IBM Backup and Restore Manager for z/VM

Administration Guide

Version 1 Release 3

SC18-9346-16

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Note:
Before using this information and the products that it supports, read the information in "Notices" on page 267.

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This edition applies to Version 1 Release 3 of IBM Backup and Restore Manager for z/VM (5697-J06) and to all subsequent releases and modifications until otherwise indicated in new editions.

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About this information

These topics provide instructions for installing, configuring, and administering IBM® Backup and Restore Manager for z/VM®.

These topics are designed to help system administrators perform the following tasks:

- Plan for and install Backup and Restore Manager
- Configure Backup and Restore Manager
- Use Backup and Restore Manager to backup and restore system data
- Diagnose and recover from Backup and Restore Manager problems

Who should read this information

This information is intended for those persons responsible for installing and configuring Backup and Restore Manager and assumes a working knowledge of:

- The z/VM operating system
- Control program (CP) command language
- CMS (including XEDIT)
- SFS concepts and facilities
- REXX

Service updates and support information

To find service updates and support information, including software Fix Packs, PTFs, Frequently Asked Questions (FAQs), technical notes, troubleshooting information, and downloads, refer to the website:

http://www.ibm.com/software/products/en/backup-restore-manager-for-zvm

Highlighting conventions

This information uses the following highlighting conventions:

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

Terminology

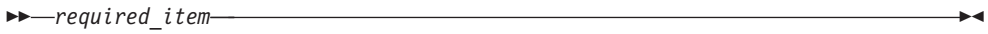
Backup and Restore Manager for z/VM is referred to as “Backup and Restore Manager.”

ECKD™ is referred to as "CKD."

How to read syntax diagrams

The following rules apply to the syntax diagrams that are used in this information:

- Read the syntax diagrams from left to right, from top to bottom, following the path of the line. The following conventions are used:
  - The >>--- symbol indicates the beginning of a syntax diagram.
  - The ---> symbol indicates that the syntax diagram is continued on the next line.
  - The >--- symbol indicates that a syntax diagram is continued from the previous line.
  - The --->< symbol indicates the end of a syntax diagram.
- Required items appear on the horizontal line (the main path).

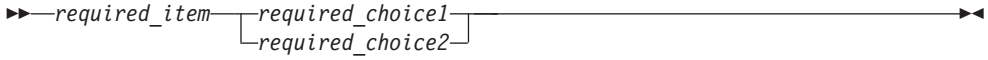


- Optional items appear below the main path.

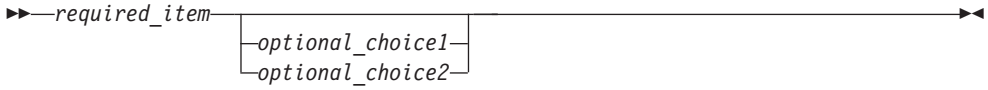
  If an optional item appears above the main path, that item has no effect on the execution of the syntax element and is used only for readability.

- If you can choose from two or more items, they appear vertically, in a stack.

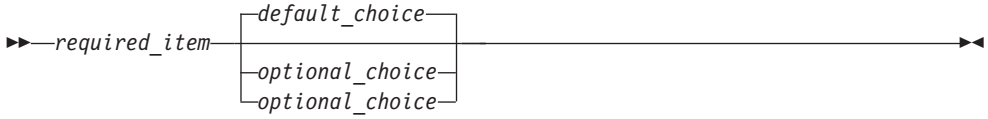
  If you *must* choose one of the items, one item of the stack appears on the main path.



  If choosing one of the items is optional, the entire stack appears below the main path.



  If one of the items is the default, it appears above the main path, and the remaining choices are shown below.



- An arrow returning to the left, above the main line, indicates an item that can be repeated.

If the repeat arrow contains a comma, you must separate repeated items with a comma.

A repeat arrow above a stack indicates that you can repeat the items in the stack.

- Keywords, and their minimum abbreviations if applicable, appear in uppercase. They must be spelled exactly as shown. Variables appear in all lowercase italic letters (for example, *column-name*). They represent user-supplied names or values.
- Separate keywords and parameters by at least one space if no intervening punctuation is shown in the diagram.
- Enter punctuation marks, parentheses, arithmetic operators, and other symbols, exactly as shown in the diagram.
- Footnotes are shown by a number in parentheses, for example (1).

Where to find information

The Resources tab of the Backup and Restore Manager for z/VM website provides current product documentation that you can view, print, and download. To locate publications with the most up-to-date information, refer to the website: http://www.ibm.com/software/products/en/backup-restore-manager-for-zvm

How to send your comments

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

- If you have questions or comments regarding z/VM publications and product documentation, please visit: http://www.vm.ibm.com/forms/
- If you have questions or comments regarding Backup and Restore Manager for z/VM publications and product documentation, send your comments by email to zvmtools@us.ibm.com. Be sure to include the name of the book, the part number of the book, the version of Backup and Restore Manager for z/VM, and, if applicable, the specific location of the text you are commenting on (for example, a page number or table number).

Chapter 1. Backup and Restore Manager overview

With Backup and Restore Manager you can back up CMS and non-CMS data to disk or tape and perform a variety of backup operations.

Use Backup and Restore Manager to perform the following actions:

- Back up one file, a group of files, or an entire minidisk (the source data can be on CMS minidisk, SFS, FBA, or CKD image).
- Create batch backup jobs with predefined job templates that specify criteria such as the files, user IDs, minidisks, or DASD volumes to include or exclude from backup processing.
- Choose from full, incremental, or disaster recovery backups.
- Direct output to tape, twin tapes, or to disk.
- Retain multiple levels of backups.

To help ensure that your system is up and running as soon as possible, you can perform the following disaster recovery tasks with Backup and Restore Manager:

- Create concurrent copies of output tapes.
- Create tape lists for backup and restore jobs.
- Create backup tapes in DASD Dump Restore (DDR) format for use by DDR during recovery.

For an overview of Backup and Restore Manager features and benefits, see the *IBM Backup and Restore Manager for z/VM User's Guide (SC18-9523)*.

What's new in Backup and Restore Manager for z/VM

This topic summarizes the technical changes for this edition.

New and changed information is indicated by a vertical bar (|) to the left of a change. Editorial changes that have no technical significance are not noted.

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- Support for Byte File System (BFS) objects was added. For more information, see "Backup types" on page 45.
- The required privileges for BKRBKUP were updated. For more information, see "Verifying privileges for the master Backup and Restore Manager server (BKRBKUP)" on page 9.
- The required privileges for BKRCATLG were updated. For more information, see "Verifying privileges for the master catalog server (BKRCATLG)" on page 10.
- The required privileges for the worker service virtual machines were updated. For more information, see "Verifying privileges for worker service virtual machines (BKRWRK*nn*)" on page 11.
- Information about the preinstalled z/VM SFS file pools was updated. For more information, see "Allocating SFS resources for the backup catalog" on page 12.
- Target SFS directory information was updated. For more information, see "Copying and customizing the sample PROFILE EXECs" on page 14.
- The instructions for modifying `ADMPROF SAMPEXEC` were updated. For more information, see "Modifying ADMPROF SAMPEXEC (BKRADMIN)" on page 15.

- The instructions for modifying `CATPROF EXEC` were updated. For more information, see "Modifying CATPROF SAMPEXEC (BKRCATLG)" on page 16.
- The instructions for modifying `MASTPROF SAMPEXEC` were updated. For more information, see "Modifying MASTPROF SAMPEXEC (BKRBKUP)" on page 18.
- The instructions for modifying `WRKPROF SAMPEXEC` were updated. For more information, see "Modifying WRKPROF SAMPEXEC (BKRWRK01...BKRWRK04)" on page 20.
- The instructions to create the root catalog structures was updated to remove the use of the **SETUPCAT** command. For more information, see "Creating root catalog directory structures" on page 24.
- The instructions for modifying `BKRSYSTM CONFIG` were updated. For more information, see "Modifying the BKRSYSTM CONFIG file for interaction with Tape Manager" on page 28.
- The instructions for modifying the BKRWRK*nn* PROFILE EXEC were updated. For more information, see "Updating the BKRWRK*nn* PROFILE EXEC" on page 28
- New sample templates were added. For more information, see "Sample job templates" on page 49 and Appendix A, "Sample job template descriptions," on page 105.
- The SAMPFULL template was updated. For more information, see "Specifying configuration information" on page 51, "Minidisk selection (MINIDISK)" on page 52, "SFS selection (SFS)" on page 53, and "Specifying end of job processing" on page 54.
- Information for including or excluding BFS file spaces was added. For more information, see "Syntax to include and exclude BFS file spaces" on page 80.
- The DUMPDYN and DUMPBFS functions were added. For more information, see "DUMPDYN" on page 134 and "DUMPBFS" on page 136.
- The types of backups that are generated by DDRTAPE were updated. For more information, see Appendix G, "DDRTAPE output handler usage guidelines," on page 145.
- New messages were added. For more information, see Appendix I, "Messages and codes," on page 157.

Backup and Restore Manager components

Backup and Restore Manager uses a combination of service virtual machines to perform backup and restore processing.

Master backup service virtual machine
The master backup service virtual machine initiates the processing of backup jobs and restore requests by the worker service virtual machines and monitors them as they perform processing.

Catalog service virtual machine
The catalog service virtual machine contains the backup catalog, which represents the data that Backup and Restore Manager manages.

During backup processing, worker service virtual machines generate data called *catalog granules*, for inclusion in the backup catalog. The catalog server records the following information:

- Information for backup processes, such as:
  - Job-level data (such as the date, time, and owner)
  - Data source information

  - Media-level data (such as the tape volser and the location on the media)
- Data for "chained media" (backups that span multiple tapes)

Worker service virtual machines

One or more worker service virtual machines process backup jobs and restore requests. The worker service virtual machines interface directly with tape and minidisk resources and are logged on to the system only during processing. After the worker service virtual machines finish processing their work, they log out of the system (no console sessions are active). Worker service virtual machines are also known as *worker task* service virtual machines.

Note: At the minimum, Backup and Restore Manager requires the following service virtual machines:

- One master backup service virtual machine
- One catalog service virtual machine
- One or more worker service virtual machines

Clients

A *client* is a virtual machine typically, a CMS user. Clients initiate requests through the master backup service virtual machine. Multiple clients can share access to a single master backup service virtual machine.

Job templates

Backup and Restore Manager provides sample job templates that facilitate the creation of backup jobs for various types of backup operations. With templates, you define the type of processing that you want Backup and Restore Manager to perform and the objects that you want Backup and Restore Manager to include or exclude from backup operations.

Full-panel catalog browser interface

Backup and Restore Manager provides a full-panel catalog browser interface from which users can easily locate and restore their own data. By default, Backup and Restore Manager administrators can view all of the entries in the catalog. Users are restricted to viewing their own entries in the catalog unless granted the appropriate privileges by an administrator. For more information, see the *IBM Backup and Restore Manager for z/VM User's Guide (SC18-9523)*.

Command-line interface

Privileged users can issue operator commands to start or stop processing, obtain server status, review and submit jobs, and expire backup catalog content. For more information, see Chapter 7, "Service virtual machine commands," on page 85.

Tape management system interface

Backup and Restore Manager provides basic tape management functions that are implemented by exit routines. The exit routines are customized for each supported tape management system, such as IBM Tape Manager for z/VM.

For information about integrating Tape Manager with Backup and Restore Manager, see "Configuring Backup and Restore Manager to work with Tape Manager for z/VM" on page 26. For information about exit routines, see Appendix D, "Tape management interface exits," on page 127.

Note: If your installation requires Automated Tape Library (ATL) support, use a tape management system such as Tape Manager, with Backup and Restore Manager. For more information about Tape Manager, see the *Tape Manager for z/VM Installation and Administration Guide* at: http://www.ibm.com/software/products/en/tape-manager-for-zvm

Backup and restore processing

Backup and Restore Manager processes backup jobs and restore requests using a combination of service virtual machines.

Backup processing

Figure 1 shows three backup jobs where an SFS file, a raw CKD DASD extent, and an EDF minidisk are backed up to tape.

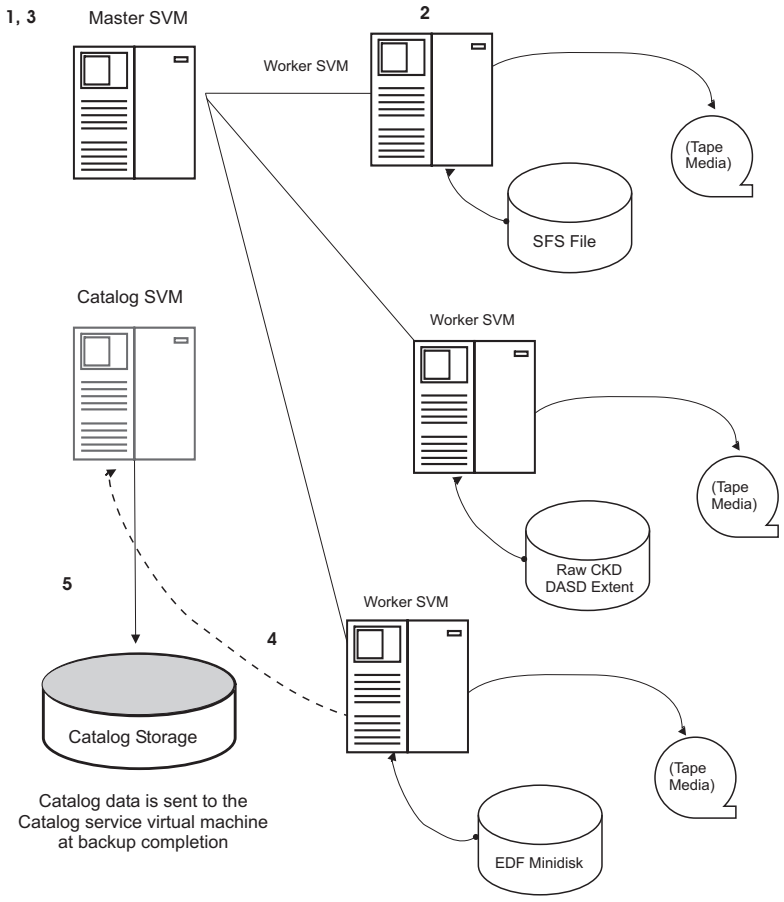


Figure 1. Backup processing (three backup jobs backing up objects to tape)

The following actions occur during backup processing:

1. The master backup service virtual machine initiates backup job processing, including performing include and exclude processing and assigning tasks to workers.
2. Worker service virtual machines perform backup job processing.
3. The master backup service virtual machine monitors worker service virtual machine processing.

4. When a worker service virtual machine completes backup job processing, it generates data (catalog granules) that are sent to the catalog service virtual machine.
5. The catalog service virtual machine records the data such as the job name and instance, job owner, date and time of job instantiation, for inclusion in the catalog.

Restore processing

Figure 2 shows how Backup and Restore Manager processes restore requests.

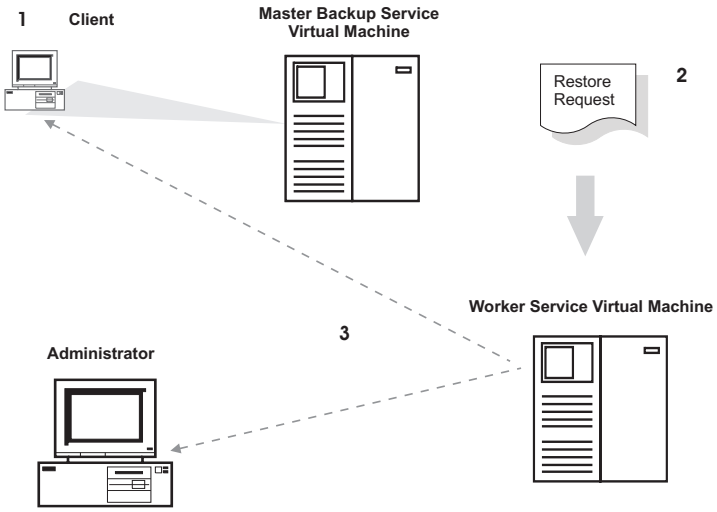


Figure 2. Restore processing

The following actions occur during restore processing:

1. A client (a CMS user) initiates a restore request through the master backup service virtual machine using the **RESTORE** command.
2. The master backup service virtual machine validates the request. If the request is accepted, a restore job is built and a worker service virtual machine is dispatched.
3. The worker service virtual machine manages the restore operation and informs both the administrator and the client of the final result.

Prerequisites

Ensure that you have the following minimum hardware and software requirements in place before you install and configure Backup and Restore Manager for z/VM.

Hardware requirements

Backup and Restore Manager runs on hardware that supports z/VM and works with any VM supported DASD, tapes, and virtual tapes.

Software requirements

Backup and Restore Manager has the following software requirements:

- One of the following z/VM versions:

  - z/VM V5.4
  - z/VM V6.2 or later
- Shared File System (included in z/VM) as the repository for the backup catalog
- One of the following IBM libraries:
  - IBM Library for REXX on zSeries V1.4
  - IBM Alternate Library for REXX on zSeries

Compatibility with prior versions

Backup and Restore Manager for z/VM V1.3 is upwardly compatible with Backup and Restore Manager for z/VM V1.2. All configuration files that were created with V1.2 continue to work with V1.3. All backup data that is created with V1.2 can be restored using V1.3.

Chapter 2. Configuring Backup and Restore Manager

These topics describe how to configure Backup and Restore Manager.

Note: The *Backup and Restore Manager for z/VM Program Directory (GI10-8662)* provides instructions for installing Backup and Restore Manager.

Configuration prerequisites

Before you configure Backup and Restore Manager, ensure that you have access to the sample system configuration files and the VM user accounts were created.

Sample system configuration files

Backup and Restore Manager provides sample system configuration files on the 2C2 minidisk or `SAMPLES` SFS directory that is associated with the product installation and maintenance user 5697J06C.

The sample files include the following files:

- Product configuration files `BKRSYSTM CONFIG` and `BKRUSERS NAMES`.
- Recommended PROFILE EXEC routines for service virtual machines.
- Sample backup job templates.
- System exit point routines (user exits).
- Processing exits.

VM user accounts

Before you configure Backup and Restore Manager, verify that the following VM user accounts were created according to the instructions in the *Backup and Restore Manager for z/VM Program Directory (GI10-8662)*.

- Backup and Restore Manager administrator (BKRADMIN).
- Master Backup and Restore Manager server (BKRBKUP).
- Master catalog server (BKRCATLG).
- One or more worker service virtual machines (BKRWRK*nn*). The default configuration is four worker service virtual machines.

Configuration steps

After you install Backup and Restore Manager as described in the *Backup and Restore Manager for z/VM Program Directory (GI10-8662)*, complete these steps to configure Backup and Restore Manager for your installation.

Note: The default installation process described in the *Backup and Restore Manager for z/VM Program Directory (GI10-8662)* provisions four worker service virtual machines: (BKRWRK01 - BKRWRK04).

Table 1. Summary of configuration steps

Step	Description	Sample files
1	Verify privileges for Backup and Restore Manager servers. For more information, see "Verifying privileges for the Backup and Restore Manager servers."	(Not applicable)
2	Allocate SFS resources for the backup catalog. For more information, see "Allocating SFS resources for the backup catalog" on page 12.	(Not applicable)
3	Copy and customize the sample PROFILE EXEC routines. For more information, see "Copying and customizing the sample PROFILE EXECs" on page 14.	`ADMPROF SAMPEXEC`, `CATPROF SAMPEXEC`, `MASTPROF SAMPEXEC`, and `WRKPROF SAMPEXEC`
4	Copy and customize the sample `BKRUSERS NAMES` file. For more information, see "Copying and customizing the BKRUSERS NAMES file" on page 22.	`BKRUSERS NAMESAMP`
5	Copy and customize the sample `BKRSYSTM CONFIG` file. For more information, see "Updating the BKRWRK*nn* PROFILE EXEC" on page 28	`BKRSYSTM CONFSAMP`
6	Create the root catalog directory structures. For more information, see "Creating root catalog directory structures" on page 24	(Not applicable)
7	Review and copy the sample backup job templates. For more information, see "Reviewing and copying sample backup job templates" on page 25.	`SAMPFULL`, `SAMPINCR`, `SFSBFS`, `SAMPLNX`, and `ZVM63L2`, `SAMPDDR`, `SAMPDR TEMPSAMP`
8	Customize the sample backup job templates for local use. For more information, see "Customizing sample backup job templates" on page 25.	(See step 7)
9	Start the service virtual machines and add them to system startup procedures. For more information, see "Starting the service virtual machines" on page 25.	(Not applicable)

Verifying privileges for the Backup and Restore Manager servers

Verify the privileges for the following Backup and Restore Manager servers.

1. BKRADMIN. For more information, see "Verifying privileges for the Backup and Restore Manager administrator (BKRADMIN)."
2. BKRBKUP. For more information, see "Verifying privileges for the master Backup and Restore Manager server (BKRBKUP)" on page 9.
3. BKRCATLG. For more information, see "Verifying privileges for the master catalog server (BKRCATLG)" on page 10.
4. BKRWRK*nn*. For more information, see "Verifying privileges for worker service virtual machines (BKRWRK*nn*)" on page 11.

Verifying privileges for the Backup and Restore Manager administrator (BKRADMIN)

The Backup and Restore Manager administrator account is used by the system programmer or system administrator to configure the product. It can also be used (with other authorized users) to create and submit backup jobs and submit restore requests.

Table 2 shows the privileges that are required for BKRADMIN:

Table 2. Privileges that are required for BKRADMIN

Privilege	Purpose
CP privilege class B	CP privilege class B allows use of the CP **MSGNOH** command and the VM User Directory Query (VMUDQ) interface, which allows BKRADMIN to invoke MAKEJOB and GETMDSK for diagnostic purposes.
CP privilege class G	CP privilege class G is required for general user commands.
OPTION LNKNOPAS	To allow BKRADMIN to link to all disks on the system without specific authorization, OPTION LNKNOPAS is required. This function is used during diagnostic execution of the **MAKEJOB** command. If an ESM is installed, such as RACF®, then equivalent authority, such as RACF OPERATIONS, is required instead of LNKNOPAS.
External security managers (ESMs)	The RACF OPERATIONS attribute is required if RACF is installed, or the equivalent authority is required for other installed ESMs.

The following privileges are recommended for BKRADMIN:

- Administrator privileges in Backup and Restore Manager. For more information, see "Copying and customizing the BKRUSERS NAMES file" on page 22.
- Administrator access to SFS file pools.

  To enable ADMIN authority, add entries to the *serverid* DMSPARMS file. Where *serverid* is the user ID of the file pool server service virtual machine. For example:

  ```
  ADMIN BKRADMIN
  ```

  Note: The DMSPARMS file is on the SFS file pool server service virtual machine 191 minidisk. To modify the DMSPARMS file, you must shut down and restart file pool. Plan the interruption at a time when it is appropriate to shut down the file pool.

  For information about the syntax and structure of the DMSPARMS file, see *CMS File Pool Planning, Administration, and Operation (SC24-6167)*.

Verifying privileges for the master Backup and Restore Manager server (BKRBKUP)

The master Backup and Restore Manager server owns the runtime code, the backup job template definitions, and the configuration files. As an administrator, you submit backup jobs and restore requests to the Backup and Restore Manager server.

Table 3 shows the privileges that are required for BKRBKUP:

Table 3. Privileges that are required for BKRBKUP

Privilege	Purpose
CP privilege class A	Privilege class A enables use of the **CANCEL** command. For more information, see "CANCEL" on page 90. The CP **FORCE** command requires CP privilege class A. BKRBKUP uses CP **FORCE** to terminate worker service virtual machines (BKRWR*nn*) when processing **CANCEL** commands.
CP privilege class B	Privilege class B enables use of the CP **MSGNOH** command.

Table 3. Privileges that are required for BKRBKUP (continued)

Privilege	Purpose
CP privilege class D	Privilege class D enables use of the **PURGE** command.
CP privilege class G	CP privilege class G is required for general user commands.
OPTION LNKNOPAS in the CP directory.	Because BKRBKUP inspects minidisks during job template processing, OPTION LNKNOPAS or equivalent external security managers (ESMs) authorization is required for the **SUBMIT**, **REVIEW**, and **RESTART** commands.
POSIXINFO UID 0 GNAME system	All Backup and Restore Manager service virtual machines require POSIXINFO UID 0 GNAME system in their CP directory entries to help ensure POSIX root-equivalent privileges for backup, restore, and other interaction with BFS file spaces.
External security managers (ESMs)	The RACF OPERATIONS attribute is required if RACF is installed, or the equivalent authority is required for other installed ESMs.

Administrator access to SFS file pools is recommended as described in "Verifying privileges for the Backup and Restore Manager administrator (BKRADMIN)" on page 8.

Verifying privileges for the master catalog server (BKRCATLG)

The master catalog server contains the backup catalog that represents the data that Backup and Restore Manager manages. Worker service virtual machines send catalog content to the catalog service virtual machine during backup activity and reference catalog content during incremental backups.

Table 4 shows the privileges that are required for BKRCATLG:

Table 4. Privileges that are required for BKRCATLG

Privilege	Purpose
CP privilege class B in the CP directory	Privilege class B enables use of the CP **MSGNOH** command.
CP privilege class E in the CP directory	BKRCATLG requires CP privilege class E to determine z/VM SSI status through CP DIAG 2CC.
CP privilege class G in the CP directory	Privilege class G enables use of the use of the CP **FORCE** command.
OPTION LNKNOPAS or RACF OPERATIONS or equivalent third-party ESM authorization.	To delete backup files from the media during **EXPIRE** command processing, BKRCATLG must be able to obtain a WR-mode LINK to DISKPOOL members. **Note:** The OPTION LNKNOPAS or RACF OPERATIONS requirement is waived for sites that do not back up to minidisk. Sites that only back up to tape or SFS are not affected.
POSIXINFO UID 0 GNAME system	All Backup and Restore Manager service virtual machines require POSIXINFO UID 0 GNAME system in their CP directory entries to help ensure POSIX root-equivalent privileges for backup, restore, and other interaction with BFS file spaces.

Table 4. Privileges that are required for BKRCATLG (continued)

Privilege	Purpose
SFS ADMIN authorization	BKRCATLG requires SFS ADMIN authority to the catalog file pool to perform the following actions: • Check the occupancy of storage group 1 of the SFS file pool that contains the backup catalog file space. The check provides early detection of problem scenarios where storage group 1 might run out of space. • Delete backup files from the media during EXPIRE processing. BKRCATLG requires SFS ADMIN privileges for SFS file pools that are used in DISKPOOL statements.

Administrator access to SFS file pools is recommended as described in "Verifying privileges for the Backup and Restore Manager administrator (BKRADMIN)" on page 8.

Verifying privileges for worker service virtual machines (BKRWRK*nn*)

Backup and Restore Manager uses worker virtual machines to perform tasks that involve direct interaction with your data. During backup operations, worker service virtual machines issue data dump functions to copy data to tape or disk and generate backup catalog content. During restore operations, worker service virtual machines retrieve data from tape or disk and place recovered objects, as designated, in the target location.

Implement worker service virtual machines based on the following considerations:

- The number of concurrently active backup processes that you want.
- The number of available tape drives. Each worker service virtual machine requires use of one tape drive to perform tape-based backup. If you use "twin set" tapes, each worker requires two tape drives.
- The available I/O bandwidth between the processor, source data, and backup storage destination.

Note: You must configure at least one worker service virtual machine.

The following privileges are required for worker service virtual machines:

Table 5. Privileges that are required for BKRWRKnn

Privilege	Purpose
CP privilege class A and OPTION DEVMAINT	If `SELECT RDEVVOL` or `SELECT RDEVICE` statements are used in backup job templates, worker task service virtual machines (BKRWRK*nn*) require CP privilege class A and OPTION DEVMAINT attributes in the `CP` directory, or equivalent external security manager (ESM) authorization. When these statements are used, worker task service virtual machines must be able to use the CP **`DEFINE MDISK`** command.
CP privilege class B	CP privilege class B allows use of the CP **`MSGNOH`** command and the VM User Directory Query (VMUDQ) interface.
CP privilege class G	CP privilege class G is required for general user commands.
OPTION LNKNOPAS in the `CP` directory.	If an ESM such as RACF is installed, then equivalent authority, such as RACF OPERATIONS, is required instead of LNKNOPAS.

Table 5. Privileges that are required for BKRWRKnn (continued)

Privilege	Purpose
ADMIN authority for SFS resources that are managed, or used, by Backup and Restore Manager	All worker service virtual machines require ADMIN authority for SFS resources that are managed, or used, by Backup and Restore Manager, including the following file pools: • SFS file pools that are to be backed up using Backup and Restore Manager • SFS file pools to which data is restored using Backup and Restore Manager • The SFS file pool that is configured to contain the backup catalog file space See "Verifying privileges for the Backup and Restore Manager administrator (BKRADMIN)" on page 8 for information about providing administrator access to SFS file pools.
POSIXINFO UID 0 GNAME system	To perform BFS backup and restore operations, all worker service virtual machines require POSIXINFO UID 0 GNAME system.
External security managers (ESMs)	The RACF OPERATIONS attribute is required if RACF is installed, or the equivalent authority is required for other installed ESMs.
OPTION DEVINFO in CP directory entries	If your system directory includes minidisks that are defined by the DEVNO form of the MDISK statement, or minidisks that use &SYSRES to indicate the current system residence volume, Backup and Restore Manager attempts to use CP DIAG E0 to extract additional real DASD volume information about the minidisks during the backup process. Worker service virtual machines require OPTION DEVINFO in their CP directory entries to use this facility.

Note: Worker service virtual machines attempt to link target minidisks in STABLE mode if you enable this behavior by specifying OPTION LNKSTABL in the worker service virtual machine directory entry. Specifying OPTION LNKSTABL is not a requirement for worker service virtual machines.

For more information, see "Worker service virtual machines" on page 39.

Allocating SFS resources for the backup catalog

The backup catalog contains a record of each minidisk, DASD volume, SFS file space, or BFS file space that is backed up. Catalog entries are generated for each instance of a backup job. Ensure that the catalog file space is large enough to contain all of the data that is generated for each minidisk, DASD volume, and file space that is captured by a backup job, and each instance of every cataloged backup job.

Complete these steps when you allocate SFS resources for the backup catalog:

1. Determine your backup catalog storage requirements. For more information, see "Determining backup catalog storage requirements" on page 13.
2. Define the backup catalog file pool and file space. For more information, see "Defining the backup catalog file pool and file space" on page 14.

   For z/VM 5.4, two SFS file pools (VMSYS: and VMSYSU:) are preinstalled as part of the z/VM system. For z/VM 6.2 and later, a third file pool, VMCOMSRV:, is also preinstalled. Do not use these file pools to contain the backup catalog file

space. The default DASD space allocation for these file pools is insufficient to allow significant use by Backup and Restore Manager. If you must use one of the preinstalled file pools, allocate more DASD space to Storage Group 1 (SFS catalog space) and Storage Group 2 (data storage) according to the instructions in *CMS File Pool Planning, Administration, and Operation (SC24-6167)*.

The default configuration files and sample backup job templates that are shipped with Backup and Restore Manager assume that a separate SFS file pool, `BKRSFS:`, is provisioned for use by Backup and Restore Manager. If you choose to use a different file pool name for Backup and Restore Manager, you must review and update sample configuration files to change the supplied default file pool name of BKRSFS.

If you implement a separate SFS file pool for the backup catalog file space, you can more easily address issues that relate to backup catalog management. For example:

- When the backup catalog is isolated in a unique, dedicated file pool, disaster recovery planning is simplified.
- DASD management tasks, such as adding more storage capacity to the backup catalog file pool can be addressed without disruption of service to other clients of the file pool.
- If the backup catalog accumulates sufficient content to exhaust the DASD storage capacity of the file pool, a dedicated file pool avoids disruption of service to other users.

Determining backup catalog storage requirements

Catalog storage requirements vary depending on the number of users, number of minidisks, file spaces and files, catalog retention policies, and whether the catalog contents are compressed.

The amount of SFS storage that is required to contain the backup catalog varies according to the number of the following items:

- Minidisks, DASD volumes, or file spaces that are recorded in the catalog
- Files that are contained on each CMS-format minidisk
- Contents of each SFS or BFS file space

By compressing the catalog data, the amount of SFS storage that is required to contain the backup catalog can be reduced. For more information about compressing catalog data, see the `BKRSYSTM CONFIG` **`BKR_Catalog_Compression_Enabled`** parameter description in "Backup catalog parameters" on page 152.

If compression is not enabled, use the following formula to estimate the amount of space that is required for the catalog file pool:

```
    A minimum of one 4K block for each minidisk and file space
  + one  4K block per every 7.7 files and directories cataloged
  * The number of unique jobs and instances maintained in the catalog
```

For example, the `MAINT 19D` minidisk requires approximately 2,200 SFS data blocks to record catalog data for approximately 17,000 files on the CMS-format minidisk. The CMS system disk `MAINT 190` that has approximately 700 files, requires approximately 95 SFS data blocks.

Each DASD image backup, regardless of the size of the source minidisk or DASD volume, requires one 4K catalog data block.

For small or medium size installations, a minimum of 3,000 cylinders (540,000 4K DASD blocks) is a reasonable starting allocation for the backup catalog file space. Installations that have many minidisks, files, and SFS resources to manage require correspondingly greater amounts of catalog storage.

Defining the backup catalog file pool and file space

If you choose a dedicated SFS file pool for Backup and Restore Manager, the name of the file pool can be a name of your choosing, subject to the guidelines that are described in *CMS File Pool Planning, Administration, and Operation*. Set the name of the catalog file space to the user name of the backup catalog service virtual machine (BKRCATLG) as shown in the examples in this guide.

Remember: BKRADMIN, BKRBKUP, BKRCATLG, BKRWRK*nn* and any other user IDs that will be used as Backup and Restore Manager administrators, require ADMIN access to the SFS file pool.

Whether you use z/VM `VMSYS`, `VMSYSU`, or `BKRSFS` (the recommended default) as the file pool or create your own, you must define the file pool and file space names to Backup and Restore Manager in the `BKRSYSTM CONFIG` file, using the following parameters:

`CatalogPool=`*`poolname`*

`CatalogSpace=`*`filespace`*

For more information, see "Backup catalog parameters" on page 152.

For more information about configuration, resource allocation, and management for SFS services, see *CMS File Pool Planning, Administration, and Operation (SC24-6167)*.

Copying and customizing the sample PROFILE EXECs

Backup and Restore Manager provides sample PROFILE EXEC routines for the administrator, master, catalog, and worker service virtual machines. During the installation process, these files must be placed on the appropriate service virtual machine 191 minidisks.

Copy the sample PROFILE EXEC routines to the appropriate targets and then customize each EXEC as described in the following sections.

- For minidisk-based installation, copy files from: `5697J06C 2C2` to the appropriate target minidisk.
- For SFS-based installation, copy files from: `VMSYS:5697J06C.BKUPMGR.SAMPLES` to the individual service virtual machine 191 or to the SFS directory.

  Note: Table 6 shows the default addresses and directories. If you created a local override to the installation specifications, modify these targets.

Table 6. Sample PROFILE EXECs and targets

Sample PROFILE EXEC	Description	Target minidisk	Target SFS directory
`ADMPROF SAMPEXEC`	The profile for the Backup and Restore Manager administrator (BKRADMIN).	BKRADMIN 191	`BKRSFS:BKRADMIN.`

Table 6. Sample PROFILE EXECs and targets (continued)

Sample PROFILE EXEC	Description	Target minidisk	Target SFS directory
CATPROF SAMPEXEC	The profile for the backup catalog service virtual machine (BKRCATLG).	BKRCATLG 191	BKRSFS:BKRCATLG.
MASTPROF SAMPEXEC	The profile for the master backup service virtual machine (BKRBKUP).	BKRBKUP 191	BKRSFS:BKRBKUP.
WRKPROF SAMPEXEC	The profile for the worker service virtual machines (BKRWRK*nn*).	BKRWRK*nn* 191	BKRSFS:BKRWRK01. - BKRSFS:BKRWRK04.

Note: The following PROFILE EXEC statements might require modification to accommodate your environment:

– CP SPOOL CONSOLE statements that direct console logs to the local Backup and Restore Manager administrator account.

– **ACCESS** commands that reflect local product installation SFS directories, or minidisks.

Modifying ADMPROF SAMPEXEC (BKRADMIN)

Complete the following steps to modify the sample PROFILE EXEC for BKRADMIN.

1. Copy the ADMPROF SAMPEXEC PROFILE EXEC to the BKRADMIN 191 minidisk or root file space using the product installation user 5697J06C:
   a. Log on to the product installation ID 5697J06C.
   b. Link and access the BKRADMIN 191 minidisk as filemode Z:
      ```
      LINK BKRADMIN 191 291 MR
      ACCESS 291 Z
      ```
   c. Access the SAMPLES minidisk as filemode E:
      ```
      ACCESS 2C2 E
      ```
   d. Copy the sample profile:
      ```
      COPY ADMPROF SAMPEXEC E PROFILE EXEC Z
      ```
2. Edit the BKRADMIN PROFILE EXEC:
   ```
   XEDIT PROFILE EXEC Z
   ```
3. Complete the following steps to modify the PROFILE EXEC:
   a. If you select the following product defaults, you do not need to modify the sample PROFILE EXEC and you can proceed to step 4.
      - Backup and Restore Manager is installed on minidisk
      - BKRADMIN is the user ID that will receive service machine consoles
      - BKRSFS is the name of the SFS file pool for the Backup and Restore Manager catalog
      - The z/VM ACCESSM0 MODULE is installed on MAINT 193 disk
      - Tape Manager for z/VM is not installed
   b. If you do not use the recommended default (BKRADMIN), modify SPOOL CONSOLE to direct the console to the local Backup and Restore Manager administrator.
   c. Review the following sections, as appropriate:

- If the product is installed to minidisk, review the MINIDISK-based installations definitions. By default, the definitions are configured for minidisk-based installations.
- If the product is installed to SFS, update the PROFILE EXEC to reflect SFS-based installations definitions. See the comments in the sample PROFILE EXEC for details.

d. Each Backup and Restore Manager service virtual machine requires a temporary work area at file mode D.
   - Allocate this space on minidisk or SFS. For BKRADMIN, ensure that the work area is large enough to contain copies of all backup job templates with fully expanded INCLUDE and EXCLUDE results. Space equivalent to 25 cylinders of 3390 DASD is sufficient for most installations.
   - Update the PROFILE EXEC for BKRADMIN to reflect the location of this work area. By default, a directory in the SFS file pool `BKRSFS:` is used.

   Notes:
   - If you use the default PROFILE EXECs, do not include a `CREATE DIRECTORY` statement to create the work area. The default profiles create the work area directory automatically.
   - If you installed Backup and Restore Manager in SFS, you must define the work area using the CMS **`CREATE DIRECTORY`** command. Refer to the SFS-based definition section of the sample PROFILE EXEC for details on the default work area location.
   - In the minidisk-based definition, if you define the work area as the 299 minidisk, it can be allocated as permanent minidisk, temporary T-disk space, or on temporary VFB-512 DASD.

e. If you use Tape Manager for z/VM to provide tape management services, remove the following comments from the definition for Tape Manager interface tools:

```
/* If IBM Tape Manager for z/VM is in use, then the Tape Manager
   client interface (TAPCMD MODULE) and any required configuration
   files must also be available.  If these are not installed on
   the CMS system "Y" disk (normally MAINT 19E), then configure
   this section:                                              */

/* Substitute the minidisk address or SFS directory path for */
/* Tape Manager, and un-comment the next two lines:          */
/* Tape_Manager = '410' */
/* 'ACCESS' Tape_Manager 'T/T' */
```

f. All Backup and Restore Manager service virtual machines require use of the CMS component ACCESSM0 MODULE. This component is typically installed on `MAINT 193`. If ACCESSM0 MODULE is installed in a different location, modify the following CP LINK and ACCESS statements in the `BKRADMIN` PROFILE EXEC appropriately:

```
'CP LINK MAINT 193 993 RR'  /* Home of ACCESSM0 MODULE */
'ACCESS 993 U'              /* Pick up ACCESSM0 now.   */
```

g. When you are finished with the modifications, save the modified PROFILE EXEC on the BKRADMIN 191 minidisk.

4. Release and detach the BKRADMIN 191 minidisk:

```
REL 291 (DET
```

Modifying CATPROF SAMPEXEC (BKRCATLG)

Complete the following steps to modify the sample PROFILE EXEC for BKRCATLG.

1. Copy the CATPROF SAMPEXEC PROFILE EXEC to the BKRCATLG 191 minidisk or root file space using the product installation user 5697J06C:
   a. Log on to the product installation ID 5697J06C.
   b. Link and access the BKRCATLG 191 minidisk as filemode Z:

      ```
      LINK BKRCATLG 191 291 MR
      ACCESS 291 Z
      ```

   c. Access the SAMPLES minidisk as filemode E:

      ```
      ACCESS 2C2 E
      ```

   d. Copy the sample profile:

      ```
      COPY CATPROF SAMPEXEC E PROFILE EXEC Z
      ```

2. Edit the BKRCATLG PROFILE EXEC:

   ```
   XEDIT PROFILE EXEC Z
   ```

3. Complete the following steps to modify the PROFILE EXEC:
   a. If you selected the following product defaults, you do not need to modify the sample PROFILE EXEC and you can proceed to step 4.
      - Backup and Restore Manager is installed on minidisk
      - BKRADMIN is the user ID that will receive service machine consoles
      - BKRSFS is the name of the SFS file pool for the Backup and Restore Manager catalog
      - The z/VM ACCESSM0 MODULE is installed on MAINT 193 disk
      - Tape Manager for z/VM is not installed

   b. If the recommended default, BKRADMIN, is not used, modify SPOOL CONSOLE to direct the console to the local Backup and Restore Manager administrator.
   c. Review the following sections, as appropriate:
      - If the product is installed to minidisk, review the MINIDISK-based installations definitions. By default, the definitions are configured for minidisk-based installations.
      - If the product is installed to SFS, update the PROFILE EXEC to reflect SFS-based installations definitions. See the comments in the sample PROFILE EXEC for details.

   d. Each Backup and Restore Manager service virtual machine requires a temporary work area at file mode D.
      - Allocate this space on minidisk or SFS. For BKRCATLG, ensure that the work area is large enough to contain the catalog data that is currently being processed for addition to the backup catalog file space. Space equivalent to 50 cylinders of 3390 DASD is sufficient for most installations.
      - Update the PROFILE EXEC for BKRCATLG to reflect the location of this work area. By default, a directory in the SFS file pool BKRSFS: is used.

      Note:
      - If you use the default PROFILE EXECs, do not include a CREATE DIRECTORY statement to create the work area. The default profiles create the work area directory automatically.
      - If you installed Backup and Restore Manager in SFS, you must define the work area using the CMS **CREATE DIRECTORY** command. Refer to the SFS-based definition section of the sample PROFILE EXEC for details on the default work area location.

- In the minidisk-based definition, if you define the work area as the 299 minidisk, it can be allocated as permanent minidisk, temporary T-disk space, or on temporary VFB-512 DASD.

e. If you use Tape Manager for z/VM to provide tape management services, remove the following comments from the definition for Tape Manager interface tools:

```
/* If IBM Tape Manager for z/VM is in use, then the Tape Manager
   client interface (TAPCMD MODULE) and any required configuration
   files must also be available.  If these are not installed on
   the CMS system "Y" disk (normally MAINT 19E), then configure
   this section:                                                */

/* Substitute the minidisk address or SFS directory path for */
/* Tape Manager, and un-comment the next two lines:          */
/* Tape_Manager = '410' */
/* 'ACCESS' Tape_Manager 'T/T' */
```

Note: When interacting with Tape Manager for z/VM, give BKRCATLG sufficient privileges to allow use of **TAPCMD TAPEMOD** or **TAPCMD RMM MSG CV** commands for volumes that are used by Backup and Restore Manager. BKRCATLG uses the commands to synchronize tape volume expiration dates between the tape catalog and backup catalog. BKRCATLG issues these commands when a **SET EXPIRE** *jobname instance days* command is processed, or when an **EXPIRE (PURGE** command removes an expired instance from the backup catalog.

f. All Backup and Restore Manager service virtual machines require use of the CMS component ACCESSM0 MODULE. ACCESSM0 MODULE is typically installed on `MAINT 193`. If ACCESSM0 MODULE is installed in a different location, modify the following CP LINK and ACCESS statements in the BKRADMIN PROFILE EXEC appropriately:

```
'CP LINK MAINT 193 993 RR'  /* Home of ACCESSM0 MODULE */
'ACCESS 993 U'              /* Pick up ACCESSM0 now.   */
```

g. Provide a temporary work area at filemode D. Ensure that the work area is large enough to contain the catalog data that is currently being processed for additions to the backup catalog.

Note: The recommended default temporary work area for BKRCATLG is an SFS directory (`.WORKAREA`) that is allocated in the same SFS file pool and file space as the backup catalog file space. Using the supplied default configuration files, the temporary work area is `BKRSFS:BKRCATLG.WORKAREA`.

4. Release and detach the BKRCATLG 191 minidisk:

```
REL 291 (DET
```

Modifying MASTPROF SAMPEXEC (BKRBKUP)

Complete the following steps to modify the sample PROFILE EXEC for BKRBKUP.

1. Copy the `MASTPROF SAMPEXEC` PROFILE EXEC to the BKRBKUP 191 minidisk or root file space using product installation user 5697J06C:
   a. Log on to the product installation ID 5697J06C.
   b. Link and access the BKRBKUP 191 minidisk as filemode Z:

```
LINK BKRBKUP 191 291 MR

ACCESS 291 Z
```

   c. Access the SAMPLES minidisk as filemode E:

```
ACCESS 2C2 E
```

d. Copy the sample profile:

```
COPY MASTPROF SAMPEXEC E PROFILE = Z
```

2. Edit the BKRBKUP PROFILE EXEC:

```
XEDIT PROFILE EXEC Z
```

3. Complete the following steps to modify the PROFILE EXEC:

a. If you selected the following product defaults, you do not need to modify the sample PROFILE EXEC and you can proceed to step 4.
   - Backup and Restore Manager is installed on minidisk
   - BKRADMIN is the user ID that will receive service machine consoles
   - BKRSFS is the name of the SFS file pool for the Backup and Restore Manager catalog
   - The z/VM ACCESSM0 MODULE is installed on MAINT 193 disk
   - Tape Manager for z/VM is not installed

b. If the recommended default, BKRADMIN, is not used, modify SPOOL CONSOLE to direct the console to the local Backup and Restore Manager administrator.

c. Review the following sections, as appropriate:
   - If the product is installed to minidisk, review the MINIDISK-based installations definitions. By default, the definitions are configured for minidisk-based installations.
   - If the product is installed to SFS, update the PROFILE EXEC to reflect SFS-based installations definitions. See the comments in the sample PROFILE EXEC for details.

d. Each Backup and Restore Manager service virtual machine requires a temporary work area at file mode D.
   - Allocate this space on minidisk or SFS. For BKRBKUP, ensure that the work area is large enough to contain the temporary files that are generated during backup template processing and job submission. Space equivalent to 25 cylinders of 3390 DASD is sufficient for most installations.
   - Update the PROFILE EXEC for BKRBKUP to reflect the location of this work area. By default, a directory in the SFS file pool BKRSFS: is used.

   Notes:
   - If you use the default PROFILE EXECs, do not include a CREATE DIRECTORY statement to create the work area. The default profiles create the work area directory automatically.
   - If you installed Backup and Restore Manager in SFS, you must define the work area using the CMS **CREATE DIRECTORY** command. Refer to the SFS-based definition section of the sample PROFILE EXEC for details on the default work area location.
   - In the minidisk-based definition, if you define the work area as the 299 minidisk, it can be allocated as permanent minidisk, temporary T-disk space, or on temporary VFB-512 DASD.

e. If you use Tape Manager for z/VM to provide tape management services, remove the following comments from the definition for Tape Manager interface tools:

```
/* If IBM Tape Manager for z/VM is in use, then the Tape Manager
   client interface (TAPCMD MODULE) and any required configuration
   files must also be available.  If these are not installed on
```

```
   the CMS system "Y" disk (normally MAINT 19E), then configure
   this section:                                              */

/* Substitute the minidisk address or SFS directory path for */
/* Tape Manager, and un-comment the next two lines:          */
/* Tape_Manager = '410' */
/* 'ACCESS' Tape_Manager 'T/T' */
```

f. All Backup and Restore Manager service virtual machines require use of the CMS component ACCESSM0 MODULE. The component is typically installed on MAINT 193. If ACCESSM0 MODULE is installed in a different location, modify the following CP LINK and ACCESS statements in the BKRADMIN PROFILE EXEC as needed:

```
'CP LINK MAINT 193 993 RR'  /* Home of ACCESSM0 MODULE */
'ACCESS 993 U'              /* Pick up ACCESSM0 now.   */
```

4. Release and detach the BKRBKUP 191 minidisk:

```
REL 291 (DET
```

Modifying WRKPROF SAMPEXEC (BKRWRK01...BKRWRK04)

Complete the following steps to modify the sample PROFILE EXEC for BKRWRK*nn*.

1. Copy the WRKPROF SAMPEXEC PROFILE EXEC to the BKRWRK01 191 minidisk or root file space using product installation user 5697J06C:
   a. Log on to the product installation ID 5697J06C.
   b. Link and access the BKRWRK01 191 minidisk as filemode Z:

      ```
      LINK BKRWRK01  191 291 MR
      ACCESS 291 Z
      ```

   c. Access the SAMPLES minidisk as filemode E:

      ```
      ACCESS 2C2 E
      ```

   d. Copy the sample profile:

      ```
      COPY WRKPROF SAMPEXEC E PROFILE = Z
      ```

2. Edit the BKRWRK01 PROFILE EXEC:

   ```
   XEDIT PROFILE EXEC Z
   ```

3. Complete the following steps to modify the PROFILE EXEC:
   a. If you selected the following product defaults, you do not need to modify the sample PROFILE EXEC and you can proceed to step 4.
      - Backup and Restore Manager is installed on minidisk
      - BKRADMIN is the user ID that will receive service machine consoles
      - BKRSFS is the name of the SFS file pool for the Backup and Restore Manager catalog
      - The z/VM ACCESSM0 MODULE is installed on MAINT 193 disk
      - Tape Manager for z/VM is not installed

   b. If the recommended default, BKRADMIN, is not used, modify SPOOL CONSOLE to direct the console to the local Backup and Restore Manager administrator.
   c. Review the following sections, as appropriate:
      - If the product is installed to minidisk, review the MINIDISK-based installations definitions. By default, the definitions are configured for minidisk-based installations.
      - If the product is installed to SFS, update the PROFILE EXEC to reflect SFS-based installations definitions. See the comments in the sample PROFILE EXEC for details.

d. Each Backup and Restore Manager service virtual machine requires a temporary work area at file mode D.
   - Allocate this space on minidisk or SFS. For BKRWRK*nn* service virtual machines, ensure that the work area is large enough to contain the temporary catalog data and other temporary files that are generated during backup or restore job processing. Space equivalent to 50 cylinders of 3390 DASD is sufficient for most installations. Installations that have many minidisks or file spaces, or that have CMS minidisks or file spaces with many files, might need to increase this allocation.
   - Update the PROFILE EXEC for BKRWRK*nn* to reflect the location of this work area. By default, a directory in the SFS file pool `BKRSFS:` is used.

   Notes:
   - If you use the default PROFILE EXECs, do not include a `CREATE DIRECTORY` statement to create the work area. The default profiles create the work area directory automatically.
   - If you installed Backup and Restore Manager in SFS, you must define the work area using the CMS **CREATE DIRECTORY** command. Refer to the SFS-based definition section of the sample PROFILE EXEC for details on the default work area location.
   - In the minidisk-based definition, if you define the work area as the 299 minidisk, it can be allocated as permanent minidisk, temporary T-disk space, or on temporary VFB-512 DASD.

e. If you use Tape Manager for z/VM to provide tape management services, remove the following comments from the definition for Tape Manager interface tools:

```
/* If IBM Tape Manager for z/VM is in use, then the Tape Manager
   client interface (TAPCMD MODULE) and any required configuration
   files must also be available.  If these are not installed on
   the CMS system "Y" disk (normally MAINT 19E), then configure
   this section:                                              */

/* Substitute the minidisk address or SFS directory path for */
/* Tape Manager, and un-comment the next two lines:          */
/* Tape_Manager = '410' */
/* 'ACCESS' Tape_Manager 'T/T' */
```

   Note: When interacting with Tape Manager for z/VM, BKRWRK*nn* service virtual machines attempt to specify an expiration date for each new scratch volume that is mounted through the EXPDAYS option of the **TAPCMD TAPEMNT** command. The expiration period is based on job template parameter **BKR_Job_Catalog_Retention**. If you do not specify a value for **BKR_Job_Catalog_Retention**, a default value of 30 days is used. When a backup job completes, BKRCATLG issues the appropriate commands to synchronize tape catalog volume expiration dates with the backup catalog retention period specified for the job through the **BKR_Job_Catalog_Retention** parameter.

f. All Backup and Restore Manager service virtual machines require use of the CMS component ACCESSM0 MODULE. ACCESSM0 MODULE is typically installed on `MAINT 193`. If ACCESSM0 MODULE is installed in a different location, modify the following CP LINK and ACCESS statements in the `BKRADMIN` PROFILE EXEC appropriately.

```
'CP LINK MAINT 193 993 RR'  /* Home of ACCESSM0 MODULE */
'ACCESS 993 U'              /* Pick up ACCESSM0 now.   */
```

4. Release and detach the BKRWRK01 191 minidisk:

```
REL 291 (DET
```

5. Repeat steps 1-4 for each worker service virtual machine (BKRWRK02-BKRWRK04) or copy the PROFILE EXEC from BKRWRK01 to the 191 disk of users BKRWRK02-BKRWRK04.

Copying and customizing the BKRUSERS NAMES file

The BKRUSERS NAMES file identifies master backup servers, workers, and users that have ADMIN privileges to Backup and Restore Manager.

Copy the sample BKRUSERS NAMES file (BKRUSERS NAMESAMP) from the SAMPLES minidisk or directory to the production configuration minidisk or directory, and modify it to suit your local configuration requirements. Customize the file using the installation user 5697J06C:

1. Link and access the system configuration disk as filemode Z:

   ```
   LINK BKRBKUP 198 198 MR
   ACCESS 198 Z
   ```

2. Access the SAMPLES minidisk as filemode E:

   ```
   ACCESS 2C2 E
   ```

3. Copy the sample BKRUSERS NAMES file:

   ```
   COPY BKRUSERS NAMESAMP E = NAMES Z
   ```

4. Edit the BKRUSERS NAMES file:

   ```
   XEDIT BKRUSERS NAMES Z
   ```

5. Review the defaults that are specified in the BKRUSERS NAMES file to confirm that the defaults will work on your system. If you choose to use the product defaults, you do not need to modify the sample BKRUSERS NAMES file. Otherwise, modify the following settings in the sample BKRUSERS NAMES file to suit your specific site requirements:

   MASTER
   The name of the master backup service virtual machine (BKRBKUP). Modify this setting if you want to specify a user name other than the default name of BKRBKUP for the master backup server. The specification consists of a 1 - 8 character alphanumeric string that identifies a unique master backup server.

   WORKERS
   The names of all of the worker service virtual machines. If you want to use different service virtual machine names, or if you want to deploy additional worker service virtual machines, modify this setting. Each specification consists of a 1 - 8 character alphanumeric string that identifies a worker service virtual machine.

   ADMIN
   The Backup and Restore Manager administrator account (BKRADMIN) and other local users to whom you want to grant administrative privileges. When you add or remove users with ADMIN privileges, modify this setting. Each specification consists of a 1 - 8 character alphanumeric string that identifies a unique user that has ADMIN privileges.

   Notes:

   - Copy the BKRUSERS NAMES file on the MAINT 19E (system Y disk) or other shared minidisk.

- Non-administrator privileged users require read-only access to the BKRUSERS NAMES file.
- Grant only the master backup server (BKRBKUP) MASTER authority.
- Grant only worker service virtual machines WORKERS authority.
- Identify additional users with ADMIN authority, subject to local site policy and needs.
- The BKRUSERS NAMES file is maintained in the standard CMS NAMES file format.

Copying and customizing the BKRSYSTM CONFIG file

The BKRSYSTM CONFIG file is a system-level configuration file that contains the global settings and site configuration information that is specific to Backup and Restore Manager.

Backup and Restore Manager validates the contents of the BKRSYSTM CONFIG file during service virtual machine startup. Backup and Restore Manager applies the following checks:

- For required settings, all required variables must be defined.
- Backup and Restore Manager checks settings for the correct data type (numeric, logical, device address, and character string) as appropriate.
- Backup and Restore Manager uses the following logic to evaluate logical variables:
  - TRUE can be specified as 1, Y, Yes, T, TRUE, ENABLE, or ENABLED.
  - FALSE can be specified as 0, N, No, F, FALSE, DISABLE, or DISABLED.

If a required value is undefined or Backup and Restore Manager encounters an unacceptable value, the service virtual machine startup process stops. Some conditions generate a warning message, followed by an attempt to continue processing.

Copy the sample BKRSYSTM CONFIG file (BKRSYSTM CONFSAMP) from the SAMPLES minidisk or directory to the production configuration minidisk or directory and modify it to suit your local configuration requirements. Customize the file using the installation user 5697J06C.

1. Link and access the system configuration disk as filemode Z:

   ```
   LINK BKRBKUP 198 198 MR
   ACCESS 198 Z
   ```

2. Access the SAMPLES minidisk as filemode E:

   ```
   ACCESS 2C2 E
   ```

3. Copy the sample BKRSYSTM CONFIG file:

   ```
   COPY BKRSYSTM CONFSAMP E = CONFIG Z
   ```

4. Edit the BKRSYSTM CONFIG file:

   ```
   XEDIT BKRSYSTM CONFIG  Z
   ```

5. To modify the sample configuration file, complete the following steps:
   a. To identify the local Backup and Restore Manager contact, specify a text string such as the name and email address of the installation-level contact for **Local_SVM_Contact**. For more information, see "Installation contact information" on page 147.

b. Specify the virtual machine names of the primary backup administrator, the master backup service virtual machine, and the backup catalog service virtual machine. For more information, see “Service virtual machine parameters” on page 147.

c. Specify the worker service virtual machine settings. For more information, see “Worker service virtual machine parameters” on page 147.

d. Specify the free storage for job template processing. For more information, see “Storage for job template processing parameters” on page 148.

e. Enable or disable the automatic formatting of unformatted CMS minidisks. For more information, see “CMS minidisk format parameters” on page 148.

f. Specify an alternate root file system for use during BFS backup and restore tasks, if needed.

   To perform backup and restore processing for BFS file spaces, Backup and Restore Manager service virtual machines must be able to create a mount point directory (`/mnt/BKRWRK`*nn*) in the root file space. If you do not want to use the default BFS root file space, you can specify an alternate root file space.

g. Specify tape management settings. If you do not plan to use Tape Manager with Backup and Restore Manager, set **`Tape_Handled_Via_EUM`** = 0 and leave **`EUM_Pool_Owner`** and **`EUM_Pool_Name`** undefined.

   If you plan to use Tape Manager with Backup and Restore Manager, “Installing and configuring Tape Manager” on page 27 provides instructions for modifying `BKRSYSTM CONFIG`.

h. Specify the backup catalog settings. For more information, see “Backup catalog parameters” on page 152.

i. Specify the reserved worker service virtual machine settings. For more information, see “Reserved worker service virtual machine parameters” on page 154.

Notes:

- Do not modify the settings that are listed after the end of the site configurable settings section.
- The `BKRSYSTM CONFIG` file must reside on a runtime-accessible minidisk or directory that is available to Backup and Restore Manager service virtual machines and users. Non-administrator privileged users require read-only access to the `BKRSYSTM CONFIG` file. Read/write access is not required. It is recommended that you place the file on MAINT 19E.
- To insert a comment in the file, start the record with an asterisk. Null records are allowed.

Creating root catalog directory structures

BKRCATLG creates required root directory structures in the SFS file pool during initial startup.

For each missing required directory, the following messages are displayed in the BKRCATLG console log. For example:

```
BKRCAT8891I DMSEXIST rc 8, reason 90230 validating "filepool:BKRCATLG.JOBCAT".

BKRCAT9252W Root catalog structure FILEPOOL:BKRCATLG.JOBCAT failed validation.

BKRCAT9252W Attempting to create required directory now...

BKRCAT9253I Successfully created new catalog root structure FILEPOOL:BKRCATLG.JOBCAT.
```

Figure 3. BKRCATLG console log messages (missing root directory structures)

Reviewing and copying sample backup job templates

Complete these steps to copy the sample backup job templates.

1. Review the sample backup job templates located on `5697J06C 2C2` or `VMSYS:5697J06C.BKUPMGR.SAMPLES` depending on your type of installation.

   For descriptions of the sample templates, see Appendix A, "Sample job template descriptions," on page 105.
2. Copy the sample templates to the production job template minidisk (`BKRBKUP 199`) or directory (`VMSYS:BKRBKUP.JOBDEFS`).

Customizing sample backup job templates

To create backup jobs, customize sample backup job templates.

Customize the sample backup job templates as described in "Using job templates to create backup jobs" on page 48.

Starting the service virtual machines

After you complete the initial configuration, start the master backup and catalog service virtual machines with the **XAUTOLOG** command.

Issue the command from a suitably privileged user using the following syntax:

```
CP AUTOLOG username
```

or

```
CP XAUTOLOG username
```

To enable automatic startup of the Backup and Restore Manager tasks after a system IPL, consider adding the SFS, master backup, and catalog service virtual machines to the AUTOLOG1 configuration.

Notes:

- Ensure that the backup catalog file space and other required SFS resources are initialized at system IPL time before you start BKRBKUP and BKRCATLG.
- In general, you do not need to pre-initialize worker task service virtual machines BKRWRK01-04 with **XAUTOLOG**. The master backup service virtual machine, BKRBKUP, automatically starts these processes using CP **XAUTOLOG**, as needed.
- To confirm that there are no errors during startup, consider starting the worker task service virtual machines once after the initial installation and configuration of the product.

Managing job template files

After Backup and Restore Manager is running, you can use the following procedure for managing job template files.

Note: The same process to manage job template files can be used to manage your DISKPOOL files. See "Requirements for disk devices" on page 41 for information.

1. From an authorized user ID, access the disk that contains the job template files using one of the following methods:
   - If the job templates files are on minidisk, link and access the `BKRBKUP 199` disk in read/write mode. For example:

     ```
     LINK BKRBKUP 199 199 MR
     ACC 199 H
     ```

   - If the job templates files are in SFS, access the directory. For example:

     ```
     ACC VMSYS:BKRBKUP.JOBDEFS H (FORCERW
     ```

2. Make your changes and save them to one or more of the job template files. All job template files have a file type of TEMPLATE.

Note: If your job templates files are on minidisk, BKRBKUP automatically checks and, if necessary, refreshes the ACCESS for both the configuration and templates minidisks (file modes B and E) when a command interrupt is processed.

Configuring Backup and Restore Manager to work with Tape Manager for z/VM

Backup and Restore Manager can take advantage of services provided by Tape Manager for z/VM.

To enable Backup and Restore Manager for use with Tape Manager, complete the following steps:

1. Install and configure Tape Manager. For Tape Manager installation and configuration information, see the *IBM Tape Manager for z/VM Program Directory (GI1-8660)* and the *Tape Manager for z/VM Installation and Administration Guide (SC18-9344)*.
2. Provision Tape Manager resources for Backup and Restore Manager.
3. Modify the Backup and Restore Manager `BKRSYSTM CONFIG` configuration file to use Tape Manager. `BKRSYSTM CONFIG` is located on the `BKRBKUP 198 minidisk` minidisk or the SFS directory `VMSYS:BKRBKUP.CONFIGURATION`
4. Update the BKRWRK*nn* PROFILE EXEC to access Tape Manager components.

When configured to take advantage of Tape Manager services, Backup and Restore Manager requests tape media services using standard Tape Manager facilities. Operator prompting for manual tape mounts is performed through Tape Manager instead of Backup and Restore Manager. Backup catalog expiration and pruning operations interact with Tape Manager to handle tape media expiration processing, including modification of media expiration dates in conjunction with the **SET EXPIRE** backup catalog server command. For more information, see "SET EXPIRE" on page 102.

Installing and configuring Tape Manager

See the *IBM Tape Manager for z/VM Program Directory (GI1-8660)* and the *IBM Tape Manager for z/VM Installation and Administration Guide (SC18-9344)* for information about installing and configuring Tape Manager for z/VM.

The guides can be found at: http://www.ibm.com/software/products/en/tape-manager-for-zvm

Provisioning Tape Manager resources

Before you enable Backup and Restore Manager for use with Tape Manager, you must allocate tape media, and create one or more tape pools within Tape Manager for exclusive use by Backup and Restore Manager.

See the *IBM Tape Manager for z/VM User's Guide and Reference (SC18-9349)* at: http://www.ibm.com/software/products/en/tape-manager-for-zvm for instructions on defining tape pools and adding tapes.

After you prepare resources within Tape Manager, you must grant privileges to the Backup and Restore Manager service virtual machines within Tape Manager. The following Backup and Restore Manager service virtual machines require the TAPE privilege for all Tape Manager tape pools that will be used by Backup and Restore Manager:

- Backup and Restore Manager administrator (BKRADMIN)
- Master backup service virtual machine (BKRBKUP)
- Backup catalog service virtual machine (BKRCATLG)
- Worker service virtual machines (BKRWRK*nn*)

The TAPE privilege allows Backup and Restore Manager service machines to request both scratch and specific volume tape mounts, and set or modify volume expiration dates.

For example, to give the default Backup and Restore Manager service machines the TAPE privilege in Tape Manager, use the following command:

TAPCMD POOLACC *poolowner poolname* **USER BKRADMIN BKRBKUP BKRCATLG BKRWRK01 BKRWRK02 BKRWRK03 BKRWRK04 TAPE**

Add more workers as needed. See the *IBM Tape Manager for z/VM User's Guide and Reference (SC18-9349)* at: http://www.ibm.com/software/products/en/tape-manager-for-zvm for information about the **POOLACC** command.

If RACF manages pool access, see the RACF **PERMIT** command for the appropriate FACILITY class profile. See *z/VM RACF Security Server Command Language Reference (SC24-6144-01)* for more information.

Note: Enabling or disabling Backup and Restore Manager to work with Tape Manager is most easily implemented during installation. Migration from stand-alone to interfacing with Tape Manager requires that you manually populate the designated Tape Manager resource pool with unexpired tape volumes that are currently active within the Backup and Restore Manager catalog if you perform the conversion after Backup and Restore Manager is in production use.

Modifying the BKRSYSTM CONFIG file for interaction with Tape Manager

To enable Backup and Restore Manager to work with Tape Manager, modify the following parameters in the BKRSYSTM CONFIG file.

1. Wait until active backup or restore operations are complete and then shut down all Backup and Restore Manager service virtual machines.
2. Modify the BKRSYSTM CONFIG file on the BKRBKUP 198 minidisk or in the VMSYS:BKRBKUP.CONFIGURATION directory:
   - Set **Tape_Handled_Via_EUM** to 1.
   - Choose from one of the following options:
     - If Tape Manager is configured in RMM mode, set **EUM_Pool_Name** and **EUM_Pool_Owner** to null.
     - Tape Manager is not configured in RMM mode set **EUM_Pool_Name** to the default tape pool from which to obtain all backup tapes for all jobs, and set **EUM_Pool_Owner** to the default owner of the tape pool from which to obtain all backup tapes for all jobs.

   For more information, see the corresponding instructions in the BKRSYSTM CONFIG file and "Tape Manager for z/VM parameters" on page 151.
3. Save the modified BKRSYSTM CONFIG file to the product configuration minidisk or directory.
4. Copy the modified BKRSYSTM CONFIG file to the runtime disk, such as MAINT 19E. For more information, see "Copying and customizing the BKRSYSTM CONFIG file" on page 23.

When Tape Manager is configured in RMM mode, review the value that is specified for **BKR_Global_Default_Tape_DSN** according to site requirements. The default setting is BKR.VM.BACKUP.DAT. The tape DSN specification can also be specified for individual backup jobs by setting **BKR_JOB_TAPE_DSN** in the job template file.

For more information, see Appendix A, "Sample job template descriptions," on page 105.

Updating the BKRWRK*nn* PROFILE EXEC

If the Tape Manager user components are not installed on the CMS system Y disk (MAINT 19E), you must update the PROFILE EXEC for all Backup and Restore Manager worker service virtual machines to allow access to Tape Manager user components.

If Tape Manager is operating in RMM mode, see "Tape Manager for z/VM parameters" on page 151 for more information.

- If Tape Manager is installed to minidisk, add the following statements to PROFILE EXEC for each worker task service virtual machine:

```
'CP LINK instuser 410 410 RR    '/* Tape Manager "User Code" */
'ACCESS 410 T                  '/* Access TM code as "T" */
```

  Note: Where *instuser* is the product installation user for Tape Manager.
- If Tape Manager is installed to SFS, add the following statement to PROFILE EXEC for each worker task service virtual machine:

```
'ACCESS filepool:instuser.TAPEMGR.PRODUSER T'  /* TM User Code */
```

After you apply the updates to the BKRSYSTM CONFIG file and worker service virtual machine PROFILE EXECs, restart the master backup (BKRBKUP) and catalog (BKRCATLG) service virtual machines.

Chapter 3. Administration

The following topics provide information about managing and monitoring Backup and Restore Manager servers and their processes.

Master Backup and Restore Manager server

The master Backup and Restore Manager server (BKRBKUP) owns backup job templates and configuration files. BKRBKUP processes backup administrator commands to create backup jobs from job templates, and processes restore requests from both backup administrators and users. BKRBKUP also monitors status of backup worker service virtual machines.

Backup administrators submit the backup jobs that are created from job templates. A backup administrator can be a CMS user or a service virtual machine component of an automated operations product such as Operations Manager for z/VM.

Starting the master Backup and Restore Manager server

After you provision BKRADMIN and after you install the MASTPROF EXEC on the master backup server (BKRBKUP) A disk or directory as PROFILE EXEC, start the master backup server.

Launch the master backup server using the CP **AUTOLOG** command `'CP AUTOLOG',` `'CP XAUTOLOG',` or, by direct login followed by `'CP DISCONN'`.

When properly installed, the console log is spooled to the user BKRADMIN.

For information about the **AUTOLOG** command, see the *z/VM CP Command and Utility Reference (SC24-6175)*.

Stopping the master Backup and Restore Manager server

To stop the master backup server, issue the **HALT** command.

For example, from a user ID with Backup and Restore Manager ADMIN privileges:

```
cp smsg BKRBKUP halt
```

For a description of the **HALT** command syntax, see "HALT" on page 86.

Displaying the status of the master Backup and Restore Manager server

To display the status of the master backup server, issue the **STATUS** command.

For example, from a user ID with Backup and Restore Manager ADMIN privileges:

```
cp smsg BKRBKUP status
```

Figure 4 on page 32 shows an example of the **STATUS** command that is issued to obtain runtime status for the master backup server (BKRBKUP).

```
smsg bkrbkup status
Ready;
SVM Name   : BKRBKUP - 5697-J06 IBM Backup and Restore Manager for z/VM - Master Backup SVM - Version 1.3.0
Compiled on: 5 Jan 2015 - 14:52:29
SVM Owner  : A User - a.user@address.com
SVM Started: Monday, 5 Jan 2015 14:19:34
Catalog SVM: BKRCATLG
Worker info as of 15:23:28:
    No workers have been activated yet.
```

Figure 4. Displaying the status of the master backup server

For a description of the **STATUS** command syntax, see "STATUS" on page 87.

Catalog server

Each instance of a backup job generates catalog entries for all of the minidisks, DASD volumes, and file spaces that are processed by the job. The catalog server (BKRCATLG) records the information in the backup catalog.

Stopping the catalog server

To stop the catalog server, issue the **HALT** command.

For example, from a user ID with Backup and Restore Manager ADMIN privileges:

```
cp smsg BKRCATLG halt
```

For a description of the **HALT** command syntax, see "HALT" on page 86.

Displaying the status of the catalog server

To display the status of the catalog server, issue the **STATUS** command.

For example, from a user ID with Backup and Restore Manager ADMIN privileges:

```
cp smsg bkrcatlg status
```

Figure 5 shows an example of the **STATUS** command that is issued to obtain runtime status for the catalog server (BKRCATLG).

```
smsg bkrcatlg status
Ready;
SVM Name    : BKRCATLG - 5697-J06 IBM Backup and Restore Manager for z/VM - Backup Catalog
SVM - Version 1.3.0
Compiled on : 5 Jan 2015 - 11:11:53
SVM Owner   : A. User - any.user@address.com
SVM Started : Monday, 27 Jan 2015 10:31:28
Backup SVM  : BKRBKUP
Catalog base: BKRSFS:BKRCATLG.
Userid       Storage Group     4K Block Limit    4K Blocks Committed     Threshold
BKRCATLG          2                179804             51781-28%             90%
```

Figure 5. Displaying the status of the catalog server

For a description of the **STATUS** command syntax, see "STATUS" on page 87.

Backup catalog

The backup catalog resides in SFS and is owned by the catalog server. The catalog entries contain information about the date and time of the backup, the owner of the minidisk, DASD volume, or file space, the files that are contained in CMS minidisks and SFS file spaces, and user data processing exit information. Worker service virtual machines send catalog content to the catalog server during backup activity and reference catalog content during incremental backups. As an administrator, you can access the catalog to gather data and to generate reports about backup processing.

The backup catalog resides in an SFS file space. To help ensure maximum integrity and simplify disaster recovery procedures, configure an SFS server that is dedicated as the backup catalog repository.

Note: A dedicated SFS server requires you to deploy an additional service virtual machine. For the instructions to set up an SFS file pool server, see *CMS File Pool Planning, Administration, and Operation (SC24-6167)*.

Terminology

The following terminology pertains to the backup catalog:

Job A unit of work that represents the packaging of a container for storage.

Container
An object that contains user data such as a ECKD or FBA DASD extent, CMS-format minidisk, or an SFS or BFS file space. A container holds zero or more files.

Note: A container might not contain files because some containers, such as SFS directories, can be empty.

File A discrete unit of data such as a CMS file on a minidisk or an SFS file space, or a collection of raw CKD track images.

Backup hierarchy

Backup and Restore Manager retains multiple instances of backups so that you have a history of the objects that were backed up and when they were backed up, which can be useful to identify a time frame from which to restore data or when a particular problem occurred.

The multiple instances of backups that are retained comprise a *backup hierarchy* that Backup and Restore Manager stores in the backup catalog. The hierarchy illustrates the relationship between backup instances as shown in Figure 6 on page 34.

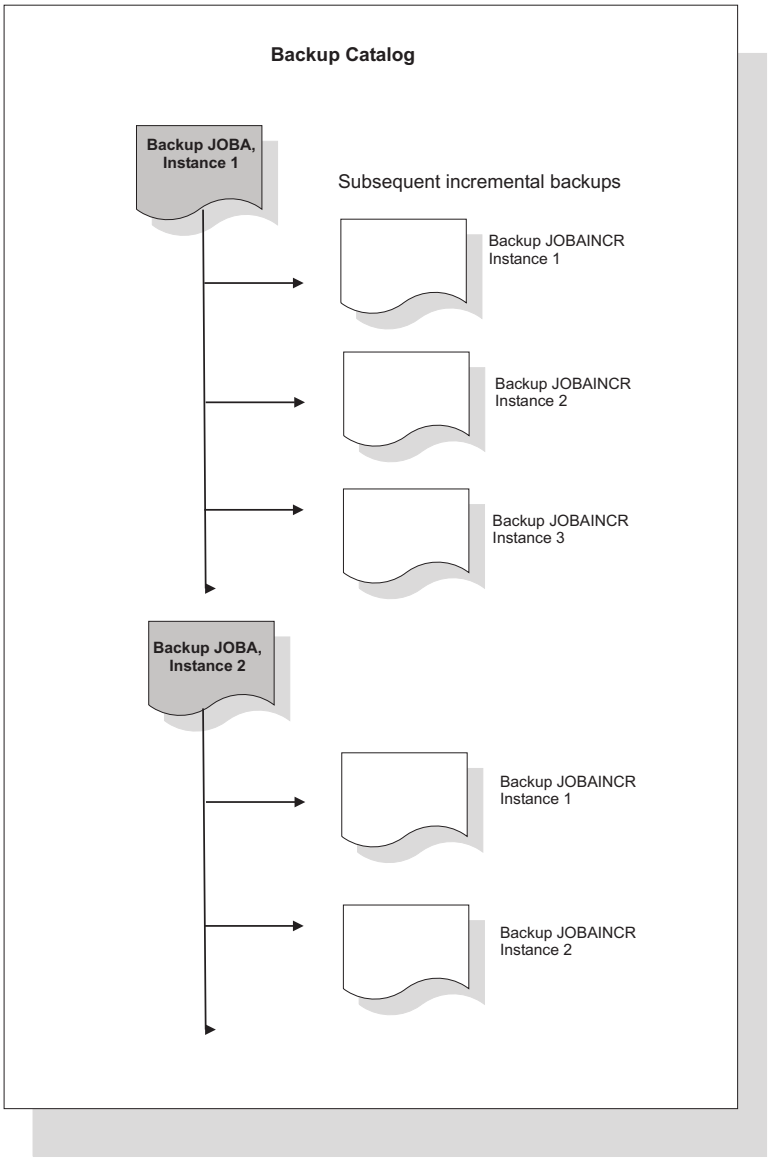


Figure 6. Backup hierarchy

Catalog implementation

The catalog is implemented in an SFS file space. It uses CMS SFS facilities to collect and organize metadata packages that are known as *granules*, which are generated during the backup process. Each granule is a file that contains the results of a single backup process.

A granule has the following structure:

Record 1
The job information such as the job name and instance, job owner, the date and time of job instantiation.

Record 2
The data container description (the logical definition of the minidisk, DASD volume, or file space that is processed during the backup).

Subsequent records
Zero or more records that describe the attributes of data container contents such as files, file space objects, raw DASD extents.

Last record
Job termination information such as the job name and instance and the date and time of termination.

When a backup process is complete, the granule data is added to the catalog. Generating the catalog in this manner records a description of every object that is processed by a backup in the backup catalog.

Note: The contents of the files that are backed up are not stored in the catalog.

Catalog root data structures

The backup catalog maintains root directory entries that organize the following catalog information.

- Minidisk and file space content information.
- DASD volume and extent information.
- Backup media information.

Root data structures are shown in Figure 7:

```
Directory = BKRSFS:BKRCATLG.
Cmd   Filename Filetype Fm Format Lrecl    Records     Blocks   Date     Time
      EXTENTBYJOB       Z  DIR        -          -          -  9/22/10 20:30:30
      EXTENTBYDASD      Z  DIR        -          -          -  9/22/10 17:09:57
      MEDIACAT          Z  DIR        -          -          -  3/14/10 21:49:40
      WORKAREA          Z  DIR        -          -          -  2/26/11 16:00:15
      SFSCAT            Z  DIR        -          -          -  2/26/11 14:38:49
      USERCAT           Z  DIR        -          -          -  2/26/11 14:38:46
      JOBCAT            Z  DIR        -          -          -  2/26/11 14:38:40
```

Figure 7. Root data structure within the backup catalog (BKRCATLG)

Minidisk and file space content tracking

Minidisk and file space contents are collected in the JOBCAT, USERCAT, and SFSCAT branches.

JOBCAT
The JOBCAT branch organizes granules by job name and job instance number. Contents are organized by user ID, container type (BFS, CKD, EDF, FBA, SFS), and container identifier ($DEVccuu, BFS or SFS file space name) for each job and instance. A CATALOG GRANULE file is stored at the end of each branch.

Note: The JOBCAT branch is considered to be the "master" catalog branch. All terminal nodes contain the base file that represents the object that is being cataloged.

USERCAT
The USERCAT branch organizes granules by user ID, container identifier, container type, job, and instance. Each branch ends in a CATALOG GRANULE file that is an SFS alias for the corresponding JOBCAT entry.

SFSCAT
The SFSCAT branch collates catalog information for each SFS file pool the product is aware of. Granule files are organized by file pool ID, container

owner, container type, job name, and instance. Each branch ends in a CATALOG GRANULE file that is aliased to the corresponding JOBCAT entry.

