

1.3

*IBM Backup and Restore Manager  
for z/VM  
Administration Guide*



**Note:**

Before using this information and the product it supports, read the "Notices" topic at the end of this information.

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

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## About this information

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IBM Backup and Restore Manager for z/VM® (also referred to as Backup and Restore Manager) is a tool to back up and restore CMS and non-CMS data in a VM environment.

These topics provide instructions for installing, configuring, and using Backup and Restore Manager.

These topics are designed to help system administrators perform these 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.

## Service updates and support information

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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 Web page:

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

## How to read syntax diagrams

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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).

▶▶ *required\_item* ▶▶

- Optional items appear below the main path.

▶▶ *required\_item* —————▶▶  
                                  └─ *optional\_item* ─┘

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.

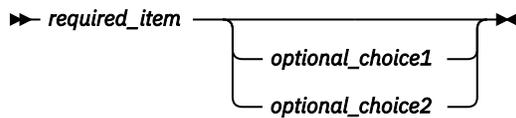
▶▶ *required\_item* —————▶▶  
                                  ┌─ *optional\_item* ─┐

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

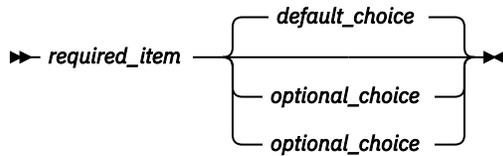
If you *must* choose one of the items, one item of the stack appears on the main path.

▶▶ *required\_item* —————▶▶  
                                  ┌─ *required\_choice1* ─┐  
                                  └─ *required\_choice2* ─┘

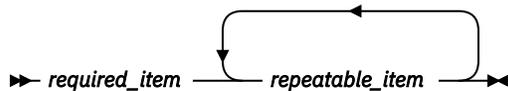
If choosing one of the items is optional, the entire stack appears below the main path.



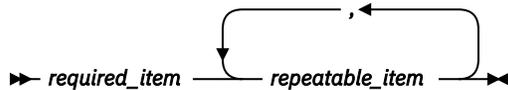
If one of the items is the default, it appears above the main path, and the remaining choices are shown below.



- 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).

## How to send your comments

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Your feedback is important in helping to provide the most accurate and high-quality information. If you have any comments about this documentation 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/http://www.vm.ibm.com/forms/>
- Send your comments by email to [zvmtools@us.ibm.com](mailto:zvmtools@us.ibm.com). Be sure to include the name of the book, the part number of the book, the version of IBM 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).

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# 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)*.

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## What's new in IBM 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.

### **SC18-9346-26 for APAR PH50490, PTF UI83064**

- A new function for distributing backup tasks across workers is added. This function can be invoked as an option on the existing REVIEW, SUBMIT, and RESTART primary backup server commands. For more information, see [REVIEW](#), [SUBMIT](#), and [RESTART](#). To configure the load balancing function, see [Load Balancing configuration parameters](#).
- Syntax for primary backup server commands REVIEW, SUBMIT, and RESTART has been modified to include the load balancing parameters and options. For more information, see [REVIEW](#), [SUBMIT](#), and [RESTART](#).
- The RESTORE function, invoked via one of the catalog user interfaces or via batch, has been enhanced to display a warning message (9656W and 9657W) and set a non-zero return code, when the EDF or SFS file was skipped if the REPLACE option was not specified but the file already exists in the target.
- Backup job names have been enhanced to use a two-digit suffix instead of single digit. This will allow 64 workers for a job, which is the maximum allowed.
  - Previous – SAMPFUL0, SAMPFUL1, SAMPFUL2....SAMPFULn
  - Current – SAMPFU00, SAMPFU01, SAMPFU02....SAMPFUnn
- INCLUDE RDEVVOL sample statements in [SAMPDR TEMPSAMP](#) have been corrected.
- New messages have been added to support above enhancements. For more information, see [Appendix J, "Messages and Codes,"](#) on page 177.

## SC18-9346-26 for APAR PH46133, PTF UI80475

A new function to display the progress of backup activity as part of STATUS reporting is added. This function is disabled by default. For more information see, [“STATUS” on page 88](#)

## SC18-9346-26 for APAR PH42721, PTF UI78527

- The Job syntax of EOJ updated. For more information, see [“EOJ” on page 76](#).
- A new function to display the progress of backup activity is added. The worker progress configuration parameters are used to control the display of the worker progress update messages and to configure the reporting intervals. For more information, see [“Worker progress reporting configuration parameters” on page 172](#).
- A new message has been added. For more information, see [“BKR9632I” on page 367](#).

## SC18-9346-26 for APAR PH39234, PTF UI76437

- A new function BKREDMIF is added that allows worker task service virtual machines (BKRWRKnn) to interact with an external Directory Manager such as z/VM DIRMAINT for cases where RESTORE functions target a minidisk that has been deleted from the system. For more information, see [“BKREDMIF exit” on page 130](#).
- A few new messages have been added. See [Appendix J, “Messages and Codes,” on page 177](#) for more information.

## SC18-9346-25 for APAR PH30009, PTF UI71888

- Additional system configuration settings have been created to assist with error detection and the recovery log when connectivity to one or more SFS file pool servers has been interrupted. See [“Service virtual machine parameters” on page 159](#) for more information.
- A few new messages have been added. See [Appendix J, “Messages and Codes,” on page 177](#) for more information.

## SC18-9346-24 for APAR PH28259, PTF UI70973 and APAR PH18389, PTF UI66016 and APAR PH13663, PTF UI63896

- The installation process has been improved to reduce the number of steps you must take to install and configure Backup and Restore Manager. See [“Copying and customizing the sample PROFILE EXECs ” on page 16](#) for more information.
- The configuration instructions that enable you to use Backup and Restore Manager with Tape Manager have been changed to include information on modifying two SAMPEXEC files. See [Modifying CATPROF SAMPEXEC \(BKRCATLG\)](#) and [Modifying WRKPROF SAMPEXEC \(BKRWRK01...BKRWRK04\)](#).
- A new command, BKRSTART, has been added to simplify service virtual machine initialization and configuration. See [“BKRSTART” on page 112](#), and [“BKRSTART configuration parameters” on page 170](#) for more information.
- The QUERY EXPIRE command has been improved to support wildcard characters. See [“QUERY EXPIRE” on page 108](#) for more information.
- A few new messages have been added. See [Appendix J, “Messages and Codes,” on page 177](#) for more information.

## SC18-9346-23 for APAR PH07218, PTF UI60669

- The **DELETECAT** option, to expire and delete the catalog information that is associated with the job instance, was added to the **CANCEL** command. For more information, see [“CANCEL” on page 92](#).
- The following commands were added for the primary backup service virtual machine: [“VOID” on page 106](#), [“UNVOID” on page 105](#), and [“QUERY VOID” on page 98](#).

- A new option allows you to specify handling of offline targets during SELECT statement processing. For more information, see [“Selection record syntax” on page 77](#).
- Several new messages were added. If you need information on any messages, refer to [Appendix J, “Messages and Codes,” on page 177](#).

### **SC18-9346-22 for APAR PI73039, PTF UI43168**

- The **CATBACKUP EXPORT** command was added. For more information, see [“CATBACKUP EXPORT” on page 94](#) and [“Special considerations for backing up the backup catalog file space” on page 39](#).
- The **BKRTAPE** command was added. For more information, see [“BKRTAPE” on page 85](#).
- Information was added to [“Copying and customizing the BKRSYSTEM CONFIG file” on page 20](#).
- The required privileges for the worker service virtual machines were updated. For more information, see [“Verifying privileges for worker service virtual machines \(BKRWRKnn\)” on page 13](#).
- The **SET EXPIRE** command was updated. For more information, see [“SET EXPIRE” on page 110](#).
- New parameters were added. For more information, see [Appendix H, “BKRSYSTEM CONFIG parameters,” on page 159](#).
- New messages were added. For more information, see [Appendix J, “Messages and Codes,” on page 177](#).

### **SC18-9346-21 (all changes for "-21" and lower are prior to 2017)**

- Information about creating an alternate BFS root file space was added. For more information, see [“Creating an alternate BFS root file space” on page 24](#).
- Information about the order of backup operations was added. For more information, see [“Order of backup operations” on page 44](#).
- Information about backing up the backup catalog file space was added. For more information, see [“Special considerations for backing up the backup catalog file space” on page 39](#).
- Information about storage requirements for the backup catalog SFS file space was updated. For more information, see [“Determining backup catalog SFS file space storage requirements” on page 32](#).
- Information about the use of host-based data compression and encryption exits was added. For more information, see [“Data compression and encryption exits” on page 47](#).

### **SC18-9346-20**

- The IBM Tape Manager for z/VM parameter descriptions were updated. For more information, see [“Tape Manager for z/VM parameters” on page 164](#).
- New variables were added to the CONFIG syntax. For more information, see [“Optional variables” on page 64](#).

### **SC18-9346-19**

- The syntax for the **SET EXPIRE** command was enhanced to provide the ability to specify an explicit date in the form of YYYY/MM/DD or MM/DD/YYYY. For more information, see [“SET EXPIRE” on page 110](#).
- Two new variables: DDRTAPE\_Preserve\_Label (BKRSYSTEM CONFIG) and BKR\_Job\_DDRTAPE\_Preserve\_Label (job template setting) were added in support of DDR SL Tape Label toleration (z/VM APAR VM65778). For more information, see [“DDRTAPE output variables” on page 70](#), [Appendix G, “DDRTAPE output handler usage guidelines,” on page 157](#), and [“Copying and customizing the BKRSYSTEM CONFIG file” on page 20](#).
- The job template SUMMARIZE and EOJ output was enhanced to include the job name and instance. For more information, see [“SUMMARIZE” on page 73](#).

- SVM responses to the **STATUS** command now includes the compile date and time (regardless of the REXX runtime library version) and the active version of the REXX runtime library. For more information, see [“STATUS” on page 88](#).
- New messages were added. For more information, see [Appendix J, “Messages and Codes,” on page 177](#).

### **SC18-9346-18**

- The maximum number of worker service virtual machines for BKR\_Job\_Workers was increased from 16 to 64. For more information, see [“Optional variables” on page 64](#) and [“Copying and customizing the BKRUSERS NAMES file” on page 18](#).
- The GRANULE variables BKR\_Catalog\_Granule\_FN, BKR\_Catalog\_Granule\_FT, and BKR\_Catalog\_Granule\_FM were removed. Existing GRANULE variable settings in job templates are ignored.
- New messages were added. For more information, see [Appendix J, “Messages and Codes,” on page 177](#).

### **SC18-9346-17**

- The required privileges for BKRBKUP were updated. For more information, see [“Verifying privileges for the primary Backup and Restore Manager server \(BKRBKUP\)” on page 11](#).
- The required privileges for the worker service virtual machines were updated. For more information, see [“Verifying privileges for worker service virtual machines \(BKRWRKnn\)” on page 13](#).
- The description of the DUMPSFS output was updated. For more information, see [“SFS \(DUMPSFS statement processing\)” on page 154](#).

### **SC18-9346-16**

- Support for Byte File System (BFS) objects was added. For more information, see [“Backup types” on page 43](#).
- The required privileges for BKRBKUP were updated. For more information, see [“Verifying privileges for the primary Backup and Restore Manager server \(BKRBKUP\)” on page 11](#).
- The required privileges for BKRCATLG were updated. For more information, see [“Verifying privileges for the primary catalog server \(BKRCATLG\)” on page 12](#).
- The required privileges for the worker service virtual machines were updated. For more information, see [“Verifying privileges for worker service virtual machines \(BKRWRKnn\)” on page 13](#).
- Information about the preinstalled z/VM SFS file pools was updated. For more information, see [“Allocating SFS resources for the backup catalog” on page 14](#).
- Target SFS directory information was updated. For more information, see [“Copying and customizing the sample PROFILE EXECs ” on page 16](#).
- The instructions for modifying ADMPROF SAMPEXEC were updated. For more information, see [Modifying ADMPROF SAMPEXEC \(BKRADMIN\)](#).
- The instructions for modifying CATPROF EXEC were updated. For more information, see [Modifying CATPROF SAMPEXEC \(BKRCATLG\)](#).
- The instructions for modifying MASTPROF SAMPEXEC were updated. For more information, see [Modifying MASTPROF SAMPEXEC \(BKRBKUP\)](#).
- The instructions for modifying WRKPROF SAMPEXEC were updated. For more information, see [Modifying WRKPROF SAMPEXEC \(BKRWRK01...BKRWRK04\)](#).
- 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](#).
- The instructions for modifying BKRSYSTEM CONFIG were updated. For more information, see [“Modifying the BKRSYSTEM CONFIG file for interaction with Tape Manager” on page 24](#).

- The instructions for modifying the BKRWRKnn PROFILE EXEC were updated. For more information, see [Updating the BKRWRKnn PROFILE EXEC](#)
- New sample templates were added. For more information, see [“Sample job templates” on page 49](#) and [Appendix A, “Sample job template descriptions,” on page 115.](#)
- The SAMPFULL template was updated. For more information, see [“Specifying configuration information” on page 50](#), [“Minidisk selection \(MINIDISK\)” on page 51](#), [“SFS selection \(SFS\)” on page 52](#), and [“Specifying end of job processing” on page 53.](#)
- 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 145](#) and [“DUMPBFS” on page 147.](#)
- The types of backups that are generated by DDRTAPE were updated. For more information, see [Appendix G, “DDRTAPE output handler usage guidelines,” on page 157.](#)
- New messages were added. For more information, see [Appendix J, “Messages and Codes,” on page 177.](#)

## Backup and Restore Manager components

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

### primary backup service virtual machine

The primary 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 primary 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 primary backup service virtual machine. Multiple clients can share access to a single primary 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® 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 IBM Tape Manager for z/VM”](#) on page 23. For information about exit routines, see [Appendix D, “Tape management interface exits,”](#) on page 139.

**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](#) on page 7 shows three backup jobs where an SFS file, a raw CKD DASD extent, and an EDF minidisk are backed up to tape.

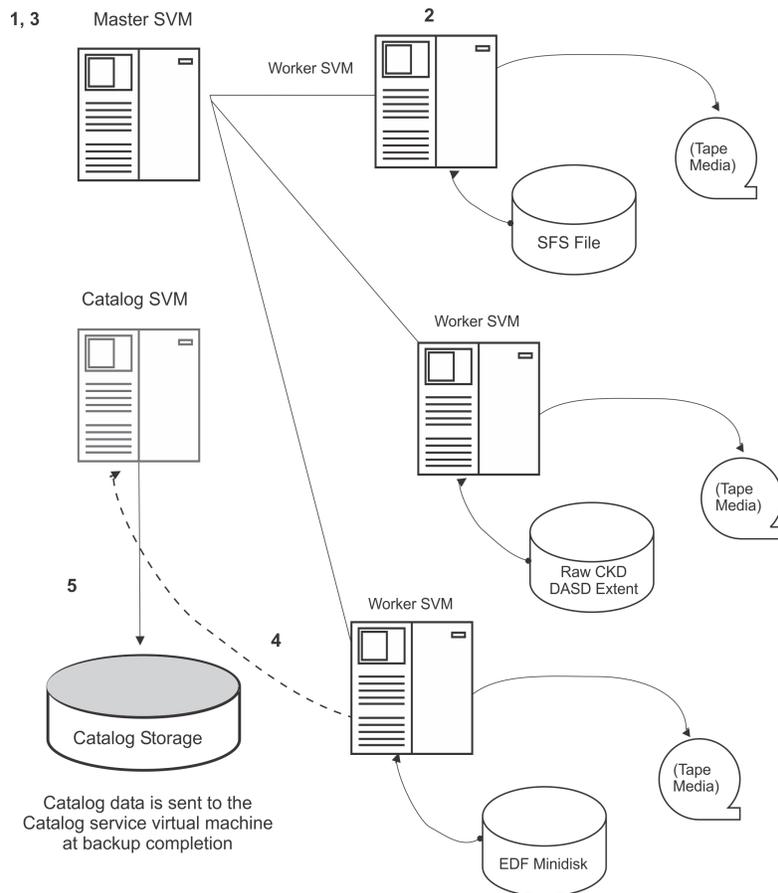


Figure 1. Backup processing (three backup jobs backing up objects to tape)

The following actions occur during backup processing:

1. The primary 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 primary 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 on page 8 shows how Backup and Restore Manager processes restore requests.

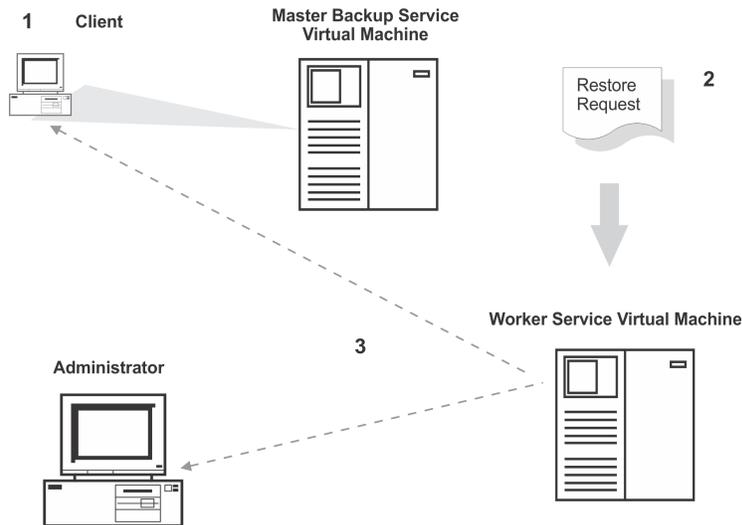


Figure 2. Restore processing

The following actions occur during restore processing:

1. A client (a CMS user) initiates a restore request through the primary backup service virtual machine using the **RESTORE** command.
2. The primary 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 IBM 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

IBM Backup and Restore Manager for z/VM V1.3 is upwardly compatible with IBM 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 BKRSYSTEM 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).
- Primary Backup and Restore Manager server (BKRBKUP).
- Primary 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).

Step	Description	Sample files
1	Verify privileges for Backup and Restore Manager servers. For more information, see <a href="#">“Verifying privileges for the Backup and Restore Manager servers”</a> on page 10.	(Not applicable)

Step	Description	Sample files
2	Allocate SFS resources for the backup catalog. For more information, see <a href="#">“Allocating SFS resources for the backup catalog”</a> on page 14.	(Not applicable)
3	Copy and customize the sample PROFILE EXEC routines. For more information, see <a href="#">“Copying and customizing the sample PROFILE EXECs ”</a> on page 16.	ADMPROF SAMPEXEC, CATPROF SAMPEXEC, MASTPROF SAMPEXEC, and WRKPROF SAMPEXEC
4	Copy and customize the sample BKRUSERS NAMES file. For more information, see <a href="#">“Copying and customizing the BKRUSERS NAMES file”</a> on page 18.	BKRUSERS NAMESAMP
5	Copy and customize the sample BKRSYSTEM CONFIG file. For more information, see <a href="#">“Copying and customizing the BKRSYSTEM CONFIG file”</a> on page 20.	BKRSYSTEM CONFSAMP
6	Review and copy the sample backup job templates. For more information, see <a href="#">“Reviewing and copying sample backup job templates”</a> on page 22.	SAMPFULL, SAMPINCR, SFSBFS, SAMPLNX, and ZVM63L2, SAMPDDR, SAMPDR TEMPSAMP
7	Customize the sample backup job templates for local use. For more information, see <a href="#">“Customizing sample backup job templates”</a> on page 22.	(See step 7)
8	Start the service virtual machines and add them to system startup procedures. For more information, see <a href="#">“Starting the service virtual machines”</a> on page 22.	(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 \(BKRADMIN\)”](#) on page 10.
2. BKRBKUP. For more information, see [“Verifying privileges for the primary Backup and Restore Manager server \(BKRBKUP\)”](#) on page 11.
3. BKRCATLG. For more information, see [“Verifying privileges for the primary catalog server \(BKRCATLG\)”](#) on page 12.
4. BKRWRKnn. For more information, see [“Verifying privileges for worker service virtual machines \(BKRWRKnn\)”](#) on page 13.

## 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 on page 11 shows the privileges that are required for BKRADMIN:

Privilege	Purpose
CP privilege class B	CP privilege class B allows use of the CP <b>MSGNOH</b> 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.

The following privileges are recommended for BKRADMIN:

- When resolving LINK FAILED or CMS ACCESS errors that are reported in backup job logs, a user ID that has the same privileges as the Backup and Restore Manager workers (BKRWRKxx), specifically the ability to CP LINK to all disks on the system, is usually needed. If the backup administrator does not have access to, or does not want to use, MAINT or another privileged account for this purpose, then use OPTION LNKNOPAS to give BKRADMIN this ability. If an ESM such as RACF is active, RACF OPERATIONS authority or its equivalent is required.
- Administrator privileges in Backup and Restore Manager. For more information, see [“Copying and customizing the BKRUSERS NAMES file”](#) on page 18.
- Administrator access to all SFS file pools that will be backed up by Backup and Restore Manager.

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 the 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 primary Backup and Restore Manager server (BKRBKUP)

The primary 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 on page 11 shows the privileges that are required for BKRBKUP:

Privilege	Purpose
CP privilege class A	Privilege class A enables use of the <b>CANCEL</b> command. For more information, see <a href="#">“CANCEL”</a> on page 92. The CP <b>FORCE</b> command requires CP privilege class A. BKRBKUP uses CP <b>FORCE</b> to terminate worker service virtual machines (BKRWRnn) when processing <b>CANCEL</b> commands.
CP privilege class B	Privilege class B enables use of the CP <b>MSGNOH</b> command.
CP privilege class D	Privilege class D enables use of the <b>PURGE</b> 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 <b>SUBMIT</b> , <b>REVIEW</b> , and <b>RESTART</b> commands.

Table 3. Privileges that are required for BKR BKUP (continued)

Privilege	Purpose
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	To perform backup and restore operations, BKR BKUP requires ADMIN access to all SFS file pools that will be backed up by Backup and Restore Manager or that will be the target of a restore operation. For more information, see “ <a href="#">Verifying privileges for the Backup and Restore Manager administrator (BKRADMIN)</a> ” on page 10.
SFS ADMIN privileges to the VMSYS: file pool	To perform BFS backup and restore operations, BKR BKUP requires SFS ADMIN privileges to the VMSYS: file pool.

### Verifying privileges for the primary catalog server (BKRCATLG)

The primary 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 on page 12 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 <b>MSGNOH</b> 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 CP <b>FORCE</b> command.
OPTION LNKNOPAS or RACF OPERATIONS or equivalent third-party ESM authorization.	To delete backup files from the media during <b>EXPIRE</b> command processing, BKRCATLG must be able to obtain a WR-mode LINK to DISKPOOL members.  <b>Note:</b> 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	<p>BKRCATLG requires SFS ADMIN authority to the catalog file pool to perform the following actions:</p> <ul style="list-style-type: none"> <li>• 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.</li> <li>• Delete backup files from the media during EXPIRE processing. BKRCATLG requires SFS ADMIN privileges for SFS file pools that are used in DISKPOOL statements.</li> </ul>

Administrator access to SFS file pools is recommended as described in [“Verifying privileges for the Backup and Restore Manager administrator \(BKRADMIN\)”](#) on page 10.

## Verifying privileges for worker service virtual machines (BKRWRKnn)

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" or "dual" 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 (BKRWRKnn) 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 <b>DEFINE MDISK</b> command.
CP privilege class B	CP privilege class B allows use of the CP <b>MSGNOH</b> command and the VM User Directory Query (VMUDQ) interface. CP privilege class B is also required if workers will restore a raw CKD or FB-512 image backup to a real DASD device. For more information, see the <b>BKR_Allow_RealDevice_Restore</b> parameter in <a href="#">“Worker service virtual machine parameters”</a> on page 160.
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: <ul style="list-style-type: none"> <li>• SFS file pools that are to be backed up using Backup and Restore Manager</li> <li>• SFS file pools to which data is restored using Backup and Restore Manager</li> <li>• The SFS file pool that is configured to contain the backup catalog file space</li> </ul> See “ <a href="#">Verifying privileges for the Backup and Restore Manager administrator (BKRADMIN)</a> ” on page 10 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.
SFS ADMIN privileges to the VMSYS: file pool	To perform BFS backup and restore operations, BKRWRKnn servers require SFS ADMIN privileges to the VMSYS: file pool.

**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 35.

## 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 15.
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 15.

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 BKRSYSTEM CONFIG **BKR\_Catalog\_Compression\_Enabled** parameter description in [“Backup catalog parameters”](#) on page 166.

- 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, BKRWRKnn 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 BKRSYSTEM CONFIG file, using the following parameters:

```
CatalogPool=poolname
```

```
CatalogSpace=filespace
```

See [“Backup catalog parameters” on page 166](#) for details.

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 a sample common PROFILE EXEC for all service virtual machines. During the installation process, these files must be placed on the 191 minidisk of each service virtual machine.

Customize a copy of BKRSTPRF SAMPEXEC and place a copy on the CMS A-disk (or SFS directory) as PROFILE EXEC for each Backup and Restore Manager service virtual machine.

- For minidisk-based installation, BKRSTPRF SAMPEXEC can be found on 5697J06C 2C2.
- For SFS-based installation, BKRSTPRF SAMPEXEC can be found on VMSYS:5697J06C.BKUPMGR.SAMPLES.
- Using this example, all Backup and Restore Manager service virtual machines can be configured to use a single version of PROFILE EXEC, which calls BKRSTART EXEC. Detailed service virtual machine initialization is driven by the BKRSTART EXEC service virtual machine initialization tool.
- BKRSTART requires access to the minidisk (BKRBKUP 198) or SFS directory (*filepool2*:BKRBKUP.CONFIGURATION) where BKRSYSTEM CONFIG and BKRUSERS NAMES are stored. Information from BKRUSERS NAMES is used to determine the role of each individual service virtual machine. Embedded default configuration settings for service virtual machines can be defined in BKRSYSTEM CONFIG.
- All Backup and Restore Manager service virtual machines require use of the CMS component, ACCESSMO MODULE. This component is typically installed on MAINT 193. If ACCESSMO MODULE is installed in a different location, that information can be declared in BKRSYSTEM CONFIG by defining a value for BKR\_StartUp\_MAINT193.
- You may be able to use the PROFILE EXEC supplied as BKRSTPRF SAMPEXEC without customization. The provided sample relies on two assumptions:
  - Service virtual machine consoles are presumed to be monitored by IBM Operations Manager for z/VM or another automated operations tool. If you require creation of SPOOL CONSOLE activity logs, remove comments around the supplied SPOOL CONSOLE command.
  - *IBM Tape Manager for z/VM* is not being used. If you plan to use Tape Manager with Backup and Restore Manager, remove comments from the supplied “CP LINK” command, or add a LINK statement to the virtual machine’s CP directory entry to provide access to Backup and Restore Manager client interface routines.
- Refer to [“Configuration settings for BKRSTART” on page 17](#) for more information on BKRSTART syntax and the BKRSTART-related settings, which are defined in BKRSYSTEM CONFIG.

## Configuration settings for BKRSTART

This section describes the BKRSTART syntax and BKRSTART-related configuration settings that can be defined in BKRSYSTEM CONFIG.

The table below shows the embedded default settings that are contained in the BKRSTART EXEC.

Configuration Setting	Embedded Default
BKR_StartUp_SVMRuntime	591 (virtual machine 591 minidisk)
BKR_StartUp_ClientRuntime	592 (virtual machine 592 minidisk)
BKR_StartUp_JobTemplates	199 (virtual machine 199 minidisk)
BKR_StartUp_TapeManager	" (<null> - Tape Manager not used)
BKR_StartUp_Workarea	299 (virtual machine 299 minidisk)
BKR_StartUp_MAINT193	MAINT 193 (User MAINT minidisk 193)

For more information, see [“BKRSTART configuration parameters”](#) on page 170.

## Customize BKRSTPRF SAMPEXEC

You can customize BKRSTPRF SAMPEXEC and deploy to service virtual machines as PROFILE EXEC.

Place a copy of BKRSTPRF SAMPEXEC on the install user's A-disk (or SFS directory). If required, customize BKRSTPRF SAMPEXEC as described in [“Copying and customizing the sample PROFILE EXECs”](#) on page 16 above.

For each Backup and Restore Manager service virtual machine (BKRADMIN, BKRBKUP, BKRCATLG, BKRWRK01, BKRWRK02, etc.), perform the following steps:

1. Link and access the service virtual machine (*svm\_id*) 191 minidisk as file mode **Z** as shown below:

```
VMLINK svm_id 191 < * Z MR >
```

2. Copy BKRSTPRF SAMPEXEC to the destination as PROFILE EXEC, as shown below:

```
COPYFILE BKRSTPRF SAMPEXEC A PROFILE EXEC Z (REPLACE
```

3. An initial copy of BKRSTART EXEC needs to be placed on the service virtual machine 191 minidisk. If Backup and Restore Manager is installed to minidisk, execute this command:

```
VMLINK BKRBKUP 591 < * U RR >
```

If Backup and Restore Manager is installed to SFS, execute this command:

```
ACCESS VMPSFS:5697J06C.BKUPMGR.RUNTIME U
```

4. Place a copy of BKRSTART EXEC on the *svm\_id* 191 minidisk:

```
COPYFILE BKRSTART EXEC U = = Z (REPLACE OLDDATE
```

5. Release and detach the SVM 191 minidisk, as shown below:

```
RELEASE Z (DETACH
```

6. Once all SVM 191 minidisks have been updated, release the minidisk or directory accessed in step 3.

```
RELEASE U (DETACH
```

## 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 (also referred to as "primary") 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. You can specify a maximum of 64 worker service virtual machines.

### 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.
- To include more workers, keep adding workers service virtual machines in subsequent lines, under a single :list.

## (Optional) Configure an external security mechanism

If you use an ESM (external security manager) that supports the RACROUTE macro and the FACILITY class, you can configure Backup and Restore Manager to use the ESM as its authorization mechanism

instead of using its own internal authorization mechanism. You can control which users have authority to issue privileged service virtual machine commands.

## **Set up example for IBM Resource Access Control Facility (RACF)**

BKRBKUP (the primary backup service virtual machine), BKRCATLG (the backup catalog service virtual machine), and BKRWRK## (all backup worker service virtual machines), and any other user ID executing BKRSTART to manage service virtual machine initialization, must have authority to issue checks for access to a resource on behalf of another user. An example on how to do this for IBM Resource Access Control Facility (RACF) is provided. However, refer to the latest documentation for your particular release of an ESM for details.

To use RACF as the authorization mechanism, perform the following steps:

1. Authorize communication with the RACF/VM server through IUVC.
2. Authorize third-party authorization checks.
3. Identify the RACF/VM server to which RACROUTE will be sent.
4. Define ESM options for Backup and Restore Manager.

All of these steps are described below.

### ***Authorize communication with RACF/VM***

Servers communicate with RACF through IUCV. There are two options for authorizing this communication. You should consider which option is appropriate for your system's security administration policies.

- The more general option is to have the RACF/VM server (usually called RACFVM) include an IUCV ALLOW statement in its directory entry. This will permit any user in the system to establish communication with the RACF server.
- The more restricted option is to have the Backup and Restore Manager service machine, BKRBKUP, include an IUCV statement for the RACF/VM server (for example, IUCV RACFVM PRIORITY MSGLIMIT 255) in its directory entry. This will permit only the users with this statement in their directory entry to establish communication with the RACF server.

### ***Authorize third-party checks***

Authority to issue third-party authorization checks is controlled by the ICHCONN profile in the FACILITY class in RACF/VM. You must create this profile if it does not exist and give the Backup and Restore Manager service virtual machines UPDATE access to ICHCONN. This includes BKRADMIN, if BKRSTART is used to initialize BKRADMIN. The ICHCONN profile must be in the FACILITY class.

### ***Identify the RACF/VM server***

The RACROUTE interface must be able to identify the RACF/VM server. This is done with the RACF SERVMACH file, which is normally loaded to the CMS Y-disk during RACF installation. If you want to use a different RACF server, or your installation has removed the RACF SERVMACH file from general access, you should provide a tailored RACF SERVMACH file to all of the Backup and Restore Manager service virtual machines.

### ***Define ESM options for Backup and Restore Manager***

To activate the use of an external security manager, you must define two configuration parameters in BKRSYSTEM CONFIG, which is the primary Backup and Restore Manager configuration file. The two parameters are the following:

#### **BKR\_ESM\_Command\_Auth = Enabled**

Set to 1 (Enabled) to manage authorizations via ESM.

#### **BKR\_ESM\_Command\_Fallback\_Allowed = (Enabled | Disabled)**

- When set to **Enabled**, authorization checks will fall back to the service virtual machine roles defined in BKRUSERS NAMES if the ESM is unavailable.

- When set to **Disabled**, authorization checks will return "not authorized" if the ESM is unavailable.

## ESM class and Facility class profiles

Backup and Restore Manager uses profiles in the RACF FACILITY class to determine privileged command authorization levels. These profiles are:

Command Authorization	Description
BKR.CMDAUTH.MASTER	<ul style="list-style-type: none"> <li>• Users with READ access have MASTER authority. Example: BKRBKUP must have MASTER authority.</li> <li>• Corresponds to users assigned the "MASTER" role in BKRUSERS NAMES.</li> </ul>
BKR.CMDAUTH.WORKER	<ul style="list-style-type: none"> <li>• Users with READ access have WORKER authority. Example: BKRWRKnn servers require WORKER authority.</li> <li>• Corresponds to users assigned the "WORKER" role in BKRUSERS NAMES.</li> </ul>
BKR.CMDAUTH.ADMIN	<ul style="list-style-type: none"> <li>• Users with READ access have ADMIN authority. Example: BKRADMIN must have ADMIN authority.</li> <li>• Corresponds to users assigned the "ADMIN" role in BKRUSERS NAMES.</li> </ul>

An example of the RACF commands necessary to configure RACF resources and permissions for a default installation is provided as file BKRRACF SAMPEXEC on the "Samples" minidisk (5697J06C 2C2).

## Copying and customizing the BKRSYSTEM CONFIG file

The BKRSYSTEM 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 BKRSYSTEM 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 BKRSYSTEM CONFIG file (BKRSYSTEM 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 BKRSYSTEM CONFIG file:

COPY BKRSYSTEM CONFSAMP E = CONFIG Z

4. Edit the BKRSYSTEM CONFIG file:

XEDIT BKRSYSTEM 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 159.
- b) Specify the virtual machine names of the primary backup administrator, the primary backup service virtual machine, and the backup catalog service virtual machine. For more information, see [“Service virtual machine parameters”](#) on page 159.
- c) Specify the worker service virtual machine settings. For more information, see [“Worker service virtual machine parameters”](#) on page 160.
- d) Specify the free storage for job template processing. For more information, see [“Storage for job template processing parameters”](#) on page 161.
- e) Enable or disable the automatic formatting of unformatted CMS minidisks. For more information, see [“CMS minidisk format parameters”](#) on page 162.
- 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/BKRWRKnn) 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 23 provides instructions for modifying BKRSYSTEM CONFIG.

- h) Specify the backup catalog settings. For more information, see [“Backup catalog parameters”](#) on page 166.
- i) Specify the reserved worker service virtual machine settings. For more information, see [“Reserved worker service virtual machine parameters”](#) on page 168.

#### Notes:

- Do not modify the settings that are listed after the end of the site configurable settings section.
  - The BKRSYSTEM 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 BKRSYSTEM 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.
- j) Support for z/VM APAR VM65778: DDR standard VOL1 toleration support. To enable site-wide support for this update to the z/VM DDR utility, add the statement **DDRTAPE\_Preserve\_Label** = Yes to BKRSYSTEM CONFIG. To retain compatibility with prior versions of the z/VM DDR utility, omit this statement or specify **DDRTAPE\_Preserve\_Label** = No.



**Warning:** Prior versions of the z/VM DDR utility do not support multi-volume backups that have standard VOL1 labels. Do not enable this behavior unless service for z/VM APAR VM65778 is installed on all systems you plan to use for DDR restore operations.

- k) If you choose to enable RESTORE using real DASD devices as output targets for the **RESTORE** command, you must enable this capability in the BKRSYSTEM CONFIG file through the **BKR\_Allow\_RealDevice\_Restore** parameter. For more information, see [“Worker service virtual machine parameters”](#) on page 160.
- l) If you choose to enable the **CATBACKUP EXPORT** command, you must provision an additional minidisk for use by BKRBACKUP and update the setting for **BKR\_Catalog\_Export\_Minidisk**. For more information, see [“CATBACKUP EXPORT”](#) on page 94.

## 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 115.

2. Copy the sample templates to the production job template minidisk (BKRBACKUP 199) or directory (VMSYS:BKRBACKUP.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 primary backup and catalog service virtual machines with the **XAUTOLOG** command.

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

```
CP AUTOLOG use:username
```

or

```
CP XAUTOLOG use:username
```

To enable automatic startup of the Backup and Restore Manager tasks after a system IPL, consider adding the SFS, primary 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 BKRBACKUP and BKRCATLG.
- In general, you do not need to pre-initialize worker task service virtual machines BKRWRK01-04 with **XAUTOLOG**. The primary backup service virtual machine, BKRBACKUP, 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 37 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 BKR BKUP 199 disk in read/write mode. For example:

```
LINK BKR BKUP 199 199 MR
ACC 199 H
```

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

```
ACC VMSYS:BKR BKUP .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, BKR BKUP 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 IBM Tape Manager for z/VM

---

Backup and Restore Manager can take advantage of services provided by IBM 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 BKR BKUP 198 minidisk minidisk or the SFS directory VMSYS:BKR BKUP .CONFIGURATION
4. Update the BKRWRKnn 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 110.

### 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 IBM 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)
- Primary backup service virtual machine (BKRBKUP)
- Backup catalog service virtual machine (BKRCATLG)
- Worker service virtual machines (BKRWRKnn)

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 BKRSYSTEM CONFIG file for interaction with Tape Manager

To enable Backup and Restore Manager to work with Tape Manager, modify the following parameters in the BKRSYSTEM 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 BKRSYSTEM CONFIG file on the BKRBKUP 198 minidisk or in the VMSYS:BKRBKUP.CONFIGURATION directory.  
For more information, see the corresponding instructions in the BKRSYSTEM CONFIG file and [“Tape Manager for z/VM parameters”](#) on page 164.
3. Save the modified BKRSYSTEM CONFIG file to the product configuration minidisk or directory.
4. Copy the modified BKRSYSTEM CONFIG file to the runtime disk, such as MAINT 19E. For more information, see [“Copying and customizing the BKRSYSTEM CONFIG file”](#) on page 20.

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 115.

## Creating an alternate BFS root file space

To back up or restore BFS data, Backup and Restore Manager requires the worker service virtual machine to mount a BFS root file space. By default, Backup and Restore Manager uses the default BFS root file space (VMSYS:ROOT) for these operations. By definition, a BFS root file space must be mounted as "/". However, this technique only allows workers to back up other file spaces, it does not allow the root file space to be backed up. In addition, CMS OpenExtensions does not allow a file space to be mounted at more than one mount point.

If your site has a requirement to back up VMSYS:ROOT because it contains data that must be backed up or restored, you can create a duplicate copy of the VMSYS:ROOT file space to use as an alternate root file space for Backup and Restore Manager to use.

The ROOTDUMP EXEC and ROOTLOAD EXEC programs provided with Backup and Restore Manager (on the samples disk 5697J06C 2C2) are examples of how you can use the **FILEPOOL UNLOAD FILESPACE** and **FILEPOOL RELOAD FILESPACE** commands to duplicate VMSYS:ROOT. To issue these commands, you must have SFS file pool ADMIN privileges for the source (VMSYS:.) and destination file pools. For information about the FILEPOOL utility, see *CMS File Pool Planning, Administration, and Operation*.

To set up a duplicate root file space using **ROOTDUMP** and **ROOTLOAD** commands, use the following example:

1. Use the **ROOTDUMP** command to create a copy of VMSYS:ROOT in CMS file BFSROOT SNAPSHOT A. The following example shows the typical output from the **ROOTDUMP** command:

```
rootdump bfsroot snapshot a
rootdump: Source file space "VMSYS:ROOT" is a BFS file space with 1399 4k blocks in use.
rootdump: Invoking FILEPOOL UNLOAD at 17:59:44 on 19 May 2016
DMSWFP3485I FILEPOOL processing begun at 17:59:44 on 19 May 2016.
DMS5PY3455I The unload of file space ROOT is starting: 17:59:43
DMS5PY3455I The unload of file space ROOT is complete: 17:59:43
DMS5PX3438I FILEPOOL UNLOAD successful
DMSWFP3486I FILEPOOL processing ended at 17:59:44 on 19 May 2016.
rootdump: FILEPOOL UNLOAD completed with return code 0 at 17:59:44 on 19 May 2016
rootdump: FILEPOOL UNLOAD data is saved in CMS file "BFSROOT SNAPSHOT A".

