresponding simulation has already been done. If you enter a migration group name for which a migration job JCL *grpname*2 already exists in the control data set, you are given the following options: • Reuse the existing job. If a previous migration job terminated, resubmitting the job picks up from where the previous job ended. • Save new parameters for the migration group. If a previous migration job used the same migration group name, the output from this migration job is appended to the existing migration output log in the control data set.
Migrate to specific cloud named	*cldname*	Migrate recalled data sets from DFSMShsm ML2 to a specific cloud destination. When specifying a cloud name, you must also specify **Migrate using assigned management class**=**NO** If you blank out this field and press **Enter** while **Migrate using assigned management class**=**NO**, then the default cloud name (saved in the current configuration file) is inserted.

Table 6. Migrate job parameters (continued)

Parameter	Value	Description
Migrate using assigned management class	YES | NO	**YES** - Each data set recalled from DFSMShsm ML2 are migrated based on the active ACS routine for your management class for each data set. Further management of that data set is controlled by the class transition criteria of the assigned management class. **NO** - Provide a specific cloud destination in the **`Migrate to specific cloud named`** field.
Time of day to stop recall processing	*hh:mm:ss*	Time of day at which DFSMScdm stops issuing DFSMShsm RECALL commands, therefore limiting CPU processing. Only values up to 23:59:59 are accepted. When a DFSMScdm migration job has ended because it reached a time limit, another job can be run using the same JCL to pick up from where the previous job left off. The second migration job reads the simulation and migration logs for the migration group to determine the next data set to recall from DFSMShsm ML2 and migrate to the cloud.
Maximum amount of time to recall	*hh:mm*	Maximum amount of time a DFSMScdm job spends doing DFSMShsm recalls, therefore limiting CPU processing. When a DFSMScdm migration job has ended because it reached a time limit, another job can be run using the same JCL to pick up from where the previous job left off. The second migration job reads the simulation and migration logs for the migration group to determine the next data set to recall from DFSMShsm ML2 and migrate to the cloud.
Number of data sets in recall batch	*nnnn*	Number of data sets recalled in a single batch.
Seconds to wait between data sets	*nn*	Number of seconds between each data set recall within a single batch. A value of 0 seconds is strongly recommended.
Minutes:seconds between batches	*mm:ss*	Number of minutes and seconds between each batch of recalls.
Percent STORGRP full before remigrate	*nn*	Percentage threshold for when recalls are paused and a migration from disk to cloud is started. When the storage group being used by DFSMScdm reaches the specified percentage of storage in use, recalls pause and a migration of data sets from ML2 to cloud starts. Recalls resume when the disk space usage drops to half of the threshold value.

Option 4 Monitor - Monitor active DFSMScdm migration jobs

View the status of a running migration job.

```
                  Monitor Active DFSMScdm Migration Jobs     Row 1 to 2 of 2
Command ===>                                                Scroll ===> CSR

  Group    HSM Recall Started   CLD Migrate Started    #Recalled    #Remaining
_ GROUP0A  2023/08/11 03:36:21                             2            23
S MAR08A   2023/08/11 02:42:20                             2             4
****************************** Bottom of data ********************************

 F1=Help      F2=Split     F3=Exit      F6=Refresh   F7=Up        F8=Down
 F9=Swap     F12=Cancel
```

Figure 11. Option 4 Monitor - Monitor active DFSMScdm migration jobs list panel

- To see details about the current status, such as batch sizing, migration wait times between data sets, and migration wait times between data set batches, enter **S** next to the group name.
- The panel only displays active jobs; once a job has completed, it is removed from the list.

```
                  Monitor Active DFSMScdm Migration Jobs
Command ===>

Current status of migration job ABCXYZ   for group MAR08A

Recall from ML2 date/time  . . . . . : 2023/08/11 02:42:20
Elapsed time . . . . . . . . . . . . : 0:00:22   (hh:mm:ss)
Maximum duration for recalls . . . . : 09:09     (hh:mm)
Time of day to stop recalls  . . . . : 12:00     (hh:mm)
Recall batch size  . . . . . . . . . : 2
Recall wait between data sets  . . . : 00        seconds
Recall wait between batches  . . . . : 08:00     (mm:ss)
Number of data sets recalled . . . . : 2
Number of data sets remaining  . . . : 4
Number of data set recall errors . . : 0
What stopped recall  . . . . . . . . :
Recall from ML2 end date/time  . . . :
Last data set recalled . . . . : ELI.A130418.NA100513

Migration to cloud start date/time  . . . . :
Migrate using assigned management class . . : YES
Percent full to start cloud migration . . . : 55

 F1=Help      F2=Split     F3=Exit      F6=Refresh   F7=Up        F8=Down
 F9=Swap     F12=Cancel
```

Figure 12. Option 4 Monitor - Monitor active DFSMScdm migration jobs detail panel

- The job continues to run while you are in the panel. To refresh the information displayed, press **Enter** or **F6**, or enter **Refresh** on the command line.

For a description of parameters, see Table 6 on page 33.

Option 5 Display - Display cloud simulate/migrate logs

Display a list of migration groups for which simulation logs or migration logs exist and view a summary of the results.

```
                    Display Cloud Simulate/Migrate Logs    Row 1 to 17 of 48
Command ===>                                                Scroll ===> CSR

  Group      Simulate            Migrate            Process   Number  Number
             Date/Time           Date/Time          Complete  DSNs    ML2 vols
_ APR12A     2023/08/11 23:00    --N/A--            Yes          273         4
_ MAR25A     2023/08/11 22:06    2023/08/11 22:26   No             6        22
_ MAR18B     2023/08/11 21:40    2023/08/11 21:43   Yes            4        22
_ MAR18A     2023/08/11 20:23    2023/08/11 20:25   Yes            4        22
_ MAR17A     2023/08/11 19:20    2023/08/11 19:30   Yes            6        22
_ MAR11A     2023/08/11 18:17    2023/08/11 18:23   Yes            6        21
_ MAR10A     2023/08/11 17:03    --N/A--            Yes            6        21
_ MAR08B     2023/08/11 16:05    2023/08/11 16:11   Yes            6        21
_ MAR08A     2023/08/11 15:03    2023/08/11 15:20   Yes            6         1
_ MAR07B     2023/08/11 14:02    2023/08/11 14:22   Yes            6         1
_ MAR07A     2023/08/11 13:01    2023/08/11 13:11   Yes            6         1
_ MAR04B     2023/08/11 12:03    2023/08/11 12:13   Yes            6         1
_ MAR04A     2023/08/11 11:01    2023/08/11 11:06   Yes            6         2
_ MAR02B     2023/08/11 10:45    2023/08/11 10:49   Yes            6        21
S MAR02A     2023/08/11 09:33+   2023/08/11 09:35+  Yes            6        21
_ MAR01B     2023/08/11 08:30    2023/08/11 08:36+  Yes            6        21
_ MAR01A     2023/08/11 07:46    2023/08/11 07:48   Yes            6        21

 F1=Help    F2=Split   F3=Exit    F7=Up      F8=Down    F9=Swap   F12=Cancel
```

Figure 13. Option 5 Display - Display cloud simulate/migrate logs panel

Group
Name of migration group for which a simulation job, migration job, or both was run.

Simulate Date/Time
Date and time a simulate job was run for that migration group.

If a simulation or migration was run in multiple parts, the date and time of the most recent run is displayed, followed by + .

Migrate Date/Time
Similar to the **Simulate Date/Time** column, except if the value is `--N/A--`, only a simulation was done for that group.

Process Complete
Indicates whether all the data sets selected during the simulation step have been processed. Note that DFSMShsm may have not yet migrated all of the recalled data sets to the cloud location.

Number DSNs
Number of selected data sets.

Number ML2 vols
Number of ML2 volumes containing the selected data sets.

UI controls

- To sort the list by the values in a column, double-click the column header. To toggle between ascending and descending sort sequence, double-click the column header again.
- To display another panel with information from the simulation or migration log for a migration group, enter **S** or **M** to the left of the group name.

Simulate detail results panel

To display a panel with information from the simulation log for a group, enter **S** to the left of the group name on the previous panel. The simulate detail results panel displays a list of data sets selected by a simulation.

```
                    DFSMScdm SIMULATE Detail for MAR02A       Row 1 to 6 of 6
Command ===>                                                 Scroll ===> CSR

Statistics from DFSMScdm SIMULATION phase - part 1 of 2
Simulation run on 2023/08/11 TIME=09:33:09 at 09:33:09
Simulation started from beginning of MCDS
Simulation ended by 6 migrated data sets returned
Options used at execution time:
  Selected data sets migrated after  . . : 2022/09/09
  Selected data sets migrated before . . : 2022/10/10
  Maximum number of migrated data sets . : 6
  Maximum number of ML2 volumes  . . . . : no limit
  Filtering by data set mask?  . . . . . : No
Last MCDS data set name read: ABCDEF1.CDM.A210928.C0000001
Amount of data selected by this simulation: 3 MB
Total amount of data in this migration group: 6 MB

Data sets selected                          ML2 Migrate Date    ML2 Volume
ABCDEF1.CDM.A210923.X0000001                   2022/09/23         V20153
ABCDEF1.CDM.A210923.X0000002                   2022/09/23         V20153
ABCDEF1.CDM.A210923.X0000003                   2022/09/23         V20153
ABCDEF1.CDM.A210923.X0000004                   2022/09/23         V20153
ABCDEF1.CDM.A210923.X0000005                   2022/09/23         V20153
ABCDEF1.CDM.A210928.C0000001                   2022/09/28         V20153
****************************** Bottom of data ********************************

 F1=Help      F2=Filters   F3=Exit      F4=Browse    F5=Prev      F6=Next
 F7=Up        F8=Down      F9=Swap     F10=Part     F11=All      F12=Cancel
```

Figure 14. Option 5 Display - DFSMScdm simulate detail results panel

The options used for selecting data sets are shown at the top of the panel. The selection of data sets depends on the specified criteria.

Tip: To view the full job log, press **F4**, instead of entering SDSF to look at the job output.

Migrate detailed results panel

To display a panel with information from the migration log for a group, enter **M** to the left of the group name on the previous panel. The migrate detailed results panel displays a list of data sets migrated to the cloud using the specified migration group.

```
                    DFSMScdm MIGRATE Detail for MAR02A       Row 1 to 2 of 2
Command ===>                                                 Scroll ===> CSR

Statistics from DFSMScdm MIGRATE phase - part 1 of 3
Migrate using assigned management class  . . : YES
Date/time DFSMShsm recall processing started : 2023/08/11 09:33:31
Date/time DFSMShsm recall processing ended . : 2023/08/11 09:33:44
Total time in DFSMShsm recall phase  . . . . : 00:00:13
Condition that stopped recall  . . . . . . . : STOP command
Number of data sets successfully recalled  . :
Remaining number of data sets to recall  . . : 4
Date/time cloud migration processing started : 2023/08/11 09:33:44
Date/time cloud migration job ended  . . . . : 2023/08/11 09:33:44
Number of times storage group reached 55%  . : 0

Data sets migrated in part 1             Date/time cloud       ML2    Current
                                         migration submitted   volume volume
ABCDEF1.CDM.A210923.X0000001             2023/08/11 09:33:44   V20153 N/A
ABCDEF1.CDM.A210923.X0000002             2023/08/11 09:33:44   V20153 N/A
****************************** Bottom of data ********************************

 F1=Help    F3=Exit    F4=Browse  F5=Prev    F6=Next    F7=Up      F8=Down
 F9=Swap   F10=Part   F11=All    F12=Cancel
```

Figure 15. Option 5 Display - DFSMScdm migrate detail results panel

In this example, the migration was interrupted and restarted twice by operator console commands, resulting in 3 parts of the migration for group MAR02A.

The top section of the panel shows summary statistics for the simulation or migration, such as the condition that stopped the recall process. Possible conditions are as follows:

None
Recall process ongoing.

STOP command
MODIFY command was entered by the user.

STOPNOW command
MODIFY command was entered by the user.

Maximum time
Maximum time specified in the job by the user was reached.

Time of day
Time of day specified in the job by the user was reached.

Storage group full
Storage group usage exceeds threshold specified by the job.

No data sets to recall
No data sets selected; therefore, no data sets to recall.

Finished recalling
Recall process completed.

The bottom scrollable section of the panel lists the data sets selected or migrated to the cloud. Column headers are as follows:

Data sets migrated in part *n*
Name of data set migrated to cloud.

Date/time cloud migration submitted
Date and time cloud migration job was submitted.

ML2 volume
Name of ML2 volume read from the simulation log for this migration group.

If another simulation was done for the same migration group after the migration job was run, it would have selected different data sets, so the panel cannot display the ML2 volume information for the migration.

Current volume
Where the data set is currently located. The job will complete before DFSMShsm completes the migration from disk to cloud. Press **Enter** to refresh the display. When each data set has been migrated, MIGRAT*x* is displayed.

If the simulation or migration was stopped and restarted at least once, only the statistics for one of those parts are displayed. You can move between the displays for the statistics of each part. The initial display upon entering the panel is for the first part.

Tip: To view the full job log, press **F4**, instead of entering SDSF to look at the job output.

UI controls

To sort the list by the values in a column, double-click the column header. To toggle between ascending and descending sort sequence, double-click the column header again.

F2 | FILTER
Display a panel with the data set names or masks used for filtering data sets that meet the date selection criteria specified in the simulation job.

F4 | BROWSE
View the full job log.

F5 and F6 | PREV and NEXT
Move between the displays for the statistics of each part, if the job was run in multiple parts.

F7 and F8 | Page Up and Page Down
View the rest of the list of data sets selected, and their ML2 migrate date and ML2 volume.

F10 | PART
Show only the data sets selected or migrated by one part of the simulation or migration job.

F11 | ALL
Show all the data sets in all parts.

Option C Configure - Configure control data set and session options

Display and update configuration values in the DFSMScdm configuration member and your ISPF user profile.

```
               Configure Control Data Set and Session Options
Command ===>

                                                                More:     +
Control data set name . . . . . hlq.CNTL.LIB
Configuration member name . . . . CONFIG01

DFSMScdm load library . . . . . hlq.IBM.HGBQ120.SGBQLLIB
DFSMScdm REXX library . . . . . hlq.IBM.HGBQ120.SGBQELIB
DFSMScdm panel library  . . . . hlq.IBM.HGBQ120.SGBQPENU
DFSMScdm table library  . . . . hlq.IBM.HGBQ120.SGBQTLIB
DFSMScdm message library  . . . hlq.IBM.HGBQ120.SGBQMLIB
DFSMScdm skeleton library . . . hlq.IBM.HGBQ120.SGBQSLIB

DFSMShsm MCDS name  . . . . . . DFHSM.MCDS
                                ____________________________________________
                                ____________________________________________
                                ____________________________________________
DFSMShsm OCDS name  . . . . . . DFHSM.OCDS
Name of cloud to migrate to . . . CLOUD01
STORCLAS for DFSMScdm to use for DFSMShsm recalls  CDMSTORC   <-- These must
Placeholder volser to use for DFSMShsm recalls . . CDMPHV     <-- match your
STORGRP for DFSMScdm to use for DFSMShsm recalls   CDMSTORG   <-- ACS routines
Date format  . . . . . . . . . . . . . . . . . . . YYYY/MM/DD (MM/DD/YYYY
                                                               DD/MM/YYYY
                                                               YYYY/MM/DD)

                User model JOB card for DFSMScdm batch jobs
//JOBNAME  JOB  CLASS=A,MSGCLASS=X,NOTIFY=&SYSUID
//* CLEAN UP JCL JOBCARD

 F1=Help      F2=Split     F3=Exit      F5=Save      F6=ReadCfg   F7=Up
 F8=Down      F9=Swap     F12=Cancel
```

Figure 16. Option C Configure - Configure control data set and session options panel

The following values are saved in your ISPF user profile *hlq*.ISPF.ISPPROF in member GBQPROF:

- DFSMScdm control data set and configuration member names
- DFSMScdm library names
- Model JOB card for submitting DFSMScdm batch jobs

The following values are saved in the DFSMScdm configuration member in the control data set specified in the panel:

- DFSMShsm MCDS and OCDS names
- Name of the cloud to migrate to
- Storage class, placeholder volser, and storage group used strictly for DFSMShsm recalls
- Date format

UI controls

F3 | EXIT
Save the currently-displayed values and exit the panel.

F5 | SAVE
Save the currently-displayed values into your user profile and into the specified configuration member without exiting the panel.

F6 | READCFG
Read the contents of an existing DFSMScdm configuration member. Enter the control data set and configuration member names then press **F6** to retrieve configuration values. This is useful if you want to switch configurations.

F12 | CANCEL
Exit the panel without saving any updated values.

Enter
Similar to pressing **F6**, except you are given the option to read values from the specified configuration member if it already exists. To retrieve configuration values from the member, enter **Y**. To keep the values currently displayed on the panel, enter **N**.

Tip: To display help text on any given field, place the cursor on the field and press **F1**.

Table 7. Configuration parameters

Parameter	Description
Control data set name	PDSE library allocated during setup containing DFSMScdm configuration members, simulation and migration jobs and logs, and placeholder members. This value is saved in your ISPF profile in member GBQPROF.
Configuration member name	Member listing configuration parameters and their values that you defined on this panel. This is saved in the control data set as CONFIG*nn*, where *nn* is any value from 00 to 99. The following configuration parameters are saved in this member: • Name of default target cloud • DFSMShsm MCDS names • DFSMShsm OCDS name • Name of storage class to use for DFSMShsm recalls • Name of storage group to use for DFSMShsm recalls • Date format to use in reports and dialog displays For most usages of DFSMScdm, only one configuration member is used. You can define multiple configuration members, each with different configuration values for each purpose. For more information, see step “1” on page 11. Update the configuration member name to switch between configurations. Press **F3** to save the currently-displayed values into the configuration member and exit the panel. Similar to **F3**, press **F5** to save values, but stay on the panel. Press **F6** to retrieve values from the specified configuration member if it already exists. Press **Enter** to be given the option to either retrieve values from the specified configuration member if it already exists, or to keep the values currently specified on the panel. This value is saved in your ISPF profile in member GBQPROF.

Table 7. Configuration parameters (continued)

Parameter	Description
DFSMScdm load library DFSMScdm REXX library DFSMScdm panel library DFSMScdm table library DFSMScdm message library DFSMScdm skeleton library	DFSMScdm product libraries. These fields are initially filled in with default values based on the high-level qualifiers of the REXX member to run the product the first time. Update these values if you have installed the product into different libraries, moved their contents, or renamed the libraries. The product libraries are listed in "Setting up DFSMScdm" on page 10 and detailed information described in the *IBM z/OS DFSMS Cloud Data Manager Program Directory*. These values are saved in your ISPF profile in member GBQPROF.
DFSMShsm MCDS name DFSMShsm OCDS name	DFSMShsm migration control data set (up to four segments can be specified), and offline control data set names. These libraries are searched by DFSMScdm to determine which data sets are recalled and migrated to the cloud, based on criteria specified by the user in the simulation job. These data set names must match the names used by the active DFSMShsm system running when the migration is performed. These names are saved in the current configuration member being used in your DFSMScdm control data set.
Name of cloud to migrate to	Optional field to specify the network connection name of the cloud to which DFSMScdm migrations are directed. This is used as the default cloud name in migration jobs. However, when building a job, you can still change the cloud name used for that job in the JCL. If no cloud name is specified, the management class assigned by SMS determines the migration destination. For more information, see "Configuring DFSMScdm for DFSMShsm data movement" on page 11. This name is saved in the current configuration member being used in your DFSMScdm control data set.
STORCLAS for DFSMScdm to use for DFSMShsm recalls	Name of the storage class in your ACS routines defined by the storage administrator. This storage class is used strictly for DFSMShsm recalls by DFSMScdm jobs to avoid conflicts with normal DFSMShsm production processing. The storage class ACS routine must be defined to include a selection clause that specifies a placeholder volser to be used by DFSMScdm to direct DFSMShsm recalls to that storage class. For more information, see "Configuring DFSMScdm for DFSMShsm data movement" on page 11. This name is saved in the current configuration member being used in your DFSMScdm control data set.

Table 7. Configuration parameters (continued)	
Parameter	**Description**
Placeholder volser to use for DFSMShsm recalls	Name of any volser in the storage group defined by the storage administrator. This storage group is used strictly for DFSMShsm recalls by DFSMScdm jobs to avoid conflicts with normal DFSMShsm production processing. This volser is used by DFSMScdm to recall data sets to any volume in that storage group. For more information, see "Configuring DFSMScdm for DFSMShsm data movement" on page 11. This value is saved in the current configuration member being used in your DFSMScdm control data set.
STORGRP for DFSMScdm to use for DFSMShsm recalls	Name of the storage group in your ACS routine defined by the storage administrator. This storage group is used strictly for DFSMShsm recalls by DFSMScdm jobs to avoid conflicts with normal DFSMShsm production processing. For more information, see "Configuring DFSMScdm for DFSMShsm data movement" on page 11. If you are using the assigned management class to control data set migration, this value is not required.
Date format	Date format used in DFSMScdm reports and dialog panel displays. Enter a valid first character, press **Enter**, and the value autofills on the panel. The following date formats are supported: • MM/DD/YYYY • DD/MM/YYYY • YYYY/MM/DD This value is saved in the current configuration member being used in your DFSMScdm control data set.
User model JOB card for DFSMScdm batch jobs	Default JOB statement used by DFSMScdm to create batch jobs. When building a batch job, it is displayed in the ISPF editor, so you can edit the JOB statement before the job is submitted. This value is saved in your ISPF profile in member GBQPROF.

Related tasks

"Setting up DFSMScdm" on page 10
Set up and start the DFSMScdm ISPF dialog by following the procedure outlined in this topic. This setup is required for both DFSMShsm data movement and hybrid cloud data management functions.

Option H Help - Message help

Display a GBQ*nnnn* message.

Enter a message number to display the message text, explanation, system programmer response and system action.

For a list of all messages, see "GBQ0001I" on page 89.

```
                                Message Help               Row 1 to 10 of 10
Command ===>                                                Scroll ===> CSR

This screen displays information about informational, warning, and error
messages that are displayed in DFSMScdm batch job logs or on the user's
terminal.

Within the message text there may be special string variables that will be
replaced when the message is generated.
 ------------------------------------------------------------------------------
Message Number: 0001
GBQ0001I

Message Text:
DFSMScdm initializing.

Explanation:
DFSMScdm has started the initialization process.

System Action:
DFSMScdm execution continues.

 F1=Help    F2=Split   F3=Exit    F9=Swap   F12=Cancel
```

Figure 17. Option H Help - Message help panel

Sample job outputs

The JCL and output log are located in the DFSMScdm control data set.

The figures in the following sections show a template of the JCL and a sample of a job output. For a list of all members stored in the control data set, see “Members in the control data set ” on page 19.

Summary job output

For configuration name CONFIG*nn*, the JCL for the summary job is in member SUMRY*nnJ*. The output log is in member SUMRY*nn*.

For a description of the parameters, see “Option 1 Summary - Generate/display summary report of migrated data sets” on page 27.

```
//* JCL for running a DFSMScdm summary job.
//*
//* The PARM defines the control data set, and the configuration member.
//* For configuration member CONFIGnn, the summary output is
//* written to the control data set in member SUMRYnn.
//GBQUTILM    EXEC  PGM=GBQSUMRY,REGION=64M,
//            PARM=('cdm.control.data.set',
//            CONFIGnn)
//*
//STEPLIB     DD DISP=SHR,DSN=hlq.IBM.HGBQ120.SGBQLLIB
//SYSUDUMP    DD SYSOUT=*
//GBQPRINT    DD SYSOUT=*
//* No control statements are needed for the summary job.
/*
```

Figure 18. Template for summary job JCL SUMRYnnJ

```
TOTAL=15,171
TOTALSIZE=158 GB
AVERAGE=252 Days
OLDEST=2021/10/04
NORECALL=15,028
PERNORECALL=99%
BACKUPVOLS=438
CLOUDOBJS=13,223
REPORTDATE=2023/08/11
```

Figure 19. Sample summary job output SUMRYnn

Simulate job output

For migration group named *grpname*, the JCL for the simulate job is in member *grpname*1. The output log is in member *grpname*S.

