

IBM Backup and Restore Manager for z/VM



# Administration Guide

*Version 1 Release 2*



IBM Backup and Restore Manager for z/VM



# Administration Guide

*Version 1 Release 2*

**Note:**

Before using this information and the products that it supports, read the information in “Notices” on page 255.

This edition applies to Version 1 Release 2 of IBM Backup and Restore Manager for z/VM (5697-J06) and to all subsequent releases and modifications until otherwise indicated in new editions.

This edition replaces SC18-9346-14.

© Copyright Rocket Software, Inc. 2003 – 2015. All Rights Reserved.

---

# Contents

<b>Figures</b> . . . . .	<b>vii</b>
<b>Tables</b> . . . . .	<b>ix</b>
<b>Preface</b> . . . . .	<b>xi</b>
Who should read this information . . . . .	xi
Service updates and support information . . . . .	xi
Highlighting conventions . . . . .	xi
Terminology . . . . .	xi
How to read syntax diagrams . . . . .	xi
Where to find information . . . . .	xiii
How to send your comments . . . . .	xiii
<b>Chapter 1. Backup and Restore Manager overview</b> . . . . .	<b>1</b>
What's new in Backup and Restore Manager for z/VM . . . . .	1
Backup and Restore Manager components . . . . .	8
Master backup service virtual machine . . . . .	8
Catalog service virtual machine . . . . .	8
Worker service virtual machines . . . . .	8
Clients . . . . .	8
Job templates . . . . .	8
Full-panel catalog browser interface . . . . .	9
Command line interface . . . . .	9
Tape management system interface . . . . .	9
Backup and restore processing . . . . .	9
Backup operations . . . . .	11
Methods of backing up data . . . . .	11
Backup types . . . . .	12
Scheduling backups . . . . .	13
Notification of backup start and completion . . . . .	14
Backup hierarchy and levels . . . . .	14
Retention of backups . . . . .	15
Restore operations . . . . .	15
Methods of restoring data . . . . .	16
Controlling a user's ability to restore data . . . . .	17
Disaster recovery tasks . . . . .	17
Storage media considerations . . . . .	17
Prerequisites . . . . .	18
<b>Chapter 2. Configuring Backup and Restore Manager</b> . . . . .	<b>21</b>
Configuration summary . . . . .	21
Configuration steps. . . . .	22
Step 1. Verify privileges for the Backup and Restore Manager servers . . . . .	22
Step 2. Allocate SFS resources for the backup catalog . . . . .	25
Step 3. Copy and customize the sample PROFILE EXECs . . . . .	27
Step 4. Copy and customize the BKRUSERS NAMES file . . . . .	34
Step 5. Copy and customize the BKRSYSTEM CONFIG file . . . . .	36
Step 6. Create root catalog directory structures . . . . .	46
Step 7. Review and copy sample backup job templates . . . . .	47
Step 8. Customize sample backup job templates . . . . .	47
Step 9. Start the service virtual machines . . . . .	47
Managing job template files . . . . .	47
Configuring Backup and Restore Manager to work with Tape Manager for z/VM. . . . .	48
Step 1. Install and configure Tape Manager. . . . .	49

Step 2. Provision Tape Manager resources . . . . .	49
Step 3. Verify support routines . . . . .	50
Step 4. Modify the BKRSYSTEM CONFIG file . . . . .	50
Step 5. Update the BKRWRKxx PROFILE EXEC . . . . .	50
<b>Chapter 3. Administration . . . . .</b>	<b>53</b>
Managing the master Backup and Restore Manager server. . . . .	53
Starting the master Backup and Restore Manager server . . . . .	53
Stopping the master Backup and Restore Manager server . . . . .	53
Displaying the status of the master Backup and Restore Manager server . . . . .	54
Managing the catalog server. . . . .	54
Stopping the catalog server . . . . .	54
Displaying the status of the catalog server . . . . .	54
Managing the backup catalog . . . . .	55
Catalog implementation . . . . .	55
Catalog structure . . . . .	56
Retaining catalog content. . . . .	57
Aging and expiration of catalog content . . . . .	57
Sizing the catalog SFS file space . . . . .	58
Performing backups of the catalog SFS file space . . . . .	58
Restoring the backup catalog . . . . .	59
Managing worker service virtual machines . . . . .	59
Stopping a worker service virtual machine . . . . .	60
Displaying the status of a worker service virtual machine . . . . .	60
Adding a worker service virtual machine . . . . .	60
Removing an instance of a worker service virtual machine . . . . .	61
Managing storage media . . . . .	61
Determining storage media requirements . . . . .	61
Configuring DISKPOOL files to identify output resources . . . . .	61
Performing disaster recovery tasks. . . . .	63
Creating concurrent copies of output tapes . . . . .	63
Creating backups in DDR format . . . . .	63
Creating tape lists . . . . .	64
Service virtual machine error recovery and diagnosis . . . . .	64
<b>Chapter 4. Performing backup and restore operations . . . . .</b>	<b>65</b>
Creating backup jobs . . . . .	65
Sample job templates . . . . .	67
Job template structure . . . . .	67
Job syntax . . . . .	67
Specifying configuration information . . . . .	68
Including or excluding objects from processing (INCLUDE and EXCLUDE) . . . . .	68
Specifying end of job processing . . . . .	70
Guidelines. . . . .	71
Performing restore operations using the catalog browser interface . . . . .	71
Using the RESTORE command to restore data. . . . .	72
Batch restore processing . . . . .	72
<b>Chapter 5. Job syntax . . . . .</b>	<b>73</b>
Specification of logical job template variables . . . . .	73
CONFIG . . . . .	73
CONSOLE. . . . .	84
CP_COMMAND. . . . .	84
CP_QUIET . . . . .	85
SUMMARIZE . . . . .	85
EOJ . . . . .	87
JOB_HEADER . . . . .	87
JOB_TRAILER . . . . .	88
Selection record syntax (INCLUDE, EXCLUDE, and SELECT statements). . . . .	88
Supported wildcard characters . . . . .	89

Syntax to include and exclude minidisks . . . . .	89
Syntax to include and exclude SFS file pools . . . . .	91
Syntax to include and exclude real devices by address . . . . .	91
Syntax to include and exclude real devices by volume label . . . . .	92
Syntax to select specific minidisks or devices . . . . .	92
Variable substitutions . . . . .	93
<b>Chapter 6. Service virtual machine commands . . . . .</b>	<b>95</b>
Common commands . . . . .	95
CMS. . . . .	95
CP . . . . .	96
HALT . . . . .	96
STATUS . . . . .	97
SUSPEND mode commands. . . . .	98
CMS. . . . .	98
CP . . . . .	99
RESTART . . . . .	99
RESUME . . . . .	100
Master backup service virtual machine commands . . . . .	100
CANCEL. . . . .	100
PAUSE . . . . .	102
QUERY DISKPOOL . . . . .	103
QUERY INSTANCE . . . . .	103
RESTART. . . . .	104
RESUME . . . . .	105
REVIEW . . . . .	106
SET INSTANCE . . . . .	107
SUBMIT . . . . .	107
Catalog commands . . . . .	108
EXPIRE . . . . .	109
QUERY EXPIRE . . . . .	110
QUERY TAPES . . . . .	111
SET EXPIRE . . . . .	112
<b>Appendix A. Sample job templates . . . . .</b>	<b>115</b>
Full backup (SAMPFULL TEMPSAMP). . . . .	115
Incremental backup (SAMPINCR TEMPSAMP) . . . . .	118
Full backup of SFS resources to DASD (SFSONLY TEMPSAMP) . . . . .	120
DDR (DDRSAMP TEMPSAMP) . . . . .	120
z/VM 6.2 guest (ZVM62 TEMPSAMP) . . . . .	122
Linux guest operating system (SAMPLNX TEMPSAMP) . . . . .	122
<b>Appendix B. Sample user exits . . . . .</b>	<b>125</b>
BKREXI01 exit . . . . .	125
BKREXI02 exit . . . . .	127
BKREXI03 exit . . . . .	128
<b>Appendix C. Sample processing exits . . . . .</b>	<b>131</b>
Deferred processing exit (BKRNUDAY SAMPEXEC) . . . . .	131
User data processing exits (UDPEs) . . . . .	132
Sample exits. . . . .	132
Exit register processing . . . . .	133
Return codes . . . . .	134
Sample exit processing . . . . .	135
<b>Appendix D. Tape management interface exits . . . . .</b>	<b>137</b>
Stand-alone tape handling exits . . . . .	137
BKRMOUNT . . . . .	138
BKRMUNT . . . . .	139
BKREOV . . . . .	140

Tape Manager for z/VM interaction exits . . . . .	142
<b>Appendix E. DUMP<sub>xxx</sub> functions . . . . .</b>	<b>143</b>
DUMPCKD . . . . .	143
DUMPEDF . . . . .	143
DUMPFBA . . . . .	144
DUMPSFS . . . . .	145
<b>Appendix F. Summary output overview . . . . .</b>	<b>147</b>
General information . . . . .	147
EDF (DUMPEDF statement processing). . . . .	148
CKD (DUMPCKD statement processing) . . . . .	149
FBA (DUMPFBA statement processing). . . . .	149
SFS (DUMPSFS statement processing) . . . . .	150
<b>Appendix G. DDRTAPE output handler usage guidelines. . . . .</b>	<b>153</b>
<b>Appendix H. Messages and codes . . . . .</b>	<b>155</b>
<b>Notices . . . . .</b>	<b>255</b>
Trademarks . . . . .	257
<b>Bibliography. . . . .</b>	<b>259</b>
<b>Index . . . . .</b>	<b>261</b>