FILENAME FILETYPE FM FORMAT LRECL RECS BLOCKS DATE      TIME      LABEL
BFSROOT  SNAPSHOT A1      V 28956  236   1554 5/19/16 17:59:44 BKRTMP

Ready;
```

The contents of the file space are copied in CMS FILEPOOL UNLOAD format.

2. Select a target file pool to contain the alternate BFS root file space that will be used by Backup and Restore Manager. The new file space should only be used by Backup and Restore Manager. You can create a new SFS file pool or use any existing SFS file pool that does not already contain a file space that is named ROOT.

In the following example, file pool BKRSFS was selected to contain the duplicate BFS root file space. This is the default file pool that is used by Backup and Restore Manager for the backup catalog. Therefore, when you back up the BKRSFS file pool, EXCLUDE the alternate root file space from backup. Otherwise, Backup and Restore Manager will display error messages that indicate that it cannot mount the already-in-use file system.

To exclude the alternate root file space from backup, add the following statement to the SFS and BFS INCLUDE / EXCLUDE job template statements:

```
      FUNCTION  MEDIATYPE  POOLNAME  OWNER  FS
|-----|-----|-----|-----|---|
EXCLUDE    BFS          BKRSFS:    ROOT   BFS
```

3. Use the **QUERY LIMITS** command to check the attributes of VMSYS:ROOT. Use the **ENROLL** command to create a new, empty BFS root file space in the target file pool with the same number of 4K blocks as the root file space in VMSYS:. For example:

```
query limits for root vmsys
Userid Storage Group 4K Block Limit 4K Blocks Committed Threshold
ROOT 2 2000 1399-69% 100%
Ready;
enroll user root bkrsfs (storgroup 2 blocks 2000 bfs)
Ready;
```

4. Use the **ROOTLOAD** command to copy the contents of VMSYS:ROOT to the alternate BFS root file space. For example:

```
rootload bfsroot snapshot a (pool bkrsfs)
rootload: Destination file space "BKRSFS:ROOT" is a BFS file space with 0 4k blocks in use.
rootload: Invoking FILEPOOL RELOAD at 18:12:12 on 19 May 2016
DMSWFP3485I FILEPOOL processing begun at 18:12:12 on 19 May 2016.
```

```

DMS5PY3594R File space ROOT in file pool BKRSFS will be replaced from
DMS5PY3594R file space ROOT in file pool VMSYS from reload file
DMS5PY3594R created at 05/19/16 on 17:59:43
DMS5PY3594R Enter '1' to continue or '0' to cancel.
1
DMS5PY3455I The reload of file space ROOT is starting: 18:12:15
DMS5PY3455I The reload of file space ROOT is complete: 18:12:16
DMS5PY3438I FILEPOOL RELOAD successful
DMSWFP3486I FILEPOOL processing ended at 18:12:17 on 19 May 2016.
rootload: FILEPOOL RELOAD completed with return code 0 at 18:12:17 on 19 May 2016
rootload: FILEPOOL RELOAD data obtained from CMS file "BFSROOT SNAPSHOT A".

FILENAME FILETYPE FM FORMAT LRECL RECS BLOCKS DATE TIME LABEL
BFSROOT SNAPSHOT A1 V 28956 236 1554 5/19/16 17:59:44 BKRTMP

Userid Storage Group 4K Block Limit 4K Blocks Committed Threshold
ROOT                2          2000          1399-69%          100%
Ready;

```

5. Update BKRSYSTEM CONFIG to use the alternate BFS root file space for BFS backup and recovery operations. In this example, add the following line:

```
BKR_BFS_RootFileSystem = ../../VMBFS:BKRSFS:ROOT/
```

If you create an alternate root file space for Backup and Restore Manager to use, do not use it for other purposes, or permit it to be used by programs other than Backup and Restore Manager.

---

## Chapter 3. Administration

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

### Primary Backup and Restore Manager server

---

The primary 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 IBM Operations Manager for z/VM.

### Starting the primary Backup and Restore Manager server

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

Launch the primary 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 primary Backup and Restore Manager server

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

For example, from a user ID with Backup and Restore Manager ADMIN privileges: cp msg BKRBKUP halt

For a description of the **HALT** command syntax, see [“HALT” on page 87](#).

### Displaying the status of the primary Backup and Restore Manager server

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

For example, from a user ID with Backup and Restore Manager ADMIN privileges: cp msg BKRBKUP status

[Figure 3 on page 28](#) shows an example of the **STATUS** command that is issued to obtain runtime status for the primary backup server (BKRBKUP).

```

msg bkrbkup status
Ready;
SVM Name   : BKRBKUP - 5697-J06 IBM Backup and Restore Manager for z/VM - Master Backup SVM - Version
1.3.0
Runtime lib : Compiler
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 3. Displaying the status of the primary backup server

For a description of the **STATUS** command syntax, see [“STATUS” on page 88](#).

## 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 msg BKRCATLG halt`

For a description of the **HALT** command syntax, see [“HALT” on page 87](#).

### 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 msg bkrcatlg status`

Figure 4 on page 28 shows an example of the **STATUS** command that is issued to obtain runtime status for the catalog server (BKRCATLG).

```

msg bkrcatlg status
Ready;
SVM Name   : BKRCATLG - 5697-J06 IBM Backup and Restore Manager for z/VM - Backup Catalog
SVM - Version 1.3.0
Runtime lib : Compiler
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 4. Displaying the status of the catalog server

For a description of the **STATUS** command syntax, see [“STATUS” on page 88](#).

## Managing the 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 5 on page 30](#).

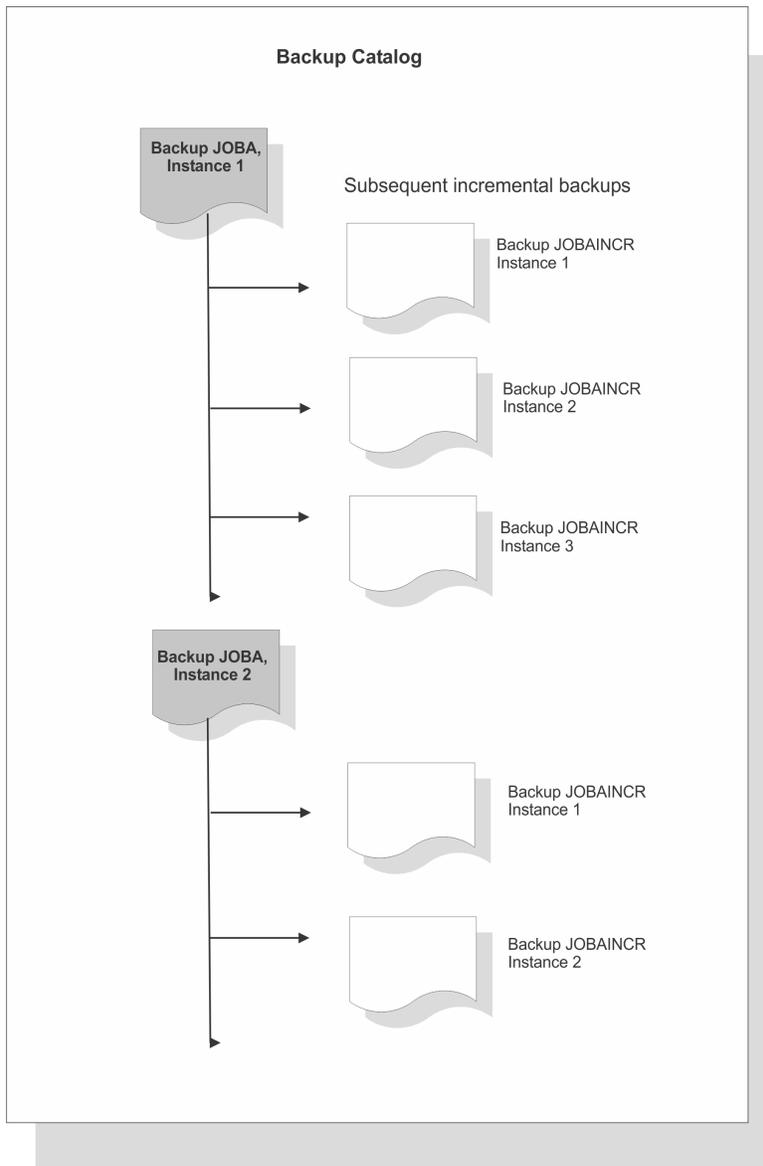


Figure 5. Backup hierarchy

## 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 6 on page 31](#):

```
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 6. 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 "primary" 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 BKRSYSTEM 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 139.

## Determining backup catalog SFS file space storage requirements

When you allocate DASD resources for the SFS file pool server that contains the backup catalog file space, the following considerations apply.

### File pool server storage group 1

SFS file pool servers allocate DASD space from storage group 1 to contain information about the files and directories in the file pool, who owns them, who is authorized to look at them, and so on. The SFS file pool server (BKRSVSFS by default) creates and owns all of the data in storage group 1. Backup and Restore Manager does not directly create data in storage group 1. As the number of files in a file pool grows, so does the size required for storage group 1. Because the backup catalog file space contains a large volume of SFS directories, aliases, and permission attributes, DASD space requirements for storage group 1 are greater than a typical SFS file space. For most installations, DASD space that is equivalent to 400 cylinders of 3390 DASD is a reasonable starting allocation for storage group 1.

Because BKRCATLG is granted SFS ADMIN authority for the SFS file pool server where the backup catalog file space resides, BKRCATLG will check and report on the utilization of storage group 1 during start-up processing. Use the **QUERY FILEPOOL CATALOG** command to periodically check the utilization of storage group 1 by manually reviewing file pool server DASD utilization. An automated operations facility, such as IBM Operations Manager for z/VM, can be used to perform the following tasks:

- Monitor the startup output from BKRCATLG to alert as appropriate
- Periodically issue the **QUERY FILEPOOL CATALOG** command and alert as appropriate. (The user ID issuing the command must have SFS ADMIN authority to the file pool.)

### File pool server storage group 2

Storage group 2 is the default storage group that is used for the backup catalog that Backup and Restore Manager creates when the backup catalog file space is created by the ENROLL command. DASD requirements in the storage group for each instance of a backup job vary depending on the number of users, number of minidisks, file spaces and files, and whether the catalog contents are compressed. As an example, let us assume a backup scheme is implemented in SAMPFULL TEMPLATE and SAMPINCR TEMPLATE using a 30-day "moving window" backup. That is, the retention period in both backup jobs has been set to 30 days. Using these examples, assume the following conditions:

- You have scheduled SAMPFULL to run once per week.
- You have scheduled SAMPINCR to run on a daily basis between instances of SAMPFULL.

- You have scheduled the BKRCATLG **EXPIRE (PURGE)** command to run on a daily basis, before each new SUBMIT of SAMPFULL or SAMPINCR, to remove expired backup instances from the catalog.

Following this example, there is an implication that a fully-populated backup catalog file space will contain as many as five instances of SAMPFULL and up to 26 instances of SAMPINCR.

**Note:** The following is an approximation. Due to the unique nature of each system, there is no "one-size-fits-all" recommendation. The amount of SFS storage that is required to contain the backup catalog varies according to the following considerations:

- Site-specific policies that govern backup frequency and retention.
- The total number of minidisks, DASD volumes, or file spaces that are recorded in the catalog.
- The number of files that are on each CMS-format minidisk.
- The contents of each SFS or BFS file space (the number of files, directories, and aliases in each file space).

If compression is not enabled, use the following formula to estimate the amount of space that is required for storage group 2:

```
One 4K block for each minidisk and file space;
+ one 4K block per every 7.7 CMS files, SFS directories, and SFS aliases cataloged
* The number of unique jobs and instances maintained in the catalog
```

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

When backup catalog data compression is enabled by specifying `BKR_Catalog_Compression_Enabled = 1` in the `BKRSYSTEM CONFIG` file, DASD requirements for CMS backup data can be reduced to as much as one-third.

For example, when cataloged in uncompressed format, one instance of the MAINT 19D minidisk requires approximately 2,200 SFS data blocks to hold catalog data for approximately 17,000 files from that CMS-format minidisk. In compressed format, the same data occupies approximately 727 4K blocks. The CMS system disk MAINT 190 that has approximately 700 files requires approximately 95 SFS data blocks in uncompressed format (or approximately 30 4K blocks when compression is enabled).

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.

Space requirements for incremental backups are typically significantly less than the corresponding full backup requirements. For each CMS minidisk or SFS file space in an incremental backup, the catalog information relates only to files that are new, modified, or deleted since the corresponding baseline full backup.

Storage administrators should routinely check utilization of file pool server minidisks for storage group 2. The CMS SFS administrator command **QUERY FILEPOOL MINIDISK** can be used for this purpose. See the *z/VM: CMS File Pool Planning, Administration, and Operation* for instructions on CMS SFS file pool server management.

## 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 (BKADMIN) PROFILE EXEC, the Backup and Restore Manager new day exit (BKRNUDAY EXEC), or to your preferred automated operations tool, such as IBM 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 7 on page 34](#).

```

FUNCTION  MEDIATYPE  OWNER      VDEV VOLUME DEVTYPE      START      END      SIZE
RESERVED
|-----|-----|-----|---|-----|-----|---|-----|---|-----|---|-----|
|-----|
EXCLUDE   MINIDISK   *          = *   *       *       = *       = *       = *
*
INCLUDE   MINIDISK   catsivr    = 019* *       *       = *       = *       = *
*

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

```

Figure 7. 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 BKRSYSTEM CONFIG file to point to the new catalog location.
5. Shut down and then restart BKRBACKUP and BKRCATLG to incorporate the changes that you made to the BKRSYSTEM 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 primary 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 primary server (BKRBACKUP). 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 160.

## 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 BKRBACKUP CANCEL bkrwrk05
```

For a description of the **HALT** command syntax, see [“HALT”](#) on page 87. For information about the **CANCEL** command, see [“CANCEL”](#) on page 92.

## 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 primary backup service virtual machine, BKRBACKUP.

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 msg bkrwrk01 status

Figure 8 on page 36 shows an example of the **STATUS** command that is issued to obtain runtime status for the worker service virtual machine bkrwrk01.

```

msg bkrwrk01 status
Ready;
SVM Name   : BKRWRK01 - 5697-J06 IBM Backup and Restore Manager for z/VM
- Worker Task SVM - Version 1.3.0
  Runtime lib : Compiler
  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 8. Displaying the status of a worker service virtual machine

For a description of the **STATUS** command syntax, see [“STATUS” on page 88](#).

## Adding a worker service virtual machine

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

**Note:** Backup and Restore Manager supports a maximum of 64 worker service virtual machines.

1. Create the new BKRWRK $nn$  user in the CP directory, including a one cylinder 191 disk. Format the new 191 disk.
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 the BKRUSERS NAMES file also resides on MAINT 19E or other shared minidisk, copy your updated file to the additional location and reload the CMS saved system, if needed.
4. Shut down the SFS server that is used for the Backup and Restore Manager catalog. (The default is BKRSVSFS.)
5. Update the DMSPARMS file on the 191 disk of the server to add an ADMIN statement for each new worker.
6. Restart the SFS server.
7. Enroll the new worker in SFS with enough space for a work area and then create the work area. For example, issue the following commands:

```

ENROLL USER BKRWRK $nn$  BKRSFS (BLOCKS 20000 STORGROUP 2
CREATE DIRECTORY BKRSFS:BKRWRK $nn$ .WORKAREA

```

Where  $nn$  is the worker number.

8. If you are using IBM Tape Manager for z/VM, authorize the worker for tape operations. For example, issue the following command:

```

TAPCMD POOLACC <pool owner> <pool name> USER BKRWRK $nn$ TAPE

```

Where *pool owner* and *pool name* specify the tape pool that is used by Backup and Restore Manager and  $nn$  is the worker number. Repeat for additional tape pools.

9. Restart the primary backup server. (The default is BKRBKUP.)
10. Backup and Restore Manager workers need ADMIN privileges for SFS file pools that they back up or restore. Repeat steps 4-6 for SFS file pool servers that manage SFS or BFS file spaces that the worker will back up or restore.
11. Start the worker and verify its availability to confirm that there are no startup errors. For example, issue the following commands:

```

CP XAUTOLOG BKRWRK $nn$ 
CP SMSG BKRWRK $nn$  STATUS

```

Where *nn* is the worker number.

## Removing an instance of a worker service virtual machine

To remove a worker service virtual machine, complete these steps.

1. Modify the BKRUSERS NAMES configuration file to delete the names of the worker service virtual machines that you want to remove.
2. If BKRUSERS NAMES also resides on MAINT 19E or other shared minidisk, copy your updated file to this additional location and reload the CMS saved system if necessary.
3. Restart the primary backup server.

You can also perform additional cleanup to remove the user ID and its minidisk from the CP directory, remove the user from the list of ADMINS in the DMSPARMS file, delete the user from the SFS file pool, and change the users authorization to NONE for tape pools.

## 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 IBM Tape Manager for z/VM”](#) on page 23.
- Exit routines provide integration with other tape management systems. For more information, see [Appendix D, “Tape management interface exits,”](#) on page 139.

**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 primary 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 (BKRWRKnn) 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 10 on page 39) 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 *filepath: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 9 on page 39 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 9. DISKPOOL file example (minidisks)

In Figure 9 on page 39, the minidisks in the pool are identified in the range of 293 - 297 for owner ABCUSER.

Figure 10 on page 39 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 10. DISKPOOL file example (minidisks and SFS)

In Figure 10 on page 39, 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.

### Special considerations for backing up the backup catalog file space

Backup and Restore Manager provides the DDRTAPE output handler as a means to create DASD image backups for disaster recovery. This feature allows creation of DASD image backups on tape media, in a form that can be restored by the z/VM DASD Dump/Restore utility (DDR). Backups created in this format can be restored in a recovery scenario without additional software beyond the standard z/VM installation media and at least one tape device.

General restore functions that use Backup and Restore Manager rely on the contents of the backup catalog (BKRCATLG) SFS file space. Clients initiate a restore operation by browsing contents of the backup catalog and selecting objects to restore, using the **RESTORE** command, or using the batch interface provided by Backup and Restore Manager. Internally, Backup and Restore Manager uses metadata in the catalog to associate the tape or disk location of backup data with a file, minidisk, SFS, or BFS file space when a restore request is processed.

Because the contents of the backup catalog SFS file space are an essential component of performing non-DDR restore operations, you might consider the options that are available for backing up and restoring

the backup catalog SFS file space in a disaster recovery scenario. One option is to use the CMS FILEPOOL utility to capture a snapshot of the backup catalog file space. FILEPOOL allows creation of a portable backup image of an SFS file space, which can be restored without additional software beyond what is provided with a standard z/VM system. Backup and Restore Manager provides a command and two sample programs to assist you in using the CMS FILEPOOL utility.

First, Backup and Restore Manager provides the administrator command **CATBACKUP EXPORT** that uses the CMS FILEPOOL utility to export a copy of the backup catalog file space. To use this command, you must provision an additional minidisk for BKRBACKUP and identify the minidisk in BKRSYSTEM CONFIG using **BKR\_Catalog\_Export\_Minidisk**. This enables use of the BKRBACKUP command **CATBACKUP EXPORT** to create a copy of the backup catalog file space in native **FILEPOOL UNLOAD FILESPACE** format. In a disaster recovery scenario, the resulting file can be used to manually re-create a copy of the backup catalog file space using the CMS **FILEPOOL RELOAD FILESPACE** command. For more information, including guidelines for sizing this minidisk, see [“CATBACKUP EXPORT” on page 94](#).

Second, Backup and Restore Manager provides two sample programs, CATDUMP EXEC and CATLOAD EXEC, that show how you can use **FILEPOOL UNLOAD FILESPACE** and **FILEPOOL RELOAD FILESPACE** to create a snapshot of the BKRCATLG SFS file space, and to restore the snapshot to an SFS file pool server. The sample programs are provided on the Backup and Restore Manager samples disk (5697J06C 2C2). For information about the FILEPOOL utility, see *CMS File Pool Planning, Administration, and Operation*.

**Note:** You must have SFS file pool ADMIN privileges to issue the **FILEPOOL UNLOAD FILESPACE** and **FILEPOOL RELOAD FILESPACE** commands.

To use the sample CATDUMP EXEC to capture a backup snapshot of the backup catalog SFS file space with CATDUMP, you must allocate a CMS minidisk that has enough space to contain the resulting backup file. To calculate an estimate of the space required, use the CMS **QUERY LIMITS** command to check the current backup catalog SFS file space utilization.

The number reported as `4K Blocks Committed` is the number of 4K DASD data blocks in use. Multiply this number by 1.4 to estimate the number of CMS minidisk 4K data blocks needed to contain a backup image in FILEPOOL UNLOAD format, and then divide the result by 180 to arrive at an approximate number of 3390 DASD cylinders.

For example, if QUERY LIMITS reports 121,128 4K SFS data blocks in use, the calculation is:

```
121128 x 1.2 = 145353.6 --- approximate number of 4K CMS minidisk data blocks
needed
145353 / 180 = 807.516 --- approximate number of 3390 DASD cylinders needed
```

In the example, a minidisk of 808 3390 cylinders should be large enough to contain an exported copy of the backup catalog file space.

Once DASD has been allocated and prepared with the CMS **FORMAT** command, use the CATDUMP sample program to export a copy of the backup catalog SFS file space.

The following example shows the typical output from CATDUMP:

```
catdump catalog backup z (bkrsfs bkrcatlg
catdump: Source file space "BKRSFS:BKRCATLG" is a SFS file space with 121128 4k blocks in use.
catdump: Invoking FILEPOOL UNLOAD at 12:57:31 on 24 Jun 2016
DMSWFP3485I FILEPOOL processing begun at 12:57:31 on 24 Jun 2016.
DMS5PY3455I The unload of file space BKRCATLG is starting: 12:57:30
DMS5PY3455I The unload of file space BKRCATLG is complete: 12:58:15
DMS5PX3438I FILEPOOL UNLOAD successful
DMSWFP3486I FILEPOOL processing ended at 12:58:16 on 24 Jun 2016.
catdump: FILEPOOL UNLOAD completed with return code 0 at 12:58:16 on 24 Jun 2016
catdump: FILEPOOL UNLOAD data is saved in CMS file "CATALOG BACKUP Z".

FILENAME FILETYPE FM FORMAT LRECL RECS BLOCKS DATE TIME LABEL
CATALOG BACKUP Z1 V 29015 19988 139201 6/24/16 12:58:16 CATBKP
Ready;
```

You can back up the resulting file for disaster recovery purposes.

To restore a catalog image that is backed up in FILEPOOL UNLOAD format, use the FILEPOOL RELOAD FILESPACE utility or the CATLOAD sample program. If you use CATLOAD, first use the **ENROLL** command to create a destination file space that has the same limits as the original backup catalog file space. You can use the **CMS QUERY LIMITS** command to determine the size of the original backup catalog file space. For example:

```
ENROLL USER BKRCATLG NEWPOOL (STORGROUP 2 BLOCKS 600000)
```

Once the destination file space is created, you can restore a copy of the backup catalog file space using the following steps:

1. Create a destination file space with the same limits as the original backup catalog file space. Use the file pool administrator **ENROLL** command. For example:

```
ENROLL USER BKRCATLG newpool(STORGROUP 2 BLOCKS 600000)
```

2. Once the destination file space has been created, use the CATLOAD sample program to restore the backup to the newly created empty file space. (CATLOAD is an example of how to use the CMS **FILEPOOL RELOAD FILESPACE** utility to restore a backup created using **FILEPOOL UNLOAD FILESPACE** format.) Output from a successful catalog restore using CATLOAD looks similar to the following example:

```
catload catalog backup z (newpool bkrcatlg
catload: Destination file space "NEWPOOL:BKRCATLG" is a SFS file space with 0 4k blocks in
use.
catload: Invoking FILEPOOL RELOAD at 13:19:56 on 24 Jun 2016
DMSWFP3485I FILEPOOL processing begun at 13:19:56 on 24 Jun 2016.
DMS5PY3594R File space BKRCATLG in file pool NEWPOOL will be replaced from
DMS5PY3594R file space BKRCATLG in file pool BKRSFS from reload file
DMS5PY3594R created at 06/24/16 on 12:57:30
DMS5PY3594R Enter '1' to continue or '0' to cancel.
1
DMS5PY3455I The reload of file space BKRCATLG is starting: 13:19:58
DMS5PY3455I The reload of file space BKRCATLG is complete: 13:25:39
DMS5PY3438I FILEPOOL RELOAD successful
DMSWFP3486I FILEPOOL processing ended at 13:25:40 on 24 Jun 2016.
catload: FILEPOOL RELOAD completed with return code 0 at 13:25:40 on 24 Jun 2016
catload: FILEPOOL RELOAD data obtained from CMS file "CATALOG BACKUP Z".

FILENAME FILETYPE FM FORMAT LRECL RECS BLOCKS DATE TIME LABEL
CATALOG BACKUP Z1 V 29015 19988 139201 6/24/16 12:58:16 EMPTY

Userid Storage Group 4K Block Limit 4K Blocks Committed Threshold
BKRCATLG                2          600000          121128-20%          90%

Ready;
```

## 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, EOVS 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 EOVS condition, EOVS processing is driven only for the volume that reached EOVS. Output continues on the other tape until the backup concludes or an EOVS 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 EOVS synchronization does not occur.

For more information, see [Chapter 6, “Job syntax,” on page 59](#).

## 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 157](#).

## 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 at the interruption point, issue the **RESUME** command. Issue the **RESTART** command to reset the virtual machine environment and IPL CMS. See [“RESUME” on page 91](#) or [“RESTART” on page 91](#) for more information.

Also refer to [“SUSPEND mode commands” on page 90](#).

---

## 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” on page 43](#).
2. Select the data that you want to back up. For more information, see [Selecting data for backups](#).
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 45](#).
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 46](#).

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<sup>®</sup> file system minidisks that reside on CKD or FBA DASD volumes, is only handled through full backups as shown in [Table 7 on page 43](#).

Data type	Full backup	Incremental backup
CKD	Yes	No

Data type	Full backup	Incremental backup
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 157](#) in this guide, and the “DDR” section of 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.

## Order of backup operations

When a backup job template is processed by the **SUBMIT**, **REVIEW**, or **RESTART** commands, the set of INCLUDE, EXCLUDE, and SELECT statements is expanded into a set of DUMP tasks. The order in which DASD volumes, minidisks and file spaces, are backed up depends on the job template configuration.

### Job templates that are defined with one worker

For templates that are configured to create a backup job that is processed by one worker service virtual machine (Config BKR\_Job\_Workers = 1 is specified in the template header section), DASD volumes, minidisks and file spaces, are backed up in the following order:

1. Minidisks (including full volume minidisks) that are incorporated into the job as a result of INCLUDE MINIDISK statements are backed up first. The order of virtual machine names and devices depends on the order in which the VMUDQ interface extracts the full set of minidisk definitions from the CP object directory. In a system where DIRMAINT is used for directory maintenance, objects are ordered by the owning virtual machine name (sorted A to Z, then 0 to 9), and then by hexadecimal virtual device number, sorted 0000 to FFFF.

See *z/VM: CP Programming Services* for more information about the VMUDQ interface.

2. SFS file spaces that are incorporated as a result of INCLUDE SFS statements follow. File pool names are grouped in the order listed in the original INCLUDE / EXCLUDE statements. For each unique file pool server name, file spaces are ordered by file space name (sorted A to Z, then 0 to 9).
3. BFS file spaces that are incorporated as a result of INCLUDE BFS statements follow. File pool names are grouped in the order listed in the original INCLUDE / EXCLUDE statements. For each unique file pool server name, file spaces are ordered by file space name (sorted A to Z, then 0 to 9).
4. DASD devices that are incorporated as a result of INCLUDE RDEVVOL or INCLUDE RDEVICE follow. The objects are ordered by hexadecimal real device number (0000 to FFFF).
5. Minidisks or DASD devices that are incorporated as a result of SELECT MINIDISK, SELECT RDEVVOL, or SELECT RDEVICE are last. The objects are in bottom-up order of the corresponding job template SELECT statements.

## Job templates that are defined with multiple workers

For job templates that are defined with multiple workers (Config BKR\_Job\_Workers =  $n$  is specified in the job template header, and  $n > 1$ ), the full set of DUMP tasks is deployed across workers in round-robin fashion. For example, if Config BKR\_Job\_Workers = 4 is specified, the objects are backed up in the following order:

```
DUMPDYN USER1 0191 --> BKRWRK01
DUMPDYN USER1 0192 --> BKRWRK02
DUMPDYN USER2 0191 --> BKRWRK03
DUMPDYN USER2 0192 --> BKRWRK04
DUMPDYN USER3 0191 --> BKRWRK01
DUMPDYN USER3 0192 --> BKRWRK02
DUMPDYN USER3 0291 --> BKRWRK03
DUMPDYN USER3 0292 --> BKRWRK04
DUMPDYN USER3 0293 --> BKRWRK01
```

**Note:** To back up real DASD devices in a specific order, specify SELECT RDEVVOL statements in a job instead of INCLUDE RDEVICE or INCLUDE RDEVVOL statements. SELECT RDEVVOL explicitly matches a single real DASD volume. When you run the job, the resulting order is the inverse of the order that is specified in the job template.

## 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 IBM 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 primary 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 file space, or BFS file space to tape or to a CMS file as shown in [Table 8](#) on page 46.

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 file space to tape or to a CMS file.
DUMPBFS	Back up a single BFS file space 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 file spaces.

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 file space to a tape or to a CMS file.

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

```
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.

## Data compression and encryption exits

---

Two optional assembly language user data processing exit (UDPEs) points are provided within the backup and restore processes. These exits can examine and alter the stream of data to be backed up or restored.

If one or both exits are enabled during a backup operation, then Backup and Restore Manager feeds the data stream to be backed up into the first exit, feeds the output from the first exit into the second exit (if the second exit is enabled), and the output from the second exit becomes the data stream written to the output medium.

Backup and Restore Manager saves the names of the exits that are called during a backup operation and calls them in reverse order when the data is restored so that alterations can be undone. Backup and Restore Manager knows only the exit names and cannot track versions, therefore, if an exit were replaced with a new module of the same name that was not compatible with the old version, data corruption during a restore operation might result.

While these exit points were designed to allow sites to implement compression and encryption, as long as the exits are fully reversible and follow the rules of linkage and operation described in [“User data processing exits \(UDPEs\)”](#) on page 134, you can use them for any purpose.

### Relationship of the UDPEs and reblocking

To call the UDPEs, reblocking must be enabled. When reblocking is enabled, logical writes of smaller data records are buffered in memory until the block approaches the maximum size of a single “real” I/O operation. For backups to tape, this can yield a significant reduction in the number of real tape device I/Os performed.

For output to tape, Backup and Restore Manager enables reblocking by default, so the UDPEs can be enabled for backups to tape by specifying the appropriate UDPE parameters (parameters that begin with BKR\_Out\_Tape\_UDPE\* for output to tape).

For output to disk, reblocking is disabled by default because there are no similar performance benefits. Therefore, you must specifically enable reblocking for output to disk. For example, if you want to compress the disk output in order to save space, you must also enable reblocking in your job by specifying `Config BKR_Out_EDF_Reblock = Yes`.

The log for each job shows the status of reblocking (enabled/disabled) and the UDPEs that were invoked (the module name that is associated with the exit point, and enabled/disabled). It is not considered an error to specify UDPEs in a job when reblocking is disabled (the exits are not called), therefore no error message is issued for this situation.

### Use of compression

Many tape devices automatically compress the data that is sent to them before it is written to the tape, which saves processor resources on the host system and some clock time. Therefore, Backup and Restore Manager does not compress data by default. If you are backing up large amounts of highly compressible data such as text or other human-readable files to disk, you might save a significant amount of space by enabling compression for disk output. Any job in which you want Backup and Restore Manager

to compress output to disk, using the supplied exit BKREXT3A that uses CMS Compression Services, should specify the following options:

```
Config BKR_Out_EDF_Reblock = Yes
Config BKR_Out_EDF_UDPE1 = BKREXT3A
```

For more information about using exits within Backup and Restore Manager, see [Appendix C, “Sample processing exits,”](#) on page 133.

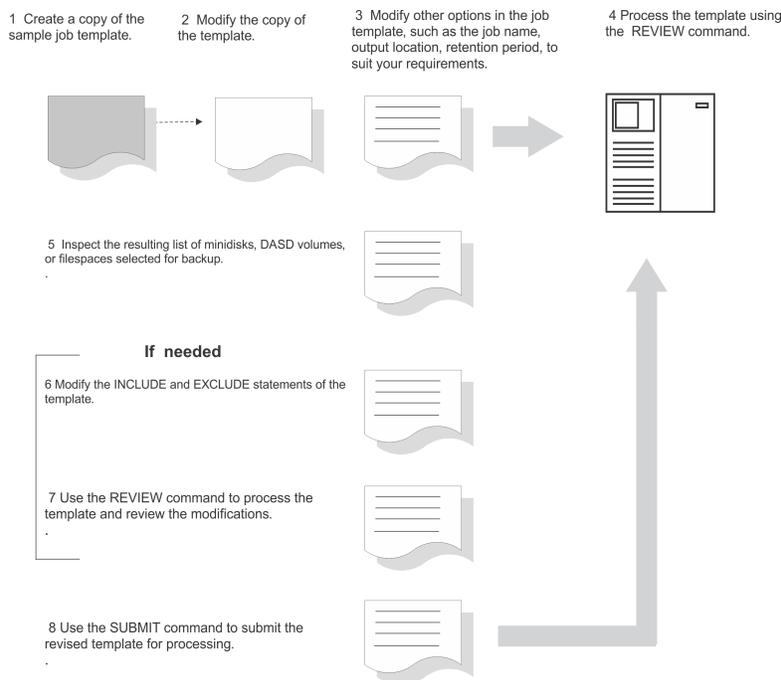
## Using job templates to create backup jobs

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 primary 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 11 on page 48](#) shows an overview of the process of creating and submitting a batch job using a job template:



*Figure 11. 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 115.
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 51.
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 [“Primary backup service virtual machine commands”](#) on page 92.

## Sample job templates

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

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 IBM 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 primary 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 primary backup server for processing, the statements generate a series of DUMPxxx (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 59](#).

**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 12 on page 50](#) 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 $$TEMPLATE$$ $$$DATE$$
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 = $$$DATE$$

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_EDF_Incr_Toggle = Off
Config BKR_SFS_Incr_Toggle = Off
Config BKR_Out_Tape_Verbose = Disabled
```

*Figure 12. 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 72](#).
- **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 59](#).

## 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 151](#).

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.

Function	MediaType	Owner	VDEV	Volser	DevType	Extent Start	Extent End	Extent Size
RESERVED								
Include	Minidisk	*	= *	*	*	= *	= *	= *
Exclude	Minidisk	FDISK	= *	*	*	= *	= *	= *
Exclude	Minidisk	\$ALLOC\$	= *	*	*	= *	= *	= *
Exclude	Minidisk	MACKO*	= *	*	*	= *	= *	= *
Include	Minidisk	MACKO*	= 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 13. 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 BKRWRKnn 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 14. 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 15. INCLUDE and EXCLUDE selection records (real device selection by address)

Note:

- When you specify RDEVICE in a backup job, worker task service virtual machines (BKRWRKnn) 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.
- Each DASD volume specified must be online and attached to SYSTEM before the backup job is submitted.
- 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 16. 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 (BKRWRKnn) 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.

- Each DASD volume specified must be online and attached to SYSTEM before the backup job is submitted.
- 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 $$UPDATE$$ $$TIME$$
Console *

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

EOJ
```

*Figure 17. Specifying end of job processing*

Note the following items shown in [Figure 17 on page 53](#):

- `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 59](#) 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 125](#).



---

## 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 file space.

#### 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 primary 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 56](#) 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 125](#).

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.

➤ CONFIG — *variable* ➤

*Figure 18. CONFIG syntax*

#### Authorization

System administrator.

#### Operands

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

- [“Required variables” on page 60](#)
- [“Optional variables” on page 64](#)
- [“CMSFILE output variables” on page 70](#)
- [“DDRTAPE output variables” on page 70](#)
- [“IBMTAPE and IBMTWIN output variables” on page 71](#)

#### 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 DUMPxxx 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 82](#).

### **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 82](#).

### **BKR\_JOB\_MASTER**

The primary 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 `$$primary$` substitution variable. For more information, see [“Variable substitutions” on page 82](#).

### **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 BKRSYSTEM 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 82.

#### **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 82.

#### **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 `BKRSYSTEM 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 157.](#)

### 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\_Pool1\_Owner** and **EUM\_Pool1\_Name** using CONFIG statements in the backup job template. For more information, see [“Tape Manager for z/VM parameters” on page 164.](#)

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 37](#).

## 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 BKR BKUP STATUS response for the worker to the following response:

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

The BKRWRKnn 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:  
*** Job name:  SAMPFULL, instance  
00001916
```

```

*** 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 primary 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 99](#).

### BKR\_JOB\_EUM\_ALT\_MOUNT\_PARMS

This variable specifies the optional mount parameters that are added to the Tape Manager **TAPEMNT** commands that are issued by Backup and Restore Manager for secondary tape mounts in jobs that create two sets of tapes. The secondary tape mounts are the set of tapes that are created on the virtual device 182 of the Backup and Restore Manager worker. If specified with a valid value, the **BKR\_JOB\_EUM\_ALT\_MOUNT\_PARMS** job template setting overrides the **EUM\_ALT\_MOUNT\_PARMS** BKRSYSTEM CONFIG setting.

Valid parameters cannot specify **EXPDAYS** or **EXPDATE** and cannot be used to override the Tape Manager **Pool Owner** or **Pool Name** parameters. All other Tape Manager **TAPEMNT** parameters are valid.

In the following example, the **TEXT** and the **EJECT** parameter will be added to the tape mount command:

```
BKR_Job_EUM_Alt_Mount_Parms= TEXT 'BKR' EJECT
```

**Note:** The Backup and Restore Manager workers must have permission within Tape Manager to use the **EJECT** parameter or the **TAPEMNT** command will fail.

**Note:** **BKR\_JOB\_EUM\_ALT\_MOUNT\_PARMS** is applicable only when all of the following conditions are met:

- The IBMTWIN or DUALTAPE output handlers are in use.
- Interaction with Tape Manager is enabled with **Tape\_Handled\_Via\_EUM** in the BKRSYSTEM CONFIG file. If you disable Tape Manager interaction, Backup and Restore Manager ignores the **BKR\_JOB\_EUM\_ALT\_MOUNT\_PARMS** parameter setting.
- The job is a backup job. The mount parameters are ignored for restore jobs.
- The parameters do not specify **EXPDAYS** or **EXPDATE**. If either parameter is specified, the setting is ignored.

### BKR\_JOB\_EUM\_MOUNT\_PARMS

This variable specifies the optional mount parameters that are added to the Tape Manager **TAPEMNT** commands that are issued by Backup and Restore Manager for the primary tape mounts in jobs that create two sets of tape. The primary tape mounts are the set of tapes that are created on the virtual device 181 of the Backup and Restore Manager worker. If specified with a valid value, the **BKR\_JOB\_EUM\_MOUNT\_PARMS** job template setting overrides the **EUM\_MOUNT\_PARMS** setting in BKRSYSTEM CONFIG.

Valid parameters cannot specify **EXPDAYS** or **EXPDATE** and cannot be used to override the Tape Manager **Pool Owner** or **Pool Name** parameters. All other Tape Manager **TAPEMNT** parameters are valid.

In the following example, the **TEXT** parameter specifies symbolic references for the job name and job instance. During template processing, Backup and Restore Manager resolves the values and adds them to the **BKR\_JOB\_EUM\_MOUNT\_PARMS** parameter before they are added to the **TAPEMNT** command. The **BKR\_Job\_Name** value must be defined in the backup job template before the **BKR\_JOB\_EUM\_MOUNT\_PARMS** statement so Backup and Restore Manager can resolve the mount parameters for **\$\$JOBNAME\$\$**.

```
BKR_Job_EUM_Mount_Parms = TEXT 'BKR $$JOBNAME$$ $$INSTANCE$$'
```

**Note:** **BKR\_JOB\_EUM\_MOUNT\_PARMS** is applicable only when all of the following conditions are met:

- Interaction with Tape Manager is enabled with **Tape\_Handled\_Via\_EUM** in the BKRSYSTEM CONFIG file. If you disable Tape Manager interaction, Backup and Restore Manager ignores the **BKR\_JOB\_EUM\_MOUNT\_PARMS** parameter setting.
- The job is a backup job. The mount parameters are ignored for restore jobs.
- The parameters do not specify **EXPDAYS** or **EXPDATE**. If either parameter is specified, the setting is ignored.

### **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 BKRSYSTEM 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 BKRSYSTEM 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 BKRSYSTEM 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 BKRSYSTEM 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\_FORCE\_EDF\_IMAGE**

This parameter indicates whether MDISKS in a backup job will be processed as DASD image backups. Specify one of the following values:

**0**

(Default) This represents "No" or "off" and prevents this parameter from being processed. This setting implies normal handling of MDISKS found to be formatted as a CMS EDF file system. These resources will be processed as CMS file-level backups.

**1**

When set to 1 ("Yes" or "True"), all MDISKS in a backup job will be processed as DASD image backups.

### **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\_SELECT\_TOLERATENOTFOUND**

(Logical variable.) This parameter affects SELECT statement handling within a particular job template. Specify one of the following values:

**NO**

(Default) The condition will be treated as an error when a job template SELECT statement cannot do one of the following:

- Cannot resolve SELECT RDEVICE to a valid real DASD device.
- Cannot resolve SELECT RDEVVOL to a valid real DASD volser when a job template is processed by the SUBMIT, RESTART, or REVIEW commands.

This error will terminate job template processing.

**YES**

If a job template SELECT statement cannot resolve SELECT RDEVICE or SELECT RDEVVOL to a valid real DASD device or volser, the condition will be treated as a warning. SUBMIT, RESTART, or REVIEW processing will continue. The SELECT failure will be reported via message 9591W.

Examples of the 9591W message are shown below.

```
BKRINC9591W WARNING: SELECTed real DASD volume <volser>
not found on system.
```

This message is issued to document a failed SELECT RDEVVOL statement.