DASD volume and extent tracking

Two catalog roots (EXTENTBYJOB and EXTENTBYDASD) are provided for data containers that represent DASD-based objects.

Note: Extent catalog creation is enabled by default. You can disable the creation of the extent structures by setting **BKR_Catalog_ExtentCat_Enabled** = No in the BKRSYSTM CONFIG file.

Host volume and extent information are extracted from metadata that is contained in the relevant granule files.

EXTENTBYJOB

The EXTENTBYJOB branch organizes catalog information by job name and instance, DASD label, the starting cylinder (ECKD) or block (FBA) of the extent, the extent size, extent owner, and minidisk address. The organization facilitates programmatic inspection of DASD contents that are incorporated by each job instance in the catalog. Each fully qualified branch ends with a CATALOG GRANULE file that is aliased to the corresponding JOBCAT entry.

EXTENTBYDASD

The EXTENTBYDASD branch organizes catalog information by DASD label, extent origin and size, object owner and minidisk address, and job name and instance. The organization provides an easy way to determine depth of backup coverage for DASD extents the product is aware of. Each fully qualified branch ends with a CATALOG GRANULE file that is aliased to the corresponding JOBCAT entry.

Tape media tracking

The default tape mount exits BKRMOUNT, BKREOV, and BKRUMNT implement the MEDIACAT structure to track status and ownership of tape volumes.

For more information about tape mount exits, see Appendix D, “Tape management interface exits,” on page 127.

Guidelines for sizing the catalog SFS file space

A successful backup operation for a minidisk, DASD volume, or SFS file space results in creation of a catalog granule file in addition to the data structures that organize backup results by backup job and instance, owner user ID, real DASD volume, and for SFS data, SFS file pool.

The catalog file space must be large enough to contain the collected metadata for each minidisk, DASD volume, or SFS file space, which is multiplied by the number of backup jobs and instances that are retained in the backup catalog.

If the SFS storage limits for the catalog file space are exceeded, the catalog service virtual machine abends. To view file space occupancy level information, issue the **STATUS** command. If the limit is reached, the catalog service virtual machine shuts down and additional catalog content accumulates in the CP system spool space and on the virtual RDR of the catalog service virtual machine, until the SFS storage limit is increased and the catalog service virtual machine is restarted. When this situation occurs, issue the **XAUTOLOG** command for BKRCATLG and it automatically incorporates pending entries to the catalog.

Depending upon the capacity of the catalog SFS file pool server, it might be possible to alleviate the constraint by raising the size limit through the CMS **MODIFY USER** command. If the SFS storage group that contains the catalog file space is full, you might need to provision more DASD storage for the SFS file pool server. For more information, see *CMS File Pool Planning, Administration, and Operation (SC24-6167)*.

General guidelines for allocating SFS resources to the backup catalog file space are provided in "Backup catalog parameters" on page 152.

Retention of catalog content

Carefully consider the requirements for retention of catalog content. Backup data is available for restoration only when the associated metadata is retained in the backup catalog.

Expiration of the catalog entries for a backup job and instance is associated with expiration of the associated tape media. After catalog contents are expired and purged from the catalog, Backup and Restore Manager issues requests to Tape Manager to indicate the volumes are expired.

- Back up the catalog after each full system and incremental backup so that in the event of a disaster, you have the latest copy of the catalog.
- The example Backup and Restore Manager backup templates use a 30 day retention value that is specified with the `CONFIG BKR_CATALOG_RETENTION` setting in the backup job template. Consider the data management policies and requirements of your installation, and establish appropriately consistent backup catalog retention policies and procedures.

Expiration processing of catalog content

The length of time a backup is retained or when a backup is expired from the backup catalog is determined by an expiration date. As an administrator, you can assign each instance of a backup job an expiration date that determines when the backup data is removed from the catalog.

The catalog expiration process reclaims capacity in the catalog SFS file space by deleting `CATALOG GRANULE` metadata files and supporting directory structures for each job and instance that is being deleted, or pruned from the catalog structure.

From any user ID with Backup and Restore Manager ADMIN privileges, issue the following commands:

- CP **SMSG BKRCATLG EXPIRE (PREVIEW**. Generate a list of jobs and job instances with expiration information.
- CP **SMSG BKRCATLG EXPIRE (PURGE**. Generate a list of jobs and job instances with expiration information and delete catalog content that has aged beyond its assigned expiration date.
- With the **EXPIRE** command PREVIEW option, you can safely determine which jobs and instances in the catalog are considered to be expired. You can then decide whether to extend the life span of a catalog entry using the **SET EXPIRE** command, or proceed with catalog pruning through use of the PURGE option.

Perform expiration processing of backup catalog content on a routine basis, in most cases daily.

Automate expiration processing of backup catalog content by adding the appropriate command to the Backup and Restore Manager administrator (BKRADMIN) PROFILE EXEC, the Backup and Restore Manager new day exit (BKRNUDAY EXEC), or to your preferred automated operations tool, such as Operations Manager for z/VM. The decision as to when to invoke expiration processing is left to the installation.

Note: Modifications to catalog content or structure outside the tools that are provided with Backup and Restore Manager can produce unpredictable results.

Performing backups of the catalog SFS file space

Because the backup catalog SFS file space is central to data restoration functions, implement a backup of the catalog file space as part of your routine backup operations.

One method to implement a backup of the catalog file space is to create a backup job that includes only the backup catalog file space for processing as shown in Figure 8.

```
 FUNCTION  MEDIATYPE   OWNER      VDEV VOLUME DEVTYPE       START          END           SIZE    RESERVED
|----------|----------|--------|--|----|------|--------|--|----------|--|----------|--|----------|--------|

 EXCLUDE    MINIDISK   *        =  *    *      *        =  *          =  *          =  *          *
 INCLUDE    MINIDISK   catsrvr  =  019* *      *        =  *          =  *          =  *          *


  FUNCTION  MEDIATYPE  POOLNAME  OWNER   FS
|----------|----------|--------|--------|---|
 INCLUDE    SFS        catpool: BKRCATLG SFS
```

Figure 8. Backing up the backup catalog SFS file space

The example establishes the following selection criteria:

- All minidisk definitions are first excluded.
- All minidisks in the 019* address range for the catalog file pool service virtual machine are included.
- The catalog file space is included.

In the example, manage and retain the resulting output media with other critical system backup content.

Restoring the backup catalog

Complete these steps to restore the backup catalog from a previously backed up copy of the catalog.

1. Locate the most recent catalog backup that you want to restore.
2. Ensure no worker service virtual machines are running.
3. Restore the catalog backup to an alternate file space or an alternate file pool and file space. Do not copy over the old catalog and create a new catalog using the most recent backup.
4. Update the `BKRSYSTM CONFIG` file to point to the new catalog location.
5. Shut down and then restart BKRBKUP and BKRCATLG to incorporate the changes that you made to the `BKRSYSTM CONFIG` file in step 4.

6. Verify the new catalog and then delete the old, or corrupt, catalog file space using standard SFS administration commands.

Worker service virtual machines

Worker service virtual machines process backup and restore jobs. Worker machines interface directly with tape and minidisk resources and are logged on to the system only during processing.

Note: The master backup server automatically starts the worker service virtual machines as they are needed. When a worker service virtual machine starts running, it automatically registers with the master server (BKRBKUP). If a worker is idle for a specific amount of time, it automatically logs off the system. The **Worker_Idle_Timeout** setting specifies the amount of time that a worker service virtual machine remains idle before it logs off the system. For more information, see "Worker service virtual machine parameters" on page 147.

Stopping a worker service virtual machine

To stop a worker service virtual machine, issue the **HALT** command.

For example, from a user ID with Backup and Restore Manager ADMIN privileges:

```
CP SMSG bkrwrk05 HALT
```

or

```
CP SMSG BKRBKUP CANCEL bkrwrk05
```

For a description of the **HALT** command syntax, see "HALT" on page 86. For information about the CANCEL command, see "CANCEL" on page 90.

Displaying the status of a worker service virtual machine

Worker service virtual machines respond to a status inquiry only when they are idle.

Note: In most cases, direct status requests to the master backup service virtual machine, BKRBKUP.

To display the status of a worker service virtual machine, issue the **STATUS** command. For example, from a user ID with Backup and Restore Manager ADMIN privileges: `cp smsg bkrwrk01 status`

Figure 9 shows an example of the **STATUS** command that is issued to obtain runtime status for the worker service virtual machine bkrwrk01.

```
smsg bkrwrk01 status
Ready;
 SVM Name   : BKRWRK01 - 5697-J06 IBM Backup and Restore Manager for z/VM
- Worker Task SVM - Version 1.3.0
 Compiled on: 5 Jan 2015 - 12:08:49
 SVM Owner  : A User - a.user@address.com
 SVM Started: Monday, 5 Jan 2015 15:23:35
 Backup SVM  : BKRBKUP
 Catalog SVM : BKRCATLG
 Idle Timeout: +00:15:00
```

Figure 9. Displaying the status of a worker service virtual machine

For a description of the **STATUS** command syntax, see "STATUS" on page 87.

Adding a worker service virtual machine

To add a worker service virtual machine, complete the following steps.

1. Create the new BKRWRK*nn* user in the CP directory. Use an existing user as a model.
2. Configure the new BKRWRK*nn* user PROFILE EXEC. You can copy a PROFILE EXEC from another worker, or modify WRKPROF SAMPEXEC.
3. Add the new worker service virtual machine to the list of workers in the BKRUSERS NAMES file. If BKRUSERS NAMES also resides on MAINT 19E or other shared minidisk, copy your updated file to this additional location.
4. Restart the master backup server.

Removing an instance of a worker service virtual machine

To remove a worker service virtual machine, modify the BKRUSERS NAMES configuration file to delete the names of the worker service virtual machines that you want to remove. If BKRUSERS NAMES also resides on MAINT 19E or other shared minidisk, copy your updated file to this additional location. Then restart the master backup server.

Storage media management

Evaluate your storage requirements and how you want to use various storage media with Backup and Restore Manager.

When you use Backup and Restore Manager, the amount and type of media you require is determined by the following factors:

- The amount of data you want to back up
- How long you want to keep the backups (the retention period)

A longer retention period means that the media is kept for a longer amount of time. This approach requires more storage media. In contrast, a shorter retention period means that media is recycled more frequently and therefore, less storage media is required.

Requirements for tape devices

When you use tape devices with Backup and Restore Manager, review the following requirements.

- All volumes require a valid VOL1 label. (Initialize tapes with a valid VOL1 label before use.)
- Backup and Restore Manager supports tape devices that are supported by CMS. The tape device must support a maximum block size of 64 K.

You can integrate Backup and Restore Manager with your tape management system:

- Full integration with Tape Manager is provided. For more information, see "Configuring Backup and Restore Manager to work with Tape Manager for z/VM" on page 26.
- Exit routines provide integration with other tape management systems. For more information, see Appendix D, "Tape management interface exits," on page 127.

Note: Backup and Restore Manager is fully compatible with Tape Manager. You do not need to create an exit to use Backup and Restore Manager with Tape Manager.

Requirements for disk devices

When you back up data to disk rather than tape, Backup and Restore Manager can store the data on CMS formatted minidisks or in an SFS file space. One CMS file is created per backed-up object. You identify minidisks or SFS files spaces to Backup and Restore Manager using DISKPOOL files on the job templates minidisk of the master backup server. You can specify the pool of disks or SFS resources or a mixture of both, in a DISKPOOL file. Backup and Restore Manager uses the CMSFILE configuration statement to identify a pool of available output disks or SFS resources for the backup job.

As an administrator, you provision media and configuration files for DISKPOOL definitions as part of the configuration process. Within a DISKPOOL file, one or more EDF-format minidisks in a pool are identified by owner ID and virtual address. Minidisks and SFS resources are selected for output by the worker virtual machine as backup tasks are processed.

Requirements for specifying minidisks in a DISKPOOL file

List minidisks in a DISKPOOL file subject to the following requirements.

- An administrator must format the minidisks before using them with Backup and Restore Manager. An EDF block size of 4096 bytes (4K) is required.
- During backup processing, minidisks in DISKPOOL files are linked in WR (non-shared write) mode by worker task service virtual machines. If other virtual machines are linked to a pool minidisk, either read-only or read-write, it renders the pool minidisk inaccessible to the worker task service virtual machine. Therefore, consider assigning pool minidisks to either a "dummy" user ID, or to a user that is ordinarily logged off the system.
- The DISKPOOL must contain at least one minidisk or SFS file space entry for each worker that is deployed to handle backup work.

  Allocate at least *n*+1 minidisks or SFS file spaces for the DISKPOOL, where *n* is the number of workers that are allocated in the backup jobs that use the particular pool. Allocating at least one extra storage location in the DISKPOOL helps ensure that a storage location is available for a worker that requires a new storage location during backup processing.

  Note: If there are fewer storage locations than workers, all of the workers cannot acquire output media, which results in a worker task that ends with an error and that portion of the backup job will be incomplete.

Requirements for specifying SFS resources in a DISKPOOL file

List SFS resources in a DISKPOOL file subject to the following requirements.

- To allow BKRCATLG to remove expired backup data from the SFS directories after content expires, BKRCATLG requires SFS ADMIN privileges for all file pools that are used to contain DISKPOOL backup data.
- To allow workers to write backup data to the SFS resource, all worker task service virtual machines (BKRWRK*nn*) require SFS ADMIN privileges for all file pools that contain DISKPOOL backup data.
- If multiple directories from the same *filepool:filespace.* specification are listed in a single DISKPOOL definition, the **QUERY DISKPOOL** command issues a warning about the condition.

The warning is issued because although it is possible to use multiple directories from the same file space in a DISKPOOL, the amount of free space available is limited to the number of SFS blocks available to the file space. That is, even if a file space has multiple directories, the overall capacity is determined by the limits of the SFS file space.

- To use SFS space for overflow accommodation (see Figure 11) use `FILECONTROL` directories. To spread backup data across multiple SFS file pools, or file spaces, use `DIRCONTROL` directories. For more information, see *CMS File Pool Planning, Administration, and Operation (SC24-6167)*.

DISKPOOL file format

The DISKPOOL files are identified as *jobname* DISKPOOL, where *jobname* is the name of the backup job that is associated with the minidisk pool.

Each record in a DISKPOOL file must adhere to the following format:

```
username ccuu
```

or

```
filepool:filespace1.directory.path
```

Where *username* is a 1-8 character username, *ccuu* is a valid minidisk, and *filepool:filespace1.directory.path* is an SFS resource.

DISKPOOL file examples

The following examples of DISKPOOL files show how to specify minidisks and SFS resources.

Figure 10 shows an example of a DISKPOOL configuration file that specifies minidisks.

```
* * * Top of File * * *
ABCUSER 293
ABCUSER 294
ABCUSER 295
ABCUSER 296
ABCUSER 297
* * * End of File * * *
```

Figure 10. DISKPOOL file example (minidisks)

In Figure 10, the minidisks in the pool are identified in the range of 293 - 297 for owner ABCUSER.

Figure 11 shows an example of a DISKPOOL configuration file that specifies minidisks and an SFS resource.

```
* * * Top of File * * *
ABCUSER 100
ABCUSER 101
ABCUSER 102
BKRSFS:ABCUSER.OVERFLOW
* * * End of File * * *
```

Figure 11. DISKPOOL file example (minidisks and SFS)

In Figure 11, user ABCUSER owns minidisks at vdev address 100, 101, and 102. The SFS file pool `BKRSFS` shows ABCUSER enrolled as a file space, and the `.OVERFLOW` directory is created as a `FILECONTROL` directory.

When a backup with one to three workers is in use, and ABCUSER 100-103 all have sufficient free space to accommodate backup output, the output is directed to minidisk. If all of the ABCUSER minidisk volumes fill up, then the remaining backup output is directed to the SFS resource (`BKRSFS.ABCUSER.OVERFLOW`).

Disaster recovery tasks

You can use Backup and Restore Manager to perform the following disaster recovery tasks.

Creating concurrent copies of output tapes

Backup and Restore Manager provides two output handlers that you can use to create concurrent copies of output tapes on multiple tape drives. In a single backup operation, you can generate logically identical sets of tapes. You can use the copies to support on site and offsite storage for disaster recovery purposes.

- The IBMTWIN output handler generates pairs of tapes that are true "twin set" backups. IBMTWIN backups create tape pairs that contain the same backup data blocks on each half of a volume pair. When an end-of-volume condition is encountered on either volume during the backup process, EOV processing is invoked for both volumes. Except for the VOL1 label, either half of the volume pair is identical.
- The DUALTAPE output handler is similar to IBMTWIN in that it also generates two concurrent output streams during the backup process. When either tape drive that is used for a DUALTAPE backup encounters an EOV condition, EOV processing is driven only for the volume that reached EOV. Output continues on the other tape until the backup concludes or an EOV is encountered on the other drive. DUALTAPE produces a set of tapes, which viewed as a whole, contain identical backup data blocks. However, contents of individual tape volumes from the primary and secondary backup copies might not be identical because EOV synchronization does not occur.

For more information, see Chapter 6, “Job syntax,” on page 61.

Creating backups in DDR format

Backup and Restore Manager also produces image backups of ECKD and FBA DASD in z/VM DASD Dump Restore (DDR) format by using the DDRTAPE output handler.

Use the CMS **DDR** command or the stand-alone DDR utility to restore tapes that are produced by DDRTAPE. For more information, see Appendix G, “DDRTAPE output handler usage guidelines,” on page 145.

Creating tape lists

There are two methods you can use to create tape lists.

- Obtain the tape lists from the worker service virtual machine console log.
- Use the **QUERY TAPES** command to obtain a list of the volumes that are associated with a particular job and instance. For more information, see Chapter 7, “Service virtual machine commands,” on page 85.

Service virtual machine error recovery and diagnosis

All Backup and Restore Manager service virtual machines incorporate an error recovery diagnostic environment referred to as *SUSPEND mode*.

Backup and Restore Manager error handling routines track the number of abnormal task terminations that take place during service virtual machine operation and backup and restore job processing. If five or more abnormal task terminations occur during job processing or service virtual machine operations, regular operations are suspended. In SUSPEND mode, the service virtual machine accepts a limited set of commands from the console or through the SMSG interface from users with administrator privileges.

SUSPEND mode provides an opportunity to perform the following actions:

- Issue CP and CMS commands to address conditions that are related to the error
- Gather diagnostic information
- Resume normal processing at the interruption point
- Reset the virtual machine environment and IPL CMS again

To resume virtual machine processing, issue the **RESUME** command to resume normal processing at the interruption point. See "RESUME" on page 90 for more information. Or, issue the **RESTART** command to reset the virtual machine environment and IPL CMS again. See "RESTART" on page 89 for more information.

For more information, see "SUSPEND mode commands" on page 88.

Chapter 4. Backing up data

With Backup and Restore Manager, you can create backup copies of data on disk or tape. The source data can reside on CMS minidisk, SFS, BFS, FBA images, or CKD images. Direct the output to disk, tape, or twin or dual tapes as needed.

Complete these steps to back up your data:

1. Determine the type of backup that you want to perform. For more information, see "Backup types."
2. Select the data that you want to back up. For more information, see "Selecting data for backups" on page 46.
3. Determine how often to back up the data. Typically, you back up data when the data changes. For example, when you update a file or you create a new file. Consider the requirements that are specific to your site, if any. For more information, see "Scheduling backups" on page 46.
4. Choose the method that you want to use to back up data:
   - Job templates that you use to create backup jobs. (This is the recommended method.)
   - Application code that you develop (based on application code examples) to back up one or more files.
   - Backup routines that you invoke from your REXX applications.

   For more information, see "Methods of backing up data" on page 47.
5. View the backup data. For more information, see the *IBM Backup and Restore Manager for z/VM User's Guide (SC18-9523)*.

Backup types

With Backup and Restore Manager, you can generate, full (baseline), incremental, or disaster recovery backups.

Full backups

A *full* backup creates a copy of all of the files or data on the specified minidisks, file spaces, or DASD volumes. A full backup provides a complete baseline copy of the data.

Incremental backups

An *incremental* backup creates a copy of a file that was modified since the last full backup. (If a file was not modified since the last full backup, then it is not included in the backup.)

Although an incremental backup typically requires less processing time and less storage space to contain the results, it generates additional catalog content. As incremental backup information is added to the backup catalog, the volume of information that must be reviewed to accomplish a restore operation increases. Therefore, when you establish a schedule of full and incremental backups, consider the implications of a large number of incremental backups that reference a relatively old baseline full backup.

Full and incremental backups according to data type

Non-CMS data, which includes guest operating system volumes such as Linux file system minidisks that reside on CKD or FBA DASD volumes, is only handled through full backups as shown in Table 7.

Table 7. Full and incremental backups according to data type

Data type	Full backup	Incremental backup
CKD	Yes	No
FBA	Yes	No
EDF	Yes	Yes
SFS	Yes	Yes
BFS	Yes	No

Note: Minidisks that were not updated since the time of the referenced baseline full backup are reported as unchanged in the worker console log and are excluded from file-level incremental change detection.

Disaster recovery backups

Disaster recovery backups help you recover your system in the event of a disaster. This type of backup is different than a full or incremental backup because it includes the objects you need to restore your entire system. For example, you might create CKD backups of the base set of system volumes that are necessary to perform a basic disaster recovery for your system.

The Backup and Restore Manager DDRTAPE output handler generates backup tapes that can be restored by the z/VM DASD Dump Restore (DDR) utility. This feature can ease disaster recovery operations by enabling system recovery using the DDR stand-alone mode of operation. For more information, see Appendix G, "DDRTAPE output handler usage guidelines," on page 145. For more information about DDR, see the *z/VM CP Commands and Utilities Reference*.

Selecting data for backups

Selecting the data that you want to back up depends on factors such as the importance of the data, how often the data changes, and the type and amount of storage that is available to store backup copies.

With Backup and Restore Manager, you can specify only the data that you want to back up.

For example, in a backup job, you can select all of the files that belong to you by specifying that Backup and Restore Manager only back up the files that match your user ID:

```
INCLUDE   MINIDISK   JDOE    = 0191 *     *       = *         =  *         = *         *
```

In the example, Backup and Restore Manager backs up files from JDOE 191.

Scheduling backups

Determining the type of backup to perform, how often to perform backups, and the objects to back up, depend upon the specific requirements of your installation.

You can schedule various combinations of backups on a daily, weekly, monthly, and yearly basis. For example:

- To provide disaster recovery protection, run a full DASD image backup once a week and store the most current copy offsite to use as a baseline for a full disaster recovery.
- To provide protection against less catastrophic events such as accidental file deletions, run backups on a more frequent basis. For example, you might run full backups over the weekend and then run incremental backups every other night. At the end of the month, the oldest backup can be expired and the tapes scratched and reclaimed for reuse.

Use a scheduling tool such as Operations Manager for z/VM to schedule your backups.

Methods of backing up data

With Backup and Restore Manager, you can back up your data using a variety of methods.

Batch backup jobs (job templates)

Use job templates to create backup jobs that define how Backup and Restore Manager performs processing. Backup and Restore Manager provides sample job templates for each of the following types of backups:

- Full system
- Incremental system
- Disaster recovery
- SFS only
- z/VM 6.3 running as a second-level guest system

Copy the job template that most closely matches your needs. Modify the copied template to specify the objects to include or exclude from the backup, and then submit it to the master backup server for processing. The result of the process is a backup job.

For more information, see "Using job templates to create backup jobs" on page 48.

Backup routines

Backup and Restore Manager provides backup routines that you can call from REXX applications.

Backup routines back up a single CKD minidisk extent, CMS formatted minidisk, SFS filespace, or BFS filespace to tape or to a CMS file as shown in Table 8.

Table 8. Backup routine descriptions

Routine	What it does
DUMPCKD	Back up a single CKD minidisk extent to tape or to a CMS file.
DUMPEDF	Back up a single CMS formatted minidisk to tape or to a CMS file.
DUMPFBA	Back up a single FBA minidisk extent to tape or to a CMS file.
DUMPSFS	Back up a single SFS filespace to tape or to a CMS file.
DUMPBFS	Back up a single BFS filespace to tape or to a CMS file.

For more information, see the *IBM Backup and Restore Manager for z/VM User's Guide (SC18-9523)*.

Sample application code

Backup and Restore Manager provides the sample routines CKDDUMP, FBADUMP, EDFDUMP, and SFSDUMP that demonstrate how to perform backup operations such as backing up raw CKD or FBA images or backing up CMS files from CMS minidisk or SFS filespaces.

Use application code that you develop to back up the following items:

- A CKD minidisk extent to a tape or to a CMS file.
- A CMS formatted minidisk to a tape or to a CMS file.
- A FBA minidisk extent to a tape or to a CMS file.
- An SFS filespace to a tape or to a CMS file.

The following example shows how to use SFSDUMP to back up a single SFS filespace:

```
SFSDUMP VMSYSU JDOE . * * * (METHOD ...
```

In the example, Backup and Restore Manager performs a backup of `VMSYSU:JDOE` to the specified target:

The following example shows how to use CKDDUMP to back up a single CKD minidisk extent:

```
CKDDUMP JDOE 191 (METHOD ...
```

In the example, Backup and Restore Manager performs a track-image backup of `JDOE 191` to the specified target.

See the *IBM Backup and Restore Manager for z/VM User's Guide (SC18-9523)* for information about performing application development with the Backup and Restore Manager data packaging tools.

Using job templates to create backup jobs

Backup and Restore Manager provides sample job templates that facilitate the creation of batch backup jobs.

With a job template, you can specify the type of processing you want Backup and Restore Manager to perform and the objects you want Backup and Restore Manager to include or exclude from processing. Copy the template that most closely matches your needs, modify it, and then submit it to the master backup server for processing.

Note: Incremental backups of CKD or FBA "raw" image volumes are not performed. Consider excluding raw CKD minidisks from incremental processing to speed up incremental backups (unless you want to capture complete image backups of CKD type minidisks with each incremental pass).

Figure 12 on page 49 shows an overview of the process of creating and submitting a batch job using a job template:

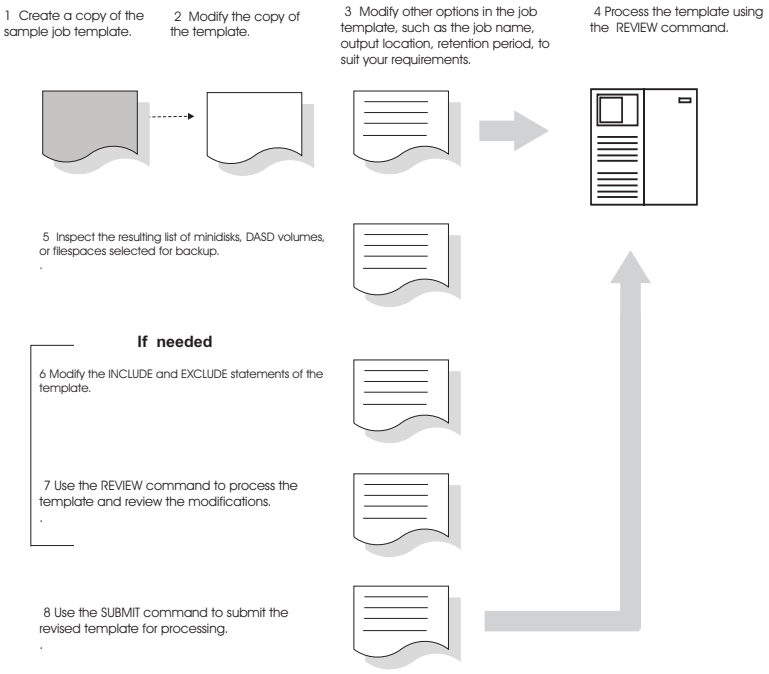


Figure 12. Creating and submitting backup jobs using a job template

Complete these steps to create a batch backup job:

1. Create a copy of the sample job template that most closely matches your needs. For a description of the sample templates, see Appendix A, "Sample job template descriptions," on page 105.
2. Modify the copy of the template to specify the objects to include or exclude from the backup operation. For instructions, see "Including or excluding objects from processing (INCLUDE and EXCLUDE)" on page 52.
3. Modify other options in the job template, such as the job name, the output location, the retention period, and so on, to suit your requirements.
4. To process the modified template, issue the **REVIEW** command. By issuing the **REVIEW** command, you can review job modifications before you submit them to a worker service virtual machine for final processing.
5. Inspect the resulting list of minidisks, DASD volumes, and file spaces that are selected for backup.
6. If needed, modify the INCLUDE and EXCLUDE statements.
7. Issue the **REVIEW** command a second time to evaluate your modifications.
8. When you are satisfied with your changes, issue the **SUBMIT** command to submit the job to a worker virtual machine for processing.

   Note: For descriptions of the **SUBMIT** and **REVIEW** commands, see "Master backup service virtual machine commands" on page 90.

Sample job templates

Backup and Restore Manager provides the following sample backup job templates on the installation user (5697J06C) SAMPLES minidisk or directory.

Table 9. Sample job templates

Job template file	Description
SAMPFULL TEMPSAMP	A sample template of a full backup that incorporates various CMS minidisks, raw CKD extents, and SFS resources. Output is directed to single-stream tape (IBMTAPE).
SAMPINCR TEMPSAMP	A sample backup template that illustrates an incremental backup job and references to the most recent instance of SAMPFULL as the baseline reference point for incremental processing.
SAMPDDR TEMPSAMP	A sample template of a full backup job definition that creates a DDR-compatible tape. You can use this tape with the z/VM DDR facility to restore the data in the event of a disaster.
SAMPLNX TEMPSAMP	A sample template that illustrates one method to automate a Linux guest backup using Operations Manager for z/VM and Backup and Restore Manager. The sample template performs an image backup of a single Linux guest file system.
SFSBFS TEMPSAMP	A sample template that is an example of a full backup job definition for data in SFS or BFS file spaces. Output is directed to the set of CMS-format minidisk or SFS resources that are listed in the file SFSBFS DISKPOOL.
SAMPDR TEMPSAMP	A sample template of a basic z/VM disaster recovery template. Output is directed to tape using the IBMTAPE output handler in native Backup and Restore Manager recording format. You must restore the resulting backup using Backup and Restore Manager. For an example of a backup, which can be restored using the z/VM DASD Dump Restore (DDR) utility, see the SAMPDDR TEMPSAMP sample template.
ZVM63L2 TEMPSAMP	A sample template of a backup of a second-level guest z/VM 6.3 system. Output is directed to tape using the IBMTAPE output handler in native Backup and Restore Manager recording format. The resulting backup must be restored using Backup and Restore Manager.

Backup templates are provided as examples. Consider the unique requirements and configuration of your system, and implement Backup and Restore Manager in a manner that is consistent with your requirements.

Job template structure

A job template contains three sections.

- The configuration section contains runtime configuration information such as the name of the job, the job owner, and the master backup service virtual machine that is required to run the job.
- The INCLUDE and EXCLUDE selection record section contains statements that specify the objects to include and exclude from processing. When you submit the template to the master backup server for processing, the statements generate a series of DUMP*xxx* (DUMPDYN, DUMPSFS, and DUMPBFS) statements which are then processed to perform the backup operations you specify.
- The end-of-job processing section contains statements that perform end of job housekeeping tasks such as resetting console characteristics and closing the console log.

Job syntax

Keywords define how Backup and Restore Manager performs backup processing. INCLUDE and EXCLUDE statements specify the minidisks, DASD volumes, or BFS or SFS file spaces to include or exclude from backup processing.

For syntax descriptions, see Chapter 6, "Job syntax," on page 61.

Note: A statement that begins with an asterisk in column 1 is regarded as a comment. Null lines are permitted between statements.

Specifying configuration information

The first portion of the job template contains configuration information that defines the runtime configuration that is required to run the job.

Figure 13 shows an example of backup job configuration information:

```
Config BKR_Output_Spec  = IBMTAPE SCRATCH RW 1

CP_Command SPOOL CONSOLE TO $$ADMIN$$ CLASS T TERM START NAME $$TEMPLATE$$ $$SDATE$$
CP_Command TERM LINES 255

Config BKR_Job_Workers = 1
Config BKR_Job_Name     = SAMPFULL
Config BKR_Job_Instance = $$INST$$
Config BKR_Job_Owner    = $$ADMIN$$
Config BKR_Job_Master   = $$MASTER$$
Config BKR_Job_Token    = $$SDATE$$

Config BKR_Job_Tape_Retention = 30

Config BKR_Job_CMS_FileMask = * * *
Config BKR_Job_SFS_PathMask = *

Config BKR_Job_Catalog     = Enabled
Config BKR_Catalog_Verbose = Disabled
Config BKR_Catalog_Master     = $$CATALOG$$
Config BKR_Catalog_Granule_FN = $$TEMPLATE$$
Config BKR_Catalog_Granule_FT = GRANULE
Config BKR_Catalog_Granule_FM = D1

Config BKR_EDF_Incr_Toggle = Off
Config BKR_SFS_Incr_Toggle = Off
Config BKR_Out_Tape_Verbose = Disabled
```

Figure 13. Backup job (configuration information)

Note the following items in the example:

- `CP_Command`. CP_Command statements issue the CP commands that a worker service virtual machine is privileged to issue. For more information, see "CP_COMMAND" on page 73.
- `Config`. Config statements initialize a REXX environment variable in the runtime environment. Configuration variables identify information such as the job name and determine the service virtual machines that are used for the job. For more information, see "CONFIG" on page 61.

Including or excluding objects from processing (INCLUDE and EXCLUDE)

INCLUDE and EXCLUDE selection records specify the minidisks, DASD volumes, and BFS and SFS file spaces to include or exclude from backup processing.

When you submit a modified copy of a template for processing, these statements generate a series of DUMPDYN statements, which Backup and Restore Manager processes to perform the specified backup operations. For more information, see Appendix F, "Summary output overview," on page 139.

See "Selection record syntax" on page 77 for descriptions of the selection record keywords.

The following examples show how to use selection records to include or exclude specific types of objects from backup processing.

Minidisk selection (MINIDISK)

The following example shows INCLUDE and EXCLUDE selection records that include or exclude minidisks from backup processing.

```
                                                                  Extent        Extent       Extent
  Function  MediaType   Owner      VDEV Volser DevType            Start         End          Size       RESERVED
|----------|----------|--------|--|----|------|--------|--|----------|--|----------|--|----------|--------|

 Include    Minidisk   *        =  *    *      *        =  *          =  *          =  *          *
 Exclude    Minidisk   FDISK    =  *    *      *        =  *          =  *          =  *          *
 Exclude    Minidisk   $ALLOC$  =  *    *      *        =  *          =  *          =  *          *
 Exclude    Minidisk   MACK0*   =  *    *      *        =  *          =  *          =  *          *
 Include    Minidisk   MACK0*   =  019* *      *        =  *          =  *          =  *          *
 Exclude    Minidisk   LNXSYS*  =  *    *      *        =  *          =  *          =  *          *
 Include    Minidisk   LNXSYS*  =  019* *      *        =  *          =  *          =  *          *
 Exclude    Minidisk   MAINT    =  0123 *      *        =  *          =  *          =  *          *
 Exclude    Minidisk   MAINT    =  0124 *      *        =  *          =  *          =  *          *
 Exclude    Minidisk   LCLSFS0* =  *    *      *        =  *          =  *          =  *          *
 Include    Minidisk   LCLSFS0* =  0191 *      *        =  *          =  *          =  *          *
 Exclude    Minidisk   PRDSFS*  =  *    *      *        =  *          =  *          =  *          *
 Include    Minidisk   PRDSFS*  =  0191 *      *        =  *          =  *          =  *          *
 Exclude    Minidisk   VMSERV*  =  *    *      *        =  *          =  *          =  *          *
 Include    Minidisk   VMSERV*  =  0191 *      *        =  *          =  *          =  *          *
 Exclude    Minidisk   *        =  *    *      *        =  *          =  *          >  3300       *
 Exclude    Minidisk   *        =  *    *      *        =  *          =  *          =  END        *
 Include    Minidisk   MAINT    =  012* *      *        =  *          =  *          =  *          *
```

Figure 14. INCLUDE and EXCLUDE selection records (minidisk selection)

Note:

- A minidisk that passes INCLUDE and EXCLUDE filtering, but is not accessible with the CP **LINK** command during backup job processing, is identified by a link failure message in the BKRWRK*nn* console log. The message identifies the return code from the CP **LINK** command, the user ID, and the virtual device number of the minidisk.
- When you configure a backup template that excludes large or full-volume minidisks from selection, note the following filtering criteria:
  - For large minidisks that are defined using a cylinder or block range, use the greater than operator (>) and an upper boundary value that can be used to eliminate large volumes from selection.

– For full-volume minidisks that are defined with END as the extent size, instead of a specific cylinder or block extent size, add a rule using the equal sign (=) operator and a value of END to exclude these minidisks from selection.

SFS selection (SFS)

The following example shows how to use INCLUDE and EXCLUDE selection records to include or exclude shared file systems from processing.

```
 FUNCTION MEDIATYPE POOLNAME  OWNER   FS
|--------|---------|--------|--------|---|

 Include  SFS       VMSYSU:  *        SFS
 Exclude  SFS       VMSYSU:  DFSMS*   SFS
 Include  SFS       VMDEVU:  *        SFS
 Include  BFS       VMSYS:   *        *
 Exclude  BFS       VMSYS:   ROOT     *
```

Figure 15. INCLUDE and EXCLUDE selection records (SFS selection)

Real device selection by address (RDEVICE)

The following example of INCLUDE and EXCLUDE selection records shows how to include or exclude real devices by address.

```
 FUNCTION MEDIATYPE ADDRESS
|--------|---------|---------|

 INCLUDE  RDEVICE   900-90F
 INCLUDE  RDEVICE   A0*
 EXCLUDE  RDEVICE   903
 EXCLUDE  RDEVICE   A10
```

Figure 16. INCLUDE and EXCLUDE selection records (real device selection by address)

Note:

- When you specify RDEVICE in a backup job, worker task service virtual machines (BKRWRK*nn*) require CP class A and OPTION DEVMAINT attributes in the `CP` directory or equivalent ESM authorization. Workers require the privileges to run the CP **`DEFINE MDISK`** command to gain temporary access to DASD volumes that are selected for backup through RDEVICE.
- Backup and Restore Manager treats volumes that are included for processing as raw image backups.
- Backup and Restore Manager enters the volumes included for backup into the backup catalog as owned by user SYSTEM under the appropriate real device address. To restore a volume that is assigned to SYSTEM in the catalog, define an appropriate minidisk entry that is owned by a valid virtual machine, and then restore the backup image to that minidisk definition.

Real device selection by volume label (RDEVVOL)

This example of INCLUDE and EXCLUDE selection records shows how to include or exclude real devices by volume label.

```
 FUNCTION MEDIATYPE VOLSER
|--------|---------|------|

 INCLUDE  RDEVVOL   630*
 INCLUDE  RDEVVOL   630SPL
 EXCLUDE  RDEVVOL   630PAG
```

Figure 17. INCLUDE and EXCLUDE selection records (real device selection by volume label)

Note:

- When RDEVVOL is used in a backup job, worker task service virtual machines (BKRWRK*nn*) require CP class A and OPTION DEVMAINT attributes in the CP directory or equivalent ESM authorization. To temporarily gain access to DASD volumes that are selected for backup through RDEVVOL, workers require privileges to run the CP **DEFINE MDISK** command.
- Volumes included for processing are always treated as raw image backups.
- Volumes included for backup are entered into the backup catalog as owned by user SYSTEM under the appropriate real device address. The preferred method for restoring a volume that is assigned to SYSTEM in the catalog is to define an appropriate minidisk entry that is owned by a valid virtual machine, and then restoring the backup image to that minidisk definition.

Specifying end of job processing

The last portion of the job defines end of job processing as shown in the following example.

```
Job_Trailer

Config BKR_Catalog_Retention = 30

CP_Command QUERY TIME
CP_Command INDICATE USER * EXP

Console *
Console * Sample full backup template $$TEMPLATE$$ updated 01/05/2015.
Console * Job image generated $$UDATE$$ $$TIME$$
Console *

CP_Quiet SPOOL CONSOLE CLOSE NAME $$TEMPLATE$$ $$SDATE$$
CP_Quiet SPOOL CONSOLE NAME WORKER OUTPUT

EOJ
```

Figure 18. Specifying end of job processing

Note the following items shown in Figure 18:

- `Job_Trailer` triggers the generation of end-of-dump housekeeping and console output.
- `Config BKR_Catalog_Retention` specifies a 30 day retention period for catalog content that is generated by the job. This retention period also applies to backup output data on tapes, minidisks, or SFS file spaces.
- `CP_Command` provides job end time and resets selected console characteristics.
- `Console` provides output to the console.
- `CP_Quiet` closes the console log and sends it to a predefined destination.
- `EOJ` triggers end-of-job processing, including printing the comment text to the console.

See Chapter 6, “Job syntax,” on page 61 for descriptions of backup job syntax.

Notification of backup start and completion

Use the Backup and Restore Manager `BKREXI02 EXEC` REXX EXEC to notify the owner of a minidisk or SFS file space when a backup operation is about to begin, and when the backup operation completes.

For more information, see Appendix B, “Sample user exits,” on page 115.

Chapter 5. Restore operations

With the Backup and Restore Manager flexible restore options, you can perform the following restore operations.

- Restore files at the filename or filetype level, or use wildcard characters to restore a group of files that meet specific criteria.
- Restore data to an alternate DASD volume or minidisk.
- Restore files to a user other than the original owner of the files.
- Control who can (or cannot) restore the data of another user. Administrators can perform all backup and restore operations and users can restore only their own data. Exit processing is available to override the authorization levels.
- Perform batch restore processing.

Methods of restoring data

To restore data from the Backup and Restore Manager catalog browser interface, you can issue the **RESTORE** command, use restore routines that you can call from REXX applications, or use application code.

Catalog browser interface

The Backup and Restore Manager catalog browser interface facilitates restore operations. From the interface, users can locate the data that they want to restore using a variety of methods. The interface supports the use of wildcard characters to filter the data to view and restore.

RESTORE command

The **RESTORE** command is primarily intended to be invoked from within the Backup and Restore Manager catalog browser interface. Users with administrative privileges can use the **RESTORE** command to restore backup content to a valid destination. Users without administrative privileges can restore data from any object type (EDF, SFS, FBA, or CKD) that is owned by their user ID to any location that is owned by their user ID.

Restore routines

Restore routines enable you to restore data such as a raw CKD or FBA image, or files that were backed up from a CMS formatted minidisk or SFS filespace.

Sample application code for restore operations

The Backup and Restore Manager CKDLOAD, FBALOAD, EDFLOAD, SFSLOAD, and DDLLOAD sample routines demonstrate how to perform restore operations. For example, you can restore raw CKD or FBA image backups to compatible media. You can restore CMS files that were backed up from CMS minidisk or SFS file spaces to minidisk, SFS, or the virtual RDR.

Batch restore processing

The master Backup and Restore Manager server (BKRBKUP) accepts **RESTORE** commands that are delivered through CP spool using the **SENDFILE** command. The spool interface provides a method to batch multiple **RESTORE** commands into a single job, processed by a single worker service virtual machine.

For more information, see "Batch restore processing" on page 59 and the *IBM Backup and Restore Manager for z/VM User's Guide (SC18-9523)*.

Performing restore operations using the catalog browser interface

Backup and Restore Manager enables users to easily restore data using a catalog browser interface. For more information, see the *Backup and Restore Manager for z/VM User's Guide (SC18-9523)*.

Using the RESTORE command to restore data

The **RESTORE** command restores data from any object type (EDF, SFS, CKD, or FBA) to any location (RDR, SFS, EDF, FBA, or CKD).

Note: You must restore backups that are created using the DDRTAPE output handler using the standard CMS DDR command or the stand-alone DDR utility. Backup and Restore Manager does not directly process restore operations for DDR-format backups.

The **RESTORE** command has the following authorization requirements:

- All users can restore data from any object type (EDF, SFS, FBA, or CKD) that is owned by their user ID to any location that is owned by their user ID.
- Users with ADMIN privileges can restore any backup content to any valid destination.

Note: The catalog browser interface is the preferred method of handling restore requests. The syntax for the **RESTORE** command is primarily intended to be driven from within a program such as the panel interface.

For more information, and a description of the **RESTORE** command syntax, see the *IBM Backup and Restore Manager for z/VM User's Guide (SC18-9523)*.

Controlling the ability of a user to restore data

To control the ability of a user to restore the data of another user, use the Backup and Restore Manager `BKREXI01 EXEC` REXX EXEC that you can use to customize access controls.

For more information, see Appendix B, "Sample user exits," on page 115.

Because access to backup catalog content relies on native SFS access controls, note the following considerations:

- To navigate and view backup catalog content, administrators require file pool ADMIN privileges or equivalent ESM authorization.
- If non-privileged users need access to their catalog information, one of the following requirements must be met:

- To be able to connect to the file pool, users must be enrolled in the catalog file pool (if only with a 0-block space allocation).
- To grant all users access to their individual catalog content, consider the use of ENROLL PUBLIC for the catalog file pool. For more information, see the *SFS Administrator's Guide and Reference (SC33-16090)*.
- If an external security manager controls access to your catalog file pool, the ESM must grant read-only access to catalog file pool resources for users.

Batch restore processing

Create batch restore requests through XEDIT. The command syntax is identical to the **RESTORE** command syntax that is used with the SMSG interface.

For batch restore operations, specify options using one of the following methods:

- Standard CMS syntax. **RESTORE** command options are delimited by a left parenthesis "(" as part of the first **RESTORE** command in a batch set.
- Alternately, specify an OPTION statement as the first record in a set of batch **RESTORE** commands.

For more information, see the *IBM Backup and Restore Manager for z/VM User's Guide (SC18-9523)*.

Chapter 6. Job syntax

These topics describe Backup and Restore Manager backup job syntax.

Note: Job syntax includes REXX environment variables. For information about REXX and REXX environment variables, see the *z/VM REXX/VM Reference (SC24-6113)* and the *z/VM REXX/VM User's Guide (SC24-6222)*.

Specification of logical job template variables

Logical job template variables accept the following values. The logical variables that accept the following values are noted in the variable descriptions.

- Specify TRUE as 1, Y, Yes, T, TRUE, ENABLE or ENABLED.
- Specify FALSE as 0, N, NO, F, FALSE, DISABLE or DISABLED.

CONFIG

The CONFIG keyword initializes a REXX environment variable.

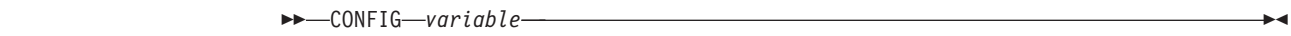


Figure 19. CONFIG syntax

Authorization

System administrator.

Operands

variable. Where *variable* is one of the following variables:

- "Required variables" on page 62
- "Optional variables" on page 67
- "CMSFILE output variables" on page 71
- "DDRTAPE output variables" on page 71
- "GRANULE variables" on page 71
- "IBMTAPE and IBMTWIN output variables" on page 72

Examples

The following example identifies the name of a backup job named ABCJOB1:

```
CONFIG BKR_JOBNAME = ABCJOB1
```

Perform an incremental backup for DUMPEDF processing:

```
CONFIG BKR_EDF_INCR_TOGGLE = YES
```

Direct output to a single tape volume:

```
CONFIG BKR_OUTPUT_SPEC = IBMTAPE SCRATCH RW 1
```

Direct output to media in a disk pool:

```
CONFIG BKR_OUTPUT_SPEC = CMSFILE DISK POOL X
```

Identify the file pool portion of the SFS resource that contains the catalog worker service virtual machines reference during an incremental backup:

```
CONFIG BKR_CATALOG_POOL = BKRAB3
```

Required variables

The following CONFIG keyword variables are required.

BKR_JOB_CATALOG
(Logical variable.) Controls whether DUMP*xxx* tasks generate catalog content. Specify one of the following options:

YES Generate catalog content.

NO Do not generate catalog content.

Note: This variable does not have a default. Set **BKR_JOB_CATALOG** to YES in most cases.

BKR_JOB_NAME
The job name. Specify 1-8 characters, alphanumeric (A-Z, 0-9). This variable does not have a default and its value cannot be a substitution variable.

BKR_JOB_INSTANCE
Identifies a single incident of execution for a job. The catalog scheme uses this identifier to represent one execution of a job. Multiple instances are grouped under the job name. Specify eight numeric characters padded on the left with zeros. The valid range is 00000001-99999999. This variable does not have a default.

Note: The recommended setting is the $$INST$$ substitution variable. For more information, see "Variable substitutions" on page 83.

BKR_JOB_OWNER
The VM user that owns the job. Output and status information can be directed to the job owner during job processing. Specify 1-8 alphanumeric characters. This variable does not have a default.

Note: CMS constraints for VM user names are applicable. The recommended setting is the $$ADMIN$$ substitution variable. For more information, see "Variable substitutions" on page 83.

BKR_JOB_MASTER
The master backup service virtual machine. Specify 1-8 alphanumeric characters. This variable does not have a default.

Note: CMS constraints for VM user names are applicable. The recommended setting is the $$MASTER$$ substitution variable. For more information, see "Variable substitutions" on page 83.

BKR_JOB_TAPE_RETENTION
(Required only for backups that use DUALTAPE, IBMTAPE, or IBMTWIN output methods.) A positive integer (*nnnnn*) that is used to update the tape expiration field of the VOL1 label when a new SCRATCH mount is processed. In most cases, set this variable to the value that is specified for **BKR_CATALOG_RETENTION**. Check your local site requirements. This variable does not have a default.

Note:

- This variable is required in the header section of all job templates that specify backups to tape.
- If you specify `Tape_Handled_Via_EUM = 1` in the `BKRSYSTM CONFIG` file, this variable is also used to set the initial expiration date for the backup tape in Tape Manager. This means all scratch tape mount requests to Tape Manager specify this expiration date in the following places:
  - In the VOL1 header of the tape, and
  - as the initial expiration date in the Tape Manager catalog (through the TAPCMD EXPDT option)

  If you specify a different value for **Config BKR_Job_Catalog_Retention**, Tape Manager overrides the initial expiration date in the Tape Manager catalog when the backup job is complete. At the completion of the backup job, Backup and Restore Manager uses the value of **Config BKR_Job_Catalog_Retention** to set both the backup catalog retention in Backup and Restore Manager and the tape retention in Tape Manager.

BKR_JOB_TOKEN

An arbitrary 1-8 byte string (alphanumeric A-Z, 0-9) Backup and Restore Manager uses to facilitate job organization and search functions in the backup catalog. This variable does not have a default.

Note: The recommended setting is the $$DATE$$ substitution variable. For more information, see "Variable substitutions" on page 83.

BKR_CATALOG_VERBOSE

Specify the amount of verbose output the catalog data generation routine produces. Specify one of the following options:

YES Generate more verbose output.

NO (Default.) Generate less verbose output.

Note: Set **BKR_CATALOG_VERBOSE** to NO in most cases.

BKR_CATALOG_MASTER

(Required only when catalog content is generated.) The user ID (1-8 characters, alphanumeric) of the catalog service virtual machine where the generated catalog content is sent after a backup task completes.

This variable does not have a default. Specify this variable as $$CATALOG$$ (for dynamic substitution) or as the user ID of the catalog service virtual machine (BKRCATLG).

Note: The recommended setting is the $$CATALOG$$ substitution variable. For more information, see "Variable substitutions" on page 83.

BKR_CATALOG_RETENTION

(Required only when catalog content is generated.) The number of days to keep catalog content. The valid range is 0-9999.

Note: This variable has no default. If you do not specify **BKR_CATALOG_RETENTION**, catalog content is considered to be non-expiring.

BKR_CATALOG_POOL

(Required for incremental backup jobs only.) The catalog is maintained in an SFS file space. **BKR_CATALOG_POOL** identifies the file pool portion of the SFS resource that is used to contain the catalog. During incremental processing, the worker service virtual machine references catalog content for each object that is being backed up. Setting **BKR_CATALOG_POOL** for incremental processing allows for the possibility of a multiple catalog scenario in complex configurations. The catalog file space is the same name as **BKR_CATALOG_MASTER**.

This variable does not have a default. In most cases, the value you specify for **BKR_CATALOG_POOL** is the same as the value specified by **CatalogPool** in the BKRSYSTM CONFIG file.

Note: Do not specify a colon (:) after the file pool name that you specify for **BKR_CATALOG_POOL**. During job processing, Backup and Restore Manager automatically inserts a colon after the file pool name.

BKR_EDF_INCR_BASEJOB

(Required for incremental backup jobs only.) The job name of the baseline full backup that the incremental backup job references. For example, SAMPFULL is the baseline full backup for SAMPINCR. Specify 1-8 characters (A-Z, 0-9). This variable does not have a default.

BKR_EDF_INCR_BASEINST

(Required for incremental backup templates.) The specific instance of the job that constitutes the baseline reference. Specify eight numeric characters padded on the left with zeros. The valid range is 00000001-99999999. This variable does not have a default.

Note: Specify **BKR_EDF_INCR_BASEINST** as "$$INST *jobname*$$" in the incremental backup job template where *jobname* is the baseline full backup job. This syntax refers to the most recent instance of job *jobname*.

BKR_EDF_INCR_TOGGLE

(Logical variable.) Controls whether DUMPEDF performs baseline or incremental backup processing. This variable does not have a default. Specify one of the following options:

YES Perform incremental backup processing and configure **BKR_EDF_INCR_BASEJOB** and **BKR_EDF_INCR_BASEINST** for incremental backup templates.

NO Back up CMS EDF minidisk data as a full backup.

BKR_SFS_INCR_TOGGLE

(Logical variable.) Controls whether DUMPSFS performs baseline or incremental backup processing. This variable does not have a default. Specify one of the following options:

YES For incremental SFS backup templates, specify YES and configure **BKR_SFS_INCR_BASEJOB** and **BKR_SFS_INCR_BASEINST**.

NO Perform full backups of SFS content.

BKR_SFS_INCR_BASEJOB

(Required for incremental backup templates.) Specified with **BKR_SFS_INCR_BASEINST**, this variable references the job and instance combination that comprises the baseline full backup that is referenced for

incremental processing for SFS object backups. This syntax refers to the most recent instance of job *jobname* Specify 1-8 characters (A-Z, 0-9). This variable does not have a default.

BKR_SFS_INCR_BASEINST
(Required for incremental backup jobs only.) Specified with **BKR_SFS_INCR_BASEJOB**, this variable references the job and instance combination that comprises the baseline full backup that is referenced for incremental processing for SFS object backups. Specify eight characters, numeric, padded on the left with zeros. The valid range is 00000001-99999999. This variable does not have a default.

Note: Specify **BKR_SFS_INCR_BASEINST** as `$$INST` *jobname*`$$` in the incremental backup job template where *jobname* is the baseline full backup job. This syntax refers to the most recent instance of job *jobname*.

BKR_OUT_EDF_VERBOSE
Specify whether the CMSFILE output handler generates verbose runtime output to the console when you backup data to disk, rather than to tape. This variable does not have a default. Specify one of the following options:

YES Generate more verbose output.

NO Generate less verbose output.

Note: Set this value to NO in most cases.

BKR_OUT_TAPE_VERBOSE
Specify whether the IBMTAPE output handler generates verbose runtime console output. Specify one of the following options:

YES Generate more verbose output.

NO (Default.) Generate less verbose output.

Note: Set this value to NO in most cases.

BKR_OUTPUT_SPEC
The output destination for dump tasks in a backup job.

Note: This variable has no default. You must explicitly declare it in the backup template.

Specify one of the following output handlers:

DDRTAPE SCRATCH RW 1
Defines the output handler for the job to be a single tape volume, attached to the worker service virtual machine at virtual device 181. The worker service virtual machine calls for SCRATCH tape mounts during backup processing. Backups that are produced with the DDRTAPE output handler are written in a format that you can restore with the z/VM DASD Dump Restore (DDR) utility. For more information, see Appendix G, “DDRTAPE output handler usage guidelines,” on page 145.

IBMTAPE SCRATCH RW 1
Defines the output handler for the job to be a single tape volume, attached to the worker service virtual machine at virtual device 181. The worker service virtual machine calls for SCRATCH tape mounts during backup processing. Fix parameters for IBMTAPE as `SCRATCH RW 1` for backup jobs.

IBMTWIN SCRATCH RW 1 SCRATCH

Defines the output handler for the job to be tape "twin set" volumes. The output destination is a pair of logically identical (except for VOL1 label) tape volumes, which are attached to the worker service virtual machine as virtual devices 181 and 182. The worker service virtual machine calls for SCRATCH tape mounts during backup processing. Fix parameters for IBMTWIN as `SCRATCH RW 1 SCRATCH` for backup jobs.

DUALTAPE SCRATCH RW 1 SCRATCH

Defines the output handler for the job to be tape "dual set" volumes. The output destination is two tape input/output streams. Unlike IBMTWIN, DUALTAPE does not enforce end-of-volume (EOV) synchronization. DUALTAPE produces two sets of volumes, which, as a whole, contain identical data blocks.

If the primary and secondary tape devices have dissimilar capacities, DUALTAPE makes effective use of the maximum tape cartridge capacity for each device before a new scratch volume is requested. Output tape devices are attached to the worker service virtual machine as virtual devices 181 and 182. The worker service virtual machine calls for SCRATCH tape mounts during backup processing. Fix parameters for DUALTAPE as `SCRATCH RW 1 SCRATCH` for backup jobs.

To specify the primary tape pool (virtual device 181) specify **`EUM_Pool_Owner`** and **`EUM_Pool_Name`** using CONFIG statements in the backup job template. For more information, see "Tape Manager for z/VM parameters" on page 151.

To specify the alternate, or secondary, set of tapes (virtual device 182) specify **`BKR_JOB_EUM_ALT_POOL_OWNER`** and **`BKR_JOB_EUM_ALT_POOL_NAME`** using CONFIG statements in the job template. For more information, see the descriptions for **`BKR_JOB_EUM_ALT_POOL_OWNER`** and **`BKR_JOB_EUM_ALT_POOL_NAME`**.

Note: To produce two identical copies of backup data that is written to identical sets of media, use IBMTWIN. To produce two identical copies of backup data where you are not required to produce two identical sets of physical media, use DUALTAPE.

CMSFILE filename filetype *

Direct backup output to media in a disk pool. During backup job processing, Backup and Restore Manager looks for a CMS file that is named *filename filetype* on a file mode that is available to the worker. The recommended usage is *jobname* `DISKPOOL *`. Store DISKPOOL files on the `CONFIGURATION` or `JOBDEFS` minidisk or directory.

To obtain backup media, worker service virtual machines reference *jobname* DISKPOOL during backup processing. Workers select the first DISKPOOL minidisk that is available for a WR-mode link and that has sufficient free space to contain a full backup image of the minidisk or file space that is selected for backup. Workers retain the same minidisk until the end of the job or until insufficient free space is available to contain the next object.

Note: In the disk pool, include at least one minidisk for each worker that you configure in the job template. For example, if you specify `BKR_JOB_WORKERS = 3`, the referenced disk pool must contain at least three entries. This requirement is necessary because CMS does not support sharing of R/W minidisks among multiple virtual machines.

Allocate at least *n*+1 minidisks for the DISKPOOL, where *n* is the number of workers that are allocated in the backup jobs that use the pool. Allocating at least one extra minidisk to the pool helps ensure that a minidisk is available for workers that require a new minidisk volume during backup processing.

For more information, see "Requirements for disk devices" on page 41.

Optional variables

The following CONFIG keyword variables are optional.

BKR_JOB_BACKUP_RESERVED_AS_IMAGE
(Logical variable.) Specify how to handle minidisks that are processed by the CMS **RESERVE** command. Specify one of the following options:

YES Handle reserved minidisks as an image dump instead of as a file-level backup.

NO (Default.) Handle minidisks that are processed by the CMS **RESERVE** command as file-level backups.

BKR_JOB_CMS_FILEMASK
Backup and Restore Manager filters file-level backups of both SFS and EDF minidisk containers against this expression. Only the file name, file type, and file mode number combinations that pass the filter are backed up.

Specify the filter as three tokens. The first two tokens are 1-8 byte wildcard expressions to specify file name and file type. Specify the last token as an asterisk, a percent sign, or a single valid file mode number (0-6).

Note: If you do not specify **BKR_JOB_CMS_FILEMASK**, Backup and Restore Manager uses a default selection of "* * *"

BKR_JOB_CONSECUTIVE_FAILED_TASK_LIMIT
Worker task service virtual machines track the number of consecutive failed dump tasks. **BKR_Job_Consecutive_Failed_Task_Limit** controls the number of successive failed tasks (0-9999) that Backup and Restore Manager tolerates before it stops the job. Specify **BKR_Job_Consecutive_Failed_Task_Limit** to interrupt jobs that encounter unrecoverable error situations. The default is 5.

When a worker exceeds the **BKR_Job_Consecutive_Failed_Task_Limit**, Backup and Restore Manager stops the job, flushes the remaining tasks in the job, clears the failed job from the workers queue, and sets the BKRBKUP STATUS response for the worker to the following response:

```
BKRWRKnn - FAILED jobname/instance at task nnnn of nnnn, reason "Failed Task Limit"
```

The BKRWRK*nn* console log displays an activity summary. For example:

```
BKRRVB9284E Job terminated; the consecutive failed task limit of 5 tasks has been exceeded.
BKRRVB9284E Remaining tasks in this job have not been processed.
```

```
***
*** Activity Summary:
***
*** Start time: 02/24/09 10:18:57
*** Ended time: 02/24/09 10:19:08
***
*** Catalog entry insertion elapsed time (ss.uu): 3.100249
***
*** DUMPCKD tasks, Max RC: 0, 0
*** DUMPFBA tasks, Max RC: 0, 0
*** DUMPEDF tasks, Max RC: 43, 4
*** DUMPSFS tasks, Max RC: 0, 0
*** RESTORE tasks, Max RC: 0, 0
***
```

The worker then resets to "waiting for more work" status, and is available for new jobs.

Note: To restart jobs that are interrupted by this feature, issue the command **RESTART** *jobname* to the master backup server (BKRBKUP). Issuing a RESTART *jobname* command to BKRBKUP is an appropriate method of recovery if you want to back up skipped minidisks or directories in the same instance instead of issuing the **SUBMIT** command to submit new backup instance for processing. For more information, see "RESTART" on page 94.

BKR_JOB_EUM_ALT_POOL_OWNER

The tape pool owner of the secondary tape pool for backup jobs that create two sets of tapes.

Note: The secondary tape pool is the set of tapes that are created on the virtual device 182 of the worker.

BKR_JOB_EUM_ALT_POOL_OWNER is applicable only in the following situations:

- The IBMTWIN or DUALTAPE output handlers are in use.
- Enable Tape Manager interaction through the **Tape_Handled_Via_EUM** setting and Tape Manager is not operating in RMM mode.

Note: If you define **BKR_JOB_EUM_ALT_POOL_OWNER** in a job template that uses another output handler, a warning message in the backup job log displays a message that indicates the inapplicable setting. Processing continues.

If you omit this variable, Backup and Restore Manager uses the default value that is specified by **EUM_Pool_Owner** in the BKRSYSTM CONFIG file, even if a job-level override for the primary pool is specified in the job template.

Note: If you disable Tape Manager interaction, Backup and Restore Manager ignores this variable.

BKR_JOB_EUM__ALT_POOL_NAME

The tape pool name of the secondary tape pool for backup jobs that create two sets of tapes.

Note: The secondary tape pool is the set of tapes that are created on the virtual device 182 of the worker.

BKR_JOB_EUM__ALT_POOL_NAME is applicable only in the following situations:

- The IBMTWIN or DUALTAPE output handlers are in use.
- Enable Tape Manager interaction through the **Tape_Handled_Via_EUM** setting and Tape Manager is not operating in RMM mode.

Note: If you define **BKR_JOB_EUM__ALT_POOL_NAME** in a job template that uses another output handler, a warning message in the backup job log indicates the inapplicable setting. Processing continues.

If you omit this variable, Backup and Restore Manager uses the default value that is specified by **EUM_Pool_Name** in the BKRSYSTM CONFIG file, even if you specify a job-level override for the primary pool in the job template.

Note: If you disable Tape Manager interaction, Backup and Restore Manager ignores this variable.

BKR_JOB_EUM_POOL_OWNER
The tape pool owner of the primary tape pool for backup jobs. The primary tape pool is the set of tapes that are created on the virtual device 181 of the worker.

Note: This variable is required only when you enable interaction with Tape Manager in the BKRSYSTM CONFIG file and Tape Manager is not operating in RMM mode.

BKR_JOB_EUM_POOL_NAME
The pool name of the primary tape pool for backup jobs. The primary tape pool is the set of tapes that are created on the virtual device 181 of the worker. This variable does not have a default.

Note: This variable is required only when you enable interaction with Tape Manager in the BKRSYSTM CONFIG file and Tape Manager is not operating in RMM mode. If you disable Tape Manager interaction, Backup and Restore Manager ignores this variable.

BKR_JOB_RESTART_ALLOWED
(Logical variable.) Specify one of the following values:

YES (Default.) Process only minidisks or file spaces that are *not* contained in the previous execution of the instance.

NO Process all minidisks and file spaces again when the backup instance is restarted.

BKR_JOB_SFS_PATHMASK
An SFS file space that is processed by the backup job has the directory path that is filtered by this definition. Backup and Restore Manager bypasses directory paths in a file space that do not pass the filter during backup processing. Specify a 1-8 byte wildcard expression.

Note: If you do not specify **BKR_JOB_SFS_PATHMASK**, Backup and Restore Manager uses a default selection of "*" .

BKR_JOB_SUPPRESS_IMAGE
(Logical variable.) Indicates whether non-CMS (image) data is backed up when incremental processing is specified (BKR_EDF_INCR_TOGGLE=YES). Specify one of the following values:

YES Suppress image backups, unless they occur as part of file-level backup error recovery.

NO (Default.) Perform image backups normally. Backup and Restore Manager performs a full backup of image data included in the backup job.

Note: Consider the implications of excluding non-CMS data from backup operations before you specify this option. For incremental backup procedures that are intended to process only CMS minidisk or SFS data, specifying `BKR_JOB_SUPPESS_IMAGE = YES` can greatly reduce requirements for processing time and output media. However, specifying `BKR_JOB_SUPPESS_IMAGE = NO` means that backups of image data are not performed when the incremental job is run.

BKR_JOB_TAPE_DSN

Sets the job-level value for data set name in tape labels. If not specified, the default value is `BKR.VM.BACKUP.DAT` or the value that is specified for **`BKR_Global_Default_Tape_DSN`** in the `BKRSYSTM CONFIG` file as follows:

- If not specified in the `BKRSYSTM CONFIG` file or job template, Backup and Restore Manager uses the default value of `BKR.VM.BACKUP.DAT`.
- If you specify **`BKR_GLOBAL_DEFAULT_TAPE_DSN`** in the `BKRSYSTM CONFIG` file, then Backup and Restore Manager uses that value as a default.
- If you specify **`BKR_JOB_TAPE_DSN`**, it overrides the value that is specified in the `BKRSYSTM CONFIG` file or the hard-wired default.

BKR_Job_Tape_Enable_EOF1HDR1

This variable applies only to backup templates that use the IBMTAPE, IBMTWIN, or DUALTAPE output methods. It provides a job-level override for the `BKRSYSTM CONFIG` file variable **`Tape_Enable_EOF1HDR1`**. Specify one of the following values:

1 (Default.) Tape volumes have a standard VOL1/HDR1 label at the start of each volume, and output is created with EOF1 and HDR1 label information between each backup data file that is generated during backup.

0 Tape volumes have a standard VOL1/HDR1 label at the start of each volume. Output is created without EOF1 or HDR1 label information. Individual backup data files are separated only by a tape mark.

Tip: Disabling creation of EOF1/HDR1 label sequences can help improve backup performance by reducing the elapsed time that is required for tape-based backup jobs.

For more information, see "Tape handling exit parameters" on page 149.

BKR_JOB_TOLERATE_DISKPOOL_DEPLETION

Specify if abend processing occurs when no suitable disk pool member can be found. Specify one of the following options:

YES When a suitable minidisk for the next DUMP operation in a backup to DISKPOOL media cannot be obtained, trigger an abend.

NO (Default.) Instead of entering abend processing, the worker task service virtual machine issues warning messages that indicate no suitable disk pool member was found. The backup operation continues with the next DUMP operation.

BKR_JOB_WORKERS

An integer (1-16) that specifies the number of worker service virtual machines to use. The job processor uses this value to determine the number job streams that are generated. If you do not specify a value, the default value is 1.

CMSFILE output variables

The following variables are specific to CMSFILE output. If you use User Data Processing Exit (UDPE) services, the following variables are required.

BKR_OUT_EDF_UDPE1
The name of the first UDPE. By default, UDPE1 is set to BKREXT3A for CMSFILE output.

BKR_OUT_EDF_REBLOCK
Specify whether to perform data reblocking on backup output to CMS files. Specify one of the following options:

YES Re-block backups to disk.

NO (Default.) Do not re-block backups to disk.

Note: This variable must be set to YES if UDPE services are configured because data reblocking is a prerequisite for UDPE processing.

BKR_OUT_EDF_UDPE1_PARM
Specify up to 128 bytes of parameter data for UDPE1. The default is blank. (BKREXT3A does not require parameters.)

BKR_OUT_EDF_UDPE1_PLEN
The length of **BKR_OUT_EDF_UDPE1_PARM**. This variable does not have a default. Explicitly declare it in the backup template, if used.

BKR_OUT_EDF_UDPE2
The second UDPE. The default is blank (disabled).

BKR_OUT_EDF_UDPE2_PARM
Specify up to 128 bytes of parameter data for UDPE2. The default is blank.

BKR_OUT_EDF_UDPE2_PLEN
The length of **BKR_OUT_EDF_UDPE2_PARM**. This variable does not have a default. Explicitly declare it in the backup template, if used.

DDRTAPE output variables

The following variables are specific to DDRTAPE output.

BKR_Job_DDRTAPE_Verbose
(Optional.) Specify the amount of information that DDRTAPE backup jobs display about the starting tape position for each minidisk or full DASD volume that is backed up by the job. Specify one of the following options:

YES Generate more verbose output. When you specify `CONFIG BKR_Job_DDRTAPE_Verbose = Yes`, DDRTAPE backup jobs issue message BKR9359I at the start of the backup for each object in the DDRTAPE backup job. Message BKR9359I displays the beginning tape position for the object.

NO (Default.) Generate less verbose output.

GRANULE variables

The following GRANULE variables specify the name and file mode of the temporary catalog contents file that Backup and Restore Manager generates during backup processing.

The recommended configuration is *jobname* GRANULE D, where:

- *jobname* is the name of the backup job.

- GRANULE is the static file type of GRANULE.
- D (file mode D is reserved for use as a temporary work area on all service virtual machines, including the worker task service virtual machines.)

Note: GRANULE variables do not have defaults. You must explicitly declare them in backup template. The default values provided in sample templates are recommended.

BKR_CATALOG_GRANULE_FN
The file name Backup and Restore Manager uses to produce catalog content file during run time.

Note: **BKR_CATALOG_GRANULE_FN** is required only when Backup and Restore Manager generates catalog content.

BKR_CATALOG_GRANULE_FT
The file type Backup and Restore Manager uses to produce catalog content file during run time.

Note: **BKR_CATALOG_GRANULE_FT** is required only when Backup and Restore Manager generates catalog content.

BKR_CATALOG_GRANULE_FM
The file mode Backup and Restore Manager uses to produce catalog content file during run time.

Note: **BKR_CATALOG_GRANULE_FM** is required only when Backup and Restore Manager generates catalog content.

IBMTAPE and IBMTWIN output variables

The following variables are specific to IBMTAPE and IBMTWIN output. If you use UDPE services, the following variables are required.

TAPE_EXIT1_NAME
The name of the first UDPE. The UDPE must be available on a minidisk or directory that is accessed by the worker task service virtual machine. The configuration minidisk or directory is the recommended location. This variable has no default. If you do not use UDPE support for tape-based backups, omit this variable or set it to null.

TAPE_EXIT1_PARM
Specify up to 128 bytes of parameter data available for UDPE1. The default is blank. BKREXT3A does not require parameters.

TAPE_EXIT1_PLEN
The length of **TAPE_EXIT1_PARM**. This variable does not have a default.

TAPE_EXIT2_NAME
The second UDPE. The default is blank (disabled).

TAPE_EXIT2_PARM
Specify up to 128 bytes of parameter data available for UDPE2. The default is blank.

TAPE_EXIT2_PLEN
The length of **TAPE_EXIT2_PARM**. This variable does not have a default.

CONSOLE

To write output text to the console, specify the CONSOLE keyword.

Figure 20. CONSOLE syntax

Authorization

System administrator.

Operands

text The output text to display to the console.

Example

The following example outputs the text "* Sample Job" to the console:

```
CONSOLE * Sample Job
```

CP_COMMAND

To run a CP command that a worker service virtual machine is privileged to issue, specify CP_COMMAND. The output is displayed to the console.

Note: There are no constraints on the argument to CP_COMMAND other than the entire command must fit on a single line. There is no constraint on the record length other than the constraints enforced by CP.

Figure 21. CP_COMMAND syntax

Authorization

System administrator.

Operands

command
A valid CP command. For more information, see the *z/VM CP Command and Utility Reference (SC24-6175)*.

Examples

The following example initiates the recording of console activity and sends the resulting output to user BKRADMIN for evaluation:

```
CP_COMMAND SPOOL CONSOLE TO BKRADMIN CLASS T TERM START
CP_COMMAND TERM MORE 0 0
CP_COMMAND TERM HOLD OFF
```

The following example provides the job end time:

```
CP_COMMAND QUERY TIME
```

CP_QUIET

To run a CP command that a worker service virtual machine is privileged to issue, specify the CP_QUIET keyword. The output is suppressed.

Figure 22. CP_QUIET syntax

Note: There are no constraints on the argument to CP_QUIET other than the command must fit on a single line. There is no constraint on the record length other than the constraints enforced by CP.

Authorization

System administrator.

Operands

command
A valid CP command. For more information about CP commands, see the *z/VM CP Command and Utility Reference (SC24-6175)*.

Example

The following example sets control options for the console spool device:

```
CP_QUIET SPOOL CONSOLE STOP CLOSE NAME BACKUP OUTPUT
```

SUMMARIZE

The SUMMARIZE keyword inserts a copy of an EOJ summary into the BKRWRK*nn* console log that Backup and Restore Manager creates during job processing.

Figure 23. SUMMARIZE syntax

Authorization

System administrator.

Example

Figure 24 on page 75 shows an example excerpt of an EOJ summary that is inserted into the job log:

```
*** Activity Summary:
***
*** Start time: 02/09/15 00:27:46
*** Ended time: 02/09/15 04:48:20
***
*** Catalog entry insertion elapsed time (ss.uu): 21.376542
***
*** 21 minidisks could not be LINKed.
***
    DATAMOVE 05FF (rc: 108) "HCPLNM108E DATAMOVE 05FF not linked; volid $$$$$$ not mounted"
    LNX0009  927C (rc: 108) "HCPLNM108E LNX0009 927C not linked; volid DASD04 not mounted"
    L2TSTSYS E400 (rc: 108) "HCPLNM108E L2TSTSYS E400 not linked; volid L2VOL1 not mounted"
    L2TSTSYS F400 (rc: 108) "HCPLNM108E L2TSTSYS F400 not linked; volid L2VOL1 not mounted"
    L2TSTSYS 0200 (rc: 108) "HCPLNM108E L2TSTSYS 0200 not linked; volid L2VOL1 not mounted"
    L2TSTSYS 2191 (rc: 108) "HCPLNM108E L2TSTSYS 2191 not linked; volid L2VOL1 not mounted"
    L2TSTSYS 4191 (rc: 108) "HCPLNM108E L2TSTSYS 4191 not linked; volid L2VOL1 not mounted"
    L2TSTSYS 6191 (rc: 108) "HCPLNM108E L2TSTSYS 6191 not linked; volid L2VOL1 not mounted"
    L2TSTSYS 1000 (rc: 108) "HCPLNM108E L2TSTSYS 1000 not linked; volid L2VOL1 not mounted"
    L2TSTSYS 0410 (rc: 108) "HCPLNM108E L2TSTSYS 0410 not linked; volid L2VOL2 not mounted"
    MPLNX1   3000 (rc: 108) "HCPLNM108E MPLNX1 3000 not linked; volid MPRES1 not mounted"
    MPLNX1   3002 (rc: 108) "HCPLNM108E MPLNX1 3002 not linked; volid MPRES1 not mounted"
    ZVM63A   3643 (rc: 108) "HCPLNM108E ZVM63A 3643 not linked; volid 63ACM2 not mounted"
    ZVM63A   3623 (rc: 108) "HCPLNM108E ZVM63A 3623 not linked; volid 63ARL2 not mounted"
    ZVM63B   2334 (rc: 108) "HCPLNM108E ZVM63B 2334 not linked; volid 63BCM1 not mounted"
    ZVM63B   2336 (rc: 108) "HCPLNM108E ZVM63B 2336 not linked; volid 63BRL1 not mounted"
    ZVM63B   2338 (rc: 108) "HCPLNM108E ZVM63B 2338 not linked; volid 63BRES not mounted"
    ZVM63B   233A (rc: 108) "HCPLNM108E ZVM63B 233A not linked; volid 63BP01 not mounted"
    ZVM63B   233C (rc: 108) "HCPLNM108E ZVM63B 233C not linked; volid 63BU01 not mounted"
    ZVM63C   240F (rc: 108) "HCPLNM108E ZVM63C 240F not linked; volid 63C001 not mounted"
    ZVM63C   240F (rc: 108) "HCPLNM108E ZVM63C 240F not linked; volid 63C001 not mounted"
***

2 CMS EDF minidisks with possible file system errors were retried as DASD image backup:

EDF: BKRQAUSR 2191
EDF: TSTUSR05 0292

26 SFS File Spaces backups completed with a non-zero return code:

SFS: VMSFS001 AMVADMIN
     BKRJOB9000W Skipping SFS backup of "VMSFS001:AMVADMIN."; worker task needs FILEPOOL ADMIN privileges.

SFS: VMSFS001 AMVCATLG
     BKRJOB9000W Skipping SFS backup of "VMSFS001:AMVCATLG."; worker task needs FILEPOOL ADMIN privileges.

....
SFS: VMSFS001 5697J06C
     BKRJOB9000W Skipping SFS backup of "VMSFS001:5697J06C."; worker task needs FILEPOOL ADMIN privileges.

*** DUMPCKD tasks, Max RC: 145, 0
*** DUMPFBA tasks, Max RC: 0, 0
*** DUMPEDF tasks, Max RC: 545, 20
*** DUMPSFS tasks, Max RC: 43, 0
*** DUMPBFS tasks, Max RC: 6, 4
*** RESTORE tasks, Max RC: 0, 0
***
*
*
* SAMPLE FULL BACKUP TEMPLATE CREATED 01/05/2015.
* JOB IMAGE GENERATED 02/09/15 00:27:46
*
BKRJOB9005I Executing CP command "SPOOL CONSOLE CLOSE NAME SAMPFULL 20150209"
```

Figure 24. Example of an EOJ summary (SUMMARIZE)

When a minidisk cannot be backed up due to the failure of a CP **LINK** command, Backup and Restore Manager documents the problem in one of the following ways:

- If the CP **LINK** command failed before DUMPEDF processing, the backup job log contains messages BKR9303W and BKR8158E. End-of-job summary information consolidates and repeats the information as shown in the example. If **LINK** command failures were encountered, the summary report displays the number of minidisks that were unavailable for the **LINK** command during backup execution. Each affected minidisk is also displayed with the CP **LINK** command return code, and the first line of any error response. (These errors are not reflected in the DUMPEDF summary of tasks and maximum return code.)
- If the CP **LINK** command failed during DUMPEDF, DUMPCKD or DUMPFBA processing, Backup and Restore Manager displays a series of messages. For example:

```
BKRRVB9303W CP LINK for minidisk L2TMALLC 3191 failed. This minidisk will not be backed up.
BKRRVB9303W LINK return code 108.
BKRRVB8158E CP response: "HCPLNM108E L2TMALLC 3191 not linked; volid L2TMV1 not mounted".
```

These errors are reflected in the DUMPEDF summary of tasks and maximum return code, but not in the summary of **LINK** command failures.

EOJ

To initiate end-of-job processing, specify the EOJ keyword.

Figure 25. EOJ syntax

Authorization

System administrator.