---

## Figures

1. Backup processing (three backup jobs backing up objects to tape) . . . . .	10	43. STATUS command example (master backup server with no active workers) . . . . .	97
2. Restore processing . . . . .	11	44. STATUS command example (master backup server with active workers) . . . . .	97
3. Backup hierarchy and levels . . . . .	15	45. STATUS command example (catalog server) . . . . .	98
4. Sample BKRUSERS NAMES file. . . . .	35	46. STATUS command example (worker response) . . . . .	98
5. BKRCATLG console log messages (missing root directory structures) . . . . .	46	47. CMS command syntax . . . . .	98
6. Example SETUPCAT output . . . . .	46	48. CP command syntax . . . . .	99
7. Displaying the status of the master backup server . . . . .	54	49. RESTART command syntax . . . . .	99
8. Displaying the status of the catalog server . . . . .	55	50. RESUME command syntax . . . . .	100
9. Root data structure within the backup catalog (BKRCATLG) . . . . .	56	51. CANCEL command syntax . . . . .	100
10. Backing up the backup catalog SFS file space . . . . .	59	52. CANCEL command example . . . . .	101
11. Displaying the status of a worker service virtual machine . . . . .	60	53. CANCEL JOB (PURGE) command example . . . . .	102
12. DISKPOOL file example (minidisks) . . . . .	62	54. CANCEL JOB (NOPURGE) command example . . . . .	102
13. DISKPOOL file example (minidisks and SFS) . . . . .	63	55. PAUSE command syntax. . . . .	102
14. Creating and submitting backup jobs using a job template . . . . .	66	56. PAUSE command example . . . . .	103
15. Backup job (configuration information) . . . . .	68	57. QUERY DISKPOOL command syntax . . . . .	103
16. INCLUDE and EXCLUDE selection records (minidisk selection) . . . . .	69	58. QUERY DISKPOOL command example . . . . .	103
17. INCLUDE and EXCLUDE selection records (SFS selection). . . . .	69	59. QUERY INSTANCE command syntax . . . . .	104
18. INCLUDE and EXCLUDE selection records (real device selection by address) . . . . .	70	60. QUERY INSTANCE command example . . . . .	104
19. INCLUDE and EXCLUDE selection records (real device selection by volume label) . . . . .	70	61. QUERY INSTANCE command example (job does not exist) . . . . .	104
20. Specifying end of job processing . . . . .	71	62. RESTART command syntax . . . . .	104
21. CONFIG syntax . . . . .	73	63. RESTART command example . . . . .	105
22. CONSOLE syntax . . . . .	84	64. RESUME command syntax . . . . .	105
23. CP_COMMAND syntax . . . . .	84	65. RESUME command example . . . . .	105
24. CP_QUIET syntax . . . . .	85	66. REVIEW command syntax . . . . .	106
25. SUMMARIZE syntax . . . . .	86	67. REVIEW command example . . . . .	106
26. Example of an EOJ summary (SUMMARIZE) . . . . .	86	68. SET INSTANCE command syntax. . . . .	107
27. EOJ syntax. . . . .	87	69. SET INSTANCE command example (modify the instance value). . . . .	107
28. JOB_HEADER syntax . . . . .	87	70. SET INSTANCE command example (set the instance value) . . . . .	107
29. JOB_TRAILER syntax . . . . .	88	71. SUBMIT command syntax . . . . .	107
30. Selection record syntax. . . . .	88	72. SUBMIT command example . . . . .	108
31. Minidisk selection record syntax . . . . .	89	73. EXPIRE command syntax . . . . .	109
32. SFS selection record syntax . . . . .	91	74. EXPIRE command example . . . . .	110
33. Real device selection by address selection record syntax . . . . .	91	75. EXPIRE ( PREVIEW command example . . . . .	110
34. Real device selection by volume label selection record syntax . . . . .	92	76. QUERY EXPIRE command syntax. . . . .	110
35. Explicit selection of minidisks or devices selection record syntax. . . . .	92	77. QUERY EXPIRE command example . . . . .	111
36. CMS command syntax . . . . .	95	78. QUERY TAPES command syntax . . . . .	111
37. CMS command example . . . . .	95	79. QUERY TAPES command example . . . . .	112
38. CP command syntax . . . . .	96	80. SET EXPIRE command syntax . . . . .	112
39. CP command example . . . . .	96	81. SET EXPIRE command example . . . . .	113
40. HALT command syntax . . . . .	96	82. DDRSAMP TEMPSAMP (sample output) . . . . .	121
41. HALT command example (master backup server) . . . . .	97	83. BKREXI01 syntax (first invocation) . . . . .	125
42. STATUS command syntax. . . . .	97	84. BKREXI01 syntax (second invocation) . . . . .	126
		85. BKRMOUNT syntax . . . . .	138
		86. BKRMUNT syntax . . . . .	139
		87. BKREOV syntax . . . . .	140
		88. DUMPCKD syntax. . . . .	143
		89. DUMPEDF syntax . . . . .	144
		90. DUMPFBA syntax . . . . .	144
		91. DUMPSFS syntax . . . . .	145
		92. Sample summary output. . . . .	147



---

## Tables

1. Full and incremental backups according to data type . . . . .	13	8. BKREXI02 return codes . . . . .	127
2. Summary of configuration steps. . . . .	21	9. BKREXI03 return codes . . . . .	129
3. Sample PROFILE EXECs and targets . . . . .	27	10. BKRNUDAY EXEC (return code behavior)	131
4. Summary of steps to configure Backup and Restore Manager to work with Tape Manager .	48	11. User data processing exit return codes	135
5. Sample job templates . . . . .	67	12. Stand-alone tape handling exits . . . . .	137
6. Supported wildcard characters for INCLUDE and EXCLUDE selection records . . . . .	89	13. BKRMOUNT return codes . . . . .	139
7. BKREXI01 return codes . . . . .	126	14. BKRMUMNT return codes . . . . .	140
		15. BKREOV return codes . . . . .	141
		16. Tape Manager for z/VM interaction exits	142
		17. Severity codes . . . . .	155



---

## Preface

This information provides instructions for installing, configuring, and administering IBM® Backup and Restore Manager for z/VM®.

This information is 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

---

## Who should read this information

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

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

---

## Service updates and support information

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

<http://www.ibm.com/software/sysmgmt/zvm/backup/>

---

## Highlighting conventions

This information uses the following highlighting conventions:

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

---

## Terminology

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

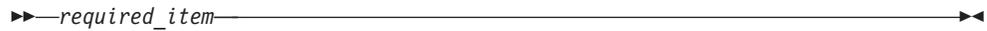
ECKD™ is referred to as "CKD."

---

## How to read syntax diagrams

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

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



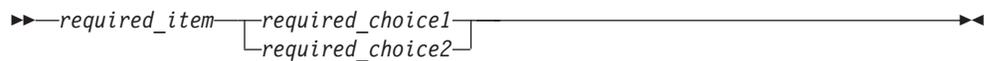
- Optional items appear below the main path.



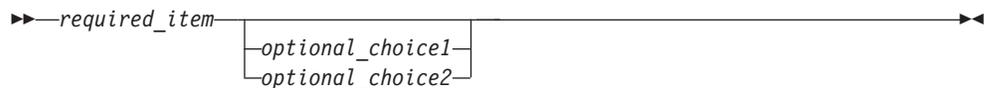
If an optional item appears above the main path, that item has no effect on the execution of the syntax element and is used only for readability.



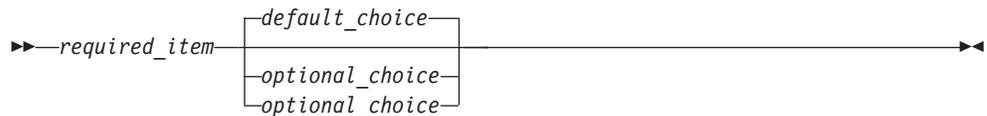
- If you can choose from two or more items, they appear vertically, in a stack. If you *must* choose one of the items, one item of the stack appears on the main path.



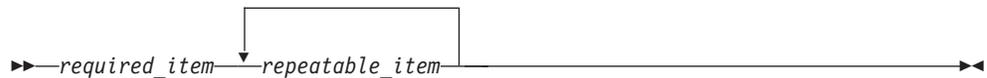
If choosing one of the items is optional, the entire stack appears below the main path.



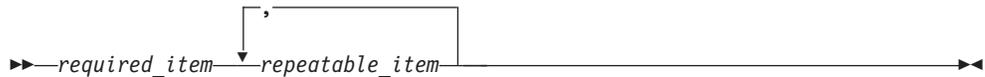
If one of the items is the default, it appears above the main path, and the remaining choices are shown below.



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



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



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

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

---

## Where to find information

The Backup and Restore Manager for z/VM Library Web page provides current product documentation that you can view, print, and download. To locate publications with the most up-to-date information, refer to the Web page: <http://www.ibm.com/software/sysmgmt/zvm/backup/library.html>

---

## How to send your comments

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

- If you have questions or comments regarding z/VM publications and product documentation, please visit: <http://www.vm.ibm.com/forms/>
- 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 Backup and Restore Manager for z/VM, and, if applicable, the specific location of the text you are commenting on (for example, a page number or table number).



---

## Chapter 1. Backup and Restore Manager overview

These topics describe the Backup and Restore Manager for z/VM components and how the product performs processing.

### Topics:

- “What's new in Backup and Restore Manager for z/VM”
- “Backup and Restore Manager components” on page 8
- “Backup and restore processing” on page 9
- “Backup operations” on page 11
- “Restore operations” on page 15
- “Disaster recovery tasks” on page 17
- “Storage media considerations” on page 17
- “Prerequisites” on page 18

For an overview of Backup and Restore Manager features and benefits, see the *Backup and Restore Manager for z/VM User's Guide*.

---

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

This topic summarizes the technical changes for this edition.

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

### SC18-9346-15

- The **BKR\_SSI\_InstanceSync** parameter was added. For more information, see “Step 5h. Configure backup catalog parameters” on page 42.
- The variables `$$TEMPLATE$$` and `$$JOBNAME$$` were added. For more information, see “Variable substitutions” on page 93.
- New messages were added. For more information, see Appendix H, “Messages and codes,” on page 155.

### SC18-9346-14

- ZVM62 TEMPSAMP (z/VM 6.2 guest system) replaces ZVM51 TEMPSAMP (sample backup of a z/VM 5.1 guest system). For more information, see “z/VM 6.2 guest (ZVM62 TEMPSAMP)” on page 122.
- New messages (9369W through 9372W) were added. Message 9201W was renumbered as message 9369W. For more information, see Appendix H, “Messages and codes,” on page 155.
- The supported z/VM version was updated to include 5.4 and 6.2. For more information, see “Prerequisites” on page 18.
- The **QUERY EXPIRE** catalog command was added. For more information, see “QUERY EXPIRE” on page 110.

### SC18-9346-13

- New messages (9361W - 9367I) were added.

- References to the target minidisk were updated in “Step 3. Copy and customize the sample PROFILE EXECs” on page 27.
- The steps to modify the sample PROFILE EXECs were updated in “Step 3. Copy and customize the sample PROFILE EXECs” on page 27.
- A new variable, \$\$SUBMITTER\$\$, was added. For more information, see “Variable substitutions” on page 93.

### SC18-9346-12

- A new variable (**BKR\_Job\_DDRTAPE\_Verbose**) that is specific to DDRTAPE output, was added. For more information, see “CONFIG” on page 73.
- Tape Manager permission requirements were clarified. For more information, see “Step 2. Provision Tape Manager resources” on page 49.
- A new BKREXI03 exit example (ALTEXI03 SAMPEXEC) was added. For more information, see “BKREXI03 exit” on page 128.
- New messages (9352 - 9359) were added and message 8984W was updated. For more information, see Appendix H, “Messages and codes,” on page 155.
- The DUMPEDF statement processing summary output was updated. For more information, see “EDF (DUMPEDF statement processing)” on page 148.
- The SUMMARIZE end-of-job summary report was updated. For more information, see “SUMMARIZE” on page 85.