```
BKRINC9591W WARNING: SELECTed real DASD device address <idev>
not found on system.
```

This message is issued to document a failed SELECT RDEVICE statement.

Occurrences of message 9591W will be reported in two places:

- BKRBACKUP's response to SUBMIT, RESTART, or REVIEW command processing.
- Backup job log output of any job affected by this condition.

Installation-wide behavior can be defined in BKRSYSTEM CONFIG via the `Select_TolerateNotFound` setting. Refer to [“SELECT toleration for unresolved SELECT RDEVVOL or SELECT RDEVICE job template statements” on page 161](#) for more information.

### **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_SUPPRESS_IMAGE = YES` can greatly reduce requirements for processing time and output media. However, specifying `BKR_JOB_SUPPRESS_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 `BKRSYSTEM CONFIG` file as follows:

- If not specified in the `BKRSYSTEM 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 `BKRSYSTEM 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 `BKRSYSTEM 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 `BKRSYSTEM 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 162](#).

#### **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 (1-64) 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.

#### **Worker\_Catalog\_Spool\_Throttle\_Enable**

Use this parameter to enable or disable throttling of catalog workload.

Specify one of the following values:

- **0** - This is the default value. This represents **No** or **Disable**. This setting implies normal handling of catalog workload and throttling will not be applied.
- **1** - When set to **1 (Yes or Enable)**, throttling will be enabled for the catalog workload.

##### **Note:**

- Throttling of catalog workload is one of the option available to optimize catalog processing.
- By default, throttle functionality is disabled. IBM recommends not enabling this function without first contacting IBM Support for guidance.
- Throttling will impact the total elapsed time for catalog insertion, as there is a wait time being introduced.
- The three throttling parameters, **Worker\_Catalog\_Spool\_Throttle\_Enable**, **Worker\_Catalog\_Spool\_Throttle\_Limit**, and **Worker\_Catalog\_Spool\_Throttle\_Delay**, should be used in conjunction.

#### **Worker\_Catalog\_Spool\_Throttle\_Limit**

Use this parameter to control the threshold limit of RDR files in catalog server that would trigger throttling functionality.

Specify an integer value (less than 9999) indicating the threshold count of the RDR files in the catalog server.

When throttling is enabled via **Worker\_Catalog\_Spool\_Throttle\_Enable** and when the RDR file count exceeds this threshold limit, worker processing will be suspended for those many seconds, as configured in the parameter **Worker\_Catalog\_Spool\_Throttle\_Delay**.

#### **Worker\_Catalog\_Spool\_Throttle\_Delay**

Use this parameter to control the suspend or delay time, in seconds (less than 99), once throttle is triggered.

When throttling is enabled via **Worker\_Catalog\_Spool\_Throttle\_Enable**, worker processing will be suspended for these many seconds once the catalog server RDR file count exceeds the value set in **Worker\_Catalog\_Spool\_Throttle\_Limit**.

## CMSFILE output variables

The following variables are specific to CMSFILE output. If you use User Data Processing Exit (UDPE) services for compression or any other processing, 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. BKREXT3A is an exit provided by Backup and Restore Manager on the samples disk (5697J06C 2C2 in minidisk installations) that CMS Compression Services to compress backup data.

### **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\_Preserve\_Label**

(Optional.) Support for z/VM APAR VM65778: DDR standard VOL1 toleration support.

#### **YES**

All tapes written by the DDRTAPE output handler will be created with their original VOL1 label intact. Backups that span multiple tape volumes can only be restored using versions of the z/VM DDR utility that have service for z/VM APAR VM65778 applied.

#### **NO**

(Default.) Only the first tape volser used by the DDRTAPE output handler will be created with the original VOL1 label intact. The VOL1 label of all subsequent volumes will be overwritten. Backups that span multiple tape volumes can be restored with any currently supported version of the z/VM DDR utility.

### **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.

## 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.

**BKR\_OUT\_TAPE\_REBLOCK**

Specify whether to perform data re-blocking on backup output to CMS files. Specify one of the following options:

**YES**

(Default) Re-block backups to tape.

**NO**

Do not re-block backups to tape.

**Note:** Disabling the re-blocking of tape output may significantly degrade performance.

## CONSOLE

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

```
➤ CONSOLE — text ➤
```

*Figure 19. 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.

►► CP\_COMMAND — *command* ◄◄

*Figure 20. 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 BKRAADMIN for evaluation:

```
CP_COMMAND SPOOL CONSOLE TO BKRAADMIN 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.

►► CP\_QUIET — *command* ◄◄

*Figure 21. 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 $n$ n console log that Backup and Restore Manager creates during job processing.

►► SUMMARIZE ◄◄

*Figure 22. SUMMARIZE syntax*

### Authorization

System administrator.

### Example 1: End-of-job (EOJ) summary report for backup jobs (SUMMARIZE)

The End of Job (EOJ) summary report in this section shows an example excerpt of an EOJ summary that is inserted into the job log. Each section of the report is described to ensure you understand the content of this report.

The first few lines of the End of Job (EOJ) summary report identify the job name and instance number, the start time of the worker service virtual machine (worker), and the worker end time.

```
*** Activity Summary:  
*** Job name: SAMPFULL, instance 00001916  
*** Start time: 02/09/19 00:27:46  
*** Ended time: 02/09/19 04:48:20  
***  
*** Catalog entry insertion elapsed time (ss.uu): 21.376542  
***
```

*Figure 23. Example of the initial summary lines of an EOJ summary (SUMMARIZE)*

The next section of the EOJ summary report will appear only if the backup worker is unable to CP LINK one or more virtual machine minidisks contained in the backup job. The example illustrates a job where the backup worker could not CP LINK to 21 of the minidisks included for backup. The summary records identify the minidisk owner id, virtual device number, the return code from CP LINK, and the error message generated by CP LINK when the LINK attempt failed.

If there are no LINK failures, this section is omitted from the summary report.

```

*** 21 minidisks could not be LINKed.
***
DATAMOVE 05FF (rc: 108) "HCPLNM108E DATAMOVE 05FF not linked; volid $$$$$$ not mounted"
LNKX0009 927C (rc: 108) "HCPLNM108E LNKX0009 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 63BR11 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"
***

```

Figure 24. Example of section listing minidisk LINK errors in the EOJ summary (SUMMARIZE)

After the LINK failure summary, if any CMS EDF-format minidisks with file system errors are encountered, those will be listed:

```

2 CMS EDF minidisks with possible file system errors were retried as DASD image backup:
EDF: BKRQAUSR 2191
EDF: TSTUSR05 0292
***

```

Figure 25. Example of LINK failure summary in the EOJ summary report (SUMMARIZE)

The example text shows two CMS-format minidisks (BKRQAUSR 2191 and TSTUSR05 0292) had damaged file systems. Backup CMS minidisks in this state are automatically retried as a DASD image backup.

If no damaged CMS file systems were encountered, this section is omitted.

Next, if any backups of SFS file spaces failed, those are listed. The example text shows three were skipped because the worker did not have SFS File Pool Administrator privileges:

```

3 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.

```

Figure 26. Example of failed SFS file space backups listed in EOJ summary (SUMMARIZE)

After the section for any problems with SFS file spaces, the next section lists objects that were dropped from backup due to error recovery processing. Objects listed in this section could not be backed up completely due to I/O errors involving either the object being backed up, or the active output device.

In some cases, error recovery processing may bypass backup of a minidisk or file space if an error condition is determined to be unrecoverable. Bypassed containers are documented in-stream in the job log via message 9007W. Any occurrences of message 9007W will also be reported as part of the End-of-Job summary report.

The example below shows a case where seven different minidisks were dropped from the backup job:

```

***
*** 7 objects were dropped from backup by dump task error recovery.
***
BKRJOB9007W Dropping DASD image backup of $DIRECT$ 0B01 (job task 1 of 1006).
BKRJOB9007W Dropping EDF minidisk backup of AUSR001 0194 (job task 2 of 1006).
BKRJOB9007W Dropping EDF minidisk backup of AUSR001 0191 (job task 3 of 1006).
BKRJOB9007W Dropping EDF minidisk backup of AUSR003 0E00 (job task 5 of 1006).
BKRJOB9007W Dropping EDF minidisk backup of AUSR005 0191 (job task 7 of 1006).
BKRJOB9007W Dropping EDF minidisk backup of AUSR008 0191 (job task 8 of 1006).
BKRJOB9007W Dropping DASD image backup of AUSR010 0191 (job task 11 of 1006).
***

```

Figure 27. Example of section for objects not backed up and listed in EOJ summary (SUMMARIZE)

The final output in this section is generated by "Say" and "CP\_Command" statements in the job template, rather than by SUMMARIZE or EOJ commands.

```
*
* SAMPLE FULL BACKUP TEMPLATE CREATED 01/05/2019.
* JOB IMAGE GENERATED 02/09/19 00:27:46
*
BKRJOB0905I Executing CP command "SPOOL CONSOLE CLOSE NAME SAMPFULL 20190209"
```

Figure 28. Example of the final lines at the end of the EOJ summary (SUMMARIZE)

### Example 2: RESTORE summary

For RESTORE jobs, SUMMARIZE and EOJ produce a summary report that displays the outcome of all RESTORE tasks in a job. This differs from summary information reported in a backup job. Backup job summary reports only contain information about backup tasks that encountered a problem during the backup process. Restore job summary reports include a summary of *all* RESTORE tasks, regardless of the task return code.

```
***
*** 7 RESTORE tasks were executed in this job. RESTORE summary:
***
RC 0 -- RESTORE 05/09/2019 06:58:04 CKD backup of MAINT 0190 to CKD TESTUSER 9405
RC 0 -- RESTORE 05/09/2019 06:57:52 EDF backup of MAINT 0190 to EDF TESTUSER 9405 PROF* * *
RC 4 -- RESTORE 05/09/2019 07:16:26 SFS backup of LCLPOOL:ADMUSER to SFS LCLPOOL:TESTUSER -
      LCLPOOL:ADMUSER.FTP * TEMPLATE *
RC 0 -- RESTORE 05/09/2019 07:03:16 EDF backup of MAINT710 051D to RDR TESTUSER - * $PPF *
RC 0 -- RESTORE 05/09/2019 07:05:02 EDF backup of TMTMM 0191 to RDR TESTUSER - * * *
RC 0 -- RESTORE 05/09/2019 07:05:02 EDF backup of TMDMM 0191 to RDR TESTUSER - * * *
RC 0 -- RESTORE 05/09/2019 06:57:43 EDF backup of ADMUSER 0191 to SFS
LCLPOOL:TESTUSER.PROJECT1.ADMUSER191
      * * * *
***
```

Figure 29. Example of RESTORE summary

A line-by-line explanation of each RESTORE summary line (in the above example) is provided below.

#### Line 1

Normal restore, CKD backup of MAINT 190 to TESTUSER's 9405 minidisk

#### Line 2

Normal restore, CMS EDF file-level backup of MAINT 190 to TESTUSER's 9405 minidisk, of files matching wild-card pattern "PROF\* \* \*".

#### Line 3

Restore with RC4 warning, CMS SFS restore of content from LCLPOOL:ADMUSER to SFS file space LCLPOOL:TESTUSER, of files matching wild-card pattern "LCLPOOL:ADMUSER.FTP \* TEMPLATE \*".

**Note:** This RESTORE task completed with a return code of 4. The RC4 occurred because LCLPOOL:TESTUSER already exists. SFS enrollment attributes for the source file space, LCLPOOL:ADMUSER, cannot be applied to an already-existing file space.

#### Line 4

Normal restore, CMS EDF file level backup of MAINT710 51D to virtual RDR for user TESTPOOL, of files matching wild card pattern "\* \$PPF \*".

#### Line 5

Normal restore, CMS EDF file level backup of TMTMM 191 to virtual RDR for TESTUSER, all files selected.

#### Line 6

Normal restore, CMS EDF file level backup of TMDMM 191 to virtual RDR for TESTUSER, all files selected.

#### Line 7

Normal restore, CMS EDF file level backup of ADMUSER 191 to SFS directory LCLPOOL:TESTUSER.PROJECT1.ADMUSER191, all files selected.



## Authorization

System administrator.

## Usage notes

Place the JOB\_TRAILER keyword after the block of DUMPxxx (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 33. 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 (MINIDISK), real DASD volume (RDEVICE), or real device address (RDEVOL) for backup processing. 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.

By default, the SELECT keyword requires that any resource targeted by SELECT must be available when job templates are processed by SUBMIT or REVIEW commands. If a resource is unavailable, job processing is terminated.

You can override this behavior and have Backup and Restore Manager produce only a warning message when the value of SELECT cannot be resolved, allowing the job to continue.

To choose how SELECT operates, modify one or more of the following:

- To specify a default for site-wide handling for unresolved SELECTs, add the following statement to the product configuration file (BKRSYSTEM CONFIG)

```
Select_TolerateNotFound = 0|1
```

- To specify a default for job template-level handling for unresolved SELECTs, add the following statement to any backup job template:

```
Config BKR_Job_Select_TolerateNotFound = 0|1
```

where:

- A value of "0" indicates the backup job is terminated if a resource on a SELECT statement is unavailable. 0 is the default if no site-wide or job template option is specified.
- A value of "1" indicates warning messages will be issued if a resource on a SELECT statement is unavailable, and the backup job will continue.

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.

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.

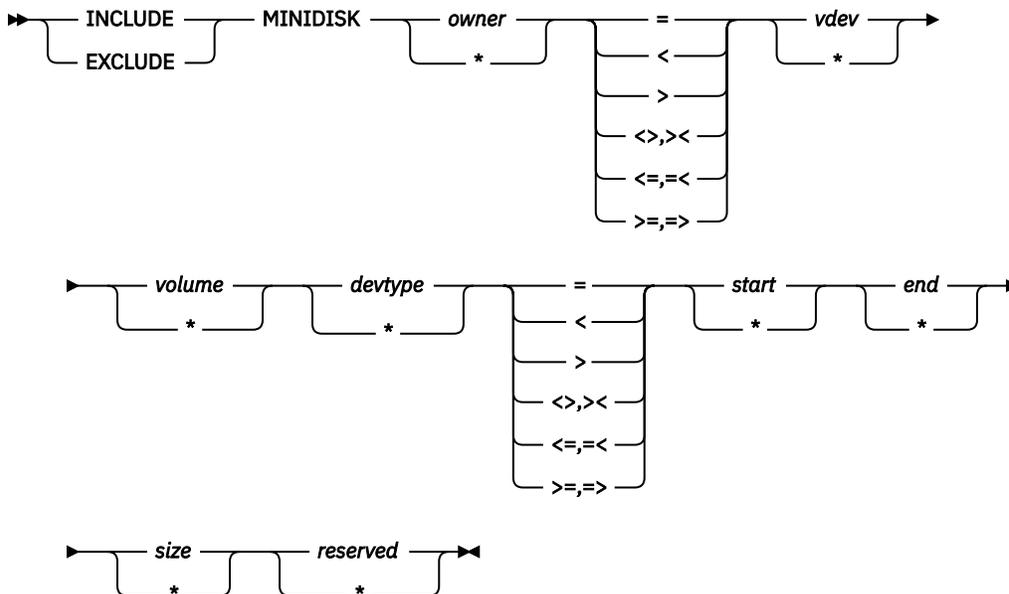


Figure 34. Minidisk selection record syntax

**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 51](#).

## Syntax to include and exclude SFS file pools

The following are keyword descriptions for SFS selection.

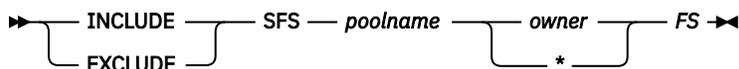


Figure 35. SFS selection record syntax

**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 52.

## Syntax to include and exclude BFS file spaces

The following are keyword descriptions for BFS selection.

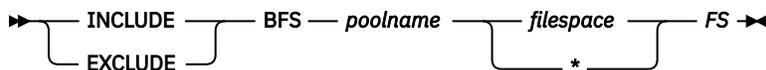


Figure 36. BFS selection record syntax

**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

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

## Syntax to include and exclude real devices by address

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

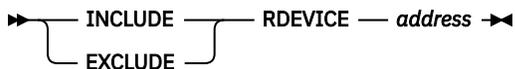


Figure 37. Real device selection by address selection record syntax

### 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 hexadecimal numbers or as wildcard characters.

For more information, see [“Real device selection by address \(RDEVICE\)”](#) on page 52.

## Syntax to include and exclude real devices by volume label

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



Figure 38. 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 52.

## 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.

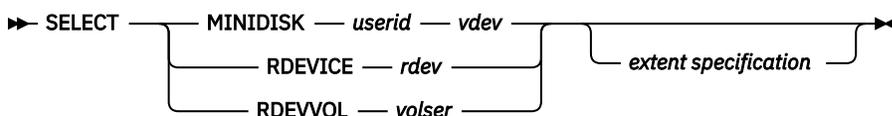


Figure 39. Explicit selection of minidisks or devices selection record syntax

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 121](#).

## 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 = JOE Backup and Restore Manager` replaces the variable `$$ADMIN$$` with the value of the **Local\_Backup\_Admin\_ID** setting from the BKRSYSTEM 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 BKRSYSTEM CONFIG file is substituted.

**\$\$CATALOG\$\$**

Replaced by the `$$CATALOG$$` in any job template record. The value of **Local\_Backup\_Catalog\_ID** from the BKRSYSTEM 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 primary 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 119](#) 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 BKRSYSTEM 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 primary, catalog, and worker service virtual machines.

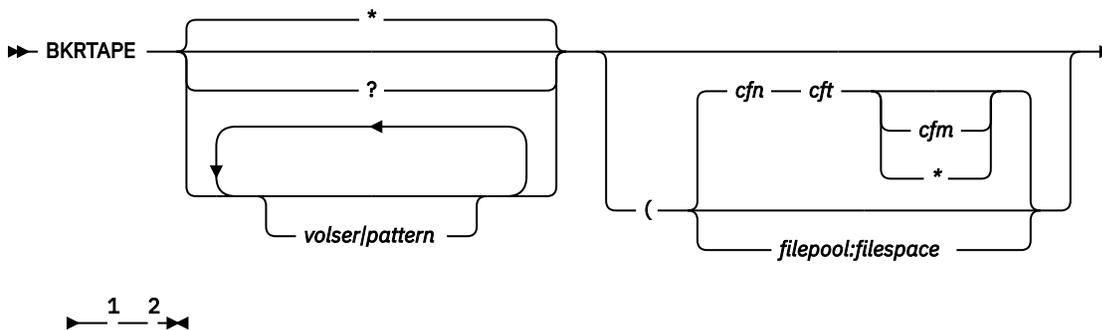
## Common commands

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 primary, catalog, and worker service virtual machines.

### BKRTAPE

The **BKRTAPE** command reads a Backup and Restore Manager catalog and reports, for each tape that matches the selection criteria, the associated job and instance. The default is to report all tapes, but one or more tape volsers or patterns can be used to restrict the output.



Notes:

- <sup>1</sup> If you invoke BKRTAPE without alternate configuration parameters (*cfn*, *cft*, *cfm*) or an SFS catalog (*filepool:filespace*), it searches for the default configuration file BKRSYSTEM CONFIG on any accessed filemode.
- <sup>2</sup> If you invoke BKRTAPE with an alternate configuration file parameter (*cfn*, *cft*), *cfm* defaults to \* if not specified.

Figure 40. BKRTAPE command syntax

### Authorization

BKRTAPE requires SFS administrator authorization to the Backup and Restore Manager catalog.

### Operands

?

Types a short description of BKRTAPE operation and syntax.

#### volser|pattern

Restricts BKRTAPE to reporting only on a specific tape (or tapes) rather than the default of all tapes.

If the operand ends in an asterisk (\*), it represents a set of tapes that begin with a common character string. For example, BKRO\* represents all tapes whose volume serials begin with the characters BKRO.

Operands that do not end in an asterisk represent a single volume serial.

You can specify as many volsers or patterns as you want, and the result will be a display of all tapes that meet any of the criteria.

**cfn**

The file name of an alternative configuration file.

**cft**

The file type of an alternative configuration file.

**cfm**

The file mode of an alternative configuration file. If you do not specify a mode, the default is \* (any accessed file mode).

**filepool**

The SFS catalog file pool to browse for backup jobs, instead of obtaining the file pool from a backup configuration file.

**Note:** You must specify *filepool* with *filespace*.

**filespace**

The SFS file space to browse for backup jobs, instead of obtaining the file space from a backup configuration file.

**Note:** You must specify *filespace* with *filepool*.

## Usage notes

Because a tape can, and usually will, be part of a "set" of tapes that are associated with the same job and instance, BKRTAPE output is structured to group tapes that are associated with a specific job and instance together. However, tape selection criteria take precedence. Therefore, if some tapes in a set meet the criteria and others do not, only the tapes that meet the criteria are shown.

## CMS

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

►► CMS — *cms\_command* ◄◄

*Figure 41. CMS command syntax*

### Authorization

System administrator.

### Operands

**cms\_command**

A valid CMS command.

### Example

Figure 42 on page 87 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 42. CMS command example

## CP

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

➤ CP — *cp\_command* ➤

Figure 43. CP command syntax

### Authorization

System administrator.

### Operands

#### **cp\_command**

A valid CP command.

### Example

Figure 44 on page 87 shows an example of the **CP** command that is used to issue the **QUERY TIME** CP command.

```

smsg bkibkup 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 44. CP command example

## HALT

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

➤ HALT ➤

Figure 45. 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 46 on page 88 shows an example of the **HALT** command that is issued to halt the primary backup server.

```
cp smsg BKR BKUP halt
```

Figure 46. HALT command example (primary backup server)

## STATUS

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

►► STATUS ◄◄

Figure 47. STATUS command syntax

BKR BKUP responds with status information for the workers that were activated since the last time BKR BKUP 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.

The output of the STATUS command will include worker progress reporting information if enabled. For more information on Progress Reporting, see [Worker progress reporting configuration parameters](#).

## Authorization

System administrator.

## Examples

Figure 48 on page 88 shows an example of the **STATUS** command that is issued to obtain runtime status for a primary backup server (BKR BKUP) that has no active workers. This example shows the runtime library that executes compiled code is in use.

```
smsg bkrbkup status
Ready; T=0.01/0.01 21:35:04
SVM Name   : BKR BKUP - 5697-J06 IBM Backup and Restore Manager for z/VM - Primary Backup SVM - Version
1.3.0
Compiled on: 19 Jan 2016 - 16:18:47
Runtime lib: Compiler
SVM Owner  : BKR 1.3.0 Production - bkradmin@address.com
SVM Started: Tuesday, 9 Feb 2016 14:08:17
Catalog SVM: BKRCATLG
Worker info as of 21:39:48:
  BKRWRK01 - Logged out at 21:37:50 on Friday, 4 Mar 2016.
  BKRWRK02 - Logged out at 02:19:21 on Friday, 4 Mar 2016.
```

Figure 48. STATUS command example (primary backup server with no active workers)

Figure 49 on page 89 shows examples of the **STATUS** command that is issued to obtain runtime status for a primary backup server that has two active workers (BKRWRK02 and BKRWRK01). This example shows the runtime library that executes compiled code is in use. This example also shows the Progress Bar for each worker and for various containers like ECKD/EDF/SFS.

```

sm bkrbkup status
SVM Name   : BAKSRVR - 5697-J06 IBM Backup and Restore Manager for z/VM - Master Backup SVM - Version
1.3.0
Compiled on: 9 Jan 2022 - 23:08:41
Runtime lib: Compiler
SVM Owner  : System Administrator - sysadmin@some.corp.com
SVM Started: Friday, 25 Mar 2022 12:01:14
Catalog SVM: BKRCATLG
Worker info as of 01:15:37:
  BKRWRK01 - Processing job SAMPFULL/00000199, task 49 of 180; EDF file-level backup of MDISK MAINT
019D since 01:15:35 on Thursday, 14 Apr 2022.
    Progress: CMS file 6000 of 17989
  BKRWRK02 - Processing job SAMPFULL/00000199, task 48 of 181; CKD image backup of MDISK MAINT 0123
since 01:14:38 on Thursday, 14 Apr 2022.
    Progress: ECKD Track 115499 of 150254

```

```

sm bkrbkup status
SVM Name   : BAKSRVR - 5697-J06 IBM Backup and Restore Manager for z/VM - Master Backup SVM - Version
1.3.0
Compiled on: 9 Jan 2022 - 23:08:41
Runtime lib: Compiler
SVM Owner  : System Administrator - sysadmin@some.corp.com
SVM Started: Friday, 25 Mar 2022 12:01:14
Catalog SVM: BKRCATLG
Worker info as of 01:16:18:
  BKRWRK01 - Processing job SAMPFULL/00000199, task 54 of 181; CKD image backup of MDISK MAINT720 0131
since 01:15:49 on Thursday, 14 Apr 2022.
    Progress: ECKD Track 52499 of 150254
  BKRWRK02 - Processing job SAMPFULL/00000199, task 105 of 186; CKD image backup of MDISK TS3163 3191
since 01:16:11 on Thursday, 14 Apr 2022.
    Progress: ECKD Track 10499 of 71144

```

```

sm bkrbkup status
SVM Name   : BAKSRVR - 5697-J06 IBM Backup and Restore Manager for z/VM - Master Backup SVM - Version
1.3.0
Compiled on: 9 Jan 2022 - 23:08:41
Runtime lib: Compiler
SVM Owner  : System Administrator - sysadmin@some.corp.com
SVM Started: Friday, 25 Mar 2022 12:01:14
Catalog SVM: BKRCATLG
Worker info as of 01:20:23:
  BKRWRK01 - Processing job SAMPFULL/00000199, task 157 of 182; SFS backup of VMPSFS:MAINT720. since
01:20:02 on Thursday, 14 Apr 2022.
    Progress: 4K block 131118 of 146862
  BKRWRK02 - Logged out at 01:19:00 on Thursday, 14 Apr 2022.

```

*Figure 49. STATUS command example (primary backup server with active workers and worker progress reporting)*

**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 50 on page 89](#) shows an example of the **STATUS** command that is issued to obtain runtime status for the catalog server (BKRCATLG). This example shows the alternate version of the library that interprets code is in use.

```

smsg bkrcatlg status
Ready; T=0.01/0.01 21:35:11
SVM Name: CATSRVR - 5697-J06 IBM Backup and Restore Manager for z/VM - Backup Catalog SVM - Version
1.3.0
Compiled on : 17 Dec 2015 - 15:14:37
Runtime lib : Alternate
SVM Owner   : BKR 1.3.0 Production - bkadmin@address.com
SVM Started : Tuesday, 9 Feb 2016 14:08:31
Backup SVM  : BKRBKUP
Catalog base: BKRSFS:BKRCATLG.
Userid      Storage Group  4K Block Limit  4K Blocks Committed  Threshold
BKRCATLG    2                    500000         171604-34%          90%

```

*Figure 50. 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 51 on page 90 shows an example of the worker (WRKSRVR) response to a **STATUS** command. This example shows the runtime library that executes compiled code is in use.

```
smsg bkrwrk01 status
Ready; T=0.01/0.01 21:35:50
SVM Name: WRKSRVR - 5697-J06 IBM Backup and Restore Manager for z/VM - Worker Task SVM - Version
1.3.0
Compiled on : 27 Jan 2016 - 11:12:19
Runtime lib : Compiler
SVM Owner   : BKR 1.3.0 Production - bkrdadmin@address.com
SVM Started : Friday, 4 Mar 2016 21:35:44
Backup SVM  : BKRBKUP
Catalog SVM : BKRCATLG
Idle Timeout: +00:02:00
```

Figure 51. STATUS command example (worker response)

BKRWRKnn users respond to the **STATUS** command only when they are idle. The worker response identifies the primary backup service virtual machine and the catalog service virtual machine with which the worker is associated.

**Note:** In all cases, the value that is displayed for `Runtime lib` in the output is one of the following:

- The compile date and time, regardless of the REXX runtime library version.
- The active version of the REXX runtime library.

## SUSPEND mode commands

---

SUSPEND mode commands apply to the Backup and Restore Manager primary, 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.

►► CMS — *cms\_command* ◄◄

Figure 52. 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.

►► CP — *cp\_command* ◄◄

Figure 53. 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.

➤ RESTART ➤

*Figure 54. 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.

➤ RESUME ➤

*Figure 55. RESUME command syntax*

## Authorization

Backup administrator.

## Operands

This command has no operands.

## Primary backup service virtual machine commands

The following commands are applicable to the primary 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.

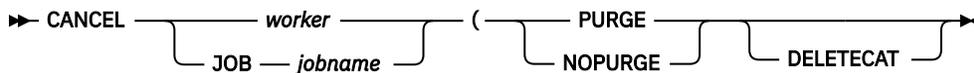


Figure 56. CANCEL command syntax

### Authorization

System administrator.

**Note:** To successfully process a **CANCEL** command, the primary 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 one command.

#### PURGE

(Default.) When a **CANCEL** command is issued, purge all queued work from the worker virtual RDR. When you issue the **CANCEL** command with the default option of **PURGE**, the following actions occur:

- The affected worker service virtual machines stop. The primary 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.

#### NOPURGE

When a **CANCEL** command is issued, retain work pending on the RDR queue 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 primary 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 primary backup server at a later point in time, processing resumes with the first task that is queued on the virtual reader of the worker.

#### DELETECAT

Delete catalog information.

When you issue the **CANCEL** command with the **DELETECAT** option, the following events occur after **CANCEL** has terminated any worker (BKRWRKnn) service virtual machines that are actively processing the specified jobname:

1. BKR BKUP issues a **SET EXPIRE <jobname> <instance> VOIDINSTANCE** command to BKRCATLG, signaling BKRCATLG to:

- Immediately perform SET EXPIRE processing.
- Delete the catalog information that is associated with the jobname/instance.

This does not affect any other expired job instances, only the one targeted by "SET EXPIRE ... VOIDINSTANCE."

2. The backup catalog is updated to indicate that the canceled job/instance is marked "void", which ensures that if any additional catalog entries arrive, BKRCATLG will recognize that they are associated with a voided jobname/instance and discard them.

For example, let's assume that a multi-worker job is sent to 3 workers, and that workers 1 and 3 start immediately while worker 2 is still busy with another job. If workers 1 and 3 are canceled, the other portion of the job will remain in worker 2's queue. With VOIDINSTANCE, worker 2 will recognize that it received a job and instance that was canceled, discard the job, and move on to the next queued job.

3. If BKRCATLG is somehow interrupted, cleanup will continue at the next EXPIRE (PURGE because the jobname/instance is expired).

When **CANCEL ... (DELETECAT** declares a job instance as VOID, the actions are:

- A "void" flag for the job instance is recorded in the backup catalog. This information is automatically removed from the backup catalog approximately 24 hours after creation. New catalog entries for the job instance will be rejected with the message: BKRBU19589W Job <jobname>, instance <instance> is marked void; new catalog entry ignored.
- Workers (BKRWRKnn) will refuse to start more backup jobs for a voided job instance with the message: BKRJOB9590W Job <jobname>, instance <instance> is marked void; job execution terminated.

### Example 1: CANCEL command

You can use the CP SMSG interface to stop an active worker service virtual machine (worker). The example below, [Figure 57 on page 93](#), shows the **CANCEL** command that is issued to cancel the BRKWRK03 worker.

```
CP SMSG BKR BKUP CANCEL BKRWRK03
```

*Figure 57. CANCEL command example*

If the worker service virtual machine is registered as an active worker with the primary backup server (BKR BKUP), the following actions occur:

- A CP **FORCE BKRWRK03** command is issued to immediately stop the worker service virtual machine (workers).
- 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.

An example of the expected response to this command is below:

```
Ready;
BKRBAK8534I Processing CANCEL BKRWRK03 command for *SMSG BKRADMIN.
BKRBAK9131I Canceling worker BKRWRK03.
BKRBAK9132I Queued work for worker BKRWRK03 has been purged.
```

### Example 2: CANCEL command with the PURGE option

In the example below, [Figure 58 on page 93](#), all workers that are engaged in processing SAMPFULL are forced from the system; queued jobs are purged.

```
CP SMSG BKR BKUP CANCEL JOB SAMPFULL ( PURGE
```

*Figure 58. CANCEL JOB (PURGE) command example*

Assuming that SAMPFULL is being processed concurrently by two active worker service virtual machines, BKRWRK01 and BKRWRK02, the expected response to this command is below:

```
Ready;
BKRBAK8534I Processing CANCEL JOB SAMPFULL ( PURGE command for *SMSG BKRADMIN.
BKRBAK9131I Canceling worker BKRWRK01 (job SAMPFULL).
BKRBAK9131I Canceling worker BKRWRK02 (job SAMPFULL).
BKRBAK9132I Queued work for worker BKRWRK01 has been purged.
BKRBAK9132I Queued work for worker BKRWRK01 has been purged.
```

### Example 3: CANCEL command with the NOPURGE option

In the example below, Figure 59 on page 94, all workers that are engaged in processing 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:

```
CP SMSG BKRBAKUP CANCEL JOB SAMPINCR ( NOPURGE
```

*Figure 59. CANCEL JOB (NOPURGE) command example*

For the results of this command, assume that SAMPINCR is currently being processed by one active worker, BKRWRK01. In this case, the expected results from issuing the above command are the following:

```
Ready;
BKRBAK8534I Processing CANCEL JOB SAMPINCR ( NOPURGE command for *SMSG BKRADMIN.
BKRBAK9131I Canceling worker BKRWRK01 (job SAMPINCR).
BKRBAK9133I Queued work for worker BKRWRK01 has been retained.
```

The next time BKRWRK01 is started, such as when BKRBAKUP selects BRKWRK01 for another job or when it is started manually with the **CP XAUTOLOG** command, BKRWRK01 will attempt to process the jobs queued on its virtual RDR.

### Example 4: CANCEL command with the DELETECAT option

In the example below, Figure 60 on page 94, all worker service virtual machines (workers) that are engaged in processing SAMPINCR are canceled and the catalog information associated with this job instance is deleted; queued jobs are purged.

```
CP SMSG BKRBAKUP CANCEL JOB SAMPINCR ( DELETECAT
```

*Figure 60. CANCEL JOB (DELETECAT) command example*

The expected results for this command are:

```
BKRBAK8534I Processing CANCEL JOB SAMPINCR ( DELETECAT command for *SMSG BKRADMIN.
BKRBAK9131I Canceling worker BKRWRK01 (job SAMPINCR).
BKRBAK9132I Queued work for worker BKRWRK01 has been purged.
```

Notice that the command did not specify PURGE or NOPURGE as an option. In this case, the default is used, which is PURGE.

## CATBACKUP EXPORT

Use the **CATBACKUP EXPORT** command to create a copy of the backup catalog file space in CMS native **FILEPOOL UNLOAD FILESPACE** format. The resulting file can be used to capture a portable copy of the backup catalog file space for use in disaster recovery scenarios.

➤ CATBACKUP EXPORT ➤

*Figure 61. CATBACKUP EXPORT command syntax*

## Authorization

System administrator.

BKRBKUP provides the **CATBACKUP EXPORT** command as a means to generate an external copy of the backup catalog SFS file space in a format that can be restored using only native z/VM CMS tools. This command invokes the CMS **FILEPOOL UNLOAD** utility to create a copy of the backup catalog in standard CMS **FILEPOOL UNLOAD FILESPACE** format.

To use **CATBACKUP EXPORT**, you must first provision a CMS minidisk for BKRBKUP to serve as a repository for this data, and then identify the minidisk in BKRSYSTEM CONFIG by declaring a value for **BKR\_Catalog\_Export\_Minidisk**. The following example declares that BKRBKUP was set up with a minidisk at virtual address CBAC for use as by **CATBACKUP EXPORT**:

```
BKR_Catalog_Export_Minidisk = CBAC
```

The CMS **FILEPOOL UNLOAD FILESPACE** utility generates output as a single CMS file. This means that the minidisk identified as **BKR\_Catalog\_Export\_Minidisk** must be a CMS-format minidisk with enough free space to contain a single copy of the backup catalog file space in **FILEPOOL UNLOAD FILESPACE** format.

The size of this minidisk varies from one installation to another. As a guideline, consider allocating 1.4 times the number of SFS 4K data blocks committed for use by your current backup catalog file space. Using this guideline, if the SFS administrator command **QUERY LIMITS FOR BKRCATLG BKRSFS** returns the following information:

```
query limits for bkrcatlg bkrsfs
Userid  Storage Group  4K Block Limit  4K Blocks Committed  Threshold
BKRCATLG      2              500000          205050-41%           90%
Ready;
```

Then the estimated minidisk space required to hold a catalog export file would be 1.4\*205,050 (287,070 4K blocks), or 1,595 cylinders of 3390 DASD (287,070 / 180 blocks per cylinder).

After a suitable minidisk is provisioned for use by **CATBACKUP EXPORT** on BKRBKUP, and identified in BKRSYSTEM CONFIG, the command is enabled for use. **CATBACKUP EXPORT** requires that no workers (BKRWRKnn) are logged on, and must only be invoked when no backup or restore jobs are in progress. Attempts to invoke **CATBACKUP EXPORT** while other activity is in progress will be rejected with a warning message.

## Examples

The resulting export file is stored with a file name of your backup catalog service virtual machine (normally BKRCATLG), and a file type of SNAPSHOT. In the following example, the file is saved as BKRCATLG SNAPSHOT. Previous versions of this file on the catalog export minidisk are erased before **FILEPOOL UNLOAD FILESPACE** is used to create a new one.

```
cp smsg bkrbkup catbackup export
Ready;
BKRBAK9484I Pausing 15 seconds for BKRCATLG shutdown.

BKRBAK9490I Invoking CMS utility FILEPOOL UNLOAD FILESPACE...
BKRBAK9491I FILEPOOL UNLOAD FILESPACE completed with return code 0.
BKRBAK9492I FILEPOOL UNLOAD FILESPACE generated the following messages:
DMSWFP3485I FILEPOOL processing begun at 13:15:21 on 5 Dec 2016.
DMS5PY3455I The unload of file space BKRCATLG is starting: 13:15:20
DMS5PY3455I The unload of file space BKRCATLG is complete: 13:16:22
DMS5PX3438I FILEPOOL UNLOAD successful
DMSWFP3486I FILEPOOL processing ended at 13:16:23 on 5 Dec 2016.
BKRBAK9493I FILEPOOL UNLOAD FILESPACE complete; restarting BKRCATLG via CP XAUTOLOG.
```

Figure 62. CATBACKUP EXPORT command example

## Note:

- For successful execution of **CATBACKUP EXPORT**, the PROFILE EXEC used by BKRCATLG must execute a CP **LOGOFF** command after CATSRVR EXEC exits. For an example, see the sample file CATPROF SAMPEXEC.
- See *z/VM: CMS File Pool Planning, Administration, and Operation* for more information about the CMS **FILEPOOL** command.
- If another virtual machine has an outstanding lock on the backup catalog file space, or has any portion of the backup catalog file space accessed in R/W mode, then **CATBACKUP EXPORT** terminates with errors reported by **FILEPOOL UNLOAD**.
- Use the CMS **FILEPOOL RELOAD** command to recover the information created by **CATBACKUP EXPORT** into a replacement backup catalog file space. See *z/VM: CMS File Pool Planning, Administration, and Operation* for more information about **FILEPOOL RELOAD**. An example program, CATLOAD SAMPEXEC, is provided in the sample materials for IBM Backup and Restore Manager for z/VM.
- Warning: Using **FILEPOOL RELOAD** to restore a previously exported copy of the backup catalog file space to your system will delete the current copy of the backup catalog file space. Doing so deletes all backup catalog records for media and backups created after the restored copy was created, and this information cannot be recovered unless it has been backed up separately.

## 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 DUMPxxx 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.

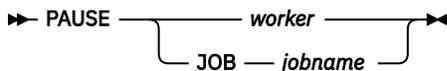


Figure 63. PAUSE command syntax

**Note:** Use the **RESUME** command to remove workers from the PAUSE state. For more information, see “RESUME” on page 100.

### 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 64 on page 97 shows an example of the **PAUSE** command that is issued to pause worker service virtual machine BKRWRK03.

```
CP smsg bkrbkup pause bkwrk03
```

Figure 64. PAUSE command example

If the worker service virtual machine registered as an active worker with the primary 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.

```
►► QUERY DISKPOOL — poolspec ◄◄
```

Figure 65. 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 66 on page 97 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 66. QUERY DISKPOOL command example

## QUERY INSTANCE

Issue the **QUERY INSTANCE** command to determine the current instance number for the specified backup job template.

```
►► QUERY INSTANCE — jobname ◄◄
```

Figure 67. 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 68 on page 98 shows an example of the **QUERY INSTANCE** command that is issued to determine the current instance number for the SAMPFULL template.

```
CP SMSG BKRBAKUP QUERY INSTANCE SAMPFULL
Ready;
BKRBAK9188I Current instance for job SAMPFULL is set to 114.
```

Figure 68. *QUERY INSTANCE* command example

If the specified job does not exist, an error response is returned:

```
CP SMSG BKRBAKUP QUERY INSTANCE NOSUCHJOB
Ready;
BKRBAK9187E No automatically managed instances matching filter NOSUCHJOB were found.
```

Figure 69. *QUERY INSTANCE* command example (job does not exist)

## QUERY VOID

Issue the **QUERY VOID** command to determine whether the specified job instance is currently marked "void."

➤ **QUERY VOID** — *jobname* — *instance* ➤

Figure 70. *QUERY VOID* command syntax

### Authorization

System administrator

## Operands

### jobname

The name of a specific backup job or a LISTFILE-compatible wildcard expression. If you do not specify a value, a default of "\*" (all jobs) is assumed.

### instance

Identifies a specific instance number or a LISTFILE-compatible wildcard expression. If you do not specify a value, a default of "\*" (all instances) is assumed.

### Example 1: Query all instances to check for those flagged as VOID

The command **QUERY VOID \* \*** is used to show everything that is marked as "void".

The response, shown beneath "Ready" in the example below, indicates that no backup instances are flagged.