Operands

text The text to display to the console. If you do not specify text, Backup and Restore Manager displays a null line on the worker console at end of job.

Example

In the following example, the text "End of job processing complete" is printed to the console:

```
EOJ End of job processing complete
```

JOB_HEADER

The JOB_HEADER keyword causes the job processor to generate job header output to the console. The output includes a copyright statement and a summary report of the environment that was configured for backup execution.

Figure 26. JOB_HEADER syntax

Authorization

System administrator.

Example

In the following example, a JOB HEADER banner is output to the console:

```
JOB_HEADER
```

JOB_TRAILER

The JOB_TRAILER keyword triggers the generation of end-of-dump housekeeping and console output.

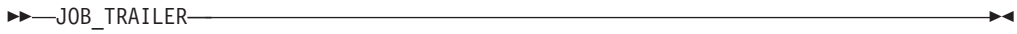


Figure 27. JOB_TRAILER syntax

Authorization

System administrator.

Usage notes

Place the JOB_TRAILER keyword after the block of DUMP*xxx* (DUMPCKD, DUMPEDF, DUMPFBA, and DUMPSFS) statements.

Example

In the following example, end of job housekeeping and console output is generated:

```
JOB_TRAILER
```

Selection record syntax

Selection records specify the objects (minidisks, shared file systems, and DASD volumes) to include or exclude from backup processing.

Figure 28. Selection record syntax

Backup and Restore Manager provides the following types of selection records:

INCLUDE
Include the objects in backup processing.

EXCLUDE
Exclude the objects from backup processing.

SELECT
Explicitly identify a minidisk, real DASD volume, or real device address for backup processing. Use the SELECT statement with the output handlers DDRTAPE, CMSFILE, DUALTAPE, IBMTAPE, or IBMTWIN. If you have backup jobs that use the DDRTAPE output handler, you can use a SELECT statement to specify a subset of cylinder ranges to back up. SELECT is valid with MINIDISK, RDEVICE, and RDEVVOL.

Each selection record consists of syntax that is specific to the object that is being processed.

Supported wildcard characters

Backup and Restore Manager supports the following wildcard characters for INCLUDE and EXCLUDE selection records.

Table 10. Supported wildcard characters for INCLUDE and EXCLUDE selection records

Wildcard character	Represents
Asterisk (*)	Zero or more of any characters.
Percent sign (%)	Any one character.
Number sign (#)	One numeric character (0-9).
At sign (@)	One hexadecimal character (A-F, a-f, 0-9).
Ampersand (&)	One alphabetic character (A-Z, a-z).
Double quotation mark (")	An escape character that allows use of one of the special characters in a pattern.

Syntax to include and exclude minidisks

The following are keyword descriptions for minidisk selection.

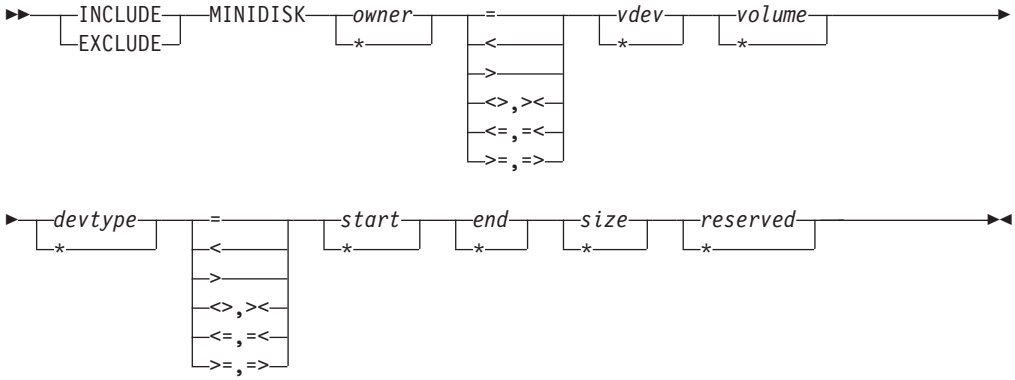


Figure 29. Minidisk selection record syntax

Note: All keywords are required unless otherwise noted. Mixed case is permitted unless otherwise noted.

MINIDISK
Specifying MINIDISK indicates that the selection is compared against the list of known minidisks.

OWNER
OWNER is the third keyword on a selection record. The maximum word length of OWNER is eight characters. An asterisk is required if no selection criteria is specified. Regular expressions rules apply.

(Operator)
The operator is the fourth keyword on a selection record. The following operators are permitted:

= Equals (string comparison).

< Less than (numeric comparison).

> Greater than (numeric comparison).

<>,>< Not equal (numeric comparison).

<=, =< Less than or equal (numeric comparison).

>=, => Greater than or equal (numeric comparison).

VDEV VDEV is the fifth keyword on a selection record. The maximum word length of VDEV is four characters. VDEV represents a hexadecimal virtual device number of the MINIDISK. An asterisk is required if no selection criteria is specified. Regular expressions rules apply only when the operator is an equal sign.

VOLUME
VOLUME is the sixth keyword on a selection record. The maximum word length of VOLUME is six characters. VOLUME represents the VOLUME LABEL of the MINIDISK. An asterisk is required if no selection criteria is specified. Regular expressions rules apply.

DEVTYPE
DEVTYPE is the seventh keyword on a selection record. The maximum word length of DEVTYPE is eight characters. DEVTYPE represents the DEVICE TYPE of the MINIDISK. An asterisk is required if no selection criteria is specified. Regular expressions rules apply. Valid values are valid DASD device types that are supported for use in the CP DIRECTORY MDISK statement.

(Operator)
The operator is the eighth keyword on a selection record.

START
START is the ninth keyword on a selection record. The maximum word length of START is ten characters. START represents the first cylinder (ECKD) or block (FBA) of the MINIDISK as a decimal number. An asterisk is required if no selection criteria is specified. Regular expressions rules apply only when the operator is an equal sign.

(Operator)
The operator is the 10th keyword on a selection record.

END END is the 11th keyword on a selection record. The maximum word length of END is ten characters. END represents the last cylinder (ECKD) or block (FBA) of the MINIDISK as a decimal number or it can be the word "END". An asterisk is required if no selection criteria is specified. Regular expressions rules apply only when the operator is an equal sign.

(Operator)
The operator is the 12th keyword on a selection record.

SIZE SIZE is the 13th keyword on a selection record. The maximum word length of SIZE is ten characters. SIZE represents the size in cylinders (ECKD) or blocks (FBA) of the MINIDISK as a decimal number or it can be the word "END". An asterisk is required if no selection criteria is specified. Regular expressions rules apply only when the operator is an equal sign.

RESERVED
RESERVED is the 14th keyword on a selection record. Specify an asterisk.

For more information, see “Minidisk selection (MINIDISK)” on page 52.

Syntax to include and exclude SFS file pools

The following are keyword descriptions for SFS selection.

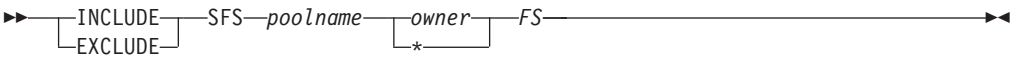


Figure 30. SFS selection record syntax

Note: All keywords are required unless otherwise noted.

SFS The selection is compared against the list of known shared file systems.

POOLNAME
POOLNAME is the 3rd keyword on a selection record. The maximum word length of POOLNAME is eight characters. POOLNAME represents the file pool of the SFS. A valid file pool name is required with or without a colon (:).

OWNER
OWNER is the 4th keyword on a selection record. The maximum word length of OWNER is eight characters. An asterisk is required if no selection criteria is specified. Regular expressions rules apply.

FS FS is the 5th keyword on a selection record. The maximum word length of FS is three characters. Set this value to SFS.

For more information, see "SFS selection (SFS)" on page 53.

Syntax to include and exclude BFS file spaces

The following are keyword descriptions for BFS selection.

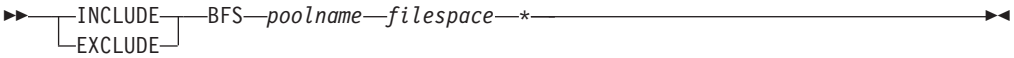


Figure 31. BFS selection record syntax

Note: All keywords are required unless otherwise noted.

BFS The selection is compared against the list of known shared file systems.

poolname
poolname is the 3rd keyword on a selection record. The maximum word length of *poolname* is eight characters. *poolname* represents the file pool of the SFS. A valid file pool name is required with or without a colon.

filespace
filespace is the 4th keyword on a selection record. The maximum word length of *filespace* is eight characters. An asterisk is required if no selection criteria is specified. Regular expressions rules apply.

***** FS is the 5th keyword on a selection record.

Syntax to include and exclude real devices by address

The following are keyword descriptions for real device selection by address.

Figure 32. Real device selection by address selection record syntax

RDEVICE
The selection is compared against the list of known real DASD devices by address.

Supported DASD devices are: ECKD and FBA. FBA includes SCSI devices that are defined to CP through SET EDEV. SCSI devices that are directly attached to a guest virtual machine are not supported because they are not defined as a DASD device or volume to CP.

ADDRESS
The real device number, or address. The maximum length of ADDRESS is four characters (*xxxx*) for a single address, or nine characters (*xxxx-xxxx*) for an address range. Specify addresses as either hexadecimal numbers or as wildcard characters.

For more information, see "Real device selection by address (RDEVICE)" on page 53.

Syntax to include and exclude real devices by volume label

The following are keyword descriptions for real device by volume label selection.

Figure 33. Real device selection by volume label selection record syntax

RDEVVOL
The selection is compared against the list of known real DASD devices by volume label.

Supported DASD devices are: ECKD and FBA. FBA includes SCSI devices that are defined to CP through SET EDEV. SCSI devices that are directly attached to a guest virtual machine are not supported because they are not defined as a DASD device or volume to CP.

VOLSER
VOLSER specifies the real device serial number. The maximum length of VOLSER is six characters. Wildcard characters are permitted.

For more information, see "Real device selection by volume label (RDEVVOL)" on page 53.

Syntax to select specific minidisks or devices

The SELECT statement explicitly identifies a minidisk, real DASD volume, or real device address for backup. The objects that you specify on the SELECT statements are included in the backup job regardless of the results of INCLUDE and EXCLUDE processing.

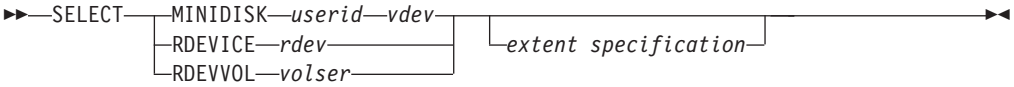


Figure 34. Explicit selection of minidisks or devices selection record syntax

Where:

MINIDISK
The selection is compared against the list of known minidisks.

userid The maximum word length of *userid* is eight characters.

vdev The maximum word length of *vdev* is four characters. VDEV represents a hexadecimal virtual device number of the minidisk.

RDEVICE
The selection is compared against the list of known real DASD devices by address.

Supported DASD devices are: ECKD and FBA. FBA includes SCSI devices that are defined to CP through SET EDEV. SCSI devices that are directly attached to a guest virtual machine are not supported because they are not defined as a DASD device or volume to CP.

rdev The real device number or address. The maximum length of *rdev* is four characters (*xxxx*) for a single address, or nine characters (*xxxx-xxxx*) for an address range. You can specify addresses as hexadecimal numbers.

RDEVVOL
The selection is compared against the list of known real DASD devices by volume label.

Supported DASD devices are: ECKD and FBA. FBA includes SCSI devices that are defined to CP through SET EDEV. SCSI devices that are directly attached to a guest virtual machine are not supported because they are not defined as a DASD device or volume to CP.

volser The real device serial number. The length can be a maximum of six characters.

Note: Wildcard characters are not permitted.

The optional *extent specification* defines one or more cylinder extents to back up.

Note: The optional extent specification applies only to DDRTAPE backups.

Specify the optional extent specification using one of the following formats:

- *start-end* (where *start* is an integer that specifies the starting cylinder and *end* is an integer that specifies the ending cylinder).
- *start.count* (where *start* is an integer that specifies the starting cylinder and *count* is an integer that specifies the number of cylinders).

- *start-END* (where *start* is an integer that specifies the starting cylinder and the literal word *END* specifies end of volume).

If you do not specify an extent specification, the default is 0-END (the entire minidisk or volume).

For more information, see "DDR (SAMPDDR TEMPSAMP)" on page 110.

Variable substitutions

Variables are permitted within the job syntax. For example, if you specify `CONFIG BKR_JOB_OWNER = $$ADMIN$$` instead of `CONFIG BKR_JOB_OWNER = JDOE` Backup and Restore Manager replaces the variable $$ADMIN$$ with the value of the **`Local_Backup_Admin_ID`** setting from the `BKRSYSTM CONFIG` file.

Backup and Restore Manager performs variable substitutions when it processes template files using the **`REVIEW`** or **`SUBMIT`** command.

$$ADMIN$$
Replaced by the $$ADMIN$$ in any job template record. The value of **`Local_Backup_Admin_ID`** from the `BKRSYSTM CONFIG` file is substituted.

$$CATALOG$$
Replaced by the $$CATALOG$$ in any job template record. The value of **`Local_Backup_Catalog_ID`** from the `BKRSYSTM CONFIG` file is substituted.

$$INST$$
The variable $$INST$$ is replaced by an eight-digit job instance number. The substitution is processed only for the **`BKR_JOB_INSTANCE`** record, and is processed only if the SUBMIT function was invoked. This substitution is implemented for automatically tracking and incrementing job instance numbers. Serialization is maintained in the file *jobname* `SERIAL` A on the master backup server (BKRBKUP).

$$INST jobname$$
The variable $$INST *jobname*$$ is replaced by the most current eight-digit job instance number. Incremental backups can use this variable to refer to the latest instance number of the baseline backup job that is specified by *jobname*. See "Incremental backup (SAMPINCR TEMPSAMP)" on page 108 for an example. The sample job uses $$INST SAMPFULL$$ to reference in the appropriate baseline backup job.

$$JOBNAME$$
Replaced by the value that is specified through the `Config BKR_Job_Name = jobname` setting in the backup job template. If $$JOBNAME$$ is encountered before the `Config BKR_Job_Name = jobname` setting, the variable is replaced with the string "*UNDEFINED*".

$$MASTER$$
Replaced by the $$MASTER$$ in any job template record. The value of **`Local_Backup_Master_ID`** from the `BKRSYSTM CONFIG` file is substituted.

$$SDATE$$
Replaced by the $$SDATE$$ in any job template record. The then-current value of the REXX DATE(S) function is substituted. The date format is: yyyymmdd where *yyyy* is the year, *mm* is the month, and *dd* is the day. For example, 20050127.

$$SUBMITTER$$

This variable is replaced with the user ID that issued a **SUBMIT**, **RESTART**, or **REVIEW** command during job template processing.

$$TEMPLATE$$

Replaced by the job template file name. While the convention is to use the same name for both the job template file name and the value set by **Config BKR_Job_Name**, it is possible to deploy multiple job templates that specify the same job name. One example for use of $$TEMPLATE$$ and $$JOBNAME$$ is to add the following record to the header section of a backup template:

```
CP_Command MSG $$SUBMITTER$$ Backup job $$JOBNAME$$ created from
template $$TEMPLATE$$ has started.
```

Note: You cannot use this substitution variable as the value of **BKR_JOB_NAME**.

$$TIME$$

Replaced by the $$TIME$$ in any job template record. The then-current value of the REXX TIME() function is substituted.

$$UDATE$$

Replaced by the $$UDATE$$ in any job template record. The then-current value of the REXX DATE(U) function is substituted. The date format is: mm/dd/yy where *mm* denotes the month, *dd* denotes the day, and *yy* denotes the year. For example, 01/27/06.

Chapter 7. Service virtual machine commands

These topics describe the commands for the Backup and Restore Manager master, catalog, and worker service virtual machines.

Common commands

The Backup and Restore Manager administrator interacts with the Backup and Restore Manager servers using the CP **SMSG** command. A user with ADMIN privileges can employ this facility to issue commands to the Backup and Restore Manager servers.

Note: Common commands are valid for the Backup and Restore Manager master, catalog, and worker service virtual machines.

CMS

Use the **CMS** command to issue a CMS command within a service virtual machine.

Figure 35. CMS command syntax

Authorization

System administrator.

Operands

cms_command
A valid CMS command.

Example

Figure 36 shows an example of the **CMS** command that is used to issue a **QUERY ACCESSED** CMS command to display the status of accessed disks and SFS directories.

```
smsg bkrcatlg cms q accessed
Ready;
 Mode  Stat     Files  Vdev  Label/Directory
 A      R/W         2  DIR   BKRSFS:BKRCATLG.
 B/B    R/O         2  DIR   BKRSFS:BKRADMIN.CONFIGURATION
 C/C    R/O        25  DIR   BKRSFS:BKRADMIN.RUNTIME
 D      R/W         1  DIRC  BKRSFS:BKRCATLG.WORKAREA
 S      R/O       691  190   MNT190
 X/S    R/O      1294  19D   MNT19D
 Y/S    R/O      1496  19E   MNT19E
 Return code: 0
```

Figure 36. CMS command example

CP

Use the **CP** command to issue a CP command within a service virtual machine.

Figure 37. CP command syntax

Authorization

System administrator.

Operands

cp_command
A valid CP command.

Example

Figure 38 shows an example of the **CP** command that is used to issue the **QUERY TIME** CP command.

```
smsg bkrbkup cp q time
Ready;
 TIME IS 12:29:41 CST MONDAY 01/05/15
 CONNECT= 99:59:59 VIRTCPU= 001:34.33 TOTCPU= 002:11.48
 Return code: 0
```

Figure 38. CP command example

HALT

Halt execution of a master, catalog, or worker service virtual machine server. Upon receipt of the **HALT** command, the service virtual machine ceases processing.

Figure 39. HALT command syntax

Authorization

System administrator.

Note: The service virtual machine that you want to halt must be idle before a **HALT** command is processed. For example, if a worker is processing a job, a **HALT** command is not acknowledged until the job completes.

Example

Figure 40 on page 87 shows an example of the **HALT** command that is issued to halt the master backup server.

```
cp smsg BKRBKUP halt
```

Figure 40. HALT command example (master backup server)

STATUS

Use the **STATUS** command to report the current runtime status to the requester.

Figure 41. STATUS command syntax

Authorization

System administrator.

Example

Figure 42 shows an example of the **STATUS** command that is issued to obtain runtime status for a master backup server (BKRBKUP) that has no active workers.

```
smsg bkrbkup status
Ready;
SVM Name   : BKRBKUP - 5697-J06 IBM Backup and Restore Manager for z/VM - Master Backup SVM - Version 1.3.0
Compiled on: 5 Jan 2015 - 14:52:29
SVM Owner  : A User - a.user@address.com
SVM Started: Monday, 5 Jan 2015 14:19:34
Catalog SVM: BKRCATLG
Worker info as of 15:23:28:
    No workers have been activated yet.
```

Figure 42. STATUS command example (master backup server with no active workers)

BKRBKUP responds with status information only for workers that were activated since the last time BKRBKUP was started. For workers that are listed in the BKRUSERS NAMES file, but that were not activated as part of a backup or restore operation, no status is reported.

Figure 43 shows an example of the **STATUS** command that is issued to obtain runtime status for a master backup server that has two active workers (BKRWRK02 and BKRWRK01).

```
sm bkrbkup status
Ready;
 SVM Name   : BAKSRVR - 5697-J06 IBM Backup and Restore Manager for z/VM - Master Backup
 SVM - Version 1.3.0
 Compiled on: 5 Jan 2015 - 20:11:50
 SVM Owner  : System Admin - sys.admin@some.corp.com
 SVM Started: Monday, 5 Jan 2015 15:54:24
 Catalog SVM: BKRCATLG
 Worker info as of 15:57:19:
   BKRWRK02 - Processing job BENCH01/00000010, task 2 of 10; EDF file-level backup of
MDISK AMVARKIV 0E00 since 15:57:10 on Monday, 5 Jan 2015.
   BKRWRK01 - Processing job BENCH01/00000010, task 3 of 9; CKD image backup of MDISK MAINT 0986 since 15:57:10 on Monday, 5 Jan 2015.
```

Figure 43. STATUS command example (master backup server with active workers)

Note: The status reply for a worker that is idle after end of job, but that has not yet logged out, identifies the job name and instance number of the last completed job.

Figure 44 shows an example of the **STATUS** command that is issued to obtain runtime status for the catalog server (BKRCATLG).

```
smsg bkrcatlg status
Ready;
SVM Name    : BKRCATLG - 5697-J06 IBM Backup and Restore Manager for z/VM - Backup Catalog
SVM - Version 1.3.0
Compiled on : 5 Jan 2015 - 11:11:53
SVM Owner   : A. User - any.user@address.com
SVM Started : Monday, 5 Jan 2015 10:31:28
Backup SVM  : BKRBKUP
Catalog base: BKRSFS:BKRCATLG.
Userid       Storage Group     4K Block Limit    4K Blocks Committed     Threshold
BKRCATLG          2                179804             51781-28%             90%
```

Figure 44. STATUS command example (catalog server)

The BKRCATLG response to the **STATUS** command reports the file *pool:filespace* of the backup catalog, and the SFS utilization statistics for the catalog file space.

Figure 45 shows an example of the worker (WRKSRVR) response to a **STATUS** command.

```
SVM Name : WRKSRVR - 5697-J06 IBM Backup and Restore Manager for z/VM - Worker Task SVM - Version 1.3.0
Compiled on: 5 Jan 2015 -13:43:49
SVM Owner : Any
Smith - any.user@address.com
SVM Started: Monday, 24 Nov 2014 16:18:57
Backup SVM : RVBACKUP
Catalog SVM : BKRCATLG
Idle Timeout: +00:01:00
```

Figure 45. STATUS command example (worker response)

BKRWRK*nn* users respond to the **STATUS** command only when they are idle. The worker response identifies the master backup service virtual machine and the catalog service virtual machine with which the worker is associated.

SUSPEND mode commands

SUSPEND mode commands apply to the Backup and Restore Manager master, catalog, and worker service virtual machines. The following commands are available when Backup and Restore Manager is in SUSPEND mode.

CMS

Use the **CMS** command to issue a CMS command within a service virtual machine.

Figure 46. CMS command syntax

Authorization

System administrator.

Operands

cms_command
A valid CMS command.

CP

Use the **CP** command to issue a CP command within a service virtual machine.

Figure 47. CP command syntax

Authorization

System administrator.

Operands

cp_command
A valid CP command.

RESTART

The **RESTART** command resets the virtual machine to a known state and then attempts to IPL CMS again using the CP **SET CONCEAL ON** facility.

Figure 48. RESTART command syntax

When a **RESTART** command is processed, the following events occur:

- CP **DETACH** commands are issued for virtual device addresses that are reserved for use by the service virtual machine.
- CP **SET CONCEAL ON** is issued. This function enables the virtual machine to be IPLed again with the same parameters that were in effect at the previous logon or IPL.
- GLOBALV information that is used by task abnormal termination interception is reset.
- CP **SYSTEM CLEAR** is issued. With CP **SET CONCEAL ON** in effect, it causes the virtual machine to be IPLed again subject to the limitations that are imposed by the CONCEAL facility. If the IPL through the CONCEAL facility is not successful, the service virtual machine enters CP READ status.

For more information about **SET CONCEAL**, see *z/VM CP Commands and Utilities Reference*.

Authorization

Backup administrator.

Operands

This command has no operands.

RESUME

Use the **RESUME** command to attempt to resume normal processing at the point where it was interrupted.

When a **RESUME** command is accepted, the count of abnormal task terminations that were encountered is reset to zero. If an excessive number of abnormal task terminations takes place after a **RESUME** command, Backup and Restore Manager enters SUSPEND mode again.

Figure 49. RESUME command syntax

Authorization

Backup administrator.

Operands

This command has no operands.

Master backup service virtual machine commands

The following commands are applicable to the master backup server only.

CANCEL

Use the **CANCEL** command to stop a specific worker, or all of the workers that are associated with a specified job.

Figure 50. CANCEL command syntax

Authorization

System administrator.

When you issue the **CANCEL** command and the worker service virtual machine (*worker*) registers as an active worker with the master backup server, the following actions occur.

When you issue the **CANCEL** command with the default option of PURGE, the following events occur:

- The affected worker service virtual machines are stopped. The master backup service virtual machine issues a CP **FORCE** command to stop the workers.
- All files on the workers virtual reader queue are removed. This action clears all current and pending activity from the worker's reader queue, regardless of class, thus completely resetting the state of the worker.

When you issue the **CANCEL** command with the NOPURGE option, the following events occur:

- The affected worker service virtual machines are stopped. The master backup service virtual machine issues a CP **FORCE** command to stop the workers.
- The current job and queued tasks on the workers reader queue are left in place. This action allows the system operator or system administrator the option of restarting the worker by using a manual CP **XAUTOLOG** command, or the opportunity to manually reorder queued tasks. When the worker is restarted using a manual CP **XAUTOLOG** command, or when auto-logged by the master backup server at a later point in time, processing resumes with the first task that is queued on the virtual reader of the worker.

Note: To successfully process a **CANCEL** command, the master backup service virtual machine requires CP privilege class A for use of the CP **FORCE** command, and CP class D (class D **PURGE** command).

Operands

worker
The worker service virtual machine to cancel.

JOB *jobname*
The job to cancel. You can cancel processing across multiple workers with a single command.

PURGE
(Default.) Purge all queued work from the virtual RDR of the worker when a **CANCEL** command is issued.

NOPURGE
Retain work pending on the RDR queue of the worker when a **CANCEL** command is issued.

Examples

You can use the CP SMSG interface to stop an active worker service virtual machine. Figure 51 shows an example of the **CANCEL** command that is issued to cancel worker service virtual machine BKRWRK03.

```
CP smsg bkrbkup cancel bkrwrk03
```

Figure 51. CANCEL command example

If the worker service virtual machine registered as an active worker with the master backup server (BKRBKUP), the following actions occur:

- A CP **FORCE BKRWRK03** command is issued to immediately stop the worker service virtual machine.
- A CP **PURGE BKRWRK03 RDR ALL** command is issued to clear the current and pending jobs from the virtual RDR queue of the worker service virtual machine.

In the example in Figure 52, all workers that are engaged in processing of SAMPFULL are forced from the system; queued jobs are purged.

```
SMSG BKRBKUP CANCEL JOB SAMPFULL (PURGE
```

Figure 52. CANCEL JOB (PURGE) command example

In the example in Figure 53 on page 92, all workers that are engaged in processing of SAMPINCR are forced from the system; queued jobs are retained. Processing can

be resumed by using the **XAUTOLOG** command for the workers at a later point in time:

```
SMSG BKRBKUP CANCEL JOB SAMPINCR (NOPURGE
```

Figure 53. CANCEL JOB (NOPURGE) command example

PAUSE

Pause processing for the specified worker. If the worker service virtual machine is currently processing jobs, the **PAUSE** command causes the worker service virtual machine to suspend job processing.

The worker service virtual machine pauses after the current DUMP*xxx* task completes processing. Once paused, the worker checks every 60 seconds to determine whether the pause condition was cleared. If the worker is not actively processing a backup job, the **PAUSE** command is ignored.

Figure 54. PAUSE command syntax

Note: Use the **RESUME** command to remove workers from the PAUSE state. For more information, see "RESUME" on page 95.

Authorization

System administrator.

Operands

worker The name of the worker service virtual machine to pause.

Note: If you specify *worker*, all backup and restore job processing by the specified worker, are paused.

JOB *jobname*
The job to pause. Use this operand to pause processing across multiple workers with a single command.

Note: If you specify JOB, all backup and restore job processing by all workers that are associated with the specified job, are paused.

Example

Figure 55 shows an example of the **PAUSE** command that is issued to pause worker service virtual machine BKRWRK03.

```
CP smsg bkrbkup pause bkrwrk03
```

Figure 55. PAUSE command example

If the worker service virtual machine registered as an active worker with the master backup server (BKRBKUP), the worker processing is paused.

QUERY DISKPOOL

Use the **QUERY DISKPOOL** command to obtain information about the storage resources that are listed in a specified DISKPOOL file. The **QUERY DISKPOOL** command returns the number of backup image files, the available free storage blocks for each minidisk or SFS resource in the DISKPOOL, and a summary for the entire DISKPOOL.

Figure 56. QUERY DISKPOOL command syntax

Authorization

System administrator.

Operands

poolspec
The name of a specific DISKPOOL file or a LISTFILE-compatible wildcard expression. If you do not specify a value, a default of "*" (list information for all DISKPOOL files) is assumed.

Example

Figure 57 shows an example of the **QUERY DISKPOOL** command that is issued to obtain information about the storage resources that are listed in the DISKPOOL file SAMPFULL.

```
CP SMSG BKRBKUP QUERY DISKPOOL SAMPFULL
Ready;
 BKRBAK9180I Processing SAMPFULL DISKPOOL B1...
 BKRBAK9184I SAMPFULL DISKPOOL B1 volume BKRMEDIA 293 contains 10035 files, 125002 free blocks.
 BKRBAK9184I SAMPFULL DISKPOOL B1 volume BKRMEDIA 294 contains 1664 files, 1321744 free blocks.
 BKRBAK9184I SAMPFULL DISKPOOL B1 volume VMSYS:BKRMEDIA.SAMPLE (VMSYS:BKRMEDIA.SAMPLE) contains 0 files, 1802761 free blocks.
 BKRBAK9184I SAMPFULL DISKPOOL B1 volume BKRMEDIA 296 contains 42 files, 1791703 free blocks.
 BKRBAK9184I SAMPFULL DISKPOOL B1 volume BKRMEDIA 297 contains 0 files, 1802761 free blocks.
 BKRBAK9185I SAMPFULL DISKPOOL B1 contains 11741 total files and has 6843971 free blocks.
```

Figure 57. QUERY DISKPOOL command example

QUERY INSTANCE

Issue the **QUERY INSTANCE** command to determine the current instance number for the specified backup job template.

Figure 58. QUERY INSTANCE command syntax

Authorization

System administrator.

Operands

jobname
The name of a specific backup job template or a LISTFILE-compatible wildcard expression. If you do not specify a value, a default of "*" (list information for all job templates) is assumed.

Examples

Figure 59 shows an example of the **QUERY INSTANCE** command that is issued to determine the current instance number for the SAMPFULL template.

```
CP SMSG BKRBKUP QUERY INSTANCE SAMPFULL
Ready;
 BKRBAK9188I Current instance for job SAMPFULL is set to 114.
```

Figure 59. QUERY INSTANCE command example

If the specified job does not exist, an error response is returned:

```
CP SMSG BKRBKUP QUERY INSTANCE NOSUCHJOB
Ready;
 BKRBAK9187E No automatically managed instances matching filter NOSUCHJOB were found.
```

Figure 60. QUERY INSTANCE command example (job does not exist)

RESTART

The **RESTART** command reprocesses and resubmits the specified job template without incrementing the associated job instance number. Use the **RESTART** command to reprocess a backup job after a **CANCEL (PURGE** operation. Worker tasks identify and report the minidisks and SFS file spaces that were processed during the prior execution of the job instance, and continue processing only for objects that were not cataloged from the previous execution of the restarted job and instance.

Figure 61. RESTART command syntax

Note: **RESTART** command behavior is controlled by the **CONFIG BKR_JOB_RESTART_ALLOWED** variable in the job template. For more information, see "CONFIG" on page 61.

Authorization

System administrator.

Operands

jobname
The name of the backup job to restart.

Example

Figure 62 shows an example of the **RESTART** command that is issued to restart a backup job named BKRJOB1.

```
CP SMSG BKRBKUP RESTART BKRJOB1
```

Figure 62. RESTART command example

RESUME

Resume processing after a **PAUSE** command was issued. Issuing a **RESUME** command resumes processing on the worker service virtual machine that is specified by *worker*.

The worker service virtual machine resumes processing with the next DUMP*xxx* task in the current job segment. A delay of up to 60 seconds can occur between the **RESUME** command and resumption of activity by the affected worker.

Figure 63. RESUME command syntax

Authorization

System administrator.

Operands

worker The name of the worker service virtual machine to resume processing.

JOB *jobname*
The job to resume. Use the JOB operand to resume processing across multiple workers with a single command.

Example

Figure 63 shows an example of the **RESUME** command that is issued to resume worker service virtual machine BKRWRK03.

```
CP smsg bkrbkup resume bkrwrk03
```

Figure 64. RESUME command example

If the worker service virtual machine registered as an active worker with the master backup server (BKRBKUP), processing resumes.

Note: All processing for BKRWRK03 resumes when the **RESUME** command is issued.

REVIEW

Process the specified job template and send the resulting job file to the user that issued the **REVIEW** command. Use the **REVIEW** command to test a job template definition to determine whether INCLUDE and EXCLUDE statement processing produces the expected result.

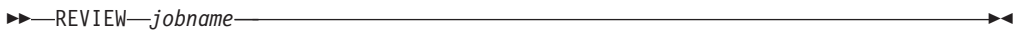


Figure 65. REVIEW command syntax

Authorization

System administrator.

The **REVIEW** command processes a job template as if the job were submitted for regular processing. All INCLUDE and EXCLUDE definitions are processed to generate a list of DUMP*xxx* (DUMPCKD, DUMPEDF, DUMPSFS, and DUMPFBA) statements for the resulting job. All substitution variables in the job template are evaluated and replaced with appropriate values. The following exceptions to **SUBMIT** command processing occur:

- Depending on the value that is specified in the template for **BKR_JOB_WORKERS**, one or more files are sent to the virtual reader of the user that issued the **REVIEW** command. These files contain the job image that would have otherwise been dispatched to the worker service virtual machines that are selected by the master backup server.
- The **REVIEW** command inserts an appropriate value for $$INST$$ in the resulting job template, but the value that is stored on the master backup server is not updated by **REVIEW** command processing.
- CP LINK processing is not performed for each minidisk that is selected during **REVIEW** command processing. See "SUBMIT" on page 97 for information about CP **LINK** processing.

By inspecting the output of a **REVIEW** operation, you can determine which resources are selected for backup processing. The type of backup operation (CKD track image, FBA block image, CMS file-level, or SFS file-level) is determined when you run the backup job.

For more information, see "Including or excluding objects from processing (INCLUDE and EXCLUDE)" on page 52 and Chapter 6, "Job syntax," on page 61.

Operands

jobname
The name of the job template to submit for review.

Example

Figure 66 shows an example of the **REVIEW** command that is issued to submit a job template that is named `bkupjob5` for review processing.

```
smsg bkrbkup review bkupjob5
```

Figure 66. REVIEW command example

SET INSTANCE

Use the **SET INSTANCE** command to create or alter the current instance number for the specified backup job template. This command can be useful in situations where you must modify the instance number that is associated with a backup job for error recovery purposes.

Figure 67. SET INSTANCE command syntax

Authorization

System administrator.

Operands

jobname
The name of the job template.

instnum
An integer in the range of 1 - 99999999. The stored instance number for the specified backup job template is set to this value.

Examples

Figure 68 shows an example of the **SET INSTANCE** command that is issued to modify the instance for a previously run backup job.

```
CP SMSG BKRBKUP SET INSTANCE VMSYSU 5
Ready;
 BKRBAK9191I Updating instance for job VMSYSU from 1 to 5.
```

Figure 68. SET INSTANCE command example (modify the instance value)

Set the instance value for a newly created template to start at 100:

```
CP SMSG BKRBKUP SET INSTANCE NEWJOB 100
Ready;
 BKRBAK9192I Setting initial instance for job NEWJOB to 100.
```

Figure 69. SET INSTANCE command example (set the instance value)

SUBMIT

Process the specified job template (send the resulting job file to the specified worker service virtual machine and start the worker service virtual machine using the CP **XAUTOLOG** command).

Figure 70. SUBMIT command syntax

Authorization

System administrator.

The **SUBMIT** command processes a job template for regular backup job submission. All INCLUDE and EXCLUDE definitions are processed to generate a list of DUMP*xxx* (DUMPCKD, DUMPEDF, DUMPSFS, and DUMPFBA) statements for the resulting job. All substitution variables in the job template are evaluated and replaced with appropriate values. The following events occur:

- Depending on the value that is specified in the template for the **BKR_JOB_WORKERS** variable, one or more files are sent to the virtual reader of the backup worker service virtual machines that are selected by the master backup server. After the backup job is delivered to the workers, each selected worker is activated using the CP **XAUTOLOG** command (if the worker is not already active).
- The substitution variable $$INST$$ is incremented by 1. The saved instance value is updated on the master backup server after it is inserted into the resulting jobs.
- During INCLUDE and EXCLUDE processing, the master backup server issues a CP **LINK** command for each minidisk that is selected for backup processing. Any minidisk that passes INCLUDE and EXCLUDE filtering, but is not accessible by using the CP **LINK** command during backup job processing, is identified by a link failure message in the BKRWRK*nn* console log. The link failure message identifies the return code from the CP **LINK** command and the user ID and the virtual device number of the minidisk.

Backup job results are recorded in the console log of the worker that is responsible for processing the job, and are normally delivered to the backup administrator upon completion of work. The backup administrator reviews the results upon completion of work, and performs appropriate record keeping tasks related to the information. Each worker delivers catalog content to the backup catalog service virtual machine during backup processing.

For more information, see "Including or excluding objects from processing (INCLUDE and EXCLUDE)" on page 52.

Operands

jobname
The name of the job template to submit for processing.

Example

Figure 71 shows an example of the **SUBMIT** command that is issued to submit a job template that is named `bkupjob5` for processing.

```
smsg bkrbkup submit bkupjob5
```

Figure 71. SUBMIT command example

Catalog commands

The following commands are applicable to the catalog server only.

EXPIRE

The **EXPIRE** command invokes expiration processing in the catalog.

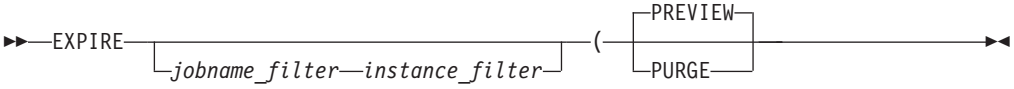


Figure 72. EXPIRE command syntax

Authorization

System administrator.

When a catalog entry for backups that are created with the CMSFILE output handler and DISKPOOL media is deleted from the backup catalog, the PURGE option also removes expired backup data from the associated minidisks or SFS directories.

To remove expired content that is stored on minidisks, BKRCATLG must be able to obtain an exclusive read/write LINK to each minidisk associated with the expired entry. Therefore, OPTION LNKNOPAS (or equivalent ESM authorization) is required in the `CP` directory entry for BKRCATLG. To remove expired content that is stored in SFS, BKRCATLG requires SFS ADMIN privileges for the associated file pools.

Note: Using the **EXPIRE** command with an empty catalog reports an "empty catalog; nothing to expire" condition.

Operands

jobname_filter
: A LISTFILE compatible wildcard expression that restricts the scope of **EXPIRE** command processing by cataloged job name. If not specified, *jobname_filter* defaults to * (no filter).

instance_filter
: A LISTFILE compatible wildcard expression that restricts the scope of **EXPIRE** command processing by cataloged instance number. If not specified, *instance_filter* defaults to * (no filter).

PREVIEW
: (The default if no options are specified.) Lists job and instance information, including the expiration date, and indicates whether the expiration date was exceeded.

PURGE
: Lists job and instance entries and expiration dates, and deletes expired entries. PURGE tolerates truncated directory structures.

Example

Figure 73 on page 100 shows an example of the **EXPIRE** command that is issued to purge expired entries. In the example, the backup catalog contains several job instances that exceeded their expiration date. The expired content is removed from the backup catalog.

When used with the PURGE option, the **EXPIRE** command identifies backup catalog content that has aged beyond its expiration date and proceeds to remove the expired job instances from the catalog.

Note: Catalog content removal is a relatively long-running task, and can cause a high volume of input/output activity on the associated SFS file pool server.

```
smsg bkrcatlg expire ( purge
Ready;

 BKRCAT8875I Job SAMPFULL instance 00000101 will expire after 20 Oct 2014.
 BKRCAT8880W Catalog for job SAMPFULL instance 00000101 has expired.
 BKRCAT8881I Removing catalog contents for job SAMPFULL instance 00000101.
 BKRCAT8875I Job SAMPINCR instance 00000056 will expire after 22 Oct 2014.
 BKRCAT8880W Catalog for job SAMPINCR instance 00000056 has expired.
 BKRCAT8881I Removing catalog contents for job SAMPINCR instance 00000056.
 BKRCAT8875I Job SAMPINCR instance 00000057 will expire after 1 Nov 2014.
 BKRCAT8880W Catalog for job SAMPINCR instance 00000057 has expired.
 BKRCAT8881I Removing catalog contents for job SAMPINCR instance 00000057.
 BKRCAT8875I Job SAMPINCR instance 00000058 will expire after 2 Nov 2014.
 BKRCAT8880W Catalog for job SAMPINCR instance 00000058 has expired.
 BKRCAT8881I Removing catalog contents for job SAMPINCR instance 00000058.
 BKRCAT8875I Job SAMPINCR instance 00000059 will expire after 10 Nov 2014.
 BKRCAT8880W Catalog for job SAMPINCR instance 00000059 has expired.
 BKRCAT8881I Removing catalog contents for job SAMPINCR instance 00000059.
 BKRCAT8875I Job SAMPINCR instance 00000060 will expire after 10 Nov 2014.
 BKRCAT8880W Catalog for job SAMPINCR instance 00000060 has expired.
 BKRCAT8881I Removing catalog contents for job SAMPINCR instance 00000060.
 BKRCAT8875I Job SAMPINCR instance 00000061 will expire after 15 Nov 2014.
 BKRCAT8875I Job SAMPINCR instance 00000062 will expire after 24 Nov 2014.
 BKRCAT8875I Job SAMPINCR instance 00000063 will expire after 30 Nov 2014.
 BKRCAT8875I Job SAMPINCR instance 00000064 will expire after 2 Dec 2014.
 BKRCAT8875I Job SAMPINCR instance 00000065 will expire after 2 Dec 2014.
 BKRCAT8875I Job SAMPINCR instance 00000066 will expire after 8 Dec 2014.
 Return code: 0
```

Figure 73. EXPIRE command example

Figure 74 shows an example of the **EXPIRE** command that is issued with the PREVIEW option. In the following example, all job instances in the backup catalog are still within their expiration period.

```
smsg bkrcatlg expire ( preview
Ready;

 BKRCAT8875I Job SAMPINCR instance 00000061 will expire after 15 Nov 2014.
 BKRCAT8875I Job SAMPINCR instance 00000062 will expire after 24 Nov 2014.
 BKRCAT8875I Job SAMPINCR instance 00000063 will expire after 30 Nov 2014.
 BKRCAT8875I Job SAMPINCR instance 00000064 will expire after 2 Dec 2014.
 BKRCAT8875I Job SAMPINCR instance 00000065 will expire after 2 Dec 2014.
 BKRCAT8875I Job SAMPINCR instance 00000066 will expire after 8 Dec 2014.
 Return code: 0
```

Figure 74. EXPIRE (PREVIEW command example

QUERY EXPIRE

Use the **QUERY EXPIRE** command to display the expiration date of a specific job name and instance.

```
►►—QUERY EXPIRE—jobname—instance———————————————————————————————►◄
```

Figure 75. QUERY EXPIRE command syntax

Authorization

System administrator.

Operands

jobname
(Required.) A valid job name.

instance
(Required.) A valid instance of job *jobname*.

To use wildcard characters to display expiration dates for multiple jobs or instances, use the **EXPIRE** command in PREVIEW mode.

Example

Figure 76 shows an example of the **QUERY EXPIRE** command.

```
smsg bkrcatlg query expire sampincr 1520
Ready;
 BKRCAT8875I Job SAMPINCR instance 00001520 will expire after 9 Oct 2014.
 Return code: 0
```

Figure 76. QUERY EXPIRE command example

QUERY TAPES

QUERY TAPES lists tape volsers that are associated with a specified job and instance.

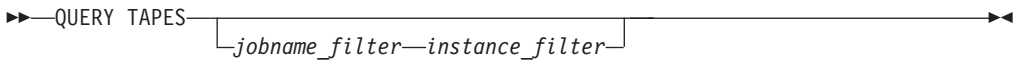


Figure 77. QUERY TAPES command syntax

Authorization

System administrator.

Operands

jobname_filter
A LISTFILE compatible wildcard expression that restricts the scope of **QUERY TAPES** processing by cataloged job name. If not specified, *jobname_filter* defaults to * (no filter).

instance_filter
A LISTFILE compatible wildcard expression that restricts the scope of **QUERY TAPES** processing by cataloged instance number. If not specified, *instance_filter* defaults to * (no filter).

Example

Figure 78 on page 102 shows an example of the **QUERY TAPES** command that is issued to list tape volsers that are associated with instance 00000007 of job BKRJOB1.

```
smsg bkrcatlg query tapes bkrjob1 7
Ready; T=0.01/0.01 15:46:35
 BKRCAT8959I Volumes in use by job BKRJOB1, instance 7:
     P20098
     P20099
     P20100
 BKRCAT8960I Total volumes: 3.
 Return code: 0
```

Figure 78. QUERY TAPES command example

SET EXPIRE

SET EXPIRE specifies when a specific job and instance expires.

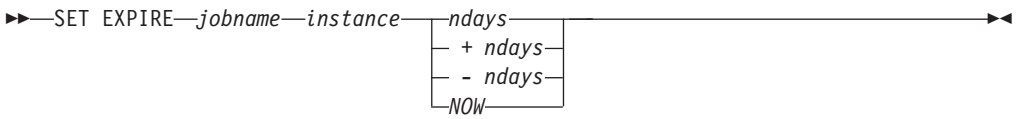


Figure 79. SET EXPIRE command syntax

Authorization

System administrator.

Operands

jobname
A valid job name.

instance
A valid instance for the job that is specified by *jobname*. The valid range is 00000001-99999999.

ndays Set the expiration date to *ndays* from today.

+*days* Extend the existing expiration date by *+days*.

-*days* Reduce the existing expiration date by *-days*.

NOW Mark the catalog content as expired and set the expiration date to today for associated Tape Manager handled tapes. The next **EXPIRE (PURGE** command that is issued removes content from the catalog.

Note: NOW assumes Backup and Restore Manager is configured to interact with Tape Manager for z/VM. If Backup and Restore Manager is *not* configured to interact with Tape Manager, the associated tapes are also marked as expired.

For example:

When Backup and Restore Manager is *not* configured to interact with Tape Manager and you specify the NOW operand, the following actions occur:

- The catalog content is marked as expired.
- Catalog entries are removed from the catalog the next time the **EXPIRE (PURGE** command is issued.
- The associated tapes are marked as expired.

- Backup and Restore Manager expires the tapes whenever **EXPIRE (PURGE** processing removes a job from the catalog. All associated tapes are removed at that point.

When Backup and Restore Manager is configured to interact with Tape Manager and you specify the NOW operand, the following actions occur:

- The catalog content is marked as expired.
- Catalog entries are removed from the catalog the next time the **EXPIRE (PURGE** command is issued.
- Backup and Restore Manager issues commands to Tape Manager to set the expiration date to today for tapes that are associated with the expired job and instance.
- Tape Manager manages the tape media accordingly.

Removal of tape information from the backup catalog does not occur until an **EXPIRE (PURGE** command removes content from the catalog.

If you use an external tape management system such as Tape Manager, the tape management system might expire and recycle tapes even if an **EXPIRE (PURGE** operation did not occur. In this scenario, it is possible for catalog content to be present, but for the associated media to be unavailable or no longer valid.

Example

Figure 80 shows an example of the **SET EXPIRE** command that is issued to expire the job that is named BKUPJOB1, instance 7, in 10 days.

```
smsg bkrcatlg set expire bkupjob1 7 10
```

Figure 80. SET EXPIRE command example

Appendix A. Sample job template descriptions

Sample templates provide you with a basis for your backup jobs. Customize the templates to meet your needs.

Note: The sample job templates are located on the SAMPLES 2C2 minidisk or SFS directory that is associated with the product installation and maintenance user ID 5697J06C. The following locations are the default locations:

- Minidisk installation: 5697J06C minidisk 2C2
- SFS installation: SFS directory VMSYS:5697J06C.BKUPMGR.SAMPLES

Full backup (SAMPFULL TEMPSAMP)

The SAMPFULL TEMPSAMP file is a sample template of a full backup that incorporates various CMS minidisks, raw CKD extents, and SFS resources. Output is directed to single-stream tape (IBMTAPE).

Configuration statements

Note the following statements in the configuration section of the SAMPFULL TEMPSAMP file.

Jobs that are based on the SAMPFULL TEMPSAMP template request a single "scratch" tape volume for output, for each worker service virtual machine that is associated with the job:

```
Config BKR_Output_Spec  = IBMTAPE SCRATCH RW 1
```

The console log from each worker service virtual machine provides the Backup and Restore Manager administrator with a historical record of the results of the backup job. The first command directs the spooled console log to the administrator identified with the **Local_Backup_Admin_ID** setting in the BKRSYSTM CONFIG file. The file name is SAMPFULL and the file type is the current date in the format: YYYYMMD:

```
CP_Command SPOOL CONSOLE TO $$ADMIN$$ CLASS T TERM START NAME $$TEMPLATE$$ $$SDATE$$
```

The second command sets the output line size to 255 characters:

```
CP_Command TERM LINES 255
```

Only one worker service virtual machine is involved in the processing jobs that result from the template:

```
Config BKR_Job_Workers = 1
```

The job name, for cataloging purposes, is SAMPFULL:

```
Config BKR_Job_Name     = SAMPFULL
```

The instance number is automatically generated and tracked by the master backup server. Numbering begins at 00000001:

```
Config BKR_Job_Instance = $$INST$$
```

The owner of this job is the owner that is specified by **Local_Backup_Admin_ID**:

```
Config BKR_Job_Owner    = $$ADMIN$$
```

The associated master backup service virtual machine name is the service virtual machine that is specified by **Local_Backup_Master_ID**:

```
Config BKR_Job_Master   = $$MASTER$$
```

The job reference token is the current date in the format: YYYYMMDD:

```
Config BKR_Job_Token    = $$SDATE$$
```

The following configuration statement indicates that an expiration date 30 days from the present date is embedded in all tape label data:

```
Config BKR_Job_Tape_Retention = 30
```

For CMS minidisks or SFS file spaces, all file names, file types, and file mode numbers are selected:

```
Config BKR_Job_CMS_FileMask = * * *
```

For SFS file spaces, all directory paths are selected:

```
Config BKR_Job_SFS_PathMask = *
```

This job template generates catalog content:

```
Config BKR_Job_Catalog     = Enabled
```

The catalog data generation routine operates in non-verbose mode:

```
Config BKR_Catalog_Verbose = Disabled
```

Catalog content is sent to **Local_Backup_Catalog_ID**:

```
Config BKR_Catalog_Master     = $$CATALOG$$
```

Temporary catalog data files are generated as SAMPFULL GRANULE on the worker service virtual machine temporary work area at file mode D1:

```
Config BKR_Catalog_Granule_FN = $$TEMPLATE$$
Config BKR_Catalog_Granule_FT = GRANULE
Config BKR_Catalog_Granule_FM = D1
```

This job does not perform incremental processing for CMS/EDF minidisks:

```
Config BKR_EDF_Incr_Toggle = Off
```

This job does not perform incremental processing for SFS file spaces:

```
Config BKR_SFS_Incr_Toggle = Off
```

If backup content is directed to tape, verbose behavior is disabled:

```
Config BKR_Out_Tape_Verbose = Disabled
```

Include and Exclude selection records

The following are descriptions of each selection record in the SAMPFULL TEMPSAMP file INCLUDE and EXCLUDE definitions.

Include every minidisk that is defined in the CP object directory:

```
Include    Minidisk   *       = *    *      *       = *         = *         = *         *
```

Omit minidisk definitions that are owned by user FDISK:

```
Exclude    Minidisk   FDISK   = *    *      *       = *         = *         = *         *
```

Omit minidisk definitions that are owned by user $ALLOC$:

```
Exclude    Minidisk   $ALLOC$  =  *    *      *       =  *         =  *         =  *         *
```

Omit minidisk definitions that are owned by any user that matches MACK0*:

```
Exclude    Minidisk   MACK0*   =  *    *      *       =  *         =  *         =  *         *
```

Revise to include minidisks that are owned by users that match MACK0*, in the address range 019* (for example, in the range 0190-019F):

```
Include    Minidisk   MACK0*   =  019* *      *       =  *         =  *         =  *         *
```

Exclude minidisks for users that match LNXSYS*:

```
Exclude    Minidisk   LNXSYS*  =  *    *      *       =  *         =  *         =  *         *
```

Include minidisks for LNXSYS* in the range 0190-019F:

```
Include    Minidisk   LNXSYS*  =  019* *      *       =  *         =  *         =  *         *
```

Exclude full-volume minidisks `MAINT 123` and `MAINT 124`:

```
Exclude    Minidisk   MAINT    =  0123 *      *       =  *         =  *         =  *       *
Exclude    Minidisk   MAINT    =  0124 *      *       =  *         =  *         =  *       *
```

Exclude minidisks for SFS file pool servers LCLSFS0* and PRDSFS* but include their 191 minidisks to back up their configuration files:

```
Exclude    Minidisk   LCLSFS0* =  *    *      *       =  *         =  *         =  *         *
Include    Minidisk   LCLSFS0* =  0191 *      *       =  *         =  *         =  *         *
Exclude    Minidisk   PRDSFS*  =  *    *      *       =  *         =  *         =  *         *
Include    Minidisk   PRDSFS*  =  0191 *      *       =  *         =  *         =  *         *
```

Exclude all minidisks for VMSERV* users, except in the range 0190-019F:

```
Exclude    Minidisk   VMSERV*  =  *    *      *       =  *         =  *         =  *         *
Include    Minidisk   VMSERV*  =  019* *      *       =  *         =  *         =  *         *
```

Exclude minidisks over 3300 cylinders (ECKD) or blocks (FBA) in size. Exclude full-volume minidisks:

```
Exclude    Minidisk   *        =  *    *      *       =  *         =  *         >  3300       *
Exclude    Minidisk   *        =  *    *      *       =  *         =  *         =  END        *
```

Include minidisks that are owned by MAINT in the address range 0120-012F. This statement negates the earlier exclusions for `MAINT 123` and `MAINT 124` and also negates the full-volume exclusions that are processed in the previous two EXCLUDE statements:

```
Include    Minidisk   MAINT    =  012* *      *       =  *         =  *         =  *         *
```

After minidisk definitions are extracted from the CP object directory and filtered, some SFS resources are incorporated into backup jobs that are created from the following statements:

```
  FUNCTION  MEDIATYPE  POOLNAME  OWNER   FS
|----------|----------|--------|--------|---|

 Include    SFS        VMSYSU:  *        SFS
 Exclude    SFS        VMSYSU:  DFSMS*   SFS
 Include    SFS        VMDEVU:  *        SFS
 Include    BFS        VMSYS:   *        *
 Exclude    BFS        VMSYS:   ROOT     *
```

This block of definitions indicates:

- All SFS file spaces from the `VMSYSU`: file pool are included.
- File spaces from `VMSYSU` for users that match DFSMS* are excluded.
- All file spaces from the pool `VMDEVU`: are included.

- All BFS file spaces from file pool VMSYS: are included
- The ROOT BFS file space from file pool VMSYS is excluded

Note: All worker service virtual machines (BKRWRK*nn*), and the master backup server (BKRBKUP) require file pool ADMIN authority for SFS file pools that are subject to back up and restore operations using Backup and Restore Manager.

Job trailer section

The following are descriptions of the statements in the SAMPFULL TEMPSAMP file job trailer section. **Job_Trailer** marks the end of INCLUDE and EXCLUDE processing, and causes summary end-of-job data to be written to the worker service virtual machine.

Catalog retention time for catalog content that is associated with jobs produced from this template is set to 30 days:

```
Config BKR_Catalog_Retention = 30
```

The Summarize statement provides a summary of basic job-level statistics such as the amount of elapsed time that is dedicated to managing catalog updates, and backup and restore task counts.

```
Summarize
```

A CP QUERY TIME command is issued to document ending time and date in the worker console log:

```
CP_Command QUERY TIME
```

Output from INDICATE USER provides expanded information about worker virtual machine resource consumption:

```
CP_Command INDICATE USER * EXP
```

A series of console messages is written to the worker console log:

```
Console *
Console * Sample full backup template $$TEMPLATE$$ updated 01/05/2015.
Console * Job image generated $$UDATE$$ $$TIME$$
Console *
```

The console log is closed:

```
CP_Quiet SPOOL CONSOLE CLOSE NAME $$TEMPLATE$$ $$SDATE$$
```

Further console output is named "WORKER OUTPUT":

```
CP_Quiet SPOOL CONSOLE NAME WORKER OUTPUT
```

The EOJ keyword indicates the end of job processing. The EOJ keyword is required as the final record of a template:

```
EOJ
```

Incremental backup (SAMPINCR TEMPSAMP)

The SAMPINCR TEMPSAMP sample backup template illustrates an incremental system backup job that refers to the most recent instance of SAMPFULL as the baseline reference point for incremental processing. Most of the job template content for an incremental backup is identical to a full backup. This information describes key differences between the SAMPFULL and the SAMPINCR TEMPSAMP templates.

Configuration statements

Setting the following values to `On` enables incremental backup processing for CMS EDF minidisks and SFS file spaces:

```
Config BKR_EDF_Incr_Toggle = On
Config BKR_SFS_Incr_Toggle = On
```

Incremental processing requires a baseline reference job in the backup catalog. The following configuration statements identify the appropriate job name (SAMPFULL) for the baseline. `$$INST SAMPFULL$$` selects the most recent instance of the SAMPFULL backup:

```
Config BKR_EDF_Incr_BaseJob = SAMPFULL
Config BKR_SFS_Incr_BaseJob = SAMPFULL
Config BKR_EDF_Incr_BaseInst = $$INST SAMPFULL$$
Config BKR_SFS_Incr_BaseInst = $$INST SAMPFULL$$
```

Note: You must provide this information for both CMS EDF minidisk processing and SFS file space processing.

An incremental backup requires a reference to the SFS file pool that contains the backup catalog:

```
Config BKR_Catalog_Pool = BKRSFS
```

You can include non-CMS minidisks in an incremental backup, but Backup and Restore Manager does not perform incremental processing of CKD or FBA image backups. A minidisk that is handled as a CKD track image or FBA block image backup is backed up in its entirety. To suppress these image backups from an incremental job, specify the following statement:

```
Config BKR_Job_Suppress_Image = Yes
```

If the current DISKPOOL resource does not have enough free space, Backup and Restore Manager searches other available resources until it finds a resource with enough free space.

If there is no DISKPOOL resource (minidisk or SFS destination) with enough free space, the **`BKR_Job_Tolerate_DiskPool_Depletion`** setting determines how the condition is handled:

```
Config BKR_Job_Tolerate_DiskPool_Depletion = Yes
```

For more information, see “CONFIG” on page 61.

Include and Exclude selection records

Consider copying INCLUDE and EXCLUDE definitions for incremental backup jobs from the corresponding *full* backup. Doing so helps ensure that incremental processing covers the same set of data sources as the related full backup.

Usage considerations

Because Backup and Restore Manager does not perform incremental processing of non-CMS data (for example, ECKD or FBA image backup minidisks), a non-CMS minidisk is treated as a full-minidisk backup. If you want to perform incremental backups of your CMS files, while omitting non-CMS information, the configuration statement `CONFIG BKR_JOB_SUPPRESS_IMAGE = YES` bypasses the backup of non-CMS minidisks. A warning message is issued for each non-CMS minidisk that is skipped during backup processing when this option is in effect. Carefully consider the use

of this option. Although it can dramatically improve the speed of incremental backup processing, non-CMS minidisks are excluded from backup in a job template with this setting.

Full backup of SFS resources (SFSBFS TEMPSAMP)

The SFSBFS TEMPSAMP sample template is an example of a full backup job definition. The output is directed to the CMS-format minidisks and SFS resources that are listed in the file SFSBFS DISKPOOL. This information describes the key differences between the SAMPFULL TEMPSAMP and the SFSBFS TEMPSAMP templates.

Configuration statements

When Backup and Restore Manager performs backups to DASD instead of tape, it requires extra configuration information to be placed on the configuration minidisk or SFS directory that is shared among its service virtual machines (the *jobname* DISKPOOL file). For more information, see "Requirements for disk devices" on page 41.

Place the SFSBFS DISKPOOL file on the product job templates minidisk. The default location is BKRBKUP 199.

```
CONFIG BKR_OUTPUT_SPEC = CMSFILE SFSBFS DISKPOOL *
```

Include and exclude selection records

The following describes how the INCLUDE and EXCLUDE definitions differ from the SAMPFULL TEMPSAMP template.

Initially, all minidisks in the CP object directory are excluded from this backup. Minidisks 0190-019F owned by users that match VMSERV* are included:

```
 FUNCTION  MEDIATYPE   OWNER         VDEV VOLUME DEVTYPE       START          END           SIZE
|----------|----------|--------|--|----|------|--------|--|----------|--|----------|--|-------

 Exclude    Minidisk   *        =  *    *      *        =  *          =  *          =  *
 Include    Minidisk   VMSERV*   =  019* *      *        =  *          =  *          =  *
```

The minidisks are included for backup to capture the file pool configuration data for the SFS file pool service virtual machines that are backed up.

The following group of INCLUDE statements include the following items:

- All SFS file spaces in the VMSYS: file pool.
- All BFS file spaces in the VMSYS: file pool.
- All SFS file spaces from VMSYSU: file pool.
- All SFS file spaces in the VMCOMSRV: file pool.

```
  FUNCTION  MEDIATYPE  POOLNAME  OWNER   FS
|----------|----------|--------|--------|---|
 Include    SFS        VMSYS:    *       *
 Include    BFS        VMSYS:    *       *
 Include    SFS        VMSYSU:   *       *
 Include    SFS        VMCOMSRV: *       *
```

DDR (SAMPDDR TEMPSAMP)

The sample job template SAMPDDR TEMPSAMP is an example of a full backup job definition that creates a DDR-compatible tape. Use the tape with the z/VM DDR facility to restore the system in the event of a disaster.

Note: DDR-compatible tapes that are created using Backup and Restore Manager do not contain the stand-alone DDR utility that is required to IPL a new system. Create this tape separately using the z/VM DDR utility. DDR-compatible tapes that are created using Backup and Restore Manager can be used as input to the stand-alone utility in a system recovery scenario.

Configuration statements

The following configuration statement specifies use of the DDRTAPE output handler to create a single set of tapes that are written in z/VM DASD Dump Restore (DDR) format:

```
Config BKR_Output_Spec = DDRTAPE SCRATCH RW 1
```

Process the resulting tapes using the CMS DDR command or the CP stand-alone DDR utility. For more information, see the *z/VM CP Commands and Utilities Reference*.

Include and Exclude selection records

The INCLUDE, EXCLUDE, and SELECT statements in the example restrict the scope of the backup to entire real DASD volumes, backing up only the volumes that are necessary for a system recovery. Individual minidisk definitions are excluded.

Note: Carefully evaluate the unique recovery requirements of your environment and modify the DASD selection in this example according to your needs.

Sample output

Figure 81 shows `SAMPDDR TEMPSAMP` sample output:

```
MAINT    0190  RR CKD 3390 3990   00000107     0015 00058786 00001604 00001605 10:25:56 12/10/07 10:28:19 12/10/07 Dump OK.
MAINT    0190  RR CKD 3390 3990   00000107     0015 00058786 00001604 00001605 10:28:21 12/10/07 10:28:33 12/10/07 Dump OK.
MAINT    0191  RR CKD 3390 3990   00000175     0015 00058786 00002624 00002625 10:28:34 12/10/07 10:29:19 12/10/07 Dump OK.
MAINT    0194  RR CKD 3390 3990   00000333     0015 00058786 00004994 00004995 10:29:20 12/10/07 10:30:38 12/10/07 Dump OK.
MAINT    0193  RR CKD 3390 3990   00000167     0015 00058786 00002504 00002505 10:30:39 12/10/07 10:31:00 12/10/07 Dump OK.
MAINT    019D  RR CKD 3390 3990   00000146     0015 00058786 00002189 00002190 10:31:01 12/10/07 10:31:14 12/10/07 Dump OK.
MAINT    019E  RR CKD 3390 3990   00000400     0015 00058786 00005999 00006000 10:31:16 12/10/07 10:32:02 12/10/07 Dump OK.
MAINT    0124  RR CKD 3390 3990   00003339     0015 00058786 00050084 00050085 10:32:03 12/10/07 10:39:17 12/10/07 Dump OK.
BKRCDD9170I Processing complete for MAINT 0123 cylinder range 0 - 20.
BKRCDD9170I Processing complete for MAINT 0123 cylinder range 391 - 480.
BKRCDD9170I Processing complete for MAINT 0123 cylinder range 3230 - 3233.
BKRCDD9170I Processing complete for MAINT 0123 cylinder range 3238 - 3338.
MAINT    0123  RR CKD 3390 3990   00003339     0015 00058786 00050084 00003240 10:39:18 12/10/07 10:39:48 12/10/07 Dump OK.
```

Figure 81. SAMPDDR TEMPSAMP (sample output)

Note the following items in the sample output:

- The last two volumes (`MAINT 124`, `MAINT 123`) are backed up as a result of `SELECT` statements in the template. The entire `MAINT 124` volume is backed up. For `MAINT 123`, a subset of the entire volume is backed up (message BKRCDD9170I indicates the areas of the volume that are backed up.)
- Where specifications pick up a contiguous range of cylinders (0-0, 1-20 from the example, and 391.45, 436-480 from the example) only one message is issued (BKRCDD9170I).
- In the example, 3238-end is specified, but when the backup is processed the true ending cylinder number (3238 - 3338) that was processed, is shown.

DR (SAMPDR TEMPSAMP)

SAMPDR TEMPSAMP is an example of a basic z/VM disaster recovery template. The output is directed to tape using the IBMTAPE output handler in native Backup and Restore Manager recording format. You must restore the backup using Backup and Restore Manager. For an example of a backup that can be restored using the z/VM DASD Dump Restore (DDR) utility, see the SAMPDDR TEMPSAMP sample template.

Configuration statements

The following configuration statement specifies that the output is directed to tape using the IBMTAPE output handler:

```
Config BKR_Output_Spec  = IBMTAPE SCRATCH RW 1
```

Include and Exclude selection records

INCLUDE and EXCLUDE definitions are more restrictive than the SAMPFULL TEMPSAMP sample template. Modify the following selection statements to suit the requirements of your installation:

```
                                                        Extent        Extent       Extent
  Function  MediaType   Owner      VDEV Volser DevType      Start         End          Size       RESERVED
|----------|----------|--------|--|----|------|--------|--|----------|--|----------|--|----------|--------|

 EXCLUDE    MINIDISK   *       =  *    *      *       =  *         =  *         =  *         *

* z/VM 6.3 - non-SSI or SSI Member slot #1 default DASD volumes

SELECT     RDEVVOL    VMCOM1
SELECT     RDEVVOL    VMCOM2
SELECT     RDEVVOL    630RL1
SELECT     RDEVVOL    630RL2
INCLUDE    RDEVVOL    M01*     =  *    *      *       =  *         =  *         =  *         *
```

z/VM 6.3 - SSI Member slot #2 default DASD volumes:

```
INCLUDE    RDEVVOL    M02*     =  *    *      *       =  *         =  *         =  *         *
```

z/VM 6.3 - SSI Member slot #3 default DASD volumes:

```
INCLUDE    RDEVVOL    M03*     =  *    *      *       =  *         =  *         =  *         *
```

z/VM 6.3 - SSI Member slot #4 default DASD volumes:

```
INCLUDE    RDEVVOL    M04*     =  *    *      *       =  *         =  *         =  *         *
```

z/VM 6.2 guest (ZVM63L2 TEMPSAMP)

The sample job template ZVM63L2 TEMPSAMP illustrates one approach to the creation of a disaster recovery backup for a guest operating system in a VM-under-VM scenario. Most of the job template content for the ZVM63L2 TEMPSAMP template is identical to the full backup SAMPFULL TEMPSAMP. This information describes the key differences between the two templates.

User ZVM63L2 is assumed to be a second-level guest z/VM 6.3 system. The template illustrates how to back up all minidisks that are owned by a single user or guest operating system. Output is directed to tape through the IBMTAPE output handler in native Backup and Restore Manager recording format. You must restore the resulting backup using Backup and Restore Manager.

Note: The ZVM63L2 TEMPSAMP template is configured to capture only the volumes that are required to allow CP to IPL. Recovery of guest systems, users, applications are unique to each installation and must be specified accordingly.

Configuration statements

One worker service virtual machine is activated to process the backup:

```
Config BKR_Job_Workers  = 1
```

Include and Exclude selection records

INCLUDE and EXCLUDE definitions are more restrictive than the SAMPFULL TEMPSAMP sample template:

```
  FUNCTION  MEDIATYPE   OWNER      VDEV VOLUME DEVTYPE       START
|----------|----------|--------|--|----|------|--------|--|----------|-

 EXCLUDE    Minidisk   *        =  *    *      *        =  *          =
 INCLUDE    Minidisk   ZVM63L2  =  *    *      *        =  *          =
```

By default, all minidisks in the CP object directory are excluded from processing. All minidisks that are owned by user ZVM63L2 are included in the backup.

Linux guest operating system (SAMPLNX TEMPSAMP)

The sample job template SAMPLNX TEMPSAMP illustrates one method you can use to automate the shutdown, backup, and restart of a Linux guest using Operations Manager and Backup and Restore Manager.

Operations Manager configuration settings

The SAMPLNX TEMPSAMP template assumes that Operations Manager for z/VM is running in the service virtual machine OPMGRM1, with the sample Operations Manager for z/VM rule definitions that are specified in the SMPLNXOM CONFSAMP file. The rule definitions contain instructions to automatically stop, back up, and restart a Linux guest.

Configuration statements

Backup data is stored on DASD resources that are identified in the file SAMPLNX DISKPOOL:

```
Config BKR_Output_Spec  = CMSFILE SAMPLNX DISKPOOL *
```

Place SAMPLNX DISKPOOL on the product job templates minidisk. The default location is BKRBKUP 199.

The Config BKR_Job_Tolerate_DiskPool_Depletion = Yes setting is in effect.

When backup jobs are configured to use the CMSFILE output method, Backup and Restore Manager checks the output destination before the backup of each minidisk or SFS file space to determine whether enough free space exists to contain the output.

If no DISKPOOL minidisk or SFS destination resource has enough free space, Backup and Restore Manager handles the condition according to the **BKR_Job_Tolerate_DiskPool_Depletion** setting. For more information, see "CONFIG" on page 61 and the comments in the SAMPLNX TEMPSAMP file.

Include and Exclude selection records

INCLUDE and EXCLUDE definitions are more restrictive than the SAMPFULL TEMPSAMP sample template. All minidisks that are owned by the Linux guest system named BKRLNXD are backed up in DASD image format (ECKD track or FB-512 block) except for minidisks that are formatted for use as a CMS EDF minidisk file system. CMS EDF-format minidisks that are owned by BKRLNXD are processed as file-level backups:

```
                                                          Extent       Extent       Extent
  Function  MediaType   Owner      VDEV Volser DevType     Start        Size         Size       RESERVED
|----------|----------|--------|--|----|------|--------|--|----------|--|----------|--|----------|--------|

 Exclude    Minidisk   *       =  *    *      *        =  *          =  *          =  *          *
 Include    Minidisk   BKRLNXD  =  *    *      *        =  *          =  *          =  *          *
```

Appendix B. Sample user exits

Backup and Restore Manager provides the following user exits.

- `BKREXI01 SAMPEXEC` is an access control exit.
- `BKREXI02 SAMPEXEC` can be used to perform pre- and post-backup processing, to notify users about the start and end of a DUMP task, or to allow the ability to implement an interface between Backup and Restore Manager and other users that must perform quiesce operations before a backup proceeds.
- `BKREXI03 SAMPEXEC` provides a mechanism to override the default algorithm that is used to select worker task service virtual machines (BKRWRK*nn*) during **`SUBMIT`**, **`REVIEW`**, **`RESTART`**, or **`RESTORE`** command processing.

The sample user exit files are on the `SAMPLES` minidisk (or SFS directory) that is associated with the product installation and maintenance user 5697J06C.

BKREXI01 exit

The BKREXI01 exit is invoked twice for each restore request. The first invocation determines whether the user who initiated the restore operation is permitted to access the restore data. The second invocation determines whether the user who initiated the restore operation is permitted to access the restore destination.

Note: Decisions are subordinate to native CP/CMS access controls, or to controls enforced by an External Security Manager (ESM) such as RACF, if present.

Required syntax and parameters

Each invocation of the BKREXI01 exit requires specific syntax and parameters.

Syntax and parameters (first invocation)

```
►►—BKREXI01—SOURCEDATA—Requester—Admin_Flag—Data_Owner—JobCat_Path————————►◄
```

Figure 82. BKREXI01 syntax (first invocation)

SOURCEDATA
A constant that indicates the invocation type.

Requester
The VM user ID that is invoking the restore transaction.

Admin_Flag
Specify one of the following values:

1 The requester was given ADMIN privileges in the configuration file `BKRUSERS NAMES`.

0 The requester is not privileged.

Data_Owner
The VM user ID that is the owner of the original data to restore.

JobCat_Path
The fully qualified SFS path to the corresponding backup catalog entry.

Syntax and parameters (second invocation)

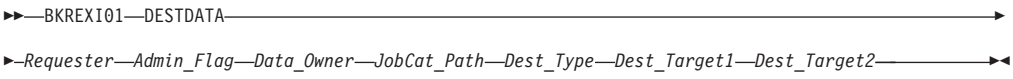


Figure 83. BKREXI01 syntax (second invocation)

DESTDATA
A constant that indicates the invocation type.

Requester
The VM user ID that is invoking the restore transaction.

Admin_Flag
One of the following values:

1 The requester was given ADMIN privileges in the configuration file `BKRUSERS NAMES`.

0 The requester is not privileged.

Data_Owner
The VM user ID that is the owner of the original data to restore.

JobCat_Path
The fully qualified SFS path to the corresponding backup catalog entry.

Dest_Type
The destination container type. Specify one of the following values:

EDF CMS minidisk.

CKD Raw CKD extent.

RDR RDR.

SFS SFS.

Dest_Target1
For EDF, CKD, or RDR, *Dest_Target1* is a user name. For SFS, *Dest_Target1* is of the form `FILEPOOL:FILESPACE`.

Dest_Target2
For EDF or CKD, *Dest_Target2* specifies a minidisk address. For RDR, *Dest_Target2* is '-' or a remote NJE node name For SFS, *Dest_Target2* is null, '-', or a numeric storage group number.

Return codes

Table 11 shows the return codes for the BKREXI01 exit.

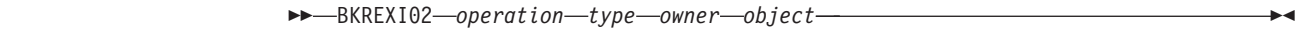
Table 11. BKREXI01 return codes

Code	Description
0	Access granted
4	Take default action
8	Access denied
12	Abend

BKREXI02 exit

Use the BKREXI02 exit to notify a third-party virtual machine when a backup of a minidisk or file space is about to begin (or recently ended). For example, use the BKREXI02 exit to enable virtual machine-specific quiesce and resume of operations around a backup event.

Required syntax and parameters



Invoke BKREXI02 using the following arguments:

operation
A constant. Specify one of the following options:

START
Backup of the specified minidisk or SFS file space begins when the exit returns control to the calling routine. Specifying the START option provides an opportunity to run pre-backup actions, such as quiescing the owner virtual machine, before the object is backed up.

END Backup of the specified minidisk or SFS file space completed. Specifying the END option provides an opportunity to perform post-backup activities such as restarting the owner virtual machine.

type The object type. A constant. Specify one of the following options:

CKD ECKD track-image backup.

EDF CMS EDF-format or file-level backup.

SFS CMS file-level backup of an SFS file space.

owner A variable. The name of the virtual machine that owns the minidisk or SFS file space to process.

object A variable. The VDEV address or file pool name as follows:

For ECKD or EDF minidisk backups, *object* is the minidisk virtual device number to process. For example, if you are backing up `MAINT 191`, *owner* and *object* are passed to BKREXI02 as `MAINT 0191`.

For SFS file space backups, *object* is the name of the SFS file pool. For example, if you are backing up the `VMSYSU:MAINT.` SFS file space, *owner* and *object* are passed to BKREXI02 as `MAINT VMSYSU`.

Return codes

Table 12 shows the BKREXI02 exit return codes.

Table 12. BKREXI02 return codes

Code	Description
0	Proceed with normal operations.
Nonzero	Triggers an immediate abend of the worker.

BKREXI03 exit

The BKREXI03 exit provides a mechanism to override the default algorithm that is used to select worker task service virtual machines (BKRWRK*nn*) during **SUBMIT**, **REVIEW**, **RESTART**, or **RESTORE** command processing.

`ALTEXI03 SAMPEXEC` is a sample version of exit BKREXI03.

`ALTEXI03 SAMPEXEC` honors the settings for reserved workers (for backup or restore jobs) in `BKRSYSTM CONFIG`. Workers from the beginning of the worker list are reserved for backups and workers from the end of the list are reserved for restores. Overlaps are detected and reported but the reserved worker settings are not overridden even if no workers are available as a result.

For each job, idle workers are selected first. Those workers that do not have work that is assigned by this exit for the longest interval are selected first.

Required syntax and parameters

BKRBKUP invokes BKREXI03 using the following arguments:

JobType
: Indicates whether the job under construction is a backup or restore operation. Either BACKUP or RESTORE is specified. (**REVIEW** and **RESTART** processing use a *JobType* of BACKUP.)

JobName
: The template name that is used to construct the job. For restore operations, the value is always set to RESTORE.

WorkerCount
: The number of workers that are requested for the job that is being processed. For backup operations, the value is determined by the **BKR_Job_Workers** job template setting. For restore operations, *WorkerCount* is always set to 1.

The following parameters must be set upon return from the calling routine:

rc
: The standard CMS return code that is set when BKREXI03 returns control to the calling routine. For more information, see Table 13 on page 119.

BKR_EXIT03_RESPONSE
: A blank-delimited character string, that is returned to the calling routine as a REXX global variable, which is established in the group BKR$ENV. If BKREXI03 exits with a return code of 0, you must define this variable in GLOBALV group BKR$ENV. The required syntax for **BKR_EXIT03_RESPONSE** is:

```
* WorkerCount Worker1 Worker2 ... WorkerN
```

Where:

*
: An asterisk, in position 1.

Note: The first character of **BKR_EXIT03_RESPONSE** must be an asterisk.

WorkerCount
An integer. Supported values are 1 - total number of workers that are defined in the BKRUSERS NAMES file. Values that are outside the supported range cause the calling routine to ignore the BKREXI03 response. If this situation occurs, the default worker selection logic is used.

Worker1 **...** *WorkerN*
Character (alphanumeric). A blank-delimited list of one or more worker virtual machine names that are selected to process the job. Virtual machine names that are returned in this response must be consistent with the definitions in the BKRUSERS NAMES file. The number of virtual machine names that are returned must match the count that is specified by *WorkerCount*.

If the contents of the string that is returned through **BKR_EXIT03_RESPONSE** cannot be successfully parsed, or if the response contains inconsistencies (for example, if the value of *WorkerCount* does not match the number of virtual machine names returned) the response from BKREXI03 is ignored and the default worker service virtual machine selection logic is applied. If this situation occurs, warning messages are issued in the BKRBKUP console log to indicate why the user exit response was rejected.

Variable requirements

When a service that manipulates REXX variables, such as the CMS GLOBALV command and the REXX SYMBOL() or VALUE() functions, valid REXX symbols are required as arguments. When a literal string is supplied as an argument, the variable name must be specified in uppercase to be considered as a valid REXX symbol.

For example:

```
BKR_Exit03_Response = '* 1 BKRWRK03'            /* Specify one worker; use BKRWRK03 to process this transaction. */
'GLOBALV SELECT BKR$ENV PUT BKR_EXIT03_RESPONSE'/* Update GLOBALV; upper-case variable name is required.        */
```

In the first statement, REXX ignores uppercase and lowercase considerations when it sets the value of the exit response. Internally, REXX folds all variable names to uppercase.