### SC18-9346-11

- Information about the variable requirements for the BKREXI03 exit was added. For more information, see “BKREXI03 exit” on page 128.

### SC18-9346-10

- The WRKPROF SAMPEXEC, MASTPROF SAMPEXEC, and CATPROF SAMPEXEC sample PROFILE EXEC files were updated. See “Step 3. Copy and customize the sample PROFILE EXECs” on page 27.
- The syntax for the **EXPIRE** and **QUERY TAPES** commands was updated to provide filtering capabilities. For more information, see “Catalog commands” on page 108.
- The **REVIEW** command description was updated. For more information, see “REVIEW” on page 106.
- The sample job templates were updated. For more information, see Appendix A, “Sample job templates,” on page 115.
- A new user exit, BKREXI03 EXEC, was added. For more information, see “BKREXI03 exit” on page 128.
- New messages were added. For more information, see Appendix H, “Messages and codes,” on page 155.

### SC18-9346-09

- New configuration setting (**BKR\_Catalog\_ExtentCat\_Enabled**) was added to the BKRSYSTEM CONFIG file. For more information, see “Step 5h. Configure backup catalog parameters” on page 42.
- Additional error handling was added for conditions that can occur during SFS backup. A new status (CSL Error) was added to the DUMPSFS termination summary message. For more information, see “SFS (DUMPSFS statement processing)” on page 150.
- New messages were added. For more information, see Appendix H, “Messages and codes,” on page 155.

## SC18-9346-08

- The BKRSYSTM CONFIG sample file (BKRSYSTM CONFSAMP) was updated. For more information, see “Step 5. Copy and customize the BKRSYSTM CONFIG file” on page 36.
- The steps to modify the sample PROFILE EXEC files were updated. For more information, see “Step 3. Copy and customize the sample PROFILE EXECs” on page 27.
- A new variable, **Tape\_Enable\_EOF1HDR1**, was added. For tapes that are created with the IBMTAPE, IBMTWIN or DUALTAPE output methods, **Tape\_Enable\_EOF1HDR1** affects the way standard label (SL) information is generated. For more information, see “Step 5f. Configure tape handling exits” on page 39.
- A new CONFIG variable, **BKR\_Job\_Tape\_Enable\_EOF1HDR1**, was added. **BKR\_Job\_Tape\_Enable\_EOF1HDR1** provides a job-level override for the BKRSYSTM CONFIG variable **Tape\_Enable\_EOF1HDR1**. For more information, see “CONFIG” on page 73.
- A new variable, **BKR\_Catalog\_Compression\_Enabled**, was added. **BKR\_Catalog\_Compression\_Enabled** specifies whether individual data files in the backup catalog are stored in compressed format. For more information, see “Step 5h. Configure backup catalog parameters” on page 42.
- A new SUSPEND mode was added. For more information, see “Service virtual machine error recovery and diagnosis” on page 64.
- New messages were added. For more information, see Appendix H, “Messages and codes,” on page 155.

## SC18-9346-07

- New messages were added. For more information, see Appendix H, “Messages and codes,” on page 155.
- Information was added to the **BKR\_Job\_Tape\_Retention** description. For more information, see “CONFIG” on page 73.

## SC18-9346-06

- Information about the DUALTAPE output handler was added. For more information, see “Creating concurrent copies of output tapes” on page 63, “Including or excluding objects from processing (INCLUDE and EXCLUDE)” on page 68, “CONFIG” on page 73 (for the new and modified operands that support DUALTAPE) “Stand-alone tape handling exits” on page 137, and Appendix G, “DDRTAPE output handler usage guidelines,” on page 153.
- Support for batch restore processing was added. For more information, see “Methods of restoring data” on page 16 and “Batch restore processing” on page 72.
- A new topic (“Managing job template files” on page 47) was added that details the steps required to manage your job template files once Backup and Restore Manager is running.
- BKRCATLG SFS ADMIN authority requirements were modified. For more information, see “Step 1c. Verify privileges for the master catalog server (BKRCATLG)” on page 23.
- Tape handling that is based on the BKRSYSTM CONFIG file setting of **Tape\_Retain\_After\_EOJ** was changed. For more information, see “Step 5f. Configure tape handling exits” on page 39.
- A new job template setting (**BKR\_Job\_Consecutive\_Failed\_Task\_Limit**) was added. For more information, see “CONFIG” on page 73.

- A new backup job template keyword, SUMMARIZE, was added. For more information, see “SUMMARIZE” on page 85.
- Selection record syntax descriptions were updated to include syntax diagrams. For more information, see “Selection record syntax (INCLUDE, EXCLUDE, and SELECT statements)” on page 88.
- A minidisk that passes INCLUDE and EXCLUDE filtering, but is not accessible through the CP **LINK** command during backup job processing, is now identified by a link failure message in the BKRWRK $mm$  console log (instead of a file). For more information, see “Including or excluding objects from processing (INCLUDE and EXCLUDE)” on page 68, “REVIEW” on page 106, and “SUBMIT” on page 107.
- Messages 9215E through 9303W were added. For more information, see Appendix H, “Messages and codes,” on page 155.

### SC18-9346-05

- A new sample template (SAMPLNX TEMPSAMP) was added. For more information, see “Linux guest operating system (SAMPLNX TEMPSAMP)” on page 122.
- Toleration of truncated directory structures was added to **EXPIRE (PURGE)** command processing. For more information, see “EXPIRE” on page 109.
- Workers now remove all of the files from the temporary workspace on file mode D at startup. For more information, see “Step 1d. Verify privileges for worker service virtual machines (BKRWRK $xx$ )” on page 24.
- You can now specify **SET EXPIRE** *jobnameinstance* NOW to immediately expire a catalog entry. For more information, see “SET EXPIRE” on page 112.
- BKRCATLG now detects and tolerates a catalog entry for an object with a null real DASD volume label. For more information, see “DASD volume and extent tracking” on page 56.
- The sample job templates were updated. For more information, see Appendix A, “Sample job templates,” on page 115.
- Time stamp messages 8897I and 9097I are now zone-corrected instead of coordinated universal time (UTC). For more information, see Appendix H, “Messages and codes,” on page 155.
- New messages were added. For more information, see Appendix H, “Messages and codes,” on page 155.
- The information for DDRTAPE was updated. For more information, see Appendix G, “DDRTAPE output handler usage guidelines,” on page 153.

### SC18-9346-04

- New functionality was added to the BKRCATLG service virtual machine. BKRCATLG now requires OPTION LNKNOPAS or RACF® OPERATIONS (or equivalent third-party ESM) authorization. For more information, see “Step 1c. Verify privileges for the master catalog server (BKRCATLG)” on page 23.
- Information was added to describe how Backup and Restore Manager validates the BKRSYSTEM CONFIG file. For more information, see “Step 5. Update the BKRWRK $xx$  PROFILE EXEC” on page 50.
- Workers now release DISKPOOL media at EOJ based on the **Tape\_Retain\_After\_EOJ** setting. For more information, see “Step 5f. Configure tape handling exits” on page 39.
- The **Tape Delay Interval** description was clarified. For more information, see “Step 5f. Configure tape handling exits” on page 39.

- The DISKPOOL file format was enhanced to support SFS file spaces. For more information, see “Configuring DISKPOOL files to identify output resources” on page 61.
- SELECT statement syntax was added to support extended DASD volume selection for INCLUDE and EXCLUDE selection records. For more information, see “Including or excluding objects from processing (INCLUDE and EXCLUDE)” on page 68.
- Information was added to describe wildcard character support for INCLUDE and EXCLUDE selection records. For more information, see “Supported wildcard characters” on page 89.
- Logical job template variables that require either a true or false setting in backup templates now accept a variety of true or false settings. For more information, see “Specification of logical job template variables” on page 73.
- A new value (DDRTAPE SCRATCH RW 1) was added to **BKR\_OUTPUT\_SPEC**. For more information, see “CONFIG” on page 73.
- A new configuration parameter, **BKR\_JOB\_TOLERATE\_DISKPOOL\_DEPLETION**, specifies whether abend processing occurs when no suitable disk pool member can be found. For more information, see “CONFIG” on page 73.
- Several new service virtual machine commands were added:
  - **QUERY DISKPOOL**
  - **QUERY INSTANCE**
  - **SET INSTANCE**
 For more information, see Chapter 6, “Service virtual machine commands,” on page 95.
- The description of the **EXPIRE** command was updated. For more information, see “EXPIRE” on page 109.
- The SAMPFULL, SAMPDR, and SAMPINCR sample templates were updated to reflect toleration for mixed-case configuration settings and extended logical variable support. For more information, see Appendix A, “Sample job templates,” on page 115.
- Information that describes the new DDR output handler was added. For more information, see “Backup types” on page 12, “Creating concurrent copies of output tapes” on page 63, “Job templates” on page 8, “Using the RESTORE command to restore data” on page 72, “DDR (DDRSAMP TEMPSAMP)” on page 120, and Appendix G, “DDRTAPE output handler usage guidelines,” on page 153.
- The required privileges for BKRAADMIN, BKRBKUP, and BKRWRKxx were updated. For more information, see “Step 1a. Verify privileges for the Backup and Restore Manager administrator (BKRAADMIN)” on page 22, “Step 1b. Verify privileges for the master Backup and Restore Manager server (BKRBKUP)” on page 23, and “Step 1d. Verify privileges for worker service virtual machines (BKRWRKxx)” on page 24.

### SC18-9346-03

- The configuration steps were updated and clarified. For more information, see “Configuration steps” on page 22.
- Information was added to the software requirements. For more information, see “Prerequisites” on page 18.
- Information about allocating the SFS file space and file pool for the backup catalog was added to the topic “Step 2. Allocate SFS resources for the backup catalog” on page 25.

- Information regarding DISKPOOL considerations was added. For more information, see “Configuring DISKPOOL files to identify output resources” on page 61 and “Storage media considerations” on page 17.
- The description of the MASTER tag in the BKRUSERS NAMES file was updated. For more information, see “Step 4. Copy and customize the BKRUSERS NAMES file” on page 34.
- Information was added to further describe the following service virtual machine commands:
  - HALT
  - STATUS
  - PAUSE
  - CANCEL
  - RESTART
  - REVIEW
  - SUBMIT
  - EXPIRE
  - QUERY TAPES
  - SET EXPIRE

For more information, see Chapter 6, “Service virtual machine commands,” on page 95.

- The descriptions for the following DUMPxxx commands were updated:
  - DUMPCKD
  - DUMPEDF
  - DUMPFBA
  - DUMPSFS

For more information, see Chapter 5, “Job syntax,” on page 73.