```
CP SMSG BKRBAKUP QUERY VOID * *
Ready;
BKRBAK9592I No voided instances matching * * were found.
```

Figure 71. *Query all VOID*

### Example 2: Query whether any instances of SAMPFULL are flagged as VOID

The following figure shows an example of the **QUERY VOID** command that is issued to determine whether the any instances of SAMPFULL are declared "void."

The response, shown beneath "Ready" in the example below, indicates that no instances of the backup job, SAMPFULL, are flagged.

```
CP SMSG BKRBKUP QUERY VOID SAMPFULL *
Ready;
BKRBAK9592I No voided instances matching SAMPFULL * were found.
```

Figure 72. Query all VOID for jobname

### Example 3: Query whether any job names and instances are flagged as VOID.

The following figure shows an example of the **QUERY VOID** command that is issued to determine whether any job names and instances of SAMPFULL are declared "void."

The response, shown beneath "Ready" in the example below, indicates that instance 1408 of the backup job, SAMPFULL, is flagged as "void".

```
CP SMSG BKRBKUP QUERY VOID * *
Ready;
BKRBAK9585I Job instance SAMPFULL 00001408 is voided.
```

Figure 73. Query all VOID for job name and instance

## 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. When the previous execution used the **GROUPBY** load balancing option, use the same **GROUPBY** load balancing option during **RESTART**.

➤ **RESTART** — *jobname* — ( — *options* ➤

### Options

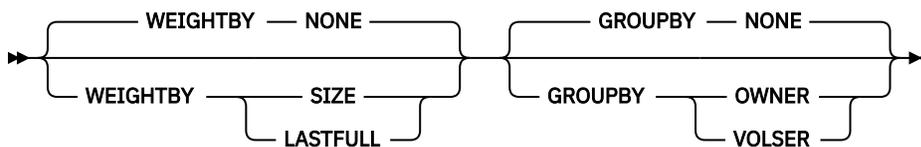


Figure 74. RESTART command syntax

**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 59](#).

## Authorization

System administrator.

## Operands

### jobname

The name of the backup job to restart.

## Options

The load balancing options **WEIGHTBY** and **GROUPBY** can be used with the **RESTART** command. For more information on the following options and parameters, see [Appendix I, “Load Balancing options and parameters,”](#) on page 175.

### **WEIGHTBY**

Specifies whether to distribute backup tasks to workers based on the size of the objects or based on the time required to back up the object in a previous backup job.

#### **NONE**

**WEIGHTBY** will not be applied. This is the default.

#### **SIZE**

Uses the size of the object, in terms of bytes, as the parameter to use for load balancing.

#### **LASTFULL**

Uses the elapsed time during the last **FULL** backup as the parameter to use for load balancing.

### **GROUPBY**

Specifies whether to distribute backup tasks to workers based on the owner of the object or the DASD volume where the object resides.

#### **NONE**

**GROUPBY** will not be applied. This is the default.

#### **OWNER**

First groups the backup tasks based on the owning user ID of the object.

#### **VOLSER**

First groups the backup tasks based on the volume serial number of the DASD volume where the object resides.

## Example

Figure 75 on page 100 shows several examples of the **RESTART** command that is issued to restart a backup job named **BKRJOB1**, with and without load balancing.

```
CP SMSG BKR BKUP RESTART BKRJOB1
CP SMSG BKR BKUP RESTART BKRJOB1 ( WEIGHTBY SIZE
CP SMSG BKR BKUP RESTART BKRJOB1 ( WEIGHTBY SIZE GROUPBY OWNER
CP SMSG BKR BKUP RESTART BKRJOB1 ( GROUPBY VOLSER
```

Figure 75. **RESTART** command examples

## 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 **DUMPxxx** 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.

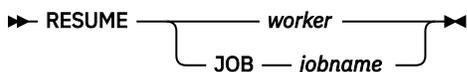


Figure 76. **RESUME** command syntax

## 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 77 on page 101 shows an example of the **RESUME** command that is issued to resume worker service virtual machine BKRWRK03.

```
CP smsg bkrbkup resume bkrwrk03
```

Figure 77. RESUME command example

If the worker service virtual machine registered as an active worker with the primary 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.

➤ **REVIEW** — *jobname* — ( — *options* ➤

### Options

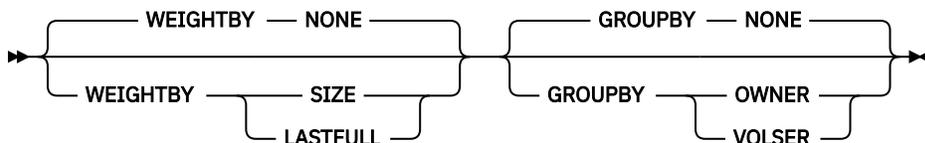


Figure 78. REVIEW command syntax

### **Note:**

1. GROUPBY needs a valid WEIGHTBY option. If WEIGHTBY is specified, then that option will be applied. If WEIGHTBY is not specified, WEIGHTBY SIZE will be used as default.
2. Load balancing is applicable only when multiple workers are specified in the backup job. When only 1 worker is used, WEIGHTBY NONE / GROUPBY NONE will be applied by default. Any options specified by the submitter will be ignored.
3. When both WEIGHTBY and GROUPBY are specified, the GROUPBY option will be applied to the list of backup tasks first.

## 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<sub>xxx</sub> (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 primary backup server.
- The **REVIEW** command inserts an appropriate value for **\$\$INST\$\$** in the resulting job template, but the value that is stored on the primary 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 103](#) 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 51](#) and [Chapter 6, “Job syntax,” on page 59](#).

## Operands

### *jobname*

The name of the job template to submit for review.

### Options

The load balancing options **WEIGHTBY** and **GROUPBY** can be used with the **REVIEW** command. For more information on the following options and parameters, see [Appendix I, “Load Balancing options and parameters,” on page 175](#).

#### **WEIGHTBY**

Specifies whether to distribute backup tasks to workers based on the size of the objects or based on the time required to back up the object in a previous backup job.

#### **NONE**

**WEIGHTBY** will not be applied. This is the default.

#### **SIZE**

Uses the size of the object, in terms of bytes, as the parameter to use for load balancing.

#### **LASTFULL**

Uses the elapsed time during the last **FULL** backup as the parameter to use for load balancing.

#### **GROUPBY**

Specifies whether to distribute backup tasks to workers based on the owner of the object or the DASD volume where the object resides.

#### **NONE**

**GROUPBY** will not be applied. This is the default.

#### **OWNER**

First groups the backup tasks based on the owning user ID of the object.

#### **VOLSER**

First groups the backup tasks based on the volume serial number of the DASD volume where the object resides.

## Example

Figure 79 on [page 103](#) shows several examples of the **REVIEW** command that is issued to submit a job template that is named `bkupjob5` for review processing, with and without load balancing.

```

msg bkrbkup review bkupjob5
msg bkrbkup review bkupjob5 ( WEIGHTBY NONE GROUPBY NONE
msg bkrbkup review bkupjob5 ( WEIGHTBY SIZE
msg bkrbkup review bkupjob5 ( WEIGHTBY LASTFULL
msg bkrbkup review bkupjob5 ( GROUPBY OWNER
msg bkrbkup review bkupjob5 ( GROUPBY VOLSER
msg bkrbkup review bkupjob5 ( WEIGHTBY SIZE GROUPBY OWNER
msg bkrbkup review bkupjob5 ( WEIGHTBY LASTFULL GROUPBY VOLSER

```

Figure 79. REVIEW command examples

## 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.

➤ SET INSTANCE — *jobname* — *instnum* ➤

Figure 80. 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 81 on page 103 shows an example of the **SET INSTANCE** command that is issued to modify the instance for a previously run backup job.

```

CP MSG BKRBKUP SET INSTANCE VMSYSU 5
Ready;
BKRBAK9191I Updating instance for job VMSYSU from 1 to 5.

```

Figure 81. SET INSTANCE command example (modify the instance value)

Set the instance value for a newly created template to start at 100:

```

CP MSG BKRBKUP SET INSTANCE NEWJOB 100
Ready;
BKRBAK9192I Setting initial instance for job NEWJOB to 100.

```

Figure 82. 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).

➤ SUBMIT — *jobname* — ( — *options* ➤

### Options

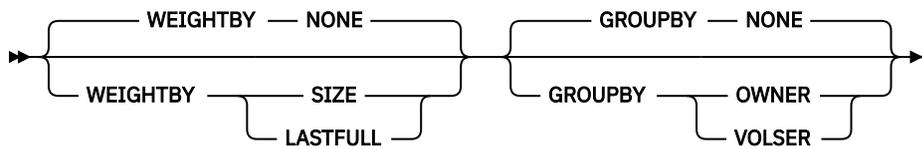


Figure 83. SUBMIT command syntax

**Note:**

1. GROUPBY needs a valid WEIGHTBY option. If WEIGHTBY is specified, then that option will be applied. If WEIGHTBY is not specified, WEIGHTBY SIZE will be used as default.
2. Load balancing is applicable only when multiple workers are specified in the backup job. When only 1 worker is used, WEIGHTBY NONE / GROUPBY NONE will be applied by default. Any options specified by the submitter will be ignored.
3. When both WEIGHTBY and GROUPBY are specified, the GROUPBY option will be applied to the list of backup tasks first.

**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 DUMPxxx (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 primary 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 primary backup server after it is inserted into the resulting jobs.
- During INCLUDE and EXCLUDE processing, the primary 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 BKRWRKnn 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 51.](#)

**Operands**

**jobname**

The name of the job template to submit for processing.

**Options**

The load balancing options WEIGHTBY and GROUPBY can be used with the **SUBMIT** command. For more information on the following options and parameters, see [Appendix I, “Load Balancing options and parameters,” on page 175.](#)

## WEIGHTBY

Specifies whether to distribute backup tasks to workers based on the size of the objects or based on the time required to back up the object in a previous backup job.

## NONE

WEIGHTBY will not be applied. This is the default.

## SIZE

Uses the size of the object, in terms of bytes, as the parameter to use for load balancing.

## LASTFULL

Uses the elapsed time during the last FULL backup as the parameter to use for load balancing.

## GROUPBY

Specifies whether to distribute backup tasks to workers based on the owner of the object or the DASH volume where the object resides.

## NONE

GROUPBY will not be applied. This is the default.

## OWNER

First groups the backup tasks based on the owning user ID of the object.

## VOLSER

First groups the backup tasks based on the volume serial number of the DASH volume where the object resides.

## Example

Figure 84 on page 105 shows several examples of the **SUBMIT** command that is issued to submit a job template that is named bkupjob5 for processing, with and without load balancing.

```
smsg bkxbkup submit bkupjob5
smsg bkxbkup submit bkupjob5 ( WEIGHTBY NONE GROUPBY NONE
smsg bkxbkup submit bkupjob5 ( WEIGHTBY SIZE
smsg bkxbkup submit bkupjob5 ( WEIGHTBY LASTFULL
smsg bkxbkup submit bkupjob5 ( GROUPBY OWNER
smsg bkxbkup submit bkupjob5 ( GROUPBY VOLSER
smsg bkxbkup submit bkupjob5 ( WEIGHTBY SIZE GROUPBY OWNER
smsg bkxbkup submit bkupjob5 ( WEIGHTBY LASTFULL GROUPBY VOLSER
```

Figure 84. SUBMIT command examples

## UNVOID

Issue the **UNVOID** command to immediately remove a job instance from "void" status.

```
➤ UNVOID — jobname — instance ➤
```

Figure 85. UNVOID command syntax

## Authorization

System administrator.

## Operands

### jobname

The name of a specific backup job to be removed from "void" status.

### instance

Identifies the instance number of the associated job *jobname* to be removed from "void" status.

## Example

The following figure shows an example of the **UNVOID** command that is issued to immediately remove a job instance from "void" status.

```
CP SMSG BKR BKUP UNVOID SAMPFULL 1408
Ready;
BKRBAK9582I Processing UNVOID SAMPFULL 1408 command from *SMSG BKRADMIN.
Return code: 0
```

Figure 86. UNVOID command example

## Additional Notes

Some other considerations to keep in mind are the following:

- VOID flags are automatically removed approximately 24 hours after they are created. Refer to the DELTECAT option in "CANCEL" on page 92 for more information on how a VOID flag affects catalog entries and backup jobs for that instance during the 24-hour period.
- Use the UNVOID command to manually remove a VOID flag *prior* to the expiration of the 24-hour time span. This allows a VOIDed job instance to be retried (using the RESTART command) within that 24-hour window. For more information on the RESTART command, see "RESTART" on page 99.

## VOID

Issue the **VOID** command to manually void the specified job instance. Manual voids expire after approximately 24 hours.

►► VOID — *jobname* — *instance* ◄◄

Figure 87. VOID command syntax

## Authorization

System administrator

## Operands

### jobname

Identifies a specific job name to be marked as "void".

### instance

Identifies the instance of job *jobname* to be marked as "void".

## Example

The following figure shows an example of the **VOID** command that is issued to manually void the specified job instance.

```
CP SMSG BKR BKUP VOID SAMPFULL 1408
Ready;
BKRBAK9582I Processing VOID SAMPFULL 1408 command from *SMSG BKRDMIN.
Return code: 0
```

Figure 88. VOID command example

## Additional Notes

Generally there is no need to explicitly issue a VOID command. In ordinary operating conditions, a job instance is flagged as "void" as a result of issuing a CATALOG DELETEDCAT command.

## Catalog commands

The following commands are applicable to the catalog server only.

### EXPIRE

The **EXPIRE** command invokes expiration processing in the catalog.

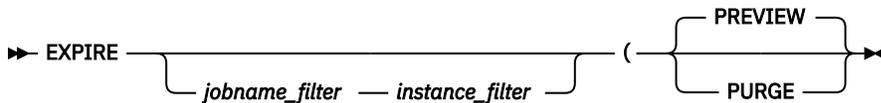


Figure 89. EXPIRE command syntax

### 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 90 on page 108 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 90. EXPIRE command example

Figure 91 on page 108 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 91. 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 92. QUERY EXPIRE command syntax

### Authorization

System administrator.

### Operands

#### *jobname*

(Required.) A valid job name.

#### *instance*

(Required.) A valid instance of job *jobname*.

QUERY EXPIRE fully supports LISTFILE-compatible wild-card expressions in the arguments for Job Name and Job Instance.

Examples of the **QUERY EXPIRE** command are provided below.

**Example 1: Query the expiration dates of all instances of all backup jobs in the Backup and Restore Manager catalog.**

```
CP SMSG BKRCATLG QUERY EXPIRE
Ready;
BKRCAT8875I Job SAMPFULL instance 00000543 will expire after 17 Jul 2020.
BKRCAT8875I Job SAMPFULL instance 00000544 will expire after 18 Jul 2020.
BKRCAT8875I Job SAMPINCR instance 00002347 will expire after 17 Jul 2020.
BKRCAT8875I Job SAMPINCR instance 00002348 will expire after 30 Jul 2020.
Return code: 0
```

Figure 93. No parameters specified

**Example 2: Query the expiration date of a specific job and instance.**

```
CP SMSG BKRCATLG QUERY EXPIRE SAMPINCR 1520
Ready;
BKRCAT8875I Job SAMPINCR instance 00001520 will expire after 9 Oct 2014.
Return code: 0
```

Figure 94. SAMPINCR parameter

**Example 3: Query the expiration dates of all instances of all backup jobs that end with INCR in the Backup and Restore Manager catalog.**

```
CP SMSG BKRCATLG QUERY EXPIRE *INCR *
Ready;
BKRCAT8875I Job SAMPINCR instance 00002347 will expire after 17 Jul 2020.
BKRCAT8875I Job SAMPINCR instance 00002348 will expire after 30 Jul 2020.
Return code: 0
```

Figure 95. Use of wildcard symbols

**Example 4: Query the expiration dates of all backup jobs and instances in the Backup and Restore Manager catalog for which the instance contains the number 3.**

```
CP SMSG BKRCATLG QUERY EXPIRE * *3*
Ready;
BKRCAT8875I Job SAMPFULL instance 00000543 will expire after 17 Jul 2020.
BKRCAT8875I Job SAMPINCR instance 00002347 will expire after 17 Jul 2020.
BKRCAT8875I Job SAMPINCR instance 00002348 will expire after 30 Jul 2020.
Return code: 0
```

Figure 96. Limit number of lines and wildcard symbols

## QUERY TAPES

**QUERY TAPES** lists tape volsers that are associated with a specified job and instance.

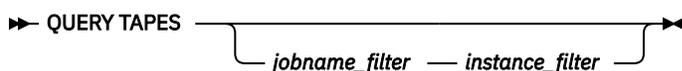


Figure 97. QUERY TAPES command syntax

## 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 98 on page 110 shows an example of the **QUERY TAPES** command that is issued to list tape volumes 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 98. **QUERY TAPES** command example

## SET EXPIRE

**SET EXPIRE** specifies when a specific job and instance expires.

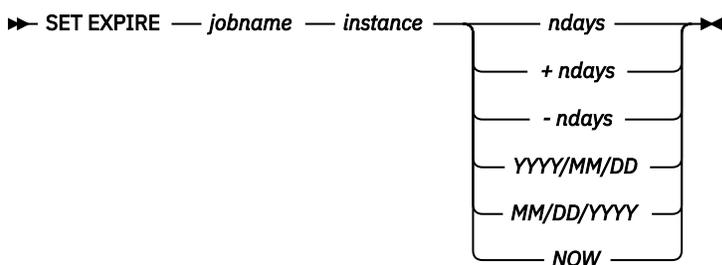


Figure 99. **SET EXPIRE** command syntax

## Authorization

System administrator.

## Operands

### *jobname*

A valid job name, or a CMS LISTFILE-compatible wildcard expression that matches one or more valid job names.

### *instance*

A valid instance number, or a CMS LISTFILE-compatible wildcard expression that matches one or more valid instance numbers.

### *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*.

### YYYY/MM/DD

An absolute expiration date in Year/Month/Day format. For example: 2016/04/17. The maximum date limit is 9999/12/31.

### MM/DD/YYYY

An absolute expiration date in Month/Day/Year format. For example: 04/17/2016. The maximum date limit is 12/31/9999.

### 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 IBM 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 100 on page 111 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 100. SET EXPIRE command example*

## CMS commands

This section describes the Conversational Monitor System (CMS) command(s) that are available for use with Backup and Restore Manager.

### BKRSTART

BKRSTART is a Conversational Monitor System (CMS) command that can be called from the PROFILE EXEC at the start-up of the Backup and Restore Manager Service Virtual Machines (SVMs). The BKRSTART command automates SVM initialization and configuration.

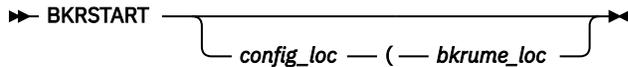


Figure 101. BKRSTART command syntax

### Authorization

System administrator

### Description

BKRSTART is a tool that may be used to simplify service virtual machine initialization and configuration. BKRSTART automates SVM initialization for four possible roles:

1. MASTER – The virtual machine is the *primary* or MASTER backup server (BKRBACKUP). The userid is defined as a MASTER (or primary) backup server in BKRUSERS NAMES.

Example: BKRBACKUP

2. CATALOG – The virtual machine is the CATALOG service virtual machine. The userid is defined as Local\_Backup\_Catalog\_ID = <id> in BKRSYSTEM CONFIG.

Example: BKRCATLG

3. WORKER – The virtual machine is a WORKER service virtual machine. The userid is defined as a WORKER server in BKRUSERS NAMES.

Example: BKRWRK01

4. ADMIN – The virtual machine is a Backup Administrator. The userid is defined as an ADMIN user in BKRUSERS NAMES.

Example: BKRADMIN

### Operands

#### Location (config\_location, bkrume\_location)

Identifies a minidisk or SFS directory path.

The minidisk is specified as `userid.vdev` where:

- `userid`: An asterisk (\*) indicates the current userid; otherwise, a valid z/VM virtual machine name is accepted.
- `vdev`: Indicates a valid minidisk address.

The SFS directory path is specified as `filepool:filesystem.dirid` where:

- `filepool`: Identifies a valid CMS SFS (Shared File System) file pool server name.
- `filesystem`: Identifies a valid CMS SFS file space name.
- `dirid`: Identifies a valid SFS directory path.

### **config\_location**

Specifies the minidisk or SFS directory where configuration files BKRSYSTEM CONFIG and BKRUSERS NAMES can be found.

- BKRSTART will use information defined in BKRUSERS NAMES to determine service virtual machine roles.
- BKRSYSTEM CONFIG may contain additional settings used by BKRSTART to establish configuration and run-time environment settings for BKRBACKUP, BKRCATLG, BKRADMIN, and BKRWRK01-04.

Default: \*.198 (current z/VM virtual machine name, virtual device 198)

### **bkcrume\_location**

Specifies the minidisk or SFS directory where the Backup and Restore Manager message repository file, BKCRUME TEXT, can be found. BKRSTART depends on this file in order to display information, warning, or error messages during execution.

Default: \*.591 (current z/VM virtual machine name, virtual device 591)

### **Notes**

1. All Backup and Restore Manager service virtual machines may be initially set up with a CMS 191 (filemode 'A') minidisk which contains copies of PROFILE EXEC and BKRSTART EXEC. A recommended sample PROFILE EXEC is provided as BKRSTPRF SAMPEXEC on the installation user 5697J06C "Samples" minidisk (2C2).  
  
BKRSTART EXEC can be found on the installation user SVM run-time components minidisk (591).
2. During initialization, BKRSTART EXEC will determine whether the copy of BKRSTART EXEC on the run-time components minidisk (591) differs from the private copy on the SVM A-disk. If the copy on the run-time components minidisk has been updated, the private A-disk copy will be refreshed from the new version and the service virtual machine will restart.
3. BKRSTART derives additional initialization settings from information contained in the configuration file, BKRSYSTEM CONFIG. Detailed information on these settings can be found in Appendix H, BKRSYSTEM CONFIG parameters, under the heading "BKRSTART Service Virtual Machine Initialization Parameters".



---

## 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 BKRSYSTEM\_CONFIG file. The file name is SAMPFULL and the file type is the current date in the format: YYYYMMDD:

```
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 primary 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 primary 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 = $$CATALOG$$
```

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 LNXXSYS\*:

```
Exclude Minidisk LNXXSYS* = * * * = * = * =
*
```

Include minidisks for LNXXSYS\* in the range 0190-019F:

```
Include Minidisk LNXXSYS* = 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:   *      BFS
Exclude   BFS        VMSYS:   ROOT   BFS
BFS

```

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 (BKRWRKnn), and the primary backup server (BKR BKUP) 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 $$UPDATE$$ $$TIME$$
Console *

```

The console log is closed:

```
CP_Quiet SPOOL CONSOLE CLOSE NAME $$$TEMPLATE$$ $$$DATE$$
```

Further console output is named "WORKER OUTPUT":

```
CP_Quiet SPOOL CONSOLE NAME WORKER OUTPUT
```

The E0J keyword indicates the end of job processing. The E0J keyword is required as the final record of a template:

```
E0J
```

## 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 59](#).

## 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 37](#).

Place the SFSBFS DISKPOOL file on the product job templates minidisk. The default location is BKRBACKUP 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 VMSEV\* are included:

FUNCTION SIZE	MEDIATYPE	OWNER	VDEV	VOLUME	DEVTYPE	START	END
Exclude	Minidisk	*	= *	*	*	= *	= *
Include	Minidisk	VMSEV*	= 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:	*	BFS
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 102 on page 122](#) 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 102. 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:

Function	MediaType	Owner	VDEV	Volser	Extent DevType	Extent Start	Extent End	Size	RESERVED
EXCLUDE	MINIDISK	*	=	*	*	=	*	=	*
SELECT	RDEVVOL	710RL1							
SELECT	RDEVVOL	VMCOM1							
* z/VM 7.1 - non-SSI or SSI Member slot #1 default DASD volumes									
INCLUDE	RDEVVOL	M01*							
*									
* z/VM 7.1 - SSI Member slot #2 default DASD volumes									
*									
INCLUDE	RDEVVOL	M02*							
*									
* z/VM 7.1 - SSI Member slot #3 default DASD volumes									

```

* INCLUDE RDEVVOL M03*
* z/VM 7.1 - 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 IBM Operations Manager for z/VM is running in the service virtual machine OPMGRM1, with the sample IBM 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 59](#) 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:

Function	MediaType	Owner	VDEV	Volser	DevType	Extent Start	Extent Size	Extent 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 (BKRWRKnn) 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.

To activate a user exit, complete the following steps:

1. Copy the appropriate sample exit from the samples disk to the configuration disk (the 5697J06C 198 minidisk by default). Rename the sample to the appropriate filetype (EXEC).
2. Modify the sample according to your requirements.
3. Restart each of the Backup and Restore Manager service machines (BKR BKUP, BKRCATLG, and BKRWRKnn).

---

### 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 103. 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)

➔ BKREXIO1 — DESTDATA — *Requester* — *Admin\_Flag* — *Data\_Owner* — *JobCat\_Path* ➔  
➔ *Dest\_Type* — *Dest\_Target1* — *Dest\_Target2* ➔

Figure 104. BKREXIO1 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 on page 126 shows the return codes for the BKREXIO1 exit.

Code	Description
0	Access granted
4	Take default action
8	Access denied

Table 11. BKREXIO1 return codes (continued)	
Code	Description
12	Abend

## BKREXIO2 exit

Use the BKREXIO2 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 BKREXIO2 exit to enable virtual machine-specific quiesce and resume of operations around a backup event.

### Required syntax and parameters

►► BKREXIO2 — *operation* — *type* — *owner* — *object* ◄◄

Invoke BKREXIO2 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 BKREXIO2 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 BKREXIO2 as MAINT VMSYSU.

### Return codes

Table 12 on page 127 shows the BKREXIO2 exit return codes.

Table 12. BKREXIO2 return codes	
Code	Description
0	Proceed with normal operations.

Table 12. BKREXI02 return codes (continued)

Code	Description
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 BKRSYSTEM 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

►► BKREXI03 — *JobType* — *JobName* — *WorkerCount* ►◄

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.

**Note:** BKREXI03 can handle up to 27 Workers (Worker Count  $\leq 27$ ). When the Worker Count exceeds 27, BKREXI03 routine will be bypassed, and default worker selection logic will be used. Warning Message 9658W will be displayed back to the user.

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 129](#).

#### **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 BKREXIO3 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 BKREXIO3 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 on page 129 shows the return codes for the BKREXIO3 exit.

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.
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.

## BKREDMIF exit

The BKREDMIF (BKR External Directory Manager InterFace) exit can be used to let worker task service virtual machines (BKRWRKnn) interact with an external Directory Manager such as z/VM DIRMAINT for cases where RESTORE functions target a minidisk that has been deleted from the system.

A fully supported version of BKREDMIF EXEC is provided with IBM Backup and Restore Manager for z/VM via PTF UI76437. This version is supported for use with the z/VM DIRMAINT feature. See “1” on page 132 for a detailed discussion of the supported version of BKREDMIF EXEC.

If you use an alternate Directory Manager, you can use these calling specifications to implement alternate versions of BKREDMIF.

### Required syntax and parameters

Each invocation of the BKREDMIF exit requires specific syntax and parameters.

### Syntax and parameters

```
➤ BKREDMIF — owner_id — owner_vdev — backup_type — dasd_class — dasd_label ➤  
  
➤ — mdisk_start — mdisk_size — mdisk_devtype — edf_blocksize ➤
```

Figure 105. BKREDMIF syntax (first invocation)

#### owner\_id

The name of the virtual machine that has the minidisk to be restored.

#### owner\_vdev

The VDEV address of the minidisk to be restored.

#### backup\_type

The type of backup data to be restored. Specify one of the following values:

##### EDF

Backup data originates from a CMS file-level minidisk backup.

##### CKD

Backup data originates from a CKD/ECKD DASD track-image backup.

##### FBA

Backup data originates from an FBA/FB-512 DASD block-image backup.

#### dasd\_class

The original minidisk real DASD device class. Specify one of the following values:

##### CKD

The original real DASD volume is a CKD or ECKD device.

##### FBA

The original real DASD volume is an FBA or FB-512 DASD image device.

#### dasd\_label

The original real DASD volume label.

#### mdisk\_start

The original minidisk starting cylinder or block number.

#### mdisk\_size

The original minidisk extent size in ECKD cylinders or FBA blocks.

#### mdisk\_devtype

The original real DASD volume device type. For example, “3390” for minidisks defined on a 3390 ECKD device, FB-512 for minidisks defined on a FB-512 device.

## edf\_blocksize

It is a variable or can be blank or null. For CMS EDF-format minidisks, this value is the original EDF minidisk block size. For this case, the possible values are: 512, 1024, 2048, or 4096.

When BKREDMIF is invoked during restore of a DASD image backup, this parameter is undefined.

## Related parameters defined in BKRSYSTM CONFIG

Settings defined in the configuration file BKRSYSTM CONFIG control whether BKREDMIF EXEC is invoked for cases where the RESTORE target minidisk is not defined.

### **BKR\_External\_Dirmanager\_Enabled = state**

Specifies whether BKREDMIF function is enabled.

Here, *state* is a logical variable (0/1, True/False, Yes/No)

- 0 (embedded default)

If a RESTORE target minidisk is undefined, report CP LINK command return code 107 and terminate the RESTORE operation.

- 1 (enabled)

If the initial attempt to CP LINK the target minidisk fails with return code 107 (indicating “minidisk is not defined in the system directory”), RESTORE logic will invoke BKREDMIF to attempt to re-define the target minidisk.

You can also define two additional optional settings in BKRSYSTM CONFIG for use with the supported version of BKREDMIF EXEC:

### **BKR\_EDMIF\_Mode = mode**

Specifies the default minidisk LINK mode to be specified in the CP Directory ‘MDISK’ statement. If undefined, the embedded default of “MR” will be used. See [“1” on page 132](#) for additional details.

### **BKR\_EDMIF\_AutoG = group**

Specifies the name of a DIRMAINT DASD group as defined in DIRMAINT’s EXTENT CONTROL configuration file. See [“3” on page 132](#) for additional details.

## Return codes

Table 14 on [page 131](#) shows the return codes for the BKREDMIF exit.

Code	Description
0	Normal termination. The target minidisk has been successfully re-defined.
8	Error encountered. The target minidisk was NOT re-defined. RESTORE logic will terminate with an indication that the CP LINK command generated return code 107 (“minidisk not defined in system directory”) and the restore operation will terminate.
16	Invalid parameter(s) encountered. BKREDMIF was invoked with incorrect or invalid arguments. RESTORE logic will terminate with an indication that the CP LINK command generated return code 107 (“minidisk not defined in system directory”) and the restore operation will terminate.
32	Serious error encountered. BKREDMIF terminated due to a serious error. RESTORE logic will terminate with an indication that the CP LINK command generated return code 107 (“minidisk not defined in system directory”) and the restore operation will terminate.

## Usage notes

1. The supported version of BKREDMIF EXEC is implemented using DIRMAINT's DVHSAPI (DIRMAINT Synchronous API) support. In addition to customizing settings in BKRSYSTEM CONFIG to enable use of the BKREDMIF exit routine, customers must take steps to implement suitable DIRMAINT customizations. Detailed instructions for customizing DIRMAINT can be found in *z/VM: Directory Maintenance Facility Tailoring and Administration Guide*.
  - Backup and Restore Manager worker task service virtual machines (BKRWRKnn) must be granted sufficient DIRMAINT privileges to allow workers to use DIRMAINT's AMDISK (Add Minidisk) command.
  - Because the original minidisk LINK mode is not embedded in backup data, an embedded default LINK mode of MR is defined. If you require a different LINK mode, define your preferred setting in BKRSYSTEM CONFIG using variable "BKR\_EDMIF\_MODE = mm". Refer to *z/VM: CP Planning and Administration*, chapter *Creating and Updating a User Directory*, section *MDISK Directory Statement* for details regarding this setting.
2. Because the original minidisk passwords as defined on the system directory MDISK statement are not embedded in backup data, minidisks re-defined via BKREDMIF EXEC will not include any passwords. End users and system or storage administrators need to redefine any minidisk passwords according to individual site policies. Depending on individual site policy and implementation, if you use an ESM (External Security Manager) such as RACF, you may need to re-apply LINK permissions to redefined minidisks.
3. The supported version of BKREDMIF proceeds in the following manner when attempting to re-define a minidisk prior to a RESTORE operation:
  - a. An initial attempt is made to redefine the target minidisk using the original MDISK location (using the original real DASD volume and starting cylinder or block number). If the DIRMAINT AMDISK operation succeeds, control will return to RESTORE processing.
  - b. If the initial attempt fails, a second attempt is made to redefine the target minidisk using the original MDISK real DASD volume, along with the DIRMAINT "AUTOV" (AUTO Volume) argument in an attempt to allow DIRMAINT to select a suitable starting location. If this attempt succeeds, control returns to RESTORE processing. Note that this requires suitable customization of DIRMAINT's EXTENT CONTROL file.
  - c. If the first two attempts fail, and BKRSYSTEM CONFIG contains a value for "BKR\_EDMIF\_AutoG = group", a third attempt is made to redefine the minidisk using the DIRMAINT "AUTOG" (AUTO Group) argument in an attempt to allow DIRMAINT to select a suitable real DASD volume and starting location. If this attempt succeeds, control returns to RESTORE processing. Otherwise, BKREDMIF terminates with return code 8.
4. When restoring a CMS EDF-format minidisk, you can opt to use the options "OKFMT YES MUSTFMT YES" on the RESTORE command in order to have the target minidisk re-initialized using the previously backed up CMS minidisk label and EDF file system block size. Otherwise, redefined CMS minidisks are initialized using DIRMAINT (or other directory manager) defaults.

## Appendix C. Sample processing exits

Backup and Restore Manager provides the following sample processing exits.

- BKRNUDAY SAMPEXEC is a **sample** "start of new day" processing exit for the primary 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.

- BKREXT2A SAMPASM is a **sample** User Data Processing Exit (UDPE) that performs run-length encoding compression of data during backup operations and decompression during restore operations. It is provided in source form.

**Note:** This exit is an example of how to construct a UDPE. It is not suitable for production use.

- BKREXT3A TEXT is a **supported** UDPE, provided in object (TEXT) form, that calls CMS Compression Services to compress data during backup operations and decompress data during restore operations.

To activate a user exit, complete the following steps:

1. Copy the appropriate sample exit from the samples disk to the configuration disk (the 5697J06C 198 minidisk by default). Rename the sample to the appropriate filetype (EXEC or ASSEMBLE).
2. Modify the sample according to your requirements.
3. If you are using BKREXT2A or BKREXT3A, create a TEXT deck for your exit.
4. Restart each of the Backup and Restore Manager service machines (BKR BKUP, BKRCATLG, and BKRWRKnn).

### Deferred processing exit (BKRNUDAY SAMPEXEC)

BKRNUDAY SAMPEXEC is a "start of new day" processing exit for the primary 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 15 on page 133 shows return code-driven behaviors for BKRNUDAY EXEC.

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).
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 <b>BKR_Dump_And_Die</b> .

**Note:** Other return codes cause the BKRNUDAY exit to be disabled until the primary 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” on page 136](#).

### 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 16 on page 136](#) shows the return codes and their descriptions.

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, BKRMUNT, and BKREOV exits to perform stand-alone tape management.
- When Backup and Restore Manager is configured to interact with IBM 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 17 on page 139](#) 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 BKRSYSTEM CONFIG file are sufficient. For more information, see [“CONFIG” on page 59](#).

Stand-alone tape handling exit	Description
BKRMOUNT	Tape mount handler
BKRMUNT	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.

►► EXEC BKRMOUNT — *volser* — *offset* — *rwstat* — *jobname* — *jobinst* — *devnum* ►►

Figure 106. 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 140.

### ***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 18. BKR MOUNT 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.

► EXEC BKRUMNT — *volser* — *devnum* ◄

Figure 107. 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 19. 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.

► EXEC BKREOV — *calltype* — *devnum* ◄

Figure 108. 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 BKR MOUNT to request a SCRATCH mount of a new volume to continue output.
7. If BKR MOUNT 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 BKR MOUNT 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

<i>Table 20. BKREOV return codes</i>	
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.

## IBM Tape Manager for z/VM interaction exits

The EUMBKRM, EUMBKRUM, and EUMBKREV exits are invoked to handle tape operations when Backup and Restore Manager is configured to interact with IBM Tape Manager for z/VM.

<i>Table 21. IBM Tape Manager for z/VM interaction exits</i>	
IBM Tape Manager for z/VM interaction exits	Description
EUMBKRM	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 BKRSYSTEM CONFIG file. For more information, see [“Modifying the BKRSYSTEM CONFIG file for interaction with Tape Manager”](#) on page 24.

For information about configuring Backup and Restore Manager to interface with IBM Tape Manager for z/VM, see [“Tape Manager for z/VM parameters”](#) on page 164.



---

## Appendix E. DUMPxxx functions

Typically, DUMPxxx 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.

```
➤➤ DUMPCKD — username — ccuu — $$DRIVER$$ ➤➤
```

*Figure 109. 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 59](#).

#### 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.

```
➤➤ DUMPDYN — username — ccuu — $$DRIVER$$ ➤➤
```

*Figure 110. 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 59](#).

## 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.

```
➤ DUMPEDF — username — ccuu — $$FMASK$$ — $$DRIVER$$ ➤
```

*Figure 111. 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 59](#) for more information.

### **\$\$DRIVER\$\$**

The method of output as indicated by **BKR\_OUTPUT\_SPEC**. For more information, see [“CONFIG” on page 59](#).

## 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.

```
►► DUMPFBA — username — ccuu — $$DRIVER$$ ◄◄
```

*Figure 112. 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 59](#).

## 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.

```
►► DUMPBFS — poolname — spacename — $$PMASK$$ — $$FMASK$$ — $$DRIVER$$ ◄◄
```

*Figure 113. 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 59](#)).

### **\$\$FMASK\$\$**

The file mask (derived from **BKR\_JOB\_CMS\_FILEMASK = fnmask ftmask fnum**). For more information, see [“CONFIG” on page 59](#).

### **\$\$DRIVER\$\$**

The method of output as indicated by **BKR\_OUTPUT\_SPEC**. For more information, see [“CONFIG” on page 59](#).

## 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.