In the second statement, GLOBALV is invoked to update information that is stored in the CMS GLOBALV facility. Because the REXX variable that is being manipulated is a literal string, it is necessary to refer to the actual REXX symbol name, **BKR_EXIT03_RESPONSE**, in uppercase.

For more information, see the *z/VM REXX/VM Reference (SC24-6113)*.

Return codes

Table 13 shows the return codes for the BKREXI03 exit.

Table 13. BKREXI03 return codes

Code	Description
0	Normal return. The exit lists the worker virtual machines through GLOBALV.
4	The exit deferred decision making to the default selection algorithm. There is no response in GLOBALV.

Table 13. BKREXI03 return codes (continued)

Code	Description
8	An insufficient number of workers are available to process the operation. The operation is abandoned. A job was not submitted.
12 (and above)	The operation was abandoned for a reason other than "too few workers." A job was not submitted.

Appendix C. Sample processing exits

Backup and Restore Manager provides the following sample processing exits.

Deferred processing exit

BKRNUDAY EXEC is a "start of new day" processing exit for the master backup server.

If the BKRNUDAY EXEC is present on any accessed file mode, the routine is driven after the next WAKEUP timer interrupt occurs (once the local clock crosses the midnight boundary). You can defer processing until a later time in the day that is based on return codes from BKRNUDAY.

User data processing exits (UDPEs)

You can call exits during both backup and restore operations so that you can see the data that is processed by Backup and Restore Manager. The following sample exits are provided.

BKREXT2A SAMPASM
A sample UDPE, provided in source form that performs run-length encoding compression of backup data.

Note: This exit is an example of how to construct a UDPE. It is not suitable for production use.

BKREXT3A TEXT
A supported UDPE, provided in object (TEXT) form, that calls CMS Compression Services to compress backup data.

Deferred processing exit (BKRNUDAY SAMPEXEC)

`BKRNUDAY SAMPEXEC` is a "start of new day" processing exit for the master backup server.

If `BKRNUDAY SAMPEXEC` is present on any accessed file mode, the routine is driven after the next WAKEUP timer interrupt occurs once the local clock crosses the midnight boundary. You can defer processing until a later time in the day that is based on return codes from BKRNUDAY.

Return codes

Table 14 shows return code-driven behaviors for `BKRNUDAY EXEC`.

Table 14. BKRNUDAY EXEC (return code behavior)

Return code	Description
NewDay_Normal = 0	Normal new-day processing. CURRENT BKRDAY is updated. Do not call again today.
NewDay_Defer = 4	It is a new day, but not the right time of day. Do not update CURRENT BKRDAY, call again.
NewDay_Error = 8	Error from new-day routine. Do not update CURRENT BKRDAY (call again today).

Table 14. BKRNUDAY EXEC (return code behavior) (continued)

Return code	Description
NewDay_Serious = 12	Error from new-day routine. Update CURRENT BKRDAY (do not call again today).
NewDay_Disable = 16	Error from new-day routine. Do not check the New Day processing state again (which effectively disables the exit until the server is restarted).
NewDay_Fatal = 20	Unrecoverable error from the user exit. Invoke **BKR_Dump_And_Die**.

Note: Other return codes cause the BKRNUDAY exit to be disabled until the master backup server is restarted.

User data processing exits (UDPEs)

You can call two exits during both backup and restore processing so that you can see the data before it is written to output during a backup, and before it is loaded to disk during a restore process. Both exits can inspect and change the data within specific requirements. For example, the exits can allow for encryption and "pluggable" data compression.

Any processing that the exits do to the data during the backup must be undone during the restore operation. When the exits are called, Backup and Restore Manager feeds the output of the first exit to the second exit during the backup and then automatically reverses the process during the restore operation. Backup and Restore Manager saves the names of the exits that are called during a backup to determine the exit to call during the restore operation; therefore, the exit names are specified only in the backup job template.

Sample exits

Backup and Restore Manager provides the following sample exits.

BKREXT2A SAMPASM

`BKREXT2A SAMPASM` is a sample UDPE, provided in source form, that performs run-length encoding compression of backup data.

Note: `BKREXT2A SAMPASM` is an example of how to construct a UDPE and is not suitable for production use.

BKREXT3A TEXT

`BKREXT3A TEXT` is a supported UDPE, provided in object (TEXT) form, that calls CMS Compression Services to compress backup data. `BKREXT3A` compresses data by invoking the CMS compression services as described in the *z/VM CMS Application Development Guide*. These services require two dictionaries, one for compression and one for expansion. For best results, tailor the dictionaries to the data you plan to compress. A pair of dictionaries that are generated against a cross-section of VM data are provided as part of `BKREXT3A`. However, if your data is sufficiently different, it might be appropriate to replace them with dictionaries that produce better compression. The dictionaries have specific technical requirements that relate to format and positioning. Replacing them can be difficult and requires a thorough

understanding of the compression services and associated EXECs and programs, and object decks. For more information, see *ESA/390 Data Compression* and *ESA/390 Principles of Operation*.

BKREXT3A TEXT is a CMS file that consists of the following concatenated object files:

- BKREXT3A. Executable exit.
- BKREXT3C. Compression dictionary.
- BKREXT3E. Expansion dictionary.

Your dictionaries must also be produced as TEXT files with the same entry names, and replace those in the supplied file in the same order. Use a method that produces files of the correct format. Two EXECs that facilitate the process are distributed with CMS: CSRBDICV and CSRCMPEV. For more information, see *z/VM CMS Commands and Utility Reference (SC24-6166)*. CSRBDICV produces a dictionary as assembly language source, which you can compile to produce the necessary text decks.

After you obtain the dictionaries as object files with the correct external symbol names (BKREXT3C and BKREXT3E) replace the two portions of the supplied BKREXT3A TEXT file. Ensure that the dictionaries are in the correct order (compression, then expansion). Because they must be page-aligned, do not delete or alter the Set Page Boundary (SPB) card image in the file at the end of the BKREXT3A section. Ensure that one SPB card image is in the resulting file immediately before the BKREXT3C section. Do not insert another SPB between BKREXT3C and BKREXT3E.

The resulting file consists of the original BKREXT3A object deck with your dictionaries in object form that is concatenated behind it. Replace the BKREXT3A TEXT file on the Backup and Restore Manager disks with the file. Save a copy of the original file if you want to revert to the supplied dictionaries.

Exit register processing

When you create your own exits, you must provide them as text decks that are available to Backup and Restore Manager on an accessed disk during backup and restore operations.

The exits are loaded into storage as needed and remain in storage until the next IPL of the virtual machine. The assembly language BASR instruction calls the exits with standard register contents. The exits are responsible for saving and restoring the caller's registers, and obtaining and freeing working storage that they use. The exits must preserve the state information that they need from one call to the next. A fullword, which can be used for this purpose, directly or as an anchor for a dynamically acquired storage area, is provided in the parameter list as described below.

At call time, the contents of the register are:

- R1, which points to the parameter list.
- R13, which points to a standard 31 bit save area the exit can use to save the caller's registers.
- R14, the address to which to return when the exit finishes its processing.
- R15, the entry point of the exit.
- All other registers are unspecified.

On return, the contents of the register are R15, the return code from the exit. All other registers are the same as when called.

The following is the format of the parameter list that is pointed to register 1 at entry:

- F. A fullword in which the exit can optionally store its return code.
- CL4. The call type of INIT, DATA, or TERM:

  INIT The exit is to perform necessary initialization processing. The fifth fullword (input record address) and sixth fullword (input record length) of the parameter list are set to zero on this call. The following are the supported return codes from INIT functions:

  0 Initialization was successful.

  12 Initialization failed. Disable the exit and continue processing as if the exit was not configured.

  >12 Initialization failed (abend).

  DATA An input record is to be handled by the exit. The fifth and sixth fullwords of the parameter list contain the address and length of the source record. The exit is responsible for processing the input record and responding with an appropriate return code. For more information, see "Return codes."

  TERM Signal the exit to enter termination processing. The fifth and sixth fullwords of the parameter list are set to zero. If the exit responds with return code 4 or 8, the calling routine processes the data that is returned, and the TERM call is reissued. Successive termination calls are repeated until the exit responds with a return code of 0 (successful termination) or with a code that is greater than or equal to 12 (trigger an abend).
- CL4. The operation type of BKUP (backup) or REST (restore).
- AL4. A fullword, which is zero on the first call within a particular data stream and whose contents Backup and Restore Manager preserves across other calls in the data stream. The exit might use the fullword for any purpose, but it is intended as a place to anchor acquired working storage.
- AL4. The address of the input record for this call (must be zero for a TERM call).
- F. The length of the input record for the call.
- AL4. The exit places the address of returned data here.
- F. The exit places the length of returned data here.
- AL4. The address of data that is provided to the exit in the job template. (This value can be zero.)
- F. The length of data that is provided to the exit in the job template. (This value can be zero.)

Return codes

Return codes are provided to allow the exits to change the number of records and their content.

For example, the exits might return more or less records than were provided to them during both backup and restore operations. Table 15 on page 125 shows the return codes and their descriptions.

Table 15. User data processing exit return codes

Return code	Description
0	The exit processed the input record successfully, but has no data to return now.
4	The exit did not process the input record, but has data to return. The caller is expected to process the returned data and then call the exit again with the same input record.
8	The exit processed the input record successfully and has data to return.
12 - 96	Reserved. The exit can use codes 100 and higher to provide diagnostic information about unrecoverable errors.

Input and output records can be 1 - 60 K (61440 bytes) in length. If the exit has no data to return after it processes an input record, it must use return code 0.

Sample exit processing

The simplest exit processes each input record into one output record and exclusively uses return code 8.

Return codes 0 and 4 are used to coordinate record handling between an exit and Backup and Restore Manager when the exit wants to change the number of records that are processed in some way. An example is an exit that "bundles" small records into larger ones of a fixed length. This practice is not recommended because Backup and Restore Manager performs the bundling, but it provides an example of a more complex exit.

For example, suppose each input record that is received from Backup and Restore Manager is 80 bytes, and you want to bundle them into 8000 byte blocks.

On the first call, you would see that the user fullword (fourth parameter) is zero so you would acquire the working storage that you need, initialize it, and save the address in this fullword, then proceed to normal processing. You would store the 80 byte input record in the acquired buffer, store a pointer, and return 0 (the record was processed, nothing to return) to the caller.

For the next 98 calls, you would continue to fill your acquired buffer, passing a return code of 0 each time. On the 100th call, you would fill the buffer, return the address and length of the buffer in parameters 7 and 8 respectively, and then pass back a return code of 8 (the record was processed, data is being returned). You would repeat the process, except for the initialization step, until it was called with a zero data address and a call type of TERM. You would then return the address and length of pending data in the buffer and a return code of 4 (cannot process input, data is being returned, re-drive with the same calling parameters). On the second TERM call, because there is now no pending data in the buffer, you would free acquired working storage, zero the fourth parameter in the list, and pass back a return code of 0.

On the restore side, you are receiving 8000 byte buffers that contain 100 80 byte records. Again, on the first call, you perform initialization tasks. In this case, you want to pass back many records for each one you received, so on the first call you pass back the address and length of the first 80 byte record, save a pointer, and pass back return code 4 (the input was not processed, data is returned, re-drive with the same record). This has the effect of pausing Backup and Restore Manager so that it is not sending additional new records, until you return all the records

from the first buffer. When you return the 100th record, you pass back return code 8 (input was processed, data is returned) causing Backup and Restore Manager to pass another input record on the next call. Again, on termination, you would use return code 4 to "refuse" termination until you returned pending records, then perform termination tasks and exits with return code 0.

Appendix D. Tape management interface exits

Backup and Restore Manager performs tape management functions using a set of tape management interface exit routines.

The following sets of exit routines are provided:

- Backup and Restore Manager uses the BKRMOUNT, BKRUMNT, and BKREOV exits to perform stand-alone tape management.
- When Backup and Restore Manager is configured to interact with Tape Manager for z/VM, it invokes the EUMBKRMT, EUMBKRUM, and EUMBKREV exits to handle tape operations.

Stand-alone tape handling exits

The input/output handler routines DUALTAPE, IBMTAPE, and IBMTWIN rely on the external exit routines to handle interaction with the tape input/output subsystem.

The input/output handler routines DUALTAPE, IBMTAPE, and IBMTWIN rely on the external exit routines that are shown in Table 16 to handle interaction with the tape input/output subsystem. These external exit routines are responsible for obtaining tape devices, verifying VOL1 label integrity, providing volume chaining information during end-of-volume (EOV) processing, positioning tapes to the requested offset, and maintaining runtime environment information that is used to perform integrity checks.

Stand-alone tape handling exits are needed only if you want to perform your own tape mount and dismount processing. Stand-alone tape handling exits are not required if you are using Tape Manager, or if you are using manual mount devices and the tape mount CONFIG options in the `BKRSYSTM CONFIG` file are sufficient. For more information, see “CONFIG” on page 61.

Table 16. Stand-alone tape handling exits

Stand-alone tape handling exit	Description
BKRMOUNT	Tape mount handler
BKRUMNT	Tape dismount handler
BKREOV	End-Of-Volume (EOV) exit

The supplied exit routines maintain specific content in the backup catalog SFS file space to track tapes that are associated with specific jobs, determine whether volumes supplied in response to a "scratch" mount request are considered to be in scratch status, and to maintain EOV old-volume to new-volume chaining information in the catalog.

Note: Because the backup catalog is not considered to be a user programming interface, implementation of alternative (user-written) local tape handling exit routines must not modify backup catalog content. Tape handling exits are responsible for maintaining all tape state information external to the backup catalog file space.

Calling parameters and requirements for maintenance of information in the REXX runtime environment are described for each exit in the following sections.

BKRMOUNT

Backup and Restore Manager invokes BKRMOUNT, the tape mount handler interface, using the following parameters.

Figure 84. BKRMOUNT syntax

Parameters

volser The VOL1 label that is requested for mount. Specify one of the following values:

- SCRATCH.
- A valid SL (Standard Label) VOL1 tape label.

offset The FSF (Forward-Space-File) offset from the beginning of the tape volume. Backup and Restore Manager treats the standard VOL1 label as offset 0. The first data file is offset 1, and so on, through end of volume. For scratch tape mounts, set this value to 1. The exit should rewind the mounted volume and issue TAPE FSF 1 (or equivalent) before it returns control to the caller. Under ordinary conditions, consider a value of 0 to be invalid, as behavior consistent with specifications would result in overwriting the VOL1 label.

rwstat Indicates how to mount the requested volume. Specify one of the following values:

RO Request a read-only mount.

RW Request a read/write mount.

BKRMOUNT is responsible for verifying write-enable status before it returns control to the calling routine.

jobname

The 1-8 character job name that is associated with the calling routine. Valid values are any combination of uppercase alphabetic and numeric characters. BKRMOUNT is responsible for preserving this information for possible interaction with other tasks. For more information, see “Runtime environment variables” on page 129.

instance

The 1-8 character job instance identifier that is associated with the current job name. BKRMOUNT is responsible for preserving this information with *jobname*.

devnum

The virtual device on which to mount the requested volume. Specify one of the following values:

- null
- blank
- 181
- 0181

- 182
- 0182

The *devnum* value must represent a valid virtual device address that is associated with CMS tape device names TAP1 or TAP2. Treat a null value, or a blank value as TAP1 (181 / 0181).

Runtime environment variables

In addition to handling tape mount requests and initial VOL1 label verification, BKRMOUNT is required to establish the following GLOBALV values in the BKR$ENV group list. For more information, see *z/VM CMS Commands and Utility Reference (SC24-6166)*.

Note: The routine is expected to establish these values before control is returned to the caller.

BKR_ACTUAL_SL_LABEL
You must set this variable to the true VOL1 label of the mounted volume.

BKR_RWSTATUS
You must set this variable to either RO or RW, based on the supplied value for *rwstatus* in the supplied parameter list.

BKR_GLOBAL_JOBNAME
You must set this variable to the value of *jobname* as supplied in the caller's parameter list.

BKR_GLOBAL_JOBINST
You must set this variable to the value of instance as supplied in the caller's parameter list.

Return codes

Table 17. BKRMOUNT return codes

Return code	Description
0	Normal mount and positioning. The calling routine proceeds with normal processing.
Nonzero	An error condition was encountered. The calling routine treats nonzero return codes as a tape mount failure.

BKRUMNT

Backup and Restore Manager invokes BKRUMNT, the tape dismount handler interface, using the following parameters.

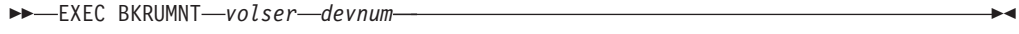


Figure 85. BKRUMNT syntax

Parameters

volser A VOL1 label that is provided by the calling routine. This value is used to verify VOL1 label integrity at dismount time.

devnum

A valid virtual device address that corresponds to TAP1 or TAP2. Specify one of the following values:

- null
- blank
- 181
- 0181
- 182
- 0182

The value must represent a valid virtual device address that is associated with CMS tape device names TAP1 or TAP2.

Note: If *devnum* is blank or null, use TAP1 (device 181).

BKRUMNT rewinds the tape drive, extracts the VOL1 label of the mounted tape, and compares the current VOL1 label with the value for **BKR_ACTUAL_SL_LABEL** as preserved using GLOBALV. A mismatch indicates a serious logic error in the calling code or corruption of the VOL1 label.

Return codes

Table 18. BKRUMNT return codes

Return code	Description
0	Normal dismount. The VOL1 label was successfully verified.
Nonzero	An error condition occurred. The calling routine treats nonzero return codes as a failure indication.

BKREOV

Backup and Restore Manager invokes BKREOV, the tape end-of-volume handling exit, using the following parameters.

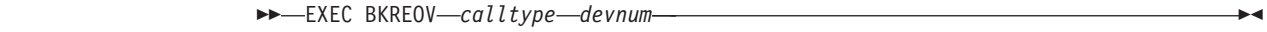


Figure 86. BKREOV syntax

Parameters

calltype

Either '' or ''. Other values are treated as an invalid invocation.

WRITDATA

Indicates that an EOV condition was raised while the calling routine was writing output to the volume that is mounted on *devnum*. In this state, BKREOV is expected to take the following actions:

1. Rewind the volume.
2. Verify the VOL1 label against the GLOBALV value of **BKR_ACTUAL_SL_LABEL**.
3. Dismount the current volume.
4. Extract the GLOBALV values of **BKR_GLOBAL_JOBNAME**, **BKR_GLOBAL_JOBINST**, and **BKR_RWSTATUS**.

5. Verify that **BKR_RWSTATUS** is set to RW from the previous mount.
6. Invoke BKRMOUNT to request a SCRATCH mount of a new volume to continue output.
7. If BKRMOUNT was successful, extract the VOL1 label of the newly mounted volume.
8. Record the old-volume to new-volume relationship for later reference on READDATA calls.

READDATA

Indicates that the calling routine encountered input stream content that references a previously handled EOV WRITDATA event. In this case, BKREOV is expected to perform the following actions:

1. Verify the VOL1 label of the currently mounted volume against the GLOBALV value of **BKR_ACTUAL_SL_LABEL**.
2. Take the necessary steps to identify the appropriate successor volume. Identification of the appropriate successor volume is typically accomplished through inspection of data that is recorded during WRITDATA processing.
3. After the appropriate successor volume is identified, the values of **BKR_GLOBAL_JOBNAME** and **BKR_GLOBAL_JOBINST** are extracted.
4. Invoke BKRMOUNT to acquire a tape mount of the successor volume, positioned to offset 1, on the appropriate tape device as specified by *devnum*.

devnum

The CMS tape device that is associated with the EOV condition. Specify one of the following values:

- null
- blank
- 181
- 0181
- 182
- 0182

The value must represent a valid virtual device address that is associated with CMS tape device names TAP1 or TAP2.

Note: If *devnum* is blank or null, use TAP1 (device 181).

Return codes

Table 19. BKREOV return codes

Return code	Description
0	Normal dismount. The VOL1 label was successfully verified.
Nonzero	An error condition occurred. The calling routine treats the condition as a failure scenario.

Tape Manager for z/VM interaction exits

The EUMBKRMT, EUMBKRUM, and EUMBKREV exits are invoked to handle tape operations when Backup and Restore Manager is configured to interact with Tape Manager for z/VM.

Table 20. Tape Manager for z/VM interaction exits

Tape Manager for z/VM interaction exits	Description
EUMBKRMT	Mount handler
EUMBKRUM	Dismount handler
EUMBKREV	EOV handler

The active set of exit routines is controlled by the **Tape_Handled_Via_EUM** parameter in the BKRSYSTM CONFIG file. For more information, see "Modifying the BKRSYSTM CONFIG file for interaction with Tape Manager" on page 28.

For information about configuring Backup and Restore Manager to interface with Tape Manager for z/VM, see "Tape Manager for z/VM parameters" on page 151.

Appendix E. DUMP*xxx* functions

Typically, DUMP*xxx* functions are not specified. Backup and Restore Manager generates them automatically, as a result of processing job template INCLUDE and EXCLUDE definitions.

The job stream syntax does not permit explicit declaration of the output method and parameters. Output method and parameters are derived from the settings for path mask, filename, type, mode# mask, and the output handler that is declared in the job header.

DUMPCKD

Invoke DUMPCKD processing to perform an image or raw CKD DASD backup.

Figure 87. DUMPCKD syntax

Authorization

System administrator.

Operands

username
: The virtual machine ID of the minidisk owner. 1-8 characters, alphanumeric.

ccuu
: The virtual address of the source minidisk (the location of the data to back up) as defined in the `CP` directory.

Variables

$$DRIVER$$
: The method of output as indicated by **`BKR_OUTPUT_SPEC`**. For more information, see "CONFIG" on page 61.

Example

In the following example, DUMPCKD processing is performed for a CKD DASD backup. DUMPCKD indicates that DUMPCKD processing is performed. MAINT is the virtual machine ID of the minidisk owner. 0490 is the virtual address of the target minidisk. IBMTAPE indicates that the output is directed to tape. RW indicates that the scratch tape is accessed as read/write. The file mode is 1.

```
DUMPCKD MAINT 190 $$DRIVER$$
```

DUMPDYN

Invoke DUMPDYN to determine whether the backup is DASD image (DUMPCKD, DUMPFBA) or CMS file-level (DUMPEDF) at time of backup.

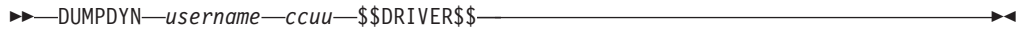


Figure 88. DUMPDYN syntax

Authorization

System administrator.

Operands

username
The virtual machine ID of the minidisk owner. 1-8 characters, alphanumeric.

ccuu The virtual address of the source minidisk (the location of the data to back up) as defined in the `CP` directory.

Variables

$$DRIVER$$
The method of output as indicated by **`BKR_OUTPUT_SPEC`**. For more information, see "CONFIG" on page 61.

Example

In the following example, DUMPDYN processing is performed for a CKD DASD backup. DUMPDYN indicates that DUMPDYN processing is performed. MAINT is the virtual machine ID of the minidisk owner. 0490 is the virtual address of the target minidisk. IBMTAPE indicates that the output is directed to tape. RW indicates that the scratch tape is accessed as read/write. The file mode is 1.

```
DUMPDYN MAINT 190 $$DRIVER$$
```

DUMPEDF

Invoke DUMPEDF processing to back up a CMS or EDF minidisk.

Figure 89. DUMPEDF syntax

Authorization

System administrator.

Operands

username
The virtual machine ID of the minidisk owner. 1-8 characters, alphanumeric.

ccuu The virtual address of the source minidisk (the location of the data to be backed up) as defined in the CP directory.

Variables

$$FMASK$$
The file mask (derived from **BKR_JOB_CMS_FILEMASK** = *fnmask ftmask fmnum*). See "CONFIG" on page 61 for more information.

$$DRIVER$$
The method of output as indicated by **BKR_OUTPUT_SPEC**. For more information, see "CONFIG" on page 61.

Example

In the following example, DUMPEDF processing is performed for a CMS or EDF minidisk backup. DUMPEDF indicates that DUMPEDF processing is performed. MAINT is the virtual machine ID of the minidisk owner. 0190 is the virtual address of the target minidisk.

```
DUMPEDF MAINT 190 $$FMASK$$ $$DRIVER$$
```

DUMPFBA

Invoke DUMPFBA processing to perform an image or raw FBA DASD backup.

Figure 90. DUMPFBA syntax

Authorization

System administrator.

Operands

username
The virtual machine ID of the minidisk owner. 1-8 characters, alphanumeric.

ccuu The virtual address of the source minidisk (the location of the data to be backed up) as defined in the CP directory.

Variables

$$DRIVER$$
The method of output as directed by **BKR_OUTPUT_SPEC**. For more information, see "CONFIG" on page 61.

Example

In the following example, DUMPFBA processing is performed for an FBA DASD backup. DUMPFBA indicates that DUMPFBA processing is performed. MAINT is the virtual machine ID of the minidisk owner. 0490 is the virtual address of the source minidisk. IBMTAPE indicates that the output is directed to tape. RW indicates that the scratch tape is accessed as read/write. The file mode is 1.

```
DUMPFBA MAINT 190 $$DRIVER$$
```

DUMPBFS

Invoke DUMPBFS processing to back up a BFS file space.

Figure 91. DUMPBFS syntax

Authorization

System administrator.

Operands

poolname
The file pool name of the source data (the location of the data to back up).

spacename
The file space name (for example, a user ID) of the source data (the location of the data to back up).

Variables

$$PMASK$$
The directory path mask (derived from **BKR_JOB_SFS_PATHMASK**. For more information, see "CONFIG" on page 61.

$$FMASK$$
The file mask (derived from **BKR_JOB_CMS_FILEMASK** = *fnmask ftmask fmnum*). For more information, see "CONFIG" on page 61.

$$DRIVER$$
The method of output as indicated by **BKR_OUTPUT_SPEC**. For more information, see "CONFIG" on page 61.

Example

In the following example, DUMPBFS processing is performed to back up an SFS file space. DUMPBFS indicates that DUMPBFS processing is performed. VMSYSU is the file pool name that contains the target file space. MAINT is the file space to back up.

```
DUMPBFS VMSYSU MAINT $$PMASK$$ $$FMASK$$ $$DRIVER$$
```

DUMPSFS

Invoke DUMPSFS processing to back up an SFS file space.

Figure 92. DUMPSFS syntax

Authorization

System administrator.

Operands

poolname
The file pool name of the source data (the location of the data to back up).

spacename
The file space name (for example, a user ID) of the source data (the location of the data to back up).

Variables

$$PMASK$$
The directory path mask (derived from **BKR_JOB_SFS_PATHMASK**. For more information, see "CONFIG" on page 61.

$$FMASK$$
The file mask (derived from **BKR_JOB_CMS_FILEMASK** = *fnmask ftmask fmnum*). For more information, see "CONFIG" on page 61.

$$DRIVER$$
The method of output as indicated by **BKR_OUTPUT_SPEC**. For more information, see "CONFIG" on page 61.

Example

In the following example, DUMPSFS processing is performed to back up an SFS file space. DUMPSFS indicates that DUMPSFS processing is performed. VMSYSU is the file pool name that contains the target file space. MAINT is the file space to back up.

```
DUMPSFS VMSYSU MAINT $$PMASK$$ $$FMASK$$ $$DRIVER$$
```

Appendix F. Summary output overview

When Backup and Restore Manager processes DUMPEDF, DUMPCKD, DUMPFBA, and DUMPSFS statements, it generates output that contains information that is related to the type of backup processing that was performed.

Figure 93 shows an example of the output generated by Backup and Restore Manager.

```
LPSERVE  0191  RR EDF 4096 LPS191 00000360 00000008 00000002 00000002 00000002 15:54:46 01/05/15 15:54:47 01/05/15 Dump OK.
MAINT    1CF1  RR EDF 4096 MNTCF1 00008100 00007529 00000045 00000045 00000015 15:54:48 01/05/15 15:54:54 01/05/15 Dump OK.
MAINT    1CF2  RR EDF 4096 MNTCF2 00008100 00008093 00000045 00000045 00000016 15:54:55 01/05/15 15:55:03 01/05/15 Dump OK.
MAINT    1CF3  RR EDF 4096 MNTCF3 00008100 00007529 00000045 00000045 00000015 15:55:04 01/05/15 15:55:11 01/05/15 Dump OK.
MAINT    0CF1  RR EDF 4096 MNTCF1 00016200 00010059 00000090 00000090 00000019 15:55:12 01/05/15 15:55:19 01/05/15 Dump OK.
MAINT    0CF2  RR EDF 4096 MNTCF2 00016200 00010049 00000090 00000090 00000018 15:55:20 01/05/15 15:55:27 01/05/15 Dump OK.
MAINT    0CF3  RR EDF 4096 MNTCF3 00016200 00010050 00000090 00000090 00000018 15:55:28 01/05/15 15:55:35 01/05/15 Dump OK.
MAINT    0190  RR EDF 4096 MNT190 00018000 00014288 00000100 00000107 00000837 15:55:36 01/05/15 15:55:58 01/05/15 OK/Recomp.
MAINT    0190  RR CKD 3390 3990   00000107     0015 00058786 00001604 00001605 15:55:59 01/05/15 15:56:16 01/05/15 Dump OK.
MAINT    02CC  RR EDF 4096 MNT2CC 00000900 00000495 00000005 00000005 00000072 15:56:17 01/05/15 15:56:19 01/05/15 Dump OK.
MAINT    0191  RR EDF 4096 MNT191 00009900 00001787 00000055 00000055 00000185 15:56:19 01/05/15 15:56:24 01/05/15 Dump OK.
MAINT    0490  RR EDF 4096 MNT490 00018000 00014285 00000100 00000107 00000836 15:56:25 01/05/15 15:56:49 01/05/15 OK/Recomp.
MAINT    0490  RR CKD 3390 3990   00000107     0015 00058786 00001604 00001605 15:56:51 01/05/15 15:57:07 01/05/15 Dump OK.
MAINT    0123  RR CKD 3390 3990   00003339     0015 00058786 00050084 00050085 15:57:08 01/05/15 16:05:31 01/05/15 Dump OK.
MAINT    0124  RR CKD 3390 3990   00003339     0015 00058786 00050084 00050085 16:05:32 01/05/15 16:13:50 01/05/15 Dump OK.
MAINT    02D2  RR EDF 4096 MNT2D2 00018900 00000538 00000105 00000105 00000219 16:13:51 01/05/15 16:13:55 01/05/15 Dump OK.
VMSYSU AUSER SFS 00002 00020000 00008502 090% 00001499 00000026 00000001 00000000 0000 0000 00000280 12:46:16 03/17/0612:46:57 01/05/15 Dump OK.
VMSYS    LDAPSRV  BFS 00002 00001800 00000000 100% 00000000 00000001 00000000 00000000 0000 0000 05:26:24 02/09/15 05:26:25 02/09/15 Dump OK.
```

Figure 93. Sample summary output

General information

The following general information is displayed in the summary output.

Owner ID
The VM user ID that owns the object that was processed.

Object ID
The identity of the object that was backed up, such as a virtual address or file space name.

Link mode (for DUMPEDF, DUMPFBA, and DUMPCKD statement processing only) The type of CP LINK that the worker obtained to the minidisk. One of the following CP LINK types:

SR Stable read.

RR Read-only.

Note: Link mode is not applicable for SFS.

Object type
One of the following object types:

EDF CMS minidisk.

CKD Raw or image CKD dump.

FBA Raw FBA dump.

SFS Shared File System file space.

EDF (DUMPEDF statement processing)

The output summary provides the following information as a result of DUMPEDF statement processing.

Block size
The EDF block size at which the minidisk is formatted.

Label The minidisk label.

Total EDF blocks
The number of available data blocks on the disk.

Used EDF blocks
The number of blocks in use.

Formatted cylinders (ECKD) or blocks (FBA)
The number of cylinders (ECKD) or blocks (FBA) that are formatted.

Max cylinders (ECKD) or blocks (FBA)
The maximum number of cylinders (ECKD) or blocks (FBA) that might be formatted on the DASD extent.

Number of files
The number of files that are backed up.

Dump start date
The date and time at which the dump routine initialized output processing.

Dump end date
The date and time at which the dump routine ended output processing.

Summary result
One of the following result types:

Dump OK
Normal outcome.

No files
The minidisk is empty.

OK/Recomp
The files were backed up normally, but there is non-EDF data at the end of the extent.

Fuzzy data
It is possible that the contents of the minidisk were modified during dump processing.

Dx210 Fault
CP DIAG 210 was unable to extract the virtual device description.

LINK error
The CP **LINK** command failed.

Note: In most cases, backup job processing detects and reports **LINK** command issues outside of DUMPEDF through message BKR9303W. However, if you start DUMPEDF outside of regular backup job processing through user-written code or the EDFDUMP sample EXEC, for example, DUMPEDF might report a **LINK** error ending status, if it is directed at a minidisk that is not available for LINK at the time of execution. For more information, see "SUMMARIZE" on page 74.

CKD (DUMPCKD statement processing)

The output summary provides the following information as a result of DUMPCKD statement processing.

Number of cylinders
The CKD DASD extent size, in cylinders.

Tracks per cylinder
The number of tracks per cylinder.

Max bytes per track
The maximum data capacity of one track on the extent.

Highest track number
The greatest relative track number in the extent. The extent starts at track 0.

Number of tracks dumped
The number of tracks that were dumped.

Note: This value is normally one greater than the highest track number. The count starts at 1.

Dump start date
The date and time at which the dump routine initialized output processing.

Dump end date
The date and time at which the dump routine ended output processing.

Summary result
One of the following result types:

Dump OK
Normal end.

Dx210 Fault
CP DIAG 210 was not able to extract the virtual device description.

LINK error
The CP LINK command failed.

FBA (DUMPFBA statement processing)

The output summary provides the following information as a result of DUMPFBA statement processing.

Number of blocks
The number of FBA blocks that were backed up.

Number of bytes
The number of bytes per block that were backed up.

Movable head blocks
The number of blocks under movable head that were backed up.

Fixed head blocks
The number of blocks under fixed head that were backed up.

Number of blocks dumped
The number of blocks that were dumped during backup processing.

Dump start date
The date and time at which the dump routine initialized output processing.

Dump end date
The date and time at which the dump routine ended output processing.

Summary result
One of the following result types:

Dump OK
Normal outcome.

Dx210 error
Error reply from CP DIAG 210 inquiry. The minidisk was not dumped.

LINK error
The CP **LINK** command failed.

SFS (DUMPSFS statement processing)

The output summary provides the following information as a result of DUMPSFS statement processing.

Storage group number
The storage group number to which the file space is assigned.

4K block limit
The maximum number of data blocks the file space can commit to the pool.

4K blocks used
The current number of committed 4K blocks.

Number of base files
The number of BASE FILE objects that were backed up.

Number of directories
The number of DIRECTORY objects that were backed up.

Number of external objects
The number of EXTERNAL OBJECT objects that were backed up.

Number of aliases
The number of ALIAS objects that were backed up.

Number of erased aliases
The number of ERASED ALIAS objects that were encountered.

Note: The aliases are discarded during processing.

Number of revoked aliases
The number of REVOKED ALIAS objects that were encountered.

Note: The aliases are discarded during processing.

Number of auth records
The number of access authorizations that resulted from **GRANT** commands, that were backed up.

Dump start date
The date and time at which the dump routine initialized output processing.

Dump end date
The date and time at which the dump routine ended output processing.

Summary result
One of the following result types:

FAILURE
Possible SFS processing error.

No access
The worker did not have access privileges for the target file space.

No Objects
The file space is empty.

Poss. Fuzz
One or more objects might have changed during processing.

CSL Error
One of the CMS Callable Service Library (CSL) routines employed during backup processing encountered an unrecoverable exception. The backup job log contains more information that identifies the CSL routine name, return code, and result code that is associated with the ending status.

BFS (DUMPBFS statement processing)

The output summary provides the following information as a result of DUMPSFS statement processing.

File Pool
The name of the SFS file pool that owns the BFS file space.

File Space
The name of the BFS file space that was backed up.

File Space Type (BFS)
The type of file space.

SFS Storage Group Number
The number of the Storage Group to which the file space was assigned.

Maximum 4K data blocks
The maximum number of 4 KB blocks that are allowed for BFS files in the file space.

4K data blocks in use
The number of 4 KB blocks that are committed in the file space.

Warning Threshold
For an SFS file space, the threshold is the percentage of the **blk_limit** at which you will receive a warning message if you meet or exceed this percentage of the file space. The default value is 90%. You can change the threshold value using the **SET THRESHOLD** command for SFS file spaces. For a BFS file space, the value is always 100%.

Number of regular files backed up
The number of regular files that were backed up.

Number of directories backed up
The number of directories that were backed up

Number of hard links backed up
The number of hard links that were backed up.

Number of symbolic links backed up
The number of symbolic links that were backed up.

Number of special objects backed up
The number of special objects that were backed up.

Number of OE/CMS External References backed up
The number of OE/CMS external references that were backed up.

Dump start date
The date at which the dump routine initialized output processing.

Dump start time
The time at which the dump routine initialized output processing.

Dump end date
The date at which the dump routine ended output processing.

Dump end time
The time at which the dump routine ended output processing.

Summary result
One of the following result types:

Dump OK.
Normal completion.

FAILURE
Severe error.

No access
Unable to access file space because of privilege limitations.

Fuzzy files
One or more objects might have changed during processing.

CSL Error
The dump ended because of an abnormal response from a CSL routine.

Appendix G. DDRTAPE output handler usage guidelines

The DDRTAPE output handler generates DASD image backups (ECKD or FB-512 devices) in a format that you can restore using the z/VM DASD Dump Restore utility.

DDRTAPE differs from other Backup and Restore Manager output handlers (DUALTAPE, IBMTAPE, IBMTWIN, and CMSFILE) in the following ways:

- DDRTAPE backups are intended for use by system programmers and administrators. Because Backup and Restore Manager does not perform restore processing for DDR-format backups, catalog content that is associated with DDRTAPE backups is not exposed to non-privileged users. General users are not granted SFS access permissions to view the catalog contents that are associated with minidisks they own. Privileged users (such as users with SFS ADMIN authority to the file pool that contains the backup catalog) can view catalog content for all backups, including backups that are created through DDRTAPE.
- Backup and Restore Manager does not restore data that is created by DDRTAPE. To restore DDR-format backups, you must use the CMS **DDR** command or the CP stand-alone DDR utility program (which you can IPL, if needed). For more information, see *z/VM CP Commands and Utilities Reference*.
- DDRTAPE requires the use of standard label (SL) tapes. Because the DDR utility does not support standard tape labels during restore operations, the following restrictions apply:
  - For the first volume in a set of tapes that are created with DDRTAPE, the VOL1 label is preserved. When you restore data from this volume, you must specify the SKIP 1 option of the DDR **RESTORE** command to bypass the VOL1 label.
  - The VOL1 label is overwritten, beginning with the second volume of any multi-volume set of tapes that are produced by DDRTAPE. This is a side-effect of producing backup tapes in DDR format. (The original VOL1 label is recorded in the backup catalog.) After the tapes expire, you must reinitialize them by re-creating an appropriate VOL1 standard label before Backup and Restore Manager can use them again.
- As noted, the DDR tape format does not support Standard Label (SL) tape labels. Label information is present only for the initial VOL1 label of the first tape that is used for output by each worker. If the backup that is being performed by a worker spans additional volumes, the VOL1 labels on subsequent volumes are overwritten.

  A DDRTAPE backup can use multiple workers. Each worker generates a set of tapes that can be restored one set at a time (using stand-alone DDR) or one set per virtual machine (running stand-alone or CMS DDR). When each worker generates the tapes sets, they create an initial tape with a VOL1 label, followed by zero or more non-labeled tapes, as needed for the backup job.

  Note: To obtain the mount sequence for tapes, track the backup log for each worker. The mount sequence is important because DDR does not tolerate out-of-sequence volumes when a restore is performed.
- DDRTAPE backups are processed only for ECKD DASD volumes and minidisks.
- DDRTAPE backups always produce an image-level (as opposed to CMS file-level) backup, which means that even when a minidisk is determined to be

formatted as a CMS minidisk, resulting in creation of a DUMPEDF statement in a backup job, the resulting backup is a DDR-format image backup rather than a file-level backup.

- If `Config BKR_Job_DDRTAPE_Verbose = Yes` is specified, the starting tape position for each DDR-format backup is recorded by message BKR9359I in the backup job log. Knowing the starting tape position can be helpful during recovery scenarios.

For other disaster recovery backups that you create with Backup and Restore Manager, retain the backup worker console log with all tapes that are intended for disaster recovery. Use the information in the worker console log to determine the content of tapes created using DDRTAPE.

For an example of a job that uses the DDRTAPE output handler, see "DDR (SAMPDDR TEMPSAMP)" on page 110. For programming interface information, see the *IBM Backup and Restore Manager for z/VM User's Guide (SC18-9523)*.

Appendix H. BKRSYSTM CONFIG parameters

Specify the following BKRSYSTM CONFIG parameters when you configure Backup and Restore Manager.

Installation contact information

The **Local_SVM_Contact** parameter specifies the installation-level contact information that is reported by the Backup and Restore Manager service virtual machines.

Local_SVM_Contact
Specify a text string such as the name and email address of the installation-level contact.

Service virtual machine parameters

If you do not want to use the default service virtual machine names that are provided in the BKRSYSTM CONFIG file, modify the following Backup and Restore Manager administrator and service virtual machine settings.

Local_Backup_Admin_ID
The user ID of the main Backup and Restore Manager administrator. The default is BKRADMIN.

Local_Backup_Master_ID
The user ID of the master backup service virtual machine. The default is BKRBKUP.

Local_Backup_Catalog_ID
The user ID of the backup catalog service virtual machine. The default is BKRCATLG.

Worker service virtual machine parameters

The following settings apply to all worker service virtual machines that you define for Backup and Restore Manager.

Worker_Idle_Timeout
Specify the amount of time that a worker service virtual machine remains idle before it logs off the system. The format is HH:MM:SS (hours:minutes:seconds). The default timeout interval is 15 minutes (00:15:00). Worker service virtual machines are auto-logged again, when needed.

Worker_Stage_Type
When you restore files to a CMS minidisk, if the destination minidisk is not formatted with the same EDF block size as the source data (or, if you are restoring an SFS backup data to a minidisk, if the destination minidisk is not formatted with an EDF block size of 4 K [4096] byte blocks), a temporary staging minidisk is required to handle the restore operation. You must set this variable to a value that is suitable for definition of T-DISK (T3380 or T3390) or VFB-512 temporary space.

The size of the staging minidisk is calculated dynamically, based on parameters of the restore operation. This value specifies whether the worker service virtual machine attempts to obtain T3390 (T-disk) or VFB-512 (v-disk) temporary storage.

Note: For best performance, set **Worker_Stage_Type** to VFB-512. You can specify other values that are valid for CP DEFINE T-disk; however, the algorithm supports VFB-512, T3390, and T3380 only.

Storage for job template processing parameters

To specify free storage for job template processing, the **Template_MDISK_Buffer_Pages** parameter.

Template_MDISK_Buffer_Pages specifies the number of pages (1- *nnnnnn*) of CMS free storage that is requested during INCLUDE and EXCLUDE statement processing. The default is 768 pages.

For large installations, if the CP directory contains more than 52,000 MDISK definitions, increase the value of **Template_MDISK_Buffer_Pages**. Calculate the minimum number of pages that are required using the following formula:

```
((mdisks * 60) / 4096) +1
```

Round up to the next integer value, where:

- `mdisk` is the number of MDISK definitions in the CP directory.
- `60` is a constant (the number of bytes for one minidisk description as returned using VMUDQ/DIAG25C).
- `4096` is a constant (the number of bytes in one 4K page).
- `1` is a constant (one extra page of memory for overhead).

Note: You might need to increase the master backup server (BKRBKUP) virtual machine size from the default value of 64MB. When Backup and Restore Manager processes **REVIEW** or **SUBMIT** commands, sufficient CMS free storage must be available to accommodate a CMSSTOR OBTAIN request for a single contiguous block of storage that is the size specified by **Template_MDISK_Buffer_Pages**.

CMS minidisk format parameters

The **BKR_Allow_EDF_Target_Format** variable specifies whether to allow worker service virtual machines to automatically format unformatted minidisks to match the restore source.

BKR_Allow_EDF_Target_Format

Specify one of the following values:

1 (Default.) Allow worker service virtual machines to automatically format unformatted minidisks to match the restore source.

0 Do not automatically format unformatted minidisks. File restore operations to unformatted minidisks stop the job.

BFS backup and restore parameters

Use the **BKR_BFS_RootFileSystem** parameter to specify an alternate root file system for use during BFS backup and restore tasks.

BKR_BFS_RootFileSystem
Specify an alternate root file system for use during BFS backup and restore tasks. Worker service virtual machines (BKRWRK*nn*) must be able to create file system mount points (`/mnt/BKRWRK`*nn*) and perform mount and dismount operations of other BFS file spaces from the root file space.

Note: Leave this setting commented unless you must override the embedded default BFS root file space (`/../VMBFS:VMSYS:ROOT/`).

Tape handling exit parameters

The following parameters apply to tape handling exits.

Tape_Exit_Context
The prefix text for exit routine and variable names that are invoked by input and output methods. **Tape_Exit_Context** must be set to `BKR`.

Note: Do not modify the **Tape_Exit_Context** setting.

Tape_Operator
The user ID that receives tape mount requests and other tape interaction status messages during backup and restore operations. See **Tape_Request_Method**.

Tape_Request_Method
Specify how worker service virtual machines communicate with **Tape_Operator**. Specify one of the following options:

EXEC TELL
(Default.) Use the CMS **TELL** command. Enables the option of creating a NAMES file entry to send messages to multiple users.

Note: EXEC TELL is the preferred setting.

CP MSG
Use the CP **MSG** command instead of the **TELL** command. (No `NAMES` file support.)

CP MSGNOH
Use the CP **MSGNOH** command. Message, no header.

CP WARN
Use the CP **WARN** command. WARN is a high-priority message that interrupts full-screen activity such as XEDIT.

Note: If you specify EXEC TELL, you can configure worker service virtual machines with an appropriately configured `NAMES` file. You can then set **Tape_Operator** to a nickname to send tape interaction requests to more than one user.

Tape_Delay_Interval
A WAKEUP interval that stipulates the amount of time a worker service virtual machine pauses before it determines whether a tape mount occurred. A mount request message is sent to the tape operator until the mount request is satisfied. The delay interval is the amount of time (hh:mm:ss) between repeat requests from workers to tape operators. The default value is 60 seconds.

For example, if you specify `Tape Delay_Interval = +00:01:00` and `Tape_Times_To_Poll = 10` the mount exit checks once per minute (00:01:00)

for 10 minutes, and repeats the mount request message until the mount request is satisfied, or the number of times to poll for a mount is exceeded.

If the mount request is not satisfied after the number of polling attempts is exhausted, the worker service virtual machine ends the job because of a mount request timeout error. Other workers with successful mount requests continue processing. BKRCATLG is unaffected.

Tape_Times_To_Poll
The number of times a worker service virtual machine requests a tape mount before it abandons the attempt. The default value is 5 (request a tape mount 5 times before abandoning the attempt).

Tape_Retain_After_EOJ
Control retention of attached tape drives when a backup or restore job is complete. Specify one of the following values:

0 (Default.) Mounted volumes are unloaded and tape devices are detached by worker service virtual machines at end of job.

1 Mounted volumes are unloaded at end-of-job, but tape devices remain attached to worker service virtual machines until the idle timeout limit is reached and the worker logs out.

2 For both backup and restore requests, worker service virtual machines retain mounted volumes at end of job until one of the following actions occur:

1. The **Worker_Idle_Timeout** value is reached and the worker automatically logs off.
2. A restore job is received that requires a different tape volume.
3. A backup job is received (because a backup job requires a new scratch volume to be mounted).

This behavior can help expedite processing of multiple restore operations by eliminating the delays that are normally involved in tape media:

- If a restore request is received, and the next restore task requires the same tape volser as the one that was retained after the previous restore job, tape mount processing is bypassed. Instead, the tape volume is positioned as required by the new restore task and normal processing continues.
- If a restore request is received for the last tape in the recently completed backup job, the mount processing delay is avoided as if the tape was still mounted after a previous restore job concluded and left the tape in place.

If the new job is a restore job that requires a different tape volume, or if the new job is a backup operation, the retained volume is unloaded and the tape device is detached, and normal tape mount processing occurs.

Note: Workers that interact with DISKPOOL media detach DISKPOOL minidisks regardless of the **Tape_Retain_After_EOJ** setting.

Tape_Enable_EOF1HDR1
Specify how standard label (SL) information is generated for tapes that are created using the IBMTAPE, IBMTWIN, or DUALTAPE output methods. Specify one of the following values:

0 Create output without EOF1 or HDR1 label information. Individual backup data files are separated only by a tape mark.

Tip: Disabling creation of EOF1/HDR1 label sequences can improve backup performance by reducing the elapsed time that is required for tape-based backup jobs.

1 (Default.) Create output with EOF1 and HDR1 label information between each backup data file that is generated during backup.

Note:

- In both cases (`Tape_Enable_EOF1HDR1=0` or `Tape_Enable_EOF1HDR1=1`) tape volumes have a standard VOL1/HDR1 label at the start of each volume.
- Because the DDR (DASD Dump Restore) component of z/VM does not accommodate SL tape labels, the **`Tape_Enable_EOF1HDR1`** setting has no effect on backups that are created with the DDRTAPE output method.
- On some tape subsystems, creation of EOF1/HDR1 label sequences between backup data files can lead to a multi-second delay between backup operations. When EOF1/HDR1 label creation is disabled, tape volumes that are created in this manner are fully supported by Backup and Restore Manager, but they do not have a full complement of SL (standard label) tape label structures present on the resulting volume. Disabling creation of EOF1/HDR1 labels eliminates delays that are associated with the operation, and can result in a noticeable reduction in the overall elapsed time that is required to complete backup jobs that process large numbers of minidisks or SFS file spaces.

BKR_Global_Default_Tape_DSN
The system-wide default value for the data set name to be incorporated in tape labels. Specify up to 17 alphanumeric characters. The default is `BKR.VM.BACKUP.DAT`.

Tape Manager for z/VM parameters

If you use Tape Manager for z/VM for all tape media management functions, configure the following tape handling exit settings.

Note: If you do not use Tape Manager for z/VM, keep these parameters commented within the file. For more information about Tape Manager for z/VM, see the *Tape Manager for z/VM User's Guide* at: http://www.ibm.com/software/products/en/tape-manager-for-zvm

Tape_Handled_Via_EUM
Indicates whether Tape Manager for z/VM is used to manage tape media. Specify one of the following values:

0 (Default.) Tape Manager for z/VM is *not* used for all tape media management functions.

1 Tape Manager for z/VM is used for all tape media management functions.

EUM_Pool_Owner
The default owner of the tape pool from which to obtain all backup tapes for all jobs. The default is BKRADMIN. To override this setting in each

backup job template, use the **BKR_JOB_EUM_ALT_POOL_OWNER** variable. For more information, see "CONFIG" on page 61.

Note: If you set **Tape_Handled_Via_EUM** to 1, you must specify a value for **EUM_POOL_Owner**.

EUM_Pool_Name
The default tape pool from which to obtain all backup tapes for all jobs. The default is BKRPOOL. You can override this setting in each backup job template with the **BKR_JOB_EUM_ALT_POOL_NAME** variable. For more information, see "CONFIG" on page 61.

Note: If you set **Tape_Handled_Via_EUM** to 1, you must specify a value for **EUM_POOL_Name**.

Note: If Tape Manager for z/VM is operating in RMM mode, then the following settings are required:

```
Tape_Handled_Via_EUM = 1
EUM_Pool_Owner =
EUM_Pool_Name =
```

(**EUM_Pool_Owner** and **EUM_Pool_Name** are specified as null values.)

Backup catalog parameters

Configure the following backup catalog storage parameters.

CatalogPool
The name of the SFS file pool that is used for catalog storage. Modify the default value to indicate the locally deployed SFS file pool.

CatalogSpace
The SFS file space in the SFS file pool that is specified by **CatalogPool** to contain the backup catalog.

Note: Set this parameter to the same value as the **Local_Backup_Catalog_ID** parameter.

BKR_Catalog_Compression_Enabled
Specify whether to store individual data files in the backup catalog in compressed format. Specify one of the following values:

0 (Default.) Store catalog data in uncompressed format.

1 Store catalog data in compressed format.

Note: If backups of CMS minidisk or SFS file spaces are performed, enabling catalog data compression can reduce the DASD space requirement for the backup catalog SFS file space. Individual catalog data files are compressed in a format that is compatible with the CMS **COPYFILE** command PACK option. Enabling catalog data compression has the following implications:

- BKRCATLG processor demands increase slightly because data compression is performed as new information is inserted into the backup catalog file space.
- Processing of incremental backup jobs for CMS minidisks and SFS file spaces incur slight additional processor demands when they reference compressed backup catalog data. Incremental backup

operations reference catalog information to perform change detection and must decompress catalog information.

- Worker service virtual machines (BKRWRK*nn* service virtual machines) might require more DASD space for their temporary work area during incremental backup operations. For each affected minidisk or SFS file space, the temporary work area must be large enough to contain an uncompressed reference copy of compressed catalog information, and a copy of new catalog information that is created during the incremental backup operation.
- The most significant factor that affects DASD storage requirements for the backup catalog SFS file space is the number of CMS files that are cataloged by a full backup operation. Catalog entries for ECKD or FBA minidisk extents presently occupy a single 4 K SFS data block, regardless of the size of the DASD extent. Catalog entries for CMS-format minidisk and SFS file spaces include metadata that is related to each individual CMS file contained therein.

  Tip: Implementing catalog compression can help reduce catalog DASD requirements.

BKR_Catalog_ExtentCat_Enabled

Specify whether minidisk DASD extent information is included in the backup catalog structure. Specify one of the following values:

0 Do not create the EXTENTBYJOB and EXTENTBYDASD structures.

1 (Default.) Create the EXTENTBYJOB and EXTENTBYDASD structures.

Disabling creation of minidisk extent catalog information reduces the overall number of SFS directory and alias objects that are created in the backup catalog file space. This results in a modest decrease in DASD resources that are consumed by the backup catalog file space and for the SFS file pool server storage group 1 minidisks.

Note:

- Existing DASD extent information in the catalog remains until it expires. The **BKR_Catalog_ExtentCat_Enabled** setting only affects the creation of new DASD extent information in the catalog.
- The BKRXNTD catalog browser interface uses the minidisk extent catalog information to display catalog entries that you are authorized to view. If you disable extent cataloging, but older entries exist, BKRXNTD displays them. If you disable extent cataloging and no previous entries exist or they expired, BKRXNTD exits with message BKR8811E `No entries returned` or message BKR8808E `No entries in catalog, or catalog is not accessible`.

BKR_SSI_InstanceSync

Specify whether saved job instance numbers are stored on the BKRBKUP service virtual machine A-disk (default) or stored in a directory in the backup catalog file space. Enabling this feature allows BKRBKUP identities on each member of an SSI cluster to share a common set of job instance numbers among all SSI cluster members.

0 (Default) Job instance numbers for each backup template are kept on the A-disk of BKRBKUP.

1 Job instance numbers are maintained in a common SFS directory (*catalogpool*:*catalogspace*.INSTANCEPOOL) in the backup catalog SFS file space. Saved instances that are present on the A-disk of BKRBKUP are migrated to this location once the feature is enabled and BKRBKUP is re-initialized.

When a backup catalog file space is shared among all members of an SSI cluster, maintaining a common set of saved instance numbers ensures that each BKRBKUP identity generates a unique instance number each time a backup is submitted.

Notes:

- When Backup and Restore Manager is deployed in an SSI cluster, the recommended setting is 1 (enabled).
- If Backup and Restore Manager is not deployed in an SSI cluster, the recommended setting is 0 (disabled). If not defined in the BKRSYSTM CONFIG file, this is the default.
- Once **BKR_SSI_InstanceSync** is enabled, saved instance numbers are automatically migrated from the A-disk of BKRBKUP to the INSTANCEPOOL directory. When multiple BKRBKUP identities are activated, and saved instance numbers exist on more than one identity in the cluster, the greatest saved instance value is retained when the same job template name is used by multiple identities.
- If the INSTANCEPOOL directory is found in the backup catalog file space, and **BKR_SSI_InstanceSync** is not enabled in the BKRSYSTM CONFIG file, BKRBKUP service virtual machine initialization ends with the following error message:

```
BKRRVB9432E Conversion to SSI job instance sharing is pending.
BKRRVB9432E BKR_SSI_InstanceSync is off, but the InstancePool directory was found.
BKRRVB9432E Add BKR_SSI_InstanceSync = ON to BKRSYSTM CONFIG to proceed.
```

- To disable this function, manually migrate saved instance numbers from the backup catalog SFS file space to the A-disk of BKRBKUP, delete the INSTANCEPOOL directory, and remove or disable the **BKR_SSI_InstanceSync** setting from BKRSYSTM CONFIG.

Reserved worker service virtual machine parameters

To help ensure that a long-running job of one type does not monopolize all resources while a short-running job of another type waits in the queue, or if you want to use Backup and Restore Manager in "backup-only" or "restore-only" mode, optionally reserve worker service virtual machines to perform only backup and restore processing.

Workers_Reserved_For_Backup
The number of worker service machines to reserve for backup-only processing. The default is zero. 0 indicates that all worker service machines can be used for backup or restore processing.

Workers_Reserved_For_Restore
The number of worker service machines to reserve for restore-only processing. The default is zero. 0 indicates that all worker service machines can be used for backup or restore processing.

If one of these settings is nonzero, the list of worker service virtual machines is partitioned. The first *n* worker machines are reserved for backups and the last *n* worker machines are reserved for restores. Remaining worker machines are used for both backup and restore processing. By setting either value to the same number of worker machines (reserve all worker machines for backups or restores) Backup and Restore Manager might be forced into "backup-only" or "restore-only" mode. Jobs that are submitted for the other types of work are rejected because there are no worker machines available.

If the sum of these values is greater than the number of worker service virtual machines that are defined, some workers will be unable to process work because each of the two reservations excludes the other type of work. If both of these settings are equal to the number of worker service virtual machines, then all reserved worker machines are excluded from backup and restore processing. If this situation occurs, error messages that describe which worker service virtual machines cannot be used are written to the Backup and Restore Manager master console.

The following examples show how to use the reserved worker service virtual machines settings. The examples assume that there are four worker service virtual machines available:

- No value is specified for **Workers_Reserved_For_Backup** or **Workers_Reserved_For_Restore**

  All four worker service virtual machines can be used for both backup and restore processing.
- `Workers_Reserved_For_Backup=1`

  All four worker service virtual machines can be used for backup processing, but only the last three can be used for restore processing.
- `Workers_Reserved_For_Restore=1`

  All four worker service virtual machines can be used for restore processing, but only the first three can be used for backup processing.
- `Workers_Reserved_For_Backup=1`
  `Workers_Reserved_For_Restore=1`

  The first worker service virtual machine can be used for backup processing only. The last worker service virtual machine can be used for restore processing only. The middle two worker service virtual machines can be used for both backup and restore processing.
- `Workers_Reserved_For_Backup=3`
  `Workers_Reserved_For_Restore=3`

  The first worker service virtual machine can be used for backup processing only. The last worker service virtual machine can be used for restore processing only. The middle two workers cannot be used for either backup or restore processing. Error messages are issued to the Backup and Restore Manager administrator console to indicate that worker service virtual machines two and three cannot be used.

Global parameters

The `BKRSYSTM CONFIG` file global parameters identify the product and version level and are not intended for site customization. Do not modify the following global variable parameters.

BKR_Global_Product_Version
The Backup and Restore Manager version and release number.

BKR_Global_Product_Name
The Backup and Restore Manager product name.

BKR_Global_Product_ID
The Backup and Restore Manager identifier.

TAP1_Virtual_Address
The virtual address that is associated with CMS generic tape names that are used by worker task virtual machines. The default is 181.

Note: Do not modify the default value.

TAP2_Virtual_Address
The virtual address that is associated with CMS generic tape names that are used by worker task virtual machines when "twin set" tapes are generated. The default is 182.

Note: Do not modify the default value.

Worker_Pool_Minidisk_Mode
The file mode letter worker service virtual machines use during a restore operation to access source data that was backed up to disk rather than tape.

Note: This variable is required for DISKPOOL support. Do not modify the default setting (R). or more information, see "Requirements for disk devices" on page 41.

Worker_Pool_Link_Address
Worker service virtual machines CP LINK diskpool minidisks at this address before they access them as the file mode letter specified by **Worker_Pool_Minidisk_Mode**.

Note: This variable is required for DISKPOOL support. Do not modify the default setting. or more information, see "Requirements for disk devices" on page 41.

Appendix I. Messages and codes

All messages generated by Backup and Restore Manager have one of the following severity codes (E, I, R, S, T, or W) as the last character of the message ID.

Table 21. Severity codes

Code	Description
E	Error message. Some errors might be user-correctable. Read the User Response to determine the appropriate course of action.
I	Information message. No user action required.
R	Response message.
S	Severe.
T	T (Terminating error or abend.)
W	Warning message. Results might not be as expected.

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Explanation: Product copyright notice.

System action: None.

User response: No action is required.

BKR8001E BKRGETRX return code *rc* while trying to fetch *variable*.

Explanation: An error occurred while attempting to extract information from the REXX environment. This is typically the result of omitting a required configuration variable.

System action: The issuing routine exits with a non-zero return code.

User response: Define the specified configuration variable (*variable*). If this does not resolve the problem, contact your system programmer or IBM Software Support.

BKR8002E REXX environment must be active.

Explanation: A routine that can be invoked only from within REXX was invoked in a non-REXX environment. The Backup and Restore Manager components that issue this message derive their operating parameters from active REXX variables instead of from the CMS command line.

System action: The issuing routine exits with a non-zero return code.

User response: The command associated with this message can only be invoked from a REXX EXEC. See the *IBM Backup and Restore Manager for z/VM User's Guide (SC18-9523)* or the sample routines (EDFDUMP EXEC, EDFLOAD EXEC, and so on) that are shipped with Backup and Restore Manager for information about the appropriate command syntax.

BKR8003E Unrecognized output handler *handler* specified.

Explanation: Backup and Restore Manager for z/VM cannot recognize the specified output handler (*handler*).

System action: The issuing routine exits with a non-zero return code.

User response: Specify a valid output handler for the operation (backup or restore). See the *IBM Backup and Restore Manager for z/VM User's Guide (SC18-9523)* for descriptions of valid output handlers.

BKR8004E Output handler *handler* has been disabled.

Explanation: Backup and Restore Manager for z/VM disabled the specified output handler (*handler*).

System action: The issuing routine exits with a non-zero return code.

User response: An unsupported I/O handler routine was invoked. Revise the configuration to specify a supported I/O handler. See the *IBM Backup and Restore Manager for z/VM User's Guide (SC18-9523)* for information about Backup and Restore Manager for z/VM input and output handlers.

BKR8005E Return code *rc* from output handler initialization.

Explanation: The selected I/O handler routine failed to initialize properly.

System action: The calling routine exits with a non-zero return code.

User response: This situation is typically the result of a runtime error or an omitted configuration variable that is required by the I/O handler. See the *IBM Backup and Restore Manager for z/VM User's Guide (SC18-9523)* for information about Backup and Restore Manager for z/VM output handlers. If the problem persists after ensuring the REXX environment is properly configured, contact your system programmer or IBM Software Support.

BKR8006E Return code *rc* from catalog data initialization.

Explanation: Catalog data creation is enabled for a backup job through the specification of `Config BKR_Job_Catalog = Yes` in the backup job, but an error was encountered when backup processing attempted to initialize catalog data creation. *rc* is the return code that is generated by the internal routine responsible for creating catalog content during backup job processing. For information about the **BKR_Job_Catalog** configuration variable, see "CONFIG" on page 61.

System action: The backup dump task ends with a return code of 20. This condition is not suitable for error recovery retry. Backup job processing attempts to continue unless the consecutive failed task limit specified by **BKR_Job_Consecutive_Failed_Task_Limit** in the backup job was exceeded. When this threshold is exceeded, the backup job ends with message BKR9284E. For information about the **BKR_Job_Consecutive_Failed_Task_Limit** configuration variable, see "CONFIG" on page 61.

User response: This message is commonly associated with problems involving the BKRWRK*nn* temporary workspace provisioned as CMS file mode D on backup worker service virtual machines. If the temporary work minidisk or SFS directory was not provisioned, review the installation requirements and provision space for temporary file management.

This message can also indicate an out-of-space condition on the temporary work area. Increase the capacity of the temporary work area, if needed.

BKR8007E DMSDISFS return code *rc*, reason code *reason*.

Explanation: DUMPSFS attempted to lock an SFS file space prior to backup processing, but was unable to obtain a lock. *rc* and *reason* are the responses supplied by the CMS CSL routine DMSDISFS. For more information, see *z/VM CMS Callable Services Reference (SC24-6072)*.

System action: The backup operation attempts to continue processing. The SFS file space backup cannot guarantee point-in-time consistency for the backup of the entire SFS file space, but SFS internal architecture ensures consistency on a file-by-file basis.

User response: This message is typically an indication that the backup worker service virtual machine (BKRWRK*nn*) lacks SFS file pool ADMIN authority for the associated SFS file pool. Ensure that all BKRWRK*nn* service virtual machines have file pool administrator privileges. For more information, see "Verifying privileges for worker service virtual machines (BKRWRK*nn*)" on page 11. If the problem persists, contact your system programmer or IBM Software Support.

BKR8008E DMSQLIMU return code *rc*, reason code *reason*.

Explanation: DUMPSFS attempted to extract enrollment parameters for an SFS file space during initialization of backup processing. The CMS CSL routine DMSQLIMU produced a non-zero response. *rc* and *reason* are the DMQLIMU return code and reason code respectively. For more information, see *z/VM CMS Callable Services Reference (SC24-6072)*.

System action: DUMPSFS exits with a return code of 8, and reports a completion status of `CSL Error`. This condition is not suitable for error recovery retry. Backup job processing attempts to continue with the next minidisk or file space that is selected for backup, unless the consecutive failed task limit specified by **BKR_Job_Consecutive_Failed_Task_Limit** was exceeded. When this threshold is exceeded, the backup job ends with message BKR9284E. For information, see "CONFIG" on page 61.

User response: This message typically indicates that the backup worker service virtual machine (BKRWRK*nn*) lacks SFS file pool ADMIN authority for the associated SFS file pool. Ensure that all BKRWRK*nn* service virtual machines have file pool administrator privileges. See "Verifying privileges for worker service virtual machines (BKRWRK*nn*)" on page 11 for more information. If the problem persists, contact your system programmer or IBM Software Support.

BKR8009E CTNRDATA(FILESPACE) return code *rc*.

Explanation: This message is issued when an output handling routine is unable to successfully record the attributes of an SFS file space during backup processing. *rc* is an internal subroutine response that can be useful to IBM Software Support.

System action: DUMPSFS exits with return code 32. This condition is not suitable for error recovery retry. Backup job processing attempts to continue with the

next minidisk or file space that is selected for backup, unless the consecutive failed task limit specified by **BKR_Job_Consecutive_Failed_Task_Limit** in the backup job was exceeded. When this threshold is exceeded, the backup job ends with message BKR9284E. For information about the **BKR_Job_Consecutive_Failed_Task_Limit** configuration variable, see "CONFIG" on page 61.

User response: This message can be generated under several circumstances when an attempt to write backup data to an output destination (tape or a DISKPOOL resource) encounters an I/O error or out-of-space condition during the initial phase of SFS file space backup processing. Inspect the contents of the backup job log and the system operator console log for additional messages that are related to the I/O error. If the problem persists or the cause cannot be determined, contact your system programmer or IBM Software Support.

BKR8010E Catalog CTNRDATA(FILESPACE) return code *rc*.

Explanation: The catalog data generation routine encountered a failure during a CTNRDATA call.

System action: Depending on severity of the error, the affected DUMP*xxx* routine attempts to continue processing, but catalog data generation might be disabled.

User response: This message is accompanied by supporting messages to the virtual machine console. If the problem persists, contact your system programmer or IBM Software Support.

BKR8011E DMSOPDIR return code *rc*, reason code *reason*.

Explanation: This message is displayed when SFS backup processing encounters a nonzero return code from the CMS CSL routine DMSOPDIR. *rc* and *reason* are the return code and reason code generated by DMSOPDIR. See *z/VM CMS Callable Services Reference (SC24-6072)* for information about DMSOPDIR.

System action: The backup operation attempts to continue the backup of the affected SFS file space, but is likely to end with message BKR8012E in the subsequent phase of backup processing. Consider the backup of the associated file space to be incomplete.

User response: This message is accompanied by more messages in the backup job log. This message is usually associated with connectivity issues between the backup worker service virtual machine (BKRWRK*nn*) and the associated SFS file pool server, or with resource limit issues affecting the associated SFS file pool server. Inspect the contents of the SFS file pool server console log for additional diagnostic information. If the problem persists, contact your system programmer or IBM Software Support.

BKR8012E DMSGETDA return code *rc*, reason code *reason*.

Explanation: This message is displayed when SFS backup processing encounters a nonzero return code from the CMS CSL routine DMSGETDA. *rc* and *reason* are the return code and reason code generated by DMSGETDA. See *z/VM CMS Callable Services Reference (SC24-6072)* for information about DMSGETDA.

System action: SFS backup processing relies on DMSGETDA to enumerate the contents of an SFS file space during backup. An abnormal response from DMSGETDA results in the end of the current file space backup effort, and is typically followed by message BKR8058E and more messages which can aid in the diagnosis of the underlying issue. This condition is not suitable for error recovery retry. Backup job processing attempts to continue with the next minidisk or file space that is selected for backup, unless the consecutive failed task limit specified by **BKR_Job_Consecutive_Failed_Task_Limit** in the backup job was exceeded. When the threshold is exceeded, the backup job ends with message BKR9284E. For information about the **BKR_Job_Consecutive_Failed_Task_Limit** configuration variable, see "CONFIG" on page 61.

User response: This message is accompanied by more messages in the backup job log. This message is usually associated with connectivity issues between the backup worker service virtual machine (BKRWRK*nn*) and the associated SFS file pool server, or with resource limit issues affecting the associated SFS file pool server. Inspect the contents of the SFS file pool server console log for additional diagnostic information. If the problem persists, contact your system programmer or IBM Software Support.

BKR8013I Base file: *dirname* / *filename*.

Explanation: This message is issued during verbose mode processing of SFS objects. It indicates a base file was encountered. *dirname* is the SFS directory path (`filepool:filespace.dirid1...`). *filename* is the CMS file encountered (*filename filetype*).

System action: Processing continues.

User response: No action is required.

BKR8014E DMSEXIST (base file) return code *rc*, reason code *reason*.

Explanation: A base file was erased or renamed during backup of an SFS file space.

System action: DUMPSFS issues message BKR9313W to identify the file affected by this situation, and then attempts to continue the backup operation with the next object in the file space.

User response: No action is required. See message BKR9313W for additional information.

BKR8015E BKRPICK fatal error, return code *rc*.

Explanation: This message is displayed during incremental backup processing if the change detection routine, BKRPICK, cannot successfully complete initialization. *rc* is an internal subroutine response that can aid in diagnosis.

System action: This scenario indicates potentially serious integrity issues that affect the backup catalog file space. The incremental backup operation ends with a U2000 abend.

User response: This message is accompanied by additional messages in the backup job log. This message can be associated with connectivity issues between the backup worker service virtual machine (BKRWRK*nn*) and the associated SFS file pool server, or with resource limit or data corruption issues affecting the associated SFS file pool server. Inspect the contents of the backup catalog SFS file pool server console log for additional diagnostic information. If the problem persists, contact your system programmer or IBM Software Support.

BKR8016W BKRPICK return code *rc*; incremental processing disabled.

Explanation: This message is displayed during incremental backup processing if the change detection routine, BKRPICK, encounters errors during initialization. *rc* is an internal subroutine response which can aid in further diagnosis.

System action: The file-level backup operation continues, but incremental change detection processing is disabled. The backup is handled as a full file-level backup of the affected CMS minidisk or SFS file space.

User response: This message commonly indicates that an incremental backup job encountered a CMS minidisk or SFS file space which was created since the latest instance of the baseline full backup job that is associated with the current incremental backup. If the problem persists, contact your system programmer or IBM Software Support.

BKR8017W DMSOPDBK return code *rc*, reason code *reason*: Target file was *filename filetype*.

Explanation: This message is displayed when an attempt to open a CMS file through the CSL routine DMSOPDBK completes with an abnormal response. *rc* and *reason* are the DMSOPDBK return code and reason code. *filename* and *filetype* identify the CMS file associated with the error. See *z/VM CMS Callable Services Reference (SC24-6072)* for information about DMSOPDBK.

System action: If this situation occurs during backup of an SFS file space, the associated CMS file is omitted from the file space backup, but the backup operation attempts to continue with the next object in the SFS file space.

When this issue occurs during backup of a CMS EDF-format minidisk file system, DUMPEDF ends with a return code of 20 and the backup of the affected minidisk is attempted again as an ECKD track-image or FB-512 block-image backup.

User response: When issued with a backup of an SFS file space, this message generally indicates that another CMS virtual machine erased a file from the file space while backup processing is active. It also implies that DUMPSFS was unable to obtain a file space lock for backup processing.

When issued with backup of a CMS EDF-format minidisk, this message can indicate that the associated minidisk is being actively updated by another user during backup processing, or in some cases, can be symptomatic of loss of logical integrity of the CMS minidisk EDF file system. If the problem cannot be resolved after consideration of these issues, contact your system programmer or IBM Software Support.

BKR8018W Base file is active in SMS; reason code *reason*.

Explanation: An SFS base file was migrated to DFSMS managed storage. Further processing is bypassed.

System action: Processing of the next SFS object in the affected file space continues.

User response: No action is required.

BKR8019E FILEHEAD (base file) return code *rc*.

Explanation: This message is issued when DUMPSFS attempts to process a base file (a regular CMS SFS file) during backup processing. *rc* is an internal subroutine response that provides information to IBM Software Support.

System action: DUMPSFS ends with return code 32. This condition is not suitable for error recovery retry. Backup job processing attempts to continue with the next minidisk or file space that is selected for backup, unless the consecutive failed task limit specified by **`BKR_Job_Consecutive_Failed_Task_Limit`** in the backup job was exceeded. When this threshold is exceeded, the backup job ends with message BKR9284E. For information about the **`BKR_Job_Consecutive_Failed_Task_Limit`** configuration variable, see "CONFIG" on page 61.

User response: This message is issued when DUMPSFS encounters an error while attempting to back up an SFS base file. Inspect the contents of the backup job log and the system operator console log for messages that are related to the input/output error. If the problem persists or you cannot determine the cause, contact your system programmer or IBM Software Support.

BKR8020E SFS FILEHEAD catalog call gave return code *rc*.

Explanation: The catalog data generation routine encountered a failure attempting to generate catalog data for an SFS base file.

System action: Depending on severity of the error, the affected DUMP*xxx* routine attempts to continue processing, but catalog data generation might be disabled.

User response: This message is accompanied by supporting messages to the virtual machine console. If the problem persists, contact your system programmer or IBM Software Support.

BKR8021E DMSRDDBK return code *rc*, reason code *reason*.

Explanation: This message is displayed when an attempt to read data blocks from a CMS file through the CSL routine DMSRDDBK completes abnormally. *rc* and *reason* are the return code and reason code generated by DMSRDDBK. See *z/VM CMS Callable Services Reference (SC24-6072)* for information about DMSRDDBK.

System action: If this error occurs during backup of an SFS file space, DUMPSFS ends with the same return code as DMSRDDBK. Consider the backup of the SFS file space incomplete. The backup job processing attempts to continue with the next task in the job.

If this error occurs during backup of a CMS EDF-format minidisk, DUMPEDF ends with the same return code as DMSRDDBK. Backup of the associated minidisk is retried as an ECKD track-image (or FB-512 block-image) backup.

User response: When issued with backup of an SFS file space this message can be a symptom of resource shortages or data corruption issues within the associated SFS file pool. Examine the SFS file pool server console log for additional diagnostic information.

When issued with backup of a CMS EDF-format minidisk, this message can indicate that the associated minidisk is being actively updated by another user during backup processing, or in some cases can be symptomatic of loss of logical integrity of the CMS minidisk EDF file system. If the problem cannot be resolved after consideration of these issues, contact your system programmer or IBM Software Support.

BKR8022E FILEDATA (base file) return code *rc*.

Explanation: The output handler encountered an I/O error while it was attempting to write file data blocks to backup media. *rc* is an internal subroutine response that can be useful to IBM Software Support.

This message can be generated when an attempt to write backup data to an output destination (tape or a DISKPOOL resource) encounters an input/output error or out-of-space condition during the initial phase of SFS file space backup processing.

System action: DUMPSFS ends with return code 32. This condition is not suitable for error recovery retry. Backup job processing attempts to continue with the next minidisk or file space selected for backup, unless the consecutive failed task limit that is specified by **BKR_Job_Consecutive_Failed_Task_Limit** in the backup job was exceeded. When this threshold is exceeded, the backup job ends with message BKR9284E. For information about the **BKR_Job_Consecutive_Failed_Task_Limit** configuration variable, see "CONFIG" on page 61.

User response: Inspect the contents of the backup job log and the system operator console log for more messages that are related to I/O error. If the problem persists or the cause cannot be determined, contact your system programmer or IBM Software Support.

BKR8023E FILEEND (base file) return code *rc*.

Explanation: The output handler encountered an I/O error while attempting to write end-of-file information to backup media. *rc* is an internal subroutine response that can be useful to IBM Software Support.

This message can be generated when an attempt to write backup data to an output destination (tape or a DISKPOOL resource) encounters an input/output error or out-of-space condition during the initial phase of SFS file space backup processing.

System action: DUMPSFS ends with return code 32. This condition is not suitable for error recovery retry. Backup job processing attempts to continue with the next minidisk or file space that is selected for backup, unless the consecutive failed task limit specified by **BKR_Job_Consecutive_Failed_Task_Limit** in the backup job was exceeded. When this threshold is exceeded, the backup job ends with message BKR9284E. For information about the **BKR_Job_Consecutive_Failed_Task_Limit** configuration variable, see "CONFIG" on page 61.

User response: Inspect the contents of the backup job log and the system operator console log for additional messages that are related to the input/output error. If the problem persists or the cause cannot be determined, contact your system programmer or IBM Software Support.

BKR8024E GETAUTH (base file) return code *rc*; R1 = *parmaddr*.

Explanation: DUMPSFS encountered an error while attempting to extract permission attributes of an SFS base file. Retain the diagnostic data provided by *rc* and *parmaddr* for analysis.

System action: Backup processing attempts to

continue. Backup of the base file associated with this message was accomplished, but the complete set of access permissions (such as those applied through the CMS **GRANT** command) might not be included in the resulting backup.

User response: This message can be displayed with additional diagnostic information. Review the console log for the SFS file pool service virtual machine that owns the affected SFS file space. The underlying cause might involve technical issues or resource constraints which are recorded on the SFS file pool service virtual machine. If the problem persists, contact your system programmer or IBM Software Support.

BKR8025E SFSATTR (base file) return code *rc*.

Explanation: DUMPSFS encountered a failure.

System action: DUMPSFS exits with a non-zero return code.

User response: This message might be accompanied by supporting messages to the virtual machine console. If the problem persists, contact your system programmer or IBM Software Support.

BKR8026E DMSCLDBK return code *rc*, reason code *reason*.

Explanation: The CSL routine DMSCLDBK ended abnormally during conclusion of the backup of an SFS object.

System action: Reason code 10000 is handled as a recoverable error. In this case, backup of the affected SFS file space attempts to continue. Other DMSCLDBK reason codes are handled as non-recoverable exceptions. DUMPSFS ends with rc 20. See *z/VM CMS Callable Services Reference (SC24-6072)* for information about DMSCLDBK.

User response: This message can be displayed with additional diagnostic information. Review the console log for the SFS file pool service virtual machine that owns the affected SFS file space. The underlying cause might involve technical issues or resource constraints which are to be recorded on the SFS file pool service virtual machine. This error can occur when there are resource shortages (virtual memory or catalog or attribute DASD space) that affects the SFS file pool that is being backed up. Another cause of this error can be that communication between BKRWRK*nn* and the file pool server was interrupted. If the problem persists, contact your system programmer or IBM Software Support.