- Call type descriptions were added for INIT, DATA, and TERM. For more information, see “Exit register processing” on page 133.
- Information was added to the steps regarding “Adding a worker service virtual machine” on page 60 and “Removing an instance of a worker service virtual machine” on page 61.
- The **Worker\_Stage\_Type**, **Worker\_Pool\_Minidisk\_Mode**, and **Worker\_Idle\_Timeout** parameter descriptions were updated. For more information, see “Step 5i. Specify reserved worker service virtual machine settings” on page 45.
- An example that shows the relationship between **Tape\_Delay\_Interval** and **Tape\_Times\_To\_Poll** parameters was provided. For more information, see “Step 5f. Configure tape handling exits” on page 39.
- Information was added to clarify authorization requirements for worker service virtual machines for SFS resources, which are managed, or used, by Backup and Restore Manager. For more information, see “Step 1d. Verify privileges for worker service virtual machines (BKRWRKxx)” on page 24.
- Information was added to clarify “Variable substitutions” on page 93.
- Operands for the CONFIG keyword were updated. For more information, see “CONFIG” on page 73.
- Additional information was provided for incremental backups.
- The description of the ADDRESS keyword was updated. For more information, see “Real device selection by address (RDEVICE)” on page 69.

- Information about minidisk selection was added to the topic “Minidisk selection (MINIDISK)” on page 69.
- Information for creating root catalog directory structures was added to the topic “Step 6. Create root catalog directory structures” on page 46.
- Information was added to the topic “Modifying ADMPROF SAMPEXEC (BKRADMIN)” on page 27.
- Information was added to the topic “Controlling a user's ability to restore data” on page 17.
- The syntax extensions to CANCEL, PAUSE, and RESUME enable "reference by jobname" in the case where multiple workers are deployed on a single job. This allows you to cancel, pause, and resume processing across multiple workers with a single command. For more information, see Chapter 6, “Service virtual machine commands,” on page 95.
- Information was added to clarify tape management interface exits. For more information, see Appendix D, “Tape management interface exits,” on page 137.
- New messages were added. For more information, see Appendix H, “Messages and codes,” on page 155.

## SC18-9346-02

- The sample PROFILE EXEC routines for the administrator, master, catalog, and worker service virtual machines were updated. For more information, see “Step 3. Copy and customize the sample PROFILE EXECs” on page 27.
- New backup job CONFIG keyword variables were added:
  - **BKR\_JOB\_BACKUP\_RESERVED\_AS\_IMAGE** was added to determine how to handle minidisks that are processed by the CMS RESERVE command.
  - **BKR\_JOB\_SUPPRESS\_IMAGE** was added to suppress image backups.
  - **BKR\_JOB\_EUM\_POOL\_OWNER** and **BKR\_JOB\_EUM\_POOL\_NAME** were added to override default tape pool values.
  - **BKR\_JOB\_TAPE\_DSN** was added to set the job-level value for data set name in tape labels.

For more information, see “CONFIG” on page 73.

- The BKRBKUP reply to a STATUS command was enhanced. For more information, see “STATUS” on page 97.
- New sample processing exits were added:
  - BKRNUDAY SAMPEXEC is a new "start of new day" processing exit for the master backup server.
  - User Data Processing Exits (UDPEs) can now be called during both backup and restore operations so you can see the data that is processed.

For more information, see Appendix C, “Sample processing exits,” on page 131.

- The following changes were made to the BKRSYSTEM CONFIG file:
  - A new **BKR\_Global\_Default\_Tape\_DSN** parameter was added to a set a system-wide default for tape labels. For more information, see “Step 5f. Configure tape handling exits” on page 39.
  - New settings were added to optionally reserve worker service virtual machines specifically for backup and restore processing. For more information, see “Step 5i. Specify reserved worker service virtual machine settings” on page 45.
- Backup templates can now INCLUDE or EXCLUDE real DASD devices by address or volume label. For more information, see “Including or excluding objects from processing (INCLUDE and EXCLUDE)” on page 68.

---

## Backup and Restore Manager components

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

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

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

### Master backup service virtual machine

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

### Catalog service virtual machine

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

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

- Information for backup processes including:
  - Job-level data (date, time, owner, and so on)
  - Data source information
  - Media-level data (tape volser, location on the media, and so on)
- 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 for the duration of processing. After the worker service virtual machines finish processing their work, they log off of the system (no console sessions are active).

**Note:** Worker service virtual machines are also known as *worker task* service virtual machines.

### Clients

A *client* is a virtual machine (typically, a CMS user).

Clients initiate requests through the master backup service virtual machine. Multiple clients can share access to a single master backup service virtual machine.

### Job templates

Backup and Restore Manager provides sample job templates that facilitate the creation of backup jobs for various types of backup operations.

With templates, you define the type of processing that you want Backup and Restore Manager to perform and the objects that you want Backup and Restore Manager to include or exclude from backup operations.

## Full-panel catalog browser interface

Backup and Restore Manager provides a full-panel catalog browser interface from which users can browse the contents of the backup catalog by job, DASD extent, DASD volume, user ID, or file listing.

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). From the catalog browser interface, users can easily locate and restore their own data. For more information, see the *Backup and Restore Manager User's Guide*.

## Command line interface

To interact with the Backup and Restore Manager service virtual machines to start or stop processing, obtain server status, review and submit jobs, and expire backup catalog content, privileged users can issue operator commands.

For more information, see Chapter 6, "Service virtual machine commands," on page 95.

## Tape management system interface

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

For information about integrating Tape Manager with Backup and Restore Manager, see "Configuring Backup and Restore Manager to work with Tape Manager for z/VM" on page 48. For information about exit routines, see Appendix D, "Tape management interface exits," on page 137.

**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/stormgmt/zvm/tape/>

---

## 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 10 shows an overview of Backup and Restore Manager backup processing. The diagram shows three backup jobs where an SFS file, a raw CKD DASD extent, and an EDF minidisk are backed up to tape.

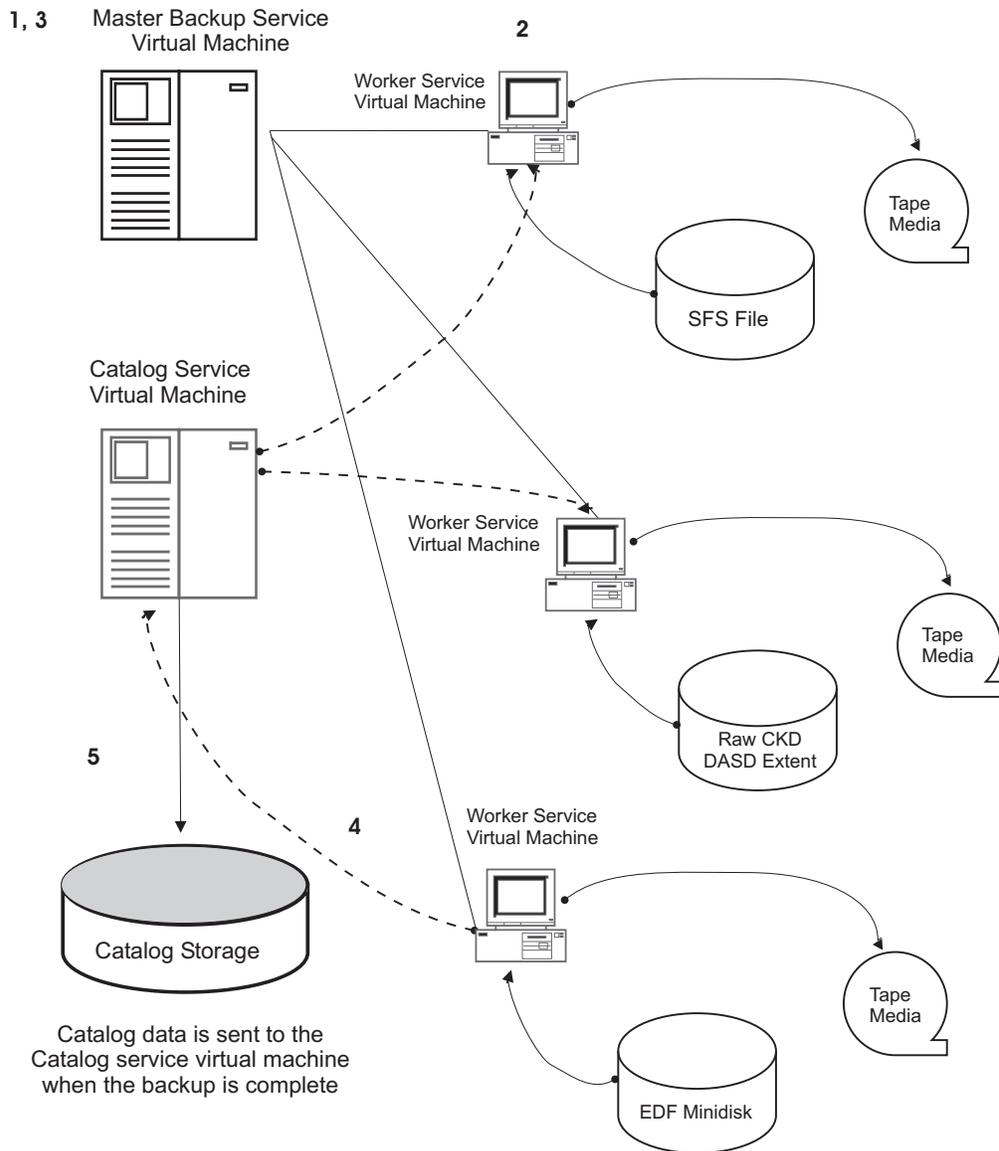


Figure 1. Backup processing (three backup jobs backing up objects to tape)

The following actions occur during backup processing:

1. The master backup service virtual machine initiates backup job processing, including performing all include and exclude processing and assigning tasks to workers.
2. Worker service virtual machines perform backup job processing.
3. The master backup service virtual machine monitors worker service virtual machine processing.
4. When a worker service virtual machine completes backup job processing, it generates data (catalog granules) that are sent to the catalog service virtual machine.
5. The catalog service virtual machine records the data (such as the job name and instance, job owner, date and time of job instantiation) for inclusion in the catalog.