For a description of the simulate job parameters, see Table 5 on page 29.

```
//* JCL for running a DFSMScdm simulate job for migration group grpname
//*
//* The PARM defines the control data set, the configuration member,
//* and the DFSMScdm migration group name (used to name the output).
//GBQUTILS    EXEC  PGM=GBQUTILS,REGION=64M,
//            PARM=('cdm.control.data.set',
//            CONFIGnn,grpname)
//*
//STEPLIB     DD DISP=SHR,DSN=hlq.IBM.HGBQ120.SGBQLLIB
//GBQPRINT    DD SYSOUT=*
//SYSUDUMP    DD SYSOUT=*
//*
//* The control cards for the simulate run
//GBQSYSIN DD *
//* Only one of the three selection methods are valid
ML2_PERCENT_USED_LESS_OR_EQUAL=nnn
* Specify a date or a range of dates
DATA_SETS_MIGRATED_BEFORE=MM/DD/YYYY    (or DD/MM/YYYY, or YYYY/MM/DD)
DATA_SETS_MIGRATED_AFTER=MM/DD/YYYY     (or DD/MM/YYYY, or YYYY/MM/DD)
* Specify a number of days or a range of days
DAYS_SINCE_MIGRATED=nnnn
MAX_DAYS_SINCE_MIGRATED=nnnn
* Date format=MM/DD/YYYY                (or DD/MM/YYY, or YYYY/MM/DD)
* Simulate ends if this value is reached. Valid for any type of simulate:
MAX_DATA_SETS_MIGRATED=nnnnnnnn
* Simulate ends if this value is reached. Valid only if ML2_PERCENT_USED_LESS_OR_EQUAL is also
used:
MAX_NUMBER_OF_ML2_VOLUMES=nnnnnnnn
*
RESUME_FROM_LAST_SIMULATED_DSN=YES|NO
* Filter data sets. Multiple instances can be used in the same job.
DSN_EXCLUDE=datasetmask
DSN_INCLUDE=datasetmask
/*
```

Figure 20. Template for simulate job JCL grpname1

The following simulation ran in two parts, since the threshold for each run was a maximum of three data sets. The second run of the simulation function uses the same JCL as the first, and logically appends its records to the records for the first run.

```
SIMULATE SUMMARY FOR GROUP=JUN09A  DATE=2023/08/12 TIME=21:29:55
DSETCT=3,VOLCT=3,FIRSTVOL=V20525,LASTVOL=V20520,RTOT=46 MB
SIMULATE SUMMARY FOR GROUP=JUN09A  DATE=2023/08/12 TIME=21:28:56
DSETCT=3,VOLCT=2,FIRSTVOL=V20520,LASTVOL=V20525,RTOT=23 MB
SIMULATE OUTPUT FOR GROUP=JUN09A  DATE=2023/08/12 TIME=21:28:56
OPTIONS USED AT EXECUTION TIME:
Date format  . . . . . YYYY/MM/DD
Maximum number of migrated data sets . 3
Maximum number of ML2 volumes  . . . . No limit
Select data sets migrated before . . . 2022/11/01
Simulate started from beginning of MCDS
Simulate ended by 3 migrated data sets returned
Last MCDS data set name read: ABC.CDM.XYZ.X02
Amount of data selected by simulate  . 23 MB


CDMOUTPUT_START_OF_ML2_TABLE
ML2VOL=V20520,PERCVAL=100,NUMDSNS=1,CRTDATE=2021/12/09,OLDEST=2021/12/09
ML2VOL=V20525,PERCVAL=100,NUMDSNS=2,CRTDATE=2021/12/09,OLDEST=2021/12/09
==>VOLCT=2,FIRSTVOL=V20520,LASTVOL=V20525


CDMOUTPUT_SIMULATE_DETAIL_DSN
V20520,DSN=ABC.CDM.XYZ.C05,NUMRECAL=0,
CRTDATE=2021/12/09,MIGDATE=2021/12/09,SIZE=7.7 MB
V20525,DSN=ABC.CDM.XYZ.X01,NUMRECAL=0,
CRTDATE=2021/12/09,MIGDATE=2021/12/09,SIZE=7.7 MB
V20525,DSN=ABC.CDM.XYZ.X02,NUMRECAL=0,
CRTDATE=2021/12/09,MIGDATE=2021/12/09,SIZE=7.7 MB
==>DSNCT=3


SIMULATE OUTPUT FOR GROUP=JUN09A  DATE=2023/08/12 TIME=21:29:55
OPTIONS USED AT EXECUTION TIME:
Date format  . . . . . YYYY/MM/DD
Maximum number of migrated data sets . 3
Maximum number of ML2 volumes  . . . . No limit
Select data sets migrated before . . . 2022/11/01
Simulate resumed from a previous run
Simulate ended by 3 migrated data sets returned
Last MCDS data set name read: ABC.CDM.XYZ.X05
Amount of data selected by simulate  . 23 MB

CDMOUTPUT_START_OF_ML2_TABLE
ML2VOL=V20525,PERCVAL=100,NUMDSNS=1,CRTDATE=2021/12/09,OLDEST=2021/12/09
ML2VOL=V20518,PERCVAL=100,NUMDSNS=1,CRTDATE=2021/12/09,OLDEST=2021/12/09
ML2VOL=V20520,PERCVAL=100,NUMDSNS=1,CRTDATE=2021/12/09,OLDEST=2021/12/09
==>VOLCT=3,FIRSTVOL=V20525,LASTVOL=V20520


CDMOUTPUT_SIMULATE_DETAIL_DSN
V20525,DSN=ABC.CDM.XYZ.X03,NUMRECAL=0,
CRTDATE=2021/12/09,MIGDATE=2021/12/09,SIZE=7.7 MB
V20518,DSN=ABC.CDM.XYZ.X04,NUMRECAL=0,
CRTDATE=2021/12/09,MIGDATE=2021/12/09,SIZE=7.7 MB
V20520,DSN=ABC.CDM.XYZ.X05,NUMRECAL=0,
CRTDATE=2021/12/09,MIGDATE=2021/12/09,SIZE=7.7 MB
==>DSNCT=3
```

Figure 21. Sample simulate job output JUN09AS

Migrate job output

For migration group named *grpname*, the JCL for the migrate job is in member *grpname*2. The output log is in member *grpname*M.

For a description of the migrate job parameters, see Table 6 on page 33.

```
//* JCL for running a DFSMScdm migrate job for migration group grpname
//*
//* This job should be started by the user during a period of low
//* migration.  It stops when all data sets have been recalled,
//* or when one of the times specified below are reached.
//*
//* The PARM defines the control data set, the configuration member,
//* and the DFSMScdm migration group name (which is used to name the
//* output).
//GBQUTILM    EXEC  PGM=GBQUTILM,
//            PARM=('cdm.control.data.set',
//            CONFIGnn,grpname)
//*
//STEPLIB     DD DISP=SHR,DSN=hlq.IBM.HGBQ120.SGBQLLIB
//*     Same output written to control data set
//GBQPRINT    DD SYSOUT=*
//SYSUDUMP    DD SYSOUT=*
//*
//*    The control cards for the MIGRATE run
//GBQSYSIN    DD *
* Pick either specific cloud **or** default management class
* Migrate to specific cloud
MIGRATE_TO_CLOUD_NAME=cldname
MIGRATE_TO_DEFAULT_MGMTCLAS=YES|NO
*
* Time of day to stop recalls
RECALL_TIME_OF_DAY_TO_STOP=hh:mm:ss
*
* Maximum duration of a recall
RECALL_MAXIMUM_TIME_FOR_RECALLS=hh:mm
*
* --- Pacing parameters ---
*
* Number of data sets in a recall batch
RECALL_BATCH_SIZE=nnnn
*
* Number of seconds to wait between recalls: 0 recommended
RECALL_WAIT_BETWEEN_DATA_SET=nn
*
* Time (mm:ss) to wait between batches of recalls
RECALL_WAIT_BETWEEN_BATCHES=mm:ss
* Percent full when recalls are paused, and a migrate of the
* storage group is started.
PERCENT_FULL_START_CLOUD_MIGRATE=nn
/*
```

Figure 22. Template for migrate job JCL grpname2

The first part of the migration log starts with MIGRATE OUTPUT00001 and lists the following information:

- Options used at execution time.
- A summary of the execution, such as the start and end time of the DFSMShsm recalls and cloud migrations, and number of data sets processed.
- Details for each data set migrated. The data sets are grouped into batches. The migration job has a pacing parameter to limit the number of data sets in an individual recall. Multiple recalls are done if necessary.

A migration may be broken into multiple parts when a migration job hits a time threshold (such as time of day or duration limit specified when the job was created) or is stopped by an operator command.

If a migration job is interrupted, it can be resumed by submitting the exact same JCL as the original job. The resubmitted job determines where to restart by reading the existing migration log for the group. This appends a new section MIGRATE OUTPUT00002 to the log. Further job interrupt and restart cycles result in additional MIGRATE OUTPUT*nnnnn* sections in the log.

```
MIGRATE SUMMARY00001 FOR GROUP=JUN09A  DS2R=NONE     DS2M=NONE

MIGRATE OUTPUT00001 FOR GROUP=JUN09A  DATE=2023/08/12 TIME=21:41:03
OPTIONS USED AT EXECUTION TIME:
Date format used . . . . . YYYY/MM/DD
Migrate to default management class. . YES
Parameters to create migrate job
Time of day to stop recall processing. 05:00
Maximum amount of time to recall . . . 20:22
Number of data sets in recall batch. . 2
Seconds to wait between data sets  . . 00
Minutes/seconds between batches  . . . 00:30
Percent STORGRP full before remigrate. 85
CDM_MIGRATE_OUTPUT
Condition that stopped recall:  Finished Recalling
Number of recall requests   :   00006
Number of recall failures   :   00000
Number of data sets recalled:   00006
Remaining data sets to recall:  NONE
Remaining data sets to migrate: NONE
Last MCDS data set name read:   ABC.CDM.XYZ.X05
Number of times cloud storage group reached 85%: 000
Date/time recall processing started: 2023/08/12 21:40:00
Date/time recall processing ended:   2023/08/12 21:41:03
Total time in DFHSM RECALL phase:    00:01:02
Date/time migrate started: 2023/08/12 21:41:03
Date/time job ended:       2023/08/12 21:41:03
CDMOUTPUT_START_OF_DETAIL_RECALL_MIGRATE
BATCH=1,RECALL=2023/08/12,21:40:00,MIGRATE=2023/08/12,21:41:03
DSN=ABC.CDM.XYZ.C05
DSN=ABC.CDM.XYZ.X01
BATCH=2,RECALL=2023/08/12,21:40:32,MIGRATE=2023/08/12,21:41:03
DSN=ABC.CDM.XYZ.X02
DSN=ABC.CDM.XYZ.X03
BATCH=3,RECALL=2023/08/12,21:41:02,MIGRATE=2023/08/12,21:41:03
DSN=ABC.CDM.XYZ.X04
DSN=ABC.CDM.XYZ.X05
```

Figure 23. Sample migrate job output JUN09AM

Sample use cases

Detailed examples of possible usages of DFSMScdm DFSMShsm data movement functions are outlined in this topic.

Migrating to multiple cloud locations

Define multiple configurations to migrate to different cloud locations.

When data sets have been recalled to the SMS storage group defined for use by DFSMScdm, and the data sets are to be migrated to a specific cloud, DFSMScdm migrates all of the data sets that are in that storage group to the specified cloud.

When using multiple clouds for your migrations, data sets may be mistakenly remigrated to different cloud locations. For example:

1. In your configuration, you specify that storage group CDMSGRP with placeholder volser CDM000 is to be used for DFSMScdm recalls and migrations.
2. You run a simulation job for migration group MIGGRP1, selecting 1000 data sets.
3. You run a simulation job for migration group MIGGRP2, selecting 50 data sets.
4. You submit a migration job for MIGGRP1, directing that data sets be migrated to CLOUD1. This migration starts to recall 1000 data sets to CDMSGRP.
5. At the same time, you submit a migration job for MIGGRP2, directing that data sets be migrated to CLOUD2. This migration recalls 50 data sets to CDMSGRP.

   The second migration job finishes recalling its 50 data sets, while the first migration job is still recalling data sets and has recalled 400 so far. The second migration job migrates all of the data sets in CDMSGRP (at that point, 450 data sets) to CLOUD2, even though data sets from the first migration job should go to CLOUD1.

Solution

To avoid data sets from being migrated to different locations when using multiple clouds, define two different DFSMScdm configurations, each of which uses a different SMS storage group for its processing. For example:

1. Define configuration CONFIG01 using SMS storage group CDMSGRP1, with placeholder volser CDM100.
2. Define configuration CONFIG02 using SMS storage group CDMSGRP2, with placeholder volser CDM200.
3. With configuration CONFIG01 active, build the simulation and migration jobs for migration group MIGGRP1.
4. With configuration CONFIG02 active, build the simulation and migration jobs for migration group MIGGRP2.

This way, data sets recalled for MIGGRP1 are recalled to a different storage group than the data sets recalled for MIGGRP2. The migration job for MIGGRP1 only migrates data sets that have been recalled to CDMSGRP1, and the migration job for MIGGRP2 only migrates data sets that have been recalled to CDMSGRP2.

Note: You do not need to use two different configurations if you only migrate data sets using their assigned management classes. In this case, DFSMScdm internally issues a command which migrates all of the data sets in the storage group but does not specify a cloud name. This results in each data set being migrated to the correct destination, based on its management class, no matter how many concurrent DFSMScdm migration jobs might overlap.

Automating jobs on a timely basis

You can automate the DFSMScdm simulation and migration process so that you do not have to repeatedly use the ISPF dialog to create the simulation and migration jobs.

You can also retain the logs from each simulation and migration job in the DFSMScdm control data set for future reference. For example, you want to move data sets which have been on ML2 for at least a year to the cloud on a monthly basis. Consider the following scenario:

On 1 September 2023, as a base, you used the following criteria to select all data sets migrated to ML2 before 1 September 2022:

```
                 Create a Job to Simulate a Cloud Migration
Command ===>


Name of migration group to simulate . . . . . BASEGRP

Choose ONE method of selection (A, B, or C):
 ------------------------------------------------------------------------------
A) Select ML2 volumes less than or equal to . . ___  percent full
   Maximum number of ML2 volumes (optional) . . _____
 ------------------------------------------------------------------------------
B) Select data sets migrated to ML2 after . . . __________ (YYYY/MM/DD)
     and/or data sets migrated before . . . . . __________ (YYYY/MM/DD)
   Resume from last simulated DSN?  . . . . . ___        (Yes/No)
   Filter by DSN? (F6 to show/edit list)  . . ___        (Yes/No)
 ------------------------------------------------------------------------------
C) Select data sets migrated to ML2 at least  . 366 days ago
     and/or data sets migrated no more than . . ____ days ago
   Resume from last simulated DSN?  . . . . . NO         (Yes/No)
   Filter by DSN? (F6 to show/edit list)  . . ___        (Yes/No)
 ------------------------------------------------------------------------------

Optional for all selection methods:
Maximum number of migrated data sets  . . . . .  _______

Active DFSMScdm Configuration . . . . . : CONFIG01
```

Submitting the simulation job creates a log output BASEGRPS, and a JCL member BASEGRP1 which are stored in the control data set:

```
//GBQUTILS    EXEC  PGM=GBQUTILS,
//            PARM=(BIXNCE.CNTL.DSN,
//            CONFIG01,BASEGRP)
//STEPLIB     DD DISP=SHR,DSN=hlq.IBM.HGBQ120.SGBQLLIB
//GBQPRINT    DD SYSOUT=*
//SYSUDUMP    DD SYSOUT=*
//* The control cards for the simulate run
//GBQSYSIN DD *
DAYS_SINCE_MIGRATED=366
RESUME_FROM_LAST_SIMULATED_DSN=NO
```

You then ran a migration job for migration group BASEGRP to migrate all of the selected data sets. Submitting the migration job creates a log output BASEGRPM and is stored in the control data set.

```
//GBQUTILM    EXEC  PGM=GBQUTILM,
//            PARM=(BIXNCE.CNTL.DSN,
//            CONFIG01,BASEGRP)
//STEPLIB     DD DISP=SHR,DSN=hlq.IBM.HGBQ120.SGBQLLIB
//GBQPRINT    DD SYSOUT=*
//GBQSYSIN    DD *
...
[DFSMScdm control statements go here]
...
```

Now, on a monthly basis, you run a job that selects data sets that have been on ML2 for at least a year. Each selection of data sets consists of a new migration group, so you can create a reusable job by specifying system symbols to create a unique migration group name (maximum of 7 characters) for each job run, assuming that they are run on different dates. In the following example, the migration group name is B&YYMMDD. Submitting the simulation job creates a log output B231001S and is stored in the control data set.

```
//GBQUTILS    EXEC  PGM=GBQUTILS,
//            PARM=(BIXNCE.CNTL.DSN,
//            CONFIG01,B&YYMMDD)
//STEPLIB     DD DISP=SHR,DSN=hlq.IBM.HGBQ120.SGBQLLIB
//GBQPRINT    DD SYSOUT=*
//SYSUDUMP    DD SYSOUT=*
//GBQSYSIN DD *
DAYS_SINCE_MIGRATED=366
RESUME_FROM_LAST_SIMULATED_DSN=NO
```

Other examples for the migration group name are G&LMON.&LDAY.&LYR2 and Q&LYR2.&JDAY.

When you run this simulation on 1 October 2023, all data sets migrated before 1 October 2022 are selected as migration group B231001. However, since the prior migration job already recalled data sets migrated to ML2 before 1 September 2022, and remigrated them to the cloud, the only data sets that are selected by this job are data sets migrated from 1 September 2022 to 30 September 2022.

You then run a migration job on the same date using the same substitution for the migration group name. The migration job created the following migration log in member B231001M in the control data set.

```
//GBQUTILM    EXEC  PGM=GBQUTILM,
//            PARM=(BIXNCE.CNTL.DSN,
//            CONFIG01,B&YYMMDD)
//STEPLIB     DD DISP=SHR,DSN=hlq.IBM.HGBQ120.SGBQLLIB
//GBQPRINT    DD SYSOUT=*
//GBQSYSIN    DD *
...
[DFSMScdm control statements go here]
...
```

You can schedule these simulation and migration jobs to run monthly to create a new migration group each month (B231001, B231101, B231201, B240101, and so on) to migrate on a rolling basis a month's worth of year-old data sets.

Note: It is essential to use a new migration group name each month to retain all of the simulation and migration logs in the DFSMScdm control data set.

When a simulation is done using **RESUME_FROM_LAST_SIMULATED_DSN=NO**, you are starting a new migration group, so any previous simulation and migration logs for that migration group are overwritten or deleted.

When a simulation is done using **RESUME_FROM_LAST_SIMULATED_DSN=YES**, the results of the simulation are appended to the results for a previous simulation using the same simulation group name, picking up from where the previous simulation left off in the MCDS, as recorded in the bookmark file for the migration group. The bookmark file records the selection date calculated by the first simulation run for the group; subsequent runs use the same selection date (not a new date calculated by subtracting 366 days from the date of the resumed job), so this cannot be used to select data sets with a new range of migration dates.

Chapter 4. Hybrid cloud data management administration

DFSMScdm provides hybrid cloud data management functions to upload and download data from the cloud.

Operating a DFSMScdm started task

A DFSMScdm started task processes DFSMScdm commands that are used to copy data sets between the z/OS system and cloud storage, and to manage the queue of command requests.

A DFSMScdm started task defines a global anchor that includes the STCID in the global anchor name (GBQGANCH*stcid*). The global anchor is a control block that provides status for the started task and stores information about the configuration in common storage for communication with other address spaces. This is different from the local anchor, which is a common space for processes to communicate inside the DFSMScdm started task address space.

A started task persists in the background as long as the system is running, and the dispatcher manages concurrent data movement requests. The DFSMScdm started task STCID global anchor persists as long as the started task is running.

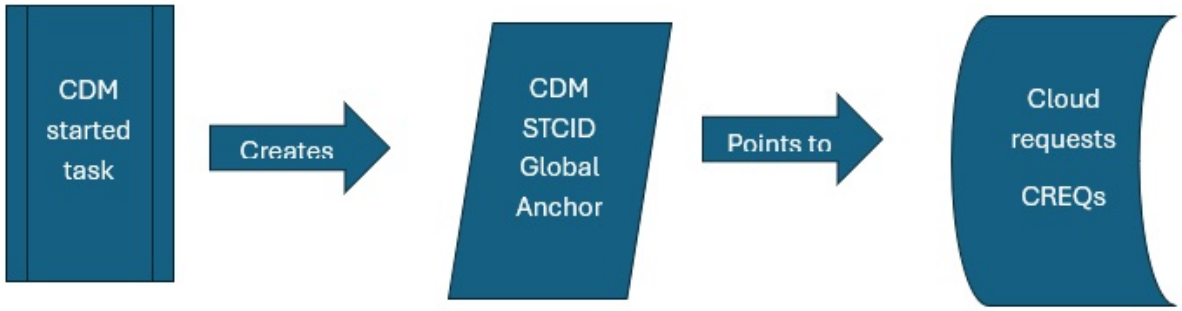

Figure 24. DFSMScdm started task process

Each STCID must be unique on the z/OS system. Multiple DFSMScdm started tasks can be running on each system. The STCID parameter is used to direct a command to the desired started task. If the STCID is not specified for a command, the default started task GBQ1 is used.

Starting a DFSMScdm started task

A warm start is the default and creates a new STCID global anchor if one does not exist. To start the DFSMScdm started task, issue a z/OS START command for the proc name of the started task with the REUSASID z/OS START command keyword, and optionally the TYPE symbolic variable:

```
S gbqproc,REUSASID=YES,TYPE=WARM
```

You can also use a z/OS START command identifier after the proc name:

```
S gbqproc.stcid,REUSASID=YES,TYPE=WARM
```

The identifier for the START command is a z/OS START command parameter that allows you to address a started task by STCID in MODIFY commands or STOP commands rather than using the started task proc name. For more information on z/OS commands, see Starting a system task from a console (www.ibm.com/docs/en/zos/3.1.0?topic=command-starting-system-task-from-console).

After the DFSMScdm started task is active, you can use z/OS MODIFY commands. For example, to display the global anchor to see configuration and status information for the started task, issue this command:

```
F gbqproc,DISP GANCH
```

For information on z/OS MODIFY commands, see "MODIFY commands" on page 53.

Stopping a DFSMScdm started task

You can stop the DFSMScdm started task with either a graceful shutdown or a forced shutdown:

Graceful shutdown

A graceful shutdown stops a DFSMScdm started task after the dispatcher completes all requests on the queue. To stop a DFSMScdm started task with a graceful shutdown, issue a SHUTDOWN command:

```
F gbqproc,SHUTDOWN
```

You can also use the STCID used in the z/OS START command:

```
F stcid,SHUTDOWN
```

Forced shutdown

A forced shutdown stops a DFSMScdm started task after the dispatcher completes only the actively processing requests, data sets, or cloud objects, depending on the request WAIT setting:

- If WAIT(NO) is specified or defaulted to for a request that is actively processing, and that request contains more than one data set or cloud object, only the currently processing data set or cloud object is processed before shutdown. The requester is notified of the partial completion, but not the final completion after restart. However, request status can be found in the GBQELOG DD statement data set.
- If WAIT(YES) is specified for a request that is actively processing, and that request contains more than one data set or cloud object, the started task dispatcher completes the entire request before shutdown.

After the dispatcher completes the actively processing requests, data sets, or cloud objects, the unprocessed requests, data sets, or cloud objects remain in the queue. To stop a DFSMScdm started task with a forced shutdown, issue a SHUTDOWN FORCE command:

```
F gbqproc,SHUTDOWN FORCE
```

You can also use the STCID used in the z/OS START command:

```
F stcid,SHUTDOWN FORCE
```

Restarting a DFSMScdm started task after a forced shutdown

If a DFSMScdm started task is stopped with a forced shutdown, and cloud requests remain in the queue, you can restart that started task with either a warm start or cold start:

Warm start

The DFSMScdm started task restarts and continues to process the remaining requests in the queue. For a warm start, issue this START command:

```
S gbqproc,REUSASID=YES,TYPE=WARM
```

Cold start

The remaining requests in the queue are deleted, and the DFSMScdm started task restarts. The START= parameter on the EXEC PGM statement for the DFSMScdm started task is required. For a cold start, issue this START command:

```
S gbqproc,REUSASID=YES,TYPE=COLD
```

You are then prompted on the z/OS console to confirm your choice. If you confirm the cold start, the remaining requests in the queue are deleted, and the DFSMScdm started task restarts.

MODIFY commands

The storage administrator uses z/OS MODIFY commands to communicate with DFSMScdm.

These commands are used to display the status of the CDA tasks, stop DFSMScdm after all current requests are processed, request DFSMScdm stop taking new requests, and display high virtual common storage usage.

The syntax of the MODIFY command is:

```
F jobname,command
```

jobname
Name of the DFSMScdm running job.

command
One of the z/OS MODIFY commands listed below.

DISPLAY GANCH

The DISPLAY GANCH command displays the fields of the global anchor.

For more information about anchors, see “Operating a DFSMScdm started task” on page 51.

Syntax

```
DISPLAY|DISP|D GANCH
```

Sample output

```
GBQ2815I  Global Anchor Display
Eyecatch:                                GBQGANCH
Started Task ID:                         CDMSTC1
GBQGANCH Address:                        15824000
Length of Area:                          4096
ECSA Subpool:                            228
ESCA Key:                                0
Version:                                 0
Flag0:                                   80
Flag1:                                   C0
GBQLANCH Address:                        18625000
SMF Record Number:                       1155
Max in Request:                          555
Max HVCommon Usage:                      1M
Cell Size:                               16384
Number of CDA Tasks:                     16
Trace Buffer Size:                       128M
Max List Buffer Size:                    64K
PC Routine Address:                      98646000
Entry Table Token Number:                0
PC LX Number:                            00181600
LX Count:                                1
LX Sequence Number:                      00000030
ETCRE Returned Token:                    2146901824
First Cell in CREQ Queue:                000001EFBCE01000
Serialization Counter:                   0
Current Request Number:                  1
Number of CREQs:                         1
GBQMAIN Dispatcher ECB:                  807CD328
Cell Pool ID:                            000001EFBCE00000
Cell Pool Size:                          16384
```

Figure 25. Sample DISPLAY GANCH output

DISPLAY LANCH

The DISPLAY LANCH command displays the fields of the local anchor.

For more information about anchors, see “Operating a DFSMScdm started task” on page 51.

Syntax

```
DISPLAY|DISP|D LANCH
```

Sample output

```
GBQ2816I  Local Anchor Display
Program:                                    GBQMAIN
Eyecatch:                                   GBQLANCH
GBQLANCH Address:                           18625000
GBQLANCH Length:                            4096
Subpool:                                    131
Key:                                        8
Version:                                    0
Server ID:                                  CDMSTC1
GBQGANCH Address:                           15824000
GBQCOMM Address:                            1863F0D1
GBQSMF Address:                             00000000
GBQINITV Address:                           98626000
GBQTRC Address:                             80008000
GBQATRC Address:                            00010000
C Program Function Request:                 COMMAND
C Program Pointer 1:                        15824000
C Program Pointer 2:                        00000000
C Program Binary 1:                         00000007
C Program Binary 2:                         00000000
C Program Char 1.1:                         D LANCH
C Program Char 1.2:
C Program Char 1.3:
C Program Char 1.4:
C Program Char 1.5:
C Program Char 2.1:                         CDMUSR
C Program Char 2.2:
C Program Char 2.3:
C Program Char 2.4:
C Program Char 2.5:
C Program Char 3.1:
C Program Char 3.2:
C Program Char 3.3:
C Program Char 3.4:
C Program Char 3.5:
C Program Char 4.1:
C Program Char 4.2:
C Program Char 4.3:
C Program Char 4.4:
C Program Char 4.5:
Trace Cell Pool ID:                         0000005000000000
Trace Cell Pool Size:                       133169152
Trace Current Address:                      00083620
Trace Starting Address:                     0000005000001000
Trace Cell Size:                            520192
```

Figure 26. Sample DISPLAY LANCH output

DISPLAY REQUESTS

The DISPLAY REQUESTS command displays information for the requests in the queue that are not yet complete.