```
►► DUMPSFS — poolname — spacename — $$PMASK$$ — $$FMASK$$ — $$DRIVER$$ ◄◄
```

*Figure 114. 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 59](#)).

### **\$\$FMASK\$\$**

The file mask (derived from **BKR\_JOB\_CMS\_FILEMASK = fnmask ftmask fnum**). For more information, see [“CONFIG” on page 59](#).

## **\$\$DRIVER\$\$**

The method of output as indicated by **BKR\_OUTPUT\_SPEC**. For more information, see [“CONFIG” on page 59](#).

### **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 115 on page 151 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 000000280 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 115. Sample summary output

### EDF (DUMPEDF statement processing)

The output summary provides the following information as a result of DUMPEDF statement processing.

#### Owner ID

The VM owner ID of the EDF-format minidisk that was backed up.

#### Virtual device

The owner ID virtual device number of the EDF-format minidisk that was backed up.

#### Link mode

One of the following values:

- RR (Read only).
- SR (Stable read).

#### Object type

The minidisk was processed as a file-level backup of a CMS EDF-format file system.

#### 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 time and date**

The time and date at which the dump routine initialized output processing.

**Dump end time and date**

The time and date 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 73](#).

## CKD (DUMPCKD statement processing)

---

The output summary provides the following information as a result of DUMPCKD statement processing.

**Owner ID**

The VM owner ID of the ECKD minidisk backed up in ECKD track-image format.

**Virtual device**

The owner ID virtual device number of the minidisk backed up in ECKD track-image format.

**Link mode**

One of the following values:

- RR (Read only).
- SR (Stable read).

**Object type**

The minidisk was processed as an ECKD track-image backup.

**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 time and date**

The time and date at which the dump routine initialized output processing.

**Dump end time and date**

The time and date 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.

**Owner ID**

The VM owner ID of the FBA minidisk backed up in FBA block-image format.

**Virtual device**

The owner ID virtual device number of the minidisk backed up in FBA block-image format.

**Link mode**

One of the following values:

- RR (Read only).
- SR (Stable read).

**Object type**

The minidisk was processed as an FBA block-image backup.

**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 time and date**

The time and date at which the dump routine initialized output processing.

**Dump end time and date**

The time and date 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.

**File pool name**

The name of the file pool.

**File space name**

The name of the file space.

**Container type (SFS)**

The object that is backed up is an SFS file space.

**File pool storage group number**

The storage group number to which the file pool is assigned.

**Block Limit**

The maximum number of 4K data blocks the file space can commit to the file pool.

**4K blocks used**

The current number of committed 4K blocks.

**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%.

**Base files**

The number of base files that were backed up from the file space.

**Number of directories**

The number of directories that were backed up.

**Number of external objects**

The number of External Objects that were backed up.

**Number of aliases**

The number of Aliases that were backed up.

**Number of erased aliases**

The number of Erased Aliases that were encountered.

**Note:** The aliases are discarded during processing.

**Number of revoked aliases**

The number of Revoked Aliases that were encountered.

**Note:** The aliases are discarded during processing.

**Number of permission entries**

The number of permission authorizations that were backed up.

**Dump start time and date**

The time and date at which the dump routine initialized output processing.

**Dump end time and date**

The time and date at which the dump routine ended output processing.

**Summary result**

One of the following result types:

**Dump OK**

Normal outcome.

**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 that are 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 DUMPBFS 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.

**Container type (BFS)**

The object that is backed up is a BFS 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 time and date**

The time and date at which the dump routine initialized output processing.

**Dump end time and date**

The time and date 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. Systems that use versions of the z/VM DDR utility without service for z/VM APAR VM65778 do not tolerate standard tape labels during restore operations. In this case, 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.
  - Beginning with the second volume of any multi-volume set of tapes that are produced by DDRTAPE, the VOL1 label is overwritten. 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, versions of the z/VM DDR utility without service for z/VM APAR VM65778 applied do not tolerate Standard Label (SL) tape labels. Label information is present only in the VOL1 label of the first tape used for output by each worker. If the backup that is being performed spans multiple volumes, the VOL1 labels on subsequent volumes will be overwritten.

Versions of the z/VM DDR utility that have service for APAR VM65778 applied will tolerate multi-volume backups with SL tape labels on all volumes in a set. SL label preservation in DDRTAPE backups can be controlled as a system-wide default or in individual job templates. To enable label preservation on an installation-wide basis, add the DDRTAPE\_Preserve\_Label = Yes statement to BKRSYSTEM CONFIG.

To control label preservation in an individual backup job template, insert the Config BKR\_Job\_DDRTAPE\_Preserve\_Label = Yes statement before the Config BKR\_Output\_Spec = DDRTAPE SCRATCH RW 1 statement in the job template.

**Note:** Do not enable this behavior unless service for z/VM APAR VM65778 has been installed on all systems that you plan to use for DDR restore operations. Versions of the z/VM DDR utility that do not have the service applied do not tolerate VOL1 labels when restoring a multi-volume backup.

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

---

## Appendix H. BKRSYSTEM CONFIG parameters

Specify the following BKRSYSTEM 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 BKRSYSTEM 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 primary 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.

The following settings control the use of service virtual machine error detection and recovery log for cases where connectivity to one or more SFS file pool servers has been interrupted.

#### **BKR\_Access\_Order\_Recovery\_Enabled = 0 | 1**

The default is 1 (enabled). Set the value to '0' to disable active management of service virtual machine CMS ACCESS order.

When enabled, Backup and Restore Manager service virtual machines will record the in-use CMS minidisks and SFS directories that are in place at the time of service virtual machine initialization. Any subsequent changes to the active set of CMS minidisks and SFS directories will be detected, and an attempt to revert back to the original CMS ACCESS order will be made.

If the original ACCESS order cannot be restored due to problems with connectivity to a local or remote SFS file pool server (indicated by ACCESS termination with return code 99 or 70), the service virtual machine will enter recovery processing. During recovery processing, periodic attempts will be made to restore the original CMS ACCESS order until either (a) the original order is restored, or (b) the maximum number of retry attempts has been exhausted. The retry interval and total number of retry attempts are determined by values set for BKR\_Access\_Restore\_Interval and BKR\_Access\_Restore\_Limit, which are described below.

If the original order is restored, normal service virtual machine execution will resume. If not, message BKR9624E will be displayed and the service virtual machine process will terminate with return code 24.

#### **BKR\_Access\_Restore\_Interval = ###**

Specify the number of seconds to delay for cases where a service virtual machine attempts to restore its original CMS ACCESS order. This value must be a valid number of seconds for use with the "CP SLEEP" command. The default is 60 seconds.

#### **BKR\_Access\_Restore\_Limit = ##**

Specify the maximum number of retry attempts for cases where a service virtual machine attempts to restore its original CMS ACCESS order. The maximum number of seconds a service virtual machine will pause to allow recovery efforts to complete is:

```
BKR_Access_Restore_Interval * BKR_Access_Restore_Limit seconds
```

The default is  $60 * 10 = 600$  seconds, or ten minutes.

## 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.

### BKR\_Allow\_RealDevice\_Restore

Specifies whether to allow worker service virtual machines to restore DASD image backups directly to real DASD devices (instead of minidisks). RESTORE to real DASD devices is disabled by default.

Specify one of the following values:

**1**

Allow RESTORE of DASD image backups to real ECKD or FBA devices. Target devices must be online, but must not be ATTACHED to SYSTEM.

**0**

(Default.) RESTORE commands that specify a real DASD device target are rejected with a warning message.

### Worker\_Direct\_Catalog\_Insertion

By default, cataloging of all backups is done by the catalog server (BKRCATLG). Worker servers send the catalog information to the reader of the catalog server for processing. There could be instances where the catalog server is not processing requests as quickly as they arrive, and the catalog server may reach the limit of 9999 spool files for a single user. This can result in some backup data not being catalogued.

To address this issue, customers should first look at tuning their environment to try and address any throughput issues on the catalog server (BKRCATLG) and the SFS server used for the Backup Manager catalog.

If the problem persists, users have two options. One option is to shift the catalog server workload to workers. Instead of sending the catalog workload to catalog server, have the workers write data to the catalog directly. Other option is to enable throttling of catalog workload. For more information about throttling of catalog workload, see [Optional Variables](#).

To enable shifting of workload from catalog server to worker, add the following parameter to BKRSYSTEM CONFIG.

```
Worker_Direct_Catalog_Insertion = state
```

Here, `state` is a logical value which supports settings of 1 or 0 only.

- **0** - This is the default value. This represents **No** or **Disable**. This setting implies normal handling meaning catalog workload will be handled by catalog server.
- **1** - When set to **1 (Yes or Enable)**, catalog workload will be handled by worker instead of catalog server.

**Note:**

- By default, the **Worker\_Direct\_Catalog\_Insertion** setting is disabled. IBM recommends not enabling this function without first contacting IBM Support for guidance.
- Since workers write data to the catalog directly, this results in additional overhead and can impact the backup elapsed time.

## Storage for job template processing parameters

---

To specify free storage for job template processing, use the **Template\_MDISK\_Buffer\_Pages** parameter.

**Template\_MDISK\_Buffer\_Pages** specifies the number of pages (1- *nnnnn*) 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:

$$((\text{mdisks} * 60) / 4096) + 1$$

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 primary backup server (BKR BKUP) 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**.

## SELECT toleration for unresolved SELECT RDEVVOL or SELECT RDEVICE job template statements

---

Use the **Select\_TolerateNotFound** parameter to define installation-wide handling for SELECT RDEVVOL and SELECT RDEVICE job template statements that cannot be resolved to a valid real DASD device or volser.

**0**

(Default) When a job template SELECT statement cannot do **one** of the following, the condition will be treated as an *error*:

- Cannot resolve SELECT RDEVICE to a valid real DASD device.
- Cannot resolve SELECT RDEVVOL to a valid real DASD volser when a job template is processed by the SUBMIT, RESTART, or REVIEW commands,

This error will terminate job template processing.

**1**

When a job template SELECT statement cannot resolve SELECT RDEVICE or SELECT RDEVVOL to a valid real DASD device or volser, the condition will be treated as a *warning*. SUBMIT, RESTART, or REVIEW processing will continue. The SELECT failure will be reported via message 9591W.

Examples of the 9591W message are shown below.

```
BKRINC9591W WARNING: SELECTed real DASD volume <volser> not found on system.
```

This message is issued to document a failed SELECT RDEVVOL statement.

```
BKRINC9591W WARNING: SELECTed real DASD device address <rdev> not found on system.
```

This message is issued to document a failed SELECT RDEVICE statement.

Occurrences of message 9591W will be reported in two places:

- BKRBACKUP's response to SUBMIT, RESTART, or REVIEW command processing.
- Backup job log output of any job affected by this condition.

This parameter defines installation-wide SELECT behavior. To modify SELECT behavior in an individual backup job template, refer to the discussion of the CONFIG **BKR\_Job\_Select\_TolerateNotFound** job template setting in [“Optional variables”](#) on page 64 .

## 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 (BKRWRKnn) must be able to create file system mount points (/mnt/BKRWRKnn) 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 IBM Tape Manager for z/VM for all tape media management functions, configure the following tape handling exit settings.

**Note:** If you do not use IBM Tape Manager for z/VM, keep these parameters commented within the file. For more information about IBM 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>

### **EUM\_Alt\_Mount\_Parms**

This parameter specifies the default optional mount parameters that are added to the Tape Manager **TAPEMNT** commands that are issued by Backup and Restore Manager for the secondary tape mounts

in jobs that create two sets of tape. The secondary tape mounts are the set of tapes that are created on the virtual device 182 of the Backup and Restore Manager worker.

To override this setting in each backup job template, use the **BKR\_Job\_EUM\_Alt\_Mount\_Parms** parameter. For more information, see [“CONFIG” on page 59](#).

Valid values cannot specify **EXPDAYS** or **EXPDATE** and cannot be used to override Tape Manager **Pool Owner** or **Pool Name** parameters. All other Tape Manager **TAPEMNT** parameters are valid.

In the following example, the **TEXT** parameter will be added to the **TAPEMNT** command:

```
EUM_Alt_Mount_Parms = TEXT 'BKR Secondary Volume'
```

**Note:** **EUM\_Alt\_Mount\_Parms** is applicable only when all of the following conditions are met:

- The IBMTWIN or DUALTAPE output handlers are in use.
- Interaction with Tape Manager is enabled with **Tape\_Handled\_Via\_EUM** in the BKRSYSTEM CONFIG file. If you disable Tape Manager interaction, Backup and Restore Manager ignores the **EUM\_Alt\_Mount\_Parms** parameter setting.
- The job is a backup job. The mount parameters are ignored for restore jobs.
- The parameters do not include **EXPDAYS** or **EXPDATE**. If either parameter is specified, the setting is ignored.

### **EUM\_Mount\_Parms**

This parameter specifies the default optional mount parameters that are added to the Tape Manager **TAPEMNT** commands that are issued by Backup and Restore Manager for the primary tape mounts in jobs that create tapes. The primary tape mounts are the set of tapes that are created on the virtual device 181 of the Backup and Restore Manager worker.

To override this setting in each backup job template, use the **BKR\_JOB\_EUM\_MOUNT\_PARMS** parameter. For more information, see [“CONFIG” on page 59](#).

Valid values cannot specify **EXPDAYS** or **EXPDATE** and cannot be used to override the Tape Manager **Pool Owner** or **Pool Name** parameters. All other Tape Manager **TAPEMNT** parameters are valid.

In the following example, the **TEXT** parameter will be added to the tape mount command:

```
EUM_MOUNT_PARMS = TEXT 'BKR Volume'
```

**Note:** **EUM\_MOUNT\_PARMS** is applicable only when all of the following conditions are met:

- Interaction with Tape Manager is enabled with **Tape\_Handled\_Via\_EUM** in the BKRSYSTEM CONFIG file. If you disable Tape Manager interaction, Backup and Restore Manager ignores the **EUM\_MOUNT\_PARMS** parameter setting.
- The job is a backup job. The mount parameters are ignored for restore jobs.
- The parameters do not specify **EXPDAYS** or **EXPDATE**. If either parameter is specified, the setting is ignored.

### **EUM\_Pool\_Owner**

The default owner of the Tape Manager tape pool from which to obtain all backup tapes for all jobs. The sample configuration value for this setting is BKRADMIN. Specify this setting only if **Tape\_Handled\_Via\_EUM = EUM** was specified (or the deprecated setting **Tape\_Handled\_Via\_EUM = 1** was specified and Tape Manager is running with the standard Tape Manager catalog).

When **Tape\_Handled\_Via\_EUM = EUM** is specified and this setting is not specified, or it is specified with a null value, the default is: **EUM\_Pool\_Owner = \*** In this case, the pool owner will be determined based on the Tape Manager configuration setting for the default scratch pool owner. Ensure that the Tape Manager default is acceptable.

To override this setting in each backup job template, use the **BKR\_Job\_EUM\_Pool\_Owner** or the **BKR\_Job\_EUM\_Alt\_Pool\_Owner** parameter. For more information, see [“CONFIG” on page 59](#).

## EUM\_Pool\_Name

The default name of the Tape Manager tape pool from which to obtain all backup tapes for all jobs. The sample configuration value for this setting is BKRPOOL. Specify this setting only if `Tape_Handled_Via_EUM = EUM` was specified (or the deprecated `Tape_Handled_Via_EUM = 1` setting was specified and Tape Manager is running with the standard Tape Manager catalog).

When `Tape_Handled_Via_EUM = EUM` is specified and this setting is not specified, or it is specified with a null value, the default is: `EUM_Pool_Name = *` In this case, the pool name will be determined based on the Tape Manager configuration setting for the default scratch pool name. Ensure that the Tape Manager default is acceptable.

To override this setting in each backup job template, use the **BKR\_Job\_EUM\_Pool\_Name** or the **BKR\_Job\_EUM\_Alt\_Pool\_Name** parameter. For more information, see [“CONFIG” on page 59](#).

## Tape\_Handled\_Via\_EUM

Indicates whether IBM Tape Manager for z/VM is used to manage tape media. Specify one of the following values:

**0**

(Default.) Do not use Tape Manager for tape media management functions.

**EUM**

Specifies that Tape Manager is used for all tape media management functions and is configured to use the standard Tape Manager catalog.

**RMM**

Specifies that Tape Manager is used for all tape media management functions and is configured to use the z/OS DFSMS Removable Media Manager (RMM) catalog.

**Note:** Using a value of 1 is deprecated in favor of EUM or RMM. If a value of 1 is specified, Tape Manager running with a Tape Manager catalog is assumed, unless both **EUM\_POOL\_OWNER** and **EUM\_POOL\_NAME** are null (or unspecified), in which case Tape Manager is assumed to be running using the RMM catalog.

**Note:** If IBM 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 (BKRWRKnn 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 BKR BKUP are migrated to this location once the feature is enabled and BKR BKUP 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 BKR BKUP 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 BKRSYSTEM CONFIG file, this is the default.
- Once **BKR\_SSI\_InstanceSync** is enabled, saved instance numbers are automatically migrated from the A-disk of BKR BKUP to the INSTANCEPOOL directory. When multiple BKR BKUP 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 BKRSYSTEM CONFIG file, BKR BKUP 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 BKRSYSTEM CONFIG to proceed.
```
- To disable this function, manually migrate saved instance numbers from the backup catalog SFS file space to the A-disk of BKR BKUP, delete the INSTANCEPOOL directory, and remove or disable the **BKR\_SSI\_InstanceSync** setting from BKRSYSTEM CONFIG.

**BKR\_Catalog\_Export\_Minidisk**

Specify the virtual device address of a minidisk owned by BKR BKUP (xxxx), to be used as the destination for output created by the **CATBACKUP EXPORT** command. The minidisk must be large enough to contain a copy of the backup catalog SFS file space in CMS **FILEPOOL UNLOAD** format. See [“CATBACKUP EXPORT” on page 94](#) for installation-dependent DASD space requirements.

By default, this parameter is not defined. **CATBACKUP EXPORT** is disabled. If undefined, the **CATBACKUP EXPORT** command terminates with a warning message.

## 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 primary 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 BKRSYSTEM 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 37.](#)

### **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 37.](#)

## **BKRSTART configuration parameters**

---

BKRSTART configuration settings are defined in the BKRSYSTEM CONFIG file. You can assign values for several BKRSTART parameters. Possible values and default values are described below.

Many of the BKRSTART parameters use **<location>** as a value, which can be one of the following:

- **userid.vdev** – Indicates a minidisk.
- **filepool:filespace.dirpath** – Indicates an SFS directory.

All of the following BKRSTART parameters can be used in the BKRSYSTEM CONFIG file. A brief description is provided to help you understand how to use these parameters and values.

### **BKR\_Startup\_SVMRuntime = <location>**

Defines the minidisk or SFS directory where Backup and Restore Manager service virtual machine run-time components are installed.

**Default:** \*.591 (current userid, minidisk 591)

### **BKR\_Startup\_ClientRuntime = <location>**

Defines the minidisk or SFS directory where Backup and Restore Manager end-user components and tools are installed.

**Default:** \*.592 (current userid, minidisk 592)

### **BKR\_Startup\_JobTemplates = <location>**

Defines the minidisk or SFS directory where Backup and Restore Manager backup job templates are installed.

**Default:** \*.199 (current userid, minidisk 199)

### **BKR\_Startup\_TapeManager = <location>**

Defines the minidisk or SFS directory where IBM Tape Manager for z/VM end-user components and tools are installed.

**Default:** <null> / Not defined (Assumes that Tape Manager is NOT installed.)

If Tape Manager is installed, example materials provided with Backup and Restore Manager (BKR) assume that the PROFILE EXEC for Backup and Restore Manager service virtual machines include the following statement:

```
CP LINK 5697J08C 410 410 RR
```

This statement makes Tape Manager components available on virtual device 410. If this convention is followed, specify the statement below in BKRSYSTEM CONFIG:

```
BKR_Startup_TapeManager = 410
```

### **BKR\_Startup\_Workarea = <location>**

Defines the minidisk or SFS directory that the service virtual machine will use for temporary or scratch files.

**Default:** \*.299 (current userid, minidisk 299)

If you opt to use SFS resources for scratch space, specify this value:

```
BKR_Startup_Workarea = filepool:
```

This will cause each service virtual machine to use SFS directory "filepool:username.WORKAREA" as its individual work area. If the ".WORKAREA" directory does not already exist, BKRSTART will attempt to create it. For example, if you create a "BKRSFS:" file pool, you would specify the following statement in BKRSYSTEM CONFIG:

```
BKR_Startup_Workarea = BKRSFS:
```

For cases where Backup and Restore Manager is installed on a member of a z/VM SSI cluster, the directory path created will be the following:

```
filepool:username.WORKAREA.member
```

where "member" is the individual z/VM member system name. Customers may also define explicit, per-SVM work areas using the following syntax in BKRSYSTEM CONFIG:

```
BKR_Startup_Workarea.USERID = location
```

where "USERID" is the name of an individual Backup and Restore Manager service virtual machine. For example,

```
BKR_Startup_Workarea.BKRWRK01 = MYPool:BKRWRK01.SCRATCH
```

will cause worker BKRWRK01 to attempt to use MYPool :BKRWRK01 . SCRATCH as its work area.

### **BKR\_Startup\_MAINT193 = <location>**

Defines the minidisk or SFS directory where service virtual machines can find ACCESSM0 MODULE. This is a CMS component, normally located on the user MAINT minidisk 193.

**Default:** MAINT.193 (System MAINT user, minidisk 193)

## **BKREDMIF configuration parameters**

The BKREDMIF (BKR External Directory Manager InterFace) exit can be used to let worker task service virtual machines (BKRWRKnn) interact with an external Directory Manager such as z/VM DIRMAINT for cases where RESTORE functions target a minidisk that has been deleted from the system.

All of the following BKREDMIF parameters can be used in the BKRSYSTEM CONFIG file. A brief description is provided to help you understand how to use these parameters and values.

Settings defined in the configuration file BKRSYSTEM CONFIG control whether BKREDMIF EXEC is invoked for cases where the RESTORE target minidisk is not defined.

### **BKR\_External\_Dirmanager\_Enabled = state**

Specifies whether BKREDMIF function is enabled.

Here, *state* is a logical variable (0/1, True/False, Yes/No)

- 0 (embedded default)

If a RESTORE target minidisk is undefined, report CP LINK command return code 107 and terminate the RESTORE operation.

- 1 (enabled)

If the initial attempt to CP LINK the target minidisk fails with return code 107 (indicating "minidisk is not defined in the system directory"), RESTORE logic will invoke BKREDMIF to attempt to re-define the target minidisk.

### **BKR\_EDMIF\_Mode = mode**

Specifies the default minidisk LINK mode to be specified in the CP Directory 'MDISK' statement. If undefined, the embedded default of "MR" will be used. See [#unique\\_232/unique\\_232\\_Connect\\_42\\_d331e401](#) for additional details.

**BKR\_EDMIF\_AutoG = group**

Specifies the name of a DIRMAINT DASD group as defined in DIRMAINT's EXTENT CONTROL configuration file. See [#unique\\_232/unique\\_232\\_Connect\\_42\\_d331e427](#) for additional details.

## Worker progress reporting configuration parameters

The worker progress configuration parameters are used to control the display of the worker progress update messages and to configure the reporting intervals. When a reporting interval is reached, the message **9632I** is displayed in the backup worker job log. The backup workers also use the **CP SMSG** command to notify the primary backup server (BKR BKUP) of the current backup task progress, so that the **STATUS** command of BKR BKUP can display the current task progress metrics.

All of the following parameters can be used in the BKRSYSTEM CONFIG file. A brief description is provided to help you understand how to use these parameters and values.

**BKR\_CKD\_Progress\_Reporting = state**

Here, *state* is a logical value (0/1, True/False, Yes/No)

- 0 (disabled, embedded default)
- 1 (enabled)

Use this value to control whether progress update messages are issued during ECKD DASD image backup processing.

**BKR\_CKD\_Progress\_Interval = <tracks>**

If **BKR\_CKD\_Progress\_Reporting** is enabled, this value defines the progress reporting interval in terms of the number of ECKD DASD tracks backed up. A new progress update message (**9632I**) will be issued each time the number of tracks has been backed up.

**Default:** 10500 (equivalent to 700 cylinders of 3390 ECKD DASD, or approximately 512MB data)

**BKR\_FBA\_Progress\_Reporting = state**

Here, *state* is a logical value (0/1, True/False, Yes/No)

- 0 (disabled, embedded default)
- 1 (enabled)

Use this value to control whether progress update messages are issued during FBA/FB-512 DASD image backup processing.

**BKR\_FBA\_Progress\_Interval = <blocks>**

If **BKR\_FBA\_Progress\_Reporting** is enabled, this value defines the progress reporting interval in terms of the number of FB-512 DASD blocks backed up. A new progress update message (**9632I**) will be issued each time the number of blocks has been backed up.

**Default:** 1048576 (1,048,576 512-byte blocks, equivalent to 512MB of FBA block-image data)

**BKR\_SFS\_Progress\_Reporting = state**

Here, *state* is a logical value (0/1, True/False, Yes/No)

- 0 (disabled, embedded default)
- 1 (enabled)

Use this value to control whether progress update messages are issued during SFS file-level backup processing.

**BKR\_SFS\_Progress\_Interval = <blocks>**

If **BKR\_SFS\_Progress\_Reporting** is enabled, this value defines the progress reporting interval in terms of the number of SFS 4K file data blocks backed up. A new progress update message (**9632I**) will be issued each time the number of blocks has been backed up.

**Default:** 131072 (131,072 4K-byte blocks, equivalent to 512MB of SFS block-image data)

**BKR\_BFS\_Progress\_Reporting = state**

Here, *state* is a logical value (0/1, True/False, Yes/No)

- 0 (disabled, embedded default)
- 1 (enabled)

Use this value to control whether progress update messages are issued during BFS image backup processing.

**BKR\_BFS\_Progress\_Interval = <blocks>**

If **BKR\_BFS\_Progress\_Reporting** is enabled, this value defines the progress reporting interval in terms of the number of BFS 4K file data blocks backed up. A new progress update message (**9632I**) will be issued each time the number of blocks has been backed up.

**Default:** 131072 (131,072 4K-byte blocks, equivalent to 512MB of SFS block-image data)

**BKR\_EDF\_Progress\_Reporting = state**

Here, *state* is a logical value (0/1, True/False, Yes/No)

- 0 (disabled, embedded default)
- 1 (enabled)

Use this value to control whether progress update messages are issued during CMS EDF file-level backup processing.

**BKR\_EDF\_Progress\_Interval = <blocks>**

If **BKR\_EDF\_Progress\_Reporting** is enabled, this value defines the progress reporting interval in terms of the number of CMS EDF minidisk files backed up. A new progress update message (**9632I**) will be issued each time the number of files has been backed up.

**Default:** 2000 (2,000 individual CMS EDF minidisk files)

**Note:** The progress for CMS EDF minidisk file-level backups is tracked by number of files, rather than volume of data backed up. The behavior for minidisk file-level backups differs from other resources since the amount of data Backup and Restore Manager will process for CMS file level backups is not available before the backup begins.

## Progress reporting message format

For each progress interval, the Backup Manager worker will display the message **BKRWRK9632I** in the following format:

**<resource> hh:mm:ss mm/dd/yy <unit\_type> <units\_count> of maximum <units\_max>**

**<resource>**

Identifies the minidisk or file space being backed up. For minidisks, this field is displayed as *ownerid vdev*. For the SFS or BFS file spaces, this field is displayed as *filepool filespace*.

**hh:mm:ss**

Current time of day.

**mm/dd/yy**

Current date (month / day / year).

**<unit\_type>**

Identifies the type of unit by which the progress is measured. This field is one of the following options:

**4K block**

For SFS or BFS file space backups, the progress is measured in terms of 4K (4,096-byte) data blocks.

**CMS file**

For CMS EDF minidisk file-level backups, the progress is measured in terms of number of individual files.

**CKD track**

For ECKD DASD image backups, the progress is measured in terms of number of tracks

**FBA block**

For FB-512 / FBA DASD image backups, the progress is measured in terms of number of 512-byte blocks.

**<units\_count>**

The current number of units backed up since the start of the task, or since the last occurrence of the message **9632I**.

**<units\_max>**

The maximum number of units to be backed up for this resource.

## Load Balancing configuration parameters

---

The load balancing configuration parameters are used to optimize the distribution of backup tasks to workers. All the below configuration parameters can be used in BKRSYSTEM CONFIG file. If no parameters are specified in BKRSYSTEM CONFIG, the embedded defaults will be used.

There are two sets of parameters, one that is used to optimize the load balancing functionality when used with WEIGHTBY SIZE and the other to optimize WEIGHTBY LASTFULL.

**SFS\_BFS\_complexity\_factor = <integer>**

This parameter indicates how much longer SFS/BFS takes to back up the same volume of data compared to EDF/CKD/FBA. Usually, SFS/BFS takes comparatively more time than EDF/CKD/FBA. Use this parameter to optimize the load balancing functionality when using WEIGHTBY SIZE. The default value is **2**.

The below set of parameters will be used to calculate elapsed time when the elapsed time cannot be determined for an object from the backup catalog. Use these parameters to optimize the load balancing functionality when using WEIGHTBY LASTFULL.

**EDF\_elapsed\_ToD\_benchmark = <elapsed ToD units>**

This parameter indicates how much time, in elapsed ToD units (micro seconds), it takes for 1KB of EDF data to be backed up. The default value is **50000**.

**CKD\_elapsed\_ToD\_benchmark = <elapsed ToD units>**

This parameter indicates how much time, in elapsed ToD units (micro seconds), it takes for 1KB of CKD data to be backed up. The default value is **50000**.

**FBA\_elapsed\_ToD\_benchmark = <elapsed ToD units>**

This parameter indicates how much time, in elapsed ToD units (micro seconds), it takes for 1KB of FBA data to be backed up. The default value is **50000**.

**SFS\_elapsed\_ToD\_benchmark = <elapsed ToD units>**

This parameter indicates how much time, in elapsed ToD units (micro seconds), it takes for 1KB of SFS data to be backed up. The default value is **100000**.

**BFS\_elapsed\_ToD\_benchmark = <elapsed ToD units>**

This parameter indicates how much time, in elapsed ToD units (micro seconds), it takes for 1KB of BFS data to be backed up. The default value is **100000**.

The utility SIZEVTOD EXEC is provided as part of the installation and can be found on the installation ID Production build disk for server code (5697J06C 591). This utility can be executed to analyze historical backup metrics and suggest values for these configuration parameters. It is suggested to run this utility first and use the suggested values.

The following is the syntax for SIZEVTOD utility:

```
SIZEVTOD <CatalogFilePool> <CatalogFileSpace> <BkupJobName> <samplesize>
```

In the syntax above, the sample size indicates how many historical records (in total) to be analyzed, from the backup catalog, to suggest benchmark metrics. A larger sample size will produce optimal or normalized metrics. Having a very low sample size may result in skewed results.

IBM suggests you start with the embedded defaults. If the load balancing results are not satisfactory, execute SIZEVTOD and identify tuning opportunities and then tune the parameters in BKRSYSTEM CONFIG.

---

## Appendix I. Load Balancing options and parameters

The load balancing functionality of Backup and Restore Manager provides you with an ability to do better work load balancing between multiple Worker servers. The load balancing options can be invoked via REVIEW / SUBMIT / RESTART primary backup server commands.

Load balancing tries to address two issues.

### **Total Elapsed Time**

By default, tasks are assigned to workers in round-robin fashion and this might result in some workers ending up with a high volume of data and other workers completing their tasks much sooner and remaining idle while some workers are still busy with backup tasks. Installations that experience this issue can use the load balancing option WEIGHTBY.

### **Controlling how backup data is grouped together at the target location**

In some cases, your primary concern may not be total elapsed time, but you may want some specific data to be backed up together on the same target (for example, the same tape volume) so that restoration is faster. In this case, use the GROUPBY load balancing option.

Each of the load balancing options, WEIGHTBY and GROUPBY, are explained below.

### **WEIGHTBY (NONE | SIZE | LASTFULL)**

WEIGHTBY attempts to attach weights to each of the individual backup (DUMP) tasks and then distributes the tasks to the workers such that the workload is consistent amongst workers. WEIGHTBY should be used primarily to reduce the total elapsed time.

WEIGHTBY takes one of the three parameters - NONE, SIZE, and LASTFULL.

#### **NONE**

This option indicates not to distribute tasks to workers based on their size or the time it took to back up each object in the last full backup. This is the default value when WEIGHTBY is not specified.

#### **SIZE**

When used, the size in terms of bytes, will be determined for each backup task and will be used for balancing.

#### **LASTFULL**

When used, the elapsed time for each backup task during the last full backup will be used for load balancing. Since this option uses actual elapsed time units, this option is expected to provide optimal results. Note that if the last full backup is very old or if several changes have happened to the object since the last full backup, this data may no longer be an accurate estimate for the new backup. When elapsed time is not available, then benchmark parameters configured in BKRSYSTEM CONFIG will be used to calculate elapsed time based on the number of bytes of data involved.

### **GROUPBY (NONE | OWNER | VOLSER)**

GROUPBY attempts to group related backup objects together and allocate them to the same worker so that they are backed up to the same target location, such as a tape volume. Though the primary objective for GROUPBY is to back up related data to the same target location, as a secondary objective, it will also perform load balancing using the WEIGHTBY option specified.

GROUPBY may or may not reduce elapsed time, since the objective of GROUPBY is to control the backup target rather than elapsed time. Clients who specifically want to reduce elapsed time should avoid GROUPBY and use WEIGHTBY instead.

GROUPBY takes one of the three parameters - NONE, OWNER, and VOLSER

#### **NONE**

This option indicates not to distribute tasks to workers based on the owning user ID or the DASD volume on which the object resides. This is the default when GROUPBY is not specified.

**OWNER**

When used, devices (EDF/CKD/FBA/SFS/BFS) belonging to the same user are assigned to the same worker. This way all data belonging to a specific user ID will be backed up to the same target location.

**VOLSER**

When used, objects (EDF/CKD/FBA/SFS/BFS) that reside on the same DASD volume are assigned to the same worker. This way all data residing on a specific DASD volume will be backed up to the same target location.

Clients can use any combination of WEIGHTBY and GROUPBY. All combinations are allowed, except the following: when GROUPBY OWNER or GOUPBY VOLSER is specified, WEIGHTBY cannot be NONE. It will be overridden with WEIGHTBY SIZE by default. When WEIGHTBY SIZE or WEIGHTBY LASTFULL is specified, GROUPBY can be NONE.

# Appendix J. 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.

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

IBM 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

IBM 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 IBM 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 IBM 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 59.

## 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 59.

## User response

This message is commonly associated with problems that involve 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 (BKRWRKnn) lacks SFS file pool ADMIN authority for the associated SFS file pool. Ensure that all BKRWRKnn service virtual machines have file pool administrator privileges. For more information, see [“Verifying privileges for worker service virtual machines \(BKRWRKnn\)” on page 13](#). 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 59](#).

## User response

This message typically indicates that the backup worker service virtual machine (BKRWRKnn) lacks SFS file pool ADMIN authority for the associated SFS file pool. Ensure that all BKRWRKnn service virtual machines have file pool administrator privileges. See [“Verifying privileges for worker service virtual machines \(BKRWRKnn\)” on page 13](#) 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 59](#).

## 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 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 DUMPxxx 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 (BKRWRKnn) and the associated SFS file pool server, or with resource limit issues that affect 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 59](#).

### 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 (BKRWRKnn) and the associated SFS file pool server, or with resource limit issues that affect 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**      **BKR PICK fatal error, return code *rc*.**

### Explanation

This message is displayed during incremental backup processing if the change detection routine, BKR PICK, 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 (BKRWRKnn) and the associated SFS file pool server, or with resource limit or data corruption issues that affect 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, 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 59](#).

## 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 DUMPxxx 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**      **DMSRDBK 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 DMSRDBK completes abnormally. *rc* and *reason* are the return code and reason code generated by

DMSRDBK. See *z/VM CMS Callable Services Reference (SC24-6072)* for information about DMSRDBK.

## System action

If this error occurs during backup of an SFS file space, DUMPSFS ends with the same return code as DMSRDBK. 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 DMSRDBK. 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 59.

### 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 59.

### User response

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 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 DMSCCLDBK return code rc, reason code reason.**

### Explanation

The CSL routine DMSCCLDBK 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 DMSCCLDBK 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 DMSCCLDBK.

### 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 BKRWRKnn 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 BKRWRKnn 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 59](#).

## 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 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 DUMPxxx 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 59](#).

## User response

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.

---

**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 59.

## 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 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 BKRWRKnn 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 BKRWRKnn 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 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, 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 59](#).

## 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 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 DUMPxxx 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 cannot 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 the backup of the SFS file space with the next 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 59](#).

## 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 /filename 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 /filename 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.

---

**BKR8066E**      **Return code *rc* attempting to recover BKR\_OUT\_TWING\_PRIVOL.**

## Explanation

An error occurred while attempting to extract the value of REXX variable BKR\_OUT\_TWING\_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\_TWING\_SECVOL.**

## Explanation

An error occurred while attempting to extract the value of REXX variable BKR\_OUT\_TWING\_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 BKRSYSTEM CONFIG file. For IBM 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 orabend.

## 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 orabend.

## 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.

---

**BKR8087E**      **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.

---

**BKR8089E**      **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**      **EOJPAML 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 were encountered while attempting to restore a CKD image backup.

### System action

Processing stops.

### User response

Specify a compatible output destination and attempt the restore operation again.

---

**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

Specify a sufficiently large destination minidisk and attempt the restore operation again.

---

**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

Specify a valid storage group number and attempt the operation again.

---

**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

To restore the version of the file that is contained on backup media, remove the colliding file from the restore destination and attempt 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** File space *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** File space 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

To restore the version of the alias that is contained in the backup, delete the pre-existing alias from the target file space and attempt 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 attempt 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 attempt 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 attempt 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 attempt 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

IBM 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 cannot 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 cannot 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**      **BKRRTK 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 EOVSUSPEND processing.**

### Explanation

A tape I/O error occurred during end-of-volume processing.

### System action

Processing stops.

### User response

Resolve the I/O error and attempt the backup operation again.

---

**BKR8180E**      **Return code *rc* from *xxx*EOV exit during EOVRRESUME 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

Resolve the tape subsystem problem and attempt the restore operation again. If the problem persists, contact your system programmer or IBM Software Support.

---

**BKR8181E**      **WRTAPE return code *rc* while finalizing EOVS processing.**

### Explanation

A tape I/O error occurred during end-of-volume processing.

### System action

Processing stops.

### User response

Resolve the I/O error and attempt 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 EOVS 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 EOVS processing.**

## Explanation

An I/O error occurred while attempting to read the VOL1 label of a tape.

## System action

Processing stops.

## User response

Use a different tape drive and attempt the restore operation again.

---

**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 attempt 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 EOVS situation occurs on one half of a twin set and the other half is closed as a result of the EOVS.

## 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 LOCBK.**

## Explanation

A TAPECTL LOCBK operation was not successful.

## System action

Processing stops.

## User response

Use an alternate media or a different tape drive and attempt the restore operation again.

---

**BKR8190E**      **RDTAPE return code *rc*.**

## Explanation

An I/O error occurred during a RDTAPE operation.

## System action

Processing stops.

## User response

Attempt the restore operation again using alternate media or a different tape drive.

---

**BKR8191W**      **Hardware EOVS 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 EOVS 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 created by backup processing during EOVS 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 volumes. It is accompanied by tape dismount and mount messages. SUSPENDs are the first indication of EOVS processing being entered during a restore operation. RESUMEs are issued after successful mount of the successor volume, as the last step of EOVS-on-restore tape swap handling.

### System action

Processing continues.

### User response

The EOVS 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 xxxEOVS exit during READDATA EOVS.**

### Explanation

A non-zero return code from an EOVS 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 EOVS RESUME.**

### Explanation

An I/O error occurred during end-of-volume processing.

### System action

Processing stops.

### User response

Attempt the restore operation again using alternate media or a different tape drive.

---

**BKR8195E**      **New volume EOVS type is not RESUME after xxxEOVS exit return.**

### Explanation

An out-of-sequence volume was mounted during EOVS processing.

### System action

Processing stops.

### User response

Attempt 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

Ensure that all tapes have a valid VOL1 label and attempt the operation again.

---

**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

IBM 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 IBM 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. This message might be accompanied by supporting messages to the virtual machine console.

### System action

Processing stops.

### User response

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 attempt 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. This message might be accompanied by supporting messages to the virtual machine console.

### System action

Processing stops.

### User response

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 attempt 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 was not successful.

### 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 attempt the unsuccessful 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 was not successful.

## 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 was not successful.

## 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 attempt the unsuccessful 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 attempt the unsuccessful 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 was not successful.

## 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 was not successful.

### 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 was not successful.

### 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. Attempt 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. Attempt 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

Attempt 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

Attempt 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. Attempt the operation again.

---

**BKR8227E**      **Error reason granting permission to user on sfs\_object.**

## Explanation

During restore processing, SFSLOAD was unable to restore permissions to a file, alias, or directory. This message can be issued when you are 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 that are re-created during restore operations.

*reason* is the CMS DMSGRA NT CSL routine reason code that is supplied as part of an error response from DMSGRA NT. *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, use the **GRANT** command to manually apply the permission setting or attempt 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 attempt the unsuccessful operation again.

---

**BKR8230E**      **BKRDLBL return code *rc*; I/O error or malformed DASD label.**

## Explanation

BKRDLBL cannot read a DASD volume label (cylinder 0, track 0, record 3) from the target device, or the label data on the minidisk is 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 BKRSYSTEM CONFIG.

### Explanation

A valid value was not specified for **BKR\_Global\_Product\_Version** in the BKRSYSTEM 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 BKRSYSTEM CONFIG.

### Explanation

A valid value was not specified for **BKR\_Global\_Product\_ID** in the BKRSYSTEM 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 BKRSYSTEM CONFIG.

### Explanation

A valid value was not specified for **BKR\_Global\_Product\_Name** in the BKRSYSTEM 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 BKRSYSTEM CONFIG.

### Explanation

A valid value was not specified for **Local\_SVM\_Contact** in the BKRSYSTEM 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 BKRSYSTEM CONFIG.

### Explanation

A valid value was not specified for **Local\_Backup\_Admin\_ID** in the BKRSYSTEM 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 BKRSYSTEM CONFIG.**

### Explanation

A valid value was not specified for Local\_Backup\_Catalog\_ID in the BKRSYSTEM 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 primary backup server.**

### Explanation

The BAKSRVR EXEC was invoked by a user not identified as Local\_Backup\_Master\_ID in the BKRSYSTEM CONFIG file.

### System action

Processing stops.

### User response

BAKSRVR can only be run by a primary backup service virtual machine. If the error occurs on the primary backup service virtual machine, ensure that the BKRSYSTEM CONFIG file is available on an accessed minidisk or SFS directory, and that the Local\_Backup\_Master\_ID parameter is configured properly in the BKRSYSTEM CONFIG file. See [“Copying and customizing the BKRSYSTEM CONFIG file” on page 20](#) for more information.

---

**BKR8507E**      **BKRSYSTEM CONFIG \* identifies user ID *user\_id* as the primary backup server.**

### Explanation

This message is issued with message BKR8506E.

### System action

Processing stops.

### User response

BAKSRVR can only be run by a primary backup service virtual machine. If the error occurs on the primary backup service virtual machine, make sure that the BKRSYSTEM CONFIG file is available on an accessed minidisk or SFS directory, and that the **Local\_Backup\_Master\_ID** parameter is configured properly in the BKRSYSTEM CONFIG file. See [“Copying and customizing the BKRSYSTEM CONFIG file” on page 20](#) for more information.

---

**BKR8508I**      **Backup Server: Entering processing loop at *hh:mn:ss*.**

### Explanation

The primary 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 BKRSYSTEM 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 \*MSG. For commands that are entered through the service virtual machine console, the value is \*CONS. For commands from an external source such as CP MSG, 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 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 primary 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 18](#) for more information.

---

**BKR8519I** Processing WRKRSTAT 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 18](#) 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 18](#).

---

**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 18.](#)

---

**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 18](#) 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 primary backup service virtual machine, BKRKBUP), CATSRVR (the backup catalog service virtual machine, BKRCATLG), or WRKSRVR (a worker service virtual machine, BKRWRKnn). *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 18](#) 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 18](#) 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 18 for more information.