## Restore processing

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

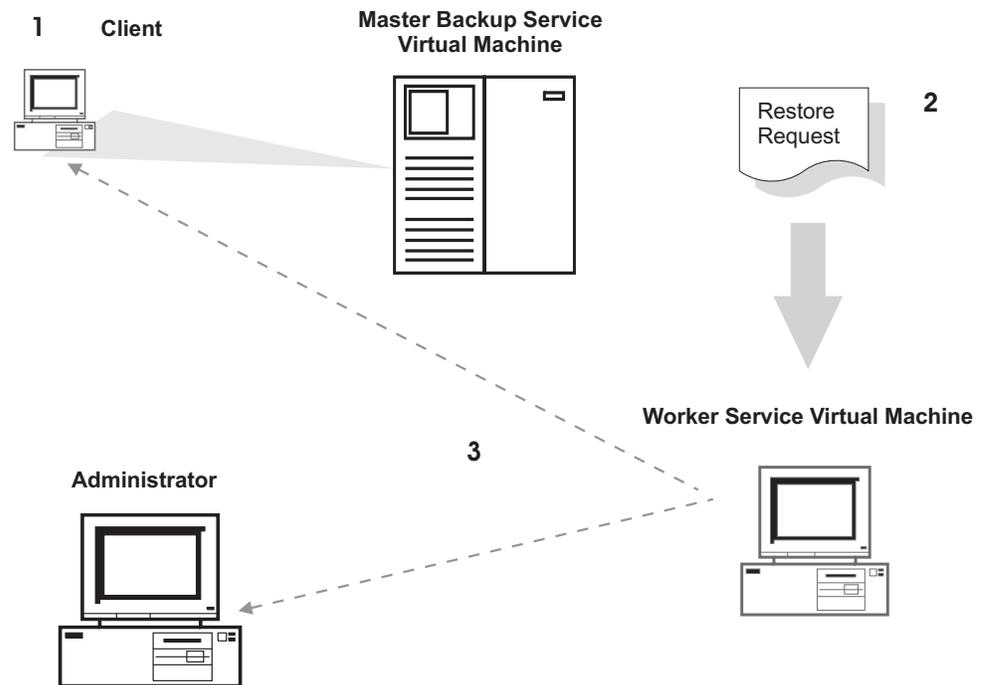


Figure 2. Restore processing

The following actions occur during restore processing:

1. A client (a CMS user) initiates a restore request through the master backup service virtual machine using the RESTORE command.
2. The master backup service virtual machine validates the request; if 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.

---

## Backup operations

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.

- Back up one file, a group of files, or an entire minidisk (the source data can reside 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 and so on, 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.

## Methods of backing up data

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
- VM running under a z/VM 6.2 guest system

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

For more information, see “Creating backup jobs” on page 65.

## Backup routines

Backup and Restore Manager provides backup routines that you can call from REXX applications. Use backup routines to back up the following items:

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

See the *Backup and Restore Manager User's Guide* for information.

## 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 filespace. See the *Backup and Restore Manager User's Guide* for examples and information about performing application development with the Backup and Restore Manager data packaging tools.

## 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 on the system. A full backup provides a complete baseline copy of the data from which you can restore the entire system, if needed.

### 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. This scenario could require the user or backup administrator to invest a significant amount of time reviewing catalog contents and selecting the files to restore.

## Full and incremental backups according to data type

Non-CMS data, which includes guest operating system volumes such as Linux file system minidisks that reside on CKD or FBA DASD volumes, is only handled through full backups as shown in Table 1.

*Table 1. Full and incremental backups according to data type*

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

**Note:** Minidisks that have not been 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 differs from 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. For more information, see Chapter 4, “Performing backup and restore operations,” on page 65.

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 153. For more information about DDR, see the *z/VM CP Commands and Utilities Reference*.

## 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.

## 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.

## Backup hierarchy and levels

Backup and Restore Manager retains multiple levels of backups so that you have a history of the objects that were backed up and when they were backed up. Retaining a history of the backups you perform is useful when you need to identify a period of time from which to restore data or you need to determine when a particular problem occurred.

The multiple levels of backups comprise a *backup hierarchy* that Backup and Restore Manager stores in the backup catalog. The hierarchy illustrates the relationship between backup levels as shown in Figure 3 on page 15.

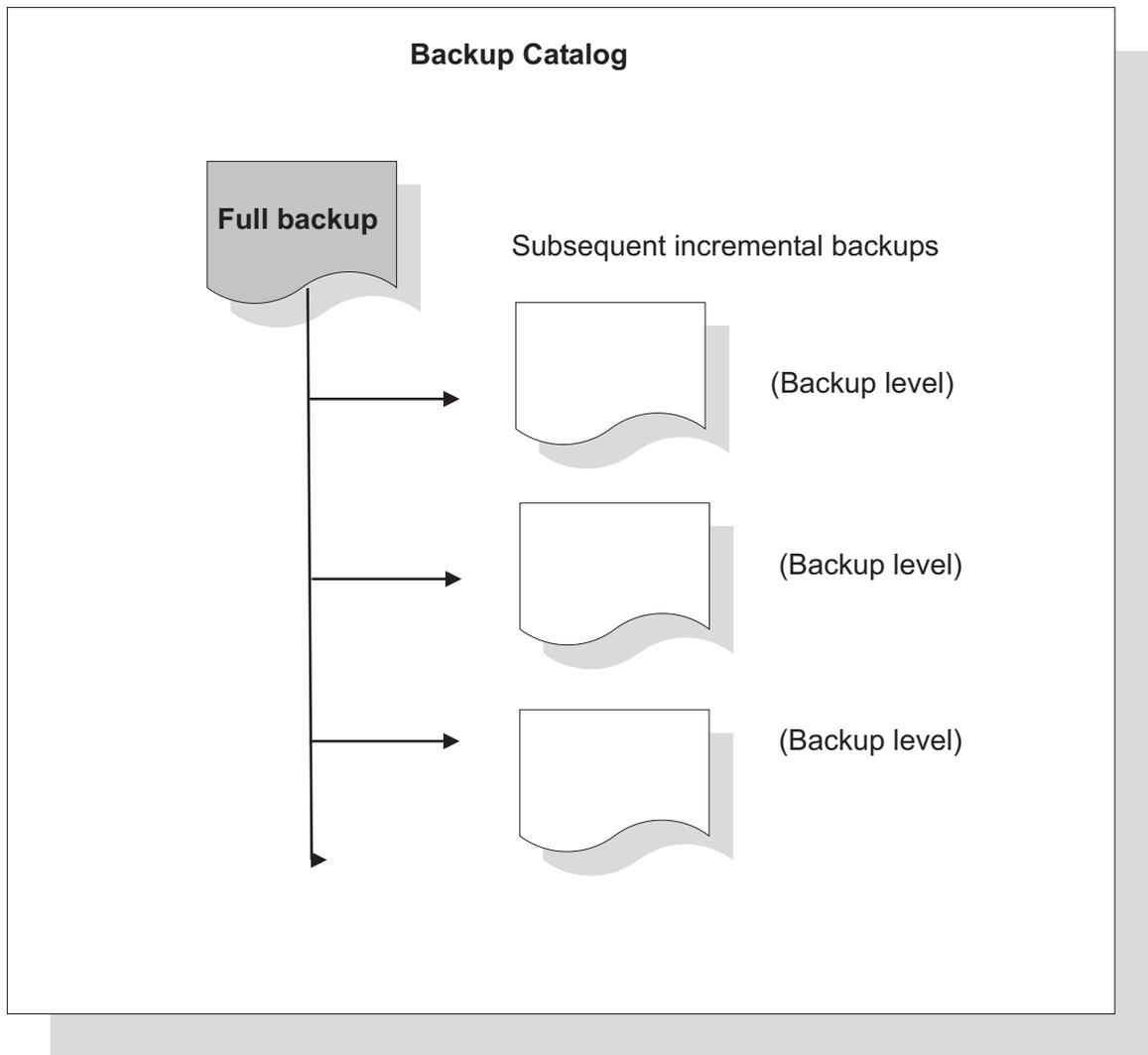


Figure 3. Backup hierarchy and levels

## Retention of backups

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 backup level an expiration date that determines when the backup data is removed from the catalog. For example, you might want to specify that backups be retained until the end of the month when the oldest can be expired.

For more information, see “Aging and expiration of catalog content” on page 57.

---

## Restore operations

With 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. See the *Backup and Restore Manager User's Guide* for information about using the catalog browser interface to perform restore operations.

### 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. For more information, see the *Backup and Restore Manager User's Guide*.

### Restore routines

Restore routines enable you to restore data such as a raw CKD or FBA image, or files that were backed up from a CMS formatted minidisk or SFS filespace. For more information, see the *Backup and Restore Manager User's Guide*.

### 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. See the *Backup and Restore Manager User's Guide* for examples and information about performing application development with the Backup and Restore Manager data packaging tools.

### Batch restore processing

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

For more information, see "Batch restore processing" on page 72 and the *Backup and Restore Manager for z/VM User's Guide*.

## Controlling a user's ability 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*.
  - 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.

---

## Disaster recovery tasks

To help ensure that your system is up and running as soon as possible, facilitate disaster recovery-related tasks with Backup and Restore Manager.

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.

For more information, see “Performing disaster recovery tasks” on page 63.

---

## Storage media considerations

Consider how you want to use various storage media with Backup and Restore Manager.

### Disk devices

A DASD-based backup stores backup content on CMS formatted minidisks (one EDF file per backed-up object). You identify minidisks to the server processes using DISKPOOL files that are located on the configuration minidisk of the master backup server. For more information, see “Configuring DISKPOOL files to identify output resources” on page 61.

#### Note:

- An administrator must format the minidisks prior to use. 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 another virtual machine is linked to a pool minidisk (read-only or read-write) the pool minidisk becomes inaccessible to the worker task

service virtual machine. Therefore, consider assigning pool minidisks to a "dummy" user ID, or to a user that is ordinarily logged off of the system.

- The DISKPOOL must contain at least one minidisk entry for each worker that is deployed to handle backup work.

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 particular pool. Allocating at least one extra minidisk to the pool helps ensure that a minidisk is available for a worker that requires a new minidisk volume during backup processing.

**Note:** If there are fewer minidisks than workers, all of the workers will not be able to acquire output media which results in a worker task SVM ABEND for the affected workers.

## Tape devices

When using 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 prior to use.)
- Backup and Restore Manager supports tape devices that are supported by CMS. The tape device must support a maximum block size of 64K.

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

- Full integration with Tape Manager is provided. For more information, see "Configuring Backup and Restore Manager to work with Tape Manager for z/VM" on page 48.
- Exit routines provide integration with other tape management systems. For more information, see Appendix D, "Tape management interface exits," on page 137.

**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.

---

## Prerequisites

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

### Hardware requirements

Backup and Restore Manager runs on hardware that supports z/VM and works with any VM supported DASD and tape and IBM's virtual tape systems (VTS).

### Software requirements

Backup and Restore Manager has the following software requirements:

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

- IBM Library for REXX on zSeries V1.4
- IBM Alternate Library for REXX on zSeries

### **Compatibility with prior versions**

Backup and Restore Manager for z/VM V1.2 is upwardly compatible with Backup and Restore Manager for z/VM V1.1. All configuration files that were created with V1.1 continue to work with V1.2. All backup data that is created with V1.1 can be restored using V1.2.