Specify WAITING or INPROC to display only requests in those states. ALL is the default and displays all requests regardless of their status.

Syntax

```
DISPLAY|DISP|D REQUESTS ALL|WAITING|INPROC
```

Sample output

```
GBQ2817I  Display Requests Summary
REQUEST   USERID     STATUS      %COMPLETE
R0000001  CDMUSR     WAITING          0
R0000002  CDMUSR     INPROC           0
R0000003  CDMUSR     WAITING          0
R0000004  CDMUSR     COMPLETE         100
R0000005  CDMUSR     WAITING          0
```

Figure 27. Sample DISPLAY REQUESTS output

DISPLAY CDATASKS

The DISPLAY CDATASKS command displays information for the CDA tasks in the queue that are not yet complete, plus the dispatcher's current status.

You can display either a summary or detailed CDA task report. The default is summary. Specify WAITING or INPROC to display only requests in those states. ALL is the default and displays both WAITING and INPROC CDA tasks.

Syntax

```
DISPLAY|DISP|D CDATASKS SUMMARY|DETAIL ALL|WAITING|INPROC
```

Sample output

```
GBQ2818I  Display Tasks Summary
DISPATCHER STATUS
 RUNNING
TASK        CLOUD             Uploads     Downloads   Status
CDAT0001                         1            0      IDLE
CDAT0002                         1            0      FINISHED
CDAT0003                         1            0      FINISHED
CDAT0004                         0            0      ASSIGNED
CDAT0005                         0            0      ASSIGNED
CDAT0006                         0            0      ASSIGNED
CDAT0007                         0            0      ASSIGNED
CDAT0008                         0            0      ASSIGNED
```

Figure 28. Sample DISPLAY CDATASKS summary output

```
GBQ2819I  Display Tasks Detailed Summary
DISPATCHER STATUS
 RUNNING
TASK       CLOUD            Uploads    Downloads  Status   Current DSN
CDAT0001                       1           0     IDLE     INACTIVE
CDAT0002                       1           0     FINISHED CDM00.TEST.INPUT
CDAT0003                       1           0     FINISHED CDM00.TEST.INPUT
CDAT0004                       0           0     ASSIGNED CDM00.TEST.INPUT
CDAT0005                       0           0     ASSIGNED CDM00.TEST.INPUT
CDAT0006                       0           0     ASSIGNED CDM00.TEST.INPUT
CDAT0007                       0           0     ASSIGNED CDM00.TEST.INPUT
CDAT0008                       0           0     ASSIGNED CDM00.TEST.INPUT
```

Figure 29. Sample DISPLAY CDATASKS detail output

DISPLAY STORAGE

The DISPLAY STORAGE command displays statistics on high virtual common usage by DFSMScdm request control blocks.

Syntax

```
DISPLAY|DISP|D STORAGE
```

Sample output

```
GBQ2820I  Display Storage Summary
REQUEST   # Cells     Cell Unit Size    Total Size
R0000001    1           16384             16384
R0000002    1           16384             16384
R0000003    1           16384             16384
```

Figure 30. Sample DISPLAY STORAGE output

DUMP GANCH

The DUMP GANCH command provides a hexadecimal dump of the global anchor.

For more information about anchors, see “Operating a DFSMScdm started task” on page 51.

Syntax

```
DUMP GANCH
```

Sample output

```
Dump of 13697000
+00000000 - C7C2D8C7 C1D5C3C8 C7C2D8C5 C1F2F3F4   * GBQGANCHGBQEA234 *
+00000010 - 13697000 00001000 E4000000 00008080   * ...    . U     .. *
+00000020 - 18620000 00000483 0000022B 00000001   * ..     .c  ..    . *
+00000030 - 00000000 00004000 00000010 00000019   *             .    . *
+00000040 - 00000080 0000000A 9861F250 00000000   *     .    .q/2&     *
+00000050 - 00000001 00181600 00000005 7FF75028   *     . ..     ."7&. *
+00000060 - 00000000 00000000 00000000 00000000   *                    *
+00000070 - 00000000 00000000 807BEE00 00000000   *          .#.       *
+00000080 - 000001EF BAE00000 00004000 00000000   *    ...\            *
+00000090 - C7C2D8C5 C1F2F3F4 C7C2D840 C3D3C440   * GBQEA234GBQ CLD  *
+000000A0 - E2C5D9E5 40D9C5D8 00012005            * SERV REQ ... *
```

Figure 31. Sample DUMP GANCH output

DUMP LANCH

The DUMP LANCH command provides a hexadecimal dump of the local anchor.

For more information about anchors, see “Operating a DFSMScdm started task” on page 51.

Syntax

```
DUMP LANCH
```

Sample output

```
Dump of 18620000
+00000000 - C7C2D8D4 C1C9D56D C7C2D8D3 C1D5C3C8   * GBQMAIN_GBQLANCH *
+00000010 - 18620000 00001000 83080000 00000000   * ..     . C.      *
+00000020 - C7C2D8C5 C1F2F3F4 13697000 18636D01   * GBQEA234... .._. *
+00000030 - 00000000 98621000 00000000 80008000   *     q..     . .  *
+00000040 - 00010000 C3D6D4D4 C1D5C440 13697000   *  .  COMMAND ...  *
+00000050 - 00000000 0000000A 00000000 00000000   * DUMP LANCH       *
+00000060 - 00000000 00000000 00000000 00000000   *                  *
+00000070 - 00000000 00000000 00000000 00000000   *                  *
+00000080 - 00000000 00000000 00000000 00000000   *                  *
+00000090 - 00000000 00000000 00000000 00000000   *                  *
+000000A0 - 00000000 00000000 00000000 00000000   *                  *
+000000B0 - 00000000 00000000 00000000 00000000   *                  *
+000000C0 - 00000000 00000000 00000000 00000000   *                  *
+000000D0 - 00000000 00000000 00000000 00000000   *                  *
+000000E0 - 00000000 00000000 00000000 00000000   *                  *
+000000F0 - 00000000 00000000 00000000 00000000   *                  *
+00000100 - 00000000 00000000 00000000 00000000   *                  *
+00000110 - 00000000 00000000 00000000 00000000   *                  *
+00000120 - 00000000 00000000 00000000 00000000   *                  *
+00000130 - 00000000 00000000 00000000 00000000   *                  *
+00000140 - 00000000 00000000 00000000 00000000   *                  *
+00000150 - 00000000 00000000 00000000 00000000   *                  *
+00000160 - C5D1C1F0 F0404040 00000000 00000000   * EJA00            *
+00000170 - 00000000 00000000 00000000 00000000   *                  *
+00000180 - 00000000 00000000 00000000 00000000   *                  *
+00000190 - 00000000 00000000 00000000 00000000   *                  *
+000001A0 - 00000000 00000000 00000000 00000000   *                  *
+000001B0 - 00000000 00000000 00000000 00000000   *                  *
+000001C0 - 00000000 00000000 00000000 00000000   *                  *
+000001D0 - 00000000 00000000 00000000 00000000   *                  *
+000001E0 - 00000000 00000000 00000000 00000000   *                  *
+000001F0 - 00000000 00000000 00000000 00000000   *                  *
+00000200 - 00000000 00000000 00000000 00000000   *                  *
+00000210 - 00000000 00000000 00000000 00000000   *                  *
+00000220 - 00000000 00000000 00000000 00000000   *                  *
+00000230 - 00000000 00000000 00000000 00000000   *                  *
+00000240 - 00000000 00000000 00000000 00000000   *                  *
+00000250 - 00000000 00000000 00000000 00000000   *                  *
+00000260 - 00000000 00000000 00000000 00000000   *                  *
+00000270 - 00000000 00000000 00000000 00000000   *                  *
+00000280 - 00000000 00000000 00000000 00000000   *                  *
+00000290 - 00000000 00000000 00000000 00000000   *                  *
+000002A0 - 00000000 00000000 00000000 00000000   *                  *
+000002B0 - 00000000 00000000 00000000 00000000   *                  *
+000002C0 - 00000000 00000000 00000000 00000000   *                  *
```

Figure 32. Sample DUMP LANCH output

SHUTDOWN

The SHUTDOWN command requests that DFSMScdm shut down after all DFSMScdm requests are completed.

After a SHUTDOWN command is issued, the started task does not allow any other commands except a SHUTDOWN FORCE. This can be utilized if you determine that you do not want to wait for all cloud requests to complete.

The FORCE option prevents new requests from being dispatched, and after all currently active cloud requests are completed, shuts down the started task. Any unprocessed cloud requests remaining in the DFSMScdm queue are either processed or deleted depending whether the next restart of the started task is warm or cold:

- With a warm start, the DFSMScdm started task restarts and continues to process the remaining requests in the queue.
- With a cold start, the remaining requests in the queue are deleted, and the DFSMScdm started task restarts.

For more information, see “Restarting a DFSMScdm started task after a forced shutdown” on page 52.

If shutdown is not immediate, a message indicating the reason is issued.

Syntax

```
SHUTDOWN FORCE
```

Sample output

```
 SHUTDOWN command being processed. Dispatcher has been informed. There are 0 cloud requests to be
 processed.
 Trace subtask has been informed of shutdown.
 Trace has been shutdown successfully.
```

Figure 33. Sample SHUTDOWN output

SWAPTRACE

The SWAPTRACE command closes the current internal event trace data set, and opens and activates the other trace data set.

Syntax

```
SWAPTRACE
```

Sample output

```
 - SWAPTRACE command received
 GBQ2903I Trace active trace data set output has been directed to DDNAME-GBQTRC2
 GBQ2904I SWAPTRACE successful.
```

Figure 34. Sample SWAPTRACE output

SVCDUMP

The SVCDUMP command initiates a diagnostic SVC dump while hybrid cloud data management processing continues.

Syntax

```
SVCDUMP
```

Sample output

```
 SWAPTRACE successful.
 IEA794I SVC DUMP HAS CAPTURED:  173
 DUMPID-009 REQUESTED BY JOB (EJAMAIR2)
 DUMP TITLE-Cloud Data Manager diagnostic dump
 DUMP CAPTURED USING OPTIMIZE-YES
```

Figure 35. Sample SVCDUMP output

STOPDISP

The STOPDISP command stops the DFSMScdm dispatcher.

Issuing the STOPDISP command disconnects any persistent cloud connections. New requests are accepted, but not processed until the dispatcher is restarted.

Syntax

```
STOPDISP
```

Sample output

```
 - STOPDISP command received
```

Figure 36. Sample STOPDISP output

STARTDISP

The STARTDISP command starts the DFSMScdm dispatcher and begins processing queued requests.

Syntax

```
STARTDISP
```

Sample output

```
 - STARTDISP command received
```

Figure 37. Sample STARTDISP output

ISPF dialog panels

The ISPF panel interface is the principal tool for interacting with DFSMScdm. Information on the usage of hybrid cloud data management function panels is outlined in the subtopics here.

The **SMF ID** on the ISPF panels is the system ID of the system that the TSO user is logged into.

```
                          DFSMS Cloud Data Manager
Option ===>

SMF ID : SYSA                                                Version : 1.2.0
                                                             24/04/27  10:49:39

                            DFSMScdm - Main Menu

         1 HSM          DFSMShsm MLx -> MLC
         2 HCDM         Hybrid Cloud Data Management
         C Configure    Configure session options
         H Help         Message help
         X Exit         Exit

 F1=Help    F2=Split   F3=Exit    F7=Up      F8=Down    F9=Swap   F12=Cancel
```

From the DFSMScdm main menu, access the hybrid cloud data management functions with **Option 2 HCDM**. The Hybrid Cloud Data Management functions menu displays.

```
                          DFSMS Cloud Data Manager
Option ===>

SMF ID : SYSA                                                Version : 1.2.0
                                                             24/04/27  10:49:39

                     DFSMScdm - Hybrid Cloud Data Management

     1 CDMSEND     Send data sets from z/OS to cloud storage
     2 CDMRET      Retrieve z/OS data sets from cloud storage
     3 CDMQUERY    Query cloud request status
     4 CDMMOD      Modify a DFSMScdm request
     5 CDMLIST     Display list of cloud objects
     6 CDMDEL      Delete a cloud object
     C Configure   Configure session options
     H Help        Message help

           DFSMScdm started task ID  . . . GBQ1____ (default GBQ1)


 F1=Help    F2=Split   F3=Exit    F7=Up      F8=Down    F9=Swap   F12=Cancel
```

Figure 38. Hybrid Cloud Data Management functions menu

On the last line, enter the DFSMScdm started task ID. This is the name entered in the STCID configuration parameter and used by the administrator when starting the DFSMScdm started task. This value is case-sensitive.

Option 1 CDMSEND - Send data sets from z/OS to cloud storage

Send one or more sequential (DSORG=PS) z/OS data sets to a cloud.

You must specify a data set name or a mask for multiple data sets to send to the cloud, a name or mask for the corresponding cloud object, and the name of the cloud and container where the object is to be saved.

When DFSMScdm uploads a z/OS data set to a cloud object, it saves the data set name and other characteristics in the object's metadata. You can use **Option 5 CDMLIST** to display the metadata for the uploaded data set.

```
                        Send z/OS Data Sets to a Cloud
Command ===>

z/OS data set or mask  . . ____________________________________________

Cloud name . . . . . . . . CLOUD01_____________
Container name . . . . . . USER1CONTAINER_____________________________   +
Mask to create object  . . &DSN/&DATE_________________________________   +

Priority . . . . . . . . . . . . . . . . . . . . . ___        (1-100)
Stop or continue if an upload fails  . . . . . . . STOP____  (Stop|Continue)
Delete z/OS data set after upload? . . . . . . . . NO_       (Yes|No)
Wait for DFSMScdm to complete request? . . . . . . NO_       (Yes|No)
Convert from EBCDIC to UTF-8?  . . . . . . . . . . NO_       (Yes|No)
Perform only a syntax check and resolve masks? . . NO_       (Yes|No)

F1=Help    F2=Split   F3=Exit    F4=Expand  F5=Submit  F7=Up      F8=Down
F9=Swap   F10=Left   F11=Right  F12=Cancel
```

Figure 39. Option 1 CDMSEND - Send z/OS data sets to a cloud

Parameters

Except for the z/OS data set name, these fields are case-sensitive.

z/OS data set or mask

Name of the z/OS data set or mask (for multiple data sets) to send to the cloud. An asterisk (*) cannot be used in the high-level qualifier, but otherwise, standard z/OS data set mask characters can be used to select multiple data sets.

Cloud name
Cloud provider name defined to CDA.

Container name
Container name in the specified cloud.

Mask to create object
Object name in the specified cloud. When sending multiple data sets to the cloud, use at least one variable to ensure that unique object names are created. For more information on variables, see "OBJECT variables" on page 70. The generated object name, including variables, can be up to 256 characters.

Priority
Optionally specifies a priority value for this request. 100 is the highest priority, and 1 is the lowest. If **YES** is specified for **Wait for DFSMScdm to complete request?**, DFSMScdm ignores this priority value and uses 100.

Stop or continue if an upload fails
Specifies whether to continue or stop processing a request with multiple data sets when one data set fails to be copied. The default is **STOP**.

Delete z/OS data set after upload?
Specifies whether DFSMScdm deletes the data set from z/OS storage after the copy to the cloud completes. The default is **NO**.

Wait for DFSMScdm to complete request?
Specifies whether to wait for DFSMScdm to complete the request if it is actively processing when a forced shutdown occurs. The default is **NO**.

Convert from EBCDIC to UTF-8?
Specifies whether to convert the data from EBCDIC to UTF-8. For a variable-length record z/OS data set, the default is **YES**. Otherwise, the default is **NO**.

Perform only a syntax check and resolve masks?
Specifies whether to check the command syntax, resolve masks and variables, and issue any warnings, but not submit the command. The default is **NO**.

UI controls

F3 | EXIT
Save the currently-displayed values and exit the panel.

F5 | SUBMIT
Submit the request to the DFSMScdm started task.

F12 | CANCEL
Exit the panel without saving the currently-displayed values.

Tip: To display help text on any given field, place the cursor on the field and press **F1**.

Option 2 CDMRET - Retrieve z/OS data sets from cloud storage

Retrieve an object from the cloud and place the data in a z/OS data set.

DFSMScdm attempts to use the original data set name from which the data was uploaded. If that data set already exists on the z/OS system it is downloading to, you can overwrite it with **Replace an existing z/OS data set?** set to **YES**, or set to **NO** to create a new data set by appending a suffix to the existing data set name using the **Characters to append to existing DSN** value.

You must specify the object to be retrieved, and the cloud and container where the object is located.

Note: Using the CDMSEND command, administrators can delete data sets that they do not have access to via RACF. For an administrator to retrieve an object to one of these data sets, they must either have RACF ALTER access to the data set, or the owner of the data set must first allocate an empty version of it.

```
                  Retrieve z/OS Data Set from a Cloud Object
Command ===>

Cloud name . . . . . _____________________
Container name . . . . . _____________________________________________   +
Object name  . . . . . _____________________________________________   +

Priority . . . . . . . . . . . . . . . . . . . . ___       (1-100)
Stop or continue if a transfer fails . . . . . ________  (Stop|Continue)
Replace an existing z/OS data set? . . . . . ___       (Yes|No)
Characters to append to existing DSN . . . . . _________
Wait for DFSMScdm to complete request? . . . . . ___       (Yes|No)
Convert from UTF-8 to EBCDIC?  . . . . . ___       (Yes|No)
Perform only a syntax check and resolve masks? . . ___       (Yes|No)

F1=Help    F2=Split   F3=Exit    F4=Expand  F5=Submit  F7=Up      F8=Down
F9=Swap   F10=Left   F11=Right  F12=Cancel
```

Figure 40. Option 2 CDMRET - Retrieve z/OS data set from a cloud object

Parameters

These values are case-sensitive.

Cloud name
Cloud provider name defined to CDA.

Container name
Container name in the specified cloud.

Object name
Object name in the specified cloud. This cannot contain a DFSMScdm variable.

Priority
Optionally specifies a priority value for this request. 100 is the highest priority, and 1 is the lowest. If **YES** is specified for **Wait for DFSMScdm to complete request?**, DFSMScdm ignores this priority value and uses 100.

Stop or continue if an upload fails
Specifies whether to continue or stop processing a request with multiple data sets when one data set fails to be copied. The default is **STOP**.

Replace an existing z/OS data set?
Specifies whether a data set is overwritten if it already exists on the z/OS system it is downloading to. The default is **NO**.

Characters to append to existing DSN
With **NO** specified for **Replace an existing z/OS data set?**, if a data set already exists on the z/OS system it is downloaded to, this parameter creates a new data set name by appending a suffix to the existing data set name. The format is 1–9 valid data set characters. Select a value that results in a valid z/OS data set name based on the existing data set name:

- The resulting data set name can be up to 44 characters.
- A qualifier can be up to 8 characters. You can adhere to this limitation by using a period (.) as the first character of the value.

Wait for DFSMScdm to complete request?
Specifies whether to wait for DFSMScdm to complete the request if it is actively processing when a forced shutdown occurs. The default is **NO**.

Convert from UTF-8 to EBCDIC?
Specifies whether to convert the data from UTF-8 to EBCDIC. For a variable-length record z/OS data set, the default is **YES**. Otherwise, the default is **NO**.

Perform only a syntax check and resolve masks?
Specifies whether to check the command syntax, resolve masks and variables, and issue any warnings, but not submit the command. The default is **NO**.

UI controls

F3 | EXIT
Save the currently-displayed values and exit the panel.

F5 | SUBMIT
Submit the request to the DFSMScdm started task.

F12 | CANCEL
Exit the panel without saving the currently-displayed values.

Tip: To display help text on any given field, place the cursor on the field and press **F1**.

Option 3 CDMQUERY - Query cloud request status

Query requests sent to DFSMScdm.

With administrator authority, you can query all requests in the queue, all requests submitted by a specific user, or a specific request number. Without administrator authority, you can query all your own submitted requests, or one of your specific request numbers.

```
                            Query DFSMScdm Requests
Command ===>

Display DFSMScdm requests by user . . . . . USER1___
Number of request to display (or ALL) . . . . ________

You must have DFSMScdm administrator access to the CDMQUERY function to:
o   Display requests by a different user.
o   Display requests by all users, by using a blank in the user field.

F1=Help    F2=Split   F3=Exit    F4=Expand  F5=Submit  F7=Up      F8=Down
F9=Swap   F10=Left   F11=Right  F12=Cancel
```

Figure 41. Option 3 CDMQUERY - Query DFSMScdm requests

Parameters

Display DFSMScdm requests by user
With administrator authority, queries all requests submitted by the specified user. To display requests by all users, leave this field blank. Without administrator authority, defaults to your user ID. This value is case-sensitive.

Number of request to display (or ALL)
With administrator authority, queries any specified request number. Without administrator authority, queries the specified request number of one of your submitted requests. **ALL** queries all of the specified user's requests.

UI controls

F3 | EXIT
Save the currently-displayed values and exit the panel.

F5 | SUBMIT
Submit the request to the DFSMScdm started task.

F12 | CANCEL
Exit the panel without saving the currently-displayed values.

Tip: To display help text on any given field, place the cursor on the field and press **F1**.

Option 4 CDMMOD - Modify a DFSMScdm request

Cancel a request sent to DFSMScdm that is not currently processing.

With administrator authority, you can cancel all requests in the queue, all requests submitted by a specific user, or a specific request number. Without administrator authority, you can cancel all your submitted requests, or one of your specific request numbers.

```
                          Cancel DFSMScdm Requests
Command ===>

Cancel DFSMScdm requests by user  . . . . . USER1___
Number of request to cancel (or ALL)  . . . . ________

You must have DFSMScdm administrator access to the CDMMOD function to:
o   Cancel requests by a different user.
o   Cancel requests by all users, by using a blank in the user field.

F1=Help    F2=Split   F3=Exit    F4=Expand  F5=Submit  F7=Up      F8=Down
F9=Swap   F10=Left   F11=Right  F12=Cancel
```

Figure 42. Option 4 CDMMOD - Cancel DFSMScdm requests

Parameters

Cancel DFSMScdm requests by user
With administrator authority, cancels all requests submitted by the specified user. To cancel requests by all users, leave this field blank. Without administrator authority, defaults to your user ID. This value is case-sensitive.

Number of request to cancel (or ALL)
With administrator authority, cancels any specified request number. Without administrator authority, cancels the specified request number of one of your submitted requests. **ALL** cancels all of the specified user's requests.

UI controls

F3 | EXIT
Save the currently-displayed values and exit the panel.

F5 | SUBMIT
Submit the request to the DFSMScdm started task.

F12 | CANCEL
Exit the panel without saving the currently-displayed values.

Tip: To display help text on any given field, place the cursor on the field and press **F1**.

Option 5 CDMLIST - Display list of cloud objects

Display information about data in cloud storage.

The output is limited by the MAX_CDMLIST_BUFFER_SIZE configuration parameter. Use the CDMLIST parameters to further limit the type of information displayed:

To display this information	Use these parameters		
	Cloud name	Container name	Object name
All containers in a cloud	✓		
All objects in a container	✓	✓	
The z/OS data set corresponding to one object	✓	✓	✓

```
              List Information About Cloud Containers and Objects
Command ===>


Cloud name . . . . . . . . _____________________
Container name . . . . . . _____________________________________________   +
Object name  . . . . . . . _____________________________________________   +


o   To list all the containers in a cloud, specify only a cloud name.
o   To list all the objects in a container, specify both a cloud name
    and container name.
o   To list information about the z/OS data set corresponding to one
    object, specify a cloud name, container name, and object name.


F1=Help    F2=Split   F3=Exit    F4=Expand  F7=Up      F8=Down    F9=Swap
F10=Left   F11=Right  F12=Cancel
```

Figure 43. Option 5 CDMLIST - List information about cloud containers and objects

Parameters

These values are case-sensitive.

Cloud name
Cloud provider name defined to CDA.

Container name
Container name in the specified cloud. To list all containers in the cloud, enter a forward slash (/) or leave this field blank. If you enter a / in this field, ensure that the OBJECT parameter is not used.

Object name
The full object name in the specified cloud.

UI controls

Enter
Submit the request to the DFSMScdm started task.

F3 | EXIT
Save the currently-displayed values and exit the panel.

F12 | CANCEL
Exit the panel without saving the currently-displayed values.

Tip: To display help text on any given field, place the cursor on the field and press **F1**.

Option 6 CDMDEL - Delete a cloud object

Delete an object from cloud storage.

You must have DFSMScdm administrator authority to delete any object in the cloud. Without administrator access, you can only delete objects that are copies of data sets to which you have ALTER access. If you do not have DFSMScdm administrator authority, a SAF authority check is done for the z/OS data set name associated with the cloud object.

```
                              Delete Cloud Object
Command ===>


Cloud name . . . . . . . . _____________________
Container name . . . . . . _____________________________________________   +
Object name  . . . . . . . _____________________________________________   +

Wait for DFSMScdm to complete request? . . . . . . . NO       (Yes|No)



F1=Help    F2=Split   F3=Exit    F4=Expand  F5=Submit  F7=Up      F8=Down
F9=Swap    F10=Left   F11=Right  F12=Cancel
```

Figure 44. Option 6 CDMDEL - Delete cloud object

Parameters

These values are case-sensitive.

Cloud name
Cloud provider name defined to CDA.

Container name
Container name in the specified cloud.

Object name
Object name in the specified cloud. Cannot contain a DFSMScdm variable.

Wait for DFSMScdm to complete request?
Specifies whether to wait for DFSMScdm to complete the request. The default is **NO**.

UI controls

F3 | EXIT
Save the currently-displayed values and exit the panel.

F5 | SUBMIT
Submit the request to the DFSMScdm started task.

F12 | CANCEL
Exit the panel without saving the currently-displayed values.