---

**BKR8534I**      **Processing CANCEL 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 primary backup service virtual machine.

## System action

The **CANCEL** operation is rejected.

## User response

If the primary backup service virtual machine was restarted and the worker service virtual machine did not register with the primary 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/PRIMARY origin test).**

### Explanation

A worker received a spool file which did not originate from a primary 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 primary SVM server.**

## Explanation

A worker service virtual machine accepted a job stream from the primary 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 42.](#)

---

**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 attempt 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 attempt 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 64 worker virtual machines were specified in the :WORKERS section of BKRUSERS NAMES. Only the first 64 virtual machines are employed for backup or restore operations.

### System action

Processing continues, but only the first 64 worker virtual machines listed in BKRUSERS NAMES are selected for processing.

### User response

Update the BKRUSERS NAMES file to specify no more than 64 worker virtual machines. For more information, see [“Copying and customizing the BKRUSERS NAMES file”](#) on page 18.

---

**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 BKRBACKUP 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*) 1-64 that specifies the number of worker service virtual machines to use. See “CONFIG” on page 59 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 59 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 59 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 59 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

Specify a valid job name of 1-8 characters, alphanumeric (A-Z,0-9) and attempt the command again. 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 BKRBACKUP 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 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- 64).

---

**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 (64 workers) of worker virtual machines are employed for processing of the backup operation.

## System action

Processing continues, subject to the maximum 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 **DUMPxxx** 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 DUMPxxx 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 cannot 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 primary backup server must be provided.*

### Explanation

You must provide the user ID of the primary backup server.

### System action

Processing continues.

### User response

Provide the user ID of the primary 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 file space. *type* can be one of SFS or BFS.

## System action

Processing continues.

## User response

Specify a pool and a file space. If the problem persists, contact your system programmer or IBM Software Support.

---

<b>BKR8858E</b>	<b>The files to be restored must be explicitly specified.</b>
-----------------	---

## 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.

---

<b>BKR8859E</b>	<b>Please fill in either path or storage group, not both.</b>
-----------------	---

## 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.

---

<b>BKR8860E</b>	<b>EXECIO return code <i>rc</i> while attempting to read BKRSYSTEM CONFIG *. Configuration processing cannot continue.</b>
-----------------	--

## Explanation

An error occurred while attempting to read BKRSYSTEM 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.

---

<b>BKR8861E</b>	<b>DMSCSR return code <i>rc</i> during configuration; Variable name <i>name</i> Attempted value <i>value</i>.</b>
-----------------	---

## Explanation

While attempting to configure IBM 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.

---

<b>BKR8862S</b>	<b>A severe error has occurred. Additional diagnostic information:</b>
-----------------	--

## 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.

---

<b>BKR8863S</b>	<b>Return code <i>rc</i> from Process_Config_file.</b>
-----------------	--

## Explanation

An unrecoverable error condition was encountered during an attempt to process contents of BKRSYSTEM CONFIG.

## System action

The associated task or command exits with a nonzero return code.

## User response

Message BKR8863S is preceded by additional messages that describe the error state. It is followed by diagnostic information, which includes the virtual machine state, CMS environment, and REXX runtime environment information. Review the configuration settings in BKRSYSTEM 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

No action is required.

---

**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 107 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 attempt the expiration process again using one of the following methods:

- To assign an expiration timer to the catalog entry, issue the CP **MSG 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 110.

- 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 **MSG BKRCATLG RESTART***jobname*) to submit the unsuccessful 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 unsuccessful 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

IBM 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 IBM 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 IBM 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.

---

<b>BKR8896E</b>	<b>Return code <i>rc</i> while attempting to read GRANCTNR from catalog entry. Restore processing cannot continue.</b>
-----------------	--

## Explanation

An error occurred while trying to read GRANCTNR from the catalog entry.

## System action

Processing continues.

## User response

No action is required.

---

<b>BKR8897I</b>	<b>Original backup job summary: --- Job Name: <i>job name</i>, instance <i>instance name</i> --- Backup time: <i>backup time</i> (Local zone) --- Source data: <i>source data</i>.</b>
-----------------	--

## Explanation

This message contains information about the backup job.

## System action

Processing continues.

## User response

No action is required.

---

<b>BKR8898E</b>	<b>Malformed GRANCTNR tag <i>tag name</i> in catalog data.</b>
-----------------	--

## 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.

---

<b>BKR8899I</b>	<b>Original source type is SFS file space: --- Original pool: <i>var1:var2</i> --- Original group: <i>group</i>; <i>n</i> blocks of <i>var5</i> in use. --- Warning threshold: <i>n</i>%.</b>
-----------------	---

## Explanation

This message contains information about the SFS file space.

## System action

Processing continues.

## User response

No action is required.

---

<b>BKR8900I</b>	<b>Original source type is CMS EDF Minidisk: --- Owner, vdev: <i>var1 var2</i>. --- EDF block size: <i>var3</i>; <i>var4</i> of <i>var5</i> blocks in use. --- <i>var6</i> cyls of <i>var7</i> formatted; "(RECOMP" <i>var8</i> in effect.</b>
-----------------	--

## Explanation

This message contains information about the CMS EDF minidisk.

## System action

Processing continues.

## User response

No action is required.

---

<b>BKR8901I</b>	<b>Original source type is CKD minidisk: --- Owner, vdev: <i>var1 var2</i>. --- Original CKD device type: <i>var3-var4</i>. --- Original extent size: <i>var5</i> cylinders; <i>var6</i> tracks per cylinder. --- Original Control Unit type is <i>var7-var8</i>.</b>
-----------------	---

## 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

Use a valid source type and attempt the restore procedure again.

---

**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

Change the location descriptor to a valid format and attempt the restore procedure again.

---

**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

Attempt 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.

---

<b>BKR8909I</b>	<b>Additional: --- Original source: source --- Source container type: source type --- Destination container type: destination type.</b>
-----------------	---

## Explanation

This message contains additional information about the source and destination container type.

## System action

Processing continues.

## User response

No action is required.

---

<b>BKR8910E</b>	<b>Malformed Restore_Loc_Identifier identifier encountered.</b>
-----------------	---

## Explanation

An error occurred that involves the **Restore\_Loc\_Identifier** setting.

## System action

Processing continues.

## User response

If the problem persists, contact your system programmer or IBM Software Support.

---

<b>BKR8911E</b>	<b>Unparseable Restore_Loc_Type type encountered.</b>
-----------------	---

## 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.

---

<b>BKR8912E</b>	<b>CKD backups can only be restored to a CKD destination. Requested destination type <i>type</i> is incompatible.</b>
-----------------	---

## Explanation

The indicated destination type is not compatible with CKD backups.

## System action

Processing continues.

## User response

Attempt the restore procedure again using a CKD compatible destination.

---

<b>BKR8913E</b>	<b>CKD restore operations do not support regular expression filters. The supplied expression <i>expression</i> is unacceptable.</b>
-----------------	---

## Explanation

An error occurred due to the supplied regular expression filter.

## System action

Processing continues.

## User response

Attempt the restore procedure again using a supported regular expression filter.

---

<b>BKR8914E</b>	<b>CP return code <i>rc</i> while trying to link <i>var2 var3</i> EFO WR. CP response was <i>var4</i>. User running restore needs <b>OPTION LNKNOPAS</b> or equivalent <b>RACF</b> authorization. The target minidisk must not be linked by any other virtual machine.</b>
-----------------	--

## 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

Attempt 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 was not successful 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 was not successful 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 was not successful because the destination type is not valid.

## System action

Processing continues.

## User response

Attempt 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

Attempt 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 LOADED routine was invoked.

## System action

Processing continues.

## User response

No action is required.

---

<b>BKR8944I</b>	<b>Invoking LOADED for EDF-to-RDR restore via EDF staging minidisk.</b>
-----------------	---

## Explanation

The LOADED routine was invoked.

## System action

Processing continues.

## User response

No action is required.

---

<b>BKR8945E</b>	<b>Valid restore destinations for EDF data are EDF, SFS, or RDR. Destination type <i>type</i> is incompatible.</b>
-----------------	--

## Explanation

The indicated destination type is not valid.

## System action

Processing continues.

## User response

Attempt the restore procedure action using a supported destination type.

---

<b>BKR8946T</b>	<b>Unrecognized source container type <i>type</i> escaped parsing; abending.</b>
-----------------	--

## 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.

---

<b>BKR8947E</b>	<b>Automatic formatting of EDF minidisks is disabled. To enable, set BKR_Allow_EDF_Target_Format = 1. in BKRSYSTEM CONFIG.</b>
-----------------	--

## Explanation

An error occurred because automatic formatting of minidisks is disabled.

## System action

Processing continues.

## User response

Set **BKR\_Allow\_EDF\_Target\_Format** to 1 and attempt the operation again.

---

<b>BKR8948E</b>	<b>No value supplied for minidisk label; FORMAT abandoned.</b>
-----------------	--

## 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.

---

<b>BKR8949E</b>	<b>Return code <i>rc</i> from CMS FORMAT command.</b>
-----------------	---

## 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 file space 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

Attempt the operation 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 BKRSYSTEM 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 BKRSYSTEM CONFIG.**

## Explanation

An error occurred because no value was supplied for the Worker\_Pool\_Minidisk\_Mode parameter in the BKRSYSTEM 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.

---

<b>BKR8965E</b>	<b>No value supplied for Worker_Pool_Link_Address in BKRSYSTEM CONFIG.</b>
-----------------	--

## Explanation

An error occurred because no value was supplied for the Worker\_Pool\_Link\_Address parameter in the BKRSYSTEM 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.

---

<b>BKR8966E</b>	<b>Filemode <i>file mode</i> is already in use by a non-pool minidisk or directory.</b>
-----------------	---

## 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.

---

<b>BKR8967E</b>	<b>Return code <i>rc</i> attempting to ESTATE <i>var *</i>.</b>
-----------------	---

## 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.

---

<b>BKR8968E</b>	<b>Return code <i>rc</i> attempting to read <i>var *</i>.</b>
-----------------	---

## 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.

---

<b>BKR8969E</b>	<b>Return code <i>rc</i> attempting to ACCESS <i>var2 var3</i> as filemode <i>file mode</i>.</b>
-----------------	--

## 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.

---

<b>BKR8970E</b>	<b>Pool <i>poolname</i> has no available minidisk with at least <i>n</i> blocks of free space.</b>
-----------------	--

## 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 was not successful.

### 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.

---

<b>BKR8985T</b>	<b>Unrecognized statement in job stream at record <i>record_id</i>. The offending record is: <i>record_name</i>. An abend is being forced.</b>
-----------------	--

### 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.

---

<b>BKR8986T</b>	<b>Return code <i>rc</i> processing job record <i>record_id1</i>. The problem record is: <i>record_id2</i>. An abend is being forced.</b>
-----------------	---

### 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.

---

<b>BKR8987T</b>	<b>Malformed job stream; no EOJ record encountered.</b>
-----------------	---

### 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.

---

<b>BKR8988W</b>	<b>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.</b>
-----------------	---

### 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.

---

<b>BKR8989T</b>	<b>Fatal runtime error; CSL routine DMSCSR return code <i>rc</i> encountered while attempting to set variable <i>var</i> to value <i>value</i>.</b>
-----------------	---

### Explanation

An unrecoverable runtime error occurred.

### System action

Processing continues.

### User response

If the problem persists, contact your system programmer or IBM Software Support.

---

<b>BKR8990E</b>	<b>DUMPEDF statement syntax error; BKR_EDF_METHOD is not set to "\$DRIVER\$".</b>
-----------------	---

## Explanation

An error occurred from a DUMPEDF statement syntax error.

## System action

Processing continues.

## User response

Correct the syntax and attempt the operation again.

---

<b>BKR8991E</b>	<b>DUMPEDF statement syntax error; BKR_JOB_CMS_FILEMASK is not set to "\$\$FMASK\$\$.</b>
-----------------	---

## Explanation

An error occurred from a DUMPEDF statement syntax error.

## System action

Processing continues.

## User response

Correct the syntax and attempt the operation again.

---

<b>BKR8992E</b>	<b>DUMPEDF statement syntax error; Unsupported value value specified for BKR_EDF_METHOD.</b>
-----------------	--

## Explanation

An error occurred due to a DUMPEDF statement syntax error.

## System action

Processing continues.

## User response

Correct the syntax error and attempt the operation again. Valid values for **BKR\_EDF\_METHOD** are CMSFILE, IBMTAPE, or IBMTWIN.

---

<b>BKR8993T</b>	<b>Limit of 999,999 objects per backup to minidisk exceeded; abending.</b>
-----------------	--

## 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.

---

<b>BKR8994W</b>	<b>Disk pool <i>diskpool</i> unavailable or depleted; pick return code was <i>pick_rc</i>. Unable to obtain pool object with at least <i>blocks</i> 4K blocks available.</b>
-----------------	--

## 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.

---

<b>BKR8995T</b>	<b>Unable to insert location info into catalog granule; abending.</b>
-----------------	---

## 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 attempt the operation 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 attempt the operation 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 attempt the operation 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 attempt the operation 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 attempt the operation 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 attempt the operation 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. Dropping EDF minidisk backup of MAINT 190 (job task <xxx> of <yyyy>).**

## Explanation

This message is issued because the dump task completed with the specified return code. The second line of the message provides details that identify the backup type, container description, and job task number involved in the abnormal termination that provoked entry to abnormal termination recovery logic.

The text of the second line varies depending upon the type backup.

### SFS / BFS filespace backup:

BKRJOB9007W Dropping SFS filespace backup of VMSYSU:MAINT. (job task <xxx> of <yyyy>).

BKRJOB9007W Dropping BFS filespace backup of VMSYS:ROOT. (job task <xxx> of <yyyy>).

### ECKD / FB-512 DASD image backup:

BKRJOB9007W Dropping DASD image backup of MAINT 190 (job task <xxx> of <yyyy>).

### Unrecognized backup type:

BKRJOB9007W Dropping unrecognized container backup of MAINT 190 (job task <xxx> of <yyyy>).

## 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*. Primary 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 primary 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.

---

<b>BKR9016E</b>	<b>Return code <i>rc</i> from processing of BKRSYSTEM CONFIG *; unable to continue.</b>
-----------------	---

## Explanation

An error occurred while processing BKRSYSTEM 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.

---

<b>BKR9017E</b>	<b>Incorrectly formatted catalogspec spec.</b>
-----------------	--

## 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.

---

<b>BKR9018E</b>	<b>Unrecognized source data type <i>type</i>; valid types are <i>list of types</i>.</b>
-----------------	---

## 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.

---

<b>BKR9019E</b>	<b>Unrecognized destination data type <i>type</i>; valid types are <i>list of types</i>.</b>
-----------------	--

## 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.

---

<b>BKR9020E</b>	<b>Invalid data location qualifier <i>qual_name</i> for minidisk source data type.</b>
-----------------	--

## 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.

---

<b>BKR9021E</b>	<b>Unable to locate JOBCAT entry; return code <i>rc</i>. Target catalog path: <i>path_name</i>.</b>
-----------------	---

## 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 18 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 BKRSYSTEM CONFIG.**

## Explanation

An error occurred because the **CatalogPool** parameter was not defined in the BKRSYSTEM CONFIG file.

## System action

Processing continues.

## User response:

Define the **CatalogPool** parameter in the BKRSYSTEM CONFIG file. See “Backup catalog parameters” on page 166 for more information.

---

**BKR9034E**      **CatalogSpace has not been defined in BKRSYSTEM CONFIG.**

## Explanation

An error occurred because the **CatalogSpace** parameter was not defined in the BKRSYSTEM CONFIG file.

## System action

Processing continues.

## User response:

Define the **CatalogSpace** parameter in the BKRSYSTEM CONFIG file. For more information, see “Backup catalog parameters” on page 166.

---

**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 File space: *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.

---

<b>BKR9057E</b>	<b>COPYFILE return code <i>rc</i>; during replacement of granule at <i>var</i>; Catalog entry creation failure.</b>
-----------------	---

## 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.

---

<b>BKR9058W</b>	<b>GRANT return code <i>rc</i>; giving <i>var</i> access to JOBCAT entry: <i>entry</i>.</b>
-----------------	---

## Explanation

This warning message is issued during access to JOBCAT entry.

## System action

Processing continues.

## User response

No action is required.

---

<b>BKR9059E</b>	<b>CatalogPool has not been defined in BKRSYSTEM CONFIG.</b>
-----------------	--

## Explanation

An error occurred because the **CatalogPool** parameter was not defined in the BKRSYSTEM CONFIG file.

## System action

Processing continues.

## User response

Specify a value for **CatalogPool**. For more information, see “Backup catalog parameters” on page 166. If the problem persists, contact your system programmer or IBM Software Support.

---

<b>BKR9060E</b>	<b>CatalogSpace has not been defined in BKRSYSTEM CONFIG.</b>
-----------------	---

## Explanation

An error occurred because the **CatalogSpace** parameter was not defined in the BKRSYSTEM CONFIG file.

## System action

Processing continues.

## User response:

For more information, see “Backup catalog parameters” on page 166. If the problem persists, contact your system programmer or IBM Software Support.

---

<b>BKR9061E</b>	<b>Local_Backup_Master_ID has not been defined in BKRSYSTEM CONFIG.</b>
-----------------	---

## 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 159. If the problem persists, contact your system programmer or IBM Software Support.

---

<b>BKR9062E</b>	<b>Routine CATSRVR should only be executed by the backup catalog server.</b>
-----------------	--

## Explanation

An error occurred because an entity other than the backup catalog server attempted to run CATSRVR.

## System action

Processing continues.

## User response

If the problem persists, contact your system programmer or IBM Software Support.

---

**BKR9063E**      **BKRSYSTEM 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.

---

<b>BKR9077S</b>	<b>Return code <i>rc</i>; from BUILD EXEC; Catalog processing cannot continue.</b>
-----------------	--

## Explanation

Message BKR9077S is issued when BUILD CAT 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 BKRWRKnn) 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.

---

<b>BKR9078E</b>	<b>Local_Backup_Master_ID has not been defined in BKRSYSTEM CONFIG.</b>
-----------------	---

## 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 159.

---

<b>BKR9079E</b>	<b>Worker_Idle_Timeout has not been defined in BKRSYSTEM CONFIG.</b>
-----------------	--

## 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 160.

---

<b>BKR9080I</b>	<b>Catalog Server: Entering processing loop at <i>var</i>. Idle timeout is set to <i>time</i>.</b>
-----------------	--

## Explanation

This message contains information about the catalog server.

## System action

Processing continues.

## User response

No action is required.

---

<b>BKR9081I</b>	<b>Idle timeout limit of <i>time</i> reached; logging off.</b>
-----------------	--

## Explanation

This message contains information about the idle timeout limit.

## System action

Processing continues.

## User response

No action is required.

---

<b>BKR9082W</b>	<b>Worker <i>workerid</i> automatically clearing PAUSE signal; no jobs being processed at present time.</b>
-----------------	---

## 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 *valid*.**

## 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 attempt the operation 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 file space: \*\*\* 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.

---

<b>BKR9104E</b>	<b>EXECIO return code <i>rc</i>; while obtaining instance number for job <i>job</i>.</b>
-----------------	--

## 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.

---

<b>BKR9105E</b>	<b>DMSQLIMU return code <i>rc</i>; reason <i>reason</i> on catalog free space check.</b>
-----------------	--

## 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.

---

<b>BKR9106E</b>	<b>Insufficient catalog free space (<i>space</i>) to contain new granule (<i>granule</i>). Please increase the size of the catalog file space and restart the catalog server.</b>
-----------------	---

## 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.

---

<b>BKR9107E</b>	<b>New catalog entry will occupy <i>nn</i> 4K blocks of catalog storage.</b>
-----------------	--

## 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.

---

<b>BKR9108E</b>	<b>DMSGETWU return code <i>rc</i>; reason <i>reason</i>, during freespace check.</b>
-----------------	--

## 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.

---

<b>BKR9109E</b>	<b>DMSPUSWU return code <i>rc</i>; reason <i>reason</i>, during freespace check.</b>
-----------------	--

## 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.

---

<b>BKR9110E</b>	<b>DMSPOPWU return code <i>rc</i>; reason <i>reason</i>, during freespace check.</b>
-----------------	--

## 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.

---

<b>BKR9111E</b>	<b>Invalid numeric character in BKR_DDL_RECORD_LIMIT (value).</b>
-----------------	---

## 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.

---

<b>BKR9112W</b>	<b>Return code <i>rc</i> from NETDATA output handler during WRITE operation.</b>
-----------------	--

## Explanation

This warning message was issued from the output handler during WRITE operation.

## System action

Processing continues.

## User response

No action is required.

---

<b>BKR9113W</b>	<b>Return code <i>rc</i> from NETDATA output handler during TERMINATE operation.</b>
-----------------	--

## Explanation

A warning message was issued from the output handler during a TERMINATE operation.

## System action

Processing continues.

## User response

No action is required.

---

<b>BKR9114I</b>	<b>Restore complete; <i>n</i> files delivered to spool destination.</b>
-----------------	---

## Explanation

This message contains information about the restore operation.

## System action

Processing continues.

## User response

No action is required.

---

<b>BKR9115I</b>	<b>Invoking LOADDDL for SFS-to-RDR restore as NETDATA output...</b>
-----------------	---

## Explanation

The restore operation from the LOADDDL routine was invoked.

## System action

Processing continues.

## User response

No action is required.

---

<b>BKR9116I</b>	<b>Invoking LOADDDL for EDF-to-RDR restore as NETDATA output...</b>
-----------------	---

## Explanation

The restore operation from the LOADDDL routine was invoked.

## System action

Processing continues.

## User response

No action is required.

---

<b>BKR9117W</b>	<b>Spool output record limit reached for file; output has been flushed. Processing continues with next file.</b>
-----------------	--

## 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 did not 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

IBM Backup and Restore Manager for z/VM encountered an error occurred while trying to perform a PAUSE operation. The worker and job name where IBM 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 unsuccessful **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

Specify a valid virtual machine name and user ID as the destination and attempt the **RESTORE** command

again. 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 cannot 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 cannot 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  
BKRRTK buffer.**

### Explanation

The DDRTAPE output handler encountered unexpected data while processing the track image data returned from internal subroutine BKRRTK.

### 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

DUMPKD 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.

This message is not displayed if support for z/VM APAR VM65778 was enabled by specifying `DDRTAPE_Preserve_Label = Yes` in `BKRSYSTEM CONFIG`, or by specifying `Config BKR_Job_DDRTAPE_Preserve_Label = Yes` as the first statement in a DDRTAPE backup job template. This message might be displayed in backup job

logs if the support for z/VM APAR VM65778 is not enabled in `BKRSYSTEM CONFIG`, and the DDRTAPE output handler is selected in a job template before `Config BKR_Job_DDRTAPE_Preserve_Label = Yes` is processed. In the latter case, message this message can be ignored.

## 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 `BKRSYSTEM CONFIG` file indicates interaction with IBM Tape Manager for z/VM is not active.

## System action

Processing continues.

## User response

Modify the settings in the `BKRSYSTEM CONFIG` file to enable interaction with IBM Tape Manager for z/VM. For more information, see [“Configuring Backup and Restore Manager to work with IBM Tape Manager for z/VM”](#) on page 23.

---

**BKR9152I**      **A job-level tape pool owner value  
of value is now in effect.**

## Explanation

Interaction with IBM 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 IBM 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.

---

<b>BKR9154W</b>	<b>EDF backup will be retried as an image backup; tape mount attempt is being re-driven.</b>
-----------------	--

## 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.

---

<b>BKR9155W</b>	<b>Skipping DUMPRDV <i>var1 var2</i>; CP DEFINE MDISK rc was <i>rc</i>.</b>
-----------------	---

## 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 (BKRWRKnn) needs additional privileges to successfully issue the CP **DEFINE MDISK** command.

---

<b>BKR9156W</b>	<b>Image backup of <i>var1 var2</i> suppressed by job configuration.</b>
-----------------	--

## 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.

---

<b>BKR9157E</b>	<b>Unable to generate unique filename/filetype for backup to DASD. Reason: <i>reason</i>.</b>
-----------------	---

## 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.

---

<b>BKR9158E</b>	<b>Backups produced in DDRTAPE format can only be restored by CMS or stand-alone DDR.</b>
-----------------	---

## 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.

This message is not displayed if support for z/VM APAR VM65778 was enabled by specifying DDRTAPE\_Preserve\_Label = Yes in BKRSYSTEM CONFIG, or by specifying Config BKR\_Job\_DDRTAPE\_Preserve\_Label = Yes as the first statement in a DDRTAPE backup job template. This message might be displayed in backup job logs if the support for z/VM APAR VM65778 is not

enabled in BKRSYSTEM CONFIG, and the DDRTAPE output handler is selected in a job template before Config BKR\_Job\_DDRTAPE\_Preserve\_Label = Yes is processed. In the latter case, message this message can be ignored.

### 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 (BKRWRKnn) 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 *userid*  
vdev cylinder range *n1* - *n2*.**

## Explanation

A DDRTAPE backup successfully backed up cylinders *n1* to *n2* from the *userid* vdev.

## 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 59 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 59 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 BKRSYSTEM 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 BKRSYSTEM 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 was not successful. 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 (BKRWRKnn) 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 (BKRWRKnn) 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 (BKRWRKnn) 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 was not successful 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. Specify an asterisk to display results for all DISKPOOL files. See [“QUERY DISKPOOL” on page 97](#) 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 primary 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 primary backup service virtual machine (BKRBKUP) console log to determine why the operation was not successful.

---

**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 cannot locate automatically tracked instance data for job template names that match filter *filter*.

## System action

The **QUERY INSTANCE** command ends.

## User response

Issue the **QUERY INSTANCE** command again with a different job template name filter. To display the current instance number for all of the job templates with automatic instance tracking in effect, specify an asterisk or omit the filter parameter.

---

**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 103 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

Attempt the operation again with an acceptable new instance value. See [“SET INSTANCE” on page 103](#) 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.

---

<b>BKR9198W</b>	<b>No write permissions for DISKPOOL volume <i>volume</i>. Skipping to next record in DISKPOOL file.</b>
-----------------	--

## Explanation

A worker task service virtual machine (BKRWRKnn) 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.

---

<b>BKR9199W</b>	<b>Unable to erase <i>var1</i> (ERASE <i>rc</i>) from directory <i>directory</i>; please ensure server has SFS ADMIN authority to this file pool.</b>
-----------------	---

## 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.

---

<b>BKR9200E</b>	<b>Return code <i>rc</i> from command. ACCESS <i>userid vdev</i> DISKPOOL</b>
-----------------	---

**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 was not successful. If the problem cannot be resolved, contact your system programmer or IBM Software Support.

---

<b>BKR9201E</b>	<b>File mode must be 0-6 or *</b>
-----------------	-----------------------------------

## 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.

---

<b>BKR9202W</b>	<b>Unable to obtain work unit; cannot process DISKPOOL volume <i>volume</i>.</b>
-----------------	--

## Explanation

The **QUERY DISKPOOL** command cannot 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 was not

successful. 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 110 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 IBM 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

Attempt 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 BKRRDF 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 BKRSYSTEM CONFIG; LISTFILE return code rc.**

### Explanation

An attempt to locate the service virtual machine configuration file, BKRSYSTEM CONFIG, was not successful.

### System action

Service virtual machine initialization stops.

### User response

Backup and Restore Manager expects the BKRSYSTEM CONFIG file to reside on the service virtual machine configuration minidisk, accessed as file mode letter B. A sample version of the BKRSYSTEM CONFIG file is distributed as BKRSYSTEM 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 BKRSYSTEM CONFIG file”](#) on page 20.

---

**BKR9220W      Continuing 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 BKRSYSTEM CONFIG were found.**

### Explanation

Multiple copies of the BKRSYSTEM 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 start-up processing continues. The copy of the BKRSYSTEM 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 BKRSYSTEM CONFIG file is expected to reside on the service virtual machine configuration minidisk, accessed as file mode letter B. A sample version of the BKRSYSTEM CONFIG file is distributed as BKRSYSTEM 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. IBM 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 BKRSYSTEM CONFIG file”](#) on page 20.

---

**BKR9222I      Service virtual machine configuration derived from BKRSYSTEM CONFIG located var1 accessed as file mode var2.**

### Explanation

Service virtual machine configuration processing issues this message to identify the copy of the BKRSYSTEM 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 BKRSYSTEM CONFIG file parameters indicate that tape services are handled through IBM 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.

---

<b>BKR9224W</b>	<b>Return code <i>rc</i> from QUERY FILEPOOL CATALOG <i>var</i>.</b>
-----------------	--

## 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.

---

<b>BKR9225W</b>	<b>Unable to check catalog file pool server storage group 1 thresholds.</b>
-----------------	---

## 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.

---

<b>BKR9226W</b>	<b>Unable to parse catalog file pool storage group 1 utilization info.</b>
-----------------	--

## 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.

---

<b>BKR9227I</b>	<b>Backup catalog file pool server storage group 1 is <i>n</i>% utilized. <i>n</i> 4K blocks in use; <i>n</i> 4K blocks free.</b>
-----------------	---

## 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 BKRSYSTEM CONFIG file parameters indicate that tape services are handled by IBM 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 IBM 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

IBM 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 cannot locate a required file (*file*). The **LISTFILE** return code is *rc*.

## System action

Service virtual machine initialization stops.

## User response

Inspect the installation of IBM 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** BKRMDS *rc rc* for component *file*; unable to continue. BKRMDS output: *msg*.

## Explanation

The **BKRMDS** 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 **BKRMDS** 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 IBM 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 IBM 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** Special virtual machine roles are configured in file BKRUSER NAMES located in *directory* accessed as file mode *fm*.

## Explanation

Virtual machines (users) with additional privileges are being configured. The special virtual machine roles are based on contents of 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" (also known as *primary*).

## 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** *count* virtual machine(s) are assigned the role of *role*.

## Explanation

A number (*count*) of virtual machines were assigned a new role (*role*) as "worker", "administrator" or "primary backup." This message is followed by a list of 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 IBM 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.

---

<b>BKR9250E</b>	<b>Storage group 1 occupancy exceeds start-up threshold limit of <i>limit</i> percent.</b>
-----------------	--

## 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.

---

<b>BKR9251E</b>	<b>Validation of root catalog structures failed. The backup catalog service virtual machine cannot be started.</b>
-----------------	--

## 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.

---

<b>BKR9252W</b>	<b>Root catalog structure <i>structure</i> failed validation. Attempting to create required directory now.</b>
-----------------	--

## 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.

---

<b>BKR9253I</b>	<b>Successfully created new catalog root structure <i>structure</i>.</b>
-----------------	--

## 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.

---

<b>BKR9254E</b>	<b>Unable to create new catalog root structure <i>structure</i>.</b>
-----------------	--

## Explanation

This message is issued with message BKR9252W. It indicates an unsuccessful 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, attempt 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 through 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 attempts to position the volume through Forward Space File (FSF) 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 that provide detail about the problems that were encountered during the unsuccessful 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 BKR BKUP, but after initial processing no valid RESTORE commands were produced.

### System action

The entire batch mode operation is rejected. BKR BKUP 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

BKR BKUP received a batch-mode restore transaction.

### System action

The primary backup service virtual machine, BKR BKUP, 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 attempt 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 BKRSYSTEM 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 BKRSYSTEM 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.

---

<b>BKR9284E</b>	<b>Job terminated; the consecutive failed task limit of <i>n</i> tasks has been exceeded. Remaining tasks in this job have not been processed.</b>
-----------------	--

## 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.

---

<b>BKR9285E</b>	<b>Fast tape positioning is enabled for this image.</b>
-----------------	---

## 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.

---

<b>BKR9286I</b>	<b>Fast tape positioning is not enabled for this image; volume</b>
-----------------	--

**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.

---

<b>BKR9287I</b>	<b>Restore operation succeeded; LOADDDL return code 0.</b>
-----------------	--

## 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.

---

<b>BKR9288E</b>	<b>Restore operation failed; LOADDDL return code was <i>rc</i>.</b>
-----------------	---

## 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.

---

<b>BKR9289I</b>	<b>Options specify worker worker will process this job.</b>
-----------------	---

## 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.

---

<b>BKR9290W</b>	<b>The specified worker, <i>worker</i>, is not configured as a worker in BKRUSERS NAMES. Standard worker selection will be used.</b>
-----------------	--

## 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.

---

<b>BKR9291E</b>	<b>Invalid function passed to BKRESTOR; options were <i>options</i>.</b>
-----------------	--

## 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.

---

<b>BKR9295W</b>	<b>Unable to process incremental backup deleted file history. Attempting to continue with restore.</b>
-----------------	--

## Explanation

The DELFILES option was specified for RESTORE processing. Restore processing cannot obtain or process deleted file information during the 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.

---

<b>BKR9296W</b>	<b>There are no free file modes available.</b>
-----------------	--

## 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

IBM 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**      **BKR PICK initialization return code rc; Incremental processing**

**disabled. Attempting to continue with backup.**

### Explanation

During an incremental backup, an attempt to initialize the internal BKR PICK 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 were unsuccessful. 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

No response is required. For more information, see the **Tape\_Enable\_EOF1HDR1** BKRSYSTEM CONFIG file parameter description in ["CONFIG"](#) on page 59.

---

**BKR9315W** IBM 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 42 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 42 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 42 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 42 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 42.

---

**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 42.

---

**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 42 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 42.

---

**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 91.

**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 42.

---

**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 because of an out-of-space condition on the worker temporary files work area, increase the size of the minidisk or SFS directory and attempt 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 166.

---

**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 *abendtasks* 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 BKRSYSTEM 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 (BKRWRKnn) 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 (BKRWRKnn) 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 (BKRWRKnn) 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 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 (BKRWRKnn) is used to pick workers for the backup or restore operation.

**User response:**

Review the response that is supplied by exit BKREXIO3 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 BKREXIO3 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 (BKRWRKnn) is used to pick workers for the backup or restore operation.

**User response:**

Review the response that is supplied by exit BKREXIO3 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 BKREXIO3 rc rc;**
**Explanation:**

Exit BKREXIO3 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), attempt the operation again when more workers are available, or modify the site

configuration for Backup and Restore Manager to provision more BKRWRKnn 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 BKREXIO3 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:**

Attempt the operation when more workers are available, or modify the site configuration for Backup and Restore Manager to provision additional BKRWRKnn service virtual machines.

---

**BKR9341W      Unsupported user exit return code.**
**Explanation:**

Exit BKREXIO3 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 BKREXIO3 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:**

Attempt the operation when more workers are available, or modify the site configuration for Backup and Restore Manager to provision more BKRWRKnn 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* 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 attempt 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*, 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 (BKR BKUP, BKRCATLG, or BKRWRKnn) 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 *filesystem* is used more than once in this DISKPOOL definition.**

### Explanation

The indicated SFS file space (filepool:filesystem) 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 file pool override is in effect. BKRSYSTEM 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 file space: Original pool: *filepool:filesystem* 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:filepace/***

## Explanation

This message is issued when an alternate root file space is defined in BKRSYSTEM 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 BKRSYSTEM 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 BKRSYSTEM 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 BKRSYSTEM 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 cannot 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

(BKRWRKnn) 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 (BKRWRKnn) 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 (BKRWRKnn) will attempt to create a mount point (*/mnt/BKRWRKnn*), 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 (BKRWRKnn) 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 (BKRWRKnn) 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 (BKRWRKnn) 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**      **Error while enumerating contents of file space at /mnt/userid; return code *rc*. The BFS file space is *filespace\_id*. The file space may be being updated by another user.**

## Explanation

An error was encountered while extracting the contents of the BFS file space mounted at the indicated path. *filespace\_id* identifies the affected BFS file space.

## System action

Processing continues with the next task in the backup job. If possible, backup of the affected BFS file space continues, but part of the backup of the file space might be incomplete. Otherwise, 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 (BKRWRKnn) has file pool administrator privileges and root-equivalent POSIX permissions. If the problem persists, contact your systems programmer or IBM Software Support.

---

**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 (BKRWRKnn) 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 that 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 (BKRWRKnn) 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 (BKRWRKnn) 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 (BKRWRKnn) 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 (BKRWRKnn) 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 (BKRWRKnn) 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 (BKRWRKnn) 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 (BKRWRKnn) 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 BKRSYSTEM 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:filepace/**

## 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 cannot 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 (BKRWRKnn) 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 (BKRWRKnn) 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 (BKRWRKnn) 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 (BKRWRKnn) 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

BKRBSTL 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

BKRBSTL 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 cataloged 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 UDPEn 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. UDPEn 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 UDPEn 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 BKRSYSTEM CONFIG to proceed.**

### Explanation

This message is issued when the InstancePool1 directory (*catalogpool:catalogspace.INSTANCEPOOL*) is found in the backup catalog file space, but configuration file BKRSYSTEM 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 BKRSYSTEM CONFIG was not updated to specify BKR\_SSI\_InstanceSync = ON. The system programmer or backup administrator must update the BKRSYSTEM 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 BKR9436W 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 BKR9436W 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 BKR9436W 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 BKR9437E 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 BKR9437E 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, attempt 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 BKR BKUP 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 BKR BKUP 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 BKR BKUP initialization.

### User response:

If the A-disk of BKR BKUP is a minidisk, ensure that the virtual device is available in read/write mode. If the A-disk of BKR BKUP is an SFS directory, ensure that BKR BKUP 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 BKR BKUP, BKRCATLG, or BKRWRKnn 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 userid vdev 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 BKRFSTL invocation.**

### Explanation

The internal utility routine BKRFSTL 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 cannot complete initialization without this resource.

### System action

Service virtual machine initialization stops.

### 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.

---

**BKR9450I**      **Original source type is FBA minidisk: Owner, vdev: ownerid, vdev. Original extent size: block\_count blocks.**

### Explanation

This message is issued when an FBA DASD image backup is being restored. It identifies the original owner ID (*ownerid*) and virtual device (*vdev*), and the original number of FB-512 DASD blocks (*block\_count*) in the image backup.

### System action

Processing continues.

### User response

No action is required.

---

**BKR9452W**      **Required keyword *keyword* not found in job template *template\_name*. Please correct the job template and retry.**

### Explanation

This message is issued when SUBMIT, REVIEW, or RESTART processing encounters a job template that has no Job\_Header or Job\_Trailer keyword. The Job\_Header or Job\_Trailer keywords are mandatory backup job template keywords that are used to separate the template into job header, include/exclude, and job trailer sections.

### System action

Template processing is abandoned.

### User response

Review the job template file *template\_name* TEMPLATE and add the necessary Job\_Header or Job\_Trailer keywords.

---

**BKR9453E**      **Invalid date format *value*; must be YYYY/MM/DD or MM/DD/YYYY.**

### Explanation

**SET EXPIRE** encountered an absolute date argument that could not be interpreted as YYYY/MM/DD or MM/DD/YYYY.

### System action

The **SET EXPIRE** command is rejected.

### User response

Correct syntax of the **SET EXPIRE** date argument and attempt the operation again. For more information, see “SET EXPIRE” on page 110.

---

**BKR9454W**      **Invalid date value *value***

### Explanation

**SET EXPIRE** was invoked with an argument that could not be interpreted as a number of days or an absolute date.

### System action

The **SET EXPIRE** command is rejected.

### User response

This message is issued when the **SET EXPIRE** command is invoked with an argument that cannot be interpreted as an integer number of days or an absolute date. Issue the command again using a valid number of days or an absolute date. For more information, see “SET EXPIRE” on page 110.

---

**BKR9455W**      **The expiration value exceeds the maximum date of 12/31/9999.**

### Explanation

This message is issued when the expiration value specified in a **SET EXPIRE** command is an absolute number of days, or results in a calculated date, which exceeds the maximum expiration date of 12/31/9999.

### System action

The **SET EXPIRE** command is rejected.

### User response

Issue the command again using a value that results in a date that does not exceed the maximum date limit of

12/31/9999. For more information, see [“SET EXPIRE”](#) on page 110.

---

**BKR9456I**      **Details for CMS file ID *filename*  
filetype *fm***

### Explanation

This message is issued with messages that are displayed when certain CMS Callable Service Library (CSL) routines encounter a CMS file I/O error. It documents CMS filename, filetype, and filemode.

### System action

Processing continues.

### User response

See the preceding CMS file I/O error messages.

---

**BKR9457I**      **Associated file mode is a *rwstatus*  
*dirtype* directory.**

### Explanation

This message is issued with message 9456I when the CMS file displayed resides in an SFS directory. *rwstatus* indicates R/O or R/W access. *dirtype* indicates whether the directory is a DIRCONTROL or FILECONTROL directory. This message is followed by message 9458I.

### System action

Processing continues.

### User response

See the preceding CMS file I/O error messages.

---

**BKR9458I**      **Path: *filepool:filespace.dir.path***

### Explanation

This message is issued with message 9457I. It displays the fully-qualified SFS directory path of the CMS file associated with message 9456I and 9457I.

### System action

Processing continues.

### User response

See the preceding CMS file I/O error messages.

---

**BKR9459I**      **Associated file mode is a *Rwstat*  
*minidisk*.**

### Explanation

This message is issued with message 9456I when the CMS file displayed in that message is on a CMS EDF-format minidisk. *Rwstat* indicates R/O or R/W access to the minidisk. This message is followed by message 9460I.

### System action

Processing continues.

### User response

See the preceding CMS file I/O error messages.

---

**BKR9460I**      **VDEV: *vdev***

### Explanation

This message is issued with message 9459I. *vdev* is the virtual device number of the associated CMS EDF-format minidisk.

### System action

Processing continues.

### User response

See the preceding CMS file I/O error messages.