---

## Chapter 2. Configuring Backup and Restore Manager

These topics describe how to configure Backup and Restore Manager.

**Topics:**

- “Configuration summary”
- “Configuration steps” on page 22
- “Configuring Backup and Restore Manager to work with Tape Manager for z/VM” on page 48

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

---

### Configuration summary

After you install Backup and Restore Manager as described in the *Backup and Restore Manager for z/VM Program Directory*, 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* provisions four worker service virtual machines: (BKRWRK01 - BKRWRK04).

Table 2. Summary of configuration steps

Step	Description	Sample files
1	Verify privileges for Backup and Restore Manager servers.	(Not applicable)
2	Allocate SFS resources for the backup catalog.	(Not applicable)
3	Copy and customize the sample PROFILE EXEC routines.	ADMPROF SAMPEXEC, CATPROF SAMPEXEC, MASTPROF SAMPEXEC, and WRKPROF SAMPEXEC
4	Copy and customize the sample BKRUSERS NAMES file.	BKRUSERS NAMESAMP
5	Copy and customize the sample BKRSYSTEM CONFIG file.	BKRSYSTEM CONFSAMP
6	Create the root catalog directory structures.	(Not applicable)
7	Review and copy the sample backup job templates.	SAMPFULL, SAMPINCR, SFSONLY, SAMPLNX, and ZVM62 TEMPSAMP
8	Customize the sample backup job templates for local use.	(See step 7)
9	Start the service virtual machines and add them to system startup procedures.	(Not applicable)

### Sample system configuration files

Backup and Restore Manager provides sample system configuration files that are on the SAMPLES minidisk or SFS directory that is associated with the product installation and maintenance user 5697J06B.

These 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.

---

## Configuration steps

Complete these steps to configure Backup and Restore Manager.

**Note:** 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*:

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

### Step 1. Verify privileges for the Backup and Restore Manager servers

Complete these steps to verify privileges for the Backup and Restore Manager servers.

#### Step 1a. Verify 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 that is responsible for installing and configuring the product. The administrator user account owns the minidisks or SFS directories that contain the runtime support and configuration files for the Backup and Restore Manager service virtual machines.

The following privileges are required for BKRADMIN:

- CP privilege class G (minimum).
- The RACF OPERATIONS attribute is required if RACF is installed, or equivalent authority for other installed external security managers (ESMs).
- OPTION LNKNOPAS is required to allow BKRADMIN to link to all disks on the system without specific authorization. This function is used during diagnostic execution of the **MAKEJOB** command. If an ESM is installed, such as RACF, then equivalent authority, such as RACF OPERATIONS, is required instead of LNKNOPAS.

The following privileges are recommended for BKRADMIN:

- Administrator privileges in Backup and Restore Manager. For more information, see “Step 4. Copy and customize the BKRUSERS NAMES file” on page 34.
- Administrator access to SFS file pools.

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

```
ADMIN BKRADMIN
```

**Note:** The DMSPARMS file is located on the SFS file pool server service virtual machine 191 minidisk. Modification of the DMSPARMS file requires that you shut down and restart file pool. Therefore, 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*.

### **Step 1b. Verify privileges for the master Backup and Restore Manager server (BKRBKUP)**

The master Backup and Restore Manager server contains the backup job template definitions. As an administrator, you submit backup jobs and perform data recovery tasks using the Backup and Restore Manager server. BKRBKUP dispatches worker service virtual machines to handle backup and recovery tasks, and monitors the status of worker service virtual machines and the master catalog service virtual machine.

The following privileges are required for BKRBKUP:

- CP privilege classes B and G. Privilege class B enables use of the CP **MSGNOH** command.
- OPTION LNKNOPAS in the CP directory. OPTION LNKNOPAS or equivalent external security managers (ESMs) authorization is required for the **SUBMIT**, **REVIEW**, and **RESTART** commands because BKRBKUP inspects minidisks during job template processing.
- For use of the CANCEL command, BKRBKUP requires CP privilege class A for use of the CP **FORCE** command and CP class D for use of the **PURGE** command. For more information, see “CANCEL” on page 100.
- The RACF OPERATIONS attribute is required if RACF is installed, or equivalent authority for other installed ESMs.

The following privileges are recommended for BKRBKUP:

- Administrator access to SFS file pools. See “Step 1a. Verify privileges for the Backup and Restore Manager administrator (BKRADMIN)” on page 22 for information about providing administrator access to SFS file pools.

### **Step 1c. Verify privileges for the master catalog server (BKRCATLG)**

The master catalog server contains the backup catalog that represents the data that Backup and Restore Manager manages. Worker service virtual machines send catalog content to the catalog service virtual machine during backup activity and reference catalog content during incremental backups. The Backup and Restore Manager administrator can access the catalog structure to gather various data and generate backup activity reports.

The following privileges are required for BKRCATLG:

- CP privilege classes B and G in the CP directory. Privilege class B enables use of the CP **MSGNOH** command.
- OPTION LNKNOPAS or RACF OPERATIONS (or equivalent third-party ESM) authorization. To delete backup files from the media during **EXPIRE** command processing, BKRCATLG must be able to obtain a WR-mode LINK to DISKPOOL members.

**Note:** The OPTION LNKNOPAS or RACF OPERATIONS requirement is waived for sites that do not back up to minidisk. Sites that only back up to tape or SFS are not affected.

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

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

**Note:** A dedicated SFS server requires you to deploy an additional service virtual machine. See *CMS File Pool Planning, Administration, and Operation* for the instructions to set up an SFS file pool server.

### Step 1d. Verify privileges for worker service virtual machines (BKRWRKxx)

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 recovery job.

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

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 "twin set" or "dual" tapes are used, each worker requires two tape drives.
- The available I/O bandwidth between the processor, source data, and backup storage destination.

The following privileges are required for worker service virtual machines:

- If SELECT RDEVVOL or SELECT RDEVICE statements are used in backup job templates, worker task service virtual machines (BKRWRKxx) require CP privilege class A and OPTION DEVMAINT attributes in the CP directory, or equivalent ESM authorization. When these statements are used, worker task service virtual machines must be able to use the CP **DEFINE MDISK** command.
- Privilege class B and G, OPTION LNKNOPAS in the CP directory. If an External Security Manager is installed, such as RACF, then equivalent authority, such as RACF OPERATIONS, is required instead of LNKNOPAS.
- All worker service virtual machines require ADMIN authority for SFS resources that are managed, or used, by Backup and Restore Manager, including the following file pools:
  - SFS file pools that are to be backed up using Backup and Restore Manager
  - SFS file pools to which data is restored using Backup and Restore Manager
  - The SFS file pool that is configured to contain the backup catalog file space

See “Step 1a. Verify privileges for the Backup and Restore Manager administrator (BKRADMIN)” on page 22 for information about providing administrator access to SFS file pools.

- The RACF OPERATIONS attribute is required if RACF is installed, or equivalent authority for other installed ESMs.
- If your system directory includes minidisks that are defined by means of 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 regarding these minidisks during the backup process. Worker service virtual machines require OPTION DEVINFO in their CP directory entries to use this facility.

**Note:** Worker service virtual machines attempt to link target minidisks in STABLE mode if you enable this behavior by specifying OPTION LNKSTABL in the worker service virtual machine directory entry. Specifying OPTION LNKSTABL is left to the discretion of the Backup and Restore Manager administrator. Specifying OPTION LNKSTABL is not a requirement for worker service virtual machines.

For more information about worker service virtual machines, see “Managing worker service virtual machines” on page 59.

## Step 2. Allocate SFS resources for the backup catalog

The Backup and Restore Manager backup catalog contains a record of each minidisk and each SFS file space placed into backup storage. 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 and file space captured by a backup job, and each instance of every cataloged backup job.

**Tip:** To provide a convenient way to organize catalog content in a hierarchical manner, place the catalog in an SFS file space.

Two SFS file pools, VMSYS: and VMSYSU:, are preinstalled as part of the z/VM system installation process. 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 need to use one of the preinstalled file pools, allocate additional DASD space to Storage Group 1 (SFS catalog space) and Storage Group 2 (data storage) according to instructions in *CMS File Pool Planning, Administration, and Operation*.

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. Relevant considerations include:

- Isolating the backup catalog in a unique, dedicated file pool simplifies disaster recovery planning.
- DASD management tasks, such as adding additional 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 from one installation to another depending upon the number of users, number of minidisks, file spaces and files, and catalog retention policies.

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

- Minidisks or file spaces that are recorded in the catalog
- Files that are contained on each CMS-format minidisk
- Files and directories that are contained in each SFS file space

## Formula to estimate the amount of space required for the catalog file pool

To estimate the amount of space that is required for the catalog file pool, use the following formula:

- 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

## Example: Determining backup catalog storage requirements

For example, the MAINT 19D minidisk requires approximately 1,700 SFS data blocks to record catalog data for approximately 13,000 files on the CMS-format minidisk. The CMS system disk MAINT 190 with approximately 850 files, requires approximately 110 SFS data blocks.

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.

**Note:** If you establish the backup catalog in a dedicated SFS file pool server, the procedures for adding additional disk space to the file pool can be implemented with minimal disruption to system operations.

## Defining the backup catalog file pool and file space

If you choose a dedicated SFS file pool for Backup and Restore Manager as recommended, 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.