Tip: To display help text on any given field, place the cursor on the field and press **F1**.

Option C Configure - Configure session options

Display and update configuration values in the DFSMScdm configuration member and your ISPF user profile.

```
                    Configure DFSMScdm Libraries
Command ===>

DFSMScdm load library . . . . . . hlq.IBM.HGBQ120.SGBQLLIB
DFSMScdm REXX library . . . . . . hlq.IBM.HGBQ120.SGBQELIB
DFSMScdm panel library  . . . . . hlq.IBM.HGBQ120.SGBQPENU
DFSMScdm table library  . . . . . hlq.IBM.HGBQ120.SGBQTLIB
DFSMScdm message library  . . . . hlq.IBM.HGBQ120.SGBQMLIB
DFSMScdm skeleton library . . . . hlq.IBM.HGBQ120.SGBQSLIB


 F1=Help      F2=Split     F3=Exit      F5=Save      F6=ReadCfg   F7=Up
 F8=Down      F9=Swap     F12=Cancel
```

Figure 45. Option C Configure - Configure control data set and session options panel

The DFSMScdm library names are saved in your ISPF user profile *hlq*.ISPF.ISPPROF in member GBQPROF:

UI controls

F3 | EXIT
Save the currently-displayed values and exit the panel.

F5 | SAVE
Save the currently-displayed values into your user profile and into the specified configuration member without exiting the panel.

F6 | READCFG
Read the contents of an existing DFSMScdm configuration member. Enter the control data set and configuration member names then press **F6** to retrieve configuration values. This is useful if you want to switch configurations.

F12 | CANCEL
Exit the panel without saving any updated values.

Enter
Similar to pressing **F6**, except you are given the option to read values from the specified configuration member if it already exists. To retrieve configuration values from the member, enter **Y**. To keep the values currently displayed on the panel, enter **N**.

Table 8. Configuration parameters

Parameter	Description
DFSMScdm load library	DFSMScdm product libraries. These fields are initially filled in with default values based on the high-level qualifiers of the REXX member to run the product the first time. Update these values if you have installed the product into different libraries, moved their contents, or renamed the libraries. The product libraries are listed in "Setting up DFSMScdm" on page 10 and detailed information described in the *IBM z/OS DFSMS Cloud Data Manager Program Directory*.
DFSMScdm REXX library	
DFSMScdm panel library	
DFSMScdm table library	
DFSMScdm message library	
DFSMScdm skeleton library	

Option H Help - Message help

Display a GBQ*nnnn* message.

Enter a message number to display the message text, explanation, programmer response, user response, and system action.

For a list of all messages, see "GBQ0001I" on page 89.

```
                                Message Help               Row 1 to 10 of 10
Command ===>                                                Scroll ===> CSR

This screen displays information about informational, warning, and error
messages that are displayed in DFSMScdm batch job logs or on the user's
terminal.

Within the message text there may be special string variables that will be
replaced when the message is generated.
 ------------------------------------------------------------------------------
Message Number: 2103
GBQ2103E

Message Text:
Invalid parameter passed on EXEC PGM PARM
start_type

Explanation:
An invalid parameter was used.

System Action:
DFSMScdm processing ends.

User response:
Ensure that the parameter being passed on the EXEC
PGM statement is valid. The first 10 characters passed
are printed in the message.

Detecting CSECT:
GBQMAIN

 F1=Help    F2=Split   F3=Exit    F9=Swap   F12=Cancel
```

Figure 46. Option H Help - Message help panel

TSO and batch commands

The commands allow you to send, retrieve, list, or delete an object in a cloud and query or cancel requests sent to DFSMScdm.

Commands and parameters are uppercase. Parameter values are enclosed in parentheses. No space is allowed after the parameter and before the opening parentheses. A command is continued with a + sign which can be after a *PARAMETER*(*value*) pair, or can be at the end of a value that is continued onto the next line. Blank spaces between the end of a value and the + sign indicating a continuation are not considered. The remainder of the value or the next *PARAMETER*(*value*) pair is on the following line at the first non-blank character. Parameters have no specific order. For example, you can issue a CDMSEND command using this syntax:

```
CDMSEND +
STCID(GBQ1) +
CLOUD(CLOUD01) +
CONTAINER(USER1CONTAINER) +
OBJECT(&DSN/&DATE) +
CONVERT_UTF8(NO) +
DELETE(YES) +
ON_ERROR(STOP) +
WAIT(NO) +
CHECK(NO) +
DEBUG(NO)
```

CDMSEND

The CDMSEND command sends one or more z/OS data sets to a cloud.

You must specify a data set name or a mask for multiple data sets to send to the cloud, a name or mask for the corresponding cloud object, and the names of the cloud and container where the object is to be saved.

When DFSMScdm uploads a z/OS data set to a cloud object, it saves the data set name and other characteristics in the object's metadata. You can use the CDMLIST command to display the metadata for the uploaded data set.

Important: Using the CDMSEND command, administrators can delete data sets that they do not have access to via RACF. For an administrator to retrieve an object to one of these data sets, they must either have RACF ALTER access to the data set, or the owner of the data set must first allocate an empty version of it.

Syntax

```
CDMSEND +
          STCID(started_task_name) +
          DSN(data_set_name_or_mask) +
          CLOUD(cloud_provider_name) +
          CONTAINER(cloud_container_name) +
          OBJECT(cloud_object_name) +
          CONVERT_UTF8(YES|NO) +
          DELETE(YES|NO) +
          ON_ERROR(CONTINUE|STOP) +
          WAIT(YES|NO) +
          PRIORITY(nnn) +
          CHECK(YES|NO) +
          DEBUG(YES|NO)
```

Parameters

Except for the z/OS data set name, these fields are case-sensitive.

Table 9. CDMSEND command parameters

Parameter	Value	Description
STCID	*started_task_name*	DFSMScdm started task to send the data set. Enter this parameter to use a started task other than GBQ1. The default is GBQ1.
DSN	*dsn_or_mask*	Name of the z/OS data set or mask (for multiple data sets) to send to the cloud. An asterisk (*) cannot be used in the high-level qualifier, but otherwise, standard z/OS data set mask characters can be used to select multiple data sets.
CLOUD	*cloud_provider_name*	Cloud provider name defined to CDA.
CONTAINER	*cloud_container_name*	Container name in the specified cloud.
OBJECT	*cloud_object_name*	Object name in the specified cloud. When sending multiple data sets to the cloud, use at least one variable in the OBJECT value to ensure that unique object names are created. For more information on variables, see “OBJECT variables” on page 70. The generated object name, including variables, can be up to 256 characters.
CONVERT_UTF8	YES | NO YES | NO	Optionally specifies whether to convert the data from EBCDIC to UTF-8. For a variable-length record z/OS data set, the default is YES. Otherwise, the default is NO.
DELETE	YES | NO	Optionally specifies whether DFSMScdm deletes the data set from cloud storage after the copy to the cloud completes. The default is NO.
ON_ERROR	CONTINUE | STOP	Optionally specifies whether to continue or stop processing a request with multiple data sets when one data set fails to be copied. The default is STOP.
WAIT	YES | NO	Optionally specifies whether to wait for DFSMScdm to complete the request. The default is NO.

Table 9. CDMSEND command parameters (continued)		
Parameter	**Value**	**Description**
PRIORITY	*nnn*	Optionally specifies a priority value for this request. 100 is the highest priority, and 1 is the lowest. If WAIT(YES) is specified, the hybrid cloud data management ignores this priority value and uses 100.
CHECK	YES | NO	Optionally specifies whether to check the command syntax, resolve masks and variables, and issue any warnings, but not submit the command. The default is NO.
DEBUG	YES | NO	Optionally specifies whether the command debugs the code. YES activates the CDA task debug option of the dispatcher to debug any CDA connection problems. The default is NO.

Sample JCL for a CDMSEND batch job

```
//TSOBATCH EXEC PGM=IKJEFT01,REGION=0M
//STEPLIB  DD  DSN=hlq.IBM.HGBQrrr.SGBQLLIB,DISP=SHR
//SYSPRINT DD  SYSOUT=A
//SYSTSPRT DD  SYSOUT=A
//SYSABEND DD  SYSOUT=A
//SYSEXEC  DD  DSN=hlq.IBM.HGBQrrr.SGBQELIB,DISP=SHR
//SYSTSIN  DD  *
 %CDMSEND +
 DSN(data-set-mask) +
 CLOUD(cloud-name) +
 CONTAINER(bucket-name) +
 OBJECT(object-mask) +
 STCID(task-id) +
 CHECK(no) +
 DELETE(no) +
 WAIT(yes)
/*
//*
```

OBJECT variables

The OBJECT parameter for CDMSEND supports variables. To send multiple data sets to the cloud, specify at least one variable to ensure that a unique object name is created for each data set.

&DSN
The DSN variable references the full data set name for that DSN OBJECT pair.

&DSN(*n*)
Where *n* references a data set name qualifier. For z/OS data set names, qualifiers are separated by a period.

&DATE
8 characters in the format YYYYMMDD.

&TIME
8 characters in the format of HHMMSSth.

For example, below are some options for generating corresponding object names for a data set named ABC.CDM.XYZ.X01 uploaded on 4 April 2024 at 5:30 PM.

Object mask using variables	**Generated object name**[1]
&DSNdate&DATEtime&TIME	ABC.CDM.XYZ.X01date20240404time17300000
&DSN/uploaded&DATEat&TIME	ABC.CDM.XYZ.X01/uploaded20240404at17300000
&DSN(1)/backup/DSN(3)&DSN(4)	ABC/backup/XYZX01

Object mask using variables	Generated object name[1]
1. The generated object name can be up to 256 characters.	

CDMRET

The CDMRET command retrieves an object from the cloud and places the data in a z/OS data set.

DFSMScdm attempts to use the original data set name from which the data was uploaded. If that data set already exists on the z/OS system it is downloading to, you can overwrite it with REPLACE(YES), or you can create a new data set with REPLACE(NO) by appending a suffix to the existing data set name using the APPEND parameter value.

You must specify the object to be retrieved, and the cloud and container where the object is located.

Syntax

```
CDMRET +
          STCID(started_task_name) +
          CLOUD(cloud_provider_name) +
          CONTAINER(cloud_container_name) +
          OBJECT(cloud_object_name) +
          CONVERT_UTF8(YES|NO) +
          WAIT(YES|NO) +
          PRIORITY(nnn) +
          CHECK(YES|NO) +
          DEBUG(YES|NO) +
          REPLACE(YES|NO) +
          APPEND(append_value)
```

Parameters

These values are case-sensitive.

Table 10. CDMRET command parameters

Parameter	Value	Description
STCID	*started_task_name*	DFSMScdm started task from which to retrieve an object. Enter this parameter to use a started task other than GBQ1. The default is GBQ1.
CLOUD	*cloud_provider_name*	Cloud provider name defined to CDA.
CONTAINER	*cloud_container_name*	Container name in the specified cloud.
OBJECT	*cloud_object_name*	Object name in the specified cloud. This cannot contain a DFSMScdm variable.
CONVERT_UTF8	YES | NO YES | NO	Optionally specifies whether to convert the data from UTF-8 to EBCDIC. For a variable-length record z/OS data set, the default is YES. Otherwise, the default is NO.
WAIT	YES | NO	Optionally specifies whether to wait for DFSMScdm to complete the request. The default is NO.
PRIORITY	*nnn*	Optionally specifies a priority value for this request. 100 is the highest priority, and 1 is the lowest. If WAIT(YES) is specified, DFSMScdm ignores this priority value and uses 100.
CHECK	YES | NO	Optionally specifies whether to check the command syntax, resolve masks and variables, and issue any warnings, but not submit the command. The default is NO.

Table 10. CDMRET command parameters (continued)		
Parameter	**Value**	**Description**
REPLACE	YES | NO	Optionally specifies whether a data set is overwritten if it exists on the z/OS system it is downloading to. The default is NO.
APPEND	*append_value*	With REPLACE(NO), if a data set already exists on the z/OS system it is downloading to, this parameter creates a new data set name by appending a suffix to the existing data set name. The format is 1–9 valid data set characters. Select a value that results in a valid z/OS data set name based on the existing data set name: • The resulting data set name can be up to 44 characters. • A qualifier can be up to 8 characters. You can adhere to this limitation by using a period (.) as the first character of the APPEND value.
DEBUG	YES | NO	Optionally specifies whether the command debugs the code. This activates the CDA task debug option of the dispatcher to debug any CDA connection problems. The default is NO.

Sample JCL for a CDMRET batch job

```
//TSOBATCH EXEC PGM=IKJEFT01,REGION=0M
//STEPLIB  DD  DSN=hlq.IBM.HGBQrrr.SGBQLLIB,DISP=SHR
//SYSPRINT DD  SYSOUT=A
//SYSTSPRT DD  SYSOUT=A
//SYSABEND DD  SYSOUT=A
//SYSEXEC  DD  DSN=hlq.IBM.HGBQrrr.SGBQELIB,DISP=SHR
//SYSTSIN  DD  *
 %CDMRET  +
 CLOUD(cloud-name) +
 CONTAINER(bucket-name) +
 OBJECT(object-name) +
 STCID(task-id) +
 CHECK(no) +
 REPLACE(no) +
 APPEND(suffix) +
 WAIT(yes)
/*
```

CDMQUERY

The CDMQUERY command queries requests sent to DFSMScdm.

With administrator authority, you can query all requests in the queue, all requests submitted by a specific user, or a specific request number. Without administrator authority, you can query all your submitted requests, or one of your specific request numbers.

Syntax

```
CDMQUERY +
          STCID(started_task_name) +
          USER(user_id) +
          ALL|REQUEST(nnnn) +
          DEBUG(YES|NO)
```

Parameters

These values are case-sensitive.

Table 11. CDMQUERY command parameters

Parameter	Value	Description
STCID	*started_task_name*	DFSMScdm started task from which to query requests. Enter this parameter to use a started task other than GBQ1. The default is GBQ1.
USER	*user_id*	With administrator authority, queries all requests submitted by the specified user.
ALL	N/A	With administrator authority, queries all requests in the queue. Without administrator authority, queries all your submitted requests.
REQUEST	*nnnn*	With administrator authority, queries any specified request number. Without administrator authority, queries the specified request number of one of your submitted requests.
DEBUG	YES | NO	Optionally specifies whether the command debugs the code. This activates the z/OS CDA task debug option of the dispatcher to debug any CDA connection problems. The default is NO.

Sample JCL for a CDMQUERY batch job

```
//TSOBATCH EXEC PGM=IKJEFT01,REGION=0M
//STEPLIB  DD  DSN=hlq.IBM.HGBQrrr.SGBQLLIB,DISP=SHR
//SYSPRINT DD  SYSOUT=A
//SYSTSPRT DD  SYSOUT=A
//SYSABEND DD  SYSOUT=A
//SYSEXEC  DD  DSN=hlq.IBM.HGBQrrr.SGBQELIB,DISP=SHR
//SYSTSIN  DD  *
 %CDMQUERY +
 USER(user-id)  +
 ALL | REQUEST(requestid) +
 STCID(task-id)
/*
//*
```

CDMMOD

The CDMMOD command cancels a request sent to DFSMScdm that is not currently processing.

With administrator authority, you can cancel all requests in the queue, all requests submitted by a specific user, or a specific request number. Without administrator authority, you can cancel all your submitted requests, or one of your specific request numbers.

Syntax

```
CDMMOD CANCEL +
          STCID(started_task_name) +
          USER(user_id) +
          ALL | REQUEST(nnnn) +
          CHECK(YES|NO) +
          DEBUG(YES|NO)
```

Parameters

These values are case-sensitive.

Table 12. CDMMOD command parameters		
Parameter	**Value**	**Description**
STCID	*started_task_name*	DFSMScdm started task from which to cancel a requests. Enter this parameter to use a started task other than GBQ1. The default is GBQ1.
USER	*user_id*	With administrator authority, performs the cancel function acting as the specified user, canceling only requests by that user.
ALL	N/A	With administrator authority, cancels all requests in the queue. Without administrator authority, cancels all your submitted requests.
REQUEST	*nnnn*	With administrator authority, cancels any specified request number. Without administrator authority, cancels the specified request number of one of your submitted requests.
CHECK	YES | NO	Optionally specifies whether to check the command syntax, resolve masks and variables, and issue any warnings, but not submit the command. The default is NO.
DEBUG	YES | NO	Optionally specifies whether the command debugs the code. This activates the CDA task debug option of the dispatcher to debug any CDA connection problems. The default is NO.

Sample JCL for a CDMMOD batch job

```
//TSOBATCH EXEC PGM=IKJEFT01,REGION=0M
//STEPLIB  DD  DSN=hlq.IBM.HGBQrrr.SGBQLLIB,DISP=SHR
//SYSPRINT DD  SYSOUT=A
//SYSTSPRT DD  SYSOUT=A
//SYSABEND DD  SYSOUT=A
//SYSEXEC  DD  DSN=hlq.IBM.HGBQrrr.SGBQELIB,DISP=SHR
//SYSTSIN  DD  *
 %CDMMOD  +
 CANCEL +
 USER(userid) +
 ALL | REQUEST(queuenumber) +
 STCID(task-id) +
 CHECK(no)
 /*
 //*
```

CDMLIST

The CDMLIST command displays information about data in cloud storage.

Use the parameters to control the type of information displayed:

To display this information	**Use these parameters**			
	CLOUD	**CONTAINER**	**OBJECT**	**OBJPREFIX**
All containers in a cloud	✓			
All objects in a container	✓	✓		
All objects starting with a specific prefix	✓	✓		✓

To display this information	Use these parameters			
	CLOUD	CONTAINER	OBJECT	OBJPREFIX
Metadata saved for a specific cloud object	✓	✓	✓	

The output is limited by the MAX_CDMLIST_BUFFER_SIZE configuration parameter. Use the command parameters to further limit the amount of output.

Syntax

```
CDMLIST +
          STCID(started_task_name) +
          CLOUD(cloud_provider_name) +
          CONTAINER(cloud_container_name) +
          OBJECT(cloud_object_name) +
          OBJPREFIX(prefix) +
          METADATA(YES|NO) +
          DEBUG(YES|NO)
```

Parameters

These values are case-sensitive.

Table 13. CDMLIST command parameters

Parameter	Value	Description
STCID	*started_task_name*	DFSMScdm started task from which to list containers. Enter this parameter to use a started task other than GBQ1. The default is GBQ1.
CLOUD	*cloud_provider_name*	Cloud provider name defined to CDA.
CONTAINER	*cloud_container_name*	Container name in the specified cloud. To list all containers in the cloud, enter a forward slash (/) . If you enter a / in this field, ensure that the OBJECT parameter is not used.
OBJECT	*cloud_object_name*	The full object name in the specified cloud.
OBJPREFIX	*prefix*	Specifies a common prefix to limit the amount of output to a list of objects with that prefix. **Note:** Do not specify both an OBJECT and an OBJPREFIX.
DEBUG	YES | NO	Optionally specifies whether the command debugs the code. This activates the CDA task debug option of the dispatcher to debug any CDA connection problems. The default is NO.

Sample JCL for a CDMLIST batch job

```
//TSOBATCH EXEC PGM=IKJEFT01,REGION=0M
//STEPLIB  DD  DSN=hlq.IBM.HGBQrrr.SGBQLLIB,DISP=SHR
//SYSPRINT DD  SYSOUT=A
//SYSTSPRT DD  SYSOUT=A
//SYSABEND DD  SYSOUT=A
//SYSEXEC  DD  DSN=hlq.IBM.HGBQrrr.SGBQELIB,DISP=SHR
//SYSTSIN  DD  *
%CDMLIST +
CLOUD(cloud-name) +
CONTAINER(bucket-name) +
OBJECT(object-name) +
```

```
STCID(task-id) +
CHECK(no)
/*
//*
```

CDMDEL

The CDMDEL command deletes an object from cloud storage.

You must have DFSMScdm administrator authority to delete any object in the cloud. Without administrator access, you can only delete objects that are copies of data sets to which you have ALTER access. If you do not have DFSMScdm administrator authority, a SAF authority check is done for the z/OS data set name associated with the cloud object.

Syntax

```
CDMDEL +
          STCID(started_task_name) +
          OBJECT(cloud_object_name) +
          CLOUD(cloud_provider_name) +
          CONTAINER(cloud_container_name) +
          WAIT(YES|NO) +
          CHECK(YES|NO) +
          DEBUG(YES|NO)
```

Parameters

These values are case-sensitive.

Table 14. CDMDEL command parameters

Parameter	Value	Description
STCID	*started_task_name*	DFSMScdm started task from which to delete an object. Enter this parameter to use a started task other than GBQ1. The default is GBQ1.
CLOUD	*cloud_provider_name*	Cloud provider name defined to CDA.
CONTAINER	*cloud_container_name*	Container name in the specified cloud.
OBJECT	*cloud_object_name*	Object name in the specified cloud. Cannot contain a DFSMScdm variable.
WAIT	YES | NO	Optionally specifies whether to wait for DFSMScdm to complete the request. The default is NO.
CHECK	YES | NO	Optionally specifies whether to check the command syntax, resolve masks and variables, and issue any warnings, but not submit the command. The default is NO.
DEBUG	YES | NO	Optionally specifies whether the command debugs the code. This activates the CDA task debug option of the dispatcher to debug any CDA connection problems. The default is NO.

Sample JCL for a CDMDEL batch job

```
//TSOBATCH EXEC PGM=IKJEFT01,REGION=0M
//STEPLIB  DD  DSN=hlq.IBM.HGBQrrr.SGBQLLIB,DISP=SHR
//SYSPRINT DD  SYSOUT=A
//SYSTSPRT DD  SYSOUT=A
//SYSABEND DD  SYSOUT=A
//SYSEXEC  DD  DSN=hlq.IBM.HGBQrrr.SGBQELIB,DISP=SHR
//SYSTSIN  DD  *
```

```
  %CDMDEL +
  CLOUD(cloud-name) +
  CONTAINER(bucket-name) +
  OBJECT(object-name) +
  STCID(task-id) +
  WAIT(yes) +
  CHECK(no)
  /*
  //*
```

Sample job outputs

The figures in the following sections show a template of the JCL and a sample of a job output.

CDMSEND output

This is an example of the CDMSEND command output when WAIT(YES) is specified.

```
GBQ3000I CDMREQ(00000001) CDMSEND dsn(user01.testdata.file1) cloud(MINIO)
container(user-bucket) object(pen1/&DSN.oct03b) stcid(PENGUIN0) priority(88)
debug(yes) check(no) delete(no) wait(yes) convert_utf8(NO) on_error(continue)
GBQ3117I CDMSEND  completed. 1 data set was processed.
 Number of datasets selected by DSN mask: 1   Maximum allowed: 8000
 * DSN=USER01.TESTDATA.FILE1   OBJ=pen1/USER01.TESTDATA.FILE1.oct03b
DSN=USER01.TESTDATA.FILE1
 -> OBJ=pen1/USER01.TESTDATA.FILE1.oct03b
 -> RC=0
GBQ3001I CDMSEND summary - 1 data set selected.
GBQ3036I CDMSEND summary - 1 completed with RC=0. 0 completed with errors.
```

Figure 47. Sample CDMSEND output

If WAIT(NO) is specified or defaulted to, this output is written to the DFSMScdm GBQELOG data set. SMF records are written when the request is added to the queue and when the request completes.