BKR8027W DMSEXIST (alias) return code *rc*, reason code *reason*.

Explanation: The CSL routine DMSEXIST responded with a nonzero return code *rc* while attempting to extract the attributes of an SFS alias. For more information, see *z/VM CMS Callable Services Reference (SC24-6072)*.

System action: DUMPSFS attempts to continue the backup of the affected SFS file space, but the alias object associated with this condition is not included in the backup.

User response: This message can be displayed with additional diagnostic information. Review the console log for the SFS file pool service virtual machine that owns the affected SFS file space. The underlying cause can involve technical issues, resource constraints which are recorded on the SFS file pool service virtual machine, or loss of communication between BKRWRK*nn* and the file pool server. If you cannot determine the cause of the problem or the problem persists, contact your system programmer or IBM Software Support.

BKR8028W Target was *dirname /filename filetype*.

Explanation: This message accompanies message BKR8027W and identifies the unresolved alias.

System action: None.

User response: No action is required.

BKR8029I Alias: *dirname/filename filetype*.

Explanation: This message documents the successful extraction of ALIAS attributes when DUMPSFS is operating in verbose mode. It is only displayed when DUMPSFS is operating in verbose mode. Verbose mode is used to generate detailed activity traces during backup of an SFS file space. Enabled it by specifying `Config BKR_SFS_Verbose = Yes` in the backup job template.

System action: Where possible, Backup and Restore Manager attempts to continue with the backup of the affected SFS file space.

User response: No action is required.

BKR8030E GETBASE failed to resolve base object.

Explanation: An attempt to resolve the base file associated with an SFS alias failed.

System action: Recovery action is attempted. Processing continues.

User response: If the situation persists, contact your system programmer or IBM Software Support.

BKR8031I ---Base object: *sfs_directory_path/filename filetype*.

Explanation: This message is issued in verbose mode to identify an SFS base file entry.

System action: None.

User response: No action is required.

BKR8032I ---Owner ID: *ownerid***.**

Explanation: This message is issued when SFS verbose tracing is enabled. It indicates the owner of a base file, alias, or directory depending on the preceding trace messages.

System action: None.

User response: No action is required.

BKR8033E FILEHEAD (alias) return code *rc***.**

Explanation: This message is issued when DUMPSFS is attempting to write end-of-file information to backup media. *rc* is an internal subroutine response that can be useful to IBM Software Support.

System action: DUMPSFS ends with return code 32. This condition is not suitable for error recovery retry. Backup job processing attempts to continue with the next minidisk or file space selected for backup, unless the consecutive failed task limit specified by **BKR_Job_Consecutive_Failed_Task_Limit** in the backup job was exceeded. When this threshold is exceeded, the backup job ends with message BKR9284E. For information about the **BKR_Job_Consecutive_Failed_Task_Limit** configuration variable, see "CONFIG" on page 61.

User response: This message can be generated under a variety of circumstances when an attempt to write backup data to an output destination (either tape or a DISKPOOL resource) encounters an input/output error or out-of-space condition during the initial phase of SFS file space backup processing. Inspect the contents of the backup job log and the system operator console log for additional messages related to the input/output error. If the problem persists or the cause cannot be determined, contact your system programmer or IBM Software Support.

BKR8034E Catalog FILEHEAD (alias) return code *rc***.**

Explanation: The catalog data generation routine encountered an error while attempting to record catalog information for an SFS alias.

System action: Depending on severity of the error, the affected DUMP*xxx* routine attempts to continue processing, but catalog data generation might be disabled.

User response: This message can be accompanied by supporting messages to the virtual machine console. If the problem persists, contact your system programmer or IBM Software Support.

BKR8035E FILEDATA (alias) return code *rc***.**

Explanation: This message can be generated when an attempt to write backup data to an output destination (tape or a DISKPOOL resource) encounters an input/output error or out-of-space condition during the initial phase of SFS file space backup processing. *rc* is an internal subroutine response that can be useful to IBM Software Support.

System action: DUMPSFS ends with return code 32. This condition is not suitable for error recovery retry. Backup job processing attempts to continue with the next minidisk or file space that is selected for backup, unless the consecutive failed task limit specified by **BKR_Job_Consecutive_Failed_Task_Limit** in the backup job was exceeded. When the threshold is exceeded, the backup job ends with message BKR9284E. For information about the **BKR_Job_Consecutive_Failed_Task_Limit** configuration variable, see "CONFIG" on page 61.

User response: Inspect the contents of the backup job log and the system operator console log for possible additional messages that are related to the input/output error. If the problem persists or you cannot determine the cause, contact your system programmer or IBM Software Support.

BKR8036E FILEEND (alias) return code *rc***.**

Explanation: An I/O handler encountered an error while attempting to write SFS alias end-of-file attributes to backup media. *rc* is an internal subroutine response that can be useful to IBM Software Support.

System action: DUMPSFS ends with return code 32. This condition is not suitable for error recovery retry. Backup job processing attempts to continue with the next minidisk or file space selected for backup, unless the consecutive failed task limit specified by **BKR_Job_Consecutive_Failed_Task_Limit** in the backup job was exceeded. When this threshold is exceeded, the backup job ends with message BKR9284E. For information about the **BKR_Job_Consecutive_Failed_Task_Limit** configuration variable, see "CONFIG" on page 61.

User response: This message can be generated under a variety of circumstances when an attempt to write backup data to an output destination (tape or a DISKPOOL resource) encounters an input/output error or out-of-space condition during the initial phase of SFS file space backup processing. Inspect the contents of the backup job log and the system operator console log for additional messages that are related to the input/output error. If the problem persists or the cause cannot be determined, contact your system programmer or IBM Software Support.

BKR8037E GETAUTH (alias) return code *rc*.

Explanation: An error occurred while extracting SFS authorization attributes for an SFS alias.

System action: The system attempts to continue backup of the associated SFS object (file, directory, or alias) but the backup might not include the full set of permissions associated with the object.

User response: This message can be generated under a variety of circumstances, from possible file pool data corruption to a loss of communication between BKRWRK*nn* and the SFS file pool server. It can be accompanied by supporting messages to the virtual machine console. If you cannot determine the cause of the problem or the problem persists, contact your system programmer or IBM Software Support.

BKR8038W SFSATTR (alias) return code *rc*.

Explanation: An I/O handler encountered an error while processing SFS alias attributes.

System action: The system attempts to continue backup of the associated SFS object (file, directory, or alias) but the backup might not include the full set of permissions associated with the object.

User response: This message can be generated under a variety of circumstances, from possible file pool data corruption to a loss of communication between BKRWRK*nn* and the SFS file pool server. It can be accompanied by supporting messages to the virtual machine console. If you cannot determine the cause of the problem or the problem persists, contact your system programmer or IBM Software Support.

BKR8039W Dropping erased alias *directory_path/filename filetype*.

Explanation: DUMPSFS encountered an erased alias. The object is excluded from backup.

System action: None.

User response: Erased alias objects cannot be re-associated with useful content because the associated SFS content was deleted. If the problem persists, contact your system programmer or IBM Software Support.

BKR8040W Dropping revoked alias *directory_path/filename filetype*.

Explanation: DUMPSFS encountered a revoked alias. The object is excluded from backup.

System action: None.

User response: Revoked alias objects cannot be re-associated with useful content because the associated SFS content was deleted. If the problem persists, contact your system programmer or IBM Software Support.

BKR8041I ---SFS Directory: *directory*.

Explanation: This message is issued in verbose mode to identify processing of an SFS directory.

System action: None.

User response: No action is required.

BKR8042E DMSEXIST (directory) return code *rc*, reason code *reason*.

Explanation: The CSL routine DMSEXIST issued a non-zero return code *rc* while processing an SFS directory. For more information, see *z/VM CMS Callable Services Reference (SC24-6072)*.

This message might be accompanied by supporting messages to the virtual machine console.

System action: Backup processing attempts to continue processing of the remaining objects (files, directories, or aliases) in the SFS file space.

User response: When issued with a backup of an SFS file space, this message usually indicates that another CMS virtual machine erased a file from the file space while backup processing is active. It also implies that DUMPSFS was unable to obtain a file space lock for backup processing.

If the problem cannot be resolved after consideration of these issues, contact your system programmer or IBM Software Support.

BKR8043E CTNRDATA (directory) return code *rc*.

Explanation: The output handler encountered an I/O error while attempting to record data representing an SFS directory to backup media.

System action: DUMPSFS ends with return code 32. This condition is not suitable for error recovery retry. Backup job processing attempts to continue with the next minidisk or file space selected for backup, unless the consecutive failed task limit specified by **BKR_Job_Consecutive_Failed_Task_Limit** in the backup job was exceeded. When this threshold is exceeded, the backup job ends with message BKR9284E. For information about the **BKR_Job_Consecutive_Failed_Task_Limit** configuration variable, see "CONFIG" on page 61.

User response: This message can be generated under a variety of circumstances when an attempt to write backup data to an output destination (either tape or a DISKPOOL resource) encounters an input/output error or out-of-space condition during the initial phase of SFS file space backup processing. Inspect the contents of the backup job log and the system operator console log for additional messages related to the input/output

error. If the problem persists or you cannot determine the cause, contact your system programmer or IBM Software Support.

BKR8044E Catalog CTNRDATA (directory) return code *rc*.

Explanation: The catalog data generation routine encountered an error during an attempt to record catalog information for an SFS directory.

System action: Depending on severity of the error, the affected DUMP*xxx* routine attempts to continue processing. Catalog data generation might be disabled.

User response: This message is accompanied by supporting messages to the virtual machine console. If the problem persists, contact your system programmer or IBM Software Support.

BKR8045E GETAUTH (directory) return code *rc*, R1 = *parmaddr*.

Explanation: An error occurred while extracting SFS authorization data for a directory.

System action: The system attempts to continue backup of the SFS file space with the next object (file, alias, or directory). The full set of permission attributes for the affected directory might not have been captured for backup.

User response: This message might be accompanied by supporting messages to the virtual machine console. If the problem persists, contact your system programmer or IBM Software Support.

BKR8046E SFSATTR (directory) return code *rc*.

Explanation: This message is issued when an output handling routine is unable to successfully record the attributes of an SFS file space during backup processing. *rc* is an internal subroutine response that can be useful to IBM Software Support.

System action: The system attempts to continue backup of the SFS file space with the next object (file, alias, or directory). The full set of permission attributes for the affected directory might not have been captured for backup

User response: This message might be accompanied by supporting messages to the virtual machine console. If the problem persists, contact your system programmer or IBM Software Support.

BKR8047E DMSEXIST (external object) return code *rc*, reason code *reason*.

Explanation: The CSL routine DMSEXIST issued a non-zero return code *rc* while processing an SFS external object. For more information, see *z/VM CMS Callable Services Reference (SC24-6072)*.

System action: The system attempts to continue backup of the SFS file space with the next file, alias, or directory. The external object that is associated with this message was not backed up.

User response: This message might be accompanied by supporting messages to the virtual machine console. If the problem persists, contact your system programmer or IBM Software Support.

BKR8048I External object: *directory_path/ filename filetype*.

Explanation: This message identifies processing of an SFS external object when verbose processing is enabled.

System action: None.

User response: No action is required.

BKR8049E DMSQOBJ return code *rc*, reason code *reason*.

Explanation: The CSL routine DMSQOBJ issued a non-zero return code *rc* during processing of an SFS external object. See *z/VM CMS Callable Services Reference (SC24-6072)* for information about DMSQOBJ.

System action: DUMPSFS ends with return code 32. Backup job processing attempts to continue with the next minidisk or file space that is selected for backup, unless the consecutive failed task limit specified by **BKR_Job_Consecutive_Failed_Task_Limit** was exceeded. When the threshold is exceeded, the backup job ends with message BKR9284E. For information about the **BKR_Job_Consecutive_Failed_Task_Limit** configuration variable, see "CONFIG" on page 61.

User response: This message might be accompanied by supporting messages to the virtual machine console. If the problem persists, contact your system programmer or IBM Software Support.

BKR8050I --- Refers to: *object_name*.

Explanation: This message is issued during verbose mode (unique to DUMPSFS) to describe an SFS external object.

System action: None.

User response: No action is required.

BKR8051I --- Xobj Type: *object_type*.

Explanation: This message is issued during verbose mode (unique to DUMPSFS) to describe an SFS external object.

System action: None.

User response: No action is required.

BKR8052E FILEHEAD (external object) return code *rc*.

Explanation: An I/O handler encountered an error while processing an SFS external object definition.

System action: The calling routine might attempt recovery or exit with a non-zero return code.

User response: This message might be accompanied by supporting messages to the virtual machine console. If the problem persists, contact your system programmer or IBM Software Support.

BKR8053E Catalog FILEHEAD (external object) return code *rc*.

Explanation: The catalog data generation routine encountered an error while processing an SFS external object.

System action: The calling routine might attempt recovery or exit with a non-zero return code.

User response: This message might be accompanied by supporting messages to the virtual machine console. If the problem persists, contact your system programmer or IBM Software Support.

BKR8054E FILEDATA (external object) return code *rc*.

Explanation: An I/O handler encountered an error while processing an SFS external object.

System action: The calling routine might attempt recovery or exit with a non-zero return code.

User response: This message might be accompanied by supporting messages to the virtual machine console. If the problem persists, contact your system programmer or IBM Software Support.

BKR8055E FILEEND (external object) return code *rc*.

Explanation: An I/O handler encountered an error while processing an SFS external object.

System action: The calling routine might attempt recovery or exit with a non-zero return code.

User response: This message might be accompanied by supporting messages to the virtual machine console. If the problem persists, contact your system programmer or IBM Software Support.

BKR8056E DMSGETDA status 7 with *dirname Ifilename filetype*.

Explanation: During backup of an SFS file space, the DMSGETDA CSL routine responded with an unsupported item status during DUMPSFS processing. See *z/VM CMS Callable Services Reference (SC24-6072)* for information about DMSGETDA.

System action: The named SFS object is dropped from further processing. Processing continues with the next object in the SFS file space, until the entire file space hierarchy is traversed.

User response: This message might be accompanied by supporting messages to the virtual machine console. If the problem persists, contact your system programmer or IBM Software Support.

BKR8057E DMSGETDA status 8 with *dirname Ifilename filetype*.

Explanation: The CSL routine DMSGETDA responded with an unsupported item status during DUMPSFS processing. Status 8 indicates an object from an OS or DOS-format minidisk volume was encountered.

System action: The named SFS object is dropped from further processing. Processing continues with the next object in the SFS file space, until the entire file space hierarchy is traversed.

User response: This message might be accompanied by supporting messages to the virtual machine console. If the problem persists, contact your system programmer or IBM Software Support.

BKR8058E DMSCLDIR return code *rc*, reason code *reason*.

Explanation: The CSL routine DMSCLDIR issued a nonzero return code *rc*. See *z/VM CMS Callable Services Reference (SC24-6072)* for information about DMSCLDIR.

System action: The calling routine might attempt recovery or exit with a nonzero return code.

User response: This message might be accompanied by supporting messages to the virtual machine console. If the problem persists, contact your system programmer or IBM Software Support.

BKR8059E DMSENAFS return code *rc*, reason code *reason*.

Explanation: The CSL routine DMSENAFS issued a nonzero return code. See *z/VM CMS Callable Services Reference (SC24-6072)* for information about DMSENAFS.

System action: The calling routine might attempt recovery or exit with a nonzero return code.

User response: This message might be accompanied by supporting messages to the virtual machine console. If the problem persists, contact your system programmer or IBM Software Support.

BKR8060E Return code *rc* from output handler termination.

Explanation: An I/O handler encountered an error during termination processing.

System action: The calling routine exits with a non-zero return code.

User response: This message might be accompanied by supporting messages to the virtual machine console. If the problem persists, contact your system programmer or IBM Software Support.

BKR8061E Return code *rc* from catalog data termination.

Explanation: The catalog data generation routine encountered an error during termination processing.

System action: The calling routine might attempt recovery or exit with a non-zero return code.

User response: This message might be accompanied by supporting messages to the virtual machine console. If the problem persists, contact your system programmer or IBM Software Support.

BKR8062E IBMTWIN output handler invoked with unrecognized parameter.

Explanation: The IBMTWIN output handler encountered an unrecognized parameter.

System action: None.

User response: Review the parameters specified for IBMTWIN to determine the incorrect parameter. See the *IBM Backup and Restore Manager for z/VM User's Guide (SC18-9523)* for valid parameters.

BKR8063E IJPARML format inconsistency.

Explanation: A consistency check during processing of backup or catalog metadata failed.

System action: None.

User response: Collect available diagnostic information accompanying the message and contact your system programmer or IBM Software Support.

BKR8065E Return code *rc* attempting to recover BKR_ACTUAL_SL_LABEL.

Explanation: An error occurred while attempting to extract the value of REXX variable BKR_ACTUAL_SL_LABEL.

System action: The calling routine exits with either a non-zero return code or an abend.

User response: Collect available diagnostic information accompanying the message and contact your system programmer or IBM Software Support.

BKR80066E Return code *rc* attempting to recover BKR_OUT_TWIN_PRIVOL.

Explanation: An error occurred while attempting to extract the value of REXX variable BKR_OUT_TWIN_PRIVOL.

System action: The calling routine exits with either a non-zero return code or an abend.

User response: Collect available diagnostic information accompanying the message and contact your system programmer or IBM Software Support.

BKR8067E Return code *rc* attempting to recover BKR_OUT_TWIN_SECVOL.

Explanation: An error occurred while attempting to extract the value of REXX variable BKR_OUT_TWIN_SECVOL.

System action: The calling routine exits with either a non-zero return code or an abend.

User response: Collect available diagnostic information accompanying the message and contact your system programmer or IBM Software Support.

BKR8068E Invalid value for JOBSEQ: *value*.

Explanation: The JOBSEQ parameter was set to an unrecognized value during backup processing.

System action: The routine encountering the error exits with a non-zero return code.

User response: Attempt to correct the error in the calling environment. (See the *IBM Backup and Restore Manager for z/VM User's Guide (SC18-9523)* for information about the JOBSEQ parameter.) If the problem persists, collect available diagnostic information accompanying the message and contact your system programmer or IBM Software Support.

BKR8069I Output handler initializing with tape exit context *value*.

Explanation: This message indicates the value supplied for the Tape_Exit_Context parameter in the `BKRSYSTM CONFIG` file. For Backup and Restore Manager for z/VM, this value must be set to `BKR`.

System action: None.

User response: No action is required.

BKR8071E xxxMOUNT exit return code *rc* on primary VOL1 mount request.

Explanation: The IBMTAPE I/O handler received the indicated return code from a tape mount exit routine.

System action: This situation indicates a tape mount failure. Processing stops.

User response: Examine the accompanying error messages and attempt to resolve the error. If the problem persists, contact your system programmer or IBM Software Support.

BKR8072E Return code *rc* from BKRTIO on primary GETVOL1 request.

Explanation: An error occurred while attempting to read the VOL1 label of a tape.

System action: Processing ends with a non-zero return code or abend.

User response: Ensure the tape associated with the error has a valid VOL1 label.

BKR8073E xxxMOUNT exit return code *rc* on secondary VOL1 mount request.

Explanation: The IBMTWIN I/O handler encountered a text error that occurred while mounting the secondary volume of a twin set.

System action: This situation indicates a tape mount failure. Processing stops.

User response: Examine accompanying error messages and attempt to resolve the error. (See the *IBM Backup and Restore Manager for z/VM User's Guide (SC18-9523)* for information about IBMTWIN.) If the problem persists, contact your system programmer or IBM Software Support.

BKR8074E Return code *rc* from BKRTIO on secondary GETVOL1 request.

Explanation: An error occurred while attempting to read the VOL1 label of a tape.

System action: Processing ends with a non-zero return code or abend.

User response: Ensure the tape associated with the error has a valid VOL1 label.

BKR8075I Output handler IBMTWIN initializing.

Explanation: This message indicates the IBMTWIN output handler is initializing.

System action: None.

User response: No action is required.

BKR8076I Job name is: *job_name*.

Explanation: This message indicates the job name.

System action: None.

User response: No action is required.

BKR8077E Recursive INIT call encountered.

Explanation: A recurring initialization call was issued to an I/O handler routine.

System action: The affected routine exits with a non-zero return code.

User response: This message might be accompanied by supporting messages to the virtual machine console. If the problem persists, contact your system programmer or IBM Software Support.

BKR8078E FILEHEAD called prior to initialization.

Explanation: The calling routine attempted to pass information to an I/O handler prior to initialization.

System action: The calling routine exits with a non-zero return code.

User response: This message might be accompanied by supporting messages to the virtual machine console. If the problem persists, contact your system programmer or IBM Software Support.

BKR8079E Recursive FILEHEAD call encountered.

Explanation: An I/O handler received a FILEHEAD call before processing of the previous file was stopped.

System action: The calling routine exits with a non-zero return code.

User response: This message might be accompanied by supporting messages to the virtual machine console. If the problem persists, contact your system programmer or IBM Software Support.

BKR8080E FHPARML inconsistency encountered.

Explanation: An internal consistency check between a data handling routine and an I/O handler failed.

System action: Processing stops.

User response: Collect available diagnostic information accompanying the message and contact your system programmer or IBM Software Support.

BKR8081E Malformed FILEHEAD; unrecognized FHFTYPE value.

Explanation: An internal consistency check between a data handling routine and an I/O handler failed.

System action: Processing stops.

User response: This message might be accompanied by supporting messages to the virtual machine console. If the problem persists, contact your system programmer or IBM Software Support.

BKR8082E FILEDATA called prior to initialization.

Explanation: An internal consistency check between a data handling routine and an I/O handler failed.

System action: Processing stops.

User response: This message might be accompanied by supporting messages to the virtual machine console. If the problem persists, contact your system programmer or IBM Software Support.

BKR8083E FILEDATA called prior to FILEHEAD.

Explanation: An internal consistency check between a data handling routine and an I/O handler failed.

System action: Processing stops.

User response: This message might be accompanied by supporting messages to the virtual machine console. If the problem persists, contact your system programmer or IBM Software Support.

BKR8084E FDPARML inconsistency encountered.

Explanation: An internal consistency check between a data handling routine and an I/O handler failed.

System action: Processing stops.

User response: This message might be accompanied by supporting messages to the virtual machine console. If the problem persists, contact your system programmer or IBM Software Support.

BKR8085E FILEEND called prior to initialization.

Explanation: An internal consistency check between a data handling routine and an I/O handler failed.

System action: Processing stops.

User response: This message might be accompanied by supporting messages to the virtual machine console. If the problem persists, contact your system programmer or IBM Software Support.

BKR8086E FILEEND called prior to FILEHEAD.

Explanation: An internal consistency check between a data handling routine and an I/O handler failed.

System action: Processing stops.

User response: This message might be accompanied by supporting messages to the virtual machine console. If the problem persists, contact your system programmer or IBM Software Support.

BKR80087E FEPARML inconsistency encountered.

Explanation: An internal consistency check between a data handling routine and an I/O handler failed.

System action: Processing stops.

User response: This message might be accompanied by supporting messages to the virtual machine console. If the problem persists, contact your system programmer or IBM Software Support.

BKR8088E TERMINAT called prior to initialization.

Explanation: An internal consistency check between a data handling routine and an I/O handler failed.

System action: Processing stops.

User response: This message might be accompanied by supporting messages to the virtual machine console. If the problem persists, contact your system programmer or IBM Software Support.

BKR80889E TERMINAT invoked with files still open.

Explanation: An internal consistency check between a data handling routine and an I/O handler failed.

System action: Processing stops.

User response: This message might be accompanied by supporting messages to the virtual machine console. If the problem persists, contact your system programmer or IBM Software Support.

BKR8090E EOJPARML inconsistency encountered.

Explanation: An internal consistency check between a data handling routine and an I/O handler failed.

System action: Processing stops.

User response: This message might be accompanied by supporting messages to the virtual machine console. If the problem persists, contact your system programmer or IBM Software Support.

BKR8091E xxxUMNT exit return code *rc* from primary dismount.

Explanation: The IBMTAPE I/O handler received a non-zero return code from a tape dismount exit routine.

System action: Processing stops.

User response: This message might be accompanied by supporting messages to the virtual machine console. If the problem persists, contact your system programmer or IBM Software Support.

BKR8092E xxxUMNT exit return code *rc* from secondary dismount.

Explanation: The IBMTWIN I/O handler received a non-zero return code from a tape dismount exit routine.

System action: Processing stops.

User response: This message might be accompanied by supporting messages to the virtual machine console. If the problem persists, contact your system programmer or IBM Software Support.

BKR8093E CTNRDATA called prior to initialization.

Explanation: An internal consistency check between a data handling routine and an I/O handler failed.

System action: Processing stops.

User response: This message might be accompanied by supporting messages to the virtual machine console. If the problem persists, contact your system programmer or IBM Software Support.

BKR8094E Out-of-sequence CTNRDATA call; state is not EOF.

Explanation: An internal consistency check between a data handling routine and an I/O handler failed.

System action: Processing stops.

User response: This message might be accompanied by supporting messages to the virtual machine console. If the problem persists, contact your system programmer or IBM Software Support.

BKR8095E CDPARML inconsistency encountered.

Explanation: An internal consistency check between a data handling routine and an I/O handler failed.

System action: Processing stops.

User response: This message might be accompanied by supporting messages to the virtual machine console. If the problem persists, contact your system programmer or IBM Software Support.

BKR8096E Unrecognized CTNRDATA call type.

Explanation: An internal consistency check between a data handling routine and an I/O handler failed.

System action: Processing stops.

User response: This message might be accompanied by supporting messages to the virtual machine console. If the problem persists, contact your system programmer or IBM Software Support.

BKR8097E SFSATTR called prior to initialization.

Explanation: An internal consistency check between a data handling routine and an I/O handler failed.

System action: Processing stops.

User response: This message might be accompanied by supporting messages to the virtual machine console. If the problem persists, contact your system programmer or IBM Software Support.

BKR8098E SFSATTR called prior to end-of-file.

Explanation: An internal consistency check between a data handling routine and an I/O handler failed.

System action: Processing stops.

User response: This message might be accompanied by supporting messages to the virtual machine console. If the problem persists, contact your system programmer or IBM Software Support.

BKR8099E SAPARML inconsistency encountered.

Explanation: An internal consistency check between a data handling routine and an I/O handler failed.

System action: Processing stops.

User response: This message might be accompanied by supporting messages to the virtual machine console. If the problem persists, contact your system programmer or IBM Software Support.

BKR8100E FEOV (Forced End-of-Volume) failure for device *device*.

Explanation: A tape handling error occurred during FEOV processing.

System action: Processing stops.

User response: This message might be accompanied by supporting messages to the virtual machine console. If the problem persists, contact your system programmer or IBM Software Support.

BKR8101E BKRTIO return code *rc*, reason code *reason*.

Explanation: An I/O error occurred reading or writing a tape device.

System action: Processing stops.

User response: This message might be accompanied by supporting messages to the virtual machine console. If the problem persists, contact your system programmer or IBM Software Support.

BKR8102E CMSFILE output handler invoked with unrecognized parameter.

Explanation: The CMSFILE output handler encountered an unrecognized parameter.

System action: Processing stops.

User response: Review the parameters specified for CMSFILE to determine the incorrect parameter. See the *IBM Backup and Restore Manager for z/VM User's Guide (SC18-9523)* for valid parameters.

BKR8103E DMSOPEN return code *rc*, reason code *reason* on output file.

Explanation: CSL routine DMSOPEN encountered an error. See *z/VM CMS Callable Services Reference (SC24-6072)* for information about DMSOPEN.

System action: The routine encountering the error condition might attempt recovery or exit with a nonzero return code.

User response: This message might be accompanied by additional supporting messages to the virtual machine console. If the problem persists, contact your system programmer or IBM Software Support.

BKR8104I Output handler CMSFILE initializing.

Explanation: This message informs you that the CMSFILE output handler is initializing.

System action: None.

User response: No action is required.

BKR8105I Output is directed to file *filename*.

Explanation: This message informs you output is being directed to the file specified by *filename*.

System action: None.

User response: No action is required.

BKR8106E DMSWRITE return code *rc*, reason code *reason* during INIT call.

Explanation: An output routine received a nonzero return code *rc* from CSL routine DMSWRITE. See *z/VM CMS Callable Services Reference (SC24-6072)* for information about DMSWRITE.

System action: Processing stops.

User response: This message might be accompanied by additional supporting messages to the virtual machine console. If the problem persists, contact your system programmer or IBM Software Support.

BKR8107E DMSWRITE return code *rc*, reason code *reason* during FILEHEAD call.

Explanation: An output routine received a non-zero return code *rc* from CSL routine DMSWRITE. See *z/VM CMS Callable Services Reference (SC24-6072)* for information about DMSWRITE.

System action: Processing stops.

User response: This message might be accompanied by additional supporting messages to the virtual machine console. If the problem persists, contact your system programmer or IBM Software Support.

BKR8108E DMSWRITE return code *rc*, reason code *reason* during FILEDATA call.

Explanation: An output routine received a non-zero return code *rc* from CSL routine DMSWRITE. See *z/VM CMS Callable Services Reference (SC24-6072)* for information about DMSWRITE.

System action: Processing stops.

User response: This message might be accompanied by additional supporting messages to the virtual machine console. If the problem persists, contact your system programmer or IBM Software Support.

BKR8109E DMSWRITE return code *rc*, reason code *reason* during FILEEND call.

Explanation: An output routine received a non-zero return code *rc* from CSL routine DMSWRITE. See *z/VM CMS Callable Services Reference (SC24-6072)* for information about DMSWRITE.

System action: Processing stops.

User response: This message might be accompanied by additional supporting messages to the virtual machine console. If the problem persists, contact your system programmer or IBM Software Support.

BKR8110E DMSWRITE return code *rc*, reason code *reason* during EOJ call.

Explanation: An output routine received a non-zero return code *rc* from CSL routine DMSWRITE. See *z/VM CMS Callable Services Reference (SC24-6072)* for information about DMSWRITE.

System action: Processing stops.

User response: This message might be accompanied by additional supporting messages to the virtual machine console. If the problem persists, contact your system programmer or IBM Software Support.

BKR8111E DMSWRITE return code *rc*, reason code *reason* during TERMINAT call.

Explanation: An output routine received a non-zero return code *rc* from CSL routine DMSWRITE. See *z/VM CMS Callable Services Reference (SC24-6072)* for information about DMSWRITE.

System action: Processing stops.

User response: This message might be accompanied by additional supporting messages to the virtual machine console. If the problem persists, contact your system programmer or IBM Software Support.

BKR8112E DMSWRITE return code *rc*, reason code *reason* during CTNRDATA call.

Explanation: An output routine received a non-zero return code *rc* from CSL routine DMSWRITE. See *z/VM CMS Callable Services Reference (SC24-6072)* for information about DMSWRITE.

System action: Processing stops.

User response: This message might be accompanied by additional supporting messages to the virtual machine console. If the problem persists, contact your system programmer or IBM Software Support.

BKR8113E DMSWRITE return code *rc*, reason code *reason* during SFSATTR call.

Explanation: An output routine received a non-zero return code *rc* from CSL routine DMSWRITE. See *z/VM CMS Callable Services Reference (SC24-6072)* for information about DMSWRITE.

System action: Processing stops.

User response: This message might be accompanied by additional supporting messages to the virtual machine console. If the problem persists, contact your system programmer or IBM Software Support.

BKR8114E IBMTAPE output handler invoked with unrecognized parameter.

Explanation: The IBMTAPE output handler encountered an unrecognized parameter.

System action: None.

User response: Review the parameters specified for IBMTAPE to determine the incorrect parameter. See the *IBM Backup and Restore Manager for z/VM User's Guide (SC18-9523)* for valid parameters.

BKR8115I Output handler IBMTAPE initializing.

Explanation: This message indicates the IBMTAPE output handler is initializing.

System action: None.

User response: No action is required.

BKR8116E Unrecognized input handler *handler* specified.

Explanation: An unrecognized input handler (*handler*) was specified.

System action: Processing stops.

User response: Specify a valid input handler. See the *IBM Backup and Restore Manager for z/VM User's Guide (SC18-9523)* for valid input handler descriptions.

BKR8117E Initialization of *handler* failed; return code *rc*, reason code *reason*.

Explanation: An I/O handler failed to initialize properly.

System action: Processing stops.

User response: This message might be accompanied by additional supporting messages to the virtual machine console. If the problem persists, contact your system programmer or IBM Software Support.

BKR8118E Input handler *handler* return code *rc*, reason *reason* during GETDATA.

Explanation: An I/O handler encountered an error during input processing.

System action: Processing stops.

User response: This message might be accompanied by additional supporting messages to the virtual machine console. If the problem persists, contact your system programmer or IBM Software Support.

BKR8119T Input stream sequencing error.

Explanation: An out-of-sequence data stream was encountered during restore processing. This situation might result from an input/output error or an internal logic failure.

System action: Processing stops.

User response: If the problem persists, collect available diagnostic data and contact your system programmer or IBM Software Support.

BKR8120T Start of buffer: *buffer_start*.

Explanation: This message accompanies message BKR8119T. It displays up to the first 80 bytes of the out-of-sequence input/output buffer. This situation might result from an input/output error or an internal logic failure.

System action: Processing stops.

User response: If the problem persists, collect available diagnostic data and contact your system

programmer or IBM Software Support.

BKR8121I Backup image generated by job *job*, instance *instance*.

Explanation: This message identifies the backup job and instance that generated the data being processed for restore.

System action: None.

User response: No action is required.

BKR8122E FHCTYPE / FHFTYPE mis-match.

Explanation: An internal consistency check between a data handling routine and an I/O handler failed.

System action: Processing stops.

User response: This message might be accompanied by additional supporting messages to the virtual machine console. If the problem persists, contact your system programmer or IBM Software Support.

BKR8123I Starting restore of raw CKD dump; track range *n1* - *n2*.

Explanation: This message indicates restore processing is beginning for a CKD image backup.

System action: None.

User response: No action is required.

BKR8124E FHCTYPE is not CKD.

Explanation: An internal consistency check between a data handling routine and an I/O handler failed.

System action: Processing stops.

User response: This message might be accompanied by additional supporting messages to the virtual machine console. If the problem persists, contact your system programmer or IBM Software Support.

BKR8125E Input stream sequencing error; FILEHEAD found before CTNRDATA.

Explanation: An internal consistency check between a data handling routine and an I/O handler failed.

System action: Processing stops.

User response: This message might be accompanied by additional supporting messages to the virtual machine console. If the problem persists, contact your system programmer or IBM Software Support.

BKR8126E Return code *rc* from BKRWTRK.

Explanation: An I/O error occurred while restoring a CKD image backup.

System action: Processing stops.

User response: This message might be accompanied by additional supporting messages to the virtual machine console. If the problem persists, contact your system programmer or IBM Software Support.

BKR8127E Unable to continue; read *n* bytes, track image length is *length*.

Explanation: An I/O error occurred while restoring a CKD image backup; there is a length mismatch between the size of the data acquired for restoration and the track capacity of the source or destination device.

System action: Processing stops.

User response: This message might be accompanied by additional supporting messages to the virtual machine console. If the problem persists, contact your system programmer or IBM Software Support.

BKR8128I Source data is a CKD image dump for *owner addr*.

Explanation: This message identifies the owner and virtual address from which source data were acquired prior to restoration of a CKD image backup.

System action: None.

User response: No action is required.

BKR8129I Target extent size (*n* cyls) is compatible with source data.

Explanation: The target CKD DASD extent was determined to be compatible with the original data source during restore of a CKD image backup.

System action: None.

User response: No action is required.

BKR8130E CTNRDATA is not flagged as CKD.

Explanation: An internal consistency check between a data handling routine and an I/O handler failed.

System action: Processing stops.

User response: This message might be accompanied by additional supporting messages to the virtual machine console. If the problem persists, contact your system programmer or IBM Software Support.

BKR8131E Invalid device address.

Explanation: The virtual device specified for a restore operation is invalid or inaccessible.

System action: Processing stops.

User response: This message might be accompanied by additional supporting messages to the virtual machine console. If the problem persists, contact your system programmer or IBM Software Support.

BKR8132E BKRD210 return code *rc* during extract of target description.

Explanation: CP DIAG 210 returned an error during backup or restore processing.

System action: Processing stops.

User response: This message might be accompanied by additional supporting messages to the virtual machine console. If the problem persists, contact your system programmer or IBM Software Support.

BKR8133E Source and target device types do not match.

Explanation: Incompatible source and destination devices encountered while attempting to restore a CKD image backup.

System action: Processing stops.

User response: Try the restore operation again specifying a compatible output destination.

BKR8134E Target extent has too few cylinders to contain source image.

Explanation: A CKD image backup cannot be restored to the target minidisk because the target extent is too small.

System action: Processing stops.

User response: Try the restore operation again specifying a sufficiently large destination minidisk.

BKR8135I Operation complete; *n* tracks restored to target extent.

Explanation: Restoration of a CKD image backup completed successfully.

System action: None.

User response: No action is required.

BKR8136E Input handler *handler* return code *rc*, reason code *reason* on TERMINAT.

Explanation: An internal consistency check between a data handling routine and an I/O handler failed.

System action: Processing stops.

User response: This message might be accompanied by additional supporting messages to the virtual machine console. If the problem persists, contact your system programmer or IBM Software Support.

BKR8137E Invalid numeric data in target storage group number *number*.

Explanation: An invalid value was specified for use as an SFS storage group during LOADSFS processing.

System action: Processing stops.

User response: Try the operation again specifying a valid storage group number.

BKR8138I Found *filename filetype* , owner *owner*, source *source*.

Explanation: This message identifies a source file during verbose restore processing. Message BKR8138I is issued if verbose mode is enabled during restoration of CMS files. *filename filetype* indicates the CMS file ID encountered. *owner* is the virtual machine name/user ID of the file owner. *source* is the minidisk or SFS file pool ID from which the file was originally backed up.

System action: None.

User response: No action is required.

BKR8139W File skipped; *file* already exists on restore destination.

Explanation: A pre-existing file was encountered during restore processing. The file is left in place instead of being overlaid by the restore operation.

System action: Processing continues.

User response: If you want to restore the version of the file contained on backup media, remove the colliding file from the restore destination and try the restore operation again.

BKR8140E DMSOPDBK (EDF) return code *rc*, reason code *reason*.

Explanation: CSL routine DMSOPDBK issued a non-zero return code to the calling routine while restoring data to a CMS minidisk. See *z/VM CMS Callable Services Reference (SC24-6072)* for information about DMSOPDBK.

System action: Processing stops.

User response: This message might be accompanied by additional supporting messages to the virtual machine console. If the problem persists, contact your system programmer or IBM Software Support.

BKR8141E DMSOPDBK (SFS) return code *rc*, reason code *reason*.

Explanation: CSL routine DMSOPDBK issued a non-zero return code to the calling routine while restoring data to an SFS file space. See *z/VM CMS Callable Services Reference (SC24-6072)* for information about DMSOPDBK.

System action: Processing stops.

User response: This message might be accompanied by additional supporting messages to the virtual machine console. If the problem persists, contact your system programmer or IBM Software Support.

BKR8142E Impossible result returned from block size calculation.

Explanation: An internal consistency check between a data handling routine and an I/O handler failed.

System action: Processing stops.

User response: This message might be accompanied by additional supporting messages to the virtual machine console. If the problem persists, contact your system programmer or IBM Software Support.

BKR8143E DMSWRDBK return code *rc*, reason code *reason*.

Explanation: CSL routine DMSWRDBK issued a non-zero return code to the calling routine. See *z/VM CMS Callable Services Reference (SC24-6072)* for information about DMSWRDBK.

System action: Processing stops.

User response: This message might be accompanied by additional supporting messages to the virtual machine console. If the problem persists, contact your system programmer or IBM Software Support.

BKR8144E DMSCLDBK return code *rc*, reason code *reason*.

Explanation: CSL routine DMSCLDBK issued a non-zero return code to the processing routine. See *z/VM CMS Callable Services Reference (SC24-6072)* for information about DMSCLDBK.

System action: Processing stops.

User response: This message might be accompanied by additional supporting messages to the virtual machine console. If the problem persists, contact your system programmer or IBM Software Support.

BKR8145W Filespace *filespace* is already enrolled; present limits will apply.

Explanation: During restore of SFS data to an SFS destination, the target file space was found to be already enrolled in the target file pool.

System action: None.

User response: The restore operation proceeds, subject to the pre-existing limits on the target file space.

BKR8146E Filespace enrollment failed, return code *rc*, reason code *reason*.

Explanation: An attempt to enroll a file space during SFS restore processing failed.

System action: Processing stops.

User response: This message might be accompanied by additional supporting messages to the virtual machine console. If the problem persists, contact your system programmer or IBM Software Support.

BKR8147E DEFSFDIR return code *rc*, reason code *reason*.

Explanation: Creation of an SFS directory failed during SFS restore processing.

System action: Processing stops.

User response: This message might be accompanied by additional supporting messages to the virtual machine console. If the problem persists, contact your system programmer or IBM Software Support.

BKR8148W ALIAS skipped; *filename filetype directory_path* already exists.

Explanation: During SFS restore processing, Backup and Restore Manager attempted to restore an ALIAS definition, which already exists.

System action: Processing continues.

User response: If you want to restore the version of the alias that is contained in the backup, delete the pre-existing alias from the target file space and try the restore operation again.

BKR8149W ALIAS not restored; DEFALIAS return code *rc*, reason code *reason*.

Explanation: An error occurred while attempting to reconstruct an SFS alias from backup data.

System action: Processing continues.

User response: The alias was not restored. If you want to restore the skipped alias, examine additional messages, take corrective action if possible, and try the restore operation again.

BKR8150E DEFAUTH return code *rc*, reason code *reason*.

Explanation: An attempt to restore SFS authorizations from backup data failed.

System action: Processing continues.

User response: The authorization attributes were not restored. Manually re-create them or try the restore operation again.

BKR8151W EXTERNAL OBJECT skipped; *filename filetype directory_path* already exists.

Explanation: A name collision occurred while trying to restore an external object to a file space. The external object definition Backup and Restore Manager encountered during restore processing already exists in the target file space.

System action: Processing continues.

User response: To restore the external object from backup data, delete the colliding external object definition and try the restore operation again.

BKR8152E DEFEXOBJ return code *rc*, reason code *reason*.

Explanation: An attempt to re-create an external object definition from backup data failed.

System action: Processing continues.

User response: The external object was not restored. Examine additional messages and try the restore operation again. If the problem persists, contact your system programmer or IBM Software Support.

BKR8153W Dropping SFS ALIAS definition; not applicable to non-SFS target.

Explanation: An SFS alias definition was skipped while restoring SFS data to a CMS EDF minidisk.

System action: Processing continues.

User response: Only SFS base files can be restored to CMS EDF minidisk. No action is required.

BKR8154W Dropping SFS AUTH definition; not applicable to non-SFS target.

Explanation: SFS permission definitions were skipped while restoring SFS data to a CMS EDF minidisk.

System action: Processing continues.

User response: No action is required.

BKR8155W Dropping SFS External Object; not applicable to non-SFS target.

Explanation: An SFS external object was skipped during restoration of SFS data to a CMS EDF minidisk.

System action: Processing continues.

User response: No action is required. Only SFS base files can be restored to CMS EDF minidisk.

BKR8156I Operation complete; restored *n* files to target.

Explanation: This message indicates that the restore operation successfully restored the specified number of files to the designated target.

System action: None.

User response: No action is required.

BKR8157E CP return code *rc* from command *command*.

Explanation: A non-zero CP return code was encountered during backup or restore processing.

System action: The affected routine might attempt recovery action or processing might stop.

User response: This message might be accompanied by additional supporting messages to the virtual machine console. If the problem persists, contact your system programmer or IBM Software Support.

BKR8158E CP response: *response*.

Explanation: An unexpected CP reply was encountered. This message displays the response that was not handled.

System action: Processing stops.

User response: This message might be accompanied by additional supporting messages to the virtual machine console. If the problem persists, contact your system programmer or IBM Software Support.

BKR8159E CMS return code *rc* from command ACCESS 3F0 Z (MODE0.

Explanation: Backup and Restore Manager for z/VM reserves virtual address 3F0 and file mode Z for backup and restore processing of CMS EDF minidisks. In this instance, an **ACCESS** command failed.

System action: Processing stops.

User response: This message might be accompanied by additional supporting messages to the virtual machine console. If the problem persists, contact your system programmer or IBM Software Support.

BKR8160E Return code *rc* from VMUDQ inquiry.

Explanation: The VMUDQ interface responded with a non-zero return code.

System action: Processing stops.

User response: This message might be accompanied by additional supporting messages to the virtual machine console. If the problem persists, contact your system programmer or IBM Software Support.

BKR8161E Incomprehensible response from VMUDQ.

Explanation: The calling routine was unable to interpret a reply from the VMUDQ interface.

System action: Processing stops.

User response: This message might be accompanied by additional supporting messages to the virtual machine console. If the problem persists, contact your system programmer or IBM Software Support.

BKR8162E Reply length was *n* bytes.

Explanation: This message is issued with message BKR8161E.

System action: None.

User response: Record the message for diagnostic purposes.

BKR8163E ADT search failure.

Explanation: DUMPEDF was unable to obtain ADT information for the source minidisk.

System action: Processing stops.

User response: Ensure Backup and Restore Manager is operating on a supported release of CMS.

BKR8164E Source minidisk is not in EDF format.

Explanation: DUMPEDF encountered a minidisk that could not be identified as being in CMS EDF format.

System action: Processing stops.

User response: Ensure Backup and Restore Manager is operating on a supported release of CMS. If the problem persists, contact your system programmer or IBM Software Support.

BKR8165E Output handler refused EDF CTNRDATA, return code *rc*.

Explanation: An internal consistency check between a data handling routine and an I/O handler failed.

System action: Processing stops.

User response: This message might be accompanied by additional supporting messages to the virtual machine console. If the problem persists, contact your system programmer or IBM Software Support.

BKR8166E Catalog handler refused EDF CTNRDATA, return code *rc*.

Explanation: An internal consistency check between a data handling routine and an I/O handler failed.

System action: Processing stops.

User response: This message might be accompanied by additional supporting messages to the virtual machine console. If the problem persists, contact your system programmer or IBM Software Support.

BKR8167E FST size inconsistency (test #1).

Explanation: DUMPEDF encountered a failure during a consistency check operation.

System action: Processing stops.

User response: Ensure Backup and Restore Manager is operating on a supported release of CMS. If the problem persists, contact your system programmer or IBM Software Support.

BKR8168E FST size inconsistency (test #2).

Explanation: DUMPEDF encountered a failure during a consistency check operation.

System action: Processing stops.

User response: Ensure Backup and Restore Manager is operating on a supported release of CMS. If the problem persists, contact your system programmer or IBM Software Support.

BKR8169E Could not locate any FSTs to process.

Explanation: DUMPEDF encountered a failure during a consistency check operation.

System action: Processing stops.

User response: Ensure Backup and Restore Manager is operating on a supported release of CMS. If the problem persists, contact your system programmer or IBM Software Support.

BKR8170E DMSEXIST return code *rc*, reason code *reason*.

Explanation: CSL routine DMSEXIST responded with a non-zero return code. See *z/VM CMS Callable Services Reference (SC24-6072)* for information about DMSEXIST.

System action: The routine receiving the error might attempt recovery or processing might stop.

User response: This message might be accompanied by additional supporting messages to the virtual

machine console. If the problem persists, contact your system programmer or IBM Software Support.

BKR8171E FILEHEAD return code *rc*.

Explanation: An internal consistency check between a data handling routine and an I/O handler failed.

System action: Processing stops.

User response: This message might be accompanied by additional supporting messages to the virtual machine console. If the problem persists, contact your system programmer or IBM Software Support.

BKR8172E Catalog FILEHEAD return code *rc*.

Explanation: An internal consistency check between a data handling routine and an I/O handler failed.

System action: Processing stops.

User response: This message might be accompanied by additional supporting messages to the virtual machine console. If the problem persists, contact your system programmer or IBM Software Support.

BKR8173E Unrecognized / unsupported EDF block size.

Explanation: An unrecognized CMS EDF minidisk data block size was encountered.

System action: Processing stops.

User response: Ensure Backup and Restore Manager is operating on a supported release of CMS. If the problem persists, contact your system programmer or IBM Software Support.

BKR8174E FILEDATA return code *rc*.

Explanation: An internal consistency check between a data handling routine and an I/O handler failed.

System action: Processing stops.

User response: This message might be accompanied by additional supporting messages to the virtual machine console. If the problem persists, contact your system programmer or IBM Software Support.

BKR8175E FILEEND return code *rc*.

Explanation: An internal consistency check between a data handling routine and an I/O handler failed.

System action: Processing stops.

User response: This message might be accompanied by additional supporting messages to the virtual machine console. If the problem persists, contact your system programmer or IBM Software Support.

BKR8176E Output handler refused CKD CTNRDATA, return code *rc*.

Explanation: An internal consistency check between a data handling routine and an I/O handler failed.

System action: Processing stops.

User response: This message might be accompanied by additional supporting messages to the virtual machine console. If the problem persists, contact your system programmer or IBM Software Support.

BKR8177E Catalog handler refused CKD CTNRDATA, return code *rc*.

Explanation: An internal consistency check between a data handling routine and an I/O handler failed.

System action: Processing stops.

User response: This message might be accompanied by additional supporting messages to the virtual machine console. If the problem persists, contact your system programmer or IBM Software Support.

BKR8178E BKRRTRK return code *rc* trying to read track *track*.

Explanation: An I/O error was encountered during a CKD track image backup operation.

System action: Processing stops.

User response: This message might be accompanied by additional supporting messages to the virtual machine console. If the problem persists, contact your system programmer or IBM Software Support.

BKR8179E WRTAPE return code *rc* during EOV SUSPEND processing.

Explanation: A tape I/O error occurred during end-of-volume processing.

System action: Processing stops.

User response: Attempt to resolve the I/O error and try the backup operation again.

BKR8180E Return code *rc* from xxxEOV exit during EOV RESUME processing.

Explanation: The IBMTAPE I/O handler encountered a non-zero return code from the End-Of-Volume tape handling exit.

System action: Processing stops.

User response: Attempt to resolve the tape subsystem problem and try the restore operation again. If the problem persists, contact your system programmer or IBM Software Support.

BKR8181E WRTAPE return code *rc* while finalizing EOV processing.

Explanation: A tape I/O error occurred during end-of-volume processing.

System action: Processing stops.

User response: Attempt to resolve the I/O error and try the failing backup operation again.

BKR8182E WRTAPE return code *rc*.

Explanation: A tape I/O error occurred.

System action: Processing stops.

User response: Resolve the tape I/O error and try the failed backup operation again.

BKR8183T New volume with no VOL1 label during EOV handling; abending.

Explanation: Backup and Restore Manager encountered a volume without a required VOL1 label.

System action: Processing is stopped through an abend.

User response: Ensure all tapes used by Backup and Restore Manager have a valid VOL1 label.

BKR8184E RDTAPE return code *rc* while trying to read VOL1 label of new volume during EOV processing.

Explanation: An I/O error occurred while attempting to read the VOL1 label of a tape.

System action: Processing stops.

User response: Try the restore operation again using a different tape drive.

BKR8185E TAPECTL return code *rc* during WTM.

Explanation: An I/O error occurred during a WTM operation.

System action: Processing stops.

User response: Correct the I/O error and try the failing backup operation again.

BKR8186E TAPECTL return code *rc* during RDBLKID.

Explanation: An I/O error occurred during a RDBLKID operation.

System action: Processing continues.

User response: Further RDBLKID operations are disabled. (This might slow performance during restore operations against the affected media.)

BKR8187I Caller has invoked FEOV processing for device *device*.

Explanation: Forced end-of-volume (FEOV) processing was invoked. This occurs when an EOV situation occurs on one half of a twin set and the other half is closed as a result of the EOV.

System action: Processing continues.

User response: No action is required.

BKR8188I The current VOL1 label is *label*.

Explanation: This message displays the current VOL1 label.

System action: None.

User response: No action is required.

BKR8189E TAPECTL return code *rc* during LOCBLK.

Explanation: A TAPECTL LOCBLK operation failed.

System action: Processing stops.

User response: Try the restore operation again using alternate media or a different tape drive.

BKR8190E RDTAPE return code *rc*.

Explanation: An I/O error occurred during a RDTAPE operation.

System action: Processing stops.

User response: Try the restore operation again using alternate media or a different tape drive.

BKR8191W Hardware EOV signal after RDTAPE.

Explanation: A tape hardware End-Of-Volume condition was encountered.

System action: Processing continues.

User response: Further processing of the input stream continues (if possible) until an EOVBLOCK data block is encountered.

BKR8192I Encountered a *chain_type* EOVBLOCK on input.

Explanation: The input tape volume was previously closed due to an EOV event.

This message is issued when a restore-from-tape operation encounters end-of-volume records that were created during the original backup. An EOVBLOCK is a tape data record is created by backup processing during EOV transitions. *chain_type* is either SUSPEND (end of current tape input volume) or RESUME (start of new input volume).

The message is displayed in the restore job log as part of tape processing when a restore task encounters a backup package that is split across tape volsers. It is accompanied by tape dismount and mount messages. SUSPENDs are the first indication of EOV processing being entered during a restore operation. RESUMEs are issued after successful mount of the successor volume, as the last step of EOV-on-restore tape swap handling.

System action: Processing continues.

User response: The EOV tape exit is invoked to identify the appropriate successor volume. Restore processing continues after the next tape in sequence is mounted.

BKR8193E Return code *rc* from xxxEOV exit during READDATA EOV.

Explanation: A non-zero return code from an EOV tape handling exit was encountered.

System action: Processing stops.

User response: This message might be accompanied by additional supporting messages to the virtual machine console. If the problem persists, contact your system programmer or IBM Software Support.

BKR8194E RDTAPE return code *rc* while validating EOV RESUME.

Explanation: An I/O error occurred during end-of-volume processing.

System action: Processing stops.

User response: Try the restore operation again using alternate media or a different tape drive.

BKR8195E New volume EOVTYPE is not RESUME after xxxEOV exit return.

Explanation: An out-of-sequence volume was mounted during EOV processing.

System action: Processing stops.

User response: Try the restore operation again with the correct sequence of input volumes.

BKR8196W TAPECTL RDBLKID return code *rc*; suppressing further RDBLKIDs.

Explanation: An I/O error was encountered on a RDBLKID operation.

System action: Processing continues.

User response: Processing is continues without further RDBLKID operations. (This might reduce performance of future restore operations which use the affected tape media.)

BKR8197E GETVOL1 processing encountered missing or damaged VOL1 label.

Explanation: A missing, damaged, or unrecognizable VOL1 label was encountered.

System action: Processing stops.

User response: Try the operation again after ensuring all tapes have a valid VOL1 label.

BKR8198E BKRTIO invoked with unsupported call type *type*.

Explanation: An internal consistency check between a data handling routine and an I/O handler failed.

System action: Processing stops.

User response: This message might be accompanied by additional supporting messages to the virtual machine console. If the problem persists, contact your system programmer or IBM Software Support.

BKR8199E Unrecognized catalog data generation parameter *parameter.*

Explanation: Backup and Restore Manager for z/VM encountered an unrecognized parameter (*parameter*) during catalog data generation.

System action: Processing stops.

User response: This message might be accompanied by additional supporting messages to the virtual machine console. If the problem persists, contact your system programmer or IBM Software Support.

BKR8200I New file *file* created to contain catalog granule contents.

Explanation: This message indicates that Backup and Restore Manager for z/VM created a new file (*file*) to contain catalog granule contents.

System action: None.

User response: No action is required.

BKR8201E DMSOPEN return code *rc*, reason *rsn* for catalog data file.

Explanation: Backup and Restore Manager received an error indication from DMSOPEN.

System action: Processing stops.

User response: If the problem persists, contact your system programmer or IBM Software Support.

BKR8202E DMSQFMOD return code *rc*; reason code *reason*.

Explanation: CSL routine DMSQFMOD responded with a non-zero return code. See *z/VM CMS Callable Services Reference (SC24-6072)* for information about DMSQFMOD.

System action: Processing stops.

User response: This message might be accompanied by supporting messages to the virtual machine console. If the problem persists, contact your system programmer or IBM Software Support.

BKR8203E DMSWRITE return code *rc*, reason code *reason* writing GRANJOB.

Explanation: CSL routine DMSWRITE responded with a non-zero return code during catalog data generation processing. See *z/VM CMS Callable Services Reference (SC24-6072)* for information about DMSWRITE.

System action: Processing stops.

User response: This message might be accompanied by supporting messages to the virtual machine console. This message typically is associated with an out of disk space condition. It might be necessary to enlarge the worker service virtual machine work area and then try the failed backup operation again. If the problem persists, contact your system programmer or IBM Software Support.

BKR8204E Catalog metadata record length mismatch.

Explanation: An internal consistency check between a data handling routine and an I/O handler failed.

System action: Processing stops.

User response: This message might be accompanied by supporting messages to the virtual machine console. If the problem persists, contact your system programmer or IBM Software Support.

BKR8205E DMSWRITE return code *rc*, reason code *reason* during GRANCTNR.

Explanation: CSL routine DMSWRITE responded with a non-zero return code. See *z/VM CMS Callable Services Reference (SC24-6072)* for information about DMSWRITE.

System action: Processing stops.

User response: This message might be accompanied by supporting messages to the virtual machine console. This message typically is associated with an out of disk space condition. It might be necessary to enlarge the worker service virtual machine work area and then try the failed backup operation again. If the problem persists, contact your system programmer or IBM Software Support.

BKR8206E GRANCTNR call encountered prior to initialization.

Explanation: An internal consistency check between a data handling routine and an I/O handler failed.

System action: Processing stops.

User response: This message might be accompanied by supporting messages to the virtual machine console. If the problem persists, contact your system programmer or IBM Software Support.

BKR8207E Recursive GRANCTNR call.

Explanation: An internal consistency check between a data handling routine and an I/O handler failed.

System action: Processing stops.

User response: This message might be accompanied by supporting messages to the virtual machine console. If the problem persists, contact your system programmer or IBM Software Support.

BKR8208E DMSWRITE return code *rc*, reason code *reason* during GRANOBJ.

Explanation: An output routine received a non-zero return code from CSL routine DMSWRITE. See *z/VM CMS Callable Services Reference (SC24-6072)* for information about DMSWRITE.

System action: Processing stops.

User response: This message might be accompanied by supporting messages to the virtual machine console. This message typically is associated with an out of disk space condition. It might be necessary to enlarge the worker service virtual machine work area and then try the failed backup operation again. If the problem persists, contact your system programmer or IBM Software Support.

BKR8209E GRANOBJ call encountered prior to GRANJOB.

Explanation: An internal consistency check between a data handling routine and an I/O handler failed.

System action: Processing stops.

User response: This message might be accompanied by supporting messages to the virtual machine console. If the problem persists, contact your system programmer or IBM Software Support

BKR8210E GRANOBJ call encountered prior to GRANCTNR.

Explanation: An internal consistency check between a data handling routine and an I/O handler failed.

System action: Processing stops.

User response: This message might be accompanied by supporting messages to the virtual machine console. If the problem persists, contact your system programmer or IBM Software Support.

BKR8211E DMSWRITE return code *rc*, reason code *reason* during GRANEND.

Explanation: An output routine received a non-zero return code from CSL routine DMSWRITE.

System action: Processing stops.

User response: This message might be accompanied by supporting messages to the virtual machine console. This message typically is associated with an out of disk space condition. It might be necessary to enlarge the worker service virtual machine work area and then try the failed backup operation again. If the problem persists, contact your system programmer or IBM Software Support.

BKR8212E DMSCLOSE return code *rc*, reason code *reason* closing granule.

Explanation: CSL routine DMSCLOSE issued a non-zero return code during catalog data processing. See *z/VM CMS Callable Services Reference (SC24-6072)* for information about DMSCLOSE.

System action: Processing stops.

User response: This message might be accompanied by supporting messages to the virtual machine console. This message typically is associated with an out of disk space condition. It might be necessary to enlarge the worker service virtual machine work area and then try the failed backup operation again. If the problem persists, contact your system programmer or IBM Software Support.

BKR8213E GRANEND call encountered prior to GRANJOB.

Explanation: An internal consistency check between a data handling routine and an I/O handler failed.

System action: Processing stops.

User response: This message might be accompanied by supporting messages to the virtual machine console. If the problem persists, contact your system programmer or IBM Software Support.

BKR8214E GRANEND call encountered prior to GRANCTNR.

Explanation: An internal consistency check between a data handling routine and an I/O handler failed.

System action: Processing stops.

User response: This message might be accompanied by supporting messages to the virtual machine console. If the problem persists, contact your system programmer or IBM Software Support.

BKR8215I Input handler IBMTAPE initializing with tape exit context *context*.

Explanation: The IBMTAPE input handler is initializing. For Backup and Restore Manager, the context should be 'BKR'.

System action: None.

User response: No action is required.

BKR8216E GETDATA call received prior to initialization.

Explanation: An internal consistency check between a data handling routine and an I/O handler failed.

System action: Processing stops.

User response: This message might be accompanied by supporting messages to the virtual machine console. If the problem persists, contact your system programmer or IBM Software Support.

BKR8217E BKRTIO return code *rc* while reading input stream.

Explanation: The IBMTAPE I/O handler encountered a tape I/O error occurred during a read operation.

System action: Processing stops.

User response: The restore operation is interrupted. Try the restore operation again using alternate media or a different tape drive. If the problem persists, contact your system programmer or IBM Software Support.

BKR8218E DMSOPEN return code *rc*, reason code *reason* opening input stream.

Explanation: The CMSFILE I/O handler received an error from the DMSOPEN CSL routine. See *z/VM CMS Callable Services Reference (SC24-6072)* for information about DMSOPEN.

System action: Processing stops.

User response: The restore operation is interrupted. This message might be accompanied by additional diagnostic information. If the problem persists, contact your system programmer or IBM Software Support.

BKR8219E DMSREAD return code *rc*, reason code *reason* reading input stream.

Explanation: The CMSFILE I/O handler received an error from the DMSREAD CSL routine. See *z/VM CMS Callable Services Reference (SC24-6072)* for information about DMSREAD.

System action: Processing stops.

User response: The restore operation is interrupted. This message might be accompanied by additional diagnostic information. If the problem persists, contact your system programmer or IBM Software Support.

BKR8220E Encountered end-of-file condition while reading input stream.

Explanation: An I/O handler encountered a premature end-of-file indication during restore processing.

System action: Processing stops.

User response: The restore operation is interrupted. Try the restore operation again using alternate media or a different tape drive. If the problem persists, contact your system programmer or IBM Software Support.

BKR8221W DMSCLOSE return code *rc*, reason code *reason* closing input stream.

Explanation: The CMSFILE I/O handler received an error indication from the DMSCLOSE CSL routine. See *z/VM CMS Callable Services Reference (SC24-6072)* for information about DMSCLOSE.

System action: Processing stops.

User response: The restore operation might have completed successfully despite this error. CMSFILE does not issue a CLOSE for the input stream until restore processing is complete. If the problem persists, contact your system programmer or IBM Software Support.

BKR8222E Please specify a valid tape drive address.

Explanation: The tape drive address provided to the issuing routine is not associated with a valid tape drive, or is an invalid virtual device address.

System action: Processing stops.

User response: Try the operation again specifying a valid tape drive address.

BKR8223E Usage: TPSENSE *ccuu* (STACK TYPE

Explanation: The TPSENSE routine was invoked with incorrect syntax.

System action: Processing stops.

User response: Try the operation again using correct syntax for the **TPSENSE** command.

BKR8224E CC=3 on SENSE I/O request.

Explanation: The TPSENSE routine received condition code 3 on a SENSE I/O operation.

System action: Processing stops.

User response: Ensure the specified tape device is attached to the virtual machine, and that at least one I/O path is online. If the problem persists, contact your system programmer or IBM Software Support.

BKR8225E CC=2 on SENSE I/O; UE or SILI received.

Explanation: The TPSENSE routine received condition code 2 on a SENSE I/O operation.

System action: Processing stops.

User response: Ensure the specified tape device is attached to the virtual machine, and that at least one I/O path is online. If the problem persists, contact your system programmer or IBM Software Support.

BKR8226E CC=1 on SENSE I/O; target *vdev* is busy or non-existent.

Explanation: The TPSENSE routine received condition code 1 on a SENSE I/O operation.

System action: Processing stops.

User response: The target tape drive responded with a "device busy" indication. Try the operation again.

BKR8227E Error *reason* granting *permission* to *user* on *sfs_object*.

Explanation: SFSLOAD was unable to restore permissions to a file, alias, or directory during restore processing. This message can be issued when restoring an SFS file space backup to an SFS file space destination. SFS restore processing attempts to reapply permissions that are present at the time of backup to SFS files or directories recreated during restore operations.

reason is the CMS DMSGRANT CSL routine reason code that is supplied as part of an error response from DMSGRANT. *permission* is the set of permissions the restore operation attempted to apply. *sfs_object* is the SFS file or directory to which Backup and Restore Manager attempted to restore permissions.

System action: Processing continues with the next file or directory in the backup stream.

User response: This message can indicate that the specified user *user* is no longer enrolled in the file pool. If appropriate, manually apply the permission setting

using the **GRANT** command or try the restore operation again.

BKR8228I VMUDQ responded with *n* bytes of data.

Explanation: GETMDSK received a reply *n* bytes long from a VMUDQ interrogation of the CP object directory.

System action: Processing continues.

User response: No action is required.

BKR8229E Insufficient CMS free storage available.

Explanation: Insufficient CMS free storage was available during processing of a CMSSTOR OBTAIN request.

System action: Processing stops.

User response: Define a larger virtual machine storage size and try the failed operation again.

BKR8230E BKRDLBL return code *rc*; I/O error or malformed DASD label.

Explanation: BKRDLBL was unable to read a DASD volume label (cylinder 0, track 0, record 3) from the target device, or the label data on the minidisk was severely corrupted.

System action: Error recovery is attempted. Processing continues with the next minidisk in the INCLUDE and EXCLUDE selection results.

User response: Determine whether the label of the subject minidisk was damaged. Correct the label and attempt the operation again.

BKR8231E Incremental backup of CKD objects is not supported.

Explanation: An incremental backup of CKD objects was requested and this type of backup is not supported for CKD objects.

System action: A full CKD track image backup is performed instead.

User response: No action is required. The minidisk is processed as a full CKD track image backup.

BKR8232E Invalid container type *type* specified.

Explanation: An invalid data container reference was passed to the incremental backup change detection routine.

System action: Processing stops.

User response: This error might indicate catalog data corruption and might be accompanied by additional diagnostic information. If the problem persists, contact your system programmer or IBM Software Support.

BKR8500E BKR_Global_Product_Version has not been defined in BKRSYSTM CONFIG.

Explanation: A valid value was not specified for **BKR_Global_Product_Version** in the BKRSYSTM CONFIG file.

System action: None.

User response: Set **BKR_Global_Product_Version** to 1.3.0. Do not modify this setting.

BKR8501E BKR_Global_Product_ID has not been defined in BKRSYSTM CONFIG.

Explanation: A valid value was not specified for BKR_Global_Product_ID in the BKRSYSTM CONFIG file.

System action: None.

User response: Set BKR_Global_Product_ID to 5697-J06. Do not modify this setting.

BKR8502E BKR_Global_Product_Name has not been defined in BKRSYSTM CONFIG.

Explanation: A valid value was not specified for BKR_Global_Product_Name in the BKRSYSTM CONFIG file.

System action: None.

User response: Set BKR_Global_Product_Name to Backup and Restore Manager for z/VM. Do not modify this setting.

BKR8503E Local_SVM_Contact has not been defined in BKRSYSTM CONFIG.

Explanation: A valid value was not specified for Local_SVM_Contact in the BKRSYSTM CONFIG file.

System action: None.

User response: Specify a text string (for example, a name and email address of the installation-level contact) to identify the local Backup and Restore Manager contact.

BKR8504E Local_Backup_Admin_ID has not been defined in BKRSYSTM CONFIG.

Explanation: A valid value was not specified for Local_Backup_Admin_ID in the BKRSYSTM CONFIG file.

System action: None.

User response: Set Local_Backup_Admin_ID to specify the user ID of the main Backup and Restore Manager administrator. The default is BKRADMIN.

BKR8505E Local_Backup_Catalog_ID has not been defined in BKRSYSTM CONFIG.

Explanation: A valid value was not specified for Local_Backup_Catalog_ID in the BKRSYSTM CONFIG file.

System action: None.

User response: Set Local_Backup_Catalog_ID to specify the user ID of the backup catalog service virtual machine. The default is BKRCATLG.

BKR8506E Routine BAKSRVR should only be executed by the master backup server.

Explanation: The BAKSRVR EXEC was invoked by a user not identified as Local_Backup_Master_ID in the BKRSYSTM CONFIG file.

System action: Processing stops.

User response: BAKSRVR can only be run by a master backup service virtual machine. If the error occurs on the master backup service virtual machine, ensure that the BKRSYSTM CONFIG file is available on an accessed minidisk or SFS directory, and that the Local_Backup_Master_ID parameter is configured properly in the BKRSYSTM CONFIG file. See "Copying and customizing the BKRSYSTM CONFIG file" on page 23 for more information.

BKR8507E BKRSYSTM CONFIG * identifies user ID *user_id* as the master backup server.

Explanation: This message is issued with message BKR8506E.

System action: Processing stops.

User response: BAKSRVR can only be run by a master backup service virtual machine. If the error occurs on the master backup service virtual machine, make sure that the BKRSYSTM CONFIG file is available on an accessed minidisk or SFS directory, and that the **Local_Backup_Master_ID** parameter is configured properly in the BKRSYSTM CONFIG file. See "Copying and customizing the BKRSYSTM CONFIG file" on page 23 for more information.

BKR85081 Backup Server: Entering processing loop at *hh:mn:ss*.

Explanation: The master backup server process was successfully initialized. *hh:mn:ss* is the local system time-of-day.

System action: None.

User response: No action is required.

BKR8509I Invoking WAKEUP with parameters *parm1* (*parm2*.

Explanation: This message acknowledges the WAKEUP parameters derived from the BKRSYSTM CONFIG file for service virtual machine operations.

System action: None.

User response: No action is required.

BKR8510I *mm/dd/yy hh:mn:ss* WAKEUP exited on a *event_type* interrupt.

Explanation: This message displays the conditions under which the WAKEUP module exited from wait operations. *mm/dd/yy hh:mn:ss* is the date-and-time stamp for the activity. *event_type* identifies the type of event that caused WAKEUP to exit idle status as follows:

VMCF issued when a VMCF message (for example, a command delivered through CP SMSG) is received.

timer issued when the service virtual machine 'heartbeat' time expires.

RDR issued when arrival of a RDR file is detected.

console issued if a command is entered at the service virtual machine console.

System action: None.

User response: No action is required.

BKR8511S Return code *rc* from Process_RDR_Arrival. Processing is being halted immediately.

Explanation: A worker service virtual machine encountered an error while attempting to process a spool file on the virtual RDR queue.

System action: A diagnostic dump of the active REXX environment is issued and the worker service virtual machine process exits.

User response: If an SFS directory was provisioned for the worker service virtual machine to use as a holding place for temporary files, verify that the SFS file pool server is online, that the worker service virtual machine has sufficient access privileges to create files in the directory, and that the file space block limit was not exceeded. If a minidisk was provisioned, verify that the worker has read/write access to the minidisk, that the minidisk is formatted correctly, and that the minidisk is large enough to contain the RDR file that is being processed. Verify that the associated RDR file is structured correctly.

BKR8512I The stack contains *n* entries. There are *n* lines on the console input queue.

Explanation: Service virtual machine processes display the contents of the program stack and console input queue during normal processing.

System action: None.

User response: No action is required.

BKR8513I Program stack entry dump:

Explanation: This message is issued with message BKR8512I.

System action: None.

User response: No action is required.

BKR8514I Console stack entry dump:

Explanation: This message is issued with message BKR8512I.

System action: None.

User response: No action is required.

BKR8515I Queued command #*n*: *origin user_id command*.

Explanation: This message is displayed in the service virtual machine console log when a command is pulled from the stack for processing. *n* is the stack position of the command that is about to be processed. *origin* is the origin source of the command. For commands from an external source, the value is *SMSG. For commands that are entered through the service virtual machine console, the value is *CONS. For commands from an external source such as CP SMSG, the *user_id* value is the virtual machine user ID that issued the command. For commands that are entered through the service virtual machine console, the value is *MYSELF*. *command* is the text string that is received for command processing. This message is issued with message BKR8512I.

System action: None.

User response: No action is required.

BKR8516I Null command received via console.

Explanation: A service virtual machine process encountered a null entry on the console input queue.

System action: Processing continues.

User response: No action is required.

BKR8517I Null command received via *origin*.

Explanation: A service virtual machine process encountered a null entry on the program stack. *origin* is the origin source of the command.

This message is typically displayed if the service virtual machine console is connected to a terminal session, and a null or blank line is entered. For example, the ENTER key is pressed (causing a VM READ condition to be entered) and then pressed again (causing a null line to be entered on the console stack).

System action: Processing continues.

User response: No action is required.

BKR8518W Rejecting WRKRSTAT command *command* from *origin user_id*.

Explanation: A **WRKRSTAT** command was received from a user that was not identified as a worker service virtual machine in the BKRUSERS NAMES file.

command represents additional arguments that are supplied through the **WRKRSTAT** command. *origin* is the origin source of the command. For commands that are from an external source, the value is *SMSG. For commands that are entered through the service virtual machine console, the value is *CONS. For commands that are from an external source such as CP SMSG, *user_id* is the virtual machine user ID that issued the command. For commands that are entered through the service virtual machine console, the value is *MYSELF*. **WRKRSTAT** is reserved for interaction between BKRWRK*nn* service virtual machines and the master backup server (BKRBKUP).

System action: None.

User response: The worker status update operation is rejected. If the source is a valid worker service virtual machine, verify that the user ID is listed in the BKRUSERS NAMES file. See “Copying and customizing the BKRUSERS NAMES file” on page 22 for more information.

BKR8519I Processing WRKRSTAT command *command* from *origin user_id*.

Explanation: A **WRKRSTAT** command was received from a known worker service virtual machine. *command* represents additional arguments that are supplied through the **WRKRSTAT** command. *origin* is the origin of the command. For commands that are from an external source, the value is *SMSG. For commands that are entered through the service virtual machine console, the value is *CONS. For commands from an external source such as CP SMSG, *user_id* is the virtual machine user ID that issued the command. For commands that are entered through the service virtual machine console, the value is *MYSELF*.

System action: Worker service virtual machine status information is updated.

User response: No action is required.

BKR8520W Rejecting STATUS command *args* **from** *originuser_id***.**

Explanation: A **STATUS** command was received from a user that was not granted ADMIN privileges in the `BKRUSERS NAMES` file. *args* represents additional arguments that are supplied on the **STATUS** command. *origin* is the origin source of the command. For commands that are from an external source, the value is *SMSG. For commands that are entered through the service virtual machine console, this value is *CONS. For commands that are from an external source such as CP SMSG, *user_id* is the virtual machine user ID that issued the command. For commands that are entered through the service virtual machine console, the value is *MYSELF*.

System action: The command is ignored. Commands from unauthorized users are acknowledged by the response: `Unrecognized command`.

User response: If the issuing user is a valid backup administrator, verify that the user ID is identified as an administrator in the `BKRUSERS NAMES` file. See "Copying and customizing the BKRUSERS NAMES file" on page 22 for more information.

BKR8521I Processing STATUS command *args* **from** *origin user_id***.**

Explanation: A **STATUS** command was accepted from a backup administrator or the service virtual machine console. *args* represents additional arguments that are supplied on the **STATUS** command. *origin* is the origin source of the command. For commands from an external source, this value is *SMSG. For commands that are entered through the service virtual machine console, this value is *CONS. For commands that are from an external source such as CP SMSG, the *user_id* value is the virtual machine user ID that issued the command. For commands that are entered through the service virtual machine console, this value is *MYSELF*.

System action: Service virtual machine status information is displayed.

User response: No action is required.

BKR8522W Rejecting CMS command *cms_command* **from** *origin user_id***.**

Explanation: A CMS command was received from a user that was not granted ADMIN privileges in the `BKRUSERS NAMES` file. *cms_command* is the CMS command. *origin* is the origin source of the command. For commands that are from an external source, this value is *SMSG. For commands that are entered through the service virtual machine console, this value is *CONS. For commands that are from an external source such as CP SMSG, the *user_id* value is the virtual machine user ID that issued the command. For commands that are entered through the service virtual machine console, this value is *MYSELF*.

System action: The command is ignored. Commands from unauthorized users are acknowledged by the response `Unrecognized command`. Processing continues.

User response: If the issuing user is a valid backup administrator, verify the user ID is identified as an administrator in the `BKRUSERS NAMES` file. For more information, see "Copying and customizing the BKRUSERS NAMES file" on page 22.

BKR8523I Processing CMS command *cms_command* **from** *originuser_id***.**

Explanation: A CMS command was received from a valid backup administrator. *cms_command* is the CMS command. *origin* is the origin source of the command. For commands that are from an external source, this value is *SMSG. For commands that are entered through the service virtual machine console, this value is *CONS. For commands that are from an external source such as CP SMSG, the *user_id* value is the virtual machine user ID that issued the command. For commands that are entered through the service virtual machine console, this value is *MYSELF*.

System action: The command is passed to CMS for processing. Output, if available, is displayed.

User response: No action is required.

BKR8524W Rejecting CP command *cp_command* **from** *originuser_id***.**

Explanation: A CP command (*cp_command*) was received from a user that was not granted ADMIN privileges in the `BKRUSERS NAMES` file. *origin* is the origin source of the command. For commands that are from an external source, the value is *SMSG. For commands that are entered through the service virtual machine console, this value is *CONS. For commands that are from an external source such as CP SMSG, the *user_id* value is the virtual machine user ID that issued the command. For commands that are entered through the service virtual machine console, the value is *MYSELF*.

System action: The command is rejected. Commands from unauthorized users are acknowledged by the response `Unrecognized command`. Processing continues.

User response: If the issuing user is a valid backup administrator, verify the user ID is identified as an administrator in the `BKRUSERS NAMES` file. For more information, see "Copying and customizing the BKRUSERS NAMES file" on page 22.

BKR8525I **Processing CP command** *cp_command* **from** *originuser_id***.**

Explanation: A CP command (*cp_command*) was received from a valid backup administrator. *origin* is the origin source of the command. For commands that are from an external source, this value is *SMSG. For commands that are entered through the service virtual machine console, this value is *CONS. For commands that are from an external source such as CP SMSG, the *user_id* value is the virtual machine user ID that issued the command. For commands that are entered through the service virtual machine console, this value is *MYSELF*.

System action: A CP command was received from a valid backup administrator.

User response: No action is required.

BKR8526W **Rejecting HALT command** *args* **from** *originuser_id***.**

Explanation: A **HALT** command (*args*) was received from a user that was not granted ADMIN privileges in the `BKRUSERS NAMES` file. *origin* is the origin source of the command. For commands that are from an external source, this value is *SMSG. For commands that are entered through the service virtual machine console, this value is *CONS. For commands that are from an external source such as CP SMSG, the *user_id* value is the virtual machine user ID that issued the command. For commands that are entered through the service virtual machine console, this value is *MYSELF*.

System action: The command is rejected. Commands from unauthorized users are acknowledged by the response "Unrecognized command." Processing continues.

User response: If the issuing user is a valid backup administrator, verify the user ID is identified as an administrator in the `BKRUSERS NAMES` file. For more information, see "Copying and customizing the BKRUSERS NAMES file" on page 22 for more information.

BKR8527I *svm_type* **ended by HALT command from** *origin user_id* **at** *mm/dd/yy hh:mn:ss***.**

Explanation: A **HALT** command was received from a valid backup administrator. *svm_type* is BAKSRVR (the master backup service virtual machine, BKRBKUP), CATSRVR (the backup catalog service virtual machine, BKRCATLG), or WRKSRVR (a worker service virtual machine, BKRWRK*nn*). *origin* is the origin source of the command. For commands that are from an external source, this value is *SMSG. For commands that are entered through the service virtual machine console, this value is *CONS. For commands that are from an external source such as CP SMSG, the *user_id* value is the virtual machine user ID that issued the command. For commands that are entered through the service virtual machine console, this value is *MYSELF*. *mm/dd/yy hh:mn:ss* is a time stamp.