Whether you use by z/VM VMSYS or VMSYSU 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
```

For more information, see “Step 5h. Configure backup catalog parameters” on page 42.

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

### Step 3. Copy and customize the sample PROFILE EXECs

Backup and Restore Manager provides sample PROFILE EXEC routines for the administrator, master, catalog, and worker service virtual machines. During the installation process, these files are placed on the appropriate service virtual machine 191 minidisks. To facilitate installation, BKRADMIN and 5697J06B link to each of these minidisks.

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

- For minidisk-based installation, copy files from: 5697J06B 2C2 to the appropriate target minidisk.
- For SFS-based installation, copy files from: VMSYS:5697J06B.BKUPMGR.SAMPLES to the individual Service Virtual Machine 191 or to the SFS directory.

**Note:** Table 3 shows the default addresses and directories. If you created a local override to the installation specifications, modify these targets.

Table 3. Sample PROFILE EXECs and targets

Sample PROFILE EXEC	Description	Target minidisk	Target SFS directory
ADMPROF SAMPEXEC	The profile for the Backup and Restore Manager administrator (BKRADMIN).	BKRADMIN 191	VMSYS:BKRADMIN.
CATPROF SAMPEXEC	The profile for the backup catalog service virtual machine (BKRCATLG).	BKRCATLG 191	VMSYS:BKRCATLG.
MASTPROF SAMPEXEC	The profile for the master backup service virtual machine (BKRBKUP).	BKRBKUP 191	VMSYS:BKRBKUP.
WRKPROF SAMPEXEC	The profile for the worker service virtual machines (BKRWRK $nn$ ).	BKRWRK $nn$ 191	VMSYS:BKRWRK01. - VMSYS:BKRWRK04.

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

- CP SPOOL CONSOLE statements that direct console logs to the local Backup and Restore Manager administrator account.
- **ACCESS** commands that reflect local product installation SFS directories, or minidisks.

#### Modifying ADMPROF SAMPEXEC (BKRADMIN)

ADMPROF SAMPEXEC is the recommended default PROFILE EXEC for the backup administrator, BKRADMIN.

Complete the following steps to modify the ADMPROF SAMPEXEC PROFILE EXEC:

1. Copy the ADMPROF SAMPEXEC PROFILE EXEC to the BKRADMIN 191 minidisk or root file space using the product installation user 5697J06B:
  - a. Log on to the product installation ID 5697J06B.
  - b. Link and access the BKRADMIN 191 minidisk as filemode Z:

```
LINK BKRADMIN 191 291 MR
ACCESS 291 Z
```

- c. Access the SAMPLES minidisk as filemode E:

```
ACCESS 2C2 E
```

- d. Copy the sample profile:

```
COPY ADMPROF SAMPEXEC E PROFILE EXEC Z
```

2. Edit the BKRADMIN PROFILE EXEC:

```
XEDIT PROFILE EXEC Z
```

3. Modify the ADMPROF SAMPEXEC PROFILE EXEC:

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

- b. Remove comments as appropriate.

- If the product is installed to minidisk, remove the following comments from the minidisk-based definitions of product component locations:

```
/* For MINIDISK-based installations, use these definitions: */
/*   remove
Config_Files = '198'
Job_Templates = '199'
SVM_RunTime = '591'
Client_Tools = '592'
*/   remove
```

- If the product is installed to SFS, remove the following comments from the SFS-based definitions of product component locations:

```
/* For SFS-based installations, use these definitions:      */
/*   remove
Config_Files = 'VMSYS:5697J06B.BKUPMGR.CONFIGURATION'
Job_Templates = 'VMSYS:5697J06B.BKUPMGR.JOBDEFS'
SVM_RunTime = 'VMSYS:5697J06B.BKUPMGR.RUNTIME'
Client_Tools = 'VMSYS:5697J06B.BKUPMGR.CLIENT'
*/   remove
```

- c. Each Backup and Restore Manager service virtual machine requires a temporary work area at file mode D. Allocate this space on minidisk or SFS. For BKRADMIN, ensure that the work area is large enough to contain copies of all backup job templates that have fully expanded INCLUDE and EXCLUDE results. Space equivalent to 25 cylinders of 3390 DASD is sufficient for most installations. Modify the following statements as appropriate:

```
/* Identify the destination for temporary files. */
/* Work_Area = 'VMSYS:'USERID()'.WORKAREA' */
/* For SFS-based work area... */
/* Work_Area = '299' */
/* For minidisk; must be formatted and ready for use. */
```

**Note:**

- In the SFS-based definition, the REXX USERID() function provides the virtual machine ID as the SFS file space in the work area directory definition. You must define the work area using the CMS **CREATE DIRECTORY** command.
- In the minidisk-based definition, the 299 minidisk can be allocated as permanent minidisk, temporary T-disk space, or on temporary VFB-512 DASD. Temporary minidisk space must be formatted for use as a CMS minidisk with a 4096-byte (4K) block size.

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

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

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

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

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

- f. When you are finished with the modifications, save the modified PROFILE EXEC on the BKRAADMIN 191 minidisk.
4. Release and detach the BKRAADMIN 191 minidisk:
- ```
REL 291 (DET
```

### Modifying CATPROF SAMPEXEC (BKRCATLG)

CATPROF EXEC is the recommended default PROFILE EXEC for the backup catalog service virtual machine, BKRCATLG.

Complete the following steps to modify the CATPROF SAMPEXEC PROFILE EXEC:

1. Copy the CATPROF SAMPEXEC PROFILE EXEC to the BKRCATLG 191 minidisk or root file space using the product installation user 5697J06B:
  - a. Log on to the product installation ID 5697J06B.
  - b. Link and access the BKRCATLG 191 minidisk as filemode Z:
 

```
LINK BKRCATLG 191 291 MR
ACCESS 291 Z
```
  - c. Access the SAMPLES minidisk as filemode E:
 

```
ACCESS 2C2 E
```
  - d. Copy the sample profile:
 

```
COPY CATPROF SAMPEXEC E PROFILE EXEC Z
```
2. Edit the BKRCATLG PROFILE EXEC:
 

```
XEDIT PROFILE EXEC Z
```
3. Complete the following steps to modify the CATPROF SAMPEXEC PROFILE EXEC:
  - a. If the recommended default, BKRAADMIN, is not used, modify SPOOL CONSOLE to direct the console to the local Backup and Restore Manager administrator.
  - b. Remove comments as appropriate.
    - If the product is installed to minidisk, remove the following comments from the minidisk-based definitions of product component locations:

```

/* For MINIDISK-based installations, use these definitions: */
/* remove
Config_Files = '198'
Job_Templates = '199'
SVM_RunTime = '591'
*/ remove

```

- If the product is installed to SFS, remove the following comments from the SFS-based definitions of product component locations:

```

/* For SFS-based installations, use these definitions: */
/* remove
Config_Files = 'VMSYS:5697J06B.BKUPMGR.CONFIGURATION'
Job_Templates = 'VMSYS:5697J06B.BKUPMGR.JOBDEFS'
SVM_RunTime = 'VMSYS:5697J06B.BKUPMGR.RUNTIME'
*/ remove

```

- c. Each Backup and Restore Manager service virtual machine requires a temporary work area at file mode D. Allocate this space on minidisk or SFS. For BKRCATLG, ensure that the work area is large enough to contain the catalog data that is currently being processed for addition to the backup catalog file space. Space equivalent to 50 cylinders of 3390 DASD is sufficient for most installations. Modify the following statements as appropriate:

```

/* Identify the destination for temporary files. */
/* Work_Area = 'VMSYS:'USERID()'.WORKAREA' */
/* For SFS-based work area... */
/* Work_Area = '299' */
/* For minidisk; must be formatted and ready for use. */

```

**Note:**

- In the SFS-based definition, the REXX USERID() function provides the virtual machine ID as the SFS file space in the work area directory definition. You must define the work area using the CMS **CREATE DIRECTORY** command.
  - In the minidisk-based definition, the 299 minidisk can be allocated as permanent minidisk, temporary T-disk space, or on temporary VFB-512 DASD. Temporary minidisk space must be formatted for use as a CMS minidisk with a 4096-byte (4K) block size.
- d. If you use Tape Manager for z/VM to provide tape management services, remove the following comments from the definition for Tape Manager interface tools:

```

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

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

```

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

*jobname instance days* command is processed, or when an **EXPIRE** (**PURGE** command removes an expired instance from the backup catalog.

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

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

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

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

4. Release and detach the BKRCATLG 191 minidisk:  
REL 291 (DET

### Modifying MASTPROF SAMPEXEC (BKRBKUP)

MASTPROF SAMPEXEC is the recommended default PROFILE EXEC for the master backup service virtual machine, BKRBKUP.

Complete the following steps to modify the MASTPROF SAMPEXEC PROFILE EXEC:

1. Copy the MASTPROF SAMPEXEC PROFILE EXEC to the BKRBKUP 191 minidisk or root file space using product installation user 5697J06B:
  - a. Log on to the product installation ID 5697J06B.
  - b. Link and access the BKRBKUP 191 minidisk as filemode Z:  
LINK BKRBKUP 191 291 MR  
ACCESS 291 Z
  - c. Access the SAMPLES minidisk as filemode E:  
ACCESS 2C2 E
  - d. Copy the sample profile:  
COPY MASTPROF SAMPEXEC E PROFILE = Z
2. Edit the BKRBKUP PROFILE EXEC:  
XEDIT PROFILE EXEC Z
3. Modify the MASTPROF SAMPEXEC PROFILE EXEC:
  - a. If the recommended default, BKRADMIN, is not used, modify SPOOL CONSOLE to direct the console to the local Backup and Restore Manager administrator.
  - b. Remove comments as appropriate.
    - If the product is installed to minidisk, remove the following comments from the minidisk-based definitions of product component locations:

```
/* For MINIDISK-based installations, use these definitions: */  
/*      remove  
Config_Files = '198'  
Job_Templates = '199'  
SVM_RunTime = '591'  
*/      remove
```

- If the product is installed to SFS, remove the following comments from the SFS-based definitions of product component locations:

```
/* For SFS-based installations, use these definitions: */
/* remove
Config_Files = 'VMSYS:5697J06B.BKUPMGR.CONFIGURATION'
Job_Templates = 'VMSYS:5697J06B.BKUPMGR.JOBDEFS'
SVM_RunTime = 'VMSYS:5697J06B.BKUPMGR.RUNTIME'
*/ remove
```

- c. Each Backup and Restore Manager service virtual machine requires a temporary work area at file mode D. Allocate this space on minidisk or SFS. For BKRKBKUP, ensure that the work area is large enough to contain the temporary files that are generated during backup template processing and job submission. Space equivalent to 25 cylinders of 3390 DASD is sufficient for most installations. Modify the following statements as appropriate:

```
/* Identify the destination for temporary files. */
/* Work_Area = 'VMSYS:'USERID()'.WORKAREA' */
/* For SFS-based work area... */
/* Work_Area = '299' */
/* For minidisk; must be formatted and ready for use. */
```

**Note:**

- In the SFS-based definition, the REXX USERID() function provides the virtual machine ID as the SFS file space in the work area directory definition. The work area must be defined using the CMS **CREATE DIRECTORY** command.
  - In the minidisk-based definition, the 299 minidisk can be allocated as permanent minidisk, temporary T-disk space, or on temporary VFB-512 DASD. Temporary minidisk space must be formatted for use as a CMS minidisk with a 4096-byte (4K) block size.
- d. If you use Tape Manager for z/VM to provide tape management services, remove the following comments from the definition for Tape Manager interface tools:

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

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

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

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

- 4. Release and detach the BKRKBKUP 191 minidisk:

```
REL 291 (DET
```

### Modifying WRKPROF SAMPEXEC (BKRWRK01...BKRWRK04)

WRKPROF SAMPEXEC is the recommended default PROFILE EXEC for each worker service virtual machine (BKRWRK01-04).

Complete these steps to modify the WRKPROF SAMPEXEC PROFILE EXEC:

1. Copy the WRKPROF SAMPEXEC PROFILE EXEC to the BKRWRK01 191 minidisk or root file space using product installation user 5697J06B:
  - a. Log on to the product installation ID 5697J06B.
  - b. Link and access the BKRWRK01 191 minidisk as filemode Z:
 