CDMRET output

This is an example of the CDMRET command output.

```
GBQ3000I CDMREQ(00000043) CDMRET cloud(MINIO) container(user-bucket) check(no)
debug(yes) replace(no) append(.bak) priority(89) stcid(PENGUIN0) wait(yes)
CONVERT_UTF8(NO) object(pen1/USER01.TESTDATA.FILE1.oct03b)
GBQ3001I CDMRET completed.
CDMREQ(00000043) CDMRET cloud(MINIO) container(user-bucket) check(no) debug(yes)
replace(no) append(.bak) priority(89) stcid(PENGUIN0) wait(yes) CONVERT_UTF8(NO)
object(pen1/USER01.TESTDATA.FILE1.oct03b)
OBJ=pen1/USER01.TESTDATA.FILE1.oct03b
 -> DSN=USER01.TESTDATA.FILE1.BAK
 -> RC=0
```

Figure 48. Sample CDMRET output

CDMQUERY output

This is an example of the CDMQUERY command output.

```
GBQ3000I CDMQUERY user(USR01) ALL stcid(PENGUIN0) debug(no)
GBQ3117I CDMQUERY completed. 2 items were processed.
CDMQUERY: 2 requests found.

Request   User      Command   Priority  Status   Issue Date/Time      Position  RC
--------  --------  --------  --------  -------  -------------------  --------  ---
00000047  USR01     CDMSEND   100                10/11/2024 15:25:35  0001      000
00000046  USR01     CDMSEND   100                10/11/2024 15:25:25  0002      000
```

Figure 49. Sample CDMQUERY output

CDMMOD output

This is an example of the CDMMOD command output.

```
GBQ3000I CDMREQ(00000048) CDMMOD CANCEL user(USR01) REQUEST(00000046) stcid(PENGUIN0)
debug(no) check(no)
GBQ3002I CDMMOD command submitted to the DSMScdm started task.
GBQ3029I At least one request has been deleted from the queue.
```

Figure 50. Sample CDMMOD output

CDMLIST output

These are examples of the CDMLIST command output.

```
GBQ3000I CDMREQ(00000044) CDMLIST cloud(MINIO) stcid(PENGUIN0) debug(no) check(no)
GBQ3001I CDMLIST completed.
GBQ3020I CDMLIST: containers in cloud MINIO
-> chris-bucket
-> prod-test-bucket-1
-> test-bucket1
-> frank-bucket
-> prod01-bucket
-> prod02-bucket
-> john-bucket1
-> bob-bucket
-> test-bucket2
-> dev-bucket
-> qatest-bucket
```

Figure 51. Sample CDMLIST output listing containers in a cloud

```
GBQ3000I CDMREQ(00000045) CDMLIST cloud(MINIO) container(user-bucket) stcid(PENGUIN0)
objprefix(pen1) debug(no) check(no)
GBQ3001I CDMLIST completed.
GBQ3019I CDMLIST: objects in container user-bucket filtered by prefix pen1
-> pen1/USER01.TESTDATA.ANOTHER.FILE1.fri10b
-> pen1/USER01.TESTDATA.ANOTHER.FILE1.mon10a
-> pen1/USER01.TESTDATA.ANOTHER.FILE1.mon10b
-> pen1/USER01.TESTDATA.ANOTHER.FILE1.mon17a
-> pen1/USER01.TESTDATA.FILE1.aug13a
-> pen1/USER01.TESTDATA.FILE1.bro1.thu25b
-> pen1/USER01.TESTDATA.FILE1.bro1.thu25c
-> pen1/USER01.TESTDATA.FILE1.bro1.thu25f
-> pen1/USER01.TESTDATA.FILE1.bro1.thu25h
-> pen1/USER01.TESTDATA.FILE1.bro1.wed24a
-> pen1/USER01.TESTDATA.FILE1.fri05a
-> pen1/USER01.TESTDATA.FILE1.fri10a
-> pen1/USER01.TESTDATA.FILE1.fri10b
-> pen1/USER01.TESTDATA.FILE1.fri19a
-> pen1/USER01.TESTDATA.FILE1.fri28a
-> pen1/USER01.TESTDATA.FILE1.fri28b
-> pen1/USER01.TESTDATA.FILE1.fri28c
-> pen1/USER01.TESTDATA.FILE1.mon15a
-> pen1/USER01.TESTDATA.FILE1.mon15b
-> pen1/USER01.TESTDATA.FILE1.oct03b
-> pen1/USER01.TESTDATA.FILE1.sep24a
```

Figure 52. Sample CDMLIST output listing objects in a container

```
GBQ3000I CDMREQ(00000006) CDMLIST cloud(MINIO) container(user-bucket)
object(pen1/USER01.TESTDATA.FILE1.oct03b) stcid(PENGUIN0) debug(no) check(no)
GBQ3001I CDMLIST completed.
GBQ3021I CDMLIST: metadata saved for cloud object
  Cloud name:               MINIO
  Cloud container:          user-bucket
  Cloud object:             pen1/USER01.TESTDATA.FILE1.oct03b
  z/OS data set name:       USER01.TESTDATA.FILE1
     record format:         FBA
     record length:         80
     block size:            3120
     dataset org:           PS
     space allocated:       10
     space used:            1
     space units:           Tracks
     data class:            **None**
     management class:      **None**
     storage class:         **None**
     creation date:         2024-05-03
     expiration date:       **None**
     last referenced date: **None**
  Uploaded to cloud by:     USER01
  Job performing upload:    USERMAIR2
  Step performing upload:   USER
```

Figure 53. Sample CDMLIST output listing metadata for an object

CDMDEL output

This is an example of the CDMDEL command output.

```
GBQ3000I CDMREQ(00000041) CDMDEL cloud(MINIO) container(user-bucket)
object(pen1/USER01.TESTDATA.FILE1.bro1.thu25a) stcid(PENGUIN0) wait(yes)
debug(yes) check(no)
GBQ3001I CDMDEL completed.
GBQ3014I CDMDEL: object pen1/USER01.TESTDATA.FILE1.bro1.thu25a successfully deleted.
```

Figure 54. Sample CDMDEL output

Sample use case

This is an example of a possible usage of hybrid cloud data management functions.

Sharing z/OS data sets using cloud object storage

An application creates data sets to be shared. The 4th node of the data set name contains a unique identifier used for sharing. The application development teams obtained and configured the required security credentials and agreed on a cloud provider, container name, and object name format. CDA is configured with a provider file and credentials for the cloud provider named BSP01. The agreed upon container name is CCSPLIT_SHARED_DAILY. The agreed upon object name is /DETAILTRANS/&DSN(4)/&DATE.

These data sets can now be shared using cloud object storage. For example:

1. You issue a CDMSEND command to send a data set to the cloud.

```
//CDMSEND  JOB CLASS=A
//BATCDM   EXEC PGM=IKJEFT01,REGION=0M
//SYSTSIN  DD *
  CDMSEND  CLOUD(BSP01)                          +
           CONTAINER(CCSPLIT-SHARED-DAILY)       +
           DSN(PROD.CREDCARD.SPLTDLY.*)          +
           CONVERT_UTF8(YES)                     +
           OBJECT(DETAILTRANS/&DSN(4)/&DATE)
```

2. Data sets are copied to the cloud.

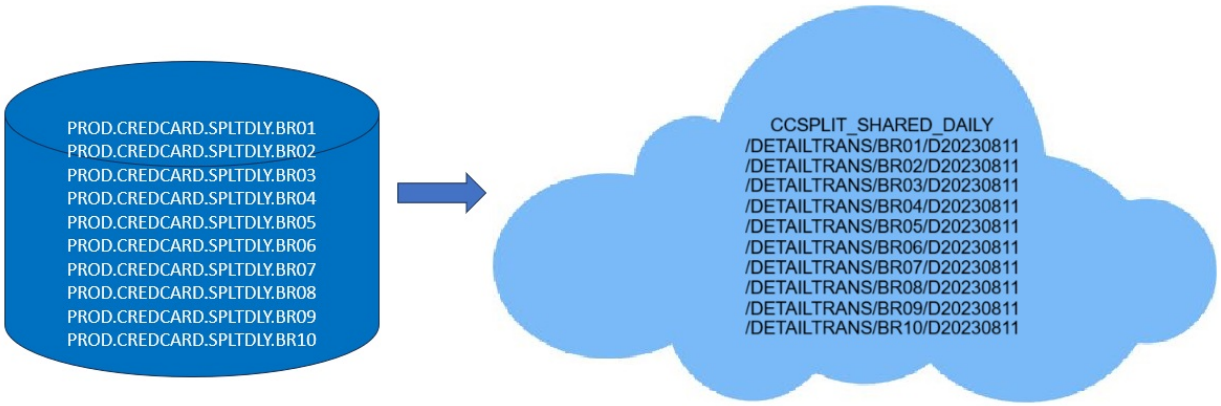

Figure 55. Copying data sets to the cloud

3. Data sets can be used by other systems connected to the cloud.

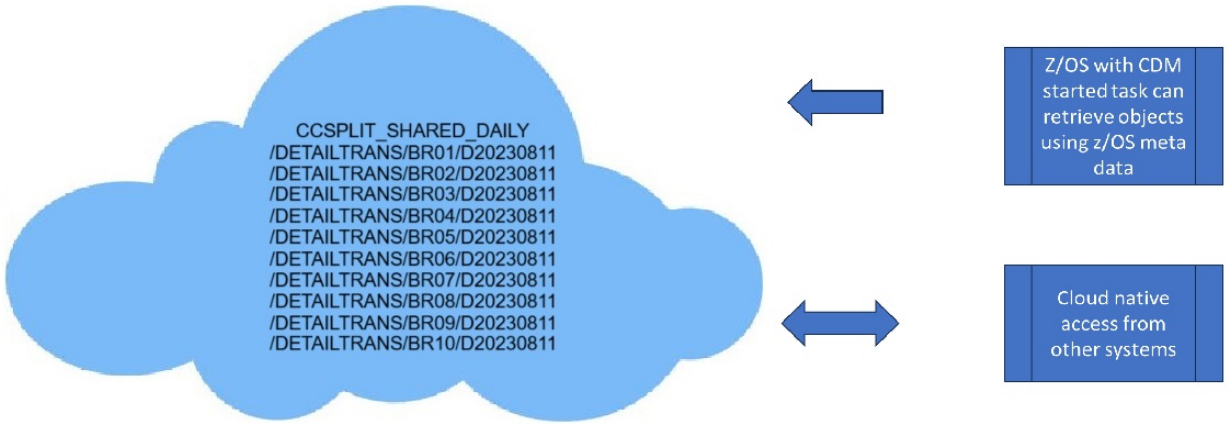

Figure 56. Sharing data sets among cloud-connected systems

Chapter 5. Batch utilities

DFSMScdm provides batch utilities for various purposes.

GBQLEVEL

GBQLEVEL displays maintenance information about the modules in the DFSMScdm load library. The identifier for the most recent APAR applied to a load module is displayed in the report written to SYSPRINT. If no APAR is applied, the FMID of the module is displayed.

GBQLEVEL does not have any input parameters.

Example

This sample job is in the GBQLEVEL member of the sample library.

```
//GBQLEVEL EXEC PGM=GBQLEVEL,REGION=0M
//STEPLIB  DD  DSN=cdm.load.library,DISP=SHR
//SYSPRINT DD  SYSOUT=A
//SYSABEND DD  SYSOUT=A
```

Example output

```
 Module    FMID/APAR Date        Time
 --------  --------- ----------  -----
 GBQATRC   HGBQ120   2024-09-26  17.18
 GBQCMD    HGBQ120   2024-09-26  17.18
 GBQCOMM   HGBQ120   2024-09-30  22.58
 GBQDISP   HGBQ120   2024-09-30  22.58
 GBQFMMSG  HGBQ120   2024-09-26  17.18
 GBQGSMSL  HGBQ120   2024-09-26  17.18
 GBQHMSG   HGBQ120   2024-09-26  17.18
 GBQHSMI   HGBQ120   2024-09-26  17.18
 GBQIIP    HGBQ120   2024-09-26  17.18
 GBQINITV  HGBQ120   2024-09-30  22.58
 GBQISPSG  HGBQ120   2024-09-26  17.18
 GBQMAIN   HGBQ120   2024-09-26  17.18
 GBQMON    HGBQ120   2024-09-26  17.18
 GBQPCR    HGBQ120   2024-09-26  17.18
 GBQPCSMF  HGBQ120   2024-09-30  22.58
 GBQPTRC   HGBQ120   2024-10-03  03.43
 GBQSMRPT  HGBQ120   2024-09-30  22.58
 GBQSUMRY  HGBQ120   2024-09-26  17.18
 GBQTRC    HGBQ120   2024-09-26  17.18
 GBQUTILM  HGBQ120   2024-09-26  17.18
 GBQUTILS  HGBQ120   2024-10-03  03.43
 GBQVFCA   HGBQ120   2024-09-26  17.18
```

GBQPTRC

GBQPTRC prints data sets created by trace. This utility uses seven parameters to filter the data sets to print. The parameters can be set to a specific value in the JCL.

DD statements

The DD statements required for GBQPTRC are:

GBQTRC
The trace data set to search.

GBQPRINT
The data set where the output is stored.

GBQINPUT
The data set where the filter parameters are stored.

Parameters

START_DATE
An optional valid date in the format MM/DD/YYYY no earlier than 01/01/1970 to filter data sets created on or after that date.

END_DATE
An optional valid date in the format MM/DD/YYYY no earlier than 01/01/1970 to filter data sets created on or before that date.

START_TIME
An optional time of day in the format HH:MM:SS to filter data sets created on or after that time.

END_TIME
An optional time of day in the format HH:MM:SS to filter data sets created on or before that time.

ID
An optional valid system ID or comma separated list of IDs. The default is no ID applied for filtering the data sets.

RTN
An optional valid RTN or comma separated list of RTNs. The default is no RTN applied for filtering.

CSECT
An optional valid CSECT or comma separated list of CSECTs. The default is no CSECT applied for filtering.

Note:

- To print a record, all filters must be true. However, when using multiple IDs, RTNs, or CSECTs, the time and date filters must be true, but only one of the specified IDs, RTNs, or CSECTs must be true.
- If a parameter exists in GBQINPUT without a value, the default value is used.
- Inline comments can be added by using a * to start the comment.

Examples

Member GBQPTRC is in the sample library. This sample JCL file for GBQPTRC can be found in *hlq*.IBM.HGBQ120.SGBQSAMP(GBQPTRC):

```
//GBQPTRC  EXEC PGM=GBQPTRC REGION=0M,
//*
//STEPLIB  DD  DISP=SHR,DSN=HLQ.IBM.HGBQ120.SGBQLLIB
//*
//*        Internal trace data sets that are always active and switch
//GBQTRC   DD  DSN=HLQ.CDM1.SERVER.TRACE1,DISP=SHR
//         DD  DSN=HLQ.CDM1.SERVER.TRACE2,DISP=SHR
//*
//GBQPRINT DD  SYSOUT=*
/*
```

```
//GBQINPUT DD  *
*
* The following sample control cards can be used to print entries from
*  the CDM internal trace data sets for problem determination.
START_DATE=MM/DD/YYYY
END_DATE=MM/DD/YYYY
START_TIME=HH:MM:SS
END_TIME=HH:MM:SS
ID=xxxxxxxx
RTN=xxxxxxxx
CSECT=xxxxxxxx
/*
```

Set GBQTRC to the trace data set you want to filter. To use a filter, update GBQINPUT. To not use a filter, delete or commented out GBQINPUT before running the member.

The following example runs GBQPTRC using only the date filters. GBQPTRC has a DSN for the data set that is being read and filtered. The output is stored in DD statement GBQPRINT.

```
//RUNPARM EXEC PGM=GBQPTRC
//GBQINPUT DD *
*
* THIS IS  A COMMENT
*
START_DATE=01/01/2001
END_DATE=01/01/2031
START_TIME=
END_TIME=
ID=
RTN=
CSECT=
/*
//GBQTRC    DD DSN=INPUT.DATA.SET.DISP=SHR
//STEPLIB   DD DSN=STEP.LIB.DISP=SHR
//GBQPRINT  DD SYSOUT=*
```

The following example demonstrates that regardless of whether you plan to use any parameters, you must declare a GBQINPUT DD statement. It also demonstrates that you can filter multiple data sets with the GBQTRC DD statement.

```
//RUNPARM EXEC PGM=GBQPTRC
//GBQINPUT DD *
/*
//GBQTRC    DD DSN=INPUT.DATA.SET.DISP=SHR
//          DD DSN=INPUT.DATA.SET2.DISP=SHR
//STEPLIB   DD DSN=STEP.LIB.DISP=SHR
//GBQPRINT  DD SYSOUT=*
```

The following example demonstrates how to use multiple IDs, RTNs, and CSECTs, and also how to enter a comment in the middle of a line.

```
//RUNPARM EXEC PGM=GBQPTRC
//GBQINPUT DD *
ID=TRACE_0033,TRACE_0032               * MULTIPLE IDS
RTN=RTN_0031,RTN_0033,RTN0031
*CSECT=GBQTRC,GBQTRC1,GBQTRC2
```

GBQSMRPT

GBQSMRPT generates a report on SMF records written by DFSMScdm hybrid cloud data management. This utility uses seven parameters to filter the SMF records used to generate the report.

DD statements

The DD statements for the GBQSMRPT job are:

GBQSMFDD
The data set where the output from the SMF data set dump program IFASMFDP is stored. GBQSMRPT reads the SMF records from this.

GBQSMOUT
The data set where the SMF report is output. This can be a SYSOUT=* statement or a data set.

SMFPARMS
The data set where the filter parameters are stored.

Parameters

START_DATE
An optional date in the format MM/DD/YYYY no earlier than 01/01/1970 to filter records written on or after that date.

END_DATE
An optional date in the format MM/DD/YYYY no earlier than 01/01/1970 to filter records written on or before that date.

START_TIME
An optional time of day in the format HH:MM:SS to filter records written on or after that time.

END_TIME
An optional time of day in the format HH:MM:SS to filter records written on or before that time.

STCID
An optional valid started task ID. The default is no started task ID applied for filtering.

SMF_RECORD_NUM
A required valid SMF record number used by the started task from 1152 to 2047. This can be found in the STCID configuration parameter and is pointed to by the GBQPARMS DD statement in the GBQMAIN proc.

SHOW_COMPLETE
An optional selection whether (YES or NO) to show SMF records for requests that have completed. The default is YES.

Example

Member GBQSMRPT is in the sample library. This sample JCL file for GBQSMRPT can be found in *hlq*.IBM.HGBQ120.SGBQSAMP(GBQSMRPT):

```
//GBQSMRPT JOB
//         EXEC PGM=GBQSMRPT
//*
//STEPLIB  DD  DISP=SHR,DSN=HLQ.IBM.HGBQ120.SGBQLLIB
//*
//*        GBQSMFDD is where GBQSMRPT will read the SMF Records from.
//*        This dataset will be the output from running the SMF data set dump program IFASMFDP
//GBQSMFDD DD  DISP=SHR,DSN=HLQ.IFASMFDP.OUTPUT
//*
//*        GBQSMOUT is where the SMF Report will be written to,
//*        this can be a SYSOUT=* statement or a dataset
//GBQSMOUT DD  SYSOUT=*
//*
//*        The SMFPARMS DD statement points to where the filter parameters are stored.
//*        This can be inline data or a dataset name
//SMFPARMS DD *
*  Start date should be of this form. If it is omitted, no start date will be used
START_DATE=MM/DD/YYYY
*  End date should be of this form. If it is omitted, no end date will be used
END_DATE=MM/DD/YYYY
*  Start time should be of this form. If it is omitted, no start time will be used
START_TIME=HH:MM:SS
*  End time should be of this form. If it is omitted, no end time will be used
END_TIME=HH:MM:SS
*  STCID is a valid STCID to be used as a filter.
*  All STCIDs will be shown if one is not specified
STCID=CDMSTC
*  SMF Record Number is the record number provided when
*  the CDM Started Task was configured. This is required
SMF_RECORD_NUM=RECNUM
*  Option to show records for completed requests. Options are yes or no
SHOW_COMPLETE=YES/NO
/*
```

Chapter 6. SMF record mapping

DFSMScdm generates SMF data to create an audit trail for the system. SMF data is used to audit DFSMScdm cloud usage and determine DFSMScdm performance.

Each SMF record that DFSMScdm generates contains the standard SMF record header.

Table 15. Fixed section of SMF record header

Offsets		Name	Length	Format	Description
0	0	SMF_CDMSMLEN	2	Binary	RDW record length
2	0	SMF_CDMSMSEG	2	Binary	RDW segment descriptor
4	4	SMF_CDMSMFLG	1	Binary	System indicator flag: **0** Reserved. **1** Subtypes are valid. **2** Extended header is present. **3–7** Reserved.
5	5	SMF_CDMSMRTY	1	Binary	Record type. This is 126 for the use of Extended Record types, and the actual type is defined in SMF_CDM_EXT_RTY.
6	6	SMF_CDMSMTME	4	Binary	Time since midnight, in hundredths of a second, when the record was moved to the SMF buffer.
10	A	SMF_CDMSMDTE	4	Binary	Date when the record was moved to the SMF buffer, in the form cyydddF: **c** The current century. 0 for 19*xx* and 1 for 20*xx*. **yy** The current year (0–99). **ddd** The current day (1–366). **F** The sign. This is a constant used for the date format and processing.
14	E	SMF_CDMSMSID	4	EBCDIC	SMF system identification.
18	12	SMF_CDMSMWID	4	EBCDIC	Subsystem identification.

Table 15. Fixed section of SMF record header (continued)

Offsets		Name	Length	Format	Description
22	16	SMF_CDMSMSTP	2	Binary	Record subtype: **1** Cloud Request Queued **2** Cloud Request Completed **3** Cloud Request Canceled
24	18	SMF_CDM_EXT_LEN	2	Binary	Length of the remainder of this section. Is 32 (hexadecimal 20).
26	1A	SMF_CDM_VER	1	Binary	Extended Header version. Is 1.
27	1B	SSMF_CDM_FLAGS	1	Binary	Flag byte: **Bit** Meaning when set. **0–7** Reserved.
28	1C	SMF_CDM_STCKE	16	Binary	Time when the record was written.
44	2C	SMF_CDM_TZO	8	Binary	Time zone offset.
52	34	SMF_CDM_EXT_RTY	2	Binary	Extended Record type from DFSMScdm SMFREC configuration parameter. The range is 1152–2047. The default is 1155.
54	36	*	2	Binary	Reserved.
56	38	SMF_JOBID	8	EBCDIC	Job ID.
64	40	SMF_CDMSTCID	8	EBCDIC	CDM STCID.
72	48	SMF_USERID	8	EBCDIC	User ID that submitted the request.
80	50	SMF_STCKE	16	Binary	STCKE date and time that the request was submitted.
96	60	SMF_REQTYPE	8	EBCDIC	DFSMScdm request that was submitted.
104	68	SMF_PROVIDER	20	EBCDIC	Cloud provider name.
124	7C	SMF_TOT_ENTS	4	Binary	Number of variable section entries in this SMF record.
128	80	SMF_TOT_SUCCESS	4	Binary	Total number of successful variable section entries in this SMF record. This is only populated on a Cloud Request Completed record subtype.
132	84	SMF_TOT_FAILURE	4	Binary	Total number of failed variable section entries in this SMF record.. This is only populated on a Cloud Request Completed record subtype.

Table 15. Fixed section of SMF record header (continued)					
Offsets		**Name**	**Length**	**Format**	**Description**
136	88	SMF_CANCELLING_REQ	4	Binary	Request ID of the CDMMOD request that canceled this request. This is only populated on a Cloud Request Canceled record subtype.
140	8C	SMF_CANCELLING_USR	8	EBCDIC	User ID that issued the CDMMOD request that canceled this request. This is only populated on a Cloud Request Canceled record subtype.
148	94	SMF_CONTAINER_LEN	2	Binary	Container name length.
150	96	SMF_DELFLG	1	Binary	Flag to indicate whether the source data set was marked for deletion: **0** Source data set was not marked for deletion. **1** Source data set was marked for deletion.
151	97	SMF_FIXED_HDR_SIZE	4	Binary	Size of the SMF Record Fixed section.
155	9B	SMF_CDMRESERVED	2	Binary	Reserved.
157	9D	SMF_CONTAINER	Up to 256	EBCDIC	Container name.

For CDMSEND, CDMRET, and CDMDEL requests, the following variable length SMF record header section is generated.

Table 16. Variable section of SMF record header for CDMSEND, CDMRET, and CDMDEL requests					
Offsets		**Name**	**Length**	**Format**	**Description**
0	0	SMRENT_DSRC	2	Binary	Return code for the data set operation. This is only populated on a Cloud Request Completed record subtype.
2	2	SMRENT_DSNUSS_L	2	Binary	Data set/USS file name length.
4	4	SMRENT_OBJNAME_L	2	Binary	Object name length.
6	6	**Variable-length fields**			
		SMRENT_DSNUSS	Up to 1024	EBCDIC	Data set/USS file name. The length is variable.
		SMRENT_OBJNAME	Up to 1024	EBCDIC	Object name. The length is variable.

For CDMMOD requests, the following variable length SMF record header section is generated.

Table 17. Variable section of SMF record header for CDMMOD requests

Offsets		Name	Length	Format	Description
0	0	MODSECT_USER	8	EBCDIC	User filter for CDMMOD request.
8	8	MODSECT_REQ	4	Binary	Request filter for CDMMOD request.

Chapter 7. DFSMScdm messages

This section documents the DFSMScdm messages.

Message types are either informational, warning, error, serious, debug, or trace. Message identifiers include a GBQ prefix, a number, and either I, W, E, or S to indicate the severity. Message identifiers D and T are for troubleshooting purposes for internal use by IBM Support.

I
Informational message, with return code 0. Describes information or the status for normal conditions and operations. These messages can also provide supporting information accompanying warning or error messages.

W
Warning message, with return code 4. Alerts to a condition that might cause problems in the future. When a warning message is displayed, processing usually continues, but might not complete in a way that is expected. Examine for possible future errors and possible action.

E
Error message, with return code 8. Alerts to a problem that has occurred. Processing cannot continue. Error messages might be accompanied by additional supporting information for diagnosis, problem determination, and action.

S
Serious error message, with return code 12. Alerts that a failure has occurred and likely requires the attention of a system programmer.

D
Diagnostic message. Provides information to help with troubleshooting.

T
Trace message. For internal use by IBM Support.

GBQ0001I DFSMScdm initializing.

Explanation:
DFSMScdm has started the initialization process.

System action:
DFSMScdm processing continues.

Detecting CSECT:
GBQUTILM

GBQ0002I Error in PARM passed on the EXEC statement.

Explanation:
There must be three parameters passed separated by commas. The three parameters are a control data set name, a config member name, and a group name.

System action:
GBQUTILM ends.

Detecting CSECT:
GBQUTILM

GBQ0003I DFSMScdm is now cleaning up old environment.

Explanation:
DFSMScdm is reinitializing any previously existing environments.

System action:
DFSMScdm processing continues.

Detecting CSECT:
GBQMAIN

GBQ0004I DFSMScdm old environment located at *location* has been orphaned.

Explanation:
DFSMScdm is reinitializing any previously existing environments.

System action:
DFSMScdm processing continues.

Detecting CSECT:
GBQMAIN

GBQ0005I DFSMScdm is terminating.

Explanation:
DFSMScdm has started the termination process.

System action:
DFSMScdm termination continues.

Detecting CSECT:
GBQMAIN

GBQ0019S **CPFX registration failed. Return code *return-code*, reason code *reason-code*.**

Explanation

DFSMScdm failed to locate or register the command prefix. Possible values for the return and reason codes are:

04/04
Invalid command prefix

04/0C
Prefix was defined with FAILDISP=PURGE

08/04
Prefix not found in command prefix table at warm start

08/08
Prefix already in use

08/1C
CPF table does not exist at warm start

0C/--
Probable abend

System action:
DFSMScdm processing ends.

Detecting CSECT:
GBQMAIN

GBQ0100E **DYNALLOC error allocating DSN=*dsn* DD=*ddn* ERR=*err* REAS=*reas* EREAS=*ereas***

Explanation:
An error occurred trying to allocate a required data set using the DD name specified.

System action:
The utility ends.

User response:
Determine why the dynamic allocation failed by looking up the return, reasons and extended reason codes.

Detecting CSECT:
GBQUTILM

GBQ0101E **GBQUTILM EXEC PARM is invalid. Missing a comma or a required parameter.**

Explanation:
Parameters on the EXEC PGM statement are incorrect. Either there was no PARM specified or there were not at least three parameters specified separated by commas.

System action:
The utility ends.

User response:
Ensure the PARM is the correct format of ctrl_dsn,config,group.