System action: The service virtual machine process is halted normally.

User response: No action is required.

BKR8528W **Rejecting REVIEW command from** *origin user_id***.**

Explanation: A **REVIEW** command was received from a user that was not granted ADMIN privileges in the `BKRUSERS NAMES` files. *origin* is the origin source of the command. For commands that are from an external source, the value is *SMSG. For commands that are entered through the service virtual machine console, the value is *CONS. For commands that are from an external source such as CP SMSG, the *user_id* value is the virtual machine user ID that issued the command. For commands that are entered through the service virtual machine console, this value is *MYSELF*.

System action: The command is rejected. Commands from unauthorized users are acknowledged by the response `Unrecognized command`. Processing continues.

User response: If the issuing user is a valid backup administrator, verify the user ID is identified as an administrator in the `BKRUSERS NAMES` file. See "Copying and customizing the BKRUSERS NAMES file" on page 22 for more information.

BKR8529I **Processing REVIEW** *jobname* **command for** *origin user_id***.**

Explanation: A **REVIEW** command was received from a valid backup administrator. *jobname* is the job template name being processed by means of the **REVIEW** command. *origin* is the origin source of the command. For commands that are from an external source, this value is *SMSG. For commands that are entered through the service virtual machine console, this value is *CONS. For commands that are from an external source such as CP SMSG, the *user_id* value is the virtual machine user ID that issued the command. For commands that are entered through the service virtual machine console, this value is *MYSELF*.

System action: The specified backup template is processed in REVIEW mode. The output is sent to the invoking user.

User response: No action is required.

BKR8530I **User** *user* **has requested RESTORE operation** *operation***.**

Explanation: A restore operation was requested by the indicated user (*user*).

System action: The restore request is validated. If accepted, a restore process is passed to a worker service virtual machine.

User response: No action is required.

BKR8531W Rejecting SUBMIT command from *originuser_id*.

Explanation: A **SUBMIT** command was received from a user that was not granted ADMIN privileges in the BKRUSERS NAMES file. *origin* is the origin source of the command. For commands that are from an external source, the value is *SMSG. For commands that are entered through the service virtual machine console, the value is *CONS. For commands that are from an external source such as CP SMSG, the *user_id* value is the virtual machine user ID that issued the command. For commands that are entered through the service virtual machine console, the value is *MYSELF*.

System action: The command is rejected. Commands from unauthorized users are acknowledged by the response "Unrecognized command." Processing continues.

User response: If the issuing user is a valid backup administrator, verify the user ID is identified as an administrator in the BKRUSERS NAMES file. See "Copying and customizing the BKRUSERS NAMES file" on page 22 for more information.

BKR8532I Processing SUBMIT *jobname* command for *origin* at *user_id*.

Explanation: A **SUBMIT** command was received from a valid backup administrator. *jobname* is the job template name that is being processed. *origin* is the origin source of the command. For commands that are from an external source, this value is *SMSG. For commands that are entered through the service virtual machine console, this value is *CONS. For commands that are from an external source such as CP SMSG, the *user_id* value is the virtual machine user ID that issued the command. For commands that are entered through the service virtual machine console, this value is *MYSELF*.

System action: The specified job template is processed in SUBMIT mode. The resulting jobs are sent to worker service virtual machines for processing.

User response: No action is required.

BKR8533W Rejecting CANCEL command from *originuser_id*.

Explanation: A **CANCEL** command was received from a user that was not granted ADMIN privileges in the BKRUSERS NAMES file. *origin* is the origin source of the command. For commands that are from an external source, the value is *SMSG. For commands that are entered through the service virtual machine console, the value is *CONS. For commands that are from an external source such as CP SMSG, the *user_id* value is the virtual machine user ID that issued the command. For commands that are entered through the service virtual machine console, the value is *MYSELF*.

System action: The command is rejected. Commands from unauthorized users are acknowledged by the response Unrecognized command. Processing continues.

User response: If the issuing user is a valid backup administrator, verify the user ID is identified as an administrator in the BKRUSERS NAMES file. See "Copying and customizing the BKRUSERS NAMES file" on page 22 for more information.

BKR8534I Processing CANCEL *command* command for *originuser_id*.

Explanation: A **CANCEL** command was received from a valid backup administrator. *origin* is the origin source of the command. For commands that are from an external source, this value is *SMSG. For commands entered through the service virtual machine console, this value is *CONS. For commands from an external source such as CP SMSG, the *user_id* value is the virtual machine user ID that issued the command. For commands that are entered through the service virtual machine console, this value is *MYSELF*.

System action: The specified worker service virtual machine is logged off using CP **FORCE**. The workers virtual RDR is cleared of all pending jobs.

User response: No action is required.

BKR8535E *worker* is not a valid worker task SVM name.

Explanation: A **CANCEL** command was accepted for processing, but the specified virtual machine is not a valid worker service virtual machine name.

System action: None.

User response: Specify a valid worker name.

BKR8536I Worker *worker* FORCEd from system; all queued work has been purged.

Explanation: A **CANCEL** command resulted in the successful termination of a worker service virtual machine.

System action: None.

User response: No action is required.

BKR8537E Worker *worker* has not registered with server as an active worker.

Explanation: A **CANCEL** command was accepted for processing, but the specified worker service virtual machine did not identify itself as an active worker process with the master backup service virtual machine.

System action: The **CANCEL** operation is rejected.

User response: If the master backup service virtual machine was restarted and the worker service virtual machine did not register with the master service virtual machine again, cancel the worker manually by issuing the CP **FORCE** command.

BKR8538E **Unrecognized command:** *var1 var2* **received from** *var3var4***.**

Explanation: An unrecognized command was encountered on the console or program stack.

System action: The command is rejected.

User response: No action is required.

BKR8539T **WAKEUP exited with a non-handled return code. The actual return code was** *rc***.**

Explanation: An unexpected WAKEUP exit condition was encountered.

System action: A diagnostic dump of the active REXX environment is issued and the worker service virtual machine process exits.

User response: Verify that only a current, supported version of WAKEUP MODULE is present in the worker service virtual machine CMS environment and attempt to restart the service virtual machine. If the problem persists, contact your system programmer or IBM Software Support.

BKR8540E **Rejecting spool file** *file* **from** *var2* **(failed MASTER origin test).**

Explanation: A worker received a spool file which did not originate from a master backup service virtual machine.

System action: The file is placed in a hold state and returned to the originating user.

User response: No action is required.

BKR8541E **Rejecting spool file** *file* **from** *var2* **(type is not PUN).**

Explanation: A worker received a spool file which was not a 'PUN' (punch) file.

System action: The file is placed in a hold state and returned to the originating user.

User response: No action is required.

BKR8542E **Rejecting spool file** *file* **from** *var2* **(class is not "J").**

Explanation: A worker received a spool file which was not spool class J.

System action: The file is placed in a hold state and returned to the originating user.

User response: No action is required.

BKR8543E **Rejecting spool file** *file* **from** *var2* **(filetype is not "JOB").**

Explanation: A worker received a spool file that did not have a file type of JOB.

System action: The file is placed in a hold state and returned to the originating user.

User response: No action is required.

BKR8544T **ABEND: Return code** *rc* **trying to RECEIVE job to filemode D. Job processing is being halted.**

Explanation: A worker service virtual machine encountered an unrecoverable error during job processing.

System action: A diagnostic dump of the active REXX environment is issued. The worker service virtual machine process exits with the **RECEIVE** return code.

User response: If an SFS directory was provisioned for the worker service virtual machine to use as a holding place for temporary files, verify that the SFS file pool server is online, that the worker service virtual machine has sufficient access privileges to create files in the directory, and that the file space block limit was not exceeded. If a minidisk was provisioned, verify that the worker has read/write access to the minidisk, that the minidisk is formatted correctly, and that the minidisk is large enough to contain the RDR file that is being processed. Verify that the associated RDR file is structured correctly.

BKR8545I **Received file** *file* **from master SVM** *server***.**

Explanation: A worker service virtual machine accepted a job stream from the master backup server.

System action: Job processing ensues.

User response: No action is required.

BKR8546I **Initiating job processing at** *var1***.**

Explanation: A worker service virtual machine initiated processing of a backup or restore job.

System action: Job processing ensues.

User response: No action is required.

BKR8547W **Job completed with return code** *rc***. Purging job from RDR and invoking task abend dump.**

Explanation: A worker service virtual machine encountered a non-zero return code from a backup or restore job.

System action: A diagnostic dump of the active REXX environment is performed. The worker service virtual machine attempts to continue normal operations.

User response: Examine the related job output for additional information. If additional jobs are queued for the affected worker, it attempts to continue processing of the next task in queue.

If the worker encounters more than five consecutive abnormal terminations, the service virtual machine enters SUSPEND mode. For more information, see "Service virtual machine error recovery and diagnosis" on page 44.

BKR8548E REVIEW requires a destination user ID to be specified.

Explanation: The **MAKEJOB** command was invoked in **REVIEW** mode, but no user ID was specified to receive **REVIEW** output.

System action: **MAKEJOB** exits with a non-zero return code.

User response: Issue the **MAKEJOB** command with correct syntax. For example: `MAKEJOB jobname (REVIEW destuser`.

BKR8549E Valid options are BUILD, SUBMIT, or REVIEW.

Explanation: The **MAKEJOB** command was invoked with an invalid parameter.

System action: **MAKEJOB** exits with a non-zero return code.

User response: Issue the **MAKEJOB** command again with correct syntax.

BKR8550E Return code *rc* trying to process BKRSYSTM CONFIG *.

Explanation: An error occurred during an attempt to process the `BKRSYSTM CONFIG` file.

System action: The issuing function exits with a non-zero return code.

User response: Ensure that the `BKRSYSTM CONFIG` file is available on a currently accessed minidisk or directory, and try the function again. If the problem persists, contact your system programmer or IBM Software Support.

BKR8551E Return code *rc* from NAMEFIND while enumerating workers.

Explanation: The CMS NAMEFIND function exited with a non-zero return code during an attempt to process `BKRUSERS NAMES`.

System action: The issuing function exits with a non-zero return code.

User response: Ensure that a correctly formatted `BKRUSERS NAMES` file is available on a currently accessed minidisk or directory, and try the function again. If the problem persists, contact your system programmer or IBM Software Support.

BKR8552E Return code *rc* reading *jobname* TEMPLATE *var3*.

Explanation: A CMS file I/O error occurred during an attempt to read file *jobname* `TEMPLATE`.

System action: The issuing function exits with a non-zero return code.

User response: Verify the indicated file is available on a currently accessed minidisk or directory. If the problem persists, contact your system programmer or IBM Software Support.

BKR8553E Return code *rc* reading *jobname* JOBHEAD *var3*.

Explanation: A CMS file I/O error occurred during an attempt to read file *jobname* `JOBHEAD`.

System action: The issuing function exits with a non-zero return code.

User response: Verify the indicated file is available on a currently accessed minidisk or directory. If the problem persists, contact your system programmer or IBM Software Support.

BKR8554E Return code *rc* reading *jobname* INCLEXCL *var3*.

Explanation: A CMS file I/O error occurred during an attempt to read file *jobname* `INCLEXCL`.

System action: The issuing function exits with a non-zero return code.

User response: Verify the indicated file is available on a currently accessed minidisk or directory. If the problem persists, contact your system programmer or IBM Software Support.

BKR8555E Return code *rc* reading *jobname* JOBTAIL *var3*.

Explanation: A CMS file I/O error occurred during an attempt to read file *jobname* `JOBTAIL`.

System action: The issuing function exits with a non-zero return code.

User response: Verify the indicated file is available on a currently accessed minidisk or directory. If the problem persists, contact your system programmer or IBM Software Support.

BKR8556W **More than *n* workers in BKRUSERS NAMES; only the first *n* will be utilized.**

Explanation: More than 16 worker virtual machines were specified in the `:WORKERS` section of `BKRUSERS NAMES`. Only the first 16 virtual machines are employed for backup or restore operations.

System action: Processing continues, but only the first 16 worker virtual machines listed in `BKRUSERS NAMES` are selected for processing.

User response: Update the `BKRUSERS NAMES` file to specify no more than 16 worker virtual machines. For more information, see "Copying and customizing the BKRUSERS NAMES file" on page 22.

BKR8557E **Return code *rc* from INCLUDE / EXCLUDE processing. *itemcount* objects were selected for backup via *JOBNAME* TEMPLATE. INCLUDE / EXCLUDE processing diagnostic messages will be displayed below.**

Explanation: INCLUDE, EXCLUDE, and SELECT processing encountered one or more exceptions while processing a SUBMIT, REVIEW, or RESTART command.

System action: If possible, backup job processing continues. The resulting backup job might not include all resources that were intended for backup. For example, if an INCLUDE statement references an SFS file pool that is unavailable during backup job creation, the resulting backup job incorporates minidisks that were selected for backup but does not back up file spaces from the offline file pool. Diagnostic information that is created during INCLUDE, EXCLUDE, and SELECT processing identifies the resources that were unavailable.

User response: Examine the diagnostic information that is associated with this message to determine the underlying cause of the exceptions. If a backup job was created, note that some items referenced by INCLUDE, EXCLUDE, and SELECT statements in the backup job template might not be fully incorporated into the resulting backup job. In this case, you might need to run the job again after offline SFS file pools become available.

BKR8558E **INCLUDE / EXCLUDE processing selected 0 objects for backup. No backup job(s) have been dispatched.**

Explanation: This message is issued when a **`SUBMIT`**, **`RESTART`**, or **`REVIEW`** command is issued, and processing of the INCLUDE, EXCLUDE, and SELECT statements in the job template selected no minidisks or SFS file spaces for backup.

System action: Because no minidisks or SFS file spaces were selected for backup, no backup jobs are submitted.

User response: Examine the INCLUDE, EXCLUDE, and SELECT statements in the associated backup job template to determine why no objects were selected for backup.

BKR8559I **INCLUDE / EXCLUDE processing for job *job* selected *n* objects for backup processing.**

Explanation: INCLUDE/EXCLUDE processing selected the specified number of minidisks and SFS file spaces for backup processing.

System action: Processing of the job template continues.

User response: No action is required.

BKR8560E **Error in job *job* record *record*; the referenced SERIAL file does not exist on filemode A. SUBMIT processing is being abandoned.**

Explanation: An error occurred while processing a $$INST$$ or $$INST jobname$$ keyword substitution. No *jobname* `SERIAL` file was found on the BKRBKUP filemode A minidisk or directory.

System action: Further processing of the backup template is abandoned.

User response: Ensure that the affected template references a known backup job name. If the problem persists, contact your system programmer or IBM Software Support.

BKR8561E **Problem record: *record*.**

Explanation: An error was encountered during processing of the job template record displayed as *record*.

System action: Further processing of the backup template is abandoned.

User response: Review and correct the affected backup job template. If the problem persists, contact your system programmer or IBM Software Support.

BKR8562E **Non-numeric value *value* for BKR_JOB_WORKERS.**

Explanation: An invalid value was specified for the BKR_JOB_WORKERS variable in a CONFIG statement.

System action: Further processing of the backup template is abandoned.

User response: Review and correct the affected backup job template. For the BKR_JOB_WORKERS variable, specify an integer (*nn*) 1-16 that specifies the number of worker service virtual machines to use. See

"CONFIG" on page 61 for more information about the BKR_JOB_WORKERS variable and the CONFIG statement. If the problem persists, contact your system programmer or IBM Software Support.

BKR8563I **Worker count for job** *job* **has been set to** *count***.**

Explanation: The specified number of worker virtual machines are employed in processing for the backup job.

System action: SUBMIT processing continues.

User response: No action is required.

BKR8564E **Incorrect number of tokens in BKR_JOB_SFS_PATHMASK** *var1***. (This value must be a single token.)**

Explanation: An invalid wildcard filter mask pattern was specified for BKR_JOB_SFS_PATHMASK.

System action: Further processing of the backup template is abandoned.

User response: Review and correct the affected backup job template. See "CONFIG" on page 61 for more information about BKR_JOB_SFS_PATHMASK. If the problem persists, contact your system programmer or IBM Software Support.

BKR8565I **BKR_JOB_SFS_PATHMASK cannot be longer than 8 characters.**

Explanation: The character string specified for BKR_JOB_SFS_PATHMASK exceeds the maximum length.

System action: Further processing of the backup template is abandoned.

User response: Review and correct the affected backup job template. See "CONFIG" on page 61 for more information about BKR_JOB_SFS_PATHMASK. If the problem persists, contact your system programmer or IBM Software Support.

BKR8566I **SFS filespaces will be filtered with path mask** *mask***.**

Explanation: Setting of BKR_JOB_SFS_PATHMASK was processed successfully.

System action: Processing of the backup job template continues.

User response: No action is required.

BKR8567E **Incorrect number of tokens in BKR_JOB_CMS_FILEMASK** *var1***. (This value must be three tokens -** *xxxxxxxx xxxxxxxx xx***).**

Explanation: An invalid wildcard filter mask pattern was specified for BKR_JOB_CMS_FILEMASK.

System action: Further processing of the backup template is abandoned.

User response: Review and correct the affected backup job template. See "CONFIG" on page 61 for more information about BKR_JOB_CMS_FILEMASK. If the problem persists, contact your system programmer or IBM Software Support.

BKR8568I **CMS files will be filtered against file mask** *mask***.**

Explanation: Setting of BKR_JOB_CMS_FILEMASK was processed successfully.

System action: Processing of the backup job template continues.

User response: No action is required.

BKR8569E **Invalid value** *value* **for BKR_JOB_NAME.**

Explanation: An invalid CMS file name was specified as a job name.

System action: Further command processing is abandoned.

User response: Try the command again specifying a valid job name. Specify a job name of 1-8 characters, alphanumeric (A-Z,0-9). If the problem persists, contact your system programmer or IBM Software Support.

BKR8570I **Instance number** *number* **has been assigned for job** *job***.**

Explanation: The stored instance number for the specified job was incremented. The specified job instance number was assigned for the current backup operation.

System action: Submit processing continues.

User response: No action is required.

BKR8571I **Instance tracking started for new job** *job***; the initial instance number is** *n***.**

Explanation: Job instance number tracking was initiated for the specified backup job.

System action: Submit processing continues.

User response: No action is required.

BKR8572I BKRSER10 return code *rc* generating new instance number for *var2*.

Explanation: An error occurred during generation of a job instance number.

System action: Submit processing is abandoned.

User response: Ensure that BKRBKUP has a read-write minidisk or directory accessed at filemode A and that free space is available on the minidisk or directory. If the problem persists, contact your system programmer or IBM Software Support.

BKR8573E Encountered a non-numeric value *value* for JOB_INSTANCE.

Explanation: A non-numeric job instance number was specified in a job template.

System action: Submit processing is abandoned.

User response: Verify that the value specified for **BKR_JOB_INSTANCE** is a valid integer. Specify 8 characters, numeric, padded on the left with zeros. The valid range is 00000001-99999999. If the problem persists, contact your system programmer or IBM Software Support.

BKR8574I Constant BKR_JOB_INSTANCE value of *value* specified for job *job*.

Explanation: A constant job instance number was specified in a job template. Processing continues, but catalog content generated by the backup job overwrites catalog content from a stored previous execution of the job.

System action: Submit processing continues normally.

User response: If this is the appropriate behavior, no further action is required. Otherwise, modify the job template to specify $$INST$$ as the value for BKR_JOB_INSTANCE and allow the system to dynamically maintain job instance values for this template.

BKR8575W "BKR_JOB_WORKERS = nn" omitted from job template; the default setting of 1 will be used.

Explanation: No CONFIG BKR_JOB_WORKERS statement was found in the job template.

System action: Processing continues. Only one worker virtual machine is employed.

User response: If this is the appropriate behavior, no further action is required. Otherwise, modify the job template to include the statement `CONFIG BKR_JOB_WORKERS = nn` to specify a number of workers (1- 16).

BKR8576W Specified value for BKR_JOB_WORKERS (*value*) exceeds the limit of *limit*. Only *n* workers will be used.

Explanation: The value specified for BKR_JOB_WORKERS exceeds the current maximum limit. Only the maximum limit (currently 16 workers) of worker virtual machines are employed for processing of the backup operation.

System action: Processing continues, subject to the 16 worker limit.

User response: No further action is required. If more workers are needed, consider breaking the backup template up into two or more different templates.

BKR8577W More workers (*workers*) than DUMP tasks *tasks*; Only *n* workers will be dispatched.

Explanation: The number of DUMP*xxx* tasks that are generated during INCLUDE and EXCLUDE processing is less than the specified value for **BKR_JOB_WORKERS**.

System action: Processing continues, but only the specified number of workers are activated.

User response: No further action is required. Consider reducing the value of **BKR_JOB_WORKERS** in the affected template.

BKR8578W No value was specified for BKR_JOB_SFS_PATHMASK. A default setting of *default* will be used.

Explanation: No CONFIG BKR_JOB_SFS_PATHMASK statement was encountered in the job template. A default selection of "*" is used.

System action: Processing continues.

User response: No action is required.

BKR8579W No value was specified for BKR_JOB_CMS_FILEMASK. A default setting of *default* will be used.

Explanation: No CONFIG BKR_JOB_CMS_FILEMASK statement was encountered in the job template. A default selection of "* * *" is used.

System action: Processing continues.

User response: No action is required.

BKR8580E Return code *rc* during job construction (JOBHEAD).

Explanation: A CMS file I/O error occurred during creation of the temporary *jobname* `JOBHEAD` file.

System action: SUBMIT processing is abandoned.

User response: Ensure that BKRBKUP has a temporary work area large enough to contain all temporary files created during normal operation. If the problem persists, contact your system programmer or IBM Software Support.

BKR8581E Return code *rc* during job construction (DumpRec).

Explanation: A CMS file I/O error occurred during creation of the temporary DUMP*xxx* records file.

System action: SUBMIT processing is abandoned.

User response: Ensure that BKRBKUP has a temporary work area large enough to contain all of the temporary files that are created during normal operation. If the problem persists, contact your system programmer or IBM Software Support.

BKR8582E Return code *rc* during job construction (JOBTAIL).

Explanation: A CMS file I/O error occurred during creation of the temporary *jobname* `JOBTAIL` file.

System action: SUBMIT processing is abandoned.

User response: Ensure that BKRBKUP has a temporary work area large enough to contain all temporary files created during normal operation. If the problem persists, contact your system programmer or IBM Software Support.

BKR8583I Sending results to *user* for review.

Explanation: **`REVIEW`** command processing is complete.

System action: Results of the **`REVIEW`** operation are being sent to the specified user through the CMS **`SENDFILE`** command.

User response: Examine output of the **`REVIEW`** operation and proceed with normal operations.

BKR8584I Sending *var1* JOB *var2* to worker task *worker*.

Explanation: SUBMIT processing is complete.

System action: Results of the SUBMIT operation are sent to the specified worker virtual machine (*worker*) for backup processing.

User response: Examine output of the backup operation upon completion.

BKR8585E Unable to locate *jobname* TEMPLATE *template*.

Explanation: The SUBMIT or REVIEW commands could not locate the specified job template file *template*.

System action: Further processing is abandoned.

User response: Ensure that the file *jobname* `TEMPLATE` exists on the BKRBKUP job template minidisk or directory. If the problem persists, contact your system programmer or IBM Software Support.

BKR8801T A file pool and share (*filepool*:*fileshare*) must be provided.

Explanation: You must provide a file pool and share.

System action: Processing continues.

User response: Provide a file pool and share. If the problem persists, contact your system programmer or IBM Software Support.

BKR8802E Both a file name and type must be provided.

Explanation: You must provide a file name and type.

System action: Processing continues.

User response: Provide a file name and type. If the problem persists, contact your system programmer or IBM Software Support.

BKR8803E Configuration file *var1 var2 var3* is not available.

Explanation: The specified configuration file is not available.

System action: Processing continues.

User response: If the problem persists, contact your system programmer or IBM Software Support.

BKR8804E EXECIO RC=*rc* reading configuration file *var2 var3 var4*.

Explanation: Backup and Restore Manager encountered an error reading the specified configuration file.

System action: Processing continues.

User response: If the problem persists, contact your system programmer or IBM Software Support.

BKR8805E Catalog information not found in configuration file *var1 var2 var3*.

Explanation: Catalog information was not found in the specified configuration file.

System action: Processing continues.

User response: If the problem persists, contact your system programmer or IBM Software Support.

BKR8806E RESTORE return code was *rc*.

Explanation: An error occurred during the restore operation. The return code associated with the error is listed.

System action: Processing continues.

User response: If the problem persists, contact your system programmer or IBM Software Support.

BKR8807E No catalog name supplied.

Explanation: A catalog name is required.

System action: Processing continues.

User response: Provide a catalog name.

BKR8808E No entries in catalog, or catalog not accessible.

Explanation: There are either no entries in the catalog or the catalog cannot be accessed.

System action: Processing continues.

User response: No action is required.

BKR8809W Unexpected catalog error *error* - list may be incomplete.

Explanation: A catalog error occurred.

System action: Processing continues.

User response: If the problem persists, contact your system programmer or IBM Software Support.

BKR8810E Error *rc* closing catalog.

Explanation: An error occurred while closing the catalog. The return code associated with this error is listed.

System action: Processing continues.

User response: If the problem persists, contact your system programmer or IBM Software Support.

BKR8811E No entries returned for *search* search.

Explanation: No entries were returned for the indicated search. It is possible that there are no entries to be processed.

System action: Processing continues.

User response: If the problem persists, contact your system programmer or IBM Software Support.

BKR8812E No records passed filters.

Explanation: No entries were returned for the filter. It is possible that there are no entries to be processed.

System action: Processing continues.

User response: If the problem persists, contact your system programmer or IBM Software Support.

BKR8813E Exec creation failed, EXECIO return code *rc*.

Explanation: An error occurred while attempting to create the EXEC. The return code associated with this error is listed.

System action: Processing continues.

User response: If the problem persists, contact your system programmer or IBM Software Support.

BKR8814I BKR EXEC successfully written.

Explanation: The BKR EXEC was successfully written.

System action: Processing continues.

User response: No action is required.

BKR8815I Cursor is not within a valid sort field.

Explanation: The cursor is not located within a valid sort field.

System action: Processing continues.

User response: Place the cursor in a valid sort field to continue.

BKR8816E Cursor is not on a file line.

Explanation: The cursor is not located on a file line.

System action: Processing continues.

User response: Place the cursor on a file line to continue.

BKR8817W Over *n* seconds have elapsed for this operation.

Explanation: *n* seconds have elapsed for this operation.

System action: Processing continues.

User response: No action is required.

BKR8818R Do you wish to continue? (Yes|No):

Explanation: Indicate whether you want to continue the operation.

System action: Processing continues.

User response: Respond `Yes` to continue; otherwise, respond `No`.

BKR8819I Terminating date/time retrieval.

Explanation: This message indicates that the date/time retrieval is ending.

System action: Processing continues.

User response: No action is required.

BKR8820E No granule name passed to expand.

Explanation: This message indicates that no granule name passed to expand.

System action: Processing continues.

User response: If the problem persists, contact your system programmer or IBM Software Support.

BKR8821E Error expanding granule file.

Explanation: An error occurred when expanding a granule file.

System action: Processing continues.

User response: If the problem persists, contact your system programmer or IBM Software Support.

BKR8822E *cmd* **is not a valid line command.**

Explanation: An invalid line command was specified.

System action: Processing continues.

User response: Specify a valid line command.

BKR8823E Sorting is not active on this screen.

Explanation: The sort function is not available for this screen.

System action: Processing continues.

User response: No action is required.

BKR8824E Restore is not available in this view.

Explanation: The Restore function is not available for this view.

System action: Processing continues.

User response: No action is required.

BKR8825E Cursor is not on a valid selection.

Explanation: The cursor is not on a valid selection.

System action: Processing continues.

User response: Place the cursor on a valid selection.

BKR8826E Unable to get base name for one or more instances, RC=*rc***.**

Explanation: Backup and Restore Manager was unable to obtain the base name for one or more instances. The return code is listed.

System action: Processing continues.

User response: If the problem persists, contact your system programmer or IBM Software Support.

BKR8827E File too large - out of storage.

Explanation: The file is too large. There is no more storage space.

System action: Processing continues.

User response: If the problem persists, contact your system programmer or IBM Software Support.

BKR8828E BKRFCAT failure - token was *token***.**

Explanation: A BKRFCAT failure occurred. The specified token *token* is indicated.

System action: Processing continues.

User response: If the problem persists, contact your system programmer or IBM Software Support.

BKR8850E The userid of the master backup server must be provided.

Explanation: You must provide the user ID of the master backup server.

System action: Processing continues.

User response: Provide the user ID of the master backup server. If the problem persists, contact your system programmer or IBM Software Support.

BKR8851E Both a userid and device are required.

Explanation: You must provide both a user ID and device.

System action: Processing continues.

User response: Provide both a user ID and device. If the problem persists, contact your system programmer or IBM Software Support.

BKR8852E Device is not a valid hexadecimal address.

Explanation: The hexadecimal address is not valid.

System action: Processing continues.

User response: If the problem persists, contact your system programmer or IBM Software Support.

BKR8853E Device address must be between 0x0001 and 0xFFFF.

Explanation: The device address must be between 0x0001 and 0xFFFF.

System action: Processing continues.

User response: If the problem persists, contact your system programmer or IBM Software Support.

BKR8854E Please fill in only one set (EDF, RDR, or SFS) of values.

Explanation: Only one set (EDF, RDR, or SFS) of values can be specified.

System action: Processing continues.

User response: Specify one set of values (EDF, RDR, or SFS). If the problem persists, contact your system programmer or IBM Software Support.

BKR8855E No restore parameters were supplied.

Explanation: No restore parameters were provided.

System action: Processing continues.

User response: Provide restore parameters. If the problem persists, contact your system programmer or IBM Software Support.

BKR8856E A userid is required for RDR restore.

Explanation: RDR restore requires a user ID.

System action: Processing continues.

User response: Provide a user ID. If the problem persists, contact your system programmer or IBM Software Support.

BKR8857E Both pool and filespace are required for *type* restores.

Explanation: SFS restores require both a pool and filespace. *type* can be one of SFS or BFS.

System action: Processing continues.

User response: Specify a pool and filespace. If the problem persists, contact your system programmer or IBM Software Support.

BKR8858E The files to be restored must be explicitly specified.

Explanation: You must specify the files you want to restore.

System action: Processing continues.

User response: Specify the files to be restored. If the problem persists, contact your system programmer or IBM Software Support.

BKR8859E Please fill in either path or storage group, not both.

Explanation: Specify the path or the storage group, not both.

System action: Processing continues.

User response: Specify the path or the storage group. If the problem persists, contact your system programmer or IBM Software Support.

BKR8860E EXECIO return code *rc* while attempting to read BKRSYSTM CONFIG *. Configuration processing cannot continue.

Explanation: An error occurred while attempting to read `BKRSYSTM CONFIG *`. The return code associated with this error is listed in the message.

System action: Processing continues.

User response: If the problem persists, contact your system programmer or IBM Software Support.

BKR8861E DMSCSR return code *rc* during configuration; Variable name *name* Attempted value *value*.

Explanation: While attempting to configure Backup and Restore Manager for z/VM, DMSCSR encountered a problem with the variable and value listed in the message.

System action: Processing continues.

User response: If the problem persists, contact your system programmer or IBM Software Support.

BKR8862S A severe error has occurred. Additional diagnostic information:

Explanation: An unrecoverable error condition was encountered.

System action: The associated task or command exits with a nonzero return code.

User response: Message BKR8862S is preceded by additional information that describes the unrecoverable error state.

BKR8863S Return code *rc* from Process_Config_file.

Explanation: An unrecoverable error condition was encountered during an attempt to process contents of `BKRSYSTM CONFIG`.

System action: The associated task or command exits with a nonzero return code.

User response: Message BKR8863S is preceded by additional messages describing the error state, and followed by diagnostic information, which includes

virtual machine state, CMS environment and REXX runtime environment information. Review the configuration settings in `BKRSYSTM CONFIG`, and correct the associated errors. Contact your system programmer or IBM Software Support.

BKR8864E Invalid value *value* for expiration number of days.

Explanation: The value specified for the number of days before expiration is not valid.

System action: Processing continues.

User response: Specify a valid value for the expiration number of days.

BKR8865I Expiration for *var1 var2* set to *value*.

Explanation: The expiration for the specified item (identified by *var1* and *var2*) was reset to *value*.

System action: Processing continues.

User response: No action is required.

BKR8866S Return code *rc* from EXECIO while setting expiration date; Exiting.

Explanation: An unrecoverable error condition was encountered during an attempt to access backup catalog data. Message BKR8866S might be preceded by messages that describe the error state, and followed by diagnostic information, which includes the virtual machine state, the CMS environment and REXX runtime environment information. This condition is usually encountered when the SFS file pool server where the backup catalog file space resides encounters a resource constraint or becomes unavailable.

System action: The backup catalog service virtual machine (BKRCATLG) ends with a nonzero return code.

User response: Look in the file pool server console log for additional information. Contact your system programmer or IBM Software Support.

BKR8867I The expiration date for *var1 var2* is being updated.

Explanation: This message indicates that an expiration date for the specified item (identified by *var1* and *var2*) was changed.

System action: Processing continues.

User response: No action is required.

BKR8868S Return code *rc* from EXECIO while reading expiration date; exiting.

Explanation: An unrecoverable error condition was encountered during an attempt to access backup catalog data. Message BKR8868S might be preceded by messages that describes the error state, and followed by diagnostic information, which includes virtual machine state, CMS environment and REXX runtime environment information. This condition is most commonly encountered when the SFS file pool server where the backup catalog file space resides encounters a resource constraint or becomes unavailable.

System action: The backup catalog service virtual machine (BKRCATLG) ends with a nonzero return code.

User response: Look in the file pool server console log for additional information. Contact your system programmer or IBM Software Support.

BKR8869I Previous expiration for *var1 var2* was *exp_date*.

Explanation: This message specifies the previous expiration date (*exp_date*) for a specific item (*var1* and *var2*).

System action: Processing continues.

User response: No action is required.

BKR8870I Expiration date for *var1 var2* changed from *old_date* to *new_date*.

Explanation: This informs you that an expiration date (identified by *var1* and *var2*) was changed from an old date (*old_date*) to a new date (*new_date*).

System action: Processing continues.

User response: See message ATH016W, which explains the actions you can take.

BKR8871S Return code *rc* from EXECIO while reading expiration date; Exiting.

Explanation: An unrecoverable error condition was encountered during an attempt to access backup catalog data. Message BKR8871S may be preceded by messages that describe the error state, and followed by diagnostic information, which includes virtual machine state, CMS environment and REXX runtime environment information. This condition is most commonly encountered when the SFS file pool server where the backup catalog file space resides encounters a resource constraint or becomes unavailable.

System action: The backup catalog service virtual machine (BKRCATLG) ends with a nonzero return code.

User response: Look in the file pool server console log

for additional information. Contact your system programmer or IBM Software Support.

BKR8872E **Job** *jobname* **instance** *instance_name* **not found in catalog.**

Explanation: The specified job and instance was not in the catalog.

System action: Processing continues.

User response: No action is required.

BKR8873W **No expiration date has been set for** *var1 var2***.**

Explanation: This warning message indicates that an expiration date is missing for the specified item.

System action: Processing continues.

User response: Specify an expiration date for the item identified by *var1* and *var2*.

BKR8874S **Return code** *rc* **from EXECIO while reading expiration date; Exiting.**

Explanation: An unrecoverable error condition was encountered during an attempt to access backup catalog data. Message BKR8874S might be preceded by messages that describe the error state, and followed by diagnostic information, which includes virtual machine state, CMS environment and REXX runtime environment information. This condition is most commonly encountered when the SFS file pool server where the backup catalog file space resides encounters a resource constraint or becomes unavailable.

System action: The backup catalog service virtual machine (BKRCATLG) terminates with a nonzero return code.

User response: Look in the file pool server console log for additional information. Contact your system programmer or IBM Software Support.

BKR8875I **Job** *jobname* **instance** *instance name* **will expire after** *value***.**

Explanation: This message informs you that a job and instance expires after the specified date, time, number of days (*value*).

System action: Processing continues.

User response: No action is required.

BKR8876W **Invalid mode** *mode* **specified for EXPIRE processing.**

Explanation: The mode that was specified for EXPIRE processing is not a valid mode for EXPIRE.

System action: Processing continues.

User response: Specify a valid mode for EXPIRE processing. See "EXPIRE" on page 98 for more information.

BKR8877S **Return code** *rc* **from ACCESS** *target fm***; Exiting.**

Explanation: An unrecoverable error condition was encountered during an attempt to access backup catalog data. Message BKR8877S might be preceded by messages that describe the error state, and followed by diagnostic information, which includes virtual machine state, CMS environment and REXX runtime environment information. This condition is most commonly encountered when the SFS file pool server where the backup catalog file space resides encounters a resource constraint or becomes unavailable.

System action: The backup catalog service virtual machine (BKRCATLG) ends with a nonzero return code.

User response: Look in the file pool server console log for additional information. Contact your system programmer or IBM Software Support.

BKR8878W **No EXPIRE CONTROL file for** *jobname instance***; catalog content will never expire.**

Explanation: No `EXPIRE CONTROL` file for the catalog entry *jobname instance* was found. *jobname* is the job name and *instance* is the instance number for the catalog entry that is associated with the message. BKRCATLG uses information in the `EXPIRE CONTROL` file to manage the retention of catalog information. When a catalog entry does not have an `EXPIRE CONTROL` file associated with it, the catalog information never ages out of the backup catalog.

Note: If a catalog retention period is intentionally omitted from the associated job template (for example, when an indefinitely long retention span is required), you can ignore this message.

The expiration stamp for a catalog entry is typically created at the end of backup job processing using the **`Config_BKR_Catalog_Expiration`** = *#days* statement.

Message BKR8878W is generated when an expiration stamp is not defined for a catalog entry. This situation usually occurs when a backup job ends abnormally (for example, if a tape mount does not occur within the mount timeout window). This state is intended to indicate a warning to the backup administrator that a job did not run to completion.

System action: Processing continues.

User response: Create the missing file and try the expiration process again using one of the following methods:

- To assign an expiration timer to the catalog entry, issue the CP **SMSG BKRCATLG SET EXPIRE** *jobname instance #days* command from BKRADMIN (or other user that was granted ADMIN privileges in BKRUSERS NAMES). To mark the entry as immediately expired, specify NOW as the retention span, rather than a number of days. The entry is deleted after the expiration time passes, and an **EXPIRE (PURGE** command is issued on BKRCATLG. For more information, see "SET EXPIRE" on page 102.
- If the job did not run to completion, and you want to process minidisks or SFS file spaces that were not backed up in the previous effort, issue the BKRCATLG **RESTART** command (CP **SMSG BKRCATLG RESTART***jobname*) to submit the failed job again without incrementing the backup instance number. If job restart processing is enabled in the job template, it results in an attempt to run the failed job again, backing up only the objects that are not already cataloged under the same job name and instance.

BKR8879S Return code *rc* **from EXECIO reading** *fileid* **for** *jobname instance***; Exiting.**

Explanation: An unrecoverable error condition was encountered during an attempt to access backup catalog data. Message BKR8879S might be preceded by messages that describe the error state, and followed by diagnostic information which includes virtual machine state, CMS environment and REXX runtime environment information. This condition is most commonly encountered when the SFS file pool server where the backup catalog file space resides encounters a resource constraint or becomes unavailable.

System action: The backup catalog service virtual machine (BKRCATLG) terminates with a non-zero return code

User response: Look in the file pool server console log for additional information. Contact your system programmer or IBM Software Support.

BKR8880W Catalog for job *job name* **instance** *instance name* **has expired.**

Explanation: The catalog for the specified job and instance expired and can no longer be used.

System action: Processing continues.

User response: No action is required.

BKR8881I Removing catalog contents for job *job name* **instance** *instance name***.**

Explanation: The catalog contents are being emptied for the specified job and instance.

System action: Processing continues.

User response: No action is required.

BKR8882W Tape Manager (EUM) mode is enabled, but TAPCMD MODULE is not available.

Explanation: Tape Manager for z/VM provides a program (TAPCMD), to assist with the processing of commands. The TAPCMD program runs on the ID of the user and performs a variety of processes, such as translating a file mode (file mode A) to a virtual address, before sending the command to Tape Manager for z/VM. This message indicates there might be a problem with the installation or configuration of the TAPCMD program on your system.

System action: Processing continues.

User response: See the *IBM Tape Manager for z/VM Installation and Administration Guide* (SC18-9344) for information about TAPCMD.

BKR8883W No tape volumes are associated with *var1 var2***.**

Explanation: The items specified in the message are not associated with any tape volumes, therefore the requested process cannot be completed.

System action: Processing continues.

User response: Assign tape volumes to the items (identified by *var1* and *var2*) in the message.

BKR8884I [*Message text varies***]**

Explanation: This message varies depending upon the type of information that is displayed. Possible messages are:

- Stage_VDEV: *text*
- Stage_FM : *text*
- BlockSize : *text*
- BlockReqd : *text*

System action: Processing continues.

User response: No action is required.

BKR8885E Staging area EDF block size *number* **is out of range.**

Explanation: The block size for staging area EDF is either too low or too high.

System action: Processing continues.

User response: Reassign a block size for EDF, ensuring the number is within the expected range.

BKR8886E Improper call to routine; null value for EDF_BlockSize.

Explanation: A routine encountered a problem with EDF_BlockSize containing a null value.

System action: Processing continues.

User response: If the problem persists, contact your system programmer or IBM Software Support.

BKR8887E Improper call to routine; null value for EDF_Blocks required.

Explanation: A routine encountered a problem with EDF_BlockSize containing a null value.

System action: Processing continues.

User response: If the problem persists, contact your system programmer or IBM Software Support.

BKR8888W Unrecognized value *value* for Worker_Stage_Type. Assuming same 4K blocks/cyl as 3390. Supported values are T3390, T3380, and VFB-512.

Explanation: The value assigned to Worker_Stage_Type is not valid, so Backup and Restore Manager for z/VM is defaulting to the same 4K blocks/cyl as 3390.

System action: Processing continues.

User response: Specify one of these valid values for Worker_Stage_Type:

- T3390
- T3380
- VFB-512

BKR8889I Estimated staging volume size is *number* cylinders/blocks.

Explanation: This message lists the estimated size of the staging volume, using cylinders/blocks.

System action: Processing continues.

User response: No action is required.

BKR8890E Return code *rc* from CP DEFINE command. Unable to obtain staging area storage; aborting.

Explanation: This message provides the return code resulting from an error in the CP **DEFINE** command.

System action: Processing continues.

User response: No action is required.

BKR8891I DMSEXIST return code *rc*, reason *rsn* validating *var*.

Explanation: The DMSEXIST module encountered a problem while attempting to validate the *var* item listed in the message. The return code and reason code provide more information.

System action: Processing continues.

User response: If the problem persists, contact your system programmer or IBM Software Support.

BKR8892E Null value passed for Restore_Granule_Loc.

Explanation: An invalid catalog reference was encountered during restore processing or the backup catalog file space was inaccessible.

System action: Processing for the DELFILES option of the **RESTORE** command ended because the restore operation requires access to a valid catalog entry. Files from the backup image were restored, but DELFILES processing cannot be performed.

User response: Ensure that a valid minidisk or SFS file space backup was referenced by the associated **RESTORE** command and that the affected BKRWRK*nn* service virtual machine can access the backup catalog file space during restore processing.

BKR8893E Validate_Directory return code *rc* for granule location *location_name*.

Explanation: An invalid catalog reference was encountered during **RESTORE** command processing, or the backup catalog file space was inaccessible.

System action: Processing for the DELFILES option of the **RESTORE** command was stopped because the **RESTORE** command requires access to a valid catalog entry. Files from the backup image were restored, but DELFILES processing cannot be performed.

User response: Ensure that a valid minidisk or SFS file space backup was referenced by the associated **RESTORE** command and that the affected BKRWRK*nn* service virtual machine can access the backup catalog file space during **RESTORE** command processing.

BKR8894E Return code *rc* from command ACCESS *var1 var2*. Restore processing cannot continue.

Explanation: An error occurred when the **ACCESS** command was applied to *var1* and *var2*.

System action: Processing ends.

User response: If the problem persists, contact your system programmer or IBM Software Support.

BKR8895E Return code *rc* while attempting to read GRANJOB from catalog entry. Restore processing cannot continue.

Explanation: An error occurred while trying to read the GRANJOB catalog entry.

System action: Processing ends.

User response: If the problem persists, contact your system programmer or IBM Software Support.

BKR8896E **Return code *rc* while attempting to read GRANCTNR from catalog entry. Restore processing cannot continue.**

Explanation: An error occurred while trying to read GRANCTNR from the catalog entry.

System action: Processing continues.

User response: No action is required.

BKR8897I **Original backup job summary: --- Job Name: *job name*, instance *instance name* --- Backup time: *backup time* (Local zone) --- Source data: *source data*.**

Explanation: This message contains information about the backup job.

System action: Processing continues.

User response: No action is required.

BKR8898E **Malformed GRANCTNR tag *tag name* in catalog data.**

Explanation: There is a problem with the GRANCTNR tag in the catalog.

System action: Processing continues.

User response: If the problem persists, contact your system programmer or IBM Software Support.

BKR8899I **Original source type is SFS filespace: --- Original pool: *var1*:*var2* --- Original group: *group*; *n* blocks of *var5* in use. --- Warning threshold: *n*%.**

Explanation: This message contains information about the SFS file space.

System action: Processing continues.

User response: No action is required.

BKR8900I **Original source type is CMS EDF Minidisk: --- Owner, vdev: *var1 var2*. --- EDF block size: *var3*; *var4* of *var5* blocks in use. --- *var6* cyls of *var7* formatted; "(RECOMP" *var8* in effect.**

Explanation: This message contains information about the CMS EDF minidisk.

System action: Processing continues.

User response: No action is required.

BKR8901I **Original source type is CKD minidisk: --- Owner, vdev: *var1 var2*. --- Original CKD device type: *var3*-*var4*. --- Original extent size: *var5* cylinders; *var6* tracks per cylinder. --- Original Control Unit type is *var7*-*var8*.**

Explanation: This message contains information about the CKD minidisk.

System action: Processing continues.

User response: No action is required.

BKR8902E **Restore operation rejected; unknown source data container type.**

Explanation: A problem with the source data container type occurred while attempting to perform a restore operation. The restore operation was halted.

System action: Processing continues.

User response: No action is required.

BKR8903E **Format error in source data location descriptor.**

Explanation: A format error occurred in a source data location descriptor.

System action: Processing continues.

User response: If the problem persists, contact your system programmer or IBM Software Support.

BKR8904E ***type* is not a valid restore data source type.**

Explanation: The specified value is not a valid restore data source type.

System action: Processing continues.

User response: Try the restore procedure again using a valid source type.

BKR8905E **Format error in restore destination location descriptor.**

Explanation: The format used for the location descriptor for the restore procedure is incorrect.

System action: Processing continues.

User response: Try the restore procedure again after changing the location descriptor to a valid format.

BKR8906E ***type* is not a valid restore destination type.**

Explanation: The destination type is not valid, so the restore procedure does not work. You must use a valid destination type.

System action: Processing continues.

User response: Try the restore procedure again using a valid destination type.

BKR8907I **Restore source: --- Media is:** *media* **--- Identifier is:** *identifier* **--- Supplemental:** *supplemental* **--- Filter mask:** *mask***.**

Explanation: This message contains information about the restore source.

System action: Processing continues.

User response: No action is required.

BKR8908I **Restore destination: --- Media is** *media* **--- Identifier is:** *identifier* **--- Supplemental:** *supplemental* **--- Filter Mask:** *mask***.**

Explanation: This message contains information about the restore destination.

System action: Processing continues.

User response: No action is required.

BKR8909I **Additional: --- Original source:** *source* **--- Source container type:** *source type* **--- Destination container type:** *destination type***.**

Explanation: This message contains additional information about the source and destination container type.

System action: Processing continues.

User response: No action is required.

BKR8910E **Malformed Restore_Loc_Identifier** *identifier* **encountered.**

Explanation: A error occurred involving the Restore_Loc_Identifier.

System action: Processing continues.

User response: If the problem persists, contact your system programmer or IBM Software Support.

BKR8911E **Unparseable Restore_Loc_Type** *type* **encountered.**

Explanation: An error occurred while parsing Restore_Loc_Type.

System action: Processing continues.

User response: If the problem persists, contact your system programmer or IBM Software Support.

BKR8912E **CKD backups can only be restored to a CKD destination. Requested destination type** *type* **is incompatible.**

Explanation: The indicated destination type is not compatible with CKD backups.

System action: Processing continues.

User response: Try the restore procedure again using a CKD compatible destination.

BKR8913E **CKD restore operations do not support regular expression filters. The supplied expression** *expression* **is unacceptable.**

Explanation: An error occurred due to the supplied regular expression filter.

System action: Processing continues.

User response: Try the restore procedure again using a supported regular expression filter.

BKR8914E **CP return code** *rc* **while trying to link** *var2 var3* **EF0 WR. CP response was** *var4***. User running restore needs OPTION LNKNOPAS or equivalent RACF authorization. The target minidisk must not be linked by any other virtual machine.**

Explanation: An error occurred during a LINK operation.

System action: Processing continues.

User response: If the problem persists, contact your system programmer or IBM Software Support.

BKR8915E **Return code** *rc* **from ACCESS** *var2 var3***.**

Explanation: An error occurred from an ACCESS operation.

System action: Processing continues.

User response: If the problem persists, contact your system programmer or IBM Software Support.

BKR8916E **CP return code** *rc* **while trying to LINK** *var2 var3* **EF1 RR. CP response was** *response***.**

Explanation: An error occurred during a LINK operation.

System action: Processing continues.

User response: If the problem persists, contact your system programmer or IBM Software Support.

BKR8917E **ESTATE return code** *rc* **for** *var2 var3 var4***. The selected input file is inaccessible.**

Explanation: An error occurred while attempting to access the selected input file.

System action: Processing continues.

User response: If the problem persists, contact your system programmer or IBM Software Support.

BKR8918I Invoking LOADCKD for CKD-to-CKD restore.

Explanation: The LOADCKD routine was invoked.

System action: Processing continues.

User response: No action is required.

BKR8919I Restore operation succeeded; LOADCKD return code 0.

Explanation: The restore operation from LOADCKD routine succeeded with a return code of zero.

System action: Processing continues.

User response: No action is required.

BKR8920E Restore operation failed; LOADCKD return code was *rc*.

Explanation: An error occurred while attempting a restore operation by LOADCKD.

System action: Processing continues.

User response: If the problem persists, contact your system programmer or IBM Software Support.

BKR8921E Warning: Restoration of SFS data to an EDF destination will only include EDF-compatible base files. Directories, aliases and SFS permissions cannot be restored to a CMS minidisk.

Explanation: This message indicates that directories, aliases and SFS permissions cannot be restored to a CMS minidisk.

System action: Processing continues.

User response: If the problem persists, contact your system programmer or IBM Software Support.

BKR8922E SFS restore requires a four-token regular expression. The supplied filter, *filter*, is unacceptable.

Explanation: An error occurred because the supplied filter is not valid.

System action: Processing continues.

User response: Try the SFS restore operation again with a valid filter.

BKR8923E The target minidisk for this restore operation is unformatted, and BKR _Allow_EDF_Target_Format has been set to FALSE.

Explanation: An error occurred while attempting to restore data to a target minidisk that is unformatted.

System action: Processing continues.

User response: Be sure to use a formatted target minidisk or set **`BKR_Allow_EDF_Target_Format`** to TRUE.

BKR8924I Invoking LOADEDF for SFS-to-EDF restore.

Explanation: The restore operation from the LOADEDF routine was invoked.

System action: Processing continues.

User response: No action is required.

BKR8926I Restore operation succeeded; LOADEDF return code 0.

Explanation: The restore operations from the LOADEDF routine succeeded with a return code of zero.

System action: Processing continues.

User response: No action is required.

BKR8927E Restore operation failed; LOADEDF return code was *rc*.

Explanation: The restore operation from LOADEDF failed with the specified return code.

System action: Processing continues.

User response: If the problem persists, contact your system programmer or IBM Software Support.

BKR8928I Invoking LOADSFS for SFS-to-SFS restore.

Explanation: The restore operation from the LOADSFS routine was invoked.

System action: Processing continues.

User response: No action is required.

BKR8929I Restore operation succeeded; LOADSFS return code 0.

Explanation: The restore operation from the LOADSFS routine succeeded with a return code of zero.

System action: Processing continues.

User response: No action is required.

BKR8930E Restore operation failed; LOADSFS return code was *rc*.

Explanation: The restore operation from the LOADSFS routine failed with the specified return code.

System action: Processing continues.

User response: If the problem persists, contact your system programmer or IBM Software Support.

BKR8931I **This restore operation requires a temporary staging area; obtaining one now.**

Explanation: The restore operation needs a staging area so one is being obtained.

System action: Processing continues.

User response: No action is required.

BKR8932E **Return code *rc* from Obtain_Staging_Area.**

Explanation: The specified return code was received when attempting to set up a staging area for a restore operation.

System action: Processing continues.

User response: If the problem persists, contact your system programmer or IBM Software Support.

BKR8933W **Warning: Restoration of SFS data to a RDR destination will only include EDF-compatible base files. Directories, aliases and SFS permissions cannot be restored to a RDR destination.**

Explanation: This message indicates that directories, aliases and SFS permissions cannot be restored to a RDR destination.

System action: Processing continues.

User response: If the problem persists, contact your system programmer or IBM Software Support.

BKR8934I **Invoking LOADEDF for SFS-to-RDR restore via EDF staging minidisk.**

Explanation: The restore operation from the LOADEDF routine was invoked.

System action: Processing continues.

User response: No action is required.

BKR8935I **Restore to staging area complete; LOADEDF return code 0. Sending files from staging area to destination.**

Explanation: The restore operation from the LOADEDF routine is sending files from staging area to the destination.

System action: Processing continues.

User response: No action is required.

BKR8936I **Delivery from staging area completed normally.**

Explanation: This message informs you that this process completed successfully.

System action: Processing continues.

User response: No action is required.

BKR8937W **Error(s) detected during delivery from staging area.**

Explanation: This message indicates that there were errors during the process of delivery from the staging area.

System action: Processing continues.

User response: No action is required.

BKR8938E **Valid restore destinations for SFS data are SFS, EDF, or RDR. Destination type *type* is incompatible.**

Explanation: The restore operation failed because the destination type is not valid.

System action: Processing continues.

User response: Try the restore operation again using one of the valid destination types.

BKR8939E **EDF restore requires a three-token regular expression. The supplied filter, *filter name*, is unacceptable.**

Explanation: An error occurred because the supplied filter is not valid.

System action: Processing continues.

User response: Try to the restore operation again using a supported filter.

BKR8940E **Return code *rc* from BKR_Format_Target_Mdisk; Restore operation failed; unable to format destination minidisk.**

Explanation: An error occurred from a restore operation because the destination minidisk could not be formatted.

System action: Processing continues.

User response: If the problem persists, contact your system programmer or IBM Software Support.

BKR8941I **Invoking LOADEDF for EDF-to-EDF restore.**

Explanation: The LOADEDF routine was invoked.

System action: Processing continues.

User response: No action is required.

BKR8942E **Return code *rc* from "ACCESS *var2 var3* (FORCERW". The SVM may not have ADMIN privileges on the target SFS file pool. The target directory may be nonexistent or locked by another user.**

Explanation: An error occurred with the specified return code.

System action: Processing continues.

User response: If the problem persists, contact your system programmer or IBM Software Support.

BKR8943I **Invoking LOADEDF for EDF-to-SFS restore.**

Explanation: The LOADEDF routine was invoked.

System action: Processing continues.

User response: No action is required.

BKR8944I **Invoking LOADEDF for EDF-to-RDR restore via EDF staging minidisk.**

Explanation: The LOADEDF routine was invoked.

System action: Processing continues.

User response: No action is required.

BKR8945E **Valid restore destinations for EDF data are EDF, SFS, or RDR. Destination type *type* is incompatible.**

Explanation: The indicated destination type is not valid.

System action: Processing continues.

User response: Try the restore procedure action using a supported destination type.

BKR8946T **Unrecognized source container type *type* escaped parsing; abending.**

Explanation: An error occurred during a parse operation.

System action: Processing ends.

User response: If the problem persists, contact your system programmer or IBM Software Support.

BKR8947E **Automatic formatting of EDF minidisks is disabled. To enable, set BKR_Allow_EDF_Target_Format = 1. in BKRSYSTM CONFIG.**

Explanation: An error occurred because automatic formatting of minidisks is disabled.

System action: Processing continues.

User response: Try operation again after setting BKR_Allow_EDF_Target_Format to 1.

BKR8948E **No value supplied for minidisk label; FORMAT abandoned.**

Explanation: An error occurred while attempting to format the minidisk.

System action: Processing continues.

User response: Be sure to supply a minidisk label prior to formatting the minidisk.

BKR8949E **Return code *rc* from CMS FORMAT command.**

Explanation: An error occurred with the specified return code after the CMS **FORMAT** command was issued.

System action: Processing continues.

User response: Issue the command again after resolving the issue indicated by the return code.

BKR8950E **Return code *rc* from CMS FORMAT ... (RECOMP command.**

Explanation: An error occurred with the specified return code after the CMS **FORMAT** command was issued.

System action: Processing continues.

User response: Issue the command again after resolving the issue indicated by the return code.

BKR8951E **Syntax error in RELOAD command.**

Explanation: An error occurred while attempting to process the **RELOAD** command.

System action: Processing continues.

User response: Correct the syntax error in the **RELOAD** command.

BKR8952E **ACCESS return code *rc* encountered while trying to access catalog branch *branch name*. Catalog filespace access is necessary in order to use the RELOAD interface.**

Explanation: An error occurred when attempting to access the catalog.

System action: Processing continues.

User response: If the problem persists, contact your system programmer or IBM Software Support.

BKR8953E **STATE return code *rc* attempting to validate access to catalog content. A fully-qualified catalog branch containing a valid CATALOG GRANULE file is required.**

Explanation: An error occurred while attempting to validate access to the catalog.

System action: Processing continues.

User response: If the problem persists, contact your system programmer or IBM Software Support.

BKR8954E ***Type* is not a valid destination media type. Valid types are *valid_types*.**

Explanation: The indicated destination type is not valid.

System action: Processing continues.

User response: Try again using a valid destination type.

BKR8955T **Return code *rc* from Process_Config_File; abending.**

Explanation: An error occurred from Process_Config_File.

System action: Processing ends.

User response: If the problem persists, contact your system programmer or IBM Software Support.

BKR8956E **No tape volumes are associated with job *jobname*, instance *instance*.**

Explanation: The **QUERY TAPES** command found no tape volumes associated with the specified job name and instance.

System action: Processing continues.

User response: No action is required.

BKR8957T **Unable to access media catalog entry, rc *rc*; abending.**

Explanation: An error occurred while attempting to access the media catalog.

System action: Processing ends.

User response: If the problem persists, contact your system programmer or IBM Software Support.

BKR8958W **Media catalog for job *job name*, instance *instance* is empty.**

Explanation: An error occurred because the media catalog for the specified job is empty.

System action: Processing continues.

User response: If the problem persists, contact your system programmer or IBM Software Support.

BKR8959I **Volumes in use by job *job name*, instance *instance*.**

Explanation: This messages indicates that the specified job is using the indicated volumes.

System action: Processing continues.

User response: No action is required.

BKR8960I **Total volumes: *number*.**

Explanation: This message contains information about the total volumes.

System action: Processing continues.

User response: No action is required.

BKR8961W **WARNING TAPE_HANDLED_VIA_EUM = 1 is specified in BKRSYSTM CONFIG, but required file *file name* cannot be found.**

Explanation: An error occurred because the required file cannot be found.

System action: Processing continues.

User response: If the problem persists, contact your system programmer or IBM Software Support.

BKR8962I **Resuming after PAUSE at *var1 var2*.**

Explanation: This message contains processing status.

System action: Processing continues.

User response: No action is required.

BKR8963W **Unrecognized CKD DASD type *type*; space requirement estimate will be based on 3390.**

Explanation: This message contains a processing warning.

System action: Processing continues.

User response: No action is required.

BKR8964E **No value supplied for Worker_Pool_Minidisk_Mode in BKRSYSTM CONFIG.**

Explanation: An error occurred because no value was supplied for the Worker_Pool_Minidisk_Mode parameter in the BKRSYSTM CONFIG file.

System action: Processing continues.

User response: Specify a valid value for Worker_Pool_Minidisk_Mode. This variable is required

for DISKPOOL support. The default setting is R. Do not modify this setting.

BKR8965E **No value supplied for Worker_Pool_Link_Address in BKRSYSTM CONFIG.**

Explanation: An error occurred because no value was supplied for the Worker_Pool_Link_Address parameter in the `BKRSYSTM CONFIG` file.

System action: Processing continues.

User response: Specify a valid value for Worker_Pool_Link_Address. This variable is required for DISKPOOL support. The default setting is 03F1. Do not modify this setting.

BKR8966E **Filemode** *file mode* **is already in use by a non-pool minidisk or directory.**

Explanation: An error occurred because the specified filemode is already in use by a non-pool minidisk directory.

System action: Processing continues.

User response: If the problem persists, contact your system programmer or IBM Software Support.

BKR8967E **Return code** *rc* **attempting to ESTATE** *var* ***.**

Explanation: An error occurred. The return code is provided.

System action: Processing continues.

User response: If the problem persists, contact your system programmer or IBM Software Support.

BKR8968E **Return code** *rc* **attempting to read** *var* ***.**

Explanation: An error occurred. The return code is provided.

System action: Processing continues.

User response: If the problem persists, contact your system programmer or IBM Software Support.

BKR8969E **Return code** *rc* **attempting to ACCESS** *var2 var3* **as filemode** *file mode***.**

Explanation: An error occurred. The return code is provided.

System action: Processing continues.

User response: If the problem persists, contact your system programmer or IBM Software Support.

BKR8970E **Pool** *poolname* **has no available minidisk with at least** *n* **blocks of free space.**

Explanation: An error occurred because there is no available minidisk space.

System action: Processing continues.

User response: If the problem persists, contact your system programmer or IBM Software Support.

BKR8971T **Return code** *rc* **from Process_Config_File; abending.**

Explanation: An error occurred. The return code is provided.

System action: Processing ends.

User response: If the problem persists, contact your system programmer or IBM Software Support.

BKR8972W **No supporting JOBCAT entry found for tape volume** *volume***; the volume will be returned to SCRATCH status. Referenced job ID is job** *job name***, instance** *instance***.**

Explanation: An error occurred because the supporting JOBCAT entry was not found for the specified tape volume.

System action: Processing continues.

User response: If the problem persists, contact your system programmer or IBM Software Support.

BKR8973W **Incomplete entry in MEDIACAT.LIVETAPE structure - Instance qualifier is missing. Problem entry:** *var1.var2.var3***.**

Explanation: A warning was issued because there is an incomplete entry.

System action: Processing continues.

User response: If the problem persists, contact your system programmer or IBM Software Support.

BKR8974W **Incomplete entry in MEDIACAT.LIVETAPE structure - Job name qualifier is missing. Problem entry:** *var1.var2***.**

Explanation: A warning was issued because there is an incomplete entry.

System action: Processing continues.

User response: If the problem persists, contact your system programmer or IBM Software Support.

BKR8975I Expiring volume *vol name* in EUM Tape Manager.

Explanation: This message contains information about an expired volume.

System action: Processing continues.

User response: No action is required.

BKR8976W Return code *rc* from TAPCMD interface; EUM Tape Manager volume expiration reset failed.

Explanation: A warning was issued because the Tape Manager volume expiration reset failed.

System action: Processing continues.

User response: If the problem persists, contact your system programmer or IBM Software Support.

BKR8977W Return code *rc* from command *command*; Will retry command in *number* seconds.

Explanation: A warning was issued because a problem was encountered from the specified command.

System action: Processing continues.

User response: No action is required.

BKR8978E Unable to successfully execute command *command* after *n* attempts.

Explanation: An error occurred while attempting to issue the indicated command after multiple attempts.

System action: Processing continues.

User response: If the problem persists, contact your system programmer or IBM Software Support.

BKR8979I QUERY ACCESSORS *var* result:

Explanation: This message contains information about query accessors.

System action: Processing continues.

User response: No action is required.

BKR8980I Return code: *rc*.

Explanation: This message contains a processing return code.

System action: Processing continues.

User response: No action is required.

BKR8981I QUERY LOCK *var* result:

Explanation: This message contains information about query lock.

System action: Processing continues.

User response: No action is required.

BKR8982E NAMEFIND return code *rc* accessing BKRUSERS NAMES *; assuming user *userid* is not a worker task SVM.

Explanation: An error occurred while attempting to access the `BKRUSER NAMES` file.

System action: Processing continues.

User response: If the problem persists, contact your system programmer or IBM Software Support.

BKR8983T EXECIO return code *rc* reading job stream; abending.

Explanation: An error occurred while reading the job stream.

System action: Processing ends.

User response: If the problem persists, contact your system programmer or IBM Software Support.

BKR8984W DUMPEDF rc *rc* while processing backup of *ownerid vdev* File system error(s) encountered during EDF backup; retrying as DASD image backup.

Explanation: A CMS file system error was detected during a file-level minidisk backup. *rc* is the DUMPEDF return code. The affected minidisk is identified by *ownerid vdev*.

System action: The backup operation is tried again as a DASD image backup (either ECKD track image or FBA-512 block image, depending on device type). Prior to this message, DUMPEDF might issue additional messages which provide more details about error condition encountered during file-level backup.

User response: No action is required. Error recovery processing attempts a low-level DASD image backup of the affected minidisk. This condition indicates the CMS file system on the affected minidisk suffered logical damage. The steps required to resolve the problem vary according to the nature and extent of corruption of the minidisk file system. If you cannot resolve the problem, contact IBM Software Support for guidance.

BKR8985T **Unrecognized statement in job stream at record** *record_id***. The offending record is:** *record_name***. An abend is being forced.**

Explanation: An error occurred because of an unrecognized statement in the job stream at the indicated record ID.

System action: Processing ends.

User response: If the problem persists, contact your system programmer or IBM Software Support.

BKR8986T **Return code** *rc* **processing job record** *record_id1***. The problem record is:** *record_id2***. An abend is being forced.**

Explanation: An error occurred while processing the specified job record.

System action: Processing continues.

User response: If the problem persists, contact your system programmer or IBM Software Support.

BKR8987T **Malformed job stream; no EOJ record encountered.**

Explanation: An error occurred because no end-of-job record was encountered.

System action: Processing continues.

User response: If the problem persists, contact your system programmer or IBM Software Support.

BKR8988W **BKR_JOB_TAPE_RETENTION does not match BKR_JOB_CATALOG_RETENTION. Expiration date in tape VOL1 label(s) may be inconsistent with backup catalog retention period.**

Explanation: A warning was issued because there is an inconsistency with the tape label and catalog retention period.

System action: Processing continues.

User response: No action is required.

BKR8989T **Fatal runtime error; CSL routine DMSCSR return code** *rc* **encountered while attempting to set variable** *var* **to value** *value***.**

Explanation: An unrecoverable runtime error occurred.

System action: Processing continues.

User response: If the problem persists, contact your system programmer or IBM Software Support.

BKR8990E **DUMPEDF statement syntax error; BKR_EDF_METHOD is not set to "$$DRIVER$$".**

Explanation: An error occurred from a DUMPEDF statement syntax error.

System action: Processing continues.

User response: Correct the syntax and try again.

BKR8991E **DUMPEDF statement syntax error; BKR_JOB_CMS_FILEMASK is not set to "$$FMASK$$".**

Explanation: An error occurred from a DUMPEDF statement syntax error.

System action: Processing continues.

User response: Correct the syntax and try again.

BKR8992E **DUMPEDF statement syntax error; Unsupported value** *value* **specified for BKR_EDF_METHOD.**

Explanation: An error occurred due to a DUMPEDF statement syntax error.

System action: Processing continues.

User response: Correct the syntax error and try again. Valid values for BKR_EDF_METHOD are CMSFILE, IBMTAPE, or IBMTWIN.

BKR8993T **Limit of 999,999 objects per backup to minidisk exceeded; abending.**

Explanation: An error occurred because the limit of backup objects was exceeded.

System action: Processing ends.

User response: If the problem persists, contact your system programmer or IBM Software Support.

BKR8994W **Disk pool** *diskpool* **unavailable or depleted; pick return code was** *pick_rc***. Unable to obtain pool object with at least** *blocks* **4K blocks available.**

Explanation: The specified DISKPOOL has no available minidisks or SFS directories with *blocks* 4K blocks of free space available. The affected backup operation cannot be performed because there are no available DASD resources with sufficient free space.

System action: If the associated job template specifies BKR_Job_Tolerate_DiskPool_Depletion = 1, backup of the associated resource is skipped. Otherwise, the backup job ends.

User response: DISKPOOL resources are reclaimed from expired job instances during BKRCATLG processing of an EXPIRE (PURGE operation. If an

EXPIRE (PURGE operation does not free sufficient space from the DISKPOOL resources, consider provisioning additional DASD space for the DISKPOOL or converting the backup job to a tape-based output method.

BKR8995T Unable to insert location info into catalog granule; abending.

Explanation: An error occurred while attempting to insert location information into catalog granule.

System action: Processing ends.

User response: If the problem persists, contact your system programmer or IBM Software Support.

BKR8996E DUMPSFS statement syntax error; BKR_SFS_METHOD is not set to "$$DRIVER$$".

Explanation: An error occurred from a DUMPSFS statement syntax error.

System action: Processing continues.

User response: Correct the syntax error and try again.

BKR8997E DUMPSFS statement syntax error; BKR_JOB_CMS_FILEMASK is not set to "$$FMASK$$".

Explanation: An error occurred from a DUMPSFS statement syntax error.

System action: Processing continues.

User response: Correct the syntax error and try again.

BKR8998E DUMPSFS statement syntax error; Unsupported value *value* specified for BKR_SFS_METHOD.

Explanation: An error occurred from a DUMPSFS statement syntax error.

System action: Processing continues.

User response: Correct the syntax error and try again.

BKR8999E DUMPSFS statement syntax error; BKR_JOB_SFS_PATHMASK is not set to "$$PMASK$$".

Explanation: An error occurred from a DUMPSFS statement syntax error.

System action: Processing continues.

User response: Correct the syntax error and try again.

BKR9000W Skipping SFS backup of *var1:var2.*; worker task needs FILEPOOL ADMIN privileges.

Explanation: A warning was issued because the SFS backup is being skipped.

System action: Processing continues.

User response: Give the worker task FILEPOOL ADMIN privileges.

BKR9001E DUMPCKD statement syntax error; BKR_CKD_METHOD is not set to "$$DRIVER$$".

Explanation: An error occurred from a DUMPCKD statement syntax error.

System action: Processing continues.

User response: Correct the syntax error and try again.

BKR9002E DUMPCKD statement syntax error; Unsupported value *value* specified for BKR_CKD_METHOD.

Explanation: An error occurred from a DUMPCKD statement syntax error.

System action: Processing continues.

User response: Valid values for the BKR_CKD_METHOD parameter are CMSFILE, IBMTAPE, or IBMTWIN. See the *IBM Backup and Restore Manager for z/VM User's Guide (SC18-9523)* for more information. Correct the syntax error and try again.

BKR9003I Initiating restore task *task*.

Explanation: This message contains information about the indicated task.

System action: Processing continues.

User response: No action is required.

BKR9004I RELOAD return code *rc*.

Explanation: This message contains return code information about RELOAD.

System action: Processing continues.

User response: No action is required.

BKR9005I Executing CP command *command*.

Explanation: This message contains information about the CP command.

System action: Processing continues.

User response: No action is required.

BKR9006I CP return code *rc*.

Explanation: This message contains return code information for CP.

System action: Processing continues.

User response: No action is required.

BKR9007W Dump task completed with return code *rc*; attempting recovery.

Explanation: This message is issued because the dump task completed with the specified return code.

System action: Processing continues.

User response: No action is required.

BKR9008T Return code *rc* from QUERY ACCESSED *var*; abending.

Explanation: An error occurred from QUERY ACCESSED.

System action: Processing ends.

User response: If the problem persists, contact your system programmer or IBM Software Support.

BKR9009T BKRCFL return code *rc* during error recovery; abending.

Explanation: An error occurred during error recovery.

System action: Processing ends.

User response: If the problem persists, contact your system programmer or IBM Software Support.

BKR9010T ACCESS return code *rc* during error recovery; abending.

Explanation: An error occurred during error recovery.

System action: Processing continues.

User response: If the problem persists, contact your system programmer or IBM Software Support.

BKR9011I Job name: *job_name*, instance identifier *instance_id* starting at *var1* on *var2*. Job owner: *owner_id*. Master backup server: *server_name*; worker virtual machine *machine_id*. Job token value is *value*.

Explanation: This message contains information about the backup job.

System action: Processing continues.

User response: No action is required.

BKR9012I Catalog content creation is enabled. Catalog content will be delivered to backup catalog server *svm_name*. Temporary catalog granule data will be generated in CMS file *filename filetype fm*.

Explanation: The backup job that is associated with this message is configured to generate data which is added to the backup catalog file space. The CMS file *filename filetype fm* identifies the destination file ID for catalog information created during backup creation. This file is passed to the master backup catalog service virtual machine (*svm_name*, normally BKRCATLG) upon successful completion of each backup task.

System action: Processing continues.

User response: No action is required.

BKR9013W WARNING: Catalog content creation is disabled. Retain this listing for job history.

Explanation: This warning message is issued because catalog content was disabled.

System action: Processing continues.

User response: No action is required.

BKR9014I Job completed at *var1* on *var2*.

Explanation: This message contains information about the completed job.

System action: Processing continues.

User response: No action is required.

BKR9015T Data length of EOF1 / HDR1 records is not 80 bytes.

Explanation: An error occurred because the data length of records is not 80 bytes.

System action: Processing ends.

User response: If the problem persists, contact your system programmer or IBM Software Support.

BKR9016E Return code *rc* from processing of BKRSYSTM CONFIG *; unable to continue.

Explanation: An error occurred while processing `BKRSYSTM CONFIG`. Processing of the file cannot continue.

System action: Processing continues.

User response: If the problem persists, contact your system programmer or IBM Software Support.

BKR9017E **Incorrectly formatted catalogspec** *spec***.**

Explanation: An error occurred because the catalogspec was incorrectly formatted.

System action: Processing continues.

User response: If the problem persists, contact your system programmer or IBM Software Support.

BKR9018E **Unrecognized source data type** *type***; valid types are** *list of types***.**

Explanation: An error occurred because of an unrecognized source data type.

System action: Processing continues.

User response: If the problem persists, contact your system programmer or IBM Software Support.

BKR9019E **Unrecognized destination data type** *type***; valid types are** *list of types***.**

Explanation: An error occurred because of an unrecognized destination data type.

System action: Processing continues.

User response: If the problem persists, contact your system programmer or IBM Software Support.

BKR9020E **Invalid data location qualifier** *qual_name* **for minidisk source data type.**

Explanation: An error occurred because of an invalid data location qualifier for the minidisk source data type.

System action: Processing continues.

User response: If the problem persists, contact your system programmer or IBM Software Support.

BKR9021E **Unable to locate JOBCAT entry; return code** *rc***. Target catalog path:** *path_name***.**

Explanation: An error occurred while attempting to locate JOBCAT entry.

System action: Processing continues.

User response: If the problem persists, contact your system programmer or IBM Software Support.

BKR9022T **ABEND processing invoked via BKREXI01 during requester-to-source validation.**

Explanation: An error occurred during the attempt to invoke abend processing using BKREXI01.

System action: Processing ends.

User response: If the problem persists, contact your system programmer or IBM Software Support.

BKR9023W **WARNING: Unsupported return code** *rc* **from BKREXI01 EXEC. The request is being processed with default access controls.**

Explanation: A warning was issued with a return code from BKREXI01.

System action: Processing continues.

User response: No action is required.

BKR9024W **Requesting user** *userid* **is not allowed access to backup content for owner** *ownerid***.**

Explanation: This warning message is issued because the specified user is not allowed access to backup content for the specified owner.

System action: Processing continues.

User response: No action is required.

BKR9025W **Requesting user** *userid* **is not allowed access to restore destination** *var2 var3 var4***.**

Explanation: This warning message is issued because the requesting user is not allowed access to the indicated restore destination.

System action: Processing continues.

User response: No action is required.

BKR9026E **Return code** *rc* **writing RESTORE JOB to work area.**

Explanation: An error occurred while attempting to write RESTORE JOB to a work area.

System action: Processing continues.

User response: If the problem persists, contact your system programmer or IBM Software Support.

BKR9027E **NAMEFIND return code** *rc* **while enumerating WORKERs.**

Explanation: An error occurred while enumerating workers.

System action: Processing continues.

User response: If the problem persists, contact your system programmer or IBM Software Support.

BKR9028E **No WORKERs defined in BKRUSERS NAMES *.**

Explanation: An error occurred because no worker service virtual machines were defined in the `BKRUSERS NAMES` file.

System action: Processing continues.

User response: See "Copying and customizing the BKRUSERS NAMES file" on page 22 for information about defining worker service virtual machines. If the problem persists, contact your system programmer or IBM Software Support.

BKR9029I Sending RESTORE request *reqid* to worker task *taskid*.

Explanation: This message provides information about the RESTORE request.

System action: Processing continues.

User response: No action is required.

BKR9030E SENDFILE return code *rc*; during RESTORE submission.

Explanation: An error occurred during RESTORE submission.

System action: Processing continues.

User response: If the problem persists, contact your system programmer or IBM Software Support.

BKR9031E Return code *rc*; from attempt to XAUTOLOG worker task *taskid*. CP response was *response*.

Explanation: An error occurred from an attempt to use the XAUTOLOG command to start the indicated worker task.

System action: Processing continues.

User response: If the problem persists, contact your system programmer or IBM Software Support.

BKR9032E Return code *rc*; from Process_Config_File.

Explanation: An error occurred with the specified return code.

System action: Processing continues.

User response: If the problem persists, contact your system programmer or IBM Software Support.

BKR9033E CatalogPool has not been defined in BKRSYSTM CONFIG.

Explanation: An error occurred because the **CatalogPool** parameter was not defined in the BKRSYSTM CONFIG file.

System action: Processing continues.

User response: Define the **CatalogPool** parameter in the BKRSYSTM CONFIG file. See"Backup catalog parameters" on page 152 for more information.

BKR9034E CatalogSpace has not been defined in BKRSYSTM CONFIG.

Explanation: An error occurred because the **CatalogSpace** parameter was not defined in the BKRSYSTM CONFIG file.

System action: Processing continues.

User response: Define the **CatalogSpace** parameter in the BKRSYSTM CONFIG file. For more information, see"Backup catalog parameters" on page 152.

BKR9035E EXECIO return code *rc*; while extracting GRANCTNR entry from file *file*.

Explanation: An error occurred while extracting GRANCTNR entry from the specified file.

System action: Processing continues.

User response: If the problem persists, contact your system programmer or IBM Software Support.

BKR9036E Catalog metadata error; malformed GRANJOB record.

Explanation: A catalog metadata error occurred.

System action: Processing continues.

User response: If the problem persists, contact your system programmer or IBM Software Support.

BKR9037E Catalog metadata error; malformed GRANCTNR record.

Explanation: A catalog metadata error occurred.

System action: Processing continues.

User response: If the problem persists, contact your system programmer or IBM Software Support.

BKR9038E Catalog metadata error; malformed INITILZ record.

Explanation: A catalog metadata error occurred.

System action: Processing continues.

User response: If the problem persists, contact your system programmer or IBM Software Support.

BKR9039E Catalog metadata error; malformed CTNRDATA record.

Explanation: A catalog metadata error occurred.

System action: Processing continues.

User response: If the problem persists, contact your system programmer or IBM Software Support.

BKR9040E **Catalog metadata error; metadata version mismatch in GRANJOB record.**

Explanation: A catalog metadata error occurred.

System action: Processing continues.

User response: If the problem persists, contact your system programmer or IBM Software Support.

BKR9041E **Catalog metadata error; metadata version mismatch in GRANJOB/INITILZ record.**

Explanation: A catalog metadata error occurred.

System action: Processing continues.

User response: If the problem persists, contact your system programmer or IBM Software Support.

BKR9042E **Catalog metadata error; metadata version mismatch in GRANCTNR record.**

Explanation: A catalog metadata error occurred.