---

**BKR9476W**      **Rejecting PAUSE command *args*  
from *origin user\_id*.**

### Explanation

A **PAUSE** 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 **PAUSE** command. *origin* is the origin source of the command. For commands that are from an external source, the value is \*MSG. 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 MSG, *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 18 for more information.

---

**BKR9477I** Processing PAUSE command *args* from *origin user\_id*.

## Explanation

A **PAUSE** command was accepted from a backup administrator or the service virtual machine console. *args* represents additional arguments that are supplied on the **PAUSE** 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.

---

**BKR9478W** Rejecting RESUME command *args* from *origin user\_id*.

## Explanation

A **RESUME** 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 **RESUME** 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 18 for more information.

---

**BKR9479I** Processing RESUME command *args* from *origin user\_id*.

## Explanation

A **PAUSE** command was accepted from a backup administrator or the service virtual machine console. *args* represents additional arguments that are supplied on the **PAUSE** 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.

---

**BKR9480I** Paused by backup administrator *admin\_id* since *time*; sleeping 60 seconds.

## Explanation

This message is issued by backup workers when activity has been suspended by the **PAUSE** command. Activity was paused by backup administrator *admin\_id* since the time indicated (*time*). Workers in “paused” status issue message BKR9480I every 60 seconds until they are released from this state.

## System action

The worker remains in paused state.

## User response

No action is required. Affected workers remain in this state until a backup administrator releases them with the **RESUME** command or terminates them with the **CANCEL** command.

---

**BKR9481I**      **Sending RESUME signal to worker worker.**

### Explanation

This message is issued when a paused backup worker, *worker*, is released through use of the **RESUME** command.

### System action

The backup worker is released from paused status, and resumes processing of the active backup job within 60 seconds.

### User response

No action is required.

---

**BKR9482I**      **Sending PAUSE signal to worker worker.**

### Explanation

Issued when a backup worker, *worker*, is signaled to enter paused status by the **PAUSE** command.

### System action

The backup worker is signaled to enter paused status. **PAUSE** takes effect when the currently active DUMPxxx task completes.

### User response

No action is required.

---

**BKR9483I**      **One or more workers are active. Retry when STATUS shows all workers logged out.**

### Explanation

This message is issued if backup worker service virtual machines are active when BKRBKUP receives a **CATBACKUP EXPORT** command.

### System action

Normal activity continues. The backup catalog file space has not been exported.

### User response

**CATBACKUP EXPORT** cannot be performed while backup or restore activity is in progress. Retry the command when all backup worker service virtual machines are logged off.

---

**BKR9484I**      **Pausing 15 seconds for catalog\_server shutdown.**

### Explanation

This message is issued during **CATBACKUP EXPORT** processing. A **HALT** command was sent to BKRCATLG; BKRBKUP will wait 15 seconds for BKRCATLG to terminate and log off.

### System action

BKRBKUP waits 15 seconds for BKRCATLG to terminate and log off.

### User response

No action is required. The PROFILE EXEC for BKRCATLG must execute a CP **LOGOFF** command after CATSRVR EXEC exits in order for **CATBACKUP EXPORT** to continue processing.

---

**BKR9485W**      **CATBACKUP is disabled; BKR\_Catalog\_Export\_Minidisk is not defined in BKRSYSTEM CONFIG.**

### Explanation

BKRBKUP accepted a **CATBACKUP EXPORT** command from a backup administrator, but cannot process the request because a catalog data export minidisk was not defined in BKRSYSTEM CONFIG.

### System action

**CATBACKUP EXPORT** processing terminates. No attempt was made to export a copy of the backup catalog file space.

### User response

Provision a suitable CMS-format minidisk for **CATBACKUP EXPORT**, and define it in BKRSYSTEM CONFIG. For more information, see [“Backup catalog parameters”](#) on page 166.

---

**BKR9486W**      **catalog\_svm is still logged in. CATBACKUP EXPORT cannot execute with catalog server active.**

### Explanation

This message is issued after message 9484I if the BKRCATLG service virtual machine (*catalog\_svm*) has not logged off after receiving a **HALT** command from BKRBKUP.

## System action

Normal BKR BKUP activity continues. The backup catalog file space was not exported.

## User response

BKRCATLG did not terminate and log off within 15 seconds after message 9484I was displayed. Check the status of BKRCATLG. The PROFILE EXEC for BKRCATLG must execute a CP **LOGOFF** command after CATSRVR EXEC terminates in order for **CATBACKUP EXPORT** to continue.

---

**BKR9486W**      **Unable to continue with *function* processing.**

## Explanation

This message is issued when command processing for the command indicated by *function* was terminated due to an error condition.

## System action

Service virtual machine processing continues.

## User response

See the preceding messages for supporting details. For example, this message is issued if **CATBACKUP EXPORT** is unable to execute due to a configuration issue, or if BKRCATLG did not terminate and log off during **CATBACKUP EXPORT** preparation.

---

**BKR9489I**      **Temporarily releasing *resource*.**

## Explanation

The CMS minidisk or SFS directory identified as *resource* has been temporarily RELEASED.

## System action

Service virtual machine processing continues.

## User response

No action is required. This message is issued when a service virtual machine must temporarily RELEASE a CMS minidisk or directory as part of normal activity.

---

**BKR9490I**      **Invoking CMS utility *cms\_utility*...**

## Explanation

This message is issued when a service virtual machine invokes a CMS utility function such as FILESERV.

## System action

Processing continues.

## User response

No action is required. Service virtual machine activity transitions to execution of the indicated CMS utility program.

---

**BKR9491I**      ***operation* completed with return code *rc*.**

## Explanation

This message is issued when execution of an external routine such as FILESERV completes. The external process is identified as *operation*; the CMS return code from the external routine is *rc*.

## System action

Service virtual machine execution continues.

## User response

No action is required.

---

**BKR9492I**      ***operation* generated the following messages:**

## Explanation

This message is issued with message 9491I if the external utility function, *operation*, generates messages which would ordinarily be displayed on the CMS console.

## System action

Processing continues.

## User response

No action is required if the operation completed normally. If *operation* did not complete with a return code of zero, subsequent output can include diagnostic information.

---

**BKR9493I**      ***operation* complete; restarting *service*.**

## Explanation

This message is issued when an external CMS utility, *operation*, such as FILESERV has completed. The process or service identified as *service* will be restarted.

## System action

Processing continues.

## User response

No action is required. This message is issued as part of **CATBACKUP EXPORT** processing after the CMS FILESERV utility completes and BKRCATLG is restarted.

---

**BKR9494W**      **Rejecting CATBACKUP args command from source user\_id.**

## Explanation

This message is issued when a **CATBACKUP** command is received from a non-authorized user. *args* indicates the CATBACKUP command arguments. *source* and *user\_id* are the source and user name of the rejected command.

## System action

Processing continues.

## 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 18](#) for more information.

---

**BKR9495I**      **Processing CATBACKUP args command from origin user\_id.**

## Explanation

A **CATBACKUP** command was accepted from a backup administrator or the service virtual machine console. *args* represents additional arguments that are supplied on the **CATBACKUP** 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.

---

**BKR9496W**      **Restore to real DASD is not enabled in BKRSYSTEM CONFIG.**

## Explanation

BKRBKUP received a **RESTORE** command that specifies a DEV (real DASD device) target, but BKR\_Allow\_RealDevice\_Restore = 1 was not defined in BKRSYSTEM CONFIG.

## System action

The **RESTORE** command is rejected.

## User response

**RESTORE** to real DASD devices is disabled by default. To enable this function, define BKR\_Allow\_RealDevice\_Restore = 1 in BKRSYSTEM CONFIG.

---

**BKR9497W**      **Restore to real DASD requires an owner id of SYSTEM; specified owner id is owner.**

## Explanation

A **RESTORE** command to a DEV (real DASD device) target was encountered; the owner ID of the target device was not SYSTEM.

## System action

The **RESTORE** command is rejected.

## User response

Correct the syntax of the affected **RESTORE** command. **RESTORE** to a DEV target requires an owner ID of SYSTEM.

---

**BKR9498W**      **Restore to real DASD rejected: reason.**

## Explanation

This message is issued when **RESTORE** to a DEV (real DASD device) target cannot be performed. *reason* indicates the reason the **RESTORE** operation failed.

## System action

Processing continues.

## User response

Evaluate the reason for failure displayed as *reason* and correct the command syntax or device state, and then retry the **RESTORE** command. Real DASD devices that are used as DEV restore targets must be online to CP but not ATTACHED to SYSTEM. Real DASD RESTORE operations might fail with this warning for a variety of reasons, including the following reasons:

- **CP QUERY** *rdev* non-zero return code
- The target device is not a DASD device
- **CP ATTACH** could not be executed by the worker
- An error response from CP DIAGNOSE x210
- The target DASD device is read-only
- An I/O error occurred while attempting to read the current DASD volume label

---

**BKR9499I**      **Current output DASD label:  
found\_label; validation label:  
check\_label.**

## Explanation

This message is issued during **RESTORE** to a DEV (real DASD device) target to document an existing volume label, *found\_label*, and the verification volume label *check\_label* specified on the **RESTORE** command.

## System action

Processing continues.

## User response

No action is required.

---

**BKR9500W**      **Validation label "SCRATCH"  
specified; output DASD volume  
will be overwritten.**

## Explanation

This message is issued during **RESTORE** to a DEV (real DASD device) target when a verification volume label of SCRATCH was specified.

## System action

Processing continues. DASD volume labels on the target device are ignored.

## User response

No action is required. Use of SCRATCH as a verification label causes the existing DASD volume label on the target device to be ignored. SCRATCH can be used to

bypass target volume label checking when restoring to an uninitialized or unlabeled target DASD device.

---

**BKR9501I**      **Output device validation passed;  
proceeding with restore to real  
DASD device rdev.**

## Explanation

This message is issued during a **RESTORE** to a DEV (real DASD device) target after the device type and volume label validation checks are completed successfully. **RESTORE** to the real device, *rdev*, is about to begin.

## System action

Processing continues.

## User response

No action is required.

---

**BKR9502W**      **CP cp\_command response:  
cp\_response.**

## Explanation

This message is issued when an unexpected response is received from execution of a CP command.

## System action

Varies; if possible, processing of the current job step or service virtual machine command continues.

## User response

Evaluate this message in the context of preceding job log or console message traffic. It is displayed when a CP command, *cp\_command*, did not complete with the expected return code or command output. *cp\_response* contains the actual response text.

---

**BKR9503W**      **No job/instance pairs matching  
jobname\_mask instance\_mask  
were found in the backup catalog.**

## Explanation

This message is issued when no job name/instance pairs that match the indicated values are found in the backup catalog file space. *jobname\_mask* and *instance\_mask* can be CMS **LISTFILE** compatible wildcard expressions.

## System action

**SET EXPIRE** completes without changing job/instance expiration information.

## User response

Correct the syntax of **SET EXPIRE** and retry the command. *jobname\_mask* can be an exact job name or a wildcard expression. *instance\_mask* can be an exact instance value or a wildcard expression. Wildcard expressions must be compatible with the specifications used by the CMS **LISTFILE** command.

---

**BKR9504W**      **No files were selected for restore.**

## Explanation

This message is issued when file-level restore processing completes and no objects are restored due to the wildcard filter specifications.

## System action

Processing continues.

## User response

No action required.

---

**BKR9505I**      *start\_or\_end* of **RESTORE** job *n* submitted by *id* on *timestamp*.

## Explanation

This message indicates the start (or end) of the specified **RESTORE** job that was submitted by *id* at the indicated time.

## System action

Processing continues.

## User response

No action required.

---

**BKR9506E**      *value1* Invalid value for parameter *parameter* (value is *value2*).

## Explanation

An invalid value was specified for the parameter *parameter*.

## System action

Processing continues.

## User response

Specify a valid value for the parameter.

---

**BKR9507W**      **&1 Tape Manager interface has been enabled in BKRSYTM CONFIG, but the required file TAPCMD MODULE could not be found.**

## Explanation

The product was unable to locate the required TAPCMD MODULE file.

## System action

Processing continues.

## User response

Contact IBM Software Support.

---

**BKR9508E**      *mount\_mode* - mount mode must be either **RO** or **RW**; found *mode*.

## Explanation

The *mount\_mode* is not **RO** or **RW**.

## System action

Processing continues.

## User response

Contact IBM Software Support.

---

**BKR9509I**      **Mount requested for volume *volume* at *position*, file *file*. This volume is already mounted on virtual device *device*. The previous position was *position*.**

## Explanation

The volume is already mounted on the specified device.

## System action

Processing continues.

## User response

No action is required.

---

**BKR9510I**      **Volume positioned to start of file *file*.**

## Explanation

This message notifies you that the volume was positioned to the beginning of the specified file.

## System action

Processing continues.

## User response

No action is required.

---

**BKR9511E** Impossible value *value* for mount offset.

## Explanation

An invalid value was encountered for the mount offset.

## System action

Processing continues.

## User response

Contact IBM Software Support.

---

**BKR9512I** Please mount SL tape volume *volume* in *mode mode*, virtual address *address* for user *user*. (Request *nnn* of *nnn*).

## Explanation

This message indicates that specified tape volume for the user, must be mounted.

## System action

Processing continues.

## User response

Mount the specified tape volume for the specified user.

---

**BKR9513I** Waiting for volume *volume* on virtual device *device*, attempt *nnn* of *nnn* at *location*.

## Explanation

Backup and Restore Manager is waiting for the specified volume.

## System action

Processing continues.

## User response

No action is required.

---

**BKR9514W** Mount for volser *volser* failed: wait limit exceeded.

## Explanation

The mount operation for the specified volser was not successful.

## System action

Processing stops.

## User response

Examine accompanying error messages and attempt to resolve the error. If the problem persists, contact your system programmer or IBM Software Support.

---

**BKR9515E** Return code *rc* from DIAG210 inspection of drive *drive*.

## Explanation

The product encountered the return code *rc* when inspecting the specified drive.

## System action

Processing stops.

## User response

Contact IBM Software Support.

---

**BKR9516I** Received device *device*.

## Explanation

The specified device was received.

## System action

Processing continues.

## User response

No action is required.

---

**BKR9517E** Mount failure: Volume was requested in *request\_mode mode*, but was received in *received\_mode mode*.

## Explanation

The volume was received in *received\_mode* mode and could not be mounted because the requested mode is *request\_mode*.

## System action

Processing stops.

## User response

Examine accompanying error messages and attempt to resolve the error. If the problem persists, contact your system programmer or IBM Software Support.

---

**BKR9518E**      **VOL1 label check failed; CMS TAPE return code *rc*.**

## Explanation

The VOL1 label check failed. The return code is *rc*.

## System action

Processing stops.

## User response

Examine accompanying error messages and attempt to resolve the error. If the problem persists, contact your system programmer or IBM Software Support.

---

**BKR9518I**      **TAPE reply: *reply*.**

## Explanation

This message provides the tape reply.

## System action

Processing continues.

## User response

No action is required.

---

**BKR9519I**      **Positioning volume *volume* on device *device* to file *file*.**

## Explanation

The volume is being positioned to the specified file on the device *device*.

## System action

Processing continues.

## User response

No action is required.

---

**BKR9520E**      **Mount failure: "TAPE FSF &1 ( &2" return code *rc*.**

## Explanation

This message indicates a tape mount failure.

## System action

Processing stops.

## User response

Examine accompanying error messages and attempt to resolve the error. If the problem persists, contact your system programmer or IBM Software Support.

---

**BKR9521W**      **&1 is undefined. Using default value *value*.**

## Explanation

The specified value was not defined. Backup and Restore Manager is using the default value of *value*.

## System action

Processing continues.

## User response

No action is required.

---

**BKR9522I**      **VOL1 label data for volume *volume* updated with expiration date *date*.**

## Explanation

The label data for the specified volume was updated with the expiration date *date*.

## System action

Processing continues.

## User response

No action is required.

---

**BKR9523I**      **New scratch volume *volume* cataloged.**

## Explanation

The specified scratch volume was cataloged.

## System action

Processing continues.

## User response

No action is required.

---

**BKR9524I**      **Successful SL mount: Volume  
volume positioned at location.**

## Explanation

The specified volume was successfully positioned at *location*.

## System action

Processing continues.

## User response

No action required.

---

**BKR9525E**      **Mount failure: Requested volume  
requested\_volume, found volume  
volume.**

## Explanation

The requested volume was not found. The mount operation was not successful.

## System action

Processing stops.

## User response

Examine accompanying error messages and attempt to resolve the error. If the problem persists, contact your system programmer or IBM Software Support.

---

**BKR9526W**      **User *user* is not listed as a worker  
in BKRUSERS NAMES. SCRATCH  
mount will not be cataloged.**

## Explanation

Because the specified user is not listed as a worker in the BKRUSERS NAMES file, Backup and Restore Manager will not catalog the SCRATCH mount operation.

## System action

Processing continues.

## User response

No action is required.

---

**BKR9530E**      **&1: CREATE DIRECTORY return  
code *rc* on attempt to create &3  
&4 . Unable to catalog SCRATCH  
mount. Check availability and &5  
permissions for catalog *catalog*.**

## Explanation

The **CREATE DIRECTORY** command encountered an error when attempting to create the specified directory.

## System action

Processing stops.

## User response

Examine accompanying error messages and attempt to resolve the error. If the problem persists, contact your system programmer or IBM Software Support.

---

**BKR9531W**      **Tape positioning via BKRTLOC  
failed, rc *rc*. Retrying via TAPE  
REW / TAPE FSF method.**

## Explanation

The tape positioning using BKRTLOC was not successful. The product is retrying the operation through the TAPE REW/TAPE FSF method.

## System action

Processing continues.

## User response

No action is required.

---

**BKR9532W**      **Tape channel block ID data not  
available; Positioning via TAPE  
REW / TAPE FSF method.**

## Explanation

The product is positioning using the TAPE REW / TAPE FSF method.

## System action

Processing continues.

## User response

No action is required.

---

**BKR9533I** Requesting volume *volume &2*, virtual device *device*, at *location*.

**Explanation**

The volume *volume*, virtual device at *location*, is being requested.

**System action**

Processing continues.

**User response**

No action is required.

---

**BKR9534I** Expedited restore: tape dismount signaled by caller.

**Explanation**

The tape dismount operation was signaled by the caller.

**System action**

Processing continues.

**User response**

No action is required.

---

**BKR9535I** Expedited restore: tape dismount bypassed.

**Explanation**

The tape dismount operation was bypassed.

**System action**

Processing continues.

**User response**

No action is required.

---

**BKR9536I** Processing dismount for volume *volume*.

**Explanation**

The product is processing the dismount for the specified volume.

**System action**

Processing continues.

**User response**

No action is required.

---

**BKR9537E** Dismount error: TAPE REW ( &1 return code *rc*

**Explanation**

The product encountered an error when performing a dismount operation. The return code is provided.

**System action**

Processing stops.

**User response**

Examine accompanying error messages and attempt to resolve the error. If the problem persists, contact your system programmer or IBM Software Support.

---

**BKR9538I** Processing dismount: releasing SCRATCH volume *volume*.

**Explanation**

The product is releasing the specified SCRATCH volume.

**System action**

Processing continues.

**User response**

No action is required.

---

**BKR9539I** Dismount: retaining device *device* until idle timeout expires.

**Explanation**

The device is being retained until the idle timeout expires.

**System action**

Processing continues.

**User response**

No action is required.

---

**BKR9540W** Dismount requested for volume *volume\_1*, but found volume *volume\_2*.

## Explanation

A dismount operation was requested for *volume\_1*, but another volume was found instead.

## System action

Processing continues.

## User response

No action required.

---

**BKR9541W** Invalid job-level *level* tape pool override values: *values*

## Explanation

Invalid job-level tape pool override values were found.

## System action

Processing continues.

## User response

No action is required.

---

**BKR9542I** Non-default tape *tape* pool override has been specified for the current job: *job*.

## Explanation

This message indicates that the specified non-default tape pool override was specified for the current job *job*.

## System action

Processing continues.

## User response

No action is required.

---

**BKR9543W** *&1* is ignored for read-only mount requests.

## Explanation

## System action

Processing continues.

## User response

No action is required.

---

**BKR9544W** No value set for *&1*.

## Explanation

## System action

Processing continues.

## User response

No action is required.

---

**BKR9545W** Object met filter criteria, but is not a base file: *&1*.

## Explanation

## System action

Processing continues.

## User response

No action is required.

---

**BKR9546I** End-of-volume reached; requesting next *volume* volume...

## Explanation

The end of the volume was reached. The next specified volume is being requested.

## System action

Processing continues.

## User response

No action is required.

---

**BKR9547I** New *&1* volume is *&2*.

## Explanation

## System action

Processing continues.

## User response

No action is required.

---

**BKR9548W** Mount request failed; retry is *&1*.

## Explanation

## System action

Processing continues.

## User response

---

**BKR9549W**      **&1 - User *user* is not listed as a worker in BKRUSERS NAMES EOV chain entry will not be cataloged.**

## Explanation

The specified user is not listed as a worker in the BKRUSERS NAMES file. The end of volume chain entry will not be cataloged.

## System action

Processing continues.

## User response

No action is required.

---

**BKR9550I**      **&1 - EOV Handling: Base volume *base\_volume* is chained to *tovol*.**

### Explanation:

This is an informational message the lists the base volume and volume to which it is chained.

### System action:

Processing continues.

### User response:

No action is required.

---

**BKR9551I**      **Notice: The original VOL1 label has been overwritten by DDR-format output. This is normal behavior for DDR-format backup operations. The original VOL1 label was "*volser*". After expiration, this volume must be relabeled.**

## Explanation

This message is issued during tape volume dismount processing when the following conditions occur:

- The **DDRTAPE** output handler is active.
- Job template parameter **DDRTAPE\_Preserve\_Label** is set to FALSE.
- The volume being dismounted belongs to a multi-volume set of DDR-format tapes.

Under these conditions, DDR-format multi-volume tape backups are created in a manner compatible with older versions of the z/VM DDR (DASD Dump Restore)

utility. Older versions of z/VM DDR do not allow SL tape volume labels as part of a multi-volume set.

### System action:

Job processing continues.

## User response

No action is required. You may want to make note of tape volumes identified by volume label *volser* in this message if, after the backup expires, tape management practices require additional steps to write a new SL volume label on affected volumes.

---

**BKR9552W**      ***MountExit: MountParameter* is ignored for *MountType* mounts.**

## Explanation

This message is issued when a tape handling routine (*MountExit*) encounters a parameter (*MountParameter*) that does not apply or is not relevant to the current mount operation (*MountType*).

### System action:

Job processing continues. Tape management options that do not apply to some scenarios, such as situations where a non-null value has been defined for EUM\_Mount\_Parms but the mount request is for a read-only volume, have no effect on volume status.

### User response:

No action is required.

---

**BKR9553W**      ***MountExit: MountParameter* has not been set.**

## Explanation

This message is issued when a tape handling routine (*MountExit*) encounters an undefined parameter (*MountParameter*) that was expected to be defined.

### System action:

Job processing continues.

### User response:

Verify tape management parameters in BKRSYSTEM CONFIG and the job template associated with this message are defined in a manner consistent with customer tape management requirements. As long as the default settings in the customer tape management system are satisfactory, this message may be ignored.

---

**BKR9554E**      ***MountExit: Return code "rc" from CMS\_Command.***

### Explanation:

This message is issued when a tape handling routine (*MountExit*) encounters an unexpected return code (*rc*) upon execution of a CMS command (*CMS\_Command*). Message 9554E is commonly associated with non-zero

return codes from TAPCMD MODULE, the command-line interface to IBM Tape Manager for z/VM.

**System action:**

Mount processing terminates with a return code of *rc* (i.e. the TAPCMD return code).

**User response:**

Diagnosis should be based on the non-zero return code from TAPCMD. To review a list of return codes for TAPCMD, refer to the *IBM Tape Manager for z/VM User's Guide* on the IBM Knowledge Center (<https://www.ibm.com/support/knowledgecenter/>). Contact your system programmer or IBM Software Support for additional assistance.

---

**BKR9555W**      **Restore created an unresolved alias.**  
**Original alias:** *orig\_fn orig\_ft pool:space.path.to.alias*  
**Original base:** *base\_fn base\_ft pool:space.path.to.base*  
**The base object does not exist, or its permissions do not allow the alias to be restored to specified destination.**

**Explanation:**

This message is issued during SFS RESTORE processing when restore of an SFS **alias** object takes place and the associated **base** object does not exist, or the user executing the restore operation does not have file pool permission to interact with the base object.

**System action:**

An unresolved alias has been created. SFS restore operations continue.

**User response**

No action is required.

If the corresponding base file does not exist or permissions do not allow access, RESTORE will create an unresolved alias. The unresolved alias may be resolved by a later operation if the base file is opened with DMSOPBLK RESOLVE. For additional information, refer to descriptions of DMSCRALI and DMSOPBLK in the *z/VM CMS Callable Services Reference (SC24-6072)*, and/or the topic "Using SFS Unresolved Aliases" in the *z/VM CMS File Pool Planning, Administration and Operation (SC24-6167)*. Both of these documents can be accessed through the IBM Knowledge Center at <https://www.ibm.com/support/knowledgecenter/>.

---

**BKR9556E**      **EDF block size mismatch. Source files are from a *Source\_Blocksize* byte block size minidisk. Destination minidisk format uses block size *Dest\_Blocksize*. Retry**

**using a compatible destination or RDR.**

**Explanation:**

During a restore-to-minidisk operation, the CMS EDF file system block size for the file being restored does not match the block size of the destination file system. File-level restore operations require that the source and destination file systems be formatted with the same block size.

**System action:**

The restore task terminates. If the current job contains multiple restore tasks, job processing continues with the next task.

**User response:**

Retry the restore operation specifying a destination minidisk formatted at the same EDF block size. When minidisk files are restored to an SFS directory, the source minidisk must be formatted with an EDF block size of 4K (4,096 bytes). If a suitable destination minidisk is not available, files can be restored to the client's RDR and loaded to minidisk via the CMS "RECEIVE" command.

---

**BKR9557E**      **Insufficient free space on restore destination. *Blocks\_Needed* blocks required; *Blocks\_Free* blocks available.**

**Explanation:**

During a restore-to-minidisk operation, RESTORE task processing determined that the destination minidisk or SFS directory does not have sufficient free space available to accommodate results of the restore operation. *Blocks\_Needed* identifies the number of available EDF data blocks required to handle the restore. *Blocks\_Free* represents the number of free EDF data blocks available on the destination minidisk.

**System action:**

The restore task terminates. If the current job contains multiple restore tasks, job processing continues with the next task.

**User response:**

Retry the restore operation specifying a CMS EDF-format minidisk or SFS directory with sufficient free space available, or restore to CP system spool space by specifying a RDR destination.

---

**BKR9558W**      **Source minidisk *Mdisk\_Owner Mdisk\_Vdev* contained 0 files when backed up.**

**Explanation:**

A RESTORE operation was invoked to restore files from a CMS EDF-format minidisk that was empty at time of backup.

**System action:**

Job processing continues. If the destination minidisk is unformatted and restore options cause it to be initialized by the CMS FORMAT command, the destination minidisk will be formatted to the same specifications (EDF block size and minidisk label) as the source minidisk. *Mdisk\_Owner* and *Mdisk\_Vdev* identify the original minidisk owner and virtual device number being restored.

**User response:**

No action required.

---

**BKR9559W**      **Destination minidisk *Mdisk\_Owner* *Mdisk\_Vdev* is being formatted prior to restore; CMS EDF block size *EDF\_Blocksize*, label "*Mdisk\_Label*"; Used/Max = *Blocks\_Used/Blocks\_Max*.**

**Explanation**

A RESTORE option was invoked to restore data from a CMS EDF-format minidisk. RESTORE options either require the destination minidisk to be initialized via the CMS FORMAT command prior to restoration of files, or the destination minidisk has not yet been initialized by the CMS FORMAT command and RESTORE options allow the destination to be initialized if necessary.

The following variables are in this message:

**Mdisk\_Owner**

Identifies the original owner id.

**Mdisk\_Vdev**

Identifies the original virtual device number.

**EDF\_Blocksize**

Specifies the CMS EDF files system block size of the source minidisk.

**Mdisk\_Label**

Specifies the minidisk volume label of the source minidisk.

**Blocks\_Used**

Indicates the number of EDF file system blocks in use on the source minidisk at time of backup.

**Blocks\_Max**

Indicates the maximum number of EDF file system blocks in the original EDF file system.

**System action:**

The destination minidisk is reinitialized via the CMS FORMAT command.

**User response:**

No action is required.

---

**BKR9560W**      **Unable to locate configuration files, reason: *ConfigFailReason*.**

**Explanation**

The BKRSTART service virtual machine initialization tool encountered a problem while trying to locate essential product configuration data. *ConfigFailReason* identifies the problem. Possible values for *ConfigFailReason* are:

**SFS ACCESS failed, rc ##**

The CMS **ACCESS** command failed with return code ## while trying to access an SFS directory.

**CP LINK failure, rc ##**

The CP **LINK** command failed with return code ##

**ACCESS error, rc ##**

The CP **LINK** command failed with return code ##.

**BKRUSERS NAMES not found**

Configuration file BKRUSERS NAMES could not be found or read.

**BKRSYSTEM CONFIG not found**

Configuration file BKRSYSTM CONFIG could not be found or read.

**System action:**

Service virtual machine initialization terminates.

**User response**

Diagnosis should be guided by the reason displayed as *ConfigFailReason*. Your action varies based on the reason.

- SFS ACCESS or CP LINK failures are commonly triggered by using an invalid SFS directory or minidisk definition in startup parameters.
- ACCESS or LINK failures may also indicate a condition where the service virtual machine does not have the privileges required to interact with an SFS resource or a minidisk.
- “BKRUSERS NAMES not found” or “BKRSYSTEM CONFIG not found” reasons may indicate a problem with minidisk or SFS permissions, an incorrect minidisk or SFS directory location for the associated file, or situations where a required file is not present.

If the problem persists, contact your system programmer or IBM Software Support for assistance.

---

**BKR9561I**      **Using explicit directory override for work area: *Workarea\_Path***

**Explanation**

The BKRSTART service virtual machine initialization tool displays this message when the default temporary / scratch data svm work area is overridden by settings in BKRSYSTM CONFIG. Customers can override the default svm work area by defining an

explicit work area setting in BKRSYSTEM CONFIG. For example,

```
BKR_Startup_Workarea.BKRCATLG =
MYPOOL: BKRCATLG.WORKAREA
```

will force the BKRCATLG svm to use SFS directory MYPOOL: BKRCATLG.WORKAREA as the location of its temporary files.

*Workarea\_Path* identifies the SFS directory specified in the override.

**Note:** The service virtual machine must have sufficient permissions to access the SFS directory or minidisk identified in the override, and the resource must be online and available during svm initialization.

**System action:**

Service virtual machine initialization continues.

**User response:**

No action is required.

**BKR9562I**      **Service virtual machine initialization parameters:**  
**Configuration file location:**  
*Config\_Location*  
**SVM Runtime component files:**  
*SVM\_Runtime\_Location*  
**Client-side component files:**  
*Client\_Tools\_Location*  
**Backup job template files:**  
*Templates\_Location*  
**Tape Manager interface:**  
*TapeManager\_Location*  
**SVM temporary scratch files:**  
*Workarea\_Location*

**Explanation**

The BKRSTART service virtual machine initialization tool displays this message after service virtual machine start-up resources have been processed and basic configuration attributes have been determined. Each of the *...\_Location* values identifies the SFS directory path or CMS minidisk location of a required file or set of required files.

BKRSTART has been updated to clarify messaging to ensure actions to be taken are clear. With this change, information displayed via line 6 (Tape Manager interface) of message 9562I will vary according to the following conditions:

1. When BKRSYSTEM CONFIG settings are defined such that **Tape\_Handled\_Via\_EUM** is ENABLED, and *no value is set* for **BKR\_Startup\_TapeManager**, BKRSTART will search the current CMS environment for TAPCMD MODULE and report details. The possible variations of line 6 for this case are:

- BKRSTA9562I Tape Manager interface: BKR\_Startup\_TapeManager not defined in BKRSYSTEM CONFIG; found TAPCMD MODULE *<fm>* on minidisk *<vdev>*
- BKRSTA9562I Tape Manager interface: BKR\_Startup\_TapeManager not defined in BKRSYSTEM CONFIG; found TAPCMD MODULE *<fm>* in SFS directory *<path>*
- BKRSTA9562I Tape Manager interface: BKR\_Startup\_TapeManager not defined in BKRSYSTEM CONFIG; TAPCMD MODULE not found.

**Note:** For the last variation, the second-stage initialization will fail with message 9232E, "Tape manager interface TAPCMD MODULE was not found on any accessed minidisk or directory."

Where:

- The *<fm>* variable indicates the CMS filemode letter and number (e.g. "Y2") for the first copy of TAPCMD MODULE encountered in the CMS search order.
- The *<vdev>* variable indicates a CMS minidisk.
- The *<path>* variable indicates a CMS SFS directory.

Note that for the last variation (Tape\_Handled\_Via\_EUM is ENABLED, BKR\_Startup\_TapeManager is undefined, and TAPCMD MODULE cannot be found), second-stage initialization will fail with message 9232E, "Tape manager interface TAPCMD MODULE was not found on any accessed minidisk or directory."

2. When **Tape\_Handled\_Via\_EUM** is ENABLED, and a value is defined for **BKR\_Startup\_TapeManager**, BKRSTART will report the value specified for **BKR\_Startup\_TapeManager**:

```
BKRSTA9562I Tape Manager interface:
<location>
```

Where *<location>* represents a CMS minidisk or an SFS directory path, as defined in BKRSYSTEM CONFIG.

**Note:** The initialization process for the second-stage service virtual machine will check for the availability of TAPCMD MODULE. If not found, initialization will fail with message 9232E. This is consistent with current behavior.

3. When **Tape\_Handled\_Via\_EUM** is DISABLED, the condition will be reported on line 6 as:

```
BKRSTA9562I Tape Manager interface: Not
enabled in BKRSYSTEM CONFIG
```

Additionally, when **Tape\_Handled\_Via\_EUM** is DISABLED, any value defined in BKRSYSTEM

CONFIG for **BKR\_Startup\_TapeManager** will be ignored.

**System action:**

Service virtual machine initialization continues.

**User response:**

No action is required.

---

**BKR9563W**      **BKRSTART EXEC not found on SVM runtime file system at file mode *mode*. Continuing with SVM initialization.**

**Explanation**

This message is issued when BKRSTART is unable to find a copy of BKRSTART EXEC on the minidisk or SFS directory that contains runtime components shared among all Backup and Restore Manager service virtual machines. BKRSTART normally executes from a copy placed on the service virtual machine A-disk (or equivalent SFS directory). During initialization, BKRSTART checks for an updated copy of BKRSTART EXEC on the SVM runtime file system. If an updated copy is found on the runtime minidisk or directory, the copy on file mode A is replaced and the service virtual machine restarts.

The *mode* variable in this message represents the file mode, which is normally "A".

**System action:**

SVM initialization continues.

**User response:**

No action is required. However, you may want to review the status of the PTF installation to ensure that BKRSTART EXEC and other runtime components have been correctly updated during the service process.

---

**BKR9564W**      **A different version of BKRSTART EXEC was found on the SVM runtime file system. Attempting to update private copy on file mode A.**

**Explanation:**

This message is issued when BKRSTART determines the primary copy of BKRSTART EXEC (located on the minidisk or SFS directory that contains runtime components shared among all Backup and Restore Manager service virtual machines) differs from the copy on the service virtual machine's A-disk.

**System action:**

BKRSTART will attempt to copy the new version to file mode A, and then reset the virtual machine to initialize with the updated version of BKRSTART EXEC.

**User response:**

No action is required.

---

**BKR9565W**      **Private copy of BKRSTART EXEC A replaced. Issuing SET CONCEAL ON. Restarting in 1 minute.**

**Explanation**

The private copy of BKRSTART EXEC on the svm's A-disk was replaced because a new version was detected on the shared SVM runtime minidisk.

This message will be issued if the PTF installation process updates the primary copy of BKRSTART EXEC located on the minidisk or SFS directory which contains runtime components shared among all Backup and Restore Manager service virtual machines.

**System action:**

The service virtual machine will issue CP SET CONCEAL ON, pause for one minute, and then reset itself. This triggers a reinitialization using the updated copy of BKRSTART EXEC.

**User response:**

No action is required.

---

**BKR9566E**      **SVM restart failed. Update BKRSTART EXEC manually.**

**Explanation**

The private copy of BKRSTART EXEC on the svm's A-disk was replaced because a new version was detected on the shared SVM runtime minidisk. Efforts to restart the service virtual machine with the new copy of BKRSTART EXEC in place failed.

To force a re-IPL of CMS, BKRSTART issues CP SET CONCEAL ON, pauses for one minute, and then issues CP SYSTEM CLEAR. This sequence of events is expected to reinitialize the service virtual machine using any IPL parameters that were in effect during the initial IPL.

**System action:**

SVM initialization terminates with return code 32.

**User response:**

Customers should attempt to determine why the reinitialization failed or contact IBM Software Support.

---

**BKR9567E**      **COPYFILE BKRSTART EXEC source\_fm = A (OLDDATE REPLACE TYPE failed with return code COPYFILE\_rc. Update BKRSTART EXEC A manually.**

**Explanation:**

The private copy of BKRSTART EXEC on the svm's A-disk is refreshed via the CMS COPYFILE command. This message indicates that COPYFILE terminated with an unexpected return code, and that the private copy of BKRSTART EXEC could not be replaced.

**System action:**

Service virtual machine initialization continues, using the original version of BKRSTART EXEC.

**User response:**

Attempt to manually refresh the private copy of BKRSTART EXEC from the minidisk or SFS directory that contains the primary copies of SVM runtime components shared by all Backup and Restore Manager service virtual machines. If the problem persists, contact your system programmer or IBM Software Support.

---

**BKR9568E**      **Return code *Set\_Lang\_RC* from SET LANG (ADD BKR USER Unable to load message repository.**

**Explanation:**

The CMS "SET LANGUAGE" command exited with an abnormal return code during an attempt to load the BKR message repository. *Set\_Lang\_RC* is the return code from SET LANGUAGE.

**System action**

The issuing routine terminates. The final return code is the CMS "SET LANGUAGE" return code.

**User response:**

Verify that the message repository file (BKRUME TEXT) is available and retry the operation. If the problem persists, contact your system programmer or IBM Software Support.

---

**BKR9569E**      **Return code *ACCESSMO\_rc* from ACCESSMO ON.**

**Explanation:**

The CMS "ACCESSMO" command exited with an abnormal return code. *ACCESSMO\_rc* is the return code from ACCESSMO.

**System action:**

The issuing routine terminates. The final return code is the CMS "ACCESSMO" return code.

**User response:**

Verify that ACCESSMO MODULE is available and retry the operation. If the problem persists, contact your system programmer or IBM Software Support.

---

**BKR9570I**      ***AdminID* is a backup administrator. Ready for work.**

**Explanation:**

BKRSTART has determined that the invoking user is the primary Backup Administrator. The CMS environment has been configured for work as a Backup Administrator.

**System action:**

BKRSTART exits with return code 0.

**User response:**

No action is required.

---

**BKR9571E**      ***UserID* has no defined role.**

**Explanation:**

BKRSTART was invoked by a user not listed in BKRUSERS NAMES or BKRSYSTEM CONFIG. This message is issued when contents of BKRSYSTEM CONFIG and BKRUSERS NAMES do not imply a role as a service virtual machine or a backup administrator for the user that executed BKRSTART.

**System action:**

BKRSTART exits with return code 8.

**User response:**

No action is required.

---

**BKR9572I**      ***UserID* is defined as a *SVM\_Role* service virtual machine.**

**Explanation**

BKRSTART has determined that the current user, *UserID*, should be configured in a specific role.

*SVM\_Role* is one of the following:

- primary backup server
- backup catalog server
- backup worker server
- backup administrator; ready for work

These roles correspond to settings defined in BKRSYSTEM CONFIG and BKRUSERS NAMES.

**System action:**

Once the CMS environment is appropriately configured, BKRSTART will execute the appropriate service virtual machine procedure. If *UserID* is the primary backup administrator, BKRSTART terminates with return code 0.

**User response:**

No action is required.

---

**BKR9573I**      **Starting main routine *SVM\_Routine*.**

**Explanation**

BKRSTART has determined that the current user is configured for use as a Backup and Restore Manager service virtual machine. Possible values for *SVM\_Routine* are the following:

- BAKSRVR EXEC
- CATSRVR EXEC
- WRKSRVR EXEC.

**System action:**

The primary service virtual machine routine *SVM\_Routine* will be invoked to perform functions for a specific role.

**User response:**

No action is required.

---

**BKR9574I** *SVM\_Routine terminated, return code SVM\_rc.*

**Explanation**

Role-specific service virtual machine operations have been terminated and control has returned to BKRSTART EXEC. The following variables are in this message:

**SVM\_Routine**

Identifies the service virtual machine routine that just terminated.

**SVM\_rc**

Indicates the final return code.

**System action:**

Service virtual machine termination processing continues

**User response:**

No action is required.

---

**BKR9575E** *Error attempting to access FM\_Role files on FM\_Source as FM\_Letter. ACCESS return code Access\_RC.*

**Explanation**

BKRSTART uses the CMS **ACCESS** command while configuring the CMS runtime environment. The variables listed in the message indicate the following:

- **ACCESS** terminated with an unexpected return code, *Access\_RC*.
- *FM\_Role* identifies the role or resource being processed.
- *FM\_Source* identifies the minidisk or SFS directory involved.
- *FM\_Letter* is the CMS file mode letter used on the **ACCESS** command.