Detecting CSECT:
GBQUTILM

GBQ0102E **STORCLAS parameter missing from DSN=*dsn* MEMBER=*mem***

Explanation:
While scanning the CONFIGnn member in the control data set, the STORCLAS parameter was not found.

System action:
The utility ends.

Programmer response:
Ensure that the CONFIGnn member specified on the EXEC PARM has a statement that starts with STORCLAS=.

Detecting CSECT:
GBQUTILM

GBQ0103E **STORGRP parameter missing from DSN=*dsn* MEMBER=*mem***

Explanation:
While scanning the CONFIGnn member in the control data set, the STORGRP parameter was not found.

System action:
The utility ends.

User response:
Ensure that the CONFIGnn member specified on the EXEC PARM has a statement that starts with STORGRP=.

Detecting CSECT:
GBQUTILM

GBQ0104E **Invalid time format in RECALL_TIME_OF_DAY_TO_STOP statement. No colon between HH and MM.**

Explanation:
While scanning the RECALL_TIME_OF_DAY_TO_STOP statement there was no colon found between the HH and MM.

System action:
The utility ends.

User response:
Ensure the time format includes a colon, using RECALL_TIME_OF_DAY_TO_STOP=hh:mm

Detecting CSECT:
GBQUTILM

GBQ0105E **Invalid time format in RECALL_TIME_OF_DAY_TO_STOP**

statement. HH was not in the range 00 - 24.

Explanation:
In the RECALL_TIME_OF_DAY_TO_STOP statement, the minimum allowed value for HH is 00, and the maximum allowed value is 24.

System action:
The utility ends.

Programmer response:
Ensure the time format is correct, using RECALL_TIME_OF_DAY_TO_STOP=hh:mm

Detecting CSECT:
GBQUTILM

GBQ0106E **Invalid time format in RECALL_TIME_OF_DAY_TO_STOP statement. MM was not in the range 00 - 59.**

Explanation:
In the RECALL_TIME_OF_DAY_TO_STOP statement, the minimum allowed value for MM is 00, and the maximum allowed value is 59.

System action:
The utility ends.

User response:
Ensure the time format is correct, using RECALL_TIME_OF_DAY_TO_STOP=hh:mm

Detecting CSECT:
GBQUTILM

GBQ0107E **Invalid time format in RECALL_WAIT_BETWEEN_BATCHES statement. No colon between MM and SS.**

Explanation:
While scanning the RECALL_WAIT_BETWEEN_BATCHES statement there was no colon found between the MM and SS.

System action:
The utility ends.

User response:
Ensure the time format includes a colon, using RECALL_WAIT_BETWEEN_BATCHES=mm:ss

Detecting CSECT:
GBQUTILM

GBQ0108E **Invalid time format in RECALL_WAIT_BETWEEN_BATCHES statement. MM was not in the range 00 - 59.**

Explanation:
In the RECALL_WAIT_BETWEEN_BATCHES statement, the minimum allowed value for MM is 00, and the maximum allowed value is 59.

System action:
The utility ends.

User response:
Ensure the time format is correct, using RECALL_WAIT_BETWEEN_BATCHES=mm:ss

Detecting CSECT:
GBQUTILM

GBQ0109E **Invalid time format in RECALL_WAIT_BETWEEN_BATCHES statement. SS was not in the range 00 - 59.**

Explanation:
In the RECALL_WAIT_BETWEEN_BATCHES statement, the minimum allowed value for SS is 00, and the maximum allowed value is 59.

System action:
The utility ends.

User response:
Ensure the time format is correct, using RECALL_WAIT_BETWEEN_BATCHES=mm:ss

Detecting CSECT:
GBQUTILM

GBQ0110E **Invalid numerics in RECALL_BATCH_SIZE statement. There are not up to 4 digits after the equal sign.**

Explanation:
While scanning the RECALL_BATCH_SIZE statement there were not up to 4 digits after the equal sign.

System action:
The utility ends.

User response:
Ensure the number of digits is correct with up to 4 digits following directly after RECALL_BATCH_SIZE=

Detecting CSECT:
GBQUTILM

GBQ0111E **Invalid numerics in RECALL_WAIT_BETWEEN_DATA_SET statement. There are not two numerics after the equal sign.**

Explanation:
While scanning the RECALL_WAIT_BETWEEN_DATA_SET statement the seconds were not two digits.

System action:
The utility ends.

User response:
Ensure the number of seconds is correct with two digits following directly after RECALL_WAIT_BETWEEN_DATA_SET=

Detecting CSECT:
GBQUTILM

GBQ0112E **Invalid numerics in PERCENT_FULL_START_CLOUD_MIGRATE statement. There are not 1 or 2 numerics after the equal sign.**

Explanation:
While scanning the PERCENT_FULL_START_CLOUD_MIGRATE statement the percentage was not two digits.

System action:
The utility ends.

User response:
Ensure the percentage has two digits or one digit followed by a blank directly after PERCENT_FULL_START_CLOUD_MIGRATE=

Detecting CSECT:
GBQUTILM

GBQ0113E **GBQHSMI module could not be loaded.**

Explanation:
The GBQHSMI module could not be found.

System action:
The utility ends.

User response:
Ensure the GBQHSMI module is in the JOBLIB, STEPLIB or LINKLIST.

Detecting CSECT:
GBQUTILM

GBQ0114E **STIMERM for RECALL_TIME_OF_DAY_TO_STOP failed RC=*rc***

Explanation:
There was an unexpected return code from STIMERM while processing the RECALL_TIME_OF_DAY_TO_STOP parameter.

System action:
The utility ends.

User response:
Ensure the RECALL_TIME_OF_DAY_TO_STOP parameter has a valid time. If RECALL_TIME_OF_DAY_TO_STOP appears correct, contact IBM Support.

Detecting CSECT:
GBQUTILM

GBQ0115E **STIMERM for RECALL_MAXIMUM_TIME_FOR_RECALLS failed RC=*rc***

Explanation:
There was an unexpected return code from STIMERM while processing the RECALL_TIME_OF_DAY_TO_STOP parameter.

System action:
The utility ends.

User response:
Ensure the RECALL_MAXIMUM_TIME_FOR_RECALLS parameter has a valid time. If RECALL_MAXIMUM_TIME_FOR_RECALLS appears correct, contact IBM Support.

Detecting CSECT:
GBQUTILM

GBQ0116E **Member *member* does not exist in *dsn***

Explanation:
A data set member that is required by GBQUTILM is not present in the specified data set.

System action:
The utility ends.

User response:
Ensure the configuration and simulate members exist within the control data set.

Detecting CSECT:
GBQUTILM

GBQ0117E **Unable to open *dsn* member *mem* return code *rc***

Explanation:
A data set member that is required by GBQUTILM is not present in the specified data set.

System action:
The utility ends.

User response:
Ensure the configuration and simulate members exist within the control data set.

Detecting CSECT:
GBQUTILM

GBQ0118E **Invalid value for MIGRATE_TO_DEFAULT_MGMTCLAS**

Explanation:
While scanning the MIGRATE_TO_DEFAULT_MGMTCLAS statement an invalid value was found.

System action:
The utility ends.

User response:
Ensure the MIGRATE_TO_DEFAULT_MGMTCLAS parameter is either YES or NO.

Detecting CSECT:
GBQUTILM

GBQ0119E **Invalid RECALL_BATCH_SIZE was specified.**

Explanation:
RECALL_BATCH_SIZE was either not set, or was set to 0. which is not a valid batch size.

System action:
The migration utility ends.

User response:
Ensure the RECALL_BATCH_SIZE parameter is an integer greater than 0.

Detecting CSECT:
GBQUTILM

GBQ0120I **Non-zero value for RECALL_WAIT_BETWEEN_DATA_SET specified. A value of 0 is recommended.**

Explanation:
While the specified value in RECALL_WAIT_BETWEEN_DATA_SET is allowed, a value of 0 will provide better recall performance. Each RECALL command waits until the recall is finished before issuing another RECALL command which will prevent GBQUTILM from building up the queue of recall requests. A nonzero value will slow down the utility processing.

System action:
The utility continues with specified value.

User response:
Specifying 0 is highly recommended for RECALL_WAIT_BETWEEN_DATA_SET=

Detecting CSECT:
GBQUTILM

GBQ0121I **MIGRATION UTILITY STATUS**

Explanation:
User requested via the Modify (F) command a status report from the GBQUTILM Cloud migration utility program. Several lines will be written to the console, system log, and JES log containing current status of the migration process. The output is similar to what is displayed on the DFSMScdm Option 4 panel for status information for the migration utility job.

Detecting CSECT:
GBQUTILM

GBQ0124E **Migration Utility name/token request failed, Return code *return-code***

Explanation:
Internal error.

System action:
The migration utility ends. Review messages in the job log from the system security product.

User response:
Make note of the message and return code. Contact IBM Support for assistance.

Detecting CSECT:
GBQUTILM

GBQ0125E **Migration/Simulation Utility access authorization failed for DFSMShsm RECALL or MIGRATE service.**

Explanation:
Attempt to validate authorization through SAF failed. Refer to messages in the job log issued by the system's security software. DFSMScdm requires the user to be authorized to issue DFSMShsm RECALL and MIGRATE commands.

System action:
The utility ends with return code 8.

User response:
Either have an authorized user submit the job, or request authorization from your system security administrator for DFSMShsm RECALL and MIGRATE commands.

Detecting CSECT:
GBQUTILM

GBQ0126W **Migration/Simulation Utility access authorization could not be determined for DFSMShsm RECALL or MIGRATE services.**

Explanation:
Attempt to validate authorization through SAF failed with a return code of 4. Either security software was not active, or there was no specification for access to STGADMIN.ARC.RECALL or STGADMIN.ARC.MIGRATE. Processing continues. Refer to messages in the job log issued by the system's security software. DFSMScdm requires the user to be authorized to issue DFSMShsm RECALL and MIGRATE commands.

System action:
The utility continues processing, but will get a return code of 4.

User response:
None required if this is expected. Otherwise determine why the security software was unable to make a

decision on the authorization request. Most likely causes are that either the security was not active, or the requested resources were incorrectly defined to the system's security product.

Detecting CSECT:
GBQUTILM

GBQ0127E Migration Utility EXEC PARM ERROR: *line*

Explanation:
GBQUTILM failed due to the parameter exceeding the maximum size as indicated in the message

System action:
The migration utility ends.

User response:
Correct the parameter value that is in error.

Detecting CSECT:
GBQUTILM

GBQ0130I Migration Utility Initializing

Explanation:
The GBQUTILM Migration Utility is reading the provided control information and performing a validation of that information.

Detecting CSECT:
GBQUTILM

GBQ0131I OPTION: *line*

Explanation:
This provides a listing of the information provided in the GBQSYSIN DD data set, without the comment cards.

Detecting CSECT:
GBQUTILM

GBQ0132E Invalid migration parameter on above statement

Explanation:
The migration parameter provided was not recognized by GBQUTILM. Parameter was either misspelled or not supported by this program.

System action:
The migration utility ends.

User response:
Remove or correct the invalid migration parameter in the GBQSYSIN input.

Detecting CSECT:
GBQUTILM

GBQ0138I Migration Utility Initialization Completed

Explanation:
The migration utility has completed the initialization process, and is now ready to start processing.

Detecting CSECT:
GBQUTILM

GBQ0139W Migration Utility ended with errors, Return code *return-code*

Explanation:
The migration utility is ending with a return code of 8. The errors can be identified by messages preceding this message.

System action:
The migration utility ends with return code 8.

User response:
Correct the indicated errors and rerun.

Detecting CSECT:
GBQUTILM

GBQ0140E Recall failed for DSN=*dsn* DFSMShsm is not active, or is not accepting requests.

Explanation:
DFSMShsm failed a recall request with a return code of 100 indicating it is not active.

System action:
The migration utility ends.

User response:
Submit the job when DFSMShsm is active and ready to accept new requests.

Detecting CSECT:
GBQUTILM

GBQ0141E Recall failed for DSN=*dsn* DFSMShsm is terminating and not accepting new requests.

Explanation:
DFSMShsm failed a recall request with a return code of 92 indicating that DFSMShsm is terminating.

System action:
The migration utility ends.

User response:
Submit the job when the DFSMShsm has been restarted.

Detecting CSECT:
GBQUTILM

GBQ0142E Recall failed for DSN=*dsn* DFSMShsm is not running at the minimum required level.

Explanation:
DFSMShsm failed a recall request with a return code of 78 indicating it is not a recent enough level for DFSMScdm.

System action:
The migration utility ends.

User response:
Install a level that supports the DFSMScdm product. DFSMScdm requires DFSMShsm for z/OS 2.4 or later. For DFSMShsm 2.4, APAR OA59904 (PTF UJ04709) is required.

Detecting CSECT:
GBQUTILM

GBQ0143E **Recall failed for DSN=*dsn* DFSMShsm recall processing is being held.**

Explanation:
DFSMShsm failed a recall request with a return code of 74 indicating RECALL processing is currently held.

System action:
The migration utility ends.

User response:
Release the hold on DFSMShsm recall processing, and then resubmit this job.

Detecting CSECT:
GBQUTILM

GBQ0144E **Recall failed for DSN=*dsn* DFSMShsm data set is not cataloged.**

Explanation:
DFSMShsm failed recall a request with a return code of 402 indicating a data set is not cataloged. The data set has most likely been deleted.

System action:
The migration utility continues, bypassing this data set.

User response:
None required, unless the data set was accidentally deleted, in which case it can be defined in the catalog again with a volume of MIGRAT2.

Detecting CSECT:
GBQUTILM

GBQ0145W **Recall failed for DSN=*dsn* Return code *return-code* Refer to DFSMShsm manual for information.**

Explanation:
DFSMShsm failed a recall request with the indicated return code. Look up the code in the DFSMShsm manual for more information on the reason for the failure. If the return code is only one digit 'n', look up message ARC110n. If the return code is only two digits 'nn', look up message ARC11nn with 'nn' replaced by the return code in the message. For 3 digit return codes, look up that message number in the DFSMShsm manual.

System action:
The migration utility continues, bypassing this data set.

User response:
If corrective action is suggested for the error code, that can be done and attempt the RECALL again. Otherwise no action is necessary. The data set is not recalled and will not be migrated.

Detecting CSECT:
GBQUTILM

GBQ0146E **MIGRATE failed for STORGRP=*storgrp* Request for space utilization in storage group failed**

Explanation:
GBQUTILM request to find amount of space currently used in the indicated storage group failed. The storage group may not be currently available or may not exist. If the return code is only one digit, look up message ARC110#. If the return code is only two digits, look up message ARC11## with ## replaced by the return code in the message. For 3 digit return codes, look up that message number in the DFSMShsm manual.

System action:
The migration utility fails, no migrate is issued

User response:
Validate that the storage group specified is valid and available for migration to cloud. GBQUTIM will end with return code of 8.

Detecting CSECT:
GBQUTILM

GBQ0201S **Out of memory**

Explanation:
GBQUTILS was unable to allocate enough memory to complete the simulation processing.

System action:
The utility ends.

User response:
Increase the REGION in your JOB card. Or contact your system programmer to increase the space available to GBQUTILS.

Detecting CSECT:
GBQUTILS

GBQ0202E **Invalid number of parameters. Expected *expected* Got *got***

Explanation:
GBQUTILS expects 1 PARM with the following format: control_dsn,config_member,group_member

System action:
The utility ends.

User response:
Provide the correct number of parameters for PARM.

Detecting CSECT:
GBQUTILS

GBQ0203E **Parm value *name* exceeds maximum length of *maxlen* Length provided *provided***

Explanation:
The length of the provided value is too long.

System action:
The utility ends.

User response:
Provide a valid value for the specified field.

Detecting CSECT:
GBQUTILS

GBQ0204E **Bad parm. Expected format: control_dsn,config_member,group_member**

Explanation:
GBQUTILS expects 1 PARM with the following format: control_dsn,config_member,group_member.

System action:
The utility ends.

User response:
Provide parm with the proper format: control_dsn,config_member,group_member

Detecting CSECT:
GBQUTILS

GBQ0205E ***value* is not a valid CONFIG member name.**

Explanation:
The configuration member name must be CONFIGnn where nn is 00-99. Valid values are from CONFIG00 to CONFIG99.

System action:
The utility ends.

User response:
Rename the configuration member to comply with the requirements.

Detecting CSECT:
GBQUTILS

GBQ0206E ***value* is not a valid GROUP name.**

Explanation:
The migration group name is invalid. The group name must be less than 8 characters long, and must not start with CONFIG or SUMRY, which are reserved prefixes.

System action:
The utility ends.

User response:
Correct the GROUP name.

Detecting CSECT:
GBQUTILS

GBQ0210I **OPTION: *line***

Detecting CSECT:
GBQUTILS

GBQ0211E **Invalid configuration parameter on line *lineno***

Explanation:
The configuration parameter provided was not recognized by GBQUTILS.

System action:
The utility ends.

User response:
Remove or correct the invalid configuration line in the provided configuration member.

Detecting CSECT:
GBQUTILS

GBQ0212E **Invalid option on line *lineno***

Explanation:
The option provided was not recognized by GBQUTILS.

System action:
The utility ends.

User response:
Remove or correct the invalid option provided.

Detecting CSECT:
GBQUTILS

GBQ0213I **No data set limit was specified.**

Explanation:
Not providing a data set limit may result in long processing time, and hurt DFSMShsm performance.

System action:
The utility continues.

User response:
Provide a data set limit to avoid excess processing.

Detecting CSECT:
GBQUTILS

GBQ0214I **No data set or volume limit was specified.**

Explanation:
Not providing a limit may result in long processing time, and degrade DFSMShsm performance.

System action:
The utility continues.

User response:
Provide either a data set or volume limit to avoid excess processing.

Detecting CSECT:
GBQUTILS

GBQ0215E No filter option specified.

Explanation:
No filter was provided for the simulate job, which is required to determine how data should be processed.

System action:
The utility ends.

User response:
Provide a filtering option.

Detecting CSECT:
GBQUTILS

GBQ0216E Cannot resume an ML2 volume simulation.

Explanation:
GBQUTILS can only resume from a migrated data set simulation, not an ML2 volume simulation.

System action:
The utility ends.

User response:
Specify RESUME_FROM_LAST_SIMULATED_DSN=NO

Detecting CSECT:
GBQUTILS

GBQ0217E No MCDS was provided in the configuration.

Explanation:
While processing the configuration member, no MCDS parameter was found.

System action:
The utility ends.

User response:
Provide an MCDS in the configuration member.

Detecting CSECT:
GBQUTILS

GBQ0218E No OCDS was provided in the configuration.

Explanation:
While processing the configuration member, no OCDS parameter was found.

System action:
The utility ends.

User response:
Provide an OCDS in the configuration member.

Detecting CSECT:
GBQUTILS

GBQ0219E No date format was provided in the configuration.

Explanation:
While processing the configuration member, no DATEFMT= parameter was found.

System action:
The utility ends.

User response:
Provide a DATEFMT in the configuration member.

Detecting CSECT:
GBQUTILS

GBQ0220W Nothing to resume.

Explanation:
RESUME_FROM_LAST_SIMULATED_DSN=YES was specified, but previous simulations have already found all data sets meeting the criteria. There's nothing left to do.

System action:
The utility ends.

User response:
To start from the beginning of the MCDS again, specify RESUME_FROM_LAST_SIMULATED_DSN=NO, or delete the simulate and bookmark members for the corresponding group.

Detecting CSECT:
GBQUTILS

GBQ0221E *fmt* is not a valid DATEFMT.

Explanation:
An invalid or unsupported date format was specified for the DATEFMT parameter in the configuration.

System action:
The utility ends.

User response:
Provide a valid DATEFMT value: - DD/MM/YYYY - MM/DD/YYYY - YYYY/MM/DD

Detecting CSECT:
GBQUTILS

GBQ0222E Previous simulation log is missing.

Explanation:
A bookmark was found from a prior simulation, but no prior simulation log was found, or an error occurred trying to open it.

System action:
The utility ends.

User response:

If the previous simulation log was deleted, delete the corresponding bookmark member belonging to that group. If the simulation log exists, ensure it is not allocated by another program.

Detecting CSECT:
GBQUTILS

GBQ0223E DD statement *ddname* is missing.

Explanation:
The required DD statement was not specified.

System action:
The utility ends.

User response:
Provide a valid DD statement.

Detecting CSECT:
GBQUTILS

GBQ0224E *keyword* value out of range. *value* is not in range *lower* to *upper*

Explanation:
The value specified is not within the acceptable range for the specified keyword statement.

System action:
The utility ends.

User response:
Specify a value inside the range specified.

Detecting CSECT:
GBQUTILS

GBQ0225E Value of *keyword* is invalid. *rsn*

Explanation:
The value specified is not valid for the reason given. The value may be too long, contain an invalid character, or break other rules for the data type (for example, a data set name starting with a number). Dates prior to 1970 are not supported, and are considered invalid.

System action:
The utility ends.

User response:
Specify a valid value.

Detecting CSECT:
GBQUTILS

GBQ0226E MCDSs specified out of order.

Explanation:
At least 1 MCDS in the configuration was specified out of order. MCDS= must always be present. Additional MCDSs must start at MCDS2 and go to MCDS4. e.g. MCDS4 cannot be used unless MCDS2 and MCDS3 are already used.

System action:
The utility ends.

User response:
Reorder the MCDSs starting at 1 and going to 4.

Detecting CSECT:
GBQUTILS

GBQ0227E Duplicate definition of *keyword* on line *lineno*. First defined on line *original*

Explanation:
The specified keyword was defined twice. A keyword is only allowed to be specified once.

System action:
The utility ends.

User response:
Remove one of the duplicate definitions.

Detecting CSECT:
GBQUTILS

GBQ0228E Did not find keyword *keyword* in *src*

Explanation:
The specified keyword was not found when it is required. In some cases, a keyword may be required, but the value can be left blank.

System action:
The utility ends.

User response:
Add the keyword in the location specified.

Detecting CSECT:
GBQUTILS

GBQ0229E Duplicate MCDS found in configuration.

Explanation:
At least 1 MCDS in the configuration was specified twice. Each MCDS specified must be unique from all preceding MCDSs.

System action:
The utility ends.

User response:
Either remove the duplicate or type a different MCDS.

Detecting CSECT:
GBQUTILS

GBQ0230E Unable to open data set *dsn* member *member* for reading. RC: *rc*

Explanation:
An error occurred when opening a data set member for reading.

System action:

The utility ends.

User response:
Ensure the data set is an existing PDS/PDSE that is not allocated by another job. Check the error number for more information.

Detecting CSECT:
GBQUTILS

GBQ0231E **Unable to open data set *dsn* member *member* for writing. RC: *rc***

Explanation:
An error occurred when opening a data set member for writing.

System action:
The utility ends.

User response:
Ensure the data set is an existing PDS/PDSE that is not allocated by another job. Check the error number for more information.

Detecting CSECT:
GBQUTILS

GBQ0240E **VSAM open error opening *dsn* RC:*rc* FDBK:*fdbk* Errno:*errno***

Explanation:
An error occurred when opening the specified VSAM data set.

System action:
The utility ends.

Programmer response:
Check the VSAM return code, and feedback code for information.

Detecting CSECT:
GBQUTILS

GBQ0241E **VSAM read error reading *dsn* RC:*rc* FDBK:*fdbk* Errno:*errno***

Explanation:
An error occurred when reading the specified VSAM data set.

System action:
The utility ends.

Programmer response:
Check the VSAM return code and feedback code for information.

Detecting CSECT:
GBQUTILS

GBQ0242W **Could not find data set record for aliased data set *alias* in *dsn***

Explanation:
An alias record had no data set record for the associated data set.

System action:
The utility continues.

Detecting CSECT:
GBQUTILS

GBQ0243W **Key *key* not found in *dsn***

Explanation:
The key specified was not found in the specified VSAM data set during a LOCATE.

System action:
The utility continues.

Detecting CSECT:
GBQUTILS

GBQ0244D **Unable to open *dsn* in RLS mode.**

Explanation:
The cluster could not be opened in RLS mode.

System action:
The utility continues and will attempt to open the cluster in non-RLS mode.

Detecting CSECT:
GBQUTILS

GBQ0245D **Opening *dsn* in RLS mode.**

Explanation:
The cluster was opened in RLS mode.

System action:
The utility continues.

Detecting CSECT:
GBQUTILS

GBQ0246D **Opening *dsn* in non-RLS mode.**

Explanation:
The cluster was opened in non-RLS mode.

System action:
The utility continues.

Detecting CSECT:
GBQUTILS

GBQ0247I **Migration log member *dsn* has been deleted.**

Explanation:
This simulation is reusing a migration group name used by a previous migration, without resuming the previous simulation for the migration group. The previous migration log output has been deleted from the control data set so that simulation and migration information for the migration group will be consistent.

System action:
The utility continues.

Detecting CSECT:
GBQUTILS

GBQ0250I **Simulation utility starting**

Detecting CSECT:
GBQUTILS

GBQ0251I **Performing migrated data set simulation**

Detecting CSECT:
GBQUTILS

GBQ0252I **Performing ML2 volume simulation**

Detecting CSECT:
GBQUTILS

GBQ0253I **Resuming from last simulated DSN *dsn***

Detecting CSECT:
GBQUTILS

GBQ0254I **Beginning from start of MCDS**

Detecting CSECT:
GBQUTILS

GBQ0255D **Found *count* data sets meeting criteria**

Detecting CSECT:
GBQUTILS

GBQ0256D **Found *count* ML2 volumes meeting criteria**

System action:
The utility continues.