System action: Processing continues.

User response: If the problem persists, contact your system programmer or IBM Software Support.

BKR9043E **Catalog metadata error; metadata version mismatch in GRANCTNR/CTNRDATA record.**

Explanation: A catalog metadata error occurred.

System action: Processing continues.

User response: If the problem persists, contact your system programmer or IBM Software Support.

BKR9044I **Adding SFS Filespace:** *var1:var2.*

Explanation: This message contains information about the added SFS file space.

System action: Processing continues.

User response: No action is required.

BKR9045W **WARNING: Catalog branch** *branchname* **already exists. Granule contents will be replaced.**

Explanation: This warning message is issued because the catalog branch already exists.

System action: Processing continues.

User response: No action is required.

BKR9046I **Adding CKD Minidisk entry --- Real Volume:** *vol_name* **--- Start / Size:** *start* **/** *number for size* **--- Owner - VDEV:** *ownerid* **-** *var***.**

Explanation: This message contains information about the added CKD minidisk entry.

System action: Processing continues.

User response: No action is required.

BKR9047I **Adding EDF Minidisk entry --- Real Volume:** *vol_name* **--- Start / Size:** *start* **/** *number for size* **--- Owner - VDEV:** *ownerid* **-** *var***.**

Explanation: This message contains information about the added EDF minidisk entry.

System action: Processing continues.

User response: No action is required.

BKR9048E **Unrecognized container type - Granule has not been added to catalog.**

Explanation: An error occurred and the granule was not added to the catalog.

System action: Processing continues.

User response: If the problem persists, contact your system programmer or IBM Software Support.

BKR9049E **Return code** *rc***; from CREATE ALIAS. Base path:** *path_name1* **Alias path:** *path_name2* **Catalog entry creation failure.**

Explanation: An error occurred while attempting to CREATE ALIAS.

System action: Processing continues.

User response: If the problem persists, contact your system programmer or IBM Software Support.

BKR9050E **GRANT return code** *rc***; while attempting to give** *userid* **USERCAT access.**

Explanation: An error occurred while attempting to give the specified user USERCAT access.

System action: Processing continues.

User response: If the problem persists, contact your system programmer or IBM Software Support.

BKR9051E **Return code *rc*; on attempt to create USERCAT branch; Related JOBCAT branch: *branch_name*.**

Explanation: An error occurred while attempting to create USERCAT branch.

System action: Processing continues.

User response: If the problem persists, contact your system programmer or IBM Software Support.

BKR9052E **Return code *rc*; on attempt to create SFSCAT branch; Related JOBCAT branch: *branch_name*.**

Explanation: An error occurred while attempting to create SFSCAT branch.

System action: Processing continues.

User response: If the problem persists, contact your system programmer or IBM Software Support.

BKR9053E **Return code *rc*; on attempt to create DIRCONTROL directory *directory*; Catalog entry creation failure.**

Explanation: An error occurred while attempting to create the specified DIRCONTROL directory.

System action: Processing continues.

User response: If the problem persists, contact your system programmer or IBM Software Support.

BKR9054E **Return code *rc*; on attempt to create FILECONTROL directory *directory*; Catalog entry creation failure.**

Explanation: An error occurred while attempting to create the specified `FILECONTROL` directory.

System action: Processing continues.

User response: If the problem persists, contact your system programmer or IBM Software Support.

BKR9055E **ACCESS return code *rc*; on attempt to access *var* in R/W mode. Catalog entry creation failure.**

Explanation: An error occurred while attempting to access the specified item in R/W mode.

System action: Processing continues.

User response: If the problem persists, contact your system programmer or IBM Software Support.

BKR9056W **A catalog entry already exists at location *location*; The old entry will be replaced.**

Explanation: This warning message is issued because the catalog entry already exists.

System action: Processing continues.

User response: No action is required.

BKR9057E **COPYFILE return code *rc*; during replacement of granule at *var*; Catalog entry creation failure.**

Explanation: An error occurred while creating a catalog entry.

System action: Processing continues.

User response: If the problem persists, contact your system programmer or IBM Software Support.

BKR9058W **GRANT return code *rc*; giving *var* access to JOBCAT entry: *entry*.**

Explanation: This warning message is issued during access to JOBCAT entry.

System action: Processing continues.

User response: No action is required.

BKR9059E **CatalogPool has not been defined in BKRSYSTM CONFIG.**

Explanation: An error occurred because the **`CatalogPool`** parameter was not defined in the `BKRSYSTM CONFIG` file.

System action: Processing continues.

User response: Specify a value for **`CatalogPool`**. For more information, see"Backup catalog parameters" on page 152. If the problem persists, contact your system programmer or IBM Software Support.

BKR9060E **CatalogSpace has not been defined in BKRSYSTM CONFIG.**

Explanation: An error occurred because the **`CatalogSpace`** parameter was not defined in the `BKRSYSTM CONFIG` file.

System action: Processing continues.

User response: For more information, see "Backup catalog parameters" on page 152. If the problem persists, contact your system programmer or IBM Software Support.

BKR9061E Local_Backup_Master_ID has not been defined in BKRSYSTM CONFIG.

Explanation: An error occurred because the **Local_Backup_Master_ID** parameter was not defined.

System action: Processing continues.

User response: For more information, see "Service virtual machine parameters" on page 147. If the problem persists, contact your system programmer or IBM Software Support.

BKR9062E Routine CATSRVR should only be executed by the backup catalog server.

Explanation: An error occurred because an entity other than the backup catalog server attempted to run CATSRVER.

System action: Processing continues.

User response: If the problem persists, contact your system programmer or IBM Software Support.

BKR9063E BKRSYSTM CONFIG * identifies user ID *userid* as the backup catalog server.

Explanation: An error occurred. The specified user ID is identified as the backup catalog server.

System action: Processing continues.

User response: If the problem persists, contact your system programmer or IBM Software Support.

BKR9064I Catalog Server: Entering processing loop at *var*.

Explanation: A processing loop was entered as specified.

System action: Processing continues.

User response: No action is required.

BKR9065W Rejecting command SET *var1* from *var2 var3*.

Explanation: This message indicates the specified **SET** command was rejected.

System action: Processing continues.

User response: No action is required.

BKR9066I Processing command SET *var1* from *var2 var3*.

Explanation: This message contains information about the **SET** command.

System action: Processing continues.

User response: No action is required.

BKR9067W Rejecting command QUERY *var1* from *var2 var3*.

Explanation: This message indicates the **QUERY** command was rejected.

System action: Processing continues.

User response: No action is required.

BKR9068I Processing command QUERY *var1* from *var2 var3*.

Explanation: This message contains information about the processed **QUERY** command.

System action: Processing continues.

User response: No action is required.

BKR9069W Rejecting command EXPIRE *var1* from *var2 var3*.

Explanation: This message indicates the **EXPIRE** command was rejected.

System action: Processing continues.

User response: No action is required.

BKR9070I Processing command EXPIRE *var1* from *var2 var3*.

Explanation: This message contains information about the processed **EXPIRE** command.

System action: Processing continues.

User response: No action is required.

BKR9071W Bypassing MEDIACAT housekeeping check because one or more worker task SVMs are active.

Explanation: This message indicates one or more worker task service virtual machines are active and a MEDIACAT housekeeping check was bypassed.

System action: Processing continues.

User response: No action is required.

BKR9072E Rejecting spool file *file* from *var* (failed WORKER origin test).

Explanation: An error occurred because the specified spool file was rejected.

System action: Processing continues.

User response: If the problem persists, contact your system programmer or IBM Software Support.

BKR9073E Rejecting spool file *file* from *var* (class is not "G").

Explanation: An error occurred because the specified spool file was rejected.

System action: Processing continues.

User response: If the problem persists, contact your system programmer or IBM Software Support.

BKR9074E Rejecting spool file *file* from *var* (filetype is not "GRANULE").

Explanation: An error occurred because the specified spool file was rejected.

System action: Processing continues.

User response: If the problem persists, contact your system programmer or IBM Software Support.

BKR9075S RECEIVE return code *rc*; while loading catalog entry to work area. Catalog processing cannot continue.

Explanation: Message BKR9075S is issued when BKRCATLG encounters an unrecoverable I/O error from a RECEIVE of new catalog data to the temporary work space of BKRCATLG. This event can occur if there is insufficient free DASD space for the temporary work area. If SFS resources are used for the temporary work area, this event can occur if the SFS file pool server for the temporary work area or the backup catalog file space encounters a resource constraint or becomes unavailable.

System action: The backup catalog service virtual machine (BKRCATLG) ends with a nonzero return code.

User response: Look in the file pool server console log for additional information. Contact your system programmer or IBM Software Support.

BKR9076I Received file *file* from worker *workid*; Adding granule to catalog structure now.

Explanation: This message contains information about the received file.

System action: Processing continues.

User response: No action is required.

BKR9077S Return code *rc*; from BUILDCAT EXEC; Catalog processing cannot continue.

Explanation: Message BKR9077S is issued when BUILDCAT encounters an unrecoverable I/O error while attempting to add a new catalog entry to the backup catalog file space. This event can occur if the SFS file pool server for the backup catalog file space encounters a resource constraint or becomes unavailable.

System action: The affected service virtual machine (BKRCATLG or BKRWRK*nn*) ends with a nonzero return code.

User response: Look in the file pool server console log for additional information. Contact your system programmer or IBM Software Support.

BKR9078E Local_Backup_Master_ID has not been defined in BKRSYSTM CONFIG.

Explanation: An error occurred because **`Local_Backup_Master_ID`** was not defined.

System action: Processing continues.

User response: Define a value for **`Local_Backup_Master_ID`**. For more information, see "Service virtual machine parameters" on page 147.

BKR9079E Worker_Idle_Timeout has not been defined in BKRSYSTM CONFIG.

Explanation: An error occurred because **`Worker_Idle_Timeout`** was not defined.

System action: Processing continues.

User response: Define a value for **`Worker_Idle_Timeout`**. For more information, see "Worker service virtual machine parameters" on page 147.

BKR9080I Catalog Server: Entering processing loop at *var*. Idle timeout is set to *time*.

Explanation: This message contains information about the catalog server.

System action: Processing continues.

User response: No action is required.

BKR9081I Idle timeout limit of *time* reached; logging off.

Explanation: This message contains information about the idle timeout limit.

System action: Processing continues.

User response: No action is required.

BKR9082W Worker *workerid* automatically clearing PAUSE signal; no jobs being processed at present time.

Explanation: This warning message was issued because no jobs are being processed.

System action: Processing continues.

User response: No action is required.

BKR9083I **CatalogPool:** *poolname***; CatalogSpace:** *spacename***.**

Explanation: This message contains information about the CatalogPool and CatalogSpace.

System action: Processing continues.

User response: No action is required.

BKR9084E **Catalog job root** *rootid* **does not exist.**

Explanation: An error occurred because the specified catalog job root does not exist.

System action: Processing continues.

User response: If the problem persists, contact your system programmer or IBM Software Support.

BKR9085E **Catalog job instance** *instance* **does not exist.**

Explanation: An error occurred because the specified catalog job instance does not exist.

System action: Processing continues.

User response: If the problem persists, contact your system programmer or IBM Software Support.

BKR9086I **Instance root** *root* **contains data for** *var* **owner(s).**

Explanation: This message contains information about the instance root and its owners.

System action: Processing continues.

User response: No action is required.

BKR9087I **Owner** *ownerid* **has** *var* **container types in this catalog branch.**

Explanation: This message contains information about an owner and the number of container types it possess in the catalog branch.

System action: Processing continues.

User response: No action is required.

BKR9088I **For owner** *ownerid***, found** *var2 var3* **containers.**

Explanation: This message indicates the containers that were found for the specified owner ID.

System action: Processing continues.

User response: No action is required.

BKR9089I **Pruning related ExtentCat entries for volume** *volid***.**

Explanation: This message contains information about pruning related ExtentCat entries for the specified volume.

System action: Processing continues.

User response: No action is required.

BKR9090I **No MEDIACAT entries exist for instance** *instance* **of job** *job name***.**

Explanation: This message contains information about MEDIACAT entries for the specified instance and job.

System action: Processing continues.

User response: No action is required.

BKR9091W **WARNING: External Tape Manager is enabled, but TAPCMD MODULE * is not available. Catalog contents will be deleted, but associated tape volumes cannot be expired.**

Explanation: This warning message is issued to provide information about the External Tape Manager.

System action: Processing continues.

User response: No action is required.

BKR9092E **DMSEXIST return code** *rc***; reason** *reason* **validating** *var***.**

Explanation: An error occurred from DMSEXIST.

System action: Processing continues.

User response: If the problem persists, contact your system programmer or IBM Software Support.

BKR9093E **Prune_Catalog invoked with incorrectly formatted target JobCat branch; Problem parameter:** *parm***.**

Explanation: An error occurred because Prune_Catalog was invoked with an incorrectly formatted target JobCat branch.

System action: Processing continues.

User response: If the problem persists, contact your system programmer or IBM Software Support.

BKR9094E **No available filemode to access** *filemode***.**

Explanation: An error occurred while attempting to access an unavailable filemode.

System action: Processing continues.

User response: If the problem persists, contact your system programmer or IBM Software Support.

BKR9095E **Unable to access** *file* **as filemode** *mode***.**

Explanation: An error occurred while attempting to access the specified file with the specified filemode.

System action: Processing continues.

User response: Use an available filemode and try again.

BKR9096E **Return code** *rc***; from STATE CATALOG GRANULE** *granule***.**

Explanation: An error occurred with the indicated return code.

System action: Processing continues.

User response: If the problem persists, contact your system programmer or IBM Software Support.

BKR9097I **Job summary: *** Job Name / Instance:** *job instance* ***** Backup Time:** *time* **(Local zone) *** Source data:** *data***.**

Explanation: This message contains job summary information.

System action: Processing continues.

User response: No action is required.

BKR9098I **Original backup data type was CMS EDF minidisk: *** Owner, vdev:** *owner vdev* ***** EDF Blocksize:** *size* **of** *n* **blocks in use. *** Minidisk label:** *label* ******* *n* **of** *n* **cylinders formatted.**

Explanation: This message contains backup information about the CMS EDF format minidisk.

System action: Processing continues.

User response: No action is required.

BKR9099I ***** "(RECOMP"** *var* **in effect for this minidisk.**

Explanation: This message contains information about the minidisk.

System action: Processing continues.

User response: No action is required.

BKR9100I **Original backup data type was CKD track-image: *** Owner, vdev:** *owner vdev* ***** CKD minidisk (***n-n***);** *n* **cylinders. ***** *n* **tracks per cylinder. ***** *n* **total tracks in backup image. *** Source CU type is** *type***.**

Explanation: This message contains information about the this CKD backup.

System action: Processing continues.

User response: No action is required.

BKR9101I **Original backup data type was CMS SFS filespace: *** Pool Owner =** *var1:var2* ***** Storage group:** *var3***;** *var4* **blocks of** *var5* **in use. *** Warning threshold:** *var6* **%.**

Explanation: This message contains information about this CMS SFS file space.

System action: Processing continues.

User response: No action is required.

BKR9102W *nn* **minidisks were selected by INCLUDE/EXCLUDE processing but could not be CP LINKed.**

Explanation: The specified minidisks could not be CP LINKed.

System action: Processing continues.

User response: No action is required.

BKR9103I **Instance number** *nn* **for job** *job* **is being restarted.**

Explanation: This message contains information about a job restart.

System action: Processing continues.

User response: No action is required.

BKR9104E **EXECIO return code** *rc***; while obtaining instance number for job** *job***.**

Explanation: An error occurred while obtaining instance number for the specified job.

System action: Processing continues.

User response: If the problem persists, contact your system programmer or IBM Software Support.

BKR9105E **DMSQLIMU return code** *rc***; reason** *reason* **on catalog free space check.**

Explanation: An error occurred while attempting a catalog free space check.

System action: Processing continues.

User response: If the problem persists, contact your system programmer or IBM Software Support.

BKR9106E **Insufficient catalog free space (***space***) to contain new granule (***granule***). Please increase the size of the catalog filespace and restart the catalog server.**

Explanation: An error occurred because of insufficient catalog free space.

System action: Processing continues.

User response: Increase the file space and restart the catalog server.

BKR9107E New catalog entry will occupy *nn* 4K blocks of catalog storage.

Explanation: An error occurred. The new catalog entry will occupy the specified number of 4K blocks of storage space.

System action: Processing continues.

User response: If the problem persists, contact your system programmer or IBM Software Support.

BKR9108E DMSGETWU return code *rc*; reason *reason*, during freespace check.

Explanation: An error occurred while attempting a freespace check.

System action: Processing continues.

User response: If the problem persists, contact your system programmer or IBM Software Support.

BKR9109E DMSPUSWU return code *rc*; reason *reason*, during freespace check.

Explanation: An error occurred while attempting a freespace check.

System action: Processing continues.

User response: If the problem persists, contact your system programmer or IBM Software Support.

BKR9110E DMSPOPWU return code *rc*; reason *reason*, during freespace check.

Explanation: An error occurred while attempting a freespace check.

System action: Processing continues.

User response: If the problem persists, contact your system programmer or IBM Software Support.

BKR9111E Invalid numeric character in BKR_DDL_RECORD_LIMIT (*value*).

Explanation: An error occurred because an invalid value was specified for BKR_DDL_RECORD_LIMIT.

System action: Processing continues.

User response: See the *IBM Backup and Restore Manager for z/VM User's Guide (SC18-9523)* for more information. If the problem persists, contact your system programmer or IBM Software Support.

BKR9112W Return code *rc* from NETDATA output handler during WRITE operation.

Explanation: This warning message was issued from the output handler during WRITE operation.

System action: Processing continues.

User response: No action is required.

BKR9113W Return code *rc* from NETDATA output handler during TERMINATE operation.

Explanation: A warning message was issued from the output handler during a TERMINATE operation.

System action: Processing continues.

User response: No action is required.

BKR9114I Restore complete; *n* files delivered to spool destination.

Explanation: This message contains information about the restore operation.

System action: Processing continues.

User response: No action is required.

BKR9115I Invoking LOADDDL for SFS-to-RDR restore as NETDATA output...

Explanation: The restore operation from the LOADDDL routine was invoked.

System action: Processing continues.

User response: No action is required.

BKR9116I Invoking LOADDDL for EDF-to-RDR restore as NETDATA output...

Explanation: The restore operation from the LOADDDL routine was invoked.

System action: Processing continues.

User response: No action is required.

BKR9117W Spool output record limit reached for file; output has been flushed. Processing continues with next file.

Explanation: A warning was issued because the spool output record limit was reached.

System action: Processing continues.

User response: No action is required.

BKR9118I Starting restore of raw FBA dump; block range *n1* - *n2*.

Explanation: This message contains information about the restore operation.

System action: Processing continues.

User response: No action is required.

BKR9119I Source data is a FBA image dump for *var1 var2*.

Explanation: This message contains information about the image dump.

System action: Processing continues.

User response: No action is required.

BKR9120I Operation complete; *n* blocks restored to target extent.

Explanation: This message contains information about the restore operation.

System action: Processing continues.

User response: No action is required.

BKR9121I Target extent size **n* blks) is compatible with source data.

Explanation: This message contains information about the restore operation.

System action: Processing continues.

User response: No action is required.

BKR9122E Target extent has too few cylinders to contain source image.

Explanation: An error occurred during a restore operation because the target has too few cylinders.

System action: Processing continues.

User response: If the problem persists, contact your system programmer or IBM Software Support.

BKR9123E CTNRDATA is not flagged as FBA.

Explanation: The CTNRDATA was not flagged as FBA.

System action: Processing continues.

User response: If the problem persists, contact your system programmer or IBM Software Support.

BKR9124E Output handler refused FBA CTNRDATA, return code *rc*.

Explanation: The output handler refused FBA CTNRDATA.

System action: Processing continues.

User response: If the problem persists, contact your system programmer or IBM Software Support.

BKR9125E Catalog handler refused FBA CTNRDATA, return code *rc*.

Explanation: An error occurred from the catalog handler.

System action: Processing continues.

User response: If the problem persists, contact your system programmer or IBM Software Support.

BKR9126E BKRFBA return code *rc*; trying to read track *track*.

Explanation: An error occurred while trying to read the specified track.

System action: Processing continues.

User response: If the problem persists, contact your system programmer or IBM Software Support.

BKR9127I Sending PAUSE signal to worker *worker* (job *jobname*).

Explanation: Backup and Restore Manager is sending a PAUSE signal to the specified worker for the specified job.

System action: Processing continues.

User response: No action is required.

BKR9128I No workers for job *jobname* were found.

Explanation: During the processing of a **CANCEL**, **PAUSE**, or **RESUME** command, Backup and Restore Manager was unable to find workers that were processing the specified job.

System action: Processing continues.

User response: No action is required.

BKR9129I Syntax error in PAUSE command. Single worker: PAUSE *worker*. Multi-worker: PAUSE JOB *jobname*.

Explanation: Backup and Restore Manager for z/VM encountered an error occurred while trying to perform a PAUSE operation. The worker and job name where Backup and Restore Manager for z/VM encountered the problem are specified in this error message.

System action: Processing continues.

User response: If the problem persists, contact your system programmer or IBM Software Support.

BKR9130I Sending RESUME signal to worker *worker* **(job** *jobname***).**

Explanation: Backup and Restore Manager is sending a RESUME signal to the specified worker for the specified job.

System action: Processing continues.

User response: No action is required.

BKR9131I Canceling worker *worker* **(job** *jobname***).**

Explanation: Backup and Restore Manager is canceling the specified worker for the specified job.

System action: Processing continues.

User response: No action is required.

BKR9132I Queued work for worker *worker* **has been purged.**

Explanation: Backup and Restore Manager purged the queued work for the specified worker.

System action: Processing continues.

User response: No action is required.

BKR9133I Queued work for worker *worker* **has been retained.**

Explanation: Backup and Restore Manager retained queued work for the specified worker.

System action: Processing continues.

User response: No action is required.

BKR9134E FORMAT allowed/required values must be NO, YES or blank.

Explanation: An error occurred while trying to perform a **RESTORE** command operation. An invalid value was specified for the **RESTORE** command.

System action: Processing continues.

User response: Verify the **RESTORE** command syntax and issue the command again. See the *IBM Backup and Restore Manager for z/VM User's Guide (SC18-9523)* for more information.

BKR9135E When FORMAT required is YES, FORMAT allowed must also be YES.

Explanation: An error occurred while trying to perform a **RESTORE** command operation.

System action: Processing continues.

User response: Verify the **RESTORE** command syntax and issue the command again. See the *IBM Backup and Restore Manager for z/VM User's Guide (SC18-9523)* for more information.

BKR9136I Failed job owner, name and instance: *owner name* **/** *instance***.**

Explanation: An error occurred while a RESTORE operation was being processed. This message identifies the owner of the failed RESTORE job and the job name and instance.

System action: The RESTORE operation is stopped. No data was restored.

User response: This message is issued with additional diagnostic information. If it is not possible to take corrective action based on the supplied information, contact your system programmer or IBM Software Support.

BKR9137E User *userid* **does not exist.**

Explanation: A CP **LINK** command returned a "user does not exist" indication during **RESTORE** command processing.

System action: The **RESTORE** operation is stopped. No data was restored.

User response: Try the **RESTORE** command again, specifying a valid virtual machine name and user ID as the destination. See the *IBM Backup and Restore Manager for z/VM User's Guide (SC18-9523)* for more information.

BKR9138E Catalog entry is a *backup type* **backup, not a CMSFILE backup.**

Explanation: This message is issued during DISKPOOL media cleanup processing if a catalog entry associated with non-DISKPOOL backup data is encountered.

System action: Catalog expiration processing continues. The associated catalog content is removed.

User response: Review the catalog service virtual machine (BKRCATLG) console log for diagnostic data associated with this event. If the problem persists, contact your system programmer or IBM Software Support.

BKR9139E Invalid Loc_MDINFO *var* **encountered.**

Explanation: This message is issued with catalog expiration and DISKPOOL media cleanup processing. A catalog entry with invalid or damaged information was encountered.

System action: Expiration processing is stopped. The damaged catalog entry was left in place.

User response: Contact your system programmer or IBM Software Support.

BKR9140E Return code *rc* from ERASE *var2 var3*.

Explanation: This message is issued with catalog expiration and DISKPOOL media cleanup processing. The **ERASE** command exited with an unexpected return code when attempting to delete expired data from a DISKPOOL member.

System action: Expiration processing stops. The associated catalog entry is left in the backup catalog.

User response: If the associated DISKPOOL media is a CMS minidisk, this message can indicate damage to the file system on the involved DISKPOOL minidisk. If the associated DISKPOOL media is an SFS resource, the message can indicate issues with the SFS file pool server or a lack of sufficient SFS access privileges by the backup catalog service virtual machine (BKRCATLG).

Review the BKRCATLG console log for diagnostic information associated with this event. If the problem persists, contact your system programmer or IBM Software Support.

BKR9141W WARNING: Backup of *object* skipped due to insufficient free space in DISKPOOL *diskpool*. This object has not been backed up. Attempting to continue processing next object.

Explanation: Backup processing for the indicated minidisk or SFS file space cannot be performed. No available resources in the associated DISKPOOL have sufficient free space to contain the backup data.

System action: This message is issued during backup processing when `CONFIG BKR_Job_Tolerate_DISKPOOL_Depletion = Yes` is specified. Backup of the affected resource is skipped and processing continues with the next task in the backup job.

User response: Issue the BKRCATLG **EXPIRE (PURGE** command to remove expired content from the backup catalog and associated DISKPOOL media. If expiration processing does not relieve the free space constraint, consider adding resources to the associated DISKPOOL, or modifying data retention policies to relieve the free space constraint.

BKR9142W Unable to obtain WRITE access to a DISKPOOL member. Retry the EXPIRE operation once all DISKPOOL minidisks are free.

Explanation: The system was unable to obtain WRITE access to a DISKPOOL minidisk or directory during catalog expiration processing. When associated with a CMS minidisk in a DISKPOOL definition, this message usually indicates that another virtual machine has a link to the DISKPOOL member. When associated with an SFS DISKPOOL definition, this message can indicate a lack of sufficient SFS permission by the catalog service virtual machine (BKRCATLG) or unavailability of the SFS file pool.

System action: The associated catalog entries are left intact and expiration processing continues.

User response: Issue the EXPIRE (PURGE operation again after the DISKPOOL resource is available for access.

BKR9143W File *file* not found (ERASE rc *rc*). Catalog cleanup will continue.

Explanation: During EXPIRE (PURGE processing, DISKPOOL media cleanup processing attempted to erase an expired backup data file but the file was not found.

System action: A warning message is issued and expiration processing continues.

User response: Examine the BKRCATLG console log for additional diagnostic information that is associated with this situation. Since this message is issued during an attempt to delete expired information from a DISKPOOL member, the situation is considered non-fatal. However, a loss of synchronization between the backup catalog and a DISKPOOL member occurred. If the situation persists and no explanation for the loss of synchronization (such as replacement of a DISKPOOL member or intentional removal of data from a DISKPOOL member) exists, contact your system programmer or IBM Software Support.

BKR9144E Return code *rc* attempting to recover BKR_ACTUAL_DR_LABEL.

Explanation: The DDRTAPE output handler was unable to retrieve a value for **BKR_ACTUAL_DR_LABEL** from the REXX runtime environment.

System action: Initialization of the DDRTAPE backup operation ends.

User response: Contact your system programmer or IBM Software Support.

BKR9145I Output handler DDRTAPE initializing...

Explanation: The DDRTAPE output handler started initialization processing.

System action: Initialization processing continues.

User response: No action is required.

BKR9146E Internal error while decoding BKRRTRK buffer.

Explanation: The DDRTAPE output handler encountered unexpected data while processing the track image data returned from internal subroutine BKRRTRK.

System action: The backup operation stops.

User response: Contact your system programmer or IBM Software Support.

BKR9147E Non-standard home address / record zero encountered.

Explanation: A track image containing a non-standard home address or record zero was encountered during a DDRTAPE backup.

System action: The backup operation stops.

User response: Contact your system programmer or IBM Software Support.

BKR9148E Data length error encountered during THR creation.

Explanation: A logical inconsistency in track image data was encountered during DDRTAPE backup processing.

System action: The backup operation stops.

User response: Contact your system programmer or IBM Software Support.

BKR9149E BKRDRUMT exit return code *rc* on dismount operation.

Explanation: The DDR-mode tape dismount exit routine, BKRDRUMNT, completed with a non-zero return code.

System action: DUMPCKD termination processing completes, exiting with return code 20. Error recovery for the backup task is attempted and, if successful, the backup continues.

User response: Review the backup job log for additional diagnostic information. If the problem persists, contact your system programmer or IBM Software Support.

BKR9150I This backup job is configured to use the DDRTAPE output method. All DASD extents will be backed up in DDR format, and can only be restored via DDR. If this backup spans multiple tape volumes, the VOL1 labels for subsequent tapes will be overwritten, and tapes must be re-initialized after expiration.

Explanation: The associated backup job was configured to create backup tapes in DASD Dump Restore (DDR) format. This backup format does not support the use of Standard Label (SL) tapes.

System action: Processing continues.

User response: DDRTAPE-generated tapes might need to have a new VOL1 label applied before using them again.

BKR9151W Ignoring override of default tape pool; EUM Tape Manager handshaking is not enabled.

Explanation: The associated backup job was configured with tape pool override settings, but the `BKRSYSTM CONFIG` file indicates interaction with Tape Manager for z/VM is not active.

System action: Processing continues.

User response: Modify the settings in the `BKRSYSTM CONFIG` file to enable interaction with Tape Manager for z/VM. For more information, see "Configuring Backup and Restore Manager to work with Tape Manager for z/VM" on page 26.

BKR9152I A job-level tape pool owner value of *value* is now in effect.

Explanation: Interaction with Tape Manager for z/VM is enabled, and a job-level override of the associated Tape Pool owner was accepted.

System action: Processing continues.

User response: No action is required.

BKR9153I A job-level tape pool name value of *value* is now in effect.

Explanation: Interaction with Tape Manager for z/VM is enabled, and a job-level override of the associated Tape Pool name was accepted.

System action: Processing continues.

User response: No action is required.

BKR9154W EDF backup will be retried as an image backup; tape mount attempt is being re-driven.

Explanation: An error occurred during an attempt to perform a file-level backup of a CMS minidisk. Error recovery processing determined that a tape mount request must be issued again as part of the recovery process.

System action: Processing continues.

User response: Examine the associated minidisk to determine why the file-level backup was unsuccessful.

BKR9155W Skipping DUMPRDV *var1 var2*; CP DEFINE MDISK rc was *rc*.

Explanation: During processing of a DUMPRDV (Dump Real Device) directive in a backup job, the CP **`DEFINE MDISK`** command resulted in a non-zero return code.

System action: The associated real DASD volume is not backed up. Job processing attempts to continue with the next step of the backup job.

User response: Correct the situation based on the return code from CP **DEFINE MDISK**. This message usually indicates that the backup worker task virtual machine (BKRWRK*nn*) needs additional privileges to successfully issue the CP **DEFINE MDISK** command.

BKR9156W Image backup of *var1 var2* **suppressed by job configuration.**

Explanation: A backup job has the specification `CONFIG BKR_Job_Suppress_Image = Yes` in effect.

System action: A minidisk which is not formatted for use by CMS was encountered. The minidisk would normally be backed up as a DASD image, but the image backup operation was suppressed by job configuration settings.

User response: No action is required. Image backup suppression is intended for use in CMS file-level incremental backup operations. If the associated backup job is intended to process both CMS and non-CMS data, enable image backup processing by removing this configuration option, or setting the value to `No`.

BKR9157E Unable to generate unique filename/filetype for backup to DASD. Reason: *reason***.**

Explanation: An error occurred during an attempt to generate a unique CMS file name and file type for backup data created during a CMSFILE (DISKPOOL) backup.

System action: The backup job ends.

User response: Contact your system programmer or IBM Software Support.

BKR9158E Backups produced in DDRTAPE format can only be restored by CMS or stand-alone DDR.

Explanation: A **RESTORE** command was issued for a backup that was created by the DDRTAPE output handler. DDR-format backup data can only be restored by the CMS or stand-alone DASD Dump Restore (DDR) utility.

System action: The **RESTORE** command is rejected.

User response: DDR-format backup entries in the backup catalog are visible only to backup administrators. The catalog entries allow you to determine the tape volume and FSF offset for each DDR-format DASD image backup. These images can only be restored by the CMS or stand-alone DDR utility.

BKR9159E Return code *rc* **from BKRDREOV exit during End-Of-Volume processing.**

Explanation: A backup job using the DDRTAPE output handler encountered an abnormal return code from the BKRDREOV end-of-volume tape mount processing exit.

System action: The backup job ends.

User response: Examine the backup job log for additional diagnostic information. If the problem cannot be successfully resolved based on that information, contact your system programmer or IBM Software Support.

BKR9160E Invalid numeric data *data* **returned for BKR_CKD_EXTENTLIST.0.**

Explanation: A SELECT RDEVICE or SELECT RDEVVOL statement included a list of cylinder extents for backup, and an internal error occurred during efforts to decode the extent specifications.

System action: The backup job ends.

User response: Contact your system programmer or IBM Software Support.

BKR9161I Scanning DISKPOOL *diskpool* **for a volume with at least** *n* **4K blocks free.**

Explanation: A CMSFILE (DISKPOOL) backup job is being processed, and the job processing routine is attempting to obtain a resource from the indicated DISKPOOL with at least *n* 4096-byte blocks of free space available.

System action: Processing continues.

User response: No action is required.

BKR9162I DISKPOOL volume *volume* **has** *n* **4K blocks free.**

Explanation: DISKPOOL member selection is in process. Volume *volume* was inspected and has *n* 4096-byte blocks of free space available.

System action: Processing continues.

User response: No action is required.

BKR9163I Continuing backup with output to *var***.**

Explanation: DISKPOOL member selection identified a volume with sufficient free space for the current need.

System action: Backup processing continues with output directed to the volume indicated in this message.

User response: No action is required.

BKR9164W Extent processing disabled; the entire minidisk will be backed up.

Explanation: An error prevented a DDRTAPE backup job from fully retrieving a list of cylinder extents for the volume that is about to be backed up.

System action: Error recovery processing attempts to continue processing the entire volume for backup.

User response: Consider increasing the virtual machine size for the backup worker task (BKRWRK*nn*) virtual machines. If this action does not provide relief, contact your system programmer or IBM Software Support.

BKR9165E Non-numeric data *data* found in extent specification.

Explanation: A non-numeric value was found in an extent specification for a DDRTAPE backup job.

System action: The backup task stops. Job error recovery attempts to continue processing of the next step in the backup. The associated minidisk or DASD volume was not backed up.

User response: Examine the SELECT statement that caused the affected volume to be included for backup and correct the syntax of extent specifications.

BKR9166E Limit of 1022 entries in extent specification has been exceeded.

Explanation: More than 1,022 entries were specified for a minidisk or DASD volume included in a DDRTAPE backup job.

System action: The backup task stops. Error recovery processing attempts to continue the backup job with the next step. The associated minidisk or DASD volume was not backed up.

User response: Reduce the number of extent specifications for this volume.

BKR9167E Extent value *value* exceeds volume size.

Explanation: An extent specification in a SELECT statement exceeds the actual size of the minidisk or real DASD volume.

System action: The backup task stops. Error recovery processing attempts to continue the backup job with the next step. The associated minidisk or DASD volume was not backed up.

User response: Reduce the number of extent specifications for this volume.

BKR9168E No end value given for last extent pair.

Explanation: An extent specification in a SELECT statement omitted the ending value of an extent specification.

System action: The backup task stops. Error recovery processing attempts to continue the backup job with the next step. The associated minidisk or DASD volume was not backed up.

User response: Correct the extent specifications in the associated SELECT statement.

BKR9169E Extent value *value* is less than previous cylinder in range.

Explanation: An extent specification in a SELECT statement specified a cylinder value less than the starting offset.

System action: The backup task stops. Error recovery processing attempts to continue the backup job with the next step. The associated minidisk or DASD volume was not backed up.

User response: Correct the extent specifications in the associated SELECT statement.

BKR9170I Processing complete for *var* cylinder range *n1* - *n2*.

Explanation: A DDRTAPE backup successfully backed up cylinders *n1* to *n2* from the *var*.

System action: Processing continues.

User response: No action is required.

BKR9171E Invalid value *value* provided for boolean variable.

Explanation: A value that cannot be interpreted as TRUE or FALSE was specified for a logical (boolean) variable in a configuration setting.

Valid TRUE options are: 1, Y, YES, T, TRUE, ENABLE, ENABLED, ON (not case-sensitive).

Valid FALSE options are: 0, N, NO, F, FALSE, DISABLE, DISABLED, OFF (not case-sensitive).

System action: Processing of the associated job template or configuration file stops.

User response: Modify the job template or configuration file record and correct the syntax. See Chapter 6, “Job syntax,” on page 61 for more information.

BKR9172W **Unsupported value *value* specified for variable *var* in file *file*. Execution continues but later errors may result from this condition.**

Explanation: This message is generated when a validity check for contents of a job template or configuration file detect an out-of-range setting or data type mismatch.

System action: Processing of the associated file continues. Depending on the particular configuration setting, the operation might, or might not, be permitted to continue with default values in effect.

User response: Modify the problem job template or configuration file record and correct the setting to an acceptable value. See Chapter 6, "Job syntax," on page 61 for more information.

BKR9173E **Variable *var* in file *file1* must be defined as *file2*. The specified value, *value*, cannot be used.**

Explanation: The value specified for variable *var1* in file *file1* was not of the required data type (numeric, character, logical). The setting was encountered in file *file2* (a job template file or the `BKRSYSTM CONFIG` file). The invalid value is *value*.

System action: Processing is stopped because of the data type mismatch.

User response: Modify the record, specifying a value of correct data type.

BKR9174E **No value has been specified for variable *var* in file *file*.**

Explanation: Configuration setting *var* has no default value. Backup and Restore Manager expects a setting for *var* to be included in file *file* (a job template file or the `BKRSYSTM CONFIG` file).

System action: Processing continues.

User response: Add a configuration setting for the required variable.

BKR9175I **DASD volume label *label* contains SFS-incompatible characters. The label has been encoded as *var* for use in the backup catalog.**

Explanation: A real DASD volume label incorporating SFS-incompatible characters was encountered. To add catalog data for the minidisk being processed, the label data was encoded as a 12-digit hexadecimal value prior to insertion in the catalog.

System action: Processing continues.

User response: No action is required.

BKR9176W **WARNING: Return code *rc* while trying to decode *var*.**

Explanation: A real DASD volume label or virtual machine user ID containing SFS-incompatible characters was previously encoded for use in a backup catalog data structure. An attempt to decode the value failed. The return code displayed in the message is from the internal subroutine which handles the encode and decode operations.

System action: If error recovery is successful, processing continues. Otherwise, the affected operation might abend or produce unexpected results.

User response: Notify your system programmer or IBM Software Support.

BKR9177W **RESTART processing disabled; worker needs SFS ADMIN authority to catalog file space *filespace*.**

Explanation: A backup job is attempting to run restart or recovery procedures, but lacks the required SFS authority for the backup catalog file space.

System action: Processing continues, but restart or recovery for previous instances of the job is disabled.

User response: Ensure that the backup worker task service virtual machines (BKRWRK*nn*) have SFS ADMIN authority or equivalent ESM authorization for the backup catalog file space.

BKR9178W ***backup* incremental backup disabled; worker needs SFS ADMIN authority to catalog file space *filespace*.**

Explanation: An incremental backup of *backup* (SFS file space or minidisk) cannot be performed because the backup worker task service virtual machine (BKRWRK*nn*) does not have SFS ADMIN privileges for the backup catalog file space.

System action: The backup operation continues, but a full backup is performed instead of an incremental backup.

User response: Ensure that the backup worker task service virtual machines (BKRWRK*nn*) have SFS ADMIN authority or equivalent ESM authorization for the backup catalog file space.

BKR9179E **No DISKPOOL files matching *arg* were found.**

Explanation: A **`QUERY DISKPOOL`** command failed because no DISKPOOL files matching the selection argument *arg* were found.

System action: The **`QUERY DISKPOOL`** command ends.

User response: Specify a valid selection argument. Use "*" or omit to display results for all DISKPOOL files.

See "QUERY DISKPOOL" on page 93 for more information.

BKR9180I Processing *var1*...

Explanation: QUERY DISKPOOL is about to display information about minidisk and SFS resources listed in *filename* DISKPOOL *fm*.

System action: Processing continues. Information about each minidisk or SFS resource listed in the indicated DISKPOOL file is displayed.

User response: No action is required.

BKR9181E EXECIO return code *rc* reading *file*.

Explanation: The CMS **EXECIO** command exited with return code *rc* during an attempt to read contents of file *file*.

System action: The system action varies depending on context of the file read operation. Additional diagnostic data are displayed with this message.

User response: Examine the accompanying diagnostic information and attempt to determine why the indicated file could not be read. If you cannot resolve the situation, contact your system programmer or IBM Software Support.

BKR9182E CP LINK return code *rc* for DISKPOOL member *member*; skipping volume.

Explanation: The **QUERY DISKPOOL** command encountered return code *rc* during an attempt to inspect the minidisk volume *userid vdev*. The volume is not available for inspection.

System action: Processing continues with the next entry in the DISKPOOL file.

User response: Use the CP **LINK** return code and accompanying diagnostic information from the master backup service virtual machine (BKRBKUP) console log to determine why the volume was not available.

BKR9183E ACCESS return code *rc* for DISKPOOL member *member*; skipping volume.

Explanation: The **QUERY DISKPOOL** command encountered return code *rc* from the CMS **ACCESS** command during an attempt to inspect the indicated minidisk or directory.

System action: Processing continues with the next entry in the DISKPOOL file.

User response: Use the ACCESS return code and accompanying diagnostic information from the master backup service virtual machine (BKRBKUP) console log to determine why the operation failed.

BKR9184I *var1* volume *volume* contains *n* files, *n* free blocks.

Explanation: This messages summarizes the state of a single DISKPOOL volume.

System action: Processing continues.

User response: No action is required.

BKR9185I *diskpool* contains *n* total files and has *n* free blocks.

Explanation: This message summarizes the overall state of an entire DISKPOOL. The **QUERY DISKPOOL** command processed all individual volumes for the indicated DISKPOOL, and issues this message to summarize the total number of files and total free 4096-byte blocks available.

System action: Processing continues.

User response: No action is required.

BKR9186I Virtual machine ID *id* contains SFS-incompatible characters. The user ID has been encoded as *userid* for use in the backup catalog.

Explanation: During creation of a new backup catalog entry, a virtual machine name containing SFS-incompatible characters was encountered. The user ID is encoded as a 16-character hexadecimal value for use in catalog data structures.

System action: Processing continues.

User response: No action is required.

BKR9187E No automatically managed instances matching filter *filter* were found.

Explanation: The **QUERY INSTANCE** command was unable to locate automatically tracked instance data for job template names matching filter *filter*.

System action: The **QUERY INSTANCE** command ends.

User response: Issue the **QUERY INSTANCE** command again with a different job template name filter. Specify an asterisk or omit the filter parameter to display the current instance number for all of the job templates that have automatic instance tracking in effect.

BKR9188I Current instance for job *job* is set to *value*.

Explanation: The **QUERY INSTANCE** command issues this message to display the current instance value for a job template.

System action: Processing continues.

User response: No action is required.

BKR9189E Job name omitted.

Explanation: The **SET INSTANCE** command was issued, but the *jobname* parameter was omitted.

System action: The **SET INSTANCE** command ends.

User response: Issue the **SET INSTANCE** command with correct syntax. See "SET INSTANCE" on page 96 for more information.

BKR9190W Rejecting command SET *var1* **from** *var2 var3***.**

Explanation: The indicated **SET** operation was rejected because the originating source and user ID lacks the required privileges.

System action: The **SET** operation stops. No changes to system configuration were made.

User response: Issue the **SET** command from a source with correct privileges, or have the backup administrator grant additional privileges.

BKR9191I Updating instance for job *job_template* **from** *old_value* **to** *new_value***.**

Explanation: The **SET INSTANCE** command is updating the saved instance value for the indicated job template from *old_value* to *new_value*.

System action: The instance value for the job template is updated.

User response: No action is required.

BKR9192I Setting initial instance for job *job_template* **to** *new_value***.**

Explanation: The **SET INSTANCE** command is creating a new saved instance value for the indicated job template. The instance is initialized to *new_value*.

System action: New instance tracking information for the indicated job template, is created.

User response: No action is required.

BKR9193E Invalid job instance value *value* **specified.**

Explanation: The **SET INSTANCE** command was invoked with invalid data supplied for the new instance value. The value must be a whole number in the range 0-99999999.

System action: The **SET INSTANCE** command ends. No changes were applied.

User response: Try the operation again with an acceptable new instance value. See "SET INSTANCE" on page 96 for more information.

BKR9194W No job name matching *jobname* **were found in the backup catalog.**

Explanation: The **EXPIRE** command found no entries matching *jobname* in the backup catalog. This message can be issued if the catalog is empty (when *jobname* is an asterisk) or when the **EXPIRE** command is issued with a job name wildcard expression that does not match any cataloged jobs.

System action: The **EXPIRE** operation ends.

User response: This is the normal completion of an **EXPIRE** command for a newly-created backup catalog file space. If the backup catalog is expected to have active content, verify that the SFS file pool server holding the catalog is available for use. Otherwise, contact your system programmer or IBM Software Support.

BKR9195W LISTFILE return code *rc* **while enumerating JOBCAT contents.**

Explanation: Internal routines for BKRCATLG attempted to invoke the CMS **LISTFILE** command while inspecting contents of the backup catalog file space. An unexpected return code was encountered.

System action: See message BKR9196I for more information. Error recovery processing attempts to continue. If error recovery succeeds, the operation continues. Otherwise, the operation ends with an error response or an abend of the backup catalog service virtual machine.

User response: Proceed or to resolve the error condition based on accompanying diagnostic information. If the problem cannot be resolved, contact your system programmer or IBM Software Support.

BKR9196I Response: *response***.**

Explanation: This message reports the output of CMS or CP commands invoked during service virtual machine functions.

System action: The system action varies depending on context of the operation.

User response: Review the additional messages that are displayed with this message.

BKR9197W Invalid record in DISKPOOL file *file***; Record:** *record***. Skipping to next record in DISKPOOL file.**

Explanation: An invalid record was encountered in a DISKPOOL file. DISKPOOL entries are either: *userid vdev* (for minidisk volumes), or *filepool:filespace.dirid* (for SFS volumes).

System action: The record is ignored. Processing continues.

User response: Edit the indicated DISKPOOL file and remove (or correct) the invalid record.

BKR9198W No write permissions for DISKPOOL volume *volume*. Skipping to next record in DISKPOOL file.

Explanation: A worker task service virtual machine (BKRWRK*nn*) encountered an SFS volume in a DISKPOOL file and the worker does not have sufficient privileges to write backup data to the SFS resource.

System action: Processing continues. DISKPOOL volume selection continues to the next resource in the DISKPOOL being processed.

User response: Ensure all workers have the required SFS access privileges to DISKPOOL volumes.

BKR9199W Unable to erase *var1* (ERASE rc *rc*) from directory *directory*; please ensure server has SFS ADMIN authority to this file pool.

Explanation: The backup catalog service virtual machine (BKRCATLG) attempted to remove expired data from an SFS DISKPOOL volume. An ERASE for the indicated file gave a non-zero return code.

System action: Processing continues, but the information associated with this failure remains in the backup catalog until the situation is resolved.

User response: Ensure that BKRCATLG has sufficient privileges to ERASE data from the indicated SFS resource. If the situation cannot be resolved, contact your system programmer or IBM Software Support.

BKR9200E Return code *rc* from command. ACCESS *userid vdev* DISKPOOL cleanup processing cannot continue.

Explanation: DISKPOOL media cleanup processing encountered a non-zero return code from the CMS **ACCESS** command when attempting to process the minidisk volume (*userid vdev*) displayed in the second line of the message. This return code might indicate a damaged CMS minidisk file system.

System action: DISKPOOL media cleanup processing ends.

User response: Evaluate the problem minidisk and attempt to determine why the **ACCESS** command failed. If the problem cannot be resolved, contact your system programmer or IBM Software Support.

BKR9201E File mode must be 0-6 or *

Explanation: The file mode must be either an asterisk (any file mode) or a numerical value 0-6.

System action: Processing continues.

User response: Provide a valid file mode number or '*' to continue.

BKR9202W Unable to obtain work unit; cannot process DISKPOOL volume *volume*.

Explanation: The **QUERY DISKPOOL** command was unable to obtain state information for the indicated SFS volume because an attempt to obtain a work unit failed.

System action: Processing continues with the next entry in the DISKPOOL definition.

User response: Issue the **QUERY DISKPOOL** command again. If the issue persists, examine accompanying messages and attempt to determine why the operation failed. If the issue cannot be resolved, contact your system programmer or IBM Software Support.

BKR9203W Unable to catalog *var1 var2* - real DASD volume label is null.

Explanation: BKRCATLG received information for a new catalog entry, which contained a null real DASD volume label. The entry cannot be incorporated into the backup catalog.

System action: The catalog entry is rejected and discarded.

User response: This situation usually results from an attempt to back up an uninitialized real DASD volume. Exclude the device from backup processing until it is properly initialized.

BKR9204W Excluding *system rdev* from backup - real DASD volume label is null.

Explanation: During **SUBMIT**, **REVIEW**, or **RESTART** command processing, BKRBKUP detected that a real DASD volume that has a null label was selected for inclusion in a backup.

System action: The device (*system rdev*) is automatically excluded from backup.

User response: This situation usually results from an attempt to back up an uninitialized real DASD volume. Exclude the device from backup processing until it is properly initialized.

BKR9205W Source minidisk: *userid vdev*.

Explanation: An error was encountered during processing of the indicated minidisk (*userid vdev*).

System action: Diagnostic information regarding the error condition is displayed with this message.

User response: Review the accompanying messages.

BKR9206W Problem file: *file*.

Explanation: An error condition was encountered during an attempt to process the indicated file (filename filetype).

System action: Additional diagnostic messages are displayed to identify the minidisk or SFS directory associated with the file and to further describe the error condition. Error and recovery processing continues.

User response: Review the accompanying messages.

BKR9207W FST (hex) is: *hex_dump*.

Explanation: An error or inconsistency in FST (File Status Table) contents was detected during a file-level backup operation. This message displays a hexadecimal dump of the problem FST, and is issued with other diagnostic information.

System action: Error and recovery processing continues. File-level backup processing continues, if possible. For minidisk file systems, an image backup of the affected minidisk is performed after the file-level backup operation ends.

User response: Inspect the minidisk or SFS resource associated with this message and attempt to further evaluate the damaged file system. Contact your system programmer or IBM Software Support.

BKR9208W This file cannot be processed. Attempting to continue backup with next file.

Explanation: Error recovery processing encountered a situation, which prevents complete backup of one or more CMS files. File-level backup operations are continuing with the next file on the minidisk or SFS directory involved. This message is accompanied by diagnostic output that identifies the minidisk or directory and other information about the problem, which prevented backup.

System action: An attempt to continue processing of the remaining files on the minidisk or directory is made. For minidisk file systems, an image backup of the associated minidisk is added to the backup job.

User response: Inspect the minidisk or SFS resource that is associated with this message and evaluate the damaged file system. Contact your system programmer or IBM Software Support.

BKR9209E Expiration is prior to today; use SET EXPIRE *jobname instance* **NOW to expire immediately.**

Explanation: Evaluation of the arguments that were supplied for a **SET EXPIRE** command resulted in an expiration date prior to the current day. The NOW operand must be used to mark a catalog entry as immediately expired.

System action: The expiration date for the associated job name and instance is unchanged.

User response: If you want immediate expiration, issue the **SET EXPIRE** command again specifying the NOW operand. See "SET EXPIRE" on page 102 for more information.

BKR9210I Entry is now expired and will be deleted at the next EXPIRE (PURGE operation.

Explanation: The **SET EXPIRE** command with the NOW operand was successful.

System action: The backup catalog entry for the associated job name and instance was revised to specify an expiration date one day prior to the current day. If parameters in the `BKRSYSTM CONFIG` file are set to enable interaction with Tape Manager for z/VM, commands were issued to mark tape volumes that are associated with the catalog entry as expired.

User response: No action is required. The affected backup catalog entry is removed the next time an **EXPIRE (PURGE** operation is issued.

BKR9211W Attempting to remove truncated JOBCAT entry.

Explanation: BKRCATLG detected an incomplete or truncated directory structure in the backup catalog file space during EXPIRE (PURGE processing.

System action: Error recovery procedures are attempting to remove the partial entry.

User response: If the operation completes successfully, no additional action is required. A truncated catalog entry might result if the backup catalog file space exceeds its storage capacity during creation of a new catalog entry. If this situation persists, increase the SFS storage capacity limits for the backup catalog file space.

BKR9212E Option *option* **is not valid.**

Explanation: Command parsing detected an invalid argument to the associated command or panel interaction.

System action: The operation is rejected.

User response: Try the operation again with the correct syntax or operands.

BKR9213E BKRREDF return code *rc*, **reason code** *reason*; **An I/O error or corrupt EDF minidisk label data was encountered.**

Explanation: Internal subroutine BKRREDF encountered an input/output error or an inconsistency in the label data during an attempt to inspect a CMS EDF-format minidisk.

System action: Additional diagnostic data is displayed. If possible, file-level backup of the associated minidisk continues. An image backup of the affected minidisk is added to the backup job.

User response: Review the other associated messages for additional detail. Evaluate the problem minidisk and attempt to correct the issue and recover data from the file system. Contact your system programmer or IBM Software Support.

BKR9214W The DIRECTOR FST for this minidisk appears to be damaged. Attempting to continue backup processing.

Explanation: An EDF-format CMS minidisk with errors or inconsistencies in the DIRECTOR FST was encountered.

System action: Additional diagnostic information is displayed with this message. Error recovery processing attempts to continue a file-level backup of the affected minidisk. An image backup of the minidisk is added to the backup job.

User response: Review other associated messages for additional information. Evaluate the problem minidisk and attempt to correct the issue and recover data from the file system. Contact your system programmer or IBM Software Support.

BKR9215E DUALTAPE output handler invoked with unrecognized parameter.

Explanation: The DUALTAPE output handler encountered an unexpected parameter.

System action: None.

User response: Verify the parameters are valid. See the *IBM Backup and Restore Manager for z/VM User's Guide (SC18-9523)* for the valid parameters.

BKR9216I Output handler DUALTAPE initializing.

Explanation: This message indicates the DUALTAPE output handler is initializing.

System action: None.

User response: No action is required.

BKR9217I Original backup data type was FBA block-image: * Owner, vdev:** *owner vdev* ***** FBA minidisk;** *num_blocks* **blocks in DASD extent. *** FBA block size is** *nnn* **bytes.**

Explanation: This message describes the original source media for a backup catalog entry. The catalog data describes an FBA block-image backup. The owner ID and virtual device number are displayed as *ownervdev*. *num_blocks* identifies the minidisk size in number of FBA blocks. *nnn* is the FBA block size of the minidisk, normally 512.

System action: Processing continues.

User response: No action is required.

BKR9218E Unable to continue service virtual machine start-up.

Explanation: A configuration error or a resource capacity constraint severe enough to stop service virtual machine initialization was encountered. See accompanying error messages for details.

System action: Service virtual machine initialization stops.

User response: Examine accompanying error messages. Identify and correct the associated error and then restart the affected service virtual machine. If the problem persists, contact your system programmer or IBM Software Support.

BKR9219E Unable to locate BKRSYSTM CONFIG; LISTFILE return code *rc***.**

Explanation: An attempt to locate the service virtual machine configuration file, `BKRSYSTM CONFIG`, was not successful.

System action: Service virtual machine initialization stops.

User response: Backup and Restore Manager expects the `BKRSYSTM CONFIG` file to reside on the service virtual machine configuration minidisk, accessed as file mode letter B. A sample version of the `BKRSYSTM CONFIG` file is distributed as `BKRSYSTM CONFSAMP` and installed on `5697J06C 2C2` or `VMSYS:5697J06C.BKUPMGR.SAMPLES`. A locally customized version of this file must be placed on the product configuration minidisk (`5697J06C 198`) or directory (`VMSYS:5697J06C.BKUPMGR.CONFIGURATION` during product installation. Backup and Restore Manager service virtual machines should access this resource as file mode B in their PROFILE EXEC. For more information, see "Copying and customizing the BKRSYSTM CONFIG file" on page 23.

BKR9220W Attempting to continue service virtual machine start-up.

Explanation: Service virtual machine start-up processing encountered a problem that might interfere with normal operation. The condition is not severe enough to prevent initialization from continuing.

System action: Service virtual machine initialization continues.

User response: To identify the condition that is responsible for the warning, examine the accompanying error messages and correct the issue.

BKR9221W Multiple copies (*n* total) of BKRSYSTM CONFIG were found.

Explanation: Multiple copies of the BKRSYSTM CONFIG file were found in the CMS environment during service virtual machine initialization. One copy of this file is present under normal conditions.

System action: Service virtual machine star-up processing continues. The copy of the BKRSYSTM CONFIG file that is used for configuration is selected based on the standard CMS search order of accessed minidisks or SFS directories.

User response: The BKRSYSTM CONFIG file is expected to reside on the service virtual machine configuration minidisk, accessed as file mode letter B. A sample version of the BKRSYSTM CONFIG file is distributed as BKRSYSTM CONFSAMP and is installed on 5697J06C 2C2 or VMSYS:5697J06C.BKUPMGR.SAMPLES. A locally customized version of this file must be placed on the product configuration minidisk (5697J06C 198) or directory (VMSYS:5697J06C.BKUPMGR.CONFIGURATION during product installation. Backup and Restore Manager for z/VM service virtual machines should access this resource as file mode B in their PROFILE EXEC. For more information, see "Copying and customizing the BKRSYSTM CONFIG file" on page 23.

BKR9222I Service virtual machine configuration derived from BKRSYSTM CONFIG located *var1* accessed as file mode *var2*.

Explanation: Service virtual machine configuration processing issues this message to identify the copy of the BKRSYSTM CONFIG file that is used to configure the runtime environment.

System action: Processing continues.

User response: No action is required.

BKR9223E Tape Manager interface TAPCMD MODULE is not available.

Explanation: The BKRSYSTM CONFIG file parameters indicate that tape services are handled through Tape Manager for z/VM. To enable the function, the command interface (TAPCMD MODULE) must be available as part of the CMS environment. This message indicates that TAPCMD MODULE was not found on any accessed minidisk or SFS directory during start-up processing.

System action: Service virtual machine initialization stops.

User response: The minidisk or directory that contains the TAPCMD MODULE must be available to the affected service virtual machine. Update the PROFILE EXEC to include an **ACCESS** command for the appropriate minidisk or directory.

BKR9224W Return code *rc* from QUERY FILEPOOL CATALOG *var*.

Explanation: Backup catalog processing generates a large volume of data in SFS storage group 1 for the backup catalog file pool. If storage group 1 completely fills up, interactions with the backup catalog might fail. Service virtual machine initialization processing attempts to check utilization of SFS storage group 1 for the SFS file pool that contains the backup catalog file space using the command QUERY FILEPOOL CATALOG catalogpool during initialization. The check can provide early detection and warning of the resource constraint. If the **QUERY** command results in a nonzero return code, message BKR9224W is issued.

System action: Service virtual machine initialization continues.

User response: To enable the check, ensure that the backup catalog service virtual machine (BKRCATLG) has SFS ADMIN authority for the catalog file pool.

BKR9225W Unable to check catalog file pool server storage group 1 thresholds.

Explanation: Service virtual machine initialization processing attempts to check utilization of SFS storage group 1 for the SFS file pool that contains the backup catalog file space using the command **QUERY FILEPOOL CATALOG** *catalogpool* during initialization. This message is issued with message BKR9224W or BKR9226W.

System action: Service virtual machine initialization continues.

User response: To enable this check, the backup catalog service virtual machine (BKRCATLG) requires SFS ADMIN authority for the catalog file pool.

Backup catalog processing generates a relatively large volume of data in SFS storage group 1 for the backup catalog file pool. If storage group 1 completely fills up, interactions with the backup catalog might fail. This check can provide early detection and warning of this resource constraint.

BKR9226W Unable to parse catalog file pool storage group 1 utilization info.

Explanation: Service virtual machine initialization processing attempts to check the utilization of SFS storage group 1 for the SFS file pool holding the backup catalog file space using the command **QUERY FILEPOOL CATALOG** *catalogpool* during initialization. This message is issued if the **QUERY** command response cannot be successfully parsed.

System action: Service virtual machine initialization continues.

User response: Retain a copy of the BKRCATLG console message log and report the problem to your system programmer or IBM Software Support.

BKR9227I **Backup catalog file pool server storage group 1 is *n*% utilized. *n* 4K blocks in use; *n* 4K blocks free.**

Explanation: The backup catalog SFS file pool's storage group 1 utilization is displayed in this message.

System action: Service virtual machine initialization continues.

User response: No action is required.

BKR9228W **Storage group 1 utilization exceeds warning threshold of *n* percent. You may need to add additional minidisk capacity to storage group 1 for the *var* SFS file pool server.**

Explanation: The storage group 1 of the backup catalog SFS file pool utilization exceeds the warning threshold of *n* percent.

System action: Service virtual machine initialization continues.

User response: It might be possible to recover some space in storage group 1 by issuing an **EXPIRE (PURGE** command on the backup catalog (BKRCATLG) service virtual machine.

If no expired backup information is removed from the backup catalog, it might become necessary to add additional minidisk capacity to storage group 1 of the SFS file pool server which contains the backup catalog file space. See *z/VM CMS File Pool Planning, Administration and Operation (SC24-6167)* for more information.

BKR9229I **The backup catalog file space is *n* percent utilized. *n* 4K blocks used; *n* 4K blocks free.**

Explanation: This message displays utilization statistics for the backup catalog SFS file space.

System action: Service virtual machine initialization continues.

User response: No action is required.

BKR9230E **Backup catalog file space utilization exceeds the start-up threshold of *n* percent.**

Explanation: The backup catalog SFS file space utilization exceeds the start-up limit of *n* percent.

System action: Service virtual machine initialization is stopped.

User response: Increase the SFS storage space limits for the backup catalog file space and restart BKRCATLG.

BKR9231W **Backup catalog file space utilization exceeds the warning threshold of *n* percent. It may be necessary to increase SFS file space limits for the backup catalog, or add additional minidisk capacity to storage group *storage_group* on the SFS file pool server for file pool *file_pool*.**

Explanation: The backup catalog SFS file space utilization exceeded the warning threshold of *n* percent.

System action: Service virtual machine initialization continues.

User response: If an EXPIRE (PURGE operation for BKRCATLG does not find expired catalog information, you might need to increase the SFS storage space that is available to BKRCATLG. If the SFS file pool server does not have sufficient capacity in storage group *storage_group*, you might need to provision more minidisk storage for the SFS file pool server. See *z/VM CMS File Pool Planning, Administration and Operation (SC24-6167)* for more information.

BKR9232E **Tape manager interface TAPCMD MODULE was not found on any accessed minidisk or directory.**

Explanation: The `BKRSYSTM CONFIG` file parameters indicate that tape services are handled by Tape Manager for z/VM. The command interface (TAPCMD MODULE) must be available as part of the CMS environment to enable the function. This message indicates that TAPCMD MODULE was not found on any accessed minidisk or SFS directory during start-up processing.

System action: Service virtual machine initialization ends.

User response: The minidisk or directory containing TAPCMD MODULE must be available to the affected service virtual machine. Update the PROFILE EXEC to include an **ACCESS** command for the appropriate minidisk or directory.

BKR9233E **Required file *file* was not found on any accessed minidisk or directory.**

Explanation: A required file, *file*, was not found.

System action: Service virtual machine initialization stops.

User response: Inspect the installation of Backup and Restore Manager for z/VM to determine why the required file is unavailable. If the problem cannot be identified and corrected, contact your system programmer or IBM Software Support.

BKR9234I A new required components state tracking file, *file*, is being created.

Explanation: Backup and Restore Manager for z/VM service virtual machines use state tracking files to enable version and change tracking of required program components. This message indicates that a new state tracking file *file* was created on file mode A.

System action: Processing continues.

User response: No action is required. File `$BKR$ SVMFILES A` maintains state information about required service virtual machine program files. File `$BKR$ CFGFILES A` maintains state information for required configuration files.

BKR9235E EXECIO return code *rc* during update to required components state tracking file.

Explanation: An unexpected EXECIO return code was encountered during an attempt to update contents of `$BKR$ SVMFILES A` or `$BKR$ CFGFILES A`.

System action: Service virtual machine initialization ends.

User response: Ensure that the A-disk (or SFS directory) for the affected service virtual machine is accessed in read-write mode. If the A-disk is accessed in read-write mode, make sure the disk (or directory) is not full.

BKR9236E Required component *file* not found; LISTFILE rc *rc*.

Explanation: The CMS **LISTFILE** command was unable to locate a required file (*file*). The **LISTFILE** return code is *rc*.

System action: Service virtual machine initialization stops.

User response: Inspect the installation of Backup and Restore Manager for z/VM to determine why the required file is unavailable. If the problem cannot be identified and corrected, contact your system programmer or IBM Software Support.

BKR9237E BKRMD5 rc *rc* for component *file*; unable to continue. BKRMD5 output: *msg*.

Explanation: The **BKRMD5** command ended with an unexpected return code, *rc*, during an attempt to calculate checksum information for file *file*.

System action: Service virtual machine initialization stops. The **BKRMD5** error message, if any, is displayed on the second line of this message as *msg*.

User response: Restart the affected service virtual machine. If the problem persists, contact your system programmer or IBM Software Support.

BKR9238W Required component *file* was found on file mode *file_mode*. The expected filemode for this component is *file_mode_letter*.

Explanation: A required file, *file*, was found in an unexpected location at file mode *file_mode*. The expected file mode letter is *file_mode_letter*.

System action: Service virtual machine initialization continues.

User response: Inspect your installation of Backup and Restore Manager for z/VM and attempt to determine why the required file is not installed on the expected file mode. If the problem cannot be identified and corrected, contact your system programmer or IBM Software Support.

BKR9239W Server startup will continue, but this installation is inconsistent with documented configuration requirements.

Explanation: A required file was found on an unexpected file mode, or multiple copies of a required file were detected.

System action: Service virtual machine initialization continues. If multiple copies of a required file were detected, standard CMS search order rules determine which file is actually in use.

User response: Review accompanying error messages and attempt to resolve the warning scenario.

BKR9240W *n* copies of required component *file* were found. The expected filemode for this component is *file_mode*.

Explanation: Multiple copies (total of *n*) of a required file *file* were encountered. The expected file mode letter for a single copy of the file is *file_mode*.

System action: Service virtual machine initialization continues.

User response: Inspect your installation of Backup and Restore Manager for z/VM and attempt to determine why multiple copies of the file are present in the service virtual machine configuration. If the issue cannot be corrected, contact your system programmer or IBM Software Support.

BKR9241E PIPE rc *rc* during state tracking file search.

Explanation: The CMS **PIPE** command exited with an unexpected return code during a search of `$BKR$ SVMFILES A` or `$BKR$ CFGFILES A`.

System action: Service virtual machine initialization is stopped.

User response: If the problem persists, contact your

system programmer or IBM Software Support.

BKR9242I **A new required component file has been found. New component:** *file***.**

Explanation: A new required component file was found, and is added to state tracking information.

System action: Service virtual machine initialization continues.

User response: No action is required.

BKR9243I **An update to a required component file has been detected. Changed component:** *component***.**

Explanation: A changed version of a required file was encountered. Information for the changed file is added to state tracking information.

System action: Service virtual machine initialization continues.

User response: No action is required.

BKR9244I **Privileged virtual machine settings are based on** *file* **located** *directory* **accessed as file mode** *fm***.**

Explanation: Virtual machines (users) with additional privileges are being configured. The privileged user definitions are based on contents of file *file* (normally `BKRUSERS NAMES`) from the minidisk or SFS directory *directory* accessed as file mode letter *fm*.

System action: Service virtual machine initialization continues.

User response: No action is required.

BKR9245E **NAMEFIND return code** *rc* **during attempt to enumerate** *var***. Service virtual machine start-up cannot continue.**

Explanation: The CMS **`NAMEFIND`** command exited with an unexpected return code *rc* during an attempt to extract information from `BKRUSERS NAMES`. *var* is either "administrators", "workers" or "masters".

System action: Service virtual machine initialization stops.

User response: Examine `BKRUSERS NAMES` and correct omissions or syntax errors in the file. If the problem persists, contact your system programmer or IBM Software Support.

BKR9246I *n* **virtual machine(s) are granted** *var* **authority.**

Explanation: A number of users (*n*) were granted additional privileges. (*var*) is one of "worker", "administrator" or "master backup." This message is followed by a list of privileged virtual machine names.

System action: Service virtual machine initialization continues.

User response: No action is required.

BKR9247I **Temporary work area at file mode D is a** *var* **minidisk with** *n* **cylinders/blocks formatted at block size of** *size***. Work area contains** *n* **files.** *n* **blocks in use;** *n*% **utilized.**

Explanation: Every service virtual machine deployed for Backup and Restore Manager for z/VM requires a temporary work area at file mode D. This message is issued to summarize the state of minidisk-based temporary space during service virtual machine initialization.

System action: Service virtual machine initialization continues.

User response: No action is required.

BKR9248I **Temporary work area at file mode D is an SFS directory:** *directory***. This file space is limited to** *n* **4K blocks.** *n* **blocks are in use;** *n*% **of capacity is utilized.**

Explanation: Every service virtual machine deployed for Backup and Restore Manager requires a temporary work area at file mode D. This message is issued to summarize the state of SFS directory-based temporary space during service virtual machine initialization.

System action: Service virtual machine initialization continues.

User response: No action is required.

BKR9249E **File mode** *mode* **is read-only, but is required to be read-write.**

Explanation: The minidisk or SFS directory at file mode *mode* is available in read-only mode. The current operation requires this space to be available in read-write mode.

System action: Service virtual machine initialization is stopped.

User response: This message is issued when the temporary work area at file mode D is not writable. Render the space available to the service virtual machine in read-write mode and restart the service virtual machine.

BKR9250E **Storage group 1 occupancy exceeds start-up threshold limit of** *limit* **percent.**

Explanation: Utilization of storage group 1 in the SFS file pool server for the backup catalog file space exceeds the start-up threshold limit of *limit* percent.

System action: Service virtual machine initialization is stopped.

User response: It might be possible to recover some space in storage group 1 through execution of an EXPIRE (PURGE operation on the backup catalog (BKRCATLG) service virtual machine.

If no expired backup information is removed from the backup catalog, it might become necessary to add additional minidisk capacity to storage group 1 of the SFS file pool server which contains the backup catalog file space. See *z/VM CMS File Pool Planning, Administration and Operation* for more information.

BKR9251E Validation of root catalog structures failed. The backup catalog service virtual machine cannot be started.

Explanation: One or more required root SFS directories for the backup catalog service virtual machine (BKRCATLG) were not found, and could not be successfully created. This message can indicate that the SFS file pool server for the backup catalog file space is unavailable, or that BKRCATLG was not yet enrolled in the SFS file pool.

System action: Service virtual machine initialization ends.

User response: Review the accompanying error messages correct the problem.

BKR9252W Root catalog structure *structure* failed validation. Attempting to create required directory now.

Explanation: A required root SFS directory for the backup catalog, *structure* was not found.

System action: BKRCATLG start-up processing attempts to create the SFS directory. If successful, BKRCATLG continues with initialization.

User response: If the directory is created successfully, no response is required. This message might be encountered by a new installation, or during creation of a new backup catalog file space if root directories were not created during the installation process.

BKR9253I Successfully created new catalog root structure *structure*.

Explanation: This message is issued with message BKR9252W. It indicates the successful creation of a root directory structure for the backup catalog.

System action: BKRCATLG initialization continues.

User response: No action is required.

BKR9254E Unable to create new catalog root structure *structure*.

Explanation: This message is issued with message BKR9252W. It indicates a failed attempt to create a root directory structure for the backup catalog.

System action: BKRCATLG initialization stops.

User response: Ensure that the SFS file pool server for the backup catalog file space is available, and that BKRCATLG is enrolled as a user of the file pool. If you cannot resolve the problem, contact your system programmer or IBM Software Support.

BKR9255W Unable to replace *file*; ERASE failed. This file has not been restored.

Explanation: Replacement of pre-existing files was enabled, but the existing copy of file *file* was not erased from the restore destination. The backup version of the file was not restored.

System action: Processing continues.

User response: Determine why the online version of the file was not erased from the minidisk or SFS directory. If the file can be removed, try the restore operation again. If the problem persists, contact your system programmer or IBM Software Support.

BKR9256W Existing copy of *file* erased. This file has been replaced by the backup version.

Explanation: Replacement of pre-existing files was enabled. A copy of file *file* was found on the restore destination, and was erased. The file was replaced with the backup version.

System action: Processing continues.

User response: No action is required.

BKR9257E Use the SFS administrator ENROLL command to create the backup catalog file space (*filespace*.) before starting the backup catalog server.

Explanation: The backup catalog service virtual machine (BKRCATLG) encountered a condition during start-up processing, which indicates the backup catalog SFS file space does not exist.

System action: Initialization stops. The backup catalog service virtual machine cannot start if the required SFS file space is unavailable.

User response: Verify that the SFS file pool service virtual machine for file pool *filepool* is active. The backup catalog SFS file space *filespace* needs to be added to the file pool using the SFS administrator **ENROLL** command. If the file pool and file space are already available, contact your system programmer or IBM Software Support.

BKR9258I Positioning tape to block ID *id*.

Explanation: A tape positioning operation is starting.

System action: An attempt to position the associated tape volume through Locate Block ensues.

User response: No action is required.

BKR9259E TAPECTL LOCBLK operation failed with return code *rc*.

Explanation: An attempt to position a tape volume via Locate Block failed with the indicated return code.

System action: When this message is displayed, the volume position cannot be determined. The system rewinds the tape volume and attempt to position the volume through FSF (Forward Space File) operations instead.

User response: No action is required.

BKR9260I Source data is a CMS EDF minidisk backup of *id source*.

Explanation: During a restore operation, this message identifies the original virtual machine ID and minidisk source of the CMS files being restored.

System action: Restore processing continues.

User response: No action is required.

BKR9261I Source data is a CMS SFS file space backup of *file pool*:*source*.

Explanation: During a restore operation, this message identifies the original SFS file pool and file space source of the CMS files being restored.

System action: Restore processing continues.

User response: No action is required.

BKR9262I Successfully verified source data owner *owner*, container *container*.

Explanation: During a restore operation, the source data owner (virtual machine ID) and container (minidisk address or SFS file space) were confirmed to match the expected source.

System action: Restore processing continues.

User response: No action is required.

BKR9263E Source data validation failure; expected owner *user1*, found owner *user2*.

Explanation: During a restore operation, the source data owner was expected to be *user1*, but the system encountered data originally owned by user ID *user2*.

System action: The restore operation is stopped.

User response: Verify that the restore job was generated by a correctly formatted **RESTORE** command, and that the user issuing the RESTORE command has sufficient privileges to access the source data. If the problem does not appear to result from incorrect command syntax or privilege level issues, contact your system programmer or IBM Software Support.

BKR9264E Source data validation failure; expected minidisk address *addr1*, found *addr2*.

Explanation: During a restore operation, the source data minidisk address was expected to be *addr1*, but the system encountered a source minidisk address *addr2*.

System action: The restore operation is stopped.

User response: Verify that the restore job was generated by a correctly formatted **RESTORE** command, and that the user issuing the **RESTORE** command has sufficient privileges to access the source data. If the problem does not appear to result from incorrect command syntax or privilege level issues, contact your system programmer or IBM Software Support.

BKR9265E Source data validation failure; expected SFS file pool name *name1*, found *name2*.

Explanation: During a restore operation, the source SFS file pool name was expected to be *name1*, but the system encountered a source SFS file pool name of *name2*.

System action: The restore operation is stopped.

User response: Verify that the restore job was generated by a correctly formatted **RESTORE** command, and that the user issuing the **RESTORE** command has sufficient privileges to access the source data. If the problem does not appear to result from incorrect command syntax or privilege level issues, contact your system programmer or IBM Software Support.

BKR9266W RESTORE processing is terminating due to error(s).

Explanation: An error condition which prevented a RESTORE operation from completing successfully was encountered.

System action: The affected RESTORE operation stops.

User response: This message is preceded by additional messages which provide detail about the problems that were encountered during the failed restore operation.

BKR9267E PIPE return code *rc* while reading file *file*.

Explanation: The CMS PIPE utility exited with an unexpected return code, *rc*, during an attempt to read file *file*.

System action: Where possible, processing continues. Otherwise, the affected operation ends and additional diagnostic information is displayed.

User response: See the *CMS Commands and Utilities Reference* regarding the PIPE return code. If the problem cannot be resolved based on the information, contact your system programmer or IBM Software Support.

BKR9268E Batch restore terminated. Pre-processing stage generated no usable records.

Explanation: A batch mode RESTORE job was received by BKRBKUP, but after initial processing no valid **RESTORE** commands were produced.

System action: The entire batch mode operation is rejected. BKRBKUP continues normal processing.

User response: This message is preceded by additional diagnostic information. This condition might result from incorrect **RESTORE** command syntax, or from insufficient Backup and Restore Manager privileges.

BKR9269I Processing batch restore transaction; *n* records.

Explanation: BKRBKUP received a batch-mode restore transaction.

System action: The master backup service virtual machine, BKRBKUP, initiates processing for the set of RESTORE commands contained in the job.

User response: No action is required.

BKR9270I Batch restore options: *options*.

Explanation: This message displays the set of options that are specified in a batch mode restore transaction. The options can be derived from an OPTION statement as the first record of the job, or from options that are specified on the first **RESTORE** command in a job (if no separate OPTION statement was specified).

System action: Processing continues.

User response: No action is required.

BKR9271E Batch restore transaction rejected due to invalid record. Problem record: *record*.

Explanation: A batch restore operation was rejected due to an invalid record in the job file.

System action: The entire batch restore transaction is rejected.

User response: Inspect the contents of the job file, correct syntax of the affected statement, and try the operation again.

BKR9272E Batch restore transaction rejected; BKRESTOR BATCH INIT return code *rc*.

Explanation: A batch restore operation was rejected because the internal BKRESTOR function exited with a non-zero return code during initialization processing.

System action: The entire batch restore transaction is rejected.

User response: This message is accompanied by additional diagnostic information. If the problem cannot be resolved based on the information, contact your system programmer or IBM Software Support.

BKR9273W Batch restore transaction rejected; BKRESTOR BATCH TASK return code *rc*. Problem record: *record*. Processing continues; this transaction will not be processed.

Explanation: One operation that was packaged as part of a batch-mode restore transaction was rejected by the internal BKRESTOR function.

System action: Processing continues with the next statement in the batch mode restore job.

User response: Verify the syntax and access privileges for the **RESTORE** command is correct. Additional diagnostic information is displayed with this message. If the problem cannot be resolved, contact your system programmer or IBM Software Support.

BKR9274I Batch restore transaction accepted; accepted record: *n*.

Explanation: One operation packaged as part of a batch-mode restore transaction was accepted.

System action: Processing continues with the next statement in the batch-mode restore job.

User response: No action is required.

BKR9275I Batch restore transaction processing complete; *n* tasks accepted. Submitting resulting job for worker processing.

Explanation: Initial processing of a batch-mode restore operation completed. The job resulted in *n* RESTORE tasks.

System action: The resulting job is submitted to a worker service virtual machine for further processing.

User response: No action is required.

BKR9276E **Batch restore transaction error; BKRESTOR BATCH SEND return code *rc*.**

Explanation: During an attempt to submit the results of a batch mode restore transaction to a worker service virtual machine, the internal BKRESTOR function exited with a nonzero return code.

System action: The batch mode restore transaction could not be submitted to a worker service virtual machine for further processing; the operation is abandoned.

User response: This message might be accompanied by additional diagnostic information. If the problem cannot be resolved based on that information, contact your system programmer or IBM Software Support.

BKR9277E **Batch restore transaction rejected. *n* records passed inspection.**

Explanation: A batch-mode restore transaction was rejected due to syntax errors or privilege restrictions.