**System action:**

Service virtual machine initialization terminates. The final return code is the CMS **ACCESS** return code.

**User response:**

Attempt to determine why the **ACCESS** command failed and retry the operation. If the problem persists, contact your system programmer or IBM Software Support

---

**BKR9576I** *SVM termination: main routine return code SVM\_rc.*

**Explanation:**

BKRSTART has entered common service virtual machine termination processing. *SVM\_rc* is the return code of the primary service virtual machine role routine.

**System action:**

If the virtual console is disconnected (for example, if the service virtual machine was started via CP XAUTOLOG or disconnected via the CP DISCONN command), the service virtual machine will issue CP LOGOFF to complete termination. If the virtual console is not disconnected, BKRSTART will exit to the calling routine or a CMS "Ready;" prompt.

**User response:**

No action is required.

---

**BKR9577I** *Virtual console is disconnected; logging off*

**Explanation:**

BKRSTART service virtual machine termination is complete, and the virtual console is disconnected.

**System action:**

A CP LOGOFF command will be issued to terminate the virtual machine.

**User response:**

No action is required.

---

**BKR9578E** *DMSQLIMU return code QLU\_rc, reason QLU\_reason. Unable to extract filepool:filepace enrollment info. Confirm file pool server is active and this user is enrolled.*

**Explanation**

BKRSTART uses CSL routine DMSQLIMU to obtain SFS file space user limits. This message is displayed when a call to DMSQLIMU returns abnormal / unexpected results. The following variables are in this message:

- *QLU\_rc* and *QLU\_reason* are the DMSQLIMU return code and reason code.
- *Filepool:filepace* identifies the SFS file pool server and file space associated with the DMSQLIMU call.

**System action:**

Service virtual machine initialization terminates. The final return code is the DMSQLIMU reason code.

**User response:**

This message typically indicates that the user is not enrolled in the associated SFS file pool (*filepool*), or that the SFS file pool server is not available for connections. DMSQLIMU responses returned as *QLU\_rc* and *QLU\_Reason* are documented in the *z/VM CMS Callable Services Reference (SC24-6072)*. If the problem cannot be resolved based on this information,

contact your system programmer or IBM Software Support for assistance.

---

**BKR9579E**      **DISKPOOL media cleanup could not be completed. Refresh\_Accessed\_Filemode result was "Refresh\_RC"**

**Explanation:**

During error recovery operations for a failed backup job task, efforts to re-ACCESS a minidisk or SFS directory resulted in an unexpected return code.

**System action:**

Error recovery processing continues.

**User response:**

No action is required. This message may indicate problems with the CMS file system for a DISKPOOL minidisk, or loss of communication between a backup worker service virtual machine and an SFS file pool server. If the problem persists, contact your system programmer or IBM Software Support for assistance.

---

**BKR9580E**      **Lost connection to resource previously accessed at file mode FM\_Letter. Job terminated due to severed SFS file pool connection. Check status of associated SFS file pool servers before restarting job.**

**Explanation:**

During error recovery operations for a failed backup job task, efforts to re-ACCESS an SFS directory resulted in an unexpected return code. This message indicates an unexpected loss of communication between a backup worker service virtual machine and an SFS file pool server configured as the repository for temporary/scratch files during batch job execution.

**System action:**

A diagnostic dump of the job environment is issued, and the job terminates with return code 32.

**User response:**

Attempt to determine why communications between the worker and the file pool were severed. If the problem cannot be resolved, contact your system programmer or IBM Software Support.

---

**BKR9581W**      **Rejecting SVM\_Command command from CMD\_Source CMD\_Requestor.**

**Explanation:**

A service virtual machine command, *SVM\_Command*, received from *CMD\_Source CMD\_Requestor* has been rejected because the user listed as *CMD\_Requestor* is not authorized to issue the command.

**System action:**

The command is rejected. SVM operations continue.

**User response:**

No action is required. If the user identified as *CMD\_Requestor* is intended to be authorized to issue the command, verify the user is listed in an appropriate role in BKRUSERS NAMES.

---

**BKR9582I**      **Processing SVM\_Command command from CMD\_Source CMD\_Requestor.**

**Explanation**

A service virtual machine command, *SVM\_Command*, received from *CMD\_Source CMD\_Requestor* has been accepted for execution.

**System action:**

The SVM command is executed. SVM operations continue.

**User response:**

No action is required.

---

**BKR9583W**      **Syntax error in command "Command\_String"**

**Explanation:**

The SVM command, *Command\_String*, was recognized, but the syntax of the provided arguments was invalid.

**System action:**

The SVM command is rejected. SVM operations continue.

**User response:**

Correct the command syntax and retry.

---

**BKR9584I**      **Syntax: QUERY VOID jobname instance**

**Explanation**

The primary backup service virtual machine (BKRBACKUP) received a QUERY VOID command with no additional arguments. This message is issued when there is a need to correct the syntax for QUERY VOID. To check VOID status of all job instances, execute the following command:

```
QUERY VOID * *
```

**System action:**

The SVM command is rejected. SVM operations continue.

**User response:**

Retry the operation with valid syntax.

---

**BKR9585I**      **Job instance jobname instancevoidstatus voided.**

## Explanation

This message is issued in response to a QUERY VOID command. The following variables are in this message:

- *Jobname* identifies a backup job name.
- *Instance* is a specific instance number.
- *Voidstatus* is a text string that indicates whether the jobname and instance **are** or **are not** voided.

### System action:

Processing continues.

### User response:

No action is required.

---

**BKR9586I**      **Syntax: VOID *jobname instance***

### Explanation:

The primary backup service virtual machine (BKRBKUP) received a VOID command with incorrect arguments. This message is issued when there is a need to correct the syntax for the VOID command.

### System action:

SVM operations continue.

### User response:

Correct the command syntax and retry.

---

**BKR9887I**      **Syntax: UNVOID *jobname instance***

### Explanation:

The primary backup service virtual machine (BKRBKUP) received a UNVOID command with incorrect arguments. This message is issued when there is a need to correct the syntax for the UNVOID command.

### System action:

SVM operations continue.

### User response:

Correct the command syntax and retry.

---

**BKR9588W**      **Return code *CMD\_rc*; Command command did NOT complete normally.**

### Explanation:

An internal routine generated an unexpected result while processing command *Command*. The *CMD\_rc* is the return code or reason received during command processing.

### System action:

The operation fails. SVM execution proceeds.

### User response:

If the problem persists, consult your system programmer or IBM Software Support.

---

**BKR9589W**      **Job *void\_jobname*, instance *void\_instance* is marked void; new catalog entry ignored.**

## Explanation

This message is displayed when an attempt is made to insert new information into the backup catalog for a backup job and instance that has been voided. Voided job instances are not eligible for insertion in the backup catalog file space.

This message is normally issued when a backup job has been cancelled with the “DELETECAT” option, and new catalog entries are queued on BKRCATLG’s virtual RDR. Entries queued on BKRCATLG for asynchronous insertion in the backup catalog file space are discarded once a job instance has been declared void. This behavior allows for immediate cancellation of a job without requiring additional catalog information cleanup by the backup administrator.

VOID status for any specific job instance automatically expires 24 hours from the initial CANCEL ... ( DELETECAT operation. VOID status can be removed immediately via the BKRBKUP “UNVOID” command.

### System action:

The entry is rejected and discarded.

### User response:

No action is required.

---

**BKR9590W**      **Job *void\_jobname*, instance *void\_instance* is marked void; job execution terminated.**

## Explanation

This message is displayed when a backup worker (BKRWRK##) service virtual machine encounters a queued batch job for a job instance that has been voided. Voided job instances are not eligible for backup execution.

This message is normally issued when a backup job has been cancelled with the “DELETECAT” option, and part of that job has been queued on a worker’s virtual RDR for deferred execution. Job instances queued under these conditions are discarded when a job instance has been declared void. This behavior allows for immediate cancellation of a job without requiring additional CANCEL operations by the backup administrator.

VOID status for any specific job instance automatically expires 24 hours from the initial CANCEL ... ( DELETECAT operation. VOID status can be removed immediately via the BKRBKUP “UNVOID” command.

### System action:

The job is rejected and discarded.

### User response:

No action is required.

---

**BKR9591W**      **WARNING: SELECTed real DASD *Resource\_ID* not found on system.**

**Explanation:**

This message is issued when

**Select\_TolerateNotFound** is enabled, and a real DASD device or volser that has been listed on a **SELECT** record in a job template cannot be found. *Resource\_ID* is a character string that is either **volume** followed by a real DASD volser or **device address** followed by a real device number

**System action:**

Job template processing continues. Note that if **Select\_TolerateNotFound** is not enabled (the default), job template processing will terminate if **SELECT RDEVVOL** or **SELECT RDEVICE** statements cannot be resolved to a valid real DASD.

**User response:**

No action is required. However, you may want to attempt to determine why the real DASD volser or device is not available and correct the problem, or update the job template to correct the associated **SELECT** statement.

---

**BKR9592I**      **No voided instances matching void\_jobname void\_instance were found.**

**Explanation**

This message is issued in response to a **QUERY VOID** command, if no matching job instances were found in **VOID** status.

To obtain a full list of voided job instances, execute this command:

```
QUERY VOID * *
```

**System action:**

Normal SVM operations continue.

**User response:**

No action is required.

---

**BKR9593I**      **Restore executed by worker Worker\_SVM.**

**Explanation:**

This message is displayed in the **RESTORE** job log during job initialization to explicitly identify the worker service virtual machine (**BKRWRK##**) that executed the restore job.

**System action:**

Job processing continues.

**User response:**

No action is required.

---

**BKR9594E**      **CP diagnose 00D4 return code rc.**

**Explanation:**

Worker virtual machines use CP diagnose code 00D4, the "Set Alternate User ID" diagnose, during

certain **RESTORE** operations. Under normal conditions, this causes spool files created by restore-to-RDR operations to appear with an origin user ID of the original data owner, rather than the user ID of the worker service virtual machine. This message will be displayed in the **RESTORE** job log if diagnose 00D4 completes with an unexpected response.

**System action:**

If this message is issued, **RESTORE** processing continues. Any files created by restore-to-RDR operations will be sent to the target user with an origin user ID of the backup worker service virtual machine.

**User response**

Possible values of 'rc' are:

- 4**      Paging error or storage error has occurred.
- 8**      Invalid virtual machine name is in diagnose 00D4 parameter list.
- 12**     Worker does not have ESM (External Security Manager – RACF or other ESM) authorization to use diagnose 00D8.
- 16**     An alternate user ID is already defined via APPC/VM.

If return code 12 is reported, verify that the worker service virtual machine has CP Privilege Class B. If RACF or another ESM is used, modify ESM permissions for the worker service virtual machine to allow use of diagnose 00D4. For other return codes, contact your systems programmer. If the issue cannot be resolved, contact IBM Support.

---

**BKR9595I**      **User worker\_SVM is now acting as an alternate for origin\_ID**

**Explanation:**

This message is displayed in **RESTORE** job logs when CP diagnose 00D4 ("Set Alternate User ID") is successfully invoked to create a worker/alternate relationship. When this relationship is defined, any spool files created during a **RESTORE** operation will have an origin ID of the original data owner ("*owner\_ID*") instead of the worker service virtual machine ("*worker\_SVM*").

**System action:**

**RESTORE** processing continues.

**User response:**

None required.

---

**BKR9596E**      **Syntax error in BKRDIAD4 invocation.**

**Explanation:**

This message is issued when internal utility routine BKRDIAD4 is invoked with incorrect syntax.

**System action:**

Processing continues. Worker/Alternate relationships have not been altered.

**User response:**

If the problem persists, contact your systems programmer or IBM for additional support.

---

**BKR9597I**      **User *worker\_SVM* is no longer acting as an alternate.**

**Explanation:**

This message is displayed in RESTORE job logs to indicate that a previously created Worker / Alternate relationship has been ended.

**System action:**

Processing continues. Any new spool files created by the worker virtual machine will have an origin ID of the worker virtual machine name.

**User response:**

None required.

---

**BKR9600I**      **Command authorizations are controlled by *auth\_source***

**Explanation**

This message informs you of the command authorization source, such as ESM and RACF. Possible values for *auth\_source* are the following:

**BKRUSERS NAMES**

Command authorization checks will be based on the roles defined in BRKUSERS NAMES.

**External Security Manager (ESM)**

Command authorization checks will be determined by the ESM configuration.

**Note:** Message BKR9601I will indicate whether fail-over to BKRUSERS NAMES is permitted if the service virtual machine cannot communicate with the ESM.

**System action:**

Processing continues.

**User response:**

None required.

---

**BKR9601I**      **If the ESM is not available, fail-over to BKRUSERS NAME is / is not permitted.**

**Explanation:**

This message informs you whether the use of BKRUSERS NAME is permitted.

**System action:**

Processing continues.

**User response:**

None required.

---

**BKR9602W**      **BKR\_ESM\_Command\_Auth is enabled, but *svm\_userid* is unable to initialize a connection to the External Security Manager. "RPIUCMS INIT" return code was *rc***

**Explanation:**

The user listed in the message was not able to connect to ESM even though it is enabled.

**System action:**

Processing continues.

**User response:**

Review the return code and correct the authorities assigned to this user ID so that a connection can be made to ESM.

---

**BKR9603W**      **Command authorization checks will be based on BKRUSERS NAMES.**

**Explanation:**

Only users listed in BKRUSERS NAMES will have the authority to run commands.

**System action:**

Processing continues.

**User response:**

None required.

---

**BKR9604E**      **BKR\_ESM\_Command\_Fallback\_All owed is disabled. Initialization will terminate because *svm\_userid* is unable to connect to the External Security Manager.**

**Explanation:**

The user listed in the message was not able to connect to ESM.

**System action:**

Processing stops.

**User response:**

Review and correct the authorities assigned to this user ID so that a connection can be made to ESM.

---

**BKR9605W**      **Unable to connect to the External Security Manager, RPIUCMS return code *rc*.**

**Explanation:**

Backup and Restore Manager was not able to connect to ESM. The return code provides more information.

**System action:**

Processing stops.

**User response:**

Review the information associated with the return code to determine what needs to be corrected to allow a connection to ESM.

---

**BKR9606W**      **Authorization check for user *user* level privileges will be validated against BKRUSER NAMES.**

**Explanation:**

The authorities assigned to the user listed in this message, and at this privilege level, will be compared to the information for this user in the BKRUSER NAMES file.

**System action:**

Processing continues.

**User response:**

None required.

---

**BKR9607W**      **Authorization for user *user* level privileges denied; fallback to BKRUSER NAMES is disabled.**

**Explanation:**

The authorities to be assigned to the user listed in this message have been denied. No changes will be made to the BKRUSER NAMES file.

**System action:**

Processing continues.

**User response:**

None required.

---

**BKR9608W**      **Warning: null value for CurrentParm encountered.**

**Explanation:**

An unexpected condition was encountered while parsing command arguments: An additional token was expected, but a blank or null value was encountered.

**System action:**

Processing continues. The omitted value will be processed as the embedded default.

**User response:**

If the embedded default value is acceptable, no response is required. Otherwise, review syntax of the associated command and retry the operation.

---

**BKR9609E**      ***label\_string* is not a valid DASD volume label.**

**Explanation:**

BKRBRT issues this message when it is invoked in "search by DASD volser" mode with the VOLSER option, and the value specified for a real DASD volume label does not conform to specifications for a label. This error indicates *label\_string* is more than 6 bytes long.

**System action:**

Command processing terminates with return code 16.

**User response:**

Retry the command with a valid value for *label\_string*.

---

**BKR9610W**      ***limit\_date* date syntax must be "yyyy/mm/dd". Unable to parse "*date\_string*" as a valid date.**

**Explanation:**

The value provided as a BEFORE or AFTER search cutoff (*limit\_date*) cannot be parsed in the required format of **yyyy/mm/dd** (year / month / day). "*Date\_string*" is the argument encountered during parsing.

**System action:**

Command processing terminates with return code 4.

**User response:**

Retry the command with a correctly formatted BEFORE or AFTER cutoff date.

---

**BKR9611W**      ***limit\_time* time stamp syntax must be "hh:mn:ss". Unable to parse "*time\_string*" as a valid time of day. Defaulting to *default\_time*.**

**Explanation:**

The value provided as a BEFORE or AFTER search cutoff time (*limit\_time*) cannot be parsed in the required format of **hh:mn:ss** (hour:minute:seconds). "*Time\_string*" is the argument encountered during parsing.

**System action:**

The embedded default cutoff time will be applied. For a **BEFORE** limit, the default time of day value is 00:00:00. For an **AFTER** limit, the default time of day value is 23:59:59.

**User response:**

If the embedded default values are acceptable, no response required. Otherwise, retry the command with a correctly formatted 24-hour time of day value.

---

**BKR9612W**      **Unrecognized parameter "*parm\_string*" ignored.**

**Explanation:**

An unrecognized argument, "*parms\_string*", was encountered during command argument parsing.

**System action:**

Processing continues. The unrecognized argument has been ignored.

**User response:**

If results are acceptable, no response is required. Otherwise, retry the command with correct syntax.

---

**BKR9613E**      **Unexpected return code *rc* from function *function\_type***

**Explanation:**

An unexpected return code, *rc*, was encountered during a backup catalog query operation. "*Function*"

identifies the catalog query routine involved; “*function\_type*” identifies the query type that resulted in the unexpected return code.

**System action:**

Command processing terminates with a return code of *rc* (the return code from the failed query operation).

**User response**

Verify that BKRBRRT was invoked with correct search arguments. If syntax was correct, make sure that the backup catalog file space is available – e.g. that the SFS file pool server is online and operating correctly.

In some cases, catalog query operations may fail due to insufficient CMS free storage. Attempt to define a larger virtual machine memory size and retry the operation.

If the problem cannot be resolved, contact your system programmer or IBM Technical Support for assistance.

---

**BKR9614I**      *function invoked with default parameters.*

**Explanation:**

The routine identified as “*function*” has been invoked with no additional parameters.

**System action:**

Processing continues. Embedded default values will be used for all options.

**User response:**

None required.

---

**BKR9615I**      *function invoked with user parameters "user\_parms".*

**Explanation:**

The routine identified as “*function*” has been invoked with additional parameters.

**System action:**

Processing continues. Customer-provided parameters (“*user\_parms*”) will override embedded default values.

**User response:**

None required.

---

**BKR9616I**      *Querying backup catalog for query\_args*

**Explanation**

BKRBRRT has been invoked and will search for backups of resources displayed as “*query\_args*”. “*Query\_args*” will be one of two values:

**Containers owned by user *USERID***

Indicates BKRBRRT has been invoked in “search by user” mode. The catalog will be searched for

backups of minidisks and file spaces owned by the user identified as *USERID*.

**Minidisk allocated on real DASD volume *VOLSER***

Indicates BKRBRRT has been invoked in “search by real DASD volume label” mode. The catalog will be searched for backups of all MDISKS defined on the real DASD volume identified as *VOLSER*.

**System action:**

Processing continues.

**User response:**

None required.

---

**BKR9617I**      *Catalog query discovered backups of container\_count unique data containers.*

**Explanation:**

The number of results returned from initial backup catalog search is displayed as “*container\_count*”.

**System action:**

Processing continues.

**User response:**

None required.

---

**BKR9618I**      *Return code rc from query\_type catalog query; no qualifying backup found for container\_name.*

**Explanation:**

A non-zero return code (*rc*) was encountered during a backup catalog query operation (*query\_type*) while searching for detailed backup information for the minidisk or file space identified as *container\_name*.

**System action:**

Processing continues.

**User response:**

None required. This message may be issued during “restore by real DASD volser” operations when backup catalog data contains references to a minidisk or file space, but a detail search of the backup catalog cannot identify any backups that pass filter criteria.

---

**BKR9619W**      *FILE option specified, but output file \$BKRBRRT JOB A already exists. Please ERASE or RENAME \$BKRBRRT JOB A and retry.*

**Explanation:**

This message is issued when BKRBRRT is invoked with the “FILE” option, and output file \$BKRBRRT JOB A already exists.

**System action:**

BKRBRRT terminates with return code 4.

**User response:**

ERASE or RENAME file \$BKRBRRT JOB A and retry the BKRBRRT command. Note that when BKRBRRT is invoked

with the "EDIT" option, if \$BKRBRT JOB A already exists, BKRBRT output will be appended to the file.

---

**BKR9620W CMS search order housekeeping detected a possible lost SFS file pool connection.**

**Explanation:**

Access to one or more SFS directories that were in use at service virtual machine start-up has been lost. This condition is detected when an initial attempt to re-issue the CMS ACCESS command terminated with return code 99 ("file pool not available") or 70 (resource serialization conflict). This condition is typically associated with a dropped APPC/VM connection between a CMS client virtual machine and an SFS (Shared File System) file pool server. The condition could be associated with termination of a file pool server, or a broken ISFC or TSAF connection to a remote file pool server.

**System action:**

When this condition is detected, Backup and Restore Manager service virtual machines will enter "wait/retry" logic to attempt to recover from the disruption. The service virtual machine will enter CP SLEEP for a cool-down pause (default: 60 seconds), and then attempt to restore the original ACCESS order. If the attempt is unsuccessful, the "wait/retry" operation will be repeated up to a default limit of 10 times. If the attempt is successful, normal service virtual machine operations will resume.

**User response**

For a successful recovery, no additional response is required. If the maximum number of recovery attempts is exceeded, the service virtual machine will terminate with return code 24. If this happens, it will be necessary to investigate and resolve the cause of the SFS file pool server outage or disrupted ISFC / TSAF connection.

Default values for the recovery cool-down period and maximum number of retry attempts can be modified by setting customized values for BKR\_Access\_Restore\_Limit = <number of retry attempts> and/or BKR\_Access\_Restore\_Interval = <number of seconds>. This housekeeping mechanism can be enabled or disabled in BKRSYSTEM CONFIG by setting BKR\_Access\_Order\_Recovery\_Enabled = 1 (to enable) or = 0 (to disable) the behavior.

---

**BRK9621W Entering recovery attempt current\_attempt of max\_attempts**

**Explanation:**

This message is issued in conjunction with message 9620W. It indicates the start of error handling measures to recover from loss of access to an SFS

directory required for normal service virtual machine operation. The value displayed for *current\_attempt* indicates the number of retry attempts executed thus far. The value displayed for *max\_attempts* is the maximum number of unsuccessful retries allowed before the service virtual machine terminates due to loss of access to a required resource.

**System action:**

Message 9622W will be displayed, and the service virtual machine will pause via "CP SLEEP" to allow time for file pool availability to be restored.

**User response:**

Attempt to determine why connectivity to one or more SFS file pool servers used by the affected service virtual machine has been lost. This could occur if an SFS file pool server is terminated, or if access to a remote SFS file pool server via ISFC or TSAF connection has been lost.

---

**BRK9622W Starting delay second recovery period delay at hh:mn:ss**

**Explanation:**

This message is issued in conjunction with messages BKR9620W and BKR9621W. It indicates that the issuing service virtual machine is pausing execution via "CP SLEEP" for *delay* seconds, beginning at time of day *hh:mn:ss*.

**System action:**

Service virtual machine execution is temporarily paused.

**User response:**

See recommended actions for messages BKR9620W and BKR9621W.

---

**BRK9623I CMS ACCESS order recovery complete with result result; attempting to resume normal operations.**

**Explanation:**

This message is issued when a successful attempt to recover from a dropped APPC/VM connection to one or more SFS directories has been completed.

**System action:**

All CMS file mode letters that were originally active at service virtual machine initialization have been restored to their original state. This includes ACCESSes for any SFS directories that were temporarily dropped due to a temporary loss of file pool server connectivity. If the value displayed for *result* is zero or four (4), all originally in-use file modes were restored to the original state. If *result* is eight (8), one or more CMS minidisks that were available and ACCESSed at service virtual machine initialization have been removed from the virtual machine I/O configuration (for example, via

"RELEASE" with the "DETACH" option), so were not available for ACCESS during recovery efforts.

**User response:**

None required. Unplanned loss of connectivity to a local or remote SFS file pool should be investigated and, where possible, avoided under normal operating conditions. For cases where a *result* of 8 is reported, you are strongly advised to *not* modify the CMS service virtual machine I/O configuration without terminating and restarting the affected service virtual machine.

---

**BRK9624E**      **Unable to recover within *max\_seconds* seconds; terminating *userid*. (Followed by exit with RC24).**

**Explanation:**

This message is displayed if the original service virtual machine CMS ACCESS order could not be restored after the maximum number of retry attempts is exceeded. For more information, refer to messages BKR9620W, BKR9621W, and BKR9622W.

**System action:**

The affected service virtual machine will terminate with return code 24 after displaying this message.

**User response:**

Investigate the cause of the lost connection to local or remote SFS file pool servers required for normal service virtual machine operations. Once these resources become available, restart the affected Backup and Restore Manager service virtual machines.

---

**BKR9625W**      **This minidisk may need to be initialized with the CMS "FORMAT" command.**

**Explanation:**

This message is issued when a Worker (BKRWRKnn) service virtual machine is attempting to select an output minidisk from a DISKPOOL, and encounters return code 100 from the CMS "ACCESS" command while trying to inspect the minidisk. Although the ACCESS command may terminate with RC100 for several different reasons, the most commonly encountered one is that a minidisk has not yet been initialized as a CMS EDF file system via the CMS "FORMAT" command.

**System action:**

The associated DUMP task is terminated. Backup job processing will attempt to continue with the next DUMP task unless the consecutive failed task limit has been reached.

**User response:**

This message will be preceded by message 8969E, which identifies the user name and device number associated with the problem minidisk. All DISKPOOL minidisks must be initialized using the CMS "FORMAT"

command as 4,096-byte block size EDF file systems before they can be used. If the problem minidisk appears to already be correctly formatted, refer to "z/VM: CMS Commands and Utilities Reference" for additional details of other conditions which may cause ACCESS to terminate with return code 100.

---

**BKR9626W**      **<pool\_owner> <vdev> is FORMatted with an EDF block size of <####>. DISKPOOL minidisk must use a 4K (4,096 byte) block size for reliable freespace estimation.**

**Explanation**

This message is issued when a Worker (BKRWRKnn) service virtual machine is attempting to select an output minidisk from a DISKPOOL, and encounters a CMS minidisk which has been formatted with an EDF block size other than 4K (4,096) bytes. "<pool\_owner>" and "<vdev>" identify the DISKPOOL minidisk. "<####>" identifies the unexpected EDF file system block size.

DISKPOOL minidisks are required to be initialized (via the CMS "FORMAT" command) with an EDF file system block size of 4K prior to use. Although other block sizes may be tolerated, the algorithm used to estimate space requirements for backup output files relies on a 4K block size. Estimates for non-4K output file systems will not be accurate, and may cause backup DUMP tasks to terminate with unexpected results.

**System action:**

The associated DUMP task will continue, but may fail before completion if insufficient free space is available on the output file system.

**User response:**

Copy all files from the problematic DISKPOOL minidisk to a separate location. Re-initialize the problem DISKPOOL minidisk using the CMS FORMAT command with an EDF file system block size of 4,096 (4K) bytes. Upon completion, copy any temporarily relocated files back to the original minidisk. Note that data files associated with a successful backup **must** remain on the original <pool\_owner> <vdev> minidisk. If files are copied to a different location and not subsequently relocated to the original minidisk, they will not be available for later RESTORE functions, and cannot be deleted via BKRCATLG's "EXPIRE (PURGE)" function after the associated backup instance expires.

---

**BKR9627I**      **BKR\_Job\_Force\_EDF\_Image is ENABLED  
All CMS EDF-format minidisks will be processed as DASD image backups.**

**NOTE: Results of this job cannot be used as the baseline reference for a future incremental backup.**

**Explanation:**

This message is displayed in the backup job log when "Config BKR\_Job\_Force\_EDF\_Image = 1" is in effect. When this setting is enabled, all MDISKS in the backup will be processed as DASD image backups.

**System action:**

Processing continues.

**User response:**

None required.

---

**BKR9628I or W** **BKR9628I: <jobname> <instance> summary: Task count <count>, maximum task rc 0.**  
**BKR9628W: <jobname> <instance> summary: Task count <count>, maximum task rc <rc>**

**Explanation**

This message is issued as part of the end-of-job (EOJ) summary report and includes the following information:

- The <jobname> and <instance> variables identify the job name and instance that have just completed.
- The <count> variable documents the total number of DUMPxxx or RESTORE tasks processed.
- The <rc> variable documents the maximum DUMPxxx or RESTORE task return code that was encountered.

If "<rc>" is zero (0), message 9628 will be issued with severity code "I" (Informational). If "<rc>" is non-zero, message 9628 will be issued with severity code "W" (Warning).

**System action:**

End-of-job processing continues.

**User response:**

None required. However, this message may be used to drive automated operations actions based on message content or the associated severity code.

---

**BKR9629I** **Target minidisk <ownerid> <vdev> does not exist. --- BKREDMIF External Directory Manager Interface is enabled. --- RESTORE will attempt to recreate the minidisk.**

**Explanation:**

BKREDMIF External Directory Manager Interface is enabled.

**System action:**

RESTORE will attempt to recreate the minidisk.

**User response:**

None Required

---

**BKR9630I** **Invoking BKREDMIF as: "<EXEC BKREDMIF args...>"**

**Explanation:**

This message is issued when RESTORE processing invokes BKREDMIF to recreate the minidisk.

**System action:**

Processing BKREDMIF EXEC to interact with an external Directory Manage and attempt to recreate the minidisk.

**User response:**

None required.

---

**BKR9631I** **BKREDMIF return code <rc>; <summary> ...where "<summary>" is one of: rc 0: "normal termination." rc >0: "target creation failed."**

**Explanation:**

BKREDMIF attempted to recreated the minidisk and return with rc

**System action:**

Processing continues

**User response:**

None required

---

**BKR9632I** **For each progress interval, the Backup Manager worker will display the message BKRWRK9632I in the following format:**  
**<resource> hh:mm:ss mm/dd/yy <unit\_type> <units\_count> of maximum <units\_max>**

**Explanation:**

This message is displayed in the backup worker job log when the worker progress reporting is enabled, and a progress reporting interval threshold is reached. Depending on the number of CMS EDF minidisk files or the volume of data being backed up from a particular resource, multiple occurrences of message **9632I** may be issued before the final backup task summary record is displayed. For more information, see ["Progress reporting message format"](#) on page 173.

**System action:**

Processing continues.

**User response:**

None required.

---

**BKR9633I** **LASTFULL - BKRQRYCT ended with RC rc for ContainerOwner ContainerType ContainerID.**

**Benchmark numbers will be used for elapsed ToD.**

**Explanation:**

This message is displayed in the load balancing log, when the load balancing functionality was invoked while submitting a backup job. This message indicates that for the specific device, elapsed time could not be determined and hence benchmark values from BKRSYSTEM CONFIG will be used to calculate elapsed time.

**System action:**

Processing continues.

**User response:**

No action is required.

---

**BKR9634I**      **BKRQRYCT returned only INCR backup. Treating it as FULL Backup to identify LASTFULL elapsed ToD.**

**Explanation:**

This message is displayed in the load balancing log, when the load balancing functionality was invoked while submitting a backup job. This message indicates that for the current backup task, elapsed time is available only from Incremental backup and not from a Full backup. The same will be used for load balancing.

**System action:**

Processing continues.

**User response:**

No action is required.

---

**BKR9635I**      **RECOMPed device found – container Owner containerID. LASTFULL elapsed ToD will be aggregated for both device types.**

**Explanation:**

This message is displayed in the load balancing log, when the load balancing functionality was invoked while submitting a backup job. This message indicates that the device is a RECOMPed device. Since RECOMPed device will be backed up as both EDF and CKD, the elapsed time will be an aggregate of both device types, for the purpose of load balancing.

**System action:**

Processing continues.

**User response:**

No action is required.

---

**BKR9636I**      **Invalid WEIGHTBY option wbyoption; using default wbyoption.**

**Explanation:**

This message is displayed when the load balancing functionality was invoked with an invalid WEIGHTBY

option. The valid options for WEIGHTBY are SIZE and LASTFULL. Any other value will be ignored and default option will be applied. For WEIGHTBY, when invoked without GROUPBY, the default option is NONE. But when invoked along with GROUPBY the default option is SIZE.

**System action:**

Processing continues.

**User response:**

If you do not want WEIGHTBY NONE, CANCEL and SUBMIT the backup job with a valid WEIGHTBY option.

---

**BKR9637I**      **Invalid GROUPBY option gbyoption; using default gbyoption.**

**Explanation:**

This message is displayed when the load balancing functionality was invoked with an invalid GROUPBY option. The valid options for GROUPBY are OWNER and VOLSER. Any other value will be ignored and default option NONE will be applied.

**System action:**

Processing continues.

**User response:**

If you do not want GROUPBY NONE, CANCEL and SUBMIT the backup job with a valid GROUPBY option.

---

**BKR9638W**      **LOADBAL - Load Balancing is not appropriate for Incremental backup. Load Balancing effect may not be optimal.**

**Explanation:**

This message is displayed when the load balancing functionality was invoked for an Incremental backup job. Load balancing works well for Full backup. For incremental backup jobs, load balancing results may not be as expected.

**System action:**

Processing continues.

**User response:**

No action is required.

---

**BKR9639I**      **Load Balancing Applied. Options used: options.**

**Explanation:**

This message is displayed when the load balancing functionality was invoked for a backup job. This message implies that load balancing will be applied, and the options indicate the WEIGHTBY and GROUPBY options that will be used.

**System action:**

Processing continues.

**User response:**

No action is required.

---

**BKR9640I**      **LOADBAL - LINK Error for dumptask. Assigning to last worker.**

**Explanation:**

This message is displayed in the load balancing log, when the load balancing functionality was invoked while submitting a backup job. This message implies that for the specific dump task, the device could not be LINKed and hence, by default, the dump task will be assigned to the last backup worker. This has no impact to the load balancing, as any device with LINK errors will not be backed up.

**System action:**

Processing continues.

**User response:**

No action is required.

---

**BKR9641I**      **LOADBAL - GETLABEL ended with RC rc for containerOwner containerID. Forcing CKD to estimate SIZE.**

**Explanation:**

This message is displayed in the load balancing log, when the load balancing functionality was invoked while submitting a backup job. This message implies that for some reason that type of the device (EDF or CKD/FBA) could not be determined and was assumed as CKD for load balancing purpose.

**System action:**

Processing continues.

**User response:**

No action is required.

---

**BKR9642I**      **LOADBAL - Device type of ContainerOwner ContainerID ContainerType, which is neither 3390 nor 3380. Forcing 3380 to calculate SIZE.**

**Explanation:**

This message is displayed in the load balancing log, when the load balancing functionality was invoked while submitting a backup job. This message implies that the specific device is neither a 3390 nor a 3380 device. For the purpose of calculating bytes, the device is assumed to be a 3380 device.

**System action:**

Processing continues.

**User response:**

No action is required.

---

**BKR9643I**      **LOADBAL - LASTFULL ended with RC rc for container. Applying benchmark for LASTFULL based on SIZE.**

**Explanation:**

This message is displayed in the load balancing log, when the load balancing functionality was invoked while submitting a backup job. This message implies that for the specific device, the last elapsed time could not be determined and hence benchmark metrics will be used to calculate elapsed time.

**System action:**

Processing continues.

**User response:**

No action is required.

---

**BKR9644E**      **SIZEVTOD - Invalid syntax. Provide 4 parms - SFS Pool Name, Pool Space, Backup Job Name, Sample Size.**

**Explanation:**

This message is displayed when the SIZEVTOD utility is invoked to understand the benchmark metrics for load balancing. The command syntax is wrong. This command needs four parameters as displayed in the message.

**System action:**

SIZEVTOD exists with a non-zero return code.

**User response:**

Correct the syntax and execute SIZEVTOD again.

---

**BKR9645E**      **SIZEVTOD - Invalid Sample Size *samplesize*. Provide a valid numeric value, greater than zero, for Sample Size.**

**Explanation:**

This message is displayed when the SIZEVTOD utility is invoked to understand the benchmark metrics for load balancing. The sample size value is incorrect. Sample size should be a valid number, greater than zero.

**System action:**

SIZEVTOD exists with a non-zero return code.

**User response:**

Provide a valid numeric value for sample size and execute SIZEVTOD again.

---

**BKR9646E**      **SIZEVTOD - Invalid Catalog SFS Directory *directory*. SFS Directory does not exist. Provide valid Directory**

**Explanation:**

This message is displayed when the SIZEVTOD utility is invoked to understand the benchmark metrics for load balancing. This message implies that the catalog SFS directory, which is a combination of Pool Name and Pool Space, does not exist or not authorized.

**System action:**

SIZEVTOD exists with a non-zero return code.

**User response:**

Resolve the directory issue and execute SIZEVTOD again.

---

**BKR9647W**      **LOADBAL - Load balancing is not applicable for backup tasks with Worker Count set as 1.**

**Explanation:**

This message is displayed in the load balancing log, when the load balancing functionality was invoked while submitting a backup job. This message implies that the load balancing functionality was invoked for a backup job that has only worker assigned. Load balancing is applicable only when more than 1 worker is involved.

**System action:**

Processing continues.

**User response:**

No action is required.

---

**BKR9648I**      **Load Balancing NOT Applied. Default Options used: *options*.**

**Explanation:**

This message implies that the load balancing functionality was either not invoked or invoked with wrong parameters or options that were ignored.

**System action:**

Processing continues.

**User response:**

No action is required.

---

**BKR9649I**      **LOADBAL - GROUPBY cannot function without a valid WEIGHTBY. Override with WEIGHTBY SIZE.**

**Explanation:**

This message implies that the load balancing functionality was invoked for the backup job with only GROUPBY function. GROUPBY parameter would also need WEIGHTBY and hence by default WEIGHTBY SIZE was applied for load balancing.

**System action:**

Processing continues.

**User response:**

No action is required.

---

**BKR9650I**      **Invalid value *value* for config parm EDF\_elapsed\_ToD\_benchmark. Default value applied.**

**Explanation:**

This message implies that the load balancing functionality was invoked for the backup job but the configuration parameter

**EDF\_Elapsed\_ToD\_benchmark** in BKRSYSTM CONFIG file was invalid and default values were applied.

**System action:**

Processing continues.

**User response:**

No action is required.

---

**BKR9651I**      **Invalid value *value* for config parm CKD\_elapsed\_ToD\_benchmark. Default value applied.**

**Explanation:**

This message implies that the load balancing functionality was invoked for the backup job but the configuration parameter **CKD\_Elapsed\_ToD\_benchmark** in BKRSYSTM CONFIG file was invalid and default values were applied.

**System action:**

Processing continues.

**User response:**

No action is required.

---

**BKR9652I**      **Invalid value *value* for config parm FBA\_elapsed\_ToD\_benchmark. Default value applied.**

**Explanation:**

This message implies that the load balancing functionality was invoked for the backup job but the configuration parameter **FBA\_Elapsed\_ToD\_benchmark** in BKRSYSTM CONFIG file was invalid and default values were applied.

**System action:**

Processing continues.

**User response:**

No action is required.

---

**BKR9653I**      **Invalid value *value* for config parm SFS\_elapsed\_ToD\_benchmark. Default value applied.**

**Explanation:**

This message implies that the load balancing functionality was invoked for the backup job but the configuration parameter **SFS\_Elapsed\_ToD\_benchmark** in BKRSYSTM CONFIG file was invalid and default values were applied.

**System action:**

Processing continues.

**User response:**

No action is required.

---

**BKR9654I**      **Invalid value *value* for config parm  
BFS\_elapsed\_ToD\_benchmark.  
Default value applied.**

**Explanation:**

This message implies that the load balancing functionality was invoked for the backup job but the configuration parameter **BFS\_Elapsed\_ToD\_benchmark** in BKRSYSTEM CONFIG file was invalid and default values were applied.

**System action:**

Processing continues.

**User response:**

No action is required.

---

**BKR9655I**      **Invalid value *value* for config parm  
SFS\_BFS\_complexity\_factor.  
Default value applied.**

**Explanation:**

This message implies that the load balancing functionality was invoked for the backup job but the configuration parameter **SFS\_BFS\_complexity\_factor** in BKRSYSTEM CONFIG file was invalid and default values were applied.

**System action:**

Processing continues.

**User response:**

No action is required.

---

**BKR9656W**      **Restore operation skipped.  
LOADEDf return code was *rc*.**

**Explanation:**

The restore operation from LOADEDf was not successful with the specified return code.

**System action:**

Processing continues.

**User response:**

Check for any related previous error messages/warnings and take corrective actions, if required. If the problem persists, contact your system programmer or IBM Software Support.

---

**BKR9657W**      **Restore operation skipped.  
LOADSFS return code was *rc*.**

**Explanation:**

The restore operation from LOADSFS was not successful with the specified return code.

**System action:**

Processing continues.

**User response:**

Check for any related previous error messages/warnings and take corrective actions, if required. If the problem persists, contact your system programmer or IBM Software Support.

---

**BKR9658W**      **Worker Count exceeds limit that  
could be handled by BKREXI03.  
Default worker selection logic will  
be used.**

**Explanation:**

The Worker Selection User Exit, BKREXI03, can handle a worker count of up to 27. When the worker count exceeds 27, the user exit BKREXI03 will be bypassed, even if available, and the default selection logic will be used for Worker Selection.

**System action:**

Processing continues. The default algorithm for selection of worker task service virtual machines (BKRWRKnn) is used to pick workers for the backup or restore operation being handled.

**User response:**

No action is required.



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