Detecting CSECT:
GBQUTILS

GBQ0257T **Found *volser* with *valid* percent valid data**

Detecting CSECT:
GBQUTILS

GBQ0258T **Ended search on key *key***

Detecting CSECT:
GBQUTILS

GBQ0259T **Found extension record for *volser***

Detecting CSECT:
GBQUTILS

GBQ0260T **Adding data set *dsn* on volume *volser***

Detecting CSECT:
GBQUTILS

GBQ0261D **Filling missing data for *count* volumes**

Detecting CSECT:
GBQUTILS

GBQ0262T **Filling missing data for *volser***

Detecting CSECT:
GBQUTILS

GBQ0263D **Opening data set *dsn* with mode *mode***

Detecting CSECT:
GBQUTILS

GBQ0264T **Found data set *dsn***

Detecting CSECT:
GBQUTILS

GBQ0265T **Data set *dsn* resides on *volser***

Detecting CSECT:
GBQUTILS

GBQ0266D **Filling missing data for *count* data sets**

Detecting CSECT:
GBQUTILS

GBQ0267T **Filling missing data for *dsn***

Detecting CSECT:
GBQUTILS

GBQ0268T **Found alias *alias* for *dsn***

Detecting CSECT:
GBQUTILS

GBQ0269D **Bookmarking data set *dsn***

Detecting CSECT:
GBQUTILS

GBQ0270I **Simulation Utility completed normally**

Detecting CSECT:
GBQUTILS

GBQ0271W **Simulation Utility completed with errors**

Detecting CSECT:
GBQUTILS

GBQ0272T **Searching for alias *alias* in *dsn* RC= *code***

Detecting CSECT:
GBQUTILS

GBQ0273E **Migration date mismatch: previous simulation used *date***

Explanation:
This simulation is attempting to resume a previous simulation selecting by migration date. The previous simulation specified a different migration date than

this job specified. Resuming a simulation for a migration group requires that the same migration date be specified in both the first simulation and all resumed simulation runs.

System action:
The utility ends.

User response:
Update the control statements to use the same migration date limit that was used in the first simulation for this migration group. Or set RESUME_FROM_LAST_SIMULATED_DSN=NO, which will start a new simulation from the beginning of the MCDS.

Detecting CSECT:
GBQUTILS

GBQ0274E Date format mismatch: previous simulation used *format*

Explanation:
This simulation is attempting to resume a previous simulation selecting by migration date. When this job was run, the configuration's specified date format was different than what was in effect when the previous simulation was run. Resuming a simulation for a migration group requires that the configuration's migration date format be the same as when the previous simulation was run.

System action:
The utility ends.

User response:
Update the DFSMScdm configuration to use the same date format that was used when the first simulation was run for this migration group.

Detecting CSECT:
GBQUTILS

GBQ0275I Simulation will select data sets migrated *beforeOrAfter date*

Explanation:
The simulation is selecting by the number of days before the job run date. The displayed date is the date calculated for the selection.

Detecting CSECT:
GBQUTILS

GBQ0276I Resuming selection of data sets migrated *beforeOrAfter date*

Explanation:
The simulation is resuming a previous simulation for the migration group. The first simulation selected data sets by a number of days before that job date. The date calculated by that job is the date used when resuming the selection procedure.

Detecting CSECT:
GBQUTILS

GBQ0301E No PARM provided.

Explanation:
GBQSUMRY expected a PARM with the format: control_dsn,config_member but no PARM was provided.

System action:
The utility ends.

User response:
Provide a valid PARM with the specified format.

Detecting CSECT:
GBQSUMRY

GBQ0302E Bad PARM field format.

Explanation:
GBQSUMRY expected a PARM with the format: control_dsn,config_member but no delimiter was found.

System action:
The utility ends.

User response:
Provide a valid PARM with the specified format.

Detecting CSECT:
GBQSUMRY

GBQ0303E PARM value *name* exceeds maximum length of *maxlen* Length provided *provided*

Explanation:
The length of the provided value is too long.

System action:
The utility ends.

User response:
Provide a valid value for the specified field.

Detecting CSECT:
GBQSUMRY

GBQ0304E Config_name *value* is invalid. Config_name must be CONFIGnn where nn is 00-99

Explanation:
The value of config_name provided in the PARM field is not valid. Config_name must start with CONFIG and end with two digits. Valid values are from CONFIG00 to CONFIG99.

System action:
The utility ends.

User response:
Provide a valid config_name.

Detecting CSECT:
GBQSUMRY

GBQ0310I **OPTION: *line***

Detecting CSECT:
GBQSUMRY

GBQ0311E **No MCDS configuration specified in *dsn* member *member***

Explanation:
While processing the configuration member, no MCDS parameter was found.

System action:
The utility ends.

User response:
Provide an MCDS in the specified configuration member.

Detecting CSECT:
GBQSUMRY

GBQ0312E **No DATEFMT configuration specified in *dsn* member *member***

Explanation:
While processing the configuration member, no DATEFMT parameter was found.

System action:
The utility ends.

User response:
Provide a DATEFMT in the specified configuration member.

Detecting CSECT:
GBQSUMRY

GBQ0313E ***fmt* is not a valid DATEFMT value.**

Explanation:
An invalid DATEFMT was specified in the configuration.

System action:
The utility ends.

User response:
Provide a supported DATEFMT: =MM/DD/YYYY =DD/MM/YYYY =YYYY/MM/DD

Detecting CSECT:
GBQSUMRY

GBQ0314E **MCDSs specified out of order.**

Explanation:
At least 1 MCDS in the configuration was specified out of order. MCDS= must always be present. Additional MCDSs must start at MCDS2 and go to MCDS4. e.g. MCDS4 cannot be used unless MCDS2 and MCDS3 are already used.

System action:
The utility ends.

User response:
Reorder the MCDSs starting at 1 and going to 4.

Detecting CSECT:
GBQSUMRY

GBQ0315E **Duplicate MCDS found in configuration.**

Explanation:
At least 1 MCDS in the configuration was specified twice. Each MCDS specified must be unique from all preceding MCDSs.

System action:
The utility ends.

User response:
Either remove or type a different MCDS.

Detecting CSECT:
GBQSUMRY

GBQ0316I ***stat***

Explanation:
GBQSUMRY output statistic. Fields printed with this message number are identical to fields in the SUMRYnn output member, in the control data set. This displays information about the amount of data on ML2 and the number of cloud objects found.

Detecting CSECT:
GBQSUMRY

GBQ0330E **Failed to allocate *dsn* to *ddn* RC:*rc* ERR:*err* INFO:*info***

Explanation:
Dynamic allocation error.

System action:
The utility ends.

Programmer response:
Check the allocation return, error, and info codes for more information.

Detecting CSECT:
GBQSUMRY

GBQ0331E **Failed to open *dsn* member *member* RC:*rc* RSN:*rsn***

Explanation:
Failed to open the ACB for the specified data set.

System action:
The utility ends.

Programmer response:
Check the reason code returned by the OPEN macro for more information.

Detecting CSECT:
GBQSUMRY

GBQ0332E **Failed to generate ACB for *dsn* member *member* RC:*rc* RSN:*rsn***

Explanation:
Failed to generate an ACB for the specified data set.

System action:
The utility ends.

Programmer response:
Check the reason code returned by the GENCB macro for more information.

Detecting CSECT:
GBQSUMRY

GBQ0333E **Failed to generate RPL for *dsn* member *member* RC:*rc* RSN:*rsn***

Explanation:
Failed to generate an RPL for the specified data set.

System action:
The utility ends.

Programmer response:
Check the reason code returned by the GENCB macro for more information.

Detecting CSECT:
GBQSUMRY

GBQ0334E **Failed to modify access mode for *dsn* RC:*rc* RSN:*rsn***

Explanation:
Failed to modify an ACB for the specified data set.

System action:
The utility ends.

Programmer response:
Check the reason code returned by the MODCB macro for more information.

Detecting CSECT:
GBQSUMRY

GBQ0335E **Failed to locate data set records in *dsn* RC:*rc* FDBK:*fdbk***

Explanation:
Failed to locate data set records in MCDS.

System action:
The utility ends.

Programmer response:
Check the reason code returned by the POINT macro for more information.

Detecting CSECT:
GBQSUMRY

GBQ0336E **Failed to locate volume records in *dsn* RC:*rc* FDBK:*fdbk***

Explanation:
Failed to locate volume records in MCDS.

System action:
The utility ends.

Programmer response:
Check the reason code returned by the POINT macro for more information.

Detecting CSECT:
GBQSUMRY

GBQ0337E **Failed to read VSAM record in *dsn* RC:*rc* FDBK:*fdbk***

Explanation:
An error occurred performing a VSAM read.

System action:
The utility ends.

Programmer response:
Check the reason code returned by the READ macro for more information.

Detecting CSECT:
GBQSUMRY

GBQ0338E **Member *member* does not exist in *dsn***

Explanation:
A data set member that is required by GBQSUMRY is not present in the specified data set.

System action:
The utility ends.

User response:
Ensure the specified member exists within the control data set.

Detecting CSECT:
GBQSUMRY

GBQ0350I **Summary Utility Starting**

Detecting CSECT:
GBQSUMRY

GBQ0351I **Processing MCDS *dsn***

Detecting CSECT:
GBQSUMRY

GBQ0352I **Read *count* data set records**

Detecting CSECT:
GBQSUMRY

GBQ0353I **Read *count* volume records**

Detecting CSECT:
GBQSUMRY

GBQ0354I **Summary Utility completed successfully**

Detecting CSECT:
GBQSUMRY

GBQ0355W **Summary Utility completed with errors**

Detecting CSECT:
GBQSUMRY

GBQ2000E **Failed to retrieve GBQLANCH**

Explanation:
GBQINITV could not retrieve the GBQLANCH from local storage.

System action:
The utility ends.

User response:
Ensure the GBQLANCH is stored in local storage with the correct name.

Detecting CSECT:
GBQINITV

GBQ2001I **Function Requested: *func***

Detecting CSECT:
GBQINITV

GBQ2002E **Invalid function option passed in GBQLANCH**

Explanation:
GBQLANCH requested a function not supported by GBQINITV.

System action:
The utility ends.

User response:
Ensure a supported function is passed to GBQINITV.

Detecting CSECT:
GBQINITV

GBQ2003I **Retrieved parameter: *name=val***

Detecting CSECT:
GBQINITV

GBQ2004I ***name* was omitted. Using default value *val***

Explanation:
A default value was substituted for a parameter that was not specified.

Detecting CSECT:
GBQINITV

GBQ2005E **The parameter *name* is not supported.**

Explanation:
This is an invalid parameter.

System action:
The utility ends.

User response:
Correct the paramater and restart the started task.

Detecting CSECT:
GBQINITV

GBQ2006E ***name* requires a unit of *unit* following the numeric value.**

Explanation:
This parameter requires a unit to follow the numeric value.

System action:
The utility ends.

User response:
Update the parameter to include a unit value.

Detecting CSECT:
GBQINITV

GBQ2007E **Internal Server Error**

Explanation:
GBQINITV encountered an unexpected error.

System action:
The utility ends.

User response:
Attempt to run the utility again. If the issue persists, contact IBM Support.

Detecting CSECT:
GBQINITV

GBQ2008E ***name* must be a *type*, *val* is not a *type***

Explanation:
The given parameter value is of the incorrect type.

System action:
The utility ends.

User response:
Ensure the parameter values are of the correct type.

Detecting CSECT:
GBQINITV

GBQ2009E ***name* value "*val*" is out of range. The acceptable range is *min* - *max***

Explanation:
The value is not within the allowed range.

System action:
The utility ends.

User response:
Ensure the parameter values are in the valid value range.

Detecting CSECT:
GBQINITV

GBQ2010E ***name* has a NULL value**

Explanation:
The value for the parameter is NULL, which is not allowed.

System action:
The utility ends.

User response:
Ensure parameter values are valid.

Detecting CSECT:
GBQINITV

GBQ2011E ***name*** **value** ***val*** **contains an invalid character**

Explanation:
The parameter value has an invalid character in it.

System action:
The utility ends.

User response:
Change parameter to only contain valid characters.

Detecting CSECT:
GBQINITV

GBQ2012E ***name*** **value** ***val*** **is too** ***highlow*****, The acceptable range is** ***min*** **-** ***max*** **bytes.**

Explanation:
The parameter value is outside of the acceptable length range.

System action:
The utility ends.

User response:
Ensure the parameter value is in the valid length range.

Detecting CSECT:
GBQINITV

GBQ2013E **Unable to open** ***ddname*** **data set**

Explanation:
GBQINITV was unable to open the data set specified on the given DD statement, or a required DD statement is missing.

System action:
The utility ends.

User response:
Ensure the given DD statement exists and contains a valid data set name.

Detecting CSECT:
GBQINITV

GBQ2100I **DFSMS Cloud Data Manager** ***cdm vrm*** **started.**

Explanation:
The started task was initialized.

System action:
DFSMScdm continues processing.

User response:
This is an informational message with the version, release and modification level of DFSMScdm.

Detecting CSECT:
GBQMAIN

GBQ2101I **GBQMAIN Started Task FMID=*fmid date* / *time* PTF=*ptf***

Explanation:
The date, time, and PTF level of the GBQMAIN module are displayed.

System action:
DFSMScdm continues processing.

User response:
This is an informational message with the date, time, and level of the GBQMAIN module.

Detecting CSECT:
GBQMAIN

GBQ2102I **CDM Started Task initialized with START=*start_type* STCID=*stcid***

Explanation:
The started task was initialized.

Detecting CSECT:
GBQMAIN

GBQ2103E **Invalid parameter passed on EXEC PGM PARM** ***start_type***

Explanation:
An invalid parameter was used.

System action:
DFSMScdm processing ends.

User response:
Ensure that the parameter being passed on the EXEC PGM statement is valid. The first 10 characters passed are printed in the message.

Detecting CSECT:
GBQMAIN

GBQ2104I **Global anchor NAME=*ganchname* is located at** ***addr***

Explanation:
This is an informational message about the global control block.

Detecting CSECT:
GBQMAIN

GBQ2105E **Name token create failed NAME=*ganchname* RC=*rcode***

Explanation:

An IEANTCR error occured while creating the global name anchor.

System action:
DFSMScdm processing ends.

User response:
See z/OS MVS Programming Assembler Services Reference for IEANTCR return codes.

Detecting CSECT:
GBQMAIN

GBQ2106E **Invalid parameter found in GBQPARMS. RC=*rcode***

Explanation:
An invalid parameter or value was found in the GBQPARMS data set. The specific error is reported in the GBQINITP data set.

System action:
DFSMScdm processing ends.

User response:
Correct the GBQPARMS parameter.

Detecting CSECT:
GBQMAIN

GBQ2107E **GBQINITV returned non-zero RC on GETCDMID call RC=*rcode***

Explanation:
An STCID that was already in use was specified or an internal logic error occurred.

System action:
DFSMScdm processing ends.

Detecting CSECT:
GBQMAIN

GBQ2108I **SHUTDOWN command being processed. Dispatcher has been informed. There are *numcreqs* cloud requests to be processed.**

Explanation:
This is an informational status message.

System action:
DFSMScdm shutdown proceeds after all requests have been processed. No new requests will be queued to the started task.

User response:
Monitor the started task until all requests have been processed and the shutdown has occurred.

Detecting CSECT:
GBQMAIN

GBQ2109E **Dispatcher task has abended S=*sys* U=*user***

Explanation:
An internal error occurred in the started task.

System action:
A diagnostic SVC dump is taken and the started task shuts down.

Programmer response:
Restart the started task. If abends persist, it may be necessary to start with the COLD option to clear any requests. SMF reporting can be used to determine any requests that were not completed. Contact IBM Support for assistance.

Detecting CSECT:
GBQMAIN

GBQ2110E **Internal trace task has abended S=*sys* U=*user***

Explanation:
This is an internal error.

System action:
A diagnostic SVC dump is taken and the started task remains active.

Programmer response:
Contact IBM Support for assistance.

Detecting CSECT:
GBQMAIN

GBQ2111I ***TYPE* start requested for existing started task *STCID* there are *numcreqs* cloud request pending on its queue.**

Explanation:
This is an informational status message.

System action:
A WTOR is issued to ask the operator if the COLD start should continue.

Programmer response:
Respond to the WTOR.

Detecting CSECT:
GBQMAIN

GBQ2112I **Confirm start type for STCID=*stcid* by replying COLD or WARM.**

Explanation:
This WTOR is issued when a COLD start is requested but there are cloud requests on the queue that have not been processed.

Programmer response:
Respond with COLD or WARM to the WTOR. If the response is COLD, the global anchor and any pending requests are deleted. DFSMScdm SMF records can be used to determine which requests were lost. If the response is WARM, the global anchor is reused and the pending requests are available to be processed by the dispatcher.

Detecting CSECT:
GBQMAIN

GBQ2113I **COLD start requested for existing started task id *stcid* with invalid eyecatcher.**

Explanation:
This is an internal error.

System action:
A diagnostic SVC dump is taken.The invalid global name token pair then deleted, and a new name token and global anchor is established.

Programmer response:
Contact IBM Support for assistance to determine root cause of this failure.

Detecting CSECT:
GBQMAIN

GBQ2114I **IEANT delete for started task id *stcid* failed with *rcode***

Explanation:
This is an internal logic error. A different STCID may need to be taken.

System action:
A diagnostic SVC dump is taken.

Programmer response:
Contact IBM Support for assistance to determine root cause of this failure.

Detecting CSECT:
GBQMAIN

GBQ2115I **Trace subtask has been informed of shutdown.**

Explanation:
This is an informational status message.

System action:
The trace buffers are written to the active trace data set and the server will continue the shutdown. Shutdown may be delayed up to one minute.

Detecting CSECT:
GBQMAIN

GBQ2116E **Started task id *stcid* is already active.**

Explanation:
The specified STCID value is already in use by another started task.

System action:
The started task ends.

Programmer response:
Shut down the active started task or select another started task ID.

Detecting CSECT:
GBQMAIN

GBQ2117E **IEANT create for local anchor *locid* failed with *rcode***

Explanation:
An error occured attempting to create a local anchor. This is an internal logic error.

System action:
A diagnostic SVC dump is taken.

Programmer response:
Contact IBM Support for assistance to determine root cause of this failure.

Detecting CSECT:
GBQMAIN

GBQ2118E **Active STCID=*stcid* was found.**

Explanation:
A started task with the same STCID is already active.

System action:
GBQMAIN ends.

User response:
Shut down the active started task or use another STCID.

Detecting CSECT:
GBQMAIN

GBQ2119E **GBQTRC DD Card *trcDD* was not found.**

Explanation:
The given TRC DD card is required and was not found.

System action:
GBQMAIN ends.

User response:
Include the DD card in the startup PROC.

Detecting CSECT:
GBQMAIN

GBQ2120E **STOP or SHUTDOWN command cannot be entered when the dispatcher is stopped.**

Explanation:
The started task is unable to process this command while the dispatcher is stopped.

System action:
The command is not processed.

Programmer response:
Issue the STARTDISP command to restart the dispatcher and allow any cloud requests to be processed, or use the SHUTDOWN FORCE command which will preserve pending cloud requests that will be processed during the next warm start.

Detecting CSECT:
GBQMAIN

GBQ2121I GBQMAIN recovery routine set termination flags.

Explanation:
This is an informational status message.

System action:
The abend is percolated.

Programmer response:
This is an informational message issued when the GBQMAIN task has abended and is issued after the global anchor flags have been reset so that the started task ID will no longer appear active.

Detecting CSECT:
GBQMAIN

GBQ2800E Internal server error passing SMF information.

Explanation:
An invalid value was passed between internal DFSMScdm modules processing SMF records.

System action:
The utility ends.

User response:
Contact IBM Support.

Detecting CSECT:
GBQSMF

GBQ2801E SMF Record Write failure. Errno: *errno*.

Explanation:
An internal call to write an SMF record failed with the given error code.

System action:
The utility ends.

User response:
Research the error code to determine the cause of the error.

Detecting CSECT:
GBQSMF

GBQ2802E SMF Record Number *recNum* is too *hiLow*. The valid range is *low* - *high*.

Explanation:
The SMF record number provided to GBQSMF is invalid.

System action:
The utility ends.

User response:
Ensure the SMF record number passed when starting the server is valid.

Detecting CSECT:
GBQSMF

GBQ2803E Too many parameters were passed in. The maximum is *max*.

Explanation:
There were too many parameters in the SMFPARMS DD.

System action:
The utility ends.

User response:
Ensure the number of parameters does not exceed the maximum shown in the message.

Detecting CSECT:
GBQSMRPT

GBQ2804E Unable to open *ddname* DD.

Explanation:
GBQSMF or GBQSMRPT was unable to open the data set stored in the given DD card.

System action:
The utility ends.

User response:
Ensure the given DD card exists and contains a valid data set name.

Detecting CSECT:
GBQSMRPT

GBQ2805E *timing tmedte* parameter is invalid. The valid form is "*valForm*".

Explanation:
The given date/time is not in a format which GBQSMRPT can interpret.

System action:
The utility ends.

User response:
Update the parameter to the given format and try again.

Detecting CSECT:
GBQSMRPT

GBQ2806E STCID *sid* is too *badLen*.

Explanation:
The given STCID is not of an acceptable size.

System action:
The utility ends.

User response:
Ensure the STCID is of the right length and try again.

Detecting CSECT:

GBQSMRPT

GBQ2807E **STCID "*sid*" contains an invalid character.**

Explanation:
The given STCID contains an invalid character. The characters allowed are those that are allowed in data set names. The first character must be non-numeric.

System action:
The utility ends.

User response:
Ensure the Server ID is free of invalid characters.

Detecting CSECT:
GBQSMRPT

GBQ2808E **Internal Server Error.**

Explanation:
GBQSMF or GBQSMRPT encountered an internal error.

System action:
The utility ends.

User response:
Attempt to run the utility again. If the issue persists, contact IBM Support.

Detecting CSECT:
GBQSMRPT

GBQ2809W **No matching records found.**

Explanation:
No matching SMF records were found.

System action:
The utility continues.

User response:
Ensure your filters are correct if you expected results but got none.

Detecting CSECT:
GBQSMRPT

GBQ2810E **Only one *parmName* parameter is allowed**

Explanation:
Multiple *parmName* parameters were specified. Only one of the parameter is allowed.

System action:
The utility ends

User response:
Remove duplicate parameters

Detecting CSECT:
GBQSMRPT

GBQ2811E ***var* value "*val*" is invalid. Valid range is *min* to *max*.**

Explanation:
The given variable is out of the valid range.

System action:
The utility ends.

User response:
Ensure the value is within the valid range and try again

Detecting CSECT:
GBQSMRPT

GBQ2812E **The given parameter "*parm*" is not supported.**

Explanation:
The given parameter is not in the list of supported parameters.

System action:
The utility ends.

User response:
Ensure the parameters provided are supported by the utility.

Detecting CSECT:
GBQSMRPT

GBQ2813E **The year parameter "*year*" must be greater than or equal to 1970.**

Explanation:
The year parameter is less than 1970, which is not supported.

System action:
The utility ends.

User response:
Specify a year greater than or equal to 1970.

Detecting CSECT:
GBQSMRPT

GBQ2814E **The SMF Record Number parameter was omitted.**

Explanation:
The SMF Record Number is a required parameter.

System action:
The utility ends.

User response:
Specify an SMF Record Number parameter.

Detecting CSECT:
GBQSMRPT

GBQ2815I **Global Anchor Display**

Explanation:
This is the header for the Display Global Anchor modify command.

Detecting CSECT:
GBQCOMM

GBQ2816I **Local Anchor Display**

Explanation:
This is the header for the Display Local Anchor modify command.

Detecting CSECT:
GBQCOMM

GBQ2817I Display Requests Summary

Explanation:
This is the header for the Display Requests Summary modify command.

Detecting CSECT:
GBQCOMM

GBQ2818I Display Tasks Summary

Explanation:
This is the header for the Display Tasks Summary modify command.

Detecting CSECT:
GBQCOMM

GBQ2819I Display Tasks Detailed Summary

Explanation:
This is the header for the Display Tasks Detailed Summary modify command.

Detecting CSECT:
GBQCOMM

GBQ2820I Display Storage Summary

Explanation:
This is the header for the Display Storage Summary modify command.

Detecting CSECT:
GBQCOMM

GBQ2821I There are no requests on the queue at this time

Explanation:
A modify command was issued that uses information from active CDM requests, but there were no CDM requests on the queue.

Detecting CSECT:
GBQCOMM

GBQ2822E The *endDateTime* parameter must be greater than or equal to the *startDateTime* parameter

Explanation:
With both specified, the end date/time must be greater than or equal to the start date/time.

System action:
The utility ends.

User response:
Specify an end date/time that is after the start date/time.

Detecting CSECT:
GBQSMRPT

GBQ2900I Trace has been initialized successfully and is active.

Explanation:
The internal trace has been initialized and is active.

System action:
Trace entry records will be periodically written to the active trace data set.

Detecting CSECT:
GBQTRC

GBQ2901I Trace has been shut down successfully.

Explanation:
The internal trace has been shut down. All trace entry records have been written to the active trace data set.

Detecting CSECT:
GBQTRC

GBQ2902W Trace active data set was out of space. SWAPTRACE has been done.

Explanation:
Writing to the active trace output data set resulted in an out of space condition.

System action:
The active trace data set has been swapped.

Programmer response:
Refer to the prior message GBQ2903I to determine the DDNAME trace automatically swapped to. Trace continues to write output. Any prior contents of the swapped to output file will be overwritten. Increase the space allocation for the data sets specified by ddnames GBQTRC1 and GBQTRC2 when this automatic SWAPTRACE occurs more frequently than desired.

Detecting CSECT:
GBQTRC

GBQ2903I Trace active trace data set output has been directed to DDNAME=*DDNAME*

Explanation:
Indicates the DDNAME that trace entries will be written to, either GBQTRC1 or GBQTRC2. The message is issued as a result of a SWAPTRACE modify command to the CDM address space, or due to an out of space condition for the active trace output data set.

Detecting CSECT:
GBQTRC

GBQ2904I SWAPTRACE successful.

Explanation:
The SWAPTRACE has completed successfully.

Detecting CSECT:
GBQTRC

GBQ2950E **Invalid time format for *tm*_TIME statement. *hr* is not in the range 00 - 23.**

Explanation:
An invalid format was used for the time value.

System action:
The utility ends.

User response:
Specify the time as *tm*_TIME=HH:MM:SS

Detecting CSECT:
GBQPTRC

GBQ2951E **Invalid time format for *time*_TIME statement. *SS* is not in the range of 0-59.**

Explanation:
The minimum allowed value for *SS* is 00 and the maximum allowed value is 59.