System action: The entire batch-mode restore transaction is rejected.

User response: Inspect the accompanying messages for details. Correct command syntax issues, and address access privilege issues before trying the operation again.

BKR9278I **Batch restore transaction successfully submitted.**

Explanation: A batch-mode restore transaction was successfully processed.

System action: The resulting RESTORE job was submitted to a worker service virtual machine for further processing.

User response: No action is required.

BKR9279E **Validation of BKRSYSTM CONFIG * completed with result code *rc*. The service virtual machine cannot start until these errors are corrected.**

Explanation: One or more errors were detected in the contents of the `BKRSYSTM CONFIG` file. The problems were of high enough severity to prevent the affected service virtual machine from starting.

System action: Start-up processing is abandoned.

User response: This message is accompanied by additional diagnostic information. Review the messages and address the identified issues, then attempt to start the affected service virtual machine.

BKR9280E **Environment configuration checks completed with result code *rc*. The service virtual machine cannot start until these issues are resolved.**

Explanation: One or more severe problems with the configuration of the service virtual machine configuration were encountered.

System action: Start-up processing is abandoned.

User response: This message is accompanied by additional diagnostic information. Review the messages and address the identified issues, then attempt to start the affected service virtual machine.

BKR9281I **Adding FBA Minidisk entry. --- Real Volume: *volume* --- Start / Size: *start* / *size* --- Owner - VDEV: *owner* - *vdev*.**

Explanation: Backup catalog update processing is adding a new entry for an FBA block-image backup.

System action: New content is inserted in to the backup catalog file space for the associated FBA minidisk extent.

User response: No action is required.

BKR9282I **Removing *n* old files from temporary work area.**

Explanation: One or more extraneous files were detected on the service virtual machines temporary work area during initialization.

System action: Initialization continues. The unneeded files are deleted from the temporary work area.

User response: No action is required.

BKR9283I **Deleted: *file*.**

Explanation: This message is issued with 9282I. The listed file was removed from the service virtual machines temporary work area.

System action: Processing continues.

User response: No action is required.

BKR9284E **Job terminated; the consecutive failed task limit of *n* tasks has been exceeded. Remaining tasks in this job have not been processed.**

Explanation: Job processing was interrupted because *n* consecutive backup or restore tasks ended without successful error recovery.

System action: The job stops.

User response: This message is accompanied by diagnostic information in the job log. If the problem cannot be resolved based on that information, contact

your system programmer or IBM Software Support.

BKR9285E Fast tape positioning is enabled for this image.

Explanation: A restore operation is in progress and the source data for the restore resides on a tape volume. The catalog information includes information which allows the volume to be positioned through the Locate Block function.

System action: A Locate Block tape positioning I/O operation is issued to the tape drive.

User response: No action is required.

BKR9286I Fast tape positioning is not enabled for this image; volume positioning will be performed via FSF / BSF.

Explanation: A restore operation is in progress, and the source data for the restore is on a tape volume. The catalog information does not include supplemental information, which would allow volume positioning through the Locate Block function. It is possible that the backup that is associated with this message was created with an earlier service level of Backup and Restore Manager. The tape device that is used during the original backup might not have supported block ID positioning operations, or an input/output error might have prevented recording of block ID information. The restore operation proceeds normally, but processing might be delayed due to longer elapsed times required to perform FSF or BSF positioning functions.

System action: The volume is positioned through FSF or BSF (Forward Space File or Back Space File) I/O operations. Depending on hardware device and model characteristics, tape positioning input/output operations using this method might have a significantly greater elapsed time versus Locate Block.

User response: No action is required.

BKR9287I Restore operation succeeded; LOADDDL return code 0.

Explanation: A restore-to-RDR operation completed normally.

System action: Processing continues with either end-of-job or the next task.

User response: No action is required. LOADDDL can exit with return code 0 even if the restore operation completed without restoring files. This situation can occur if file selection parameters for the **RESTORE** command excluded all files in the backup image from restoration.

BKR9288E Restore operation failed; LOADDDL return code was *rc*.

Explanation: A restore-to-RDR operation encountered an error and stopped.

System action: Processing continues with either end-of-job or the next task.

User response: This message might be issued with other diagnostic information. If the problem can not be resolved based on associated messages, contact your system programmer or IBM Software Support.

BKR9289I Options specify worker *worker* will process this job.

Explanation: A batch restore job designated that worker service virtual machine *worker* is to process the job that is associated with this message.

System action: Processing continues. RESTORE commands from this batch are submitted to the specified worker after BKRBKUP finishes processing the contents of the batch restore job.

User response: No action is required.

BKR9290W The specified worker, *worker*, is not configured as a worker in BKRUSERS NAMES. Standard worker selection will be used.

Explanation: A batch restore job attempted to assign worker service virtual machine *worker* to process the job, but the specified user ID is not listed as a worker in `BKRUSERS NAMES`.

System action: Processing continues. The WORKER specification is ignored. The job is submitted to a worker service virtual machine that is selected by the ordinary worker selection algorithm.

User response: If the batch restore operation must be processed by a specific worker, you can cancel the batch restore operation. In this case, modify the batch restore job to specify a valid worker service virtual machine.

If a specific worker is not required for the restore operation, no changes are required. The job is submitted to a worker service virtual machine as chosen by the normal worker selection process.

BKR9291E Invalid function passed to BKRESTOR; options were *options*.

Explanation: The internal BKRESTOR function was invoked with one or more invalid options.

System action: The operation is rejected.

User response: Review the contents of the batch restore job associated with this message. If the job contains no apparent errors, contact your system

programmer or IBM Software Support.

BKR9295W Unable to process incremental backup deleted file history. Attempting to continue with restore.

Explanation: The DELFILES option was specified for RESTORE processing. Restore processing was unable to obtain or process deleted file information during restoration of an incremental backup.

System action: The RESTORE operation attempts to continue processing, but results of the restoration are processed as if the DELFILES option was not specified. The contents of the destination minidisk or SFS file space might contain additional files.

User response: Review the diagnostic information that precedes this message.

BKR9296W There are no free file modes available.

Explanation: Backup and Restore Manager needed to temporarily allocate an unused file mode letter for temporary access to a minidisk or SFS file space, but no free file mode letters were available.

System action: Processing continues (if possible).

User response: This message is issued in with other diagnostic information. If the affected action cannot proceed successfully, attempt to free up additional file mode letters by temporarily releasing unnecessary minidisks or SFS directories.

BKR9297W Get_GranDelFile result *result***.**

Explanation: Backup and Restore Manager for z/VM encountered an error while attempting to extract deleted file information from the catalog entry for an incremental backup.

System action: Processing continues (if possible). Otherwise the affected routine exits with additional diagnostic information.

User response: Contact your system programmer or IBM Software Support.

BKR9298W Unrecognized FILEHEAD container type.

Explanation: Backup and Restore Manager encountered unrecognized information in a backup catalog entry.

System action: Processing continues (if possible). Otherwise the affected routine exits with additional diagnostic information.

User response: Contact your system programmer or IBM Software Support.

BKR9299I Incremental restore processing is removing file *file***.**

Explanation: The DELFILES option was specified for a RESTORE operation; restore processing removed the indicated file from the restore destination as part of normal activity.

System action: The restore operation continues.

User response: No action is required.

BKR9300I Recovered *n* **blocks on restore destination.**

Explanation: The DELFILES option was specified for a RESTORE operation; restore processing removed one or more files from the restore destination, and recovered the indicated number of DASD blocks.

System action: The restore operation continues.

User response: No action is required.

BKR9301W Catalog DELFILE return code *rc***. DELFILE recording disabled; attempting to continue.**

Explanation: An incremental backup operation encountered an error while attempting to record deleted file information in a backup catalog entry.

System action: Recording of deleted file information was disabled. The system attempts to continue backup processing.

User response: Contact your system programmer or IBM Software Support.

BKR9302W BKRPICK initialization return code *rc***; Incremental processing disabled. Attempting to continue with backup.**

Explanation: During an incremental backup, an attempt to initialize the internal BKRPICK routine failed.

System action: The system attempts to continue backup processing by treating the incremental backup task as a full backup.

User response: Contact your system programmer or IBM Software Support.

BKR9303W CP LINK for minidisk *ownerid vdev* **failed. This minidisk will not be backed up. LINK return code** *rc***.**

Explanation: Backup job processing encountered a minidisk which was selected for backup, but a CP **LINK** command for the indicated minidisk was rejected.

System action: The indicated minidisk was not backed up. An attempt is made to continue processing with the next minidisk or SFS file space listed in the backup job.

The full text of the error response from the CP **LINK** command is displayed through message BKR8158 with this message.

User response: Based on the error response from the CP **LINK** command that is displayed in message BKR8158, attempt to correct the underlying problem, or exclude the affected minidisk from the backup job.

BKR9304W A session update lock for *var* was not available. CREATE LOCK return code *rc*.

Explanation: Access to portions of the backup catalog SFS file space is serialized through SFS lock mechanisms. An attempt was made to lock the catalog file space, but the lock could not be obtained.

System action: Processing is delayed. After a brief delay, another attempt to obtain the lock is made.

User response: No action is required.

BKR9305W Lock retry attempt *attempt* will occur in *n* seconds.

Explanation: Access to portions of the backup catalog SFS file space is serialized through SFS lock mechanisms. An attempt was made to lock the catalog file space, but the lock could not be obtained. This message displays the number of retry attempts, and the delay interval until the next attempt is made.

System action: Processing is delayed. After a brief delay, another attempt to obtain the lock will be made.

User response: No action is required.

BKR9306E A JOBCAT lock could not be obtained after *n* retries.

Explanation: Repeated attempts to obtain a lock on the backup catalog JOBCAT structure failed. The maximum number of retry attempts was exceeded.

System action: Processing stops.

User response: Examine the accompanying diagnostic information and attempt to determine why the SFS LOCK attempts were unsuccessful. Check the SFS file pool service virtual machine console log for additional information. If the problem cannot be resolved, contact your system programmer or IBM Software Support.

BKR9307W DELETE LOCK *lock* return code *rc*; tolerating as a transient issue...

Explanation: An attempt to release an SFS resource lock resulted in an unexpected return code.

System action: Processing continues. The unlock attempt occurred at a point in processing where the lock release can be tolerated as a transient issue.

User response: No action is required. If the situation persists, contact your system programmer or IBM Software Support.

BKR9308E DELETE LOCK *lock* return code *rc*; no toleration or recovery enabled for this condition.

Explanation: An attempt to release an SFS resource lock resulted in an unexpected return code.

System action: Processing is stopped. The unlock attempt occurred at a point in processing where recovery from the failed lock release was not possible.

User response: Examine accompanying diagnostic information for details. Additional information might be recorded in the backup catalog file spaced SFS file pool server console log. Contact your system programmer or IBM Software Support.

BKR9309W DELETE LOCK *lock* return code 70; Unlock retry attempt *attempt* will occur in *n* seconds.

Explanation: An attempt to release an SFS resource lock exited with return code 70.

System action: RC 70 from a "delete lock" operation indicates a transient resource conflict. The unlock attempt is attempted again after a brief pause.

User response: No action is required.

BKR9310E A JOBCAT unlock could not be completed after *n* retries.

Explanation: Repeated attempts to release an SFS resource lock on the backup catalog file space JOBCAT structure failed. The maximum number of unlock retries was exceeded.

System action: Processing stops.

User response: Examine the job log for additional diagnostic information. Check the SFS file pool server console log for additional information. If the situation cannot be resolved, contact your system programmer or IBM Software Support.

BKR9311W Unable to erase *var*. DMSERASE return code *rc*, reason *reason*. The original version of this file has been left in place.

Explanation: A **RESTORE** command is in progress, and the DELFILES option is in effect. DELFILES processing is attempting to remove an old file from the minidisk or SFS directory path that is indicated in *var*. The DMSERASE CSL routine exited with the reason and return codes indicated by *code* and *rc* respectively. See *z/VM CMS Callable Services Reference (SC24-6072)* for information about DMSERASE.

System action: The restore function continues with the

next file or SFS object being restored.

User response: The indicated file was not replaced. It might be possible to attempt to manually delete the object and then try the **RESTORE** operation again. If the problem cannot be resolved, contact your system programmer or IBM Software Support.

BKR9312W Erased existing copy of *file*. This file will be replaced with the backup version.

Explanation: A **RESTORE** command is in progress, and the DELFILES option is in effect. DELFILES processing successfully removed the indicated file from the destination minidisk or SFS directory.

System action: Processing continues.

User response: No action is required.

BKR9313W Current file: *fn ft dirpath*.

Explanation: This message is issued with message 8014, when Backup and Restore Manager encounters an error during an attempt to back up an SFS file, which was deleted during a backup operation. Message BKR9313 identifies the file name, file type, and SFS directory path that is involved in the error.

System action: DUMPSFS attempts to continue the backup operation with the next item in the SFS file space.

User response: No response is required. The system services that are used to back up an SFS file provide a consistent point-in-time view of individual CMS files that are stored in SFS, but DUMPSFS does not lock the entire file space during backup processing. If point-in-time consistency of an entire SFS file space is required, quiesce processes that create or delete objects in the file space before the backup.

BKR9314I Creation of EOF1 / HDR1 tape labels is *status*.

Explanation: The backup job that is associated with this message uses the IBMTAPE, IBMTWIN, or DUALTAPE output method. This message displays whether tape volumes are created with EOF1 / HDR1 label sequences between backup output files. *status* indicates either "enabled" (tape volumes are created with EOF1 / HDR1 label sequences) or "disabled" (tape volumes are not created with EOF1 / HDR1 label sequences).

System action: Job processing continues.

User response: None required. For more information, see the description of the Tape_Enable_EOF1HDR1 `BKRSYSTM CONFIG` file parameter described in “CONFIG” on page 61.

BKR9315W Backup and Restore Manager for z/VM service virtual machine *svm_id* has entered SUSPEND mode because the task abend limit has been reached.

Explanation: A service virtual machine entered SUSPEND mode because too many abnormal task terminations have occurred. This message is issued when the affected service virtual machine initially enters SUSPEND mode.

System action: Normal service virtual machine operations are suspended.

User response: The SUSPEND environment provides a limited set of functions which allow the system programmer to gather additional diagnostic information, reset the service virtual machine, or resume processing. See “Service virtual machine error recovery and diagnosis” on page 44 for information about SUSPEND mode.

BKR9317W Valid commands are: RESUME - attempt to continue processing | RESTART - reset virtual machine and re-IPL CMS | CMS - execute a CMS command | CP - execute a CP command.

Explanation: A service virtual machine entered SUSPEND mode because too many abnormal task terminations have occurred. This message is issued in conjunction with message 9315W.

System action: Normal service virtual machine operations are suspended.

User response: This environment provides a limited set of functions which allow the system programmer to gather additional diagnostic information, reset the service virtual machine, or resume processing. See “Service virtual machine error recovery and diagnosis” on page 44 for information about suspended mode recovery options.

BKR9316W *svm_id* entered SUSPEND mode on *mm/dd/yy* at *hh:mn:ss*.

Explanation: A service virtual machine entered SUSPEND mode because too many abnormal task terminations occurred. This message is issued with message BKR9315W.

System action: Normal service virtual machine operations are suspended.

User response: The SUSPEND environment provides a limited set of functions which allow the system programmer to gather additional diagnostic information, reset the service virtual machine, or resume processing. See “Service virtual machine error recovery and diagnosis” on page 44 for information about SUSPEND mode.

BKR9318I SUSPEND mode commands accepted from: *admin_users*.

Explanation: A service virtual machine entered SUSPEND mode because too many abnormal task terminations have occurred. This message is issued with message BKR9315W, and is used to identify user IDs that are allowed to issue commands to the suspended virtual machine through the CP SMSG command interface.

System action: Normal service virtual machine operations are suspended.

User response: The SUSPEND environment provides a limited set of functions which allow the system programmer to gather additional diagnostic information, reset the service virtual machine, or resume processing. See "Service virtual machine error recovery and diagnosis" on page 44 for information about SUSPEND mode.

BKR9319W Using default SUSPEND mode ADMIN user list: *admin_users*.

Explanation: A service virtual machine entered SUSPEND mode because too many abnormal task terminations occurred. An error occurred during an attempt to extract the local list of backup administrators from `BKRUSERS NAMES`, and a default built-in set of user IDs is in effect. This message is issued with message BKR9315W. It identifies user IDs that are allowed to issue commands to the suspended virtual machine through the CP SMSG command interface. The default list of SUSPEND mode administrators is OPERATOR, BKRADMIN and MAINT.

System action: Normal service virtual machine operations are suspended.

User response: The SUSPEND environment provides a limited set of functions which allow the system programmer to gather additional diagnostic information, reset the service virtual machine, or resume processing. For more information, see "Service virtual machine error recovery and diagnosis" on page 44.

BKR9321W No ADMIN users were extracted from BKRUSERS NAMES *.

Explanation: An error occurred during an attempt to extract the local list of backup administrators from `BKRUSERS NAMES`, and a default built-in set of user IDs is in effect. This message is issued with message BKR9319W. It identifies user IDs that are allowed to issue commands to the suspended virtual machine through the CP SMSG command interface. The default list of SUSPEND mode administrators is OPERATOR, BKRADMIN and MAINT.

System action: Normal service virtual machine operations are suspended.

User response: The SUSPEND environment provides a limited set of functions which allow the system programmer to gather additional diagnostic information, reset the service virtual machine, or resume processing. For more information, see "Service virtual machine error recovery and diagnosis" on page 44.

BKR9322W *notify_hh:mn:ss notify_mm/dd/yy svm_id* **has been in SUSPEND mode since** *suspend_hh:mn:ss suspend_mm/dd/yy [CommandStatus]*.

Explanation: A service virtual machine entered SUSPEND mode because too many abnormal task terminations have occurred. This message is issued, without optional *commandstatus* text, at five minute intervals if the suspended service virtual machine remains idle. This message is also displayed with optional *commandstatus* text in response to unrecognized commands, or in response to commands from a non-authorized user.

System action: The service virtual machine continues to run in suspended mode.

User response: When issued without the optional *commandstatus* text, this message serves as a period reminder that the service virtual machine is in suspended mode, and that direct intervention by the system programmer or backup administrator is required to resume normal operations.

If the *commandstatus* text is `Unrecognized command`, then this message indicates that a command was received from an authorized source, but was not recognized as a valid SUSPEND mode command.

If the *commandstatus* text is `Command not authorized`, then this message indicates that a command was received from an unauthorized source.

This environment provides a limited set of functions which allow the system programmer to gather additional diagnostic information, reset the service virtual machine, or resume processing. See "Service virtual machine error recovery and diagnosis" on page 44 for information about SUSPEND mode.

BKR9323I Attempting to resume service virtual machine operations.

Explanation: A **`RESUME`** command was accepted from an authorized user or the service virtual machine console.

System action: The abnormal task termination count resets to zero. The service virtual machine attempts to continue processing. If the abnormal task termination count is exceeded after a **`RESUME`** command is accepted,

the service virtual machine enters suspended operating mode again.

User response: No action is required. The service virtual machine attempts to continue with normal operation. For more information, see "Service virtual machine error recovery and diagnosis" on page 44.

BKR9324W RESTART processing will detach reserved virtual devices and attempt to re-IPL the service virtual machine. If CP SET CONCEAL ON limits have been reached, the virtual machine will enter CP READ status.

Explanation: A **RESTART** command was accepted from an authorized user or the service virtual machine console.

System action: The abnormal task termination count resets to zero. The service virtual machine attempts to continue processing. If the abnormal task termination count is exceeded after a **RESUME** command is accepted, the service virtual machine re-enters suspended operating mode. **RESTART** processing attempts to reset the virtual machine to a known state, and then re-initializes the virtual machine through the CP **SET CONCEAL** mechanism. For more information, see "RESTART" on page 89.

User response: If the **RESTART** command is successful, normal service virtual machine initialization proceeds. If another IPL through the CONCEAL facility is not successful, the service virtual machine enters CP READ status. For more information, see "Service virtual machine error recovery and diagnosis" on page 44.

BKR9325W PIPE return code *piperc* from attempt to unpack reference granule for *resource*. A full backup will be taken if incremental processing is not possible.

Explanation: This message is issued when an incremental backup operation requires a compressed catalog entry to be staged to the affected workers temporary work area, but an error occurred during the UNPACK operation. Additional information generated by the CMS **PIPE** command might be issued with this message. The return code displayed originates from the CMS **PIPE** command.

System action: The worker attempts to continue processing. If an incremental backup cannot be performed, a full backup of the related minidisk or SFS file space is performed.

User response: If the problem occurred due to an out-of-space condition on the workers temporary files work area, increase the size of the minidisk or SFS directory and try the operation again. If the problem persists, contact IBM Software Support.

BKR9326I Catalog entry data compression is *status*.

Explanation: This message is issued during BKRCATLG initialization. It confirms whether compression of newly-created catalog content is enabled or disabled. *status* indicates either enabled (compression is enabled) or disabled (compression is disabled).

System action: BKRCATLG initialization continues.

User response: No action is required. For information about catalog data compression, see "Backup catalog parameters" on page 152.

BKR9327W Reader file *spool_id* vanished during processing.

Explanation: The specified spool file was being processed, but was unexpectedly removed from the virtual machine RDR queue.

System action: The affected service virtual machine attempts to continue processing.

User response: No action is required. This message might be issued if files are purged or transferred from a service virtual machine by another user.

BKR9328W Receive attempt limit for file *spool_id* exceeded. Placing file on HOLD and attempting to continue.

Explanation: An error prevented successful processing of the specified spool file.

System action: The file is placed on hold, changed to class H and left on the service virtual machine's reader queue. When the affected service virtual machine is started, held files are released and an attempt is made to process them again.

User response: This message might be issued if the affected service virtual machine lacks sufficient free space on its temporary files work area. Increase the DASD space allocated for the temporary work minidisk (or SFS directory), and restart the affected service virtual machine.

BKR9329E Job terminated; the task ABEND limit of *abendedtasks* tasks has been exceeded. Remaining tasks in this job have not been processed.

Explanation: The number of abnormal task terminations for the current job exceeded the acceptable threshold.

System action: The job stops. Remaining tasks in the backup or restore job are not processed.

User response: Examine the job log for additional diagnostic information that involves the abnormally ended backup or restore tasks. If you can resolve the

underlying cause, start or submit the job again after resolving the issues. If the underlying cause is not apparent, contact your system programmer or IBM Software Support.

BKR9330E Job terminated; required DISKPOOL resources are not available. Remaining tasks in this job have not been processed.

Explanation: The current backup job is configured to use the CMSFILE output method. The job associated with this message stopped before normal end-of-job because DASD resources in the DISKPOOL associated with this job were not available. This situation can indicate a DISKPOOL resource with too few minidisks or SFS directories for the number of workers that are configured to handle this job, or a lack of sufficient free DASD capacity in the DISKPOOL.

System action: The job stops. Remaining tasks in the backup job are not processed.

User response: Issue the BKRCATLG EXPIRE (PURGE command to delete expired job instances from the backup catalog, and reclaim DISKPOOL DASD space occupied by expired backup job instances. If this effort does not produce sufficient free space to allow the affected job to run to completion, provision additional DASD resources for this DISKPOOL or consider switching to a tape-based backup output method.

BKR9333I Creation of DASD volume extent catalog structures is *status*.

Explanation: This message is issued during BKRCATLG initialization. *status* is `enabled` or `disabled`, depending on the BKR_Catalog_ExtentCat_Enabled setting in the `BKRSYSTM CONFIG` file.

System action: BKRCATLG initialization continues.

User response: No action is required.

BKR9331W INCLUDE / EXCLUDE processing generated no additional output.

Explanation: Evaluation of INCLUDE and EXCLUDE statements in a backup job template completed with a nonzero return code. No additional diagnostic output was generated by the INCLUDE, EXCLUDE, or SELECT statements during this stage of job processing.

System action: If possible, processing of the **SUBMIT**, **REVIEW**, or **RESTART** command continues.

User response: This message is issued with additional diagnostic messages during **SUBMIT**, **REVIEW**, or **RESTART** command processing. Examine the associated backup job template and review the associated messages and the resulting backup job (if a job was generated). If you cannot identify the condition that triggered this warning, contact your system programmer or IBM Software Support.

BKR9332W INCLUDE / EXCLUDE processing generated the following diagnostic output:

Explanation: Evaluation of INCLUDE and EXCLUDE statements in a backup job template completed with a non-zero return code. Additional diagnostic messages were generated by the INCLUDE, EXCLUDE, SELECT processing routine, and they are displayed after this message.

System action: If possible, processing of the **SUBMIT**, **REVIEW**, or **RESTART** command continues.

User response: This message is issued with additional diagnostic messages during **SUBMIT**, **REVIEW**, or **RESTART** command processing. Review the diagnostic messages generated by the INCLUDE, EXCLUDE, SELECT processing routine. Examine the associated backup job template and review the associated message traffic and the resulting backup job if a job was generated. If the condition that triggered this warning message cannot be identified, contact your system programmer or IBM Software Support.

BKR9334W Malformed response from user exit BKREXI03: *ResponseString* . Default worker selection logic will be used.

Explanation: Exit BKREXI03 EXEC ended with return code 0 (zero), but Backup and Restore Manager could not interpret the response that was returned in GLOBALV variable **BKR_Exit03_Response**.

System action: Processing continues. The default algorithm for selection of worker task service virtual machines (BKRWRK*nn*) is used to pick workers for the backup or restore operation being handled.

User response: Review the response that is supplied by exit BKREXI03 EXEC, and correct the value that was returned through **BKR_Exit03_Response** to comply with requirements for the exit routine. Additional messages are issued with 9334W to describe the reason the customer exit response was rejected.

BKR9335W First token must be a '*'

Explanation: Exit BKREXI03 EXEC ended with return code 0, but Backup and Restore Manager was not able to interpret the response that was returned in GLOBALV variable **BKR_Exit03_Response**. This message is issued with message BKR9334W. It is displayed when the first character of the response string is not an asterisk.

System action: Processing continues. The default algorithm for selection of worker task service virtual machines (BKRWRK*nn*) is used to pick workers for the backup or restore operation that is being handled.

User response: Review the response that is supplied by exit BKREXI03 EXEC, and correct the value that was returned through **BKR_Exit03_Response** to comply with

requirements for the exit routine.

BKR9336W Worker count missing or non-numeric.

Explanation: Exit BKREXI03 EXEC ended with return code 0 (zero), but Backup and Restore Manager could not interpret the response that was returned in GLOBALV variable **BKR_Exit03_Response**. This message is issued with message BKR9334W, and is displayed when the number of workers returned is a non-numeric string.

System action: Processing continues. The default algorithm for selection of worker task service virtual machines (BKRWRK*nn*) is used to pick workers for the backup or restore operation that is being handled.

User response: Review the response that is supplied by exit BKREXI03 EXEC, and correct the value that was returned through **BKR_Exit03_Response** to comply with requirements for the exit routine.

BKR9337W Worker count *count* exceeds maximum worker limit (*workerlimit*).

Explanation: Exit BKREXI03 EXEC ended with return code 0 (zero), but Backup and Restore Manager could not interpret the response that was returned in GLOBALV variable **BKR_Exit03_Response**. This message is issued with message BKR9334W, and is displayed when the number of workers that are returned exceeds the total number of workers that are available as configured in `BKRUSERS NAMES`.

System action: Processing continues. The default algorithm for selection of worker task service virtual machines (BKRWRK*nn*) is used to pick workers for the backup or restore operation.

User response: Review the response that is supplied by exit BKREXI03 EXEC, and correct the value that was returned through **BKR_Exit03_Response** to comply with requirements for the exit routine.

BKR9338W Number of workers returned not equal to worker count.

Explanation: Exit BKREXI03 EXEC ended with return code 0, but Backup and Restore Manager could not interpret the response that was returned in the GLOBALV variable **BKR_Exit03_Response**. This message is issued with message BKR9334W. The expected response includes both a count of workers selected to process the backup or restore operation, and a list of worker service virtual machine user IDs. This message is issued when the count of workers selected is inconsistent with the number of user IDs returned by the exit.

System action: Processing continues. The default algorithm for selection of worker task service virtual machines (BKRWRK*nn*) is used to pick workers for the backup or restore operation.

User response: Review the response that is supplied by exit BKREXI03 EXEC, and correct the value that was returned through **BKR_Exit03_Response** to comply with requirements for the exit routine.

BKR9339W Operation aborted due to user exit BKREXI03 rc *rc*;

Explanation: Exit BKREXI03 EXEC ended with a return code that is greater than or equal to 8. Return code 8 is a signal from the exit routine to stop the associated backup or restore operation because of a "not enough workers available" condition. Return codes greater than 8 are not supported, but are interpreted as an "abort operation" signal from the exit. This message is issued with message BKR9340W or message BKR9341W.

System action: The backup or restore operation that is associated with this message stops. No backup or restore job is generated.

User response: If the exit routine ended with RC 8 (not enough workers available), try the operation again when more workers are available, or modify the site configuration for Backup and Restore Manager to provision more BKRWRK*nn* service virtual machines. For return codes that are greater than 8, evaluate logic that is implemented in the exit routine to determine why the exit responded with an invalid return code.

BKR9340W Not enough workers are available.

Explanation: Exit BKREXI03 EXEC ended with return code 8, which indicates that too few worker service virtual machines were available to process the backup or restore operation.

System action: Processing of the associated backup or restore operation is abandoned. No jobs were submitted.

User response: Try the operation when more workers are available, or modify the site configuration for Backup and Restore Manager to provision additional BKRWRK*nn* service virtual machines.

BKR9341W Unsupported user exit return code.

Explanation: Exit BKREXI03 EXEC ended with return code greater than 8. Return codes greater than 8 are unsupported, but are interpreted as an indication to abandon the associated backup or restore operation.

System action: Processing of the associated backup or restore operation is abandoned. No jobs were submitted.

User response: Evaluate the logic that is implemented in the exit routine to determine why the exit responded with an invalid return code.

BKR9342W Operation terminated due to user exit signal.

Explanation: Exit BKREXI03 EXEC is in use in the service virtual machine runtime environment, and the exit ended with a response to abandon the associated backup or restore operation.

System action: Processing of the associated backup or restore operation is abandoned. No jobs were submitted.

User response: This message is issued with additional console messages, which provide details, and might also be associated with output that is generated by the exit routine. The course of action is determined based on the additional messages.

BKR9343E Operation terminated; too few workers available.

Explanation: This message is issued during **SUBMIT** command processing when no worker service virtual machines are available to process the resulting job.

System action: No backup or restore jobs were generated.

User response: Try the operation when more workers are available, or modify the site configuration for Backup and Restore Manager to provision more BKRWRK*nn* service virtual machines.

BKR9344W Job template specified *count1* **workers; selection routine returned** *count2***. Continuing with** *count2* **workers.**

Explanation: Exit BKREXI03 EXEC overrode the number of workers (*count1*) that are specified in the backup job template, which indicates that *count2* workers are to be deployed to handle the operation.

System action: SUBMIT processing continues. The job is divided among *count2* workers, instead of among *count1* workers as specified in the job template.

User response: No action is required.

BKR9345I Job will be processed by:

Explanation: This message is issued as part of summary information once a **SUBMIT**, **RESTART** or **REVIEW** command completed processing of a job template.

System action: Processing continues. One or more instances of message BKR9346I is issued following this message.

User response: No action is required.

BKR9346I *WorkerID*

Explanation: This message is issued as part of summary information once a **SUBMIT**, **RESTART**, or **REVIEW** command completed processing of a job template. It identifies individual worker service virtual machines selected to process a job.

System action: Processing continues.

User response: No action is required.

BKR9347I Worker selection will be handled by user exit BKREXI03 EXEC.

Explanation: Exit routine BKREXI03 EXEC is present in the service virtual machine runtime environment, and is being invoked.

System action: Processing continues. Exit BKREXI03 EXEC is invoked to handle selection of worker service virtual machines that are used to process the resulting job.

User response: No action is required.

BKR9351W *TemplateName* **SERIAL A not found; $$INST$$ initialized to 1.**

Explanation: Backup and Restore Manager is processing a **SUBMIT**, **REVIEW**, or **RESTART** command. The job template (*TemplateName*) specified on the command uses automatic job instance tracking, and this is the first time the template was used for job creation.

System action: The instance value associated with this job is initialized to 1. Processing continues.

User response: No action is required.

BKR9352I For job *jobname* **instance** *instance***, volume** *fromvol* **is chained to** *tovol***.**

Explanation: This message is issued during backup catalog file space integrity checks. It documents valid forward-chain entries. *jobname* and *instance* identify a backup job entry. *fromvol* and *tovol* identify the volume pair.

System action: Processing continues.

User response: No action is required.

BKR9353I Validating forward-chain media catalog entries...

Explanation: This message is issued when backup catalog file space integrity checks begin inspection of tape media EOV chain relationships.

System action: Processing continues.

User response: No action is required.

BKR9354I Starting catalog file space integrity checks.

Explanation: This message is issued at the beginning of backup catalog file space integrity checking. BKRCATLG normally performs this operation as part of initialization processing, and as the final phase of **EXPIRE** command processing.

System action: Processing continues.

User response: No action is required.

BKR9355I Catalog file space integrity checks complete.

Explanation: This message is issued upon completion of backup catalog file space integrity checking.

System action: Processing continues.

User response: No action is required.

BKR9356I Validating media catalog entries...

Explanation: This message is issued as part of backup catalog file space integrity checking.

System action: Processing continues.

User response: No action is required.

BKR9357W *type* **incremental baseline job instance** *jobname instance* **is not present in the backup catalog.** *type* **resources will be subject to full backup.**

Explanation: This message is issued during an incremental backup job when the baseline full backup that is configured for use as a change detection reference point is not present in the backup catalog file space. *jobname instance* identifies the full backup job name and instance specified in the backup job. *type* is either EDF (CMS minidisk) or SFS (CMS Shared File System).

System action: Processing continues. Because the baseline reference job was not found in the backup catalog file space, all CMS EDF (minidisk) or CMS SFS (Shared File System) objects that are processed by the job is handled as a full backup, instead of an incremental backup.

User response: Verify that the incremental backup job template that is used to produce the job refers to a valid baseline full backup job for EDF and SFS objects. For EDF or SFS, verify that the **BKR_Catalog_Pool** setting is correct. For EDF incremental backups, check the configuration settings for **BKR_EDF_Incr_BaseJob** and **BKR_EDF_Incr_BaseInst**. For SFS incremental backups, check the configuration settings for **BKR_SFS_Incr_BaseJob** and **BKR_SFS_Incr_BaseInst**. This condition might also occur if the SFS file pool server which owns the backup catalog file space is not functional when the backup job is run.

BKR9358E Filemode A must be accessed R/W to use this EXEC.

Explanation: This message is issued by the catalog browsing tools (such as BKRJOB) when invoked without first having a read-write A-disk or directory available.

System action: The command stops.

User response: Access a read-write minidisk or SFS directory as file mode "A" and then try the command again.

BKR9359I DDR-format backup of *userid devno* **starts on volume** *volser* **file** *offset* **block ID** *blockid***.**

Explanation: For DDRTAPE backup jobs with `Config BKR_Job_DDRTAPE_Verbose = Yes` in effect, this message is issued at the start of backup for each object in the backup job. It documents the tape volser *volser*, the starting tape position *offset*, and the block ID *blockid* for a new DDR-format backup image.

System action: Backup processing continues.

User response: No action is required. The information contained in this message can be useful when the resulting backup tapes are used for later restore operations with DDR.

BKR9361W CP QUERY DIAG 2CC return code 3; unable to determine system SSI configuration or support status.

Explanation: The command CP **QUERY DIAG 2CC** was issued to determine whether the current system supports SSI cluster configuration. A return code of 3 indicates that the service virtual machine (BKRBKUP, BKRCATLG, or BKRWRK*nn*) lacks sufficient CP privileges to issue the CP **QUERY DIAGNOSE** command.

System action: Processing continues.

User response: CP **QUERY DIAGNOSE** requires CP privilege class A, C, or E or equivalent RACF, or other ESM authorization. Grant the `CP` directory entries for Backup and Restore Manager service virtual machines the lowest necessary privilege class (CP privilege class E) to determine whether SSI support is present on the current system.

If this message is encountered on systems running a release of z/VM prior to release 6.2, or if SSI support is not configured for 6.2 or later systems, this message can be ignored.

BKR9362W CP QUERY DIAG 2CC return code *rc*; SSI support is presumed to be absent from this system.

Explanation: The command `CP QUERY DIAG 2CC` was issued to determine whether the current system supports SSI cluster configuration. A non-zero return code indicates that the CP DIAG 2CC does not exist on the current system.

System action: Processing continues.

User response: The CP **`QUERY DIAGNOSE`** command requires CP privilege class A, C, or E (or equivalent RACF, or other ESM authorization). Grant the `CP` directory entries for Backup and Restore Manager service virtual machines the lowest necessary privilege class (CP privilege class E) to determine whether SSI support is present on the current system.

If this message is encountered on systems running a release of z/VM prior to release 6.2, or if SSI support is not configured for 6.2 or later systems, this message can be ignored.

BKR9363I Local system is not a member of an SSI cluster; not configured for SSI.

Explanation: Information obtained through CP DIAG 2CC indicates that the current z/VM system is not configured as a member of an SSI cluster.

System action: Processing continues.

User response: No action is required.

BKR9364W Local system has been IPLed in REPAIR mode; any SSI configuration has been ignored.

Explanation: Information obtained through CP DIAG 2CC indicates that the current z/VM system is configured as a member of an SSI cluster, but is currently IPLed in REPAIR mode.

System action: Processing continues.

User response: No action is required.

BKR9365W Unrecognized diag 2cc return code *rc* encountered.

Explanation: Information obtained in response to CP DIAG 2CC is in an unrecognizable format. *rc* is the CP DIAG 2CC return code.

System action: Processing continues. Special accommodations for operation in an SSI environment are disabled.

User response: If the current z/VM system is configured as a member of an SSI cluster, contact your system programmer or IBM Software Support.

BKR9366I (*multiple line message; see Explanation.*)

Explanation: SSI Configuration is active

Cluster name: *cluster_name*

Member name: *member_name*

Slot Number: *ssi_slot_number*

Bitmap Info: *ssi_bitmap_1 ssi_bitmap_2*

This message documents the current active SSI configuration.

System action: Processing continues.

User response: No action is required.

BKR9367I SSI is configured but not active. DIAG2CC rc was *rc*.

Explanation: The response to CP DIAG 2CC indicates that SSI support is available, but not active. The value returned for *rc* is the corresponding return code from CP DIAG 2CC.

System action: Processing continues.

User response: No action is required.

BKR9369W File space *filespace* is used more than once in this DISKPOOL definition.

Explanation: The indicated SFS file space (filepool:filespace) is referenced more than once in the associated DISKPOOL file. Although this is permitted, the available free space calculation for the DISKPOOL is based on the limits associated with the entire file space. Use of multiple directories in the same file space does not increase the available capacity.

System action: Processing continues.

User response: If this is the appropriate DISKPOOL configuration, no action is required.

BKR9370W Default catalog filepool override is in effect. BKRSYSTM CONFIG defines CatalogPool as *filepool*. Job defines BKR_Catalog_Pool as *filepool*.

Explanation: This message displays the baseline catalog file pool overrides that are currently in effect through the Config BKR_Catalog_Pool parameter when Backup and Restore Manager is processing an incremental backup job.

System action: Processing continues.

User response: No action is required.

BKR9371W **Worker** *BKRWRKnn*, **job** *jobname* **is already canceled and logged off.**

Explanation: This message is displayed if a CANCEL or CANCEL JOB operation is issued for a worker or a job that was already canceled.

System action: Processing continues.

User response: No action is required.

BKR9372W **No workers found for job** *jobname*.

Explanation: This message is displayed if a **CANCEL JOB** command is issued, and no workers are actively processing the specified job name.

System action: Processing continues.

User response: No action is required.

BKR9373I **Original source type is BFS filespace: Original pool:** *filepool:filespace* **Original group:** *sgid*; *blocks_used* **blocks of** *block_max* **in use. Warning threshold:** *pct* **%.**

Explanation: This message describes a BFS file system backup.

System action: Processing continues.

User response: No action is required.

BKR9374E **BFS restore does not support filter specification. The supplied filter,** *filter*, **is unacceptable.**

Explanation: An unsupported regular expression filter was encountered in a RESTORE request for a BFS file space.

System action: The RESTORE request is rejected; processing continues.

User response: Issue the RESTORE request again and specify * as the regular expression filter. BFS file spaces are backed up and restored only as a complete entities. To perform partial recovery from the contents of a BFS file space, restore the backup to an alternate location.

BKR9375I **Invoking BKRBFSLD for BFS-to-BFS restore...**

Explanation: This message is issued when RESTORE processing invokes BKRBFSLD to restore a BFS file space image.

System action: Processing continues.

User response: No action is required.

BKR9376I **Restore operation succeeded; BKRBFSLD return code 0.**

Explanation: This message is displayed when a BFS file space image is successfully restored.

System action: Processing continues.

User response: No action is required.

BKR9377E **Restore operation failed; BKRBFSLD return code was** *rc*.

Explanation: This message is displayed when a BFS file space image restore operation completes with a non-zero return code (*rc*).

System action: Processing continues.

User response: Look in the RESTORE job log for additional error or warning messages that are issued before message BKR9377E. Additional actions might be determined by this information.

BKR9378E **Syntax error in BFS root file space name** *bfs_space*. **Format is: /../ VMBFS:filepool:filespace/**

Explanation: This message is issued when an alternate root file space is defined in `BKRSYSTM CONFIG` or a job template, but the alternate name, *bfs_space*, is not correctly formatted.

System action: If the error is detected during service virtual machine initialization, initialization ends. If the error is detected during job processing, current job processing ends.

User response: An alternate root file space must be defined using the same syntax as the other CMS OpenExtensions BFS file space references. Define the override of the default BFS root file space in `BKRSYSTM CONFIG` using the variable **`BKR_BFS_RootFileSystem`**. Define job template-level overrides with **`Config BKR_Job_BFS_RootFileSystem`**. After you correct the syntax, attempt the operation again.

BKR9379E **An error was encountered while checking BFS root file space attributes:**

Explanation: This message is displayed when an attempt to extract BFS root file space attributes results in an error.

System action: If the error is detected during service virtual machine initialization, initialization ends. If the error is detected during job processing, current job processing ends.

User response: This message is followed by one or more messages that provide details of the error condition. The CSL routine DMSQLIMU is used to extract file space attributes; if the response from the CSL call indicates a problem, message BKR8008E is

issued. If the BFS root file space is empty (0 blocks in use), message BKR9380E is issued.

BKR9380E The BFS root file space is empty (0 blocks in use).

Explanation: This message is displayed when an empty BFS root file space is detected.

System action: If the error is detected during service virtual machine initialization, initialization ends. If the error is detected during job processing, processing of the current job ends.

User response: Use a valid BFS root file space and attempt the operation again.

BKR9381I The default BFS root file space (*bfs_filespace*) has been overridden by *bfs_filespace*.

Explanation: The default BFS root file space (`/../VMBFS:VMSYS:ROOT`) was overridden in `BKRSYSTM CONFIG` or in a job template.

System action: Processing continues. BFS operations will use the alternate root file space.

User response: No action is required.

BKR9382I There are *nnnn* data blocks in use by the BFS root file space.

Explanation: The default BFS root file space (`/../VMBFS:VMSYS:ROOT`) was overridden in `BKRSYSTM CONFIG` or in a job template.

System action: Processing continues. BFS operations will use the alternate root file space.

User response: No action is required.

BKR9383E Unable to mount BFS file space *filepool:filespace* for backup.

Explanation: Backup processing was unable to mount the indicated BFS file space for backup processing.

System action: Processing continues with the next task in the backup job.

User response: Verify that the SFS file pool server, *filepool*, is operational and that filespace is a valid BFS file space. Verify that the worker service virtual machine (BKRWRK*nn*) has file pool administrator privileges and root-equivalent POSIX permissions.

BKR9384E Unable to mount BFS file space *filepool:filespace*; OPENVM MOUNT return code *rc*.

Explanation: After an attempt to mount a BFS file space, the CMS **`OPENVM MOUNT`** command completed with a nonzero return code. This message might be issued with attempts to mount the BFS root file space, or another BFS file space for backup or restore processing.

System action: Processing continues with the next task in the backup job.

User response: Verify that the SFS file pool server, *filepool*, is operational and that file space is a valid BFS file space. Verify that the worker service virtual machine (BKRWRK*nn*) has file pool administrator privileges and root-equivalent POSIX permissions. This message might be accompanied by output from the CMS **`OPENVM MOUNT`** command.

BKR9385E Unable to create mount point */mnt/userid*; OPENVM EXEC /bin/mkdir return code *rc*.

Explanation: During the backup and restore of BFS file spaces, worker service virtual machines (BKRWRK*nn*) will attempt to create a mount point (`/mnt/BKRWRK`*nn*), in the root file space if one does not exist. This message is issued if the creation attempt fails.

System action: Processing continues with the next task in the backup job.

User response: Verify that the SFS file pool server, *filepool*, is operational and that *filespace* is a valid BFS file space. Verify that the worker service virtual machine (BKRWRK*nn*) has file pool administrator privileges and root-equivalent POSIX permissions. This message might be accompanied by output from the CMS **`OPENVM EXEC /bin/mkdir`** command.

BKR9386E Unable to set current working directory to `/mnt/userid`;OPENVM SET DIRECTORY return code *rc*.

Explanation: During the backup and restore of BFS file spaces, the worker service virtual machines (BKRWRK*nn*) will attempt to set the current POSIX working directory to `/mnt/BKRWRKnn` after successfully mounting a source or target file space. This message is issued if the **`OPENVM SET DIRECTORY`** command completes with a nonzero return code.

System action: Processing continues with the next task in the backup job.

User response: Verify that the SFS file pool server, *filepool*, is operational and that *filespace* is a valid BFS file space. Verify that the worker service virtual machine (BKRWRK*nn*) has file pool administrator privileges and root-equivalent POSIX permissions. This message might be accompanied by additional output from the CMS **`OPENVM SET DIRECTORY`** command.

BKR9387E Unable to enumerate contents of file space at /mnt/userid; return code *rc*.

Explanation: An error was encountered while extracting the contents of the BFS file space mounted at the indicated path.

System action: Processing continues with the next task in the backup job.

User response: Verify that the SFS file pool server, *filepool*, is operational and that *filespace* is a valid BFS file space. Verify that the worker service virtual machine (BKRWRK*nn*) has file pool administrator privileges and root-equivalent POSIX permissions.

BKR9388W No objects were found in the file space at /mnt/userid.

Explanation: Backup processing encountered an empty BFS file space.

System action: Processing continues with the next task in the backup job.

User response: If the file space is empty, no additional action is required. Backup operations record the attributes that are required for later restore operations to re-enroll the file space. Otherwise, verify that the SFS file pool server associated file pool server is operational and that the operation references a valid BFS file space. Verify that the worker service virtual machine (BKRWRK*nn*) has file pool administrator privileges and root-equivalent POSIX permissions.

BKR9389W Return code *rc* from CMS command *command*.

Explanation: A CMS command that was issued during backup or restore processing exited with a nonzero return code. If the associated CMS command generated output, this message is followed by one or more occurrences of message BKR9196I to document each output record. After the output from the associated command is displayed, additional output documents the status of error recovery efforts.

System action: Error recovery allows processing to continue, if possible.

User response: Review the additional output associated with this message.

BKR9390W Return code *rc* from OPENVM RUN *oe_command*.

Explanation: An OpenExtensions shell command that was issued using the CMS **OPENVM RUN** command exited with a nonzero return code. *oe_command* is the OpenExtensions / POSIX shell command that produced the error response⌂. If the associated CMS command generated output, this message is followed by one or more occurrences of message BKR9196I, which documents each output record. After output from the associated command is displayed, additional output documents the status of the error recovery.

System action: Error recovery allows processing to continue, if possible.

User response: Review the additional output associated with this message.

BKR9391E Source data validation failure; expected file pool *filepool*, file space *filespace*.

Explanation: An attempt to restore a BFS file space encountered backup data that originated from an unexpected source. This message documents the expected file pool and file space and is issued with message BKR9392E.

System action: Restore processing ends. Job processing continues with the next task in the restore job.

User response: Contact your system programmer or IBM Software Support.

BKR9392E Found file pool *filepool*, file space *filespace*.

Explanation: An attempt to restore a BFS file space encountered backup data that originated from an unexpected source. This message documents the encountered file pool and file space. This message is issued with message BKR9391E.

System action: Restore processing ends. Job processing continues with the next task in the restore job.

User response: Contact your system programmer or IBM Software Support.

BKR9393W Object path: /mnt/path.

Explanation: A warning or error condition occurred during the attempt to restore the referenced POSIX file system object. The object might be a file, a directory, or other BFS file system artifact. This message is preceded by one or more messages which provide details of the exception. Details of the failed operation are displayed in the preceding message.

System action: Restore processing continues.

User response: Review the messages that accompany this message.

BKR9394W BPX1CHM / chmod() return code *rc*, reason *reason*.

Explanation: During a BFS restore operation, BPX1CHM / chmod() responded with a nonzero return code. In this case, chmod() was invoked to restore the original permission bits for an object, but the operation was unsuccessful. *rc* and *reason* are the decimal values

of the associated OpenExtensions callable services routine response. This message is followed by message BKR9393W, which identifies the associated POSIX file system object.

System action: Restore processing continues.

User response: Verify that the associated SFS file pool server is operational and that the associated file space is a valid BFS file space. Verify that the worker service virtual machine (BKRWRK*nn*) has file pool administrator privileges and root-equivalent POSIX permissions. For information about the *rc* and *reason* values, see *z/VM: OpenExtensions Callable Services Reference*. Contact your system programmer or IBM Software Support for assistance, if needed.

BKR9395W BPX1CHM / chmod() driven without parameters.

Explanation: During a BFS restore operation, BPX1CHM / chmod() was invoked with null parameters.

System action: Restore processing continues.

User response: This message is followed by message BKR9393W, which identifies the associated POSIX file system object. Contact your system programmer or IBM Software Support.

BKR9396W BPX1CHO / chown() return code *rc*, reason *reason*.

Explanation: During a BFS restore operation, BPX1CHO / chown() responded with a nonzero return code. In this case, chown() was invoked to restore the original ownership for an object, but the operation was unsuccessful. *rc* and *reason* are the decimal values of the associated OpenExtensions callable services routine response. For more information about these values, see *z/VM: OpenExtensions Callable Services Reference*. This message is followed by message BKR9393W, which identifies the associated POSIX file system object.

System action: Restore processing continues.

User response: Verify that the associated SFS file pool server is operational and that the associated file space is a valid BFS file space. Verify that the worker service virtual machine (BKRWRK*nn*) has file pool administrator privileges and root-equivalent POSIX permissions. Contact your system programmer or IBM Software Support.

BKR9397W BPX1CHO / chown() driven without parameters.

Explanation: During a BFS restore operation, BPX1CHO / chown() was invoked with null parameters.

System action: Restore processing continues.

User response: This message is followed by message BKR9393W, which identifies the associated POSIX file system object. Contact your system programmer or IBM Software Support.

BKR9398W BPX1UTI / utime() return code *rc*, reason *reason*.

Explanation: During a BFS restore operation, BPX1UTI / utime() responded with a non-zero return code. In this case, utime() was invoked to restore the original date and time stamps for an object, but the operation was unsuccessful. *rc* and *reason* are the decimal values of the associated OpenExtensions callable services routine response. For more information about these values, see *z/VM: OpenExtensions Callable Services Reference*. This message is followed by message BKR9393W, which identifies the associated POSIX file system object.

System action: Restore processing continues.

User response: Verify that the associated SFS file pool server is operational and that the associated file space is a valid BFS file space. Verify that the worker service virtual machine (BKRWRK*nn*) has file pool administrator privileges and root-equivalent POSIX permissions. Contact your system programmer or IBM Software Support for assistance, if needed.

BKR9399W BPX1UTI / utime() driven without parameters.

Explanation: During a BFS restore operation, BPX1UTI / utime() was invoked with null parameters. This message is followed by message BKR9393W, which identifies the associated POSIX file system object.

System action: Restore processing continues.

User response: Contact your system programmer or IBM Software Support.

BKR9400W BPX1ELN return code code *rc*, reason *reason*.

Explanation: During a BFS restore operation, BPX1ELN responded with a nonzero return code. In this case, BPX1ELN was invoked to restore an external file system link object, but the operation was unsuccessful. *rc* and *reason* are the decimal values of the associated OpenExtensions callable services routine response. For more information about these values, see *z/VM: OpenExtensions Callable Services Reference*. This message is followed by message BKR9393W, which identifies the associated POSIX file system object.

System action: Restore processing continues.

User response: Verify that the associated SFS file pool server is operational and that the associated file space is a valid BFS file space. Verify that the worker service virtual machine (BKRWRK*nn*) has file pool administrator privileges and root-equivalent POSIX

permissions. Contact your system programmer or IBM Software Support for assistance, if needed.

BKR9401W BPX1SYM / symlink() return code *rc*, reason *reason*.

Explanation: During a BFS restore operation, BPX1SYM / symlink() responded with a nonzero return code. In this case, symlink() was invoked to restore a symbolic link to an object, but the operation was unsuccessful. *rc* and *reason* are the decimal values of the associated OpenExtensions callable services routine response. For more information about these values, see *z/VM: OpenExtensions Callable Services Reference*. This message is followed by messages BKR9393W and BKR9402W, which identify the associated POSIX file system objects.

System action: Restore processing continues.

User response: Verify that the associated SFS file pool server is operational and that the associated file space is a valid BFS file space. Verify that the worker service virtual machine (BKRWRK*nn*) has file pool administrator privileges and root-equivalent POSIX permissions. Contact your system programmer or IBM Software Support for assistance, if needed.

BKR9402W Link path: `/mnt/path`

Explanation: When a call to BPX1SYM / symlink() fails, this message is issued with message BKR9401W. Message BKR9401W documents the nonzero response from BPX1SYM / symlink(). Message BKR9393W documents the symbolic link name that is involved in the operation; message BKR9402W documents the symbolic link target.

System action: Restore processing continues.

User response: Verify that the associated SFS file pool server is operational and that the associated file space is a valid BFS file space. Verify that the worker service virtual machine (BKRWRK*nn*) has file pool administrator privileges and root-equivalent POSIX permissions. Contact your system programmer or IBM Software Support for assistance, if needed.

BKR9403W BPX1OPN / open() return code *rc*, reason *reason*.

Explanation: During a BFS restore operation, BPX1OPN / open() responded with a nonzero return code. In this case, open() was invoked to restore a BFS file, but the operation was unsuccessful. *rc* and *reason* are the decimal values of the associated OpenExtensions callable services routine response. For more information about these values, see *z/VM: OpenExtensions Callable Services Reference*. This message is followed by message BKR9393W, which identifies the associated POSIX file system objects.

System action: Restore processing continues.

User response: Verify that the associated SFS file pool server is operational and that the associated file space is a valid BFS file space. Verify that the worker service virtual machine (BKRWRK*nn*) has file pool administrator privileges and root-equivalent POSIX permissions. Contact your system programmer or IBM Software Support for assistance, if needed.

BKR9404I BFS operations will use the default root file space, *bfs_filespace*.

Explanation: This message is issued during service virtual machine initialization. It identifies the default root file space that is used for OpenExtensions BFS operations. The embedded default for *bfs_filespace* is `/../VMBFS:VMSYS:ROOT/`

System action: Processing continues.

User response: No action is required. If you must use an alternate root file space, you can define a system-wide default in `BKRSYSTM CONFIG` using **`BKR_BFS_RootFileSystem`**, or job template level overrides using `Config BKR_Job_BFS_RootFileSystem = bfs_filespace`.

BKR9405I Source data is a OE/CMS BFS file space backup of `/../VMBFSfilepool:filespace/`

Explanation: This message is issued at the beginning of a BFS file space image restore. It identifies the original file pool and file space.

System action: Restore processing continues.

User response: No action is required.

BKR9406E *svm* - Unrecognized command.

Explanation: A service virtual machine encountered a command that was unrecognized, or that was issued by a user that has insufficient privileges. *svm* is the service virtual machine ID (for example: BKRBKUP).

System action: The service virtual machine continues normal processing.

User response: Verify that the associated command is a valid command for the service virtual machine, that command syntax is correct, and that the user ID that issued the command has the privileges to issue the command.

BKR9407E Unable to locate input file *filename filetype fm*.

Explanation: The issuing routine was unable to open the CMS file *filename filetype fm*, for input.

System action: Processing of the associated task ends. Subsequent backup or restore tasks continue.

User response: This message is shared by several different utility routines, and must be evaluated in that

context. Review the messages that are issued with message BKR9407E. Contact your system programmer or IBM Software Support.

BKR9408W Authorization warning: VM5_FILEPOOL_ADMIN_RESPECT return code *rc*, reason *reason*. Unable to establish administrative privileges; attempting to continue processing.

Explanation: During a BFS backup or restore operation, BPX1VM5 / openvmf() responded with a nonzero return code. Backup and restore operations for BFS file space images require POSIX root-equivalent privileges. BPX1VM5 / openvmf() with the VM5_FILEPOOL_ADMIN_RESPECT argument is an OpenExtensions system call, which is used to escalate client privileges when the client virtual machine has SFS file pool ADMIN authority. If BPX1VM5 / openvmf() responds with a nonzero return code, worker service virtual machines (BKRWRK*nn*) will attempt to continue backup or restore processing, but the results might be incomplete without full POSIX root-equivalent privileges. *rc* and *reason* are the decimal values of the associated OpenExtensions callable services routine response. For more information about these values, see *z/VM: OpenExtensions Callable Services Reference*.

System action: Backup or restore processing continues, but the results might be incomplete due to insufficient client permissions.

User response: Verify that the associated SFS file pool server is operational and that the associated file space is a valid BFS file space. Verify that the worker service virtual machine (BKRWRK*nn*) has file pool administrator privileges and root-equivalent POSIX permissions. Contact your system programmer or IBM Software Support for assistance, if needed.

BKR9409W Authorization warning: BPX1SUI / setuid(0) return code *rc*, reason *reason*. Unable to establish administrative privileges; attempting to continue processing.

Explanation: During a BFS backup or restore operation, BPX1SUI / setuid() responded with a nonzero return code. Backup and restore operations for BFS file space images require POSIX root-equivalent privileges. BPX1SUI / setuid() is invoked to escalate client privileges to POSIX root-equivalent levels during backup and restore operations. If BPX1SUI / setuid() responds with a nonzero return code, worker service virtual machines (BKRWRK*nn*) will attempt to continue backup or restore processing, but the results might be incomplete without full POSIX root-equivalent privileges. *rc* and *reason* are the decimal values of the associated OpenExtensions callable services routine response. For more information about these values, see *z/VM: OpenExtensions Callable Services Reference*.

System action: Backup or restore processing continues, but the results might be incomplete due to insufficient client permissions.

User response: Verify that the associated SFS file pool server is operational and that the associated file space is a valid BFS file space. Verify that the worker service virtual machine (BKRWRK*nn*) has file pool administrator privileges and root-equivalent POSIX permissions. Contact your system programmer or IBM Software Support for assistance, if needed.

BKR9410E DMSGETWU code *rc*, reason *reason*; unable to allocate a CRR work unit.

Explanation: The CMS CSL routine DMSGETWU was invoked to request a new CRR work unit, and it responded with a nonzero return code. CMS uses CRR work units to isolate a group of related file system operations into a group, which can be committed or rolled back. DMSGETWU is invoked to allocate a new work unit for a set of SFS or BFS file system operations. *rc* and *reason* are the decimal values of the VMLIB callable services routine response. For more information about these values, see *z/VM CMS Callable Services Reference (SC24-6072)*. This message is typically associated with insufficient virtual memory in the client virtual machine, or CMS File Pool server resource constraints.

System action: Processing continues if error recovery is successful. Otherwise, the associated backup or restore task ends, and processing continues with the next task.

User response: If this message is displayed regularly during backup or restore operations, or if it is associated with a specific backup or restore task failure, look in the associated CMS File Pool server virtual machine console log for more diagnostic information. Contact your system programmer or IBM Software Support for assistance, if needed.

BKR9411E DMSPUSWU return code *rc*, reason *reason*; unable to activate a CRR work unit.

Explanation: The CMS CSL routine DMSPUSWU was invoked to activate a new CRR work unit, and it responded with a nonzero return code. CMS uses CRR work units to isolate a group of related file system operations into a group, which can be committed or rolled back. DMSPUSWU is invoked to activate a new work unit for a set of SFS or BFS file system operations. *rc* and *reason* are the decimal values of the VMLIB callable services routine response. For information about these values, see *z/VM CMS Callable Services Reference (SC24-6072)*. This message is typically associated with insufficient virtual memory in the client virtual machine, or CMS File Pool server resource constraints.

System action: Processing continues if error recovery

is successful. Otherwise, the associated backup or restore task ends, and processing continues with the next task.

User response: If this message is displayed regularly during backup or restore operations, or if it is associated with a specific backup or restore task failure, look in the associated CMS File Pool server virtual machine console log for more diagnostic information. Contact your system programmer or IBM Software Support for assistance, if needed.

BKR9412W Unsupported object in BKRBFSTL input stream; continuing with next item... Object: `/mnt/BKRWRKnn/path/to/object`

Explanation: BKRBFSTL encountered an unrecognized OpenExtensions BFS / POSIX file system object type during BFS file space image backup.

System action: Processing continues with the next object in the BFS file space.

User response: Confirm that the backup task is attempting to process a valid BFS file space. If the problem continues, contact your system programmer or IBM Software Support.

BKR9413W Skipping backup of the following *type* object: Object: `/mnt/BKRWRKnn/path/to/object`

Explanation: BKRBFSTL encountered an unsupported OpenExtensions BFS / POSIX file system artifact during BFS file space image backup. BFS file spaces might include special POSIX file system artifacts that are not subject to backup or restore. These artifacts include block (b) or character (c) devices, which are associated with raw POSIX devices, and named pipe / FIFO objects (p or s) devices. The artifacts are typically inserted into a POSIX file system at installation time, or they are dynamically created and deleted during process execution. When artifacts are encountered during BFS file space backup operations, their existence is documented in the job log by message BKR9412W.

System action: Processing continues with the next object in the BFS file space.

User response: For more information about supported BFS file system object types, see *z/VM: OpenExtensions POSIX Conformance Document* and *z/VM: OpenExtensions Commands Reference*.

BKR9414W Unable to back up the following object; *routine()* return code *rc*, reason *reason*

Explanation: Messages BKR9414W and BKR9415W are typically associated with the backup of an active BFS file space when a file system object is modified or deleted during the backup process. The messages are displayed when a POSIX file system interaction responds with an unexpected return and reason code during BFS file space backup. The system service routines that might be involved are lstat(), readlink(), bpx1rxl(), stat(), read(), close(), or open(). *rc* and *reason* are the decimal values of the associated OpenExtensions callable services routine response.

System action: Processing continues with the next object in the BFS file space.

User response: For more information, see *z/VM: OpenExtensions POSIX Conformance Document* and *z/VM: OpenExtensions Commands Reference*.

BKR9415W Object: `/mnt/BKRWRKnn/path/to/object`

Explanation: Messages BKR9414W and BKR9415W are typically associated with the backup of an active BFS file space when a file system object is modified or deleted during the backup process. The messages are displayed when a POSIX file system interaction responds with an unexpected return and reason code during BFS file space backup. The system service routines that might be involved are lstat(), readlink(), bpx1rxl(), stat(), read(), close(), or open(). *rc* and *reason* are the decimal values of the associated OpenExtensions callable services routine response.

System action: Processing continues with the next object in the BFS file space.

User response: For more information, see *z/VM: OpenExtensions POSIX Conformance Document* and *z/VM: OpenExtensions Commands Reference*.

BKR9416E FILEHEAD (BFS symlink) return code *rc*.

Explanation: This message is issued when an internal data structure integrity check fails during backup of a BFS file system.

System action: The current backup task ends. Processing continues with the next task in the job.

User response: Contact your system programmer or IBM Software Support.

BKR9417E Catalog FILEHEAD (BFS symlink) return code *rc*.

Explanation: This message is issued when an internal data structure integrity check fails during backup of a BFS file system.

System action: The current backup task ends. Processing continues with the next task in the job.

User response: Contact your system programmer or IBM Software Support.

BKR9418E FILEDATA (BFS symlink) return code *rc*.

Explanation: This message is issued when an internal data structure integrity check fails during backup of a BFS file system.

System action: The current backup task ends. Processing continues with the next task in the job.

User response: Contact your system programmer or IBM Software Support.

BKR9419E FILEEND (BFS symlink) return code *rc*.

Explanation: This message is issued when an internal data structure integrity check fails during backup of a BFS file system.

System action: The current backup task ends. Processing continues with the next task in the job.

User response: Contact your system programmer or IBM Software Support.

BKR9420E FILEHEAD (BFS extlink) return code *rc*.

Explanation: This message is issued when an internal data structure integrity check fails during backup of a BFS file system.

System action: The current backup task ends. Processing continues with the next task in the job.

User response: Contact your system programmer or IBM Software Support.

BKR9421E Catalog FILEHEAD (BFS extlink) return code *rc*.

Explanation: This message is issued when an internal data structure integrity check fails during backup of a BFS file system.

System action: The current backup task ends. Processing continues with the next task in the job.

User response: Contact your system programmer or IBM Software Support.

BKR9422E FILEDATA (BFS extlink) return code *rc*.

Explanation: This message is issued when an internal data structure integrity check fails during backup of a BFS file system.

System action: The current backup task ends. Processing continues with the next task in the job.

User response: Contact your system programmer or IBM Software Support.

BKR9423E FILEEND (BFS extlink) return code *rc*.

Explanation: This message is issued when an internal data structure integrity check fails during the backup of a BFS file system.

System action: The current backup task ends. Processing continues with the next task in the job.

User response: Contact your system programmer or IBM Software Support.

BKR9424W Object was deleted during backup: `/mnt/BKRWRKnn/path/to/object`

Explanation: BFS backup processing performs consistency checks for each file system artifact. This message is issued when a BFS file system artifact is deleted from the BFS file space during backup and the object was initially present in the file space for backup. The response from a final BPX1STA / stat() function indicates that the object is no longer present. This situation can occur if another application is updating objects in the BFS file space while backup processing occurs.

System action: Processing continues with the next object in the file system.

User response: No action is required.

BKR9425W Object time stamp changed during backup: `/mnt/BKRWRKnn/path/to/object`

Explanation: BFS backup processing performs consistency checks for each file system artifact. This message is issued when the last modified (*st_mtime*) time stamp for BFS file system artifact changes between start and end of object backup. This situation can occur if another application is updating objects in the BFS file space while backup processing occurs.

System action: Processing continues with the next object in the file system. The end status reported for this backup task is "Fuzzy files", unless a higher priority ending state is encountered.

User response: No action is required.

BKR9426W Object size changed during backup: `/mnt/BKRWRKnn/path/to/object`

Explanation: BFS backup processing performs consistency checks for each file system artifact. This message is issued when the file size (*st_size*) attribute of a BFS file system artifact changes between start and end of object backup. This situation can occur if another application is updating objects in the BFS file space while backup processing occurs.

System action: Processing continues with the next object in the file system. The end status reported for this backup task is "Fuzzy files", unless a higher priority end state is encountered.

User response: No action is required.

BKR9427W **No objects are catalogued for job** *jobname* **instance** *instance***; check for failed backup.**

Explanation: BKRCATLG **EXPIRE** command processing encountered an empty catalog entry for the backup job *jobname*, instance *instance*. There are no references to minidisks or file spaces that are associated with this backup instance.

System action: Expiration processing continues. If expiration processing was invoked with the PURGE option, the entry is deleted when its expiration date is reached.

User response: Empty instance entries in the backup catalog generally indicate that a backup job began running, but ended without backing up minidisks or file spaces. For tape or DISKPOOL-based backup jobs, this situation can occur if a job is canceled before successfully backing up any objects. For tape-based backups, this situation can occur if a backup is canceled due to a tape mount timeout. For DISKPOOL-based backups, this situation can occur if no DISKPOOL resources had sufficient free space to accommodate the objects that are selected for backup. To determine why the backup was not successful, review the job logs for the backup job and instance.

BKR9428I **Reblocking of** *media* **output is** *status***.**

Explanation: This message is issued at the start of each job to document the configuration setting of data reblocking services. *media* is TAPE or EDF. *status* is enabled or disabled.

System action: Job processing continues.

User response: No action is required. This message is displayed in the job log to document settings of tape and EDF output reblocking services.

BKR9429I **UDPE configuration:** *media* **UDPE***n* **is** *status***.**

Explanation: This message is issued at the start of each job to document the configuration setting of User Data Processing Exits (UDPE) 1 and 2. UDPE*n* is UDPE1 or UDPE2. *media* is set to Tape or EDF. *status* indicates whether the individual tape or EDF UDPE routine is disabled, set to the embedded default, or enabled. If the routine is set to the embedded default or enabled, the exit routine name is displayed.

System action: Job processing continues.

User response: No action is required.

BKR9430W *media* **UDPE***n* **is enabled, but data reblocking is disabled. UDPE routines can only be used with reblocking enabled.**

Explanation: This message is issued when a backup job is configured to enable UDPE exit point UDPE1 or UDPE2 for *media* (Tape or EDF) output, but data reblocking services were not enabled. Data reblocking must be enabled to use UDPE exit routines.

System action: Job processing continues. The backups that are created are generated without having backup data processed by site-configured UDPE routines.

User response: Ensure the associated job template specifies `BKR_Out_Tape_Reblock = YES` (for tape-based backups) or `BKR_Out_EDF_Reblock = YES` (for DISKPOOL-based backups) and re-submit the job.

BKR9431E **EXECIO return code rc writing** *file_ID***.**

Explanation: During an attempt to write to file *file_ID*, the CMS EXECIO utility exited with a non-zero return code.

System action: The system action varies depending on severity of the error. If possible, the write attempt is attempted again. If the file cannot be updated, the process exits with a non-zero return code and additional diagnostic messages.

User response: Ensure the affected service virtual machine has read/write access to the associated minidisk or SFS directory, and that sufficient free space is available on the destination file mode.

BKR9432E **Conversion to SSI job instance sharing is pending. BKR_SSI_InstanceSync is off, but the InstancePool directory was found in the catalog file space. Add BKR_SSI_InstanceSync = ON to BKRSYSTM CONFIG to proceed.**

Explanation: This message is issued when the `InstancePool` directory (*catalogpool:catalogspace*.`INSTANCEPOOL`) is found in the backup catalog file space, but configuration file `BKRSYSTM CONFIG` does not specify `BKR_SSI_InstanceSync = ON`.

System action: Service virtual machine startup is ended.

User response: When this conflict is encountered, it is assumed that a conversion to shared job instance configuration is in progress, and that the service virtual machine is running on an SSI member node where `BKRSYSTM CONFIG` was not updated to specify `BKR_SSI_InstanceSync = ON`. The system programmer or backup administrator must update the `BKRSYSTM CONFIG` file and restart the affected service virtual machines, once ready to proceed.

BKR9433E Unable to obtain a SESSION UPDATE lock, result *rc*. Lock target: *resource*.

Explanation: This message is issued after all wait and retry attempts to obtain a lock are exhausted. An attempt to obtain a SESSION UPDATE lock for a directory or file resulted in a nonzero return code (*rc*). This message can be displayed with several different operations and is issued with messages BKR9304, BKR9305 and BKR9196.

System action: If it is possible to continue processing, service virtual machine execution continues. If error recovery is unsuccessful, additional diagnostic information is displayed.

User response: Review the additional information that is provided by the messages help determine why a lock could not be obtained.

BKR9434E Unable to identify an unused file mode, result *result*.

Explanation: This message is issued when a service virtual machine cannot identify unused CMS file mode letters. The result of the request might provide additional diagnostic information.

System action: If possible, processing continues and file mode Z is reused for the current operation. If recovery cannot safely reuse file mode Z, the process ends.

User response: Reduce the number of active CMS file modes in the service virtual machine runtime environment and attempt the operation again.

BKR9435E Unable to ACCESS *resource*, result *result*.

Explanation: The CMS **ACCESS** command exited with a nonzero return code. *resource* identifies the minidisk or SFS directory involved. *result* identifies the ACCESS return code and can include more information.

System action: If possible, processing continues. If recovery is unsuccessful, the process ends.

User response: Assess the nature and severity of the problem based on the ACCESS return code. If *resource* is a CMS SFS directory, ensure that the service virtual machine has sufficient privileges to access the directory and that the file pool is online. If *resource* is a minidisk, verify that the service virtual machine can LINK to the virtual device and that the minidisk contains a valid CMS EDF file system.

BKR9436W Error moving *jobname* SERIAL A to InstancePool directory. Result was: *result* Move will be retried at next svm initialization.

Explanation: Conversion to shared job instance management encountered an error while attempting to move file *jobname* SERIAL A from the A-disk of BKRBKUP to the `InstancePool` directory.

System action: Processing continues, but the saved instance value for *jobname* is not consolidated into the `InstancePool` directory. The operation is attempted again the next time BKRBKUP is initialized.

User response: Verify that the SFS file pool server containing the backup catalog file space is online and available to all members of the SSI cluster. Verify that BKRBKUP has file pool administrator privileges for the associated file pool, and attempt the operation again.

BKR9437E Unable to create the InstancePool directory. Result: *result*. Verify that *svm_name* has sufficient file pool privileges for file pool *catalogpool* and that the file pool is available.

Explanation: Initial migration of job instance numbers from the A-disk of BKRBKUP to the `InstancePool` directory in the catalog file space was unsuccessful. Creation of the `InstancePool` directory failed. *result* provides additional diagnostic information.

System action: Service virtual machine start-up ends.

User response: Verify that the SFS file pool server that contains the backup catalog file space is online and available to all members of the SSI cluster. Verify that BKRBKUP has file pool administrator privileges for the associated file pool, and attempt the operation again.

BKR9438W ACCESS *dirpath filemode* (FORCERW return code *rc*.

Explanation: The CMS **ACCESS** command exited with a non-zero return code (*rc*) on an attempt to access directory *dirpath* as file mode *filemode* with the FORCERW option in effect.

System action: The associated process ends.

User response: Verify that the affected service virtual machine has sufficient privileges (ownership of the associated SFS file space, or SFS file pool administrator authority) to access the resource and attempt the operation again or restart the affected service virtual machine.

BKR9439W ACCESS retry attempt *count* will occur in *delay* seconds.

Explanation: A CMS **ACCESS** command exited with a non-zero return code. The operation is eligible for error recovery efforts. *count* is the current number of retry attempts. *delay* is the number of seconds in which the retry will occur.

System action: After *delay* seconds, the operation is attempted again.

User response: Error recovery processing pauses for several seconds. If the retry limit was not reached, try

the operation again. If the retry limit was reached, additional diagnostics are issued.

BKR9440W **ACCESS** *dirpath filemode* **(FORCERO return code** *rc***.**

Explanation: The CMS **ACCESS** command exited with a non-zero return code (*rc*) on an attempt to access directory *dirpath* as file mode *filemode* with the FORCERO option in effect.

System action: The associated process ends.

User response: Verify that the affected service virtual machine has ownership of the associated SFS file space, or SFS file pool administrator authority to access the resource and attempt the operation again or restart the affected service virtual machine.

BKR9441W **COPYFILE return code** *rc* **on attempt to move** *jobname* **SERIAL A to InstancePool directory. The operation will be retried at the next svm initialization.**

Explanation: Migration to shared job instance management encountered a non-zero return code (*rc*) from the CMS **COPYFILE** command while merging data for *jobname* into the `InstancePool` directory.

System action: Processing continues. The operation is attempted again at the next BKRBKUP initialization.

User response: Verify that the SFS file pool server that contains the backup catalog file space is online and available to all members of the SSI cluster. Verify that BKRBKUP has file pool administrator privileges for the associated file pool, and attempt the operation again.

BKR9442W **ERASE return code** *rc* **during attempt to move** *jobname* **SERIAL A to InstancePool directory. The operation will be retried at the next svm initialization.**

Explanation: Migration to shared job instance management encountered a non-zero return code (*rc*) from the CMS **ERASE** command while merging data for *jobname* into the `InstancePool` directory.

System action: Processing continues. The operation is attempted again at the next BKRBKUP initialization.

User response: If the A-disk of BKRBKUP is a minidisk, ensure that the virtual device is available in read/write mode. If the A-disk of BKRBKUP is an SFS directory, ensure that BKRBKUP has read/write privileges for the directory and that no other users have the directory or *jobname* INSTANCE locked against updates.

BKR9443E **Return code 119 from PIPE on an attempt to receive a file from spool. Work space at file mode D is read-only, or the SFS file pool server is offline. Restart this service virtual machine after the problem has been corrected.**

Explanation: A service virtual machine encountered an "unable to write to destination" condition while it was attempting to retrieve a RDR file from CP spool space to a minidisk or SFS directory.

System action: Processing ends.

User response: This situation might be encountered when an SFS file pool server goes offline while BKRBKUP, BKRCATLG, or BKRWRK*nn* is active. After the file pool server is restarted, initialize the affected service virtual machine again to continue processing.

BKR9444E **Storage group must be a whole number 2-32767.**

Explanation: This message is issued when a command argument that is treated as an SFS file pool storage group fails data type or range validation.

System action: The command is rejected.

User response: Issue the command again and specify a valid SFS file pool storage group value.

BKR9445I **DDRTAPE output handler has disabled data reblocking and UDPE routines.**

Explanation: This message is issued during backup job initialization if the DDRTAPE output handler is used.

System action: Backup job initialization continues.

User response: No action is required. Because the DDRTAPE output handler creates media in z/VM DASD Dump Restore (DDR) utility format, output data reblocking and UDPE services are automatically disabled for backup jobs that use this output method.

BKR9446I **Processing complete for** *item* **block range** *n1* **-** *n2***.**

Explanation: DASD volumes that are selected for DDRTAPE backup can be configured with partial extents that are specified for backup. This message is issued by the DDRTAPE output handler when a partial extent of an FB-512 device is processed. It documents completion of a range of FB-512 DASD data blocks, and is only displayed when a less-than-full-volume backup is defined for the device.

System action: Backup task processing continues.

User response: No action is required.

BKR9447E Syntax error in BKRBFSTL invocation.

Explanation: The internal utility routine BKRBFSTL was invoked with incorrect syntax.

System action: Backup job processing continues with the next task.

User response: Contact your system programmer or IBM Software Support.

BKR9448W Backup Manager SVM *userid* has entered diagnostic dump processing.

Explanation: An error condition was encountered by the service virtual machine identified as *userid*.

System action: Varies. If the condition can be handled by error recovery, processing continues. Otherwise, the service virtual machine stops.

User response: Review the service virtual machine console or job log and review the messages that precede the diagnostic dump. Contact your system programmer or IBM Software Support, if needed.

BKR9449W Required temporary work area at file mode D can not be accessed. Please provision a minidisk or SFS directory for temporary files before starting this service virtual machine.

Explanation: Required minidisk or SFS directory space for temporary files at file mode D was not provisioned in the service virtual machine environment. The service virtual machine is unable to complete initialization without this resource.

System action: Service virtual machine initialization is stopped.

User response: Review the product installation requirements and provision an SFS directory or minidisk for service virtual machine temporary file storage on the affected service virtual machine.

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Bibliography

You might need to refer to other sources of information when you are using Backup and Restore Manager.

This section lists the documentation that supports Backup and Restore Manager. Use the appropriate library for the version of z/VM that you are using.

Tip: To quickly locate a specific book, use the IBM Publications Center, which is located at www.elink.ibmlink.ibm.com/public/applications/publications/cgibin/pbi.cgi. After you enter your country information, click **Search for publications**, and enter the publication number (xxxx-xxxx) of the book that you want.

- *IBM Backup and Restore Manager for z/VM Program Directory, GI10-8662*
- *RACF V2R1.0 External Security Interface (RACROUTE) Macro Reference, GC23-3733*
- *RACF V1R10 Security Administrator's Guide, SC28–1340*
- *RACF V5R3.0 Security Server Security Administrator's Guide, SC24–6142*
- *z/OS® V1R3.0 MVS™ Assm Services Reference, SA22-7606*
- *z/VM V6.3 CMS User's Guide, SC24-6173*
- *z/VM V6.3 CMS Commands and Utility Reference, SC24-6166*
- *z/VM V6.2 CMS Macros and Functions Reference, SC24-6168*
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