System action:
The utility ends.

User response:
Ensure the time format is correct using *time*_TIME=HH:MM:SS

Detecting CSECT:
GBQPTRC

GBQ2952E **Incorrect *parm* length.**

Explanation:
Ensure you are using the correct length.

System action:
The utility ends.

User response:
Double check the length of parameters.

Detecting CSECT:
GBQPTRC

GBQ2953E **Could not *access FILE*.**

Explanation:
File could not be *access* using f*access*()

System action:
The utility ends.

User response:
Ensure the file is usable.

Detecting CSECT:
GBQPTRC

GBQ2954E **The date value is invalid. The format is MM/DD/YYYY**

Explanation:
Invalid or unsupported date format was specified for the date statement.

System action:
The utility ends.

User response:
Provide a valid date value in the format MM/DD/YYYY

Detecting CSECT:
GBQPTRC

GBQ2955E **Incorrect time format. The correct format is HH:MM:SS**

Explanation:
Time values must use the format HH:MM:SS

System action:
The utility ends.

User response:
Provide a valid time value in the format HH:MM:SS

Detecting CSECT:
GBQPTRC

GBQ2956E **Ensure the day of month specified is a valid value. Day must be a value from 1-31.**

Explanation:
Ensure you are using day that exists in the specified month.

System action:
The utility ends.

User response:
Provide a valid day value in MM/DD/YYYY where DD is the day.

Detecting CSECT:
GBQPTRC

GBQ2957E **Ensure the month specified is a valid value. Month must be a value from 1-12.**

Explanation:
Ensure you are using a valid month.

System action:
The utility ends.

User response:
Provide a valid month value in MM/DD/YYYY where MM is the month.

Detecting CSECT:
GBQPTRC

GBQ2958E **Error converting time and date to sec**

Explanation:
Error converting time and date to seconds.

System action:
The utility ends.

User response:
Check that valid time and date formats HH:MM:SS and MM/DD/YYYY have been used.

Detecting CSECT:
GBQPTRC

GBQ2959W **No matching records for *opt=val***

Explanation:
No records were found matching *val*.

System action:
The utility ends.

User response:
Ensure that *val* exists in the trace data set.

Detecting CSECT:
GBQPTRC

GBQ2960E **More than 7 parameters have been specified.**

Explanation:
GBQINPUT supports a maximum of 7 parameters.

System action:
The utility ends.

User response:
Use no more than 7 parameters.

Detecting CSECT:
GBQPTRC

GBQ2961E **The specified end date/time of *end* is before the start date/time of *srt***

Explanation:
The START_DATE/START_TIME must be earlier than the END_DATE/END_TIME.

System action:
The utility ends.

User response:
Ensure the START_DATE/START_TIME is earlier than the END_DATE/END_TIME.

Detecting CSECT:
GBQPTRC

GBQ2962E ***paramtr* can only be specified once in GBQINPUT.**

Explanation:
Input parameters cannot be specified multiple times.

System action:
The utility ends.

User response:
Remove the duplicate input parameter.

Detecting CSECT:
GBQPTRC

GBQ2963E **You already provided a *var* value.**

Explanation:
Repeated value found in GBQINPUT.

System action:
The utility ends.

User response:
Ensure GBQINPUT values for *var* are not repeated.

Detecting CSECT:
GBQPTRC

GBQ2964E **The block size of your data set is not valid.**

Explanation:
An invalid block size was specified.

System action:
The utility ends.

User response:
Make sure your data set has a valid block size.

Detecting CSECT:
GBQPTRC

GBQ2968E ***var* is not a valid parameter**

Explanation:
An invalid parameter was specified.

User response:
Ensure that the value of *var* is a valid filter.

Detecting CSECT:
GBQPTRC

GBQ2970W **No records found in date/time provided in GBQINPUT**

Explanation:
No records matched the specified date/time.

System action:
No records are printed.

Detecting CSECT:
GBQPTRC

GBQ2971I **GBQINPUT: *var***

Explanation:
This is an echo of the GBQPRINT input.

System action:
The GBQINPUT values are echoed.

Detecting CSECT:

GBQPTRC

GBQ2972E **You already provided *val* as a value in *filter***

Explanation:
Repeat value found in filter.

System action:
The utility ends.

User response:
Ensure filter values for *filter*'s are not repeated.

Detecting CSECT:
GBQPTRC

GBQ2973E **Ensure the year specified is a valid value. Year must be a value from 1970-9999.**

Explanation:
An invalid year was specified.

System action:
The utility ends.

User response:
Provide a valid year value in MM/DD/YYYY where YYYY is the year.

Detecting CSECT:
GBQPTRC

GBQ3000I **CDMREQ(*reqnum*) *cmdname parms***

Explanation:
This message echoes the TSO command entered and displays the DFSMScdm request queue number for the command.

System action:
The utility continues processing.

Detecting CSECT:
CDMDEL, CDMLIST, CDMMOD, CDMQUERY, CDMRET, CDMSEND

GBQ3001I **CDMSEND summary - *n* data sets selected.**

Explanation:
This is the total number of data sets selected by the specified data set mask.

Detecting CSECT:
CDMSEND

GBQ3002I ***cmdname* command submitted to the DFSMScdm started task.**

Explanation:
The specified command was submitted for processing.

System action:
The utility continues processing.

Detecting CSECT:
CDMDEL, CDMMOD, CDMRET, CDMSEND

GBQ3003E **Access denied to create z/OS data set.**

Explanation:
Your user ID is not authorized to create a z/OS data set using the name saved in the object's metadata.

System action:
The utility does not download the object. If ON_ERROR(STOP) was used, the utility ends.

User response:
Run the CDMLIST command for this object to see what z/OS data set name will be used for the download. Run the CDMRET command using a user ID that has ALTER access to this data set, or use an ID that has administrative access to run the CDMRET command.

Detecting CSECT:
CDMRET, GBQCMD

GBQ3004E **User not authorized to use *cmdname* command.**

Explanation:
Your user ID is not authorized to use this DFSMScdm command. You must have READ access to the RACF FACILITY class profile STGADMIN.GBQ.USER.*cmdname* or STGADMIN.GBQ.ADMIN.*cmdname*.

System action:
The utility ends.

User response:
Check with your storage administrator if you believe you are receiving this message in error, or run the command using a user ID that has access to the required FACILITY class profile.

Detecting CSECT:
CDMDEL, CDMLIST, CDMMOD, CDMQUERY, CDMRET, CDMSEND, GBQCMD

GBQ3005E **Required parms missing for *cmdname*.**

Explanation:
The specified command is missing one or more required parameters. This is an internal error.

System action:
The utility ends.

User response:
Contact IBM Support.

Detecting CSECT:
CDMDEL, CDMLIST, CDMMOD, CDMQUERY, CDMRET, CDMSEND

GBQ3006E **Invalid parm values for *cmdname*.**

Explanation:

One or more keywords is incorrect. This is an internal error.

System action:
The utility ends.

User response:
Contact IBM Support.

Detecting CSECT:
CDMDEL, CDMLIST, CDMMOD, CDMQUERY, CDMRET, CDMSEND

GBQ3007E **Cloud *cldname* not available.**

Explanation:
The specified cloud cannot be accessed.

System action:
The utility ends.

User response:
Confirm that the specified cloud is accessible on your system.

Detecting CSECT:
CDMDEL, CDMLIST, CDMMOD, CDMQUERY, CDMRET, CDMSEND

GBQ3008E ***cmdname* unable to retrieve configuration values. Confirm that started task *stcname* is running.**

Explanation:
The configuration values that the command needs to run could not be found. These configuration values are saved to shared storage when the started task is initiated.

System action:
The utility ends.

User response:
Confirm that the cloud specified by the STCID parameter on your command (or in the started task ID field in the CDA Functions Menu when using the ISPF interface) has been started and is still currently running.

Detecting CSECT:
CDMDEL, CDMLIST, CDMMOD, CDMQUERY, CDMRET, CDMSEND, GBQCMD

GBQ3009I **The APPEND parameter is ignored when REPLACE(YES) is used.**

Explanation:
An APPEND value was specified for the CDMRET command, but was ignored because REPLACE(YES) was also specified.

System action:
The utility continues.

Detecting CSECT:
CDMRET

GBQ3010E ***cmdname* internal error, rc=*code*.**

Explanation:
An internal error has occurred.

System action:
The utility ends.

User response:
Contact IBM Support.

Detecting CSECT:
CDMSEND, GBQCMD

GBQ3011W **WARNING: CONVERT_UTF8(NO) used with VB data set *dsname*.**

Explanation:
Failing to convert the data format will result in corrupted data for this data set.

System action:
This warning is issued when CHECK(YES) has been specified. The utility continues to check other parameters.

Detecting CSECT:
CDMSEND

GBQ3012E **Use one of these parameters: ALL or REQUEST(nnnnnnnn).**

Explanation:
You must specify if you want to query information about a specific queued request or all queued requests. An administrator can specify requests for one user or all users.

System action:
The utility ends.

User response:
Resubmit the command with one of the required keywords.

Detecting CSECT:
CDMMOD, CDMQUERY

GBQ3013E **Unable to run *cmdname* command. The DFSMScdm started task is being shut down.**

Explanation:
The DFSMScdm started task is in the process of shutting down and is unable to process your command.

System action:
The utility ends.

User response:
Resubmit the command after the started task has been restarted.

Detecting CSECT:
GBQCMD

GBQ3014E **CDMDEL: object *objname* successfully deleted.**

Explanation:
DFSMScdm has deleted the cloud object. This message is issued only when WAIT(YES) was used with the CDMDEL command.

Detecting CSECT:
CDMDEL

GBQ3015W **CDMDEL: object *objname* could not be deleted, rc=*code*.**

Explanation:
DFSMScdm was unable to delete the specified cloud object. This message is issued only when WAIT(YES) was used with the CDMDEL command.

System action:
The utility completes without deleting the object.

User response:
Contact IBM Support to interpret the return code.

Detecting CSECT:
CDMDEL, GBQCMD

GBQ3016E **This user is not allowed to [cancel| display] requests for other users; administrator access is required.**

Explanation:
You have submitted a command to display or cancel a queued request for another user, but you do not have administrator access to this command.

System action:
The utility ends.

User response:
Rerun the command using a user ID with READ access to the FACILITY class resource STGADMIN.GBQ.ADMIN.CDMMOD (for CDMMOD) or to STGADMIN.GBQ.ADMIN.CDMQUERY (for CDMQUERY).

Detecting CSECT:
CDMMOD, CDMQUERY, GBQCMD

GBQ3017W **CDMLIST: no containers found in cloud *cloudname*.**

Explanation:
There were no containers found within the specified cloud.

System action:
The utility completes without displaying a container list.

Detecting CSECT:
CDMLIST, GBQCMD

GBQ3018W **CDMLIST: no objects found in container *containername*.**

Explanation:
There were no objects found within the specified cloud container.

System action:
The utility completes without displaying an object list.

Detecting CSECT:
CDMLIST, GBQCMD

GBQ3019I **CDMLIST: objects in container *containername***

Explanation:
This message is followed by a list of the objects in the specified container.

Detecting CSECT:
CDMLIST, GBQCMD

GBQ3020I **CDMLIST: containers in cloud *cloudname***

Explanation:
This message is followed by a list of the containers in the specified cloud.

Detecting CSECT:
CDMLIST, GBQCMD

GBQ3021I **CDMLIST: metadata saved for cloud object**

Explanation:
This message is followed by a display of the metadata saved for the requested cloud object.

Detecting CSECT:
CDMLIST, GBQCMD

GBQ3022I ***cmdname* parameters have been validated.**

Explanation:
The utility has checked the validity of the keywords and parameters specified for the command.

System action:
The utility completes without submitting the command to the DFSMScdm started task.

User response:
Rerun the command using CHECK(NO) to submit the command to DFSMScdm.

Detecting CSECT:
CDMDEL, CDMLIST, CDMMOD, CDMQUERY, CDMRET

GBQ3023E **Access denied to a selected data set.**

Explanation:
Your user ID does not have access to read a data set that was specified in your GBQSEND command, either explicitly by a fully-qualified name or after evaluating a DSN mask.

System action:
If ON_ERROR(CONTINUE) was used, the utility continues with the next data set, if any, in the CDMSEND request. If ON_ERROR(STOP) was used, the utility ends.

Detecting CSECT:
CDMSEND, GBQCMD

GBQ3024E **Cannot use both OBJECT and OBJPREFIX with one CDMLIST command.**

Explanation:
Specify either an OBJPREFIX value to list the objects with names starting with the same characters, or specify OBJECT to display metadata for one object.

System action:
The utility ends.

Detecting CSECT:
CDMLIST

GBQ3025W **CDMLIST: no objects matching prefix *objprefix* found in container *containername*.**

Explanation:
There were no objects in the specified container that have names starting with the specified prefix.

System action:
The utility ends.

Detecting CSECT:
CDMLIST, GBQCMD

GBQ3026E **CDMDEL: User does not have update access to the corresponding z/OS data set.**

Explanation:
The CDMDEL command retrieves the name of the z/OS data set associated with the object which you have requested to delete. Because you do not have ALTER access to that data set, DFSMScdm will not delete the object.

System action:
The utility ends.

Detecting CSECT:
CDMDEL, GBQCMD

GBQ3027E **CDA error: *CDAmessagetext***

Explanation:
DFSMScdm attempted to use a DFSMSdfp CDA function, but CDA issued the displayed error message.

System action:
If ON_ERROR(CONTINUE) was used, the utility continues with the next data set in the request. If ON_ERROR(STOP) was used, the utility stops.

Detecting CSECT:
CDMLIST, CDMRET, GBQCMD

GBQ3028E **GBQPCR return code = *retcode*, reason code = *reascode*.**

Explanation:
These are diagnostic codes generated by the DFDMScdm PC routine.

User response:
Contact IBM Support to interpret these codes.

Detecting CSECT:
CDMLIST, CDMRET, CDMDEL, CDMMOD, CDMQUERY, CDMSEND, GBQCMD

GBQ3029I **At least one request has been deleted from the queue.**

Explanation:
A CDMMOD CANCEL successfully deleted one or more requests from the DFSMScdm queue.

Detecting CSECT:
CDMMOD, GBQCMD

GBQ3030E **Invalid CDMMOD command.**

Explanation:
An invalid parameter was used with the CDMMOD command.

System action:
The utility ends.

Detecting CSECT:
CDMMOD, GBQDISP

GBQ3031E **Not authorized to issue CDMMOD command.**

Explanation:
The user does not have access to the FACILITY class profile STGADMIN.GBQ.USER.CDMMOD.

System action:
The utility ends.

User response:
Check with your storage administrator if you believe you are receiving this message in error, or run the command using a user ID that has access to the required FACILITY class profile.

Detecting CSECT:
CDMMOD, GBQDISP

GBQ3032W **CDMLIST has returned only a partial list of results. List size is limited by MAX_CDMLIST_BUFFER_SIZE.**

Explanation:
There were more list results than could fit into the storage provided.

System action:
The utility completes with return code 4.

User response:
Using an object prefix will often reduce the number of list entries returned.

Programmer response:
Increase the value of MAX_CDMLIST_BUFFER_SIZE and restart the DFSMScdm started task.

Detecting CSECT:
CDMLIST, GBQDISP

GBQ3033I Server error encountered by CDA. Please retry the DFSMScdm command.

Explanation:
DFSMSdfp Cloud Data Access was unable to complete the DFSMS Cloud Data Manager request. CDM has determined that the problem should be resolved by resubmitting the CDM command.

System action:
The utility also issues a GBQ3027E message and ends with return code 8.

User response:
Resubmit the DFSMScdm command. If the problem persists, contact IBM Support.

Detecting CSECT:
CDMLIST, CDMRET, CDMDEL, CDMSEND

GBQ3034E Amount of list data exceeds MAX_CDMLIST_BUFFER_SIZE

Explanation:
The amount of data returned in response to a CDMLIST command exceeded the maximum buffer size defined for the DFSMScdm started task. The amount of space needed depends on both the number of containers or objects in the list, and the lengths of their names.

System action:
The utility ends.

User response:
Using an object prefix will often reduce the number of list entries returned.

Programmer response:
Increase the value of MAX_CDMLIST_BUFFER_SIZE and restart the DFSMScdm started task.

Detecting CSECT:
CDMLIST, GBQCMD

GBQ3095E GBQPCR error during [ADD|GET|FREE] processing. Contact IBM Support.

Explanation:
This is an internal error in communicating with the DFSMScdm started task.

System action:
The utility ends.

User response:
Contact IBM Support.

Detecting CSECT:
GBQPCR

GBQ3096E Internal failure occurred. Contact IBM Support.

Explanation:
This is an internal error in the DFSMScdm started task.

System action:
The utility ends.

User response:
Contact IBM Support.

Detecting CSECT:
CDMDEL, CDMLIST, CDMMOD, CDMRET, CDMSEND, GBQCMD

GBQ3097E Internal REXX interface error. Reason code = *code*. Contact IBM Support.

Explanation:
This is an internal error.

System action:
The utility ends.

User response:
Contact IBM Support.

Detecting CSECT:
CDMDEL, CDMLIST, CDMMOD, CDMQUERY, CDMRET, CDMSEND, GBQCMD

GBQ3098E CREQ error, code = *code*. Contact IBM Support.

Explanation:
This is an internal error.

System action:
The utility ends.

User response:
Contact IBM Support.

Detecting CSECT:
GBQCMD, GBQDISP

GBQ3099E Internal GBQCMD error. Reason code = *code*. Contact IBM support.

Explanation:
This is an internal error.

System action:
The utility ends.

User response:
Contact IBM Support.

Detecting CSECT:
GBQCMD

GBQ3101E **Invalid parameter *value* specified for *cmdname*.**

Explanation:
An invalid parameter value has been specified for a keyword.

System action:
The utility displays the invalid keyword and parameter in the message, and then ends.

User response:
Correct the parameter value and rerun the command.

Detecting CSECT:
CDMDEL, CDMLIST, CDMMOD, CDMQUERY, CDMRET, CDMSEND

GBQ3102E ***cmdname* required parameter(s) missing: *parmlist*.**

Explanation:
The specified command is missing one or more required parameters.

System action:
The utility displays a list of the missing required keywords in the message, and then ends.

User response:
Confirm that all required keywords have been specified, and rerun the command.

Detecting CSECT:
CDMDEL, CDMLIST, CDMMOD, CDMRET, CDMSEND

GBQ3103E **Duplicate keyword *keyword* specified for *cmdname*.**

Explanation:
The specified keyword has been used twice with the command.

System action:
The utility ends.

User response:
Resubmit the command after correcting the keyword arguments.

Detecting CSECT:
CDMDEL, CDMLIST, CDMMOD, CDMQUERY, CDMRET, CDMSEND

GBQ3104E **Cannot use both DSN() and USS() with one *cmdname* command.**

Explanation:
The DSN and USS keywords cannot both be used with one command.

System action:
The utility ends.

User response:
Resubmit the command after correcting the keyword arguments.

Detecting CSECT:
CDMSEND

GBQ3105E **Invalid OBJECT parameter *objmask*.**

Explanation:
The specified object mask is not valid.

System action:
The utility ends.

User response:
Check that mask variables have been correctly specified. Resubmit the command after correcting the mask.

Detecting CSECT:
CDMSEND

GBQ3106E **Invalid OBJECT parameter. DSN index level *number* exceeds number of qualifier levels in *dsname*.**

Explanation:
An object name cannot be constructed using the specified mask because a DSN(nn) value references a higher index level than is present in a selected data set name.

System action:
The utility ends.

User response:
Check that mask variables have been correctly specified. Resubmit the command after correcting the mask.

Detecting CSECT:
CDMSEND

GBQ3107E ***number* data sets were selected by the data set mask, but the maximum allowed is *maxnumber*. *cmdname* ended.**

Explanation:
The DFSMScdm started task has been configured to allow only the specified number of data sets to be processed by one command. The number of data sets found using the specified mask exceeds that configuration limit.

System action:
The utility ends.

User response:
Resubmit the command after changing the data set mask in a manner that results in fewer data sets being selected.

Detecting CSECT:
CDMSEND

GBQ3108W **No sequential data sets were selected by the data set name/mask *mask*.**

Explanation:
No sequential data sets or PDSE members were selected using the specified mask or data set name. DFSMScdm does not support uploading an entire PDSE.

System action:
The utility stops without processing any data sets.

Detecting CSECT:
CDMSEND

GBQ3109E **Insufficient work space for processing.**

Explanation:
The data set mask used resulted in too many data sets being selected. DFSMScdm did not have enough space available to process the list of data sets found.

System action:
The utility ends.

User response:
Resubmit the command after changing the data set mask in a manner that results in fewer data sets being selected.

Detecting CSECT:
CDMSEND

GBQ3110E **Unable to create data set using the specified APPEND(*value*). The resulting data set name is not a valid z/OS data set name.**

Explanation:
CDMRET attempted to download an object to a z/OS data set where the corresponding z/OS data set name already exists and APPEND was used. However, DFSMScdm cannot create a data set using the APPEND value because appending the specified string to the existing z/OS data set name results in a syntactically invalid value (name length > 44 characters, or an index level that exceeds 8 characters).

System action:
The utility ends.

User response:
Resubmit the command using a different APPEND value.

Detecting CSECT:
CDMRET

GBQ3111E **Unable to retrieve control information for *objname*.**

Explanation:
An internal error prevented DFSMScdm from obtaining information needed to process a command.

System action:
The utility ends.

User response:
Contact IBM Support.

Detecting CSECT:
CDMDEL, CDMLIST, CDMMOD, CDMQUERY, GBQCMD

GBQ3112E **Conflicting parameter *parm* specified for *cmdname*.**

Explanation:
The parameter shown in the message conflicts with another parameter specified for the command.

System action:
The utility ends.

User response:
Resubmit the command after correcting the conflict.

Detecting CSECT:
CDMMOD, CDMQUERY

GBQ3113E **Unable to run *cmdname* command because the DFSMScdm started task is terminating.**

Explanation:
DFSMScdm is unable to process the command because a started task shutdown is in progress.

System action:
The utility ends.

Detecting CSECT:
CDMDEL, CDMLIST, CDMMOD, CDMQUERY, CDMRET, CDMSEND, GBQCMD

GBQ3114E **No requests found [for user *username*].**

Explanation:
For a CDMQUERY request to list active requests for a specific user, no requests were found. For a CDMQUERY request by an administrator to list active requests for all users, no requests were found.

System action:
The utility ends.

Detecting CSECT:
CDMQUERY, GBQCMD

GBQ3115E **Unable to retrieve z/OS data set name. Try again later.**

Explanation:
For a CDMRET command, the DFSMScdm started task was too busy to determine the z/OS data set name to download the cloud object to.

System action:
The utility ends.

User response:
Resubmit the command when the started task is less active.

Detecting CSECT:
CDMRET, GBQCMD

GBQ3116E **Unable to save data set *dsname*. This data set already exists on z/OS, and REPLACE(YES) was not specified.**

Explanation:
For a CDMRET command, DFSMScdm retrieves the original z/OS data set name from the object's metadata and attempts to allocate that name on z/OS. If that data set already exists and REPLACE(NO) is specified, the allocation cannot be done. REPLACE(NO) is the default.

System action:
The utility ends.

User response:
Resubmit the command with REPLACE(YES), or use APPEND(suffix) to create a new data set with the suffix characters appended to the original data set name.

Detecting CSECT:
CDMRET

GBQ3117I ***cmdname* completed. *n* [items| datasets] processed.**

Explanation:
This message displays a count of the number of data sets or objects processd by the DFSMScdm command.

System action:
The utility completes normally.

Detecting CSECT:
CDMQUERY, CDMRET, CDMSEND, GBQCMD

GBQ3118E **Generated object name *objname* exceeds the maximum allowed length of 256 characters.**

Explanation:
The object name displayed is the result of using the specified OBJNAME parameter and substituting any DFSMScdm variable used. This name exceeds the maximum length supported by DFSMScdm.

System action:
The utility ends without copying any data sets.

Detecting CSECT:
CDMSEND

GBQ3119E **Container *contname* was not found in cloud *cldname*.**

Explanation:
The specified container does not exist in the cloud indicated.

System action:
The utility ends without copying any data sets.

User response:
Resubmit the command after updating the cloud or container name.

Detecting CSECT:
CDMSEND

GBQ3120E **Unable to create data set using the specified APPEND(*value*). The resulting data set already exists.**

Explanation:
DFSMScdm was unable to retrieve the object because appending the APPEND value to the object's original z/OS data set name results in the name of an existing z/OS data set.

System action:
The utility ends without retrieving the object.

User response:
Resubmit the command using a different APPEND value.

Detecting CSECT:
CDMRET

GBQ8990S **GBQMAIN is ending because the program is not APF-authorized.**

Explanation:
DFSMScdm is ending due to a lack of APF authorization.

System action:
DFSMScdm the task ends.

User response:
Ensure that the STEPLIB or the load library containing the DFSMScdm system is an authorized load library.

Detecting CSECT:
GBQMAIN

GBQ8991E **Command parse failed, RC= *return-code*, RS= *reason-code*, REX= *extended-RC***

Explanation

The command failed due to a parse error. The type of error is indicated by the reason code.

01
Storage obtain failure

09
Maximum commands queued

13
Command not compliant

14
Duplicate member name

15
Member name not found

16
No devices in range

19
Command not found

25
Invalid parameters

29
Group not found

30
No devices in range

31
Syntax error

32
Group name in use

33
Device state error

34
Processing error

35
Data base open failed

36
Data base read failed

39
Dynamic allocation failure

40
Caller not TSO user

40
SMSG read failure

41
SMSG find failure

41
SMSG open failure

System action:
The command fails, DFSMScdm processing continues.

User response:
For reason codes 13-32, correct and reissue the command. For all other reason codes, contact IBM Support for assistance.

Detecting CSECT:
GBQSSLM

GBQ9900E Message number *n* was not found.

Explanation:
The indicated message number *n* was not found in the message table.

System action:
DFSMScdm processing continues.

Programmer response:
Contact IBM Support for assistance.

Detecting CSECT:
GBQCMSG

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