```
LINK BKRWRK01 191 291 MR
ACCESS 291 Z
```
  - c. Access the SAMPLES minidisk as filemode E:
 

```
ACCESS 2C2 E
```
  - d. Copy the sample profile:
 

```
COPY WRKPROF SAMPEXEC E PROFILE = Z
```
2. Edit the BKRWRK01 PROFILE EXEC:
 

```
XEDIT PROFILE EXEC Z
```
3. Modify the WRKPROF SAMPEXEC PROFILE EXEC:
  - a. If the recommended default, BKRADMIN, is not used, modify SPOOL CONSOLE to direct the console to the local Backup and Restore Manager administrator.
  - b. Remove comments as appropriate.
    - If the product is installed to minidisk, remove the following comments from the minidisk-based definitions of product component locations:
 

```
/* For MINIDISK-based installations, use these definitions: */
/* remove
Config_Files = '198'
Job_Templates = '199'
SVM_RunTime = '591'
*/ remove
```
    - If the product is installed to SFS, remove the following comments from the SFS-based definitions of product component locations:
 

```
/* For SFS-based installations, use these definitions: */
/* remove
Config_Files = 'VMSYS:5697J06B.BKUPMGR.CONFIGURATION'
Job_Templates = 'VMSYS:5697J06B.BKUPMGR.JOBDEFS'
SVM_RunTime = 'VMSYS:5697J06B.BKUPMGR.RUNTIME'
*/ remove
```
  - c. Each Backup and Restore Manager service virtual machine requires a temporary work area at file mode D. Allocate this space on minidisk or SFS. For BKRWRK $n$  service virtual machines, ensure that the work area is large enough to contain the temporary catalog data and other temporary files that are generated during backup or restore job processing. Space equivalent to 50 cylinders of 3390 DASD is sufficient for most installations. Installations that have many minidisks or file spaces, or that have CMS minidisks or file spaces with many files, might need to increase this allocation. Modify the following statements as appropriate:
 

```
/* Identify the destination for temporary files. */
/* Work_Area = 'VMSYS:'USERID()'.WORKAREA' */
/* For SFS-based work area... */
/* Work_Area = '299' */
/* For minidisk; must be formatted and ready for use. */
```

**Note:**

- In the SFS-based definition, the REXX USERID() function provides the virtual machine ID as the SFS file space in the work area directory definition. The work area must be defined using the CMS CREATE DIRECTORY command.

- In the minidisk-based definition, the 299 minidisk can be allocated as permanent minidisk, temporary T-disk space, or on temporary VFB-512 DASD. Temporary minidisk space must be formatted for use as a CMS minidisk with a 4096-byte (4K) block size.
- d. If you use Tape Manager for z/VM to provide tape management services, remove the following comments from the definition for Tape Manager interface tools:

```

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

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

```

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

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

```

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

```

4. Release and detach the BKRWRK01 191 minidisk:  
REL 291 (DET)
5. Repeat the above steps for each worker service virtual machine (BKRWRK02-BKRWRK04).

## Step 4. Copy and customize 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 5697J06B:

1. Access the system configuration disk as filemode Z:  
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
```

Figure 4 shows the contents of the sample BKRUSERS NAMES file (BKRUSERS NAMESAMP).

```
:nick.MASTER
      :list.BKRBKUP
      :COMMENT.Service virtual machines with "MASTER" authority

:nick.WORKERS
      :list.BKRWRK01 BKRWRK02 BKRWRK03 BKRWRK04
      :COMMENT.Worker virtual machines

:nick.ADMIN
      :list.BKRADMIN MAINT
      :COMMENT.Users with ADMIN privileges
```

Figure 4. Sample BKRUSERS NAMES file

5. Modify the sample BKRUSERS NAMES file to suit your specific site requirements:

**MASTER**

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

**WORKERS**

The names of all 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:**

- Locate the BKRUSERS NAMES file on the MAINT 19E (system Y disk) or other shared minidisk.
- Non-ADMIN 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.
- This file is maintained in the standard CMS NAMES file format.

## Step 5. Copy and customize the BKRSYSTEM CONFIG file

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

The contents of the BKRSYSTEM CONFIG file are validated during service virtual machine startup. The following checks are applied:

- For required settings, all required variables must be defined.
- Settings are checked for 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 5697J06B.

1. Access the system configuration disk as filemode Z:  
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. Modify the sample configuration file to specify the following information:
  - a. Installation contact information.
  - b. Administrator user, master backup, and backup catalog service virtual machine identification.
  - c. Worker service virtual machine settings.
  - d. Free storage for job template processing.
  - e. Enable or disable automatic format of unformatted CMS minidisks.
  - f. Tape handling exits.
  - g. If you are using the product for tape media management functions, Tape Manager for z/VM settings.
  - h. Backup catalog parameters.
  - i. Reserved worker service virtual machine settings.

### Notes:

- 1) Locate the BKRSYSTEM CONFIG file on 5697J06B 198. If the catalog browser interface components are installed to MAINT 19E, maintain a current copy of the BKRSYSTEM CONFIG file on MAINT 19E.
- 2) Because the file is shared, it must reside on a runtime-accessible minidisk or directory that is available to Backup and Restore Manager service virtual machines and users. Non-ADMIN privileged users require read-only access to the BKRSYSTEM CONFIG file. Read/write access is not required.
- 3) Comments are permitted within the BKRSYSTEM CONFIG file. To insert a comment, start the record with an asterisk (\*). Null records are allowed.

### **BKRSYSTEM CONFIG global settings**

The BKRSYSTEM CONFIG file global settings identify the product and version level and are not intended for site customization.

Do not modify the following global variable settings:

#### **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.

### **Step 5a. Specify installation contact information**

**Local\_SVM\_Contact** specifies installation-level contact information reported by the Backup and Restore Manager service virtual machines.

**Note:** 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.

### **Step 5b. Identify the administrator user, master backup, and backup catalog service virtual machines**

Modify the following Backup and Restore Manager administrator and service virtual machine variables if you do not want to use the default service virtual machine names provided in the file.

#### **Local\_Backup\_Admin\_ID**

The user ID of the main Backup and Restore Manager administrator. The default is BKRADMIN.

#### **Local\_Backup\_Master\_ID**

The user ID of the master backup service virtual machine. The default is BKRBKUP.

#### **Local\_Backup\_Catalog\_ID**

The user ID of the backup catalog service virtual machine. The default is BKRCATLG.

### **Step 5c. Specify worker service virtual machine settings**

Modify the following worker service virtual machine settings for your installation.

**Note:** 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 of 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 4K [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 this value to VFB-512. You can specify other values that are valid for CP DEFINE T-disk; however, the algorithm only supports VFB-512, T3390, and T3380.

### **Worker\_Pool\_Minidisk\_Mode**

The filemode 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).

### **Worker\_Pool\_Link\_Address**

Worker service virtual machines CP LINK "diskpool" minidisks at this address prior to accessing them as the filemode letter specified by **Worker\_Pool\_Minidisk\_Mode**.

**Note:** This variable is required for DISKPOOL support. Do not modify the default setting.

For more information, see "Configuring DISKPOOL files to identify output resources" on page 61.

## **Step 5d. Specify free storage for job template processing**

Use the following variables to specify free storage for job template processing.

**Template\_MDISK\_Buffer\_Pages** specifies the number of pages (1- *nnnnnn*) of CMS free storage that is requested during INCLUDE and EXCLUDE statement processing. The default is 768 pages.

For large installations, if the CP directory contains more than 52,000 MDISK definitions, increase the value of **Template\_MDISK\_Buffer\_Pages**. Calculate the minimum number of pages that are required using the following formula:

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

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 master backup server (BKRBKUP) virtual machine size from the default value of 64MB. When Backup and Restore Manager processes **REVIEW** or **SUBMIT** commands, sufficient CMS free storage must be available to accommodate a CMSSTOR OBTAIN request for a single contiguous block of storage that is the size specified by **Template\_MDISK\_Buffer\_Pages**.

## Step 5e. Enable or disable automatic format of unformatted CMS minidisks

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.

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.

## Step 5f. Configure tape handling exits

Configure the following tape handling exit settings.

### Tape\_Exit\_Context

The prefix text for exit routine and variable names that are invoked by input and output methods. This variable must be set to BKR.

**Note:** Do not modify this 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 determining 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 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 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 abandoning the attempt. The default value is 5 (request a tape mount 5 times before abandoning the attempt).

#### **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.

#### **Tape\_Retain\_After\_EOJ**

Controls 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 delays 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.

## **Step 5g. Configure Tape Manager for z/VM settings**

If you use Tape Manager for z/VM for all tape media management functions, configure the following tape handling exit settings.

**Note:** If you do not use Tape Manager for z/VM, keep these variables commented within the file. For more information about Tape Manager for z/VM, see the *Tape Manager for z/VM User's Guide* at: <http://www.ibm.com/software/stormgmt/zvm/tape/>

### **Tape\_Handled\_Via\_EUM**

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

- 0** (Default.) Tape Manager for z/VM is *not* used for all tape media management functions.
- 1** Tape Manager for z/VM is used for all tape media management functions.

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

The default owner of the tape pool from which to obtain all backup tapes for all jobs. The default is BKRADMIN. To override this setting in each backup job template, use the **BKR\_JOB\_EUM\_ALT\_POOL\_OWNER** variable. For more information see "CONFIG" on page 73.

**Note:** If you set **Tape\_Handled\_Via\_EUM** to 1, you must specify a value for **EUM\_Pool\_Owner**.

### **EUM\_Pool\_Name**

The default tape pool from which to obtain all backup tapes for all jobs. The default is BKRPOOL. You can override this setting in each backup job template with the **BKR\_JOB\_EUM\_ALT\_POOL\_NAME** variable. For more information see "CONFIG" on page 73.

**Note:** If you set **Tape\_Handled\_Via\_EUM** to 1, you must specify a value for **EUM\_Pool\_Name**.

**Note:** If Tape Manager for z/VM is operating in RMM mode, then the following settings are required:

```
Tape_Handled_Via_EUM = 1
EUM_Pool_Owner =
EUM_Pool_Name =
```

(**EUM\_Pool\_Owner** and **EUM\_Pool\_Name** are specified as null values.)

## **Step 5h. Configure backup catalog parameters**

Configure the following backup catalog storage parameters.

### **CatalogPool**

The SFS file pool name that is used for catalog storage. Modify the default value to indicate the locally deployed SFS file pool.

### **CatalogSpace**

The SFS file space within CatalogPool to contain the backup catalog.

**Note:** Set this parameter to the same value as the **Local\_Backup\_Catalog\_ID** parameter.

#### **BKR\_Catalog\_Compression\_Enabled**

Specify whether to store individual data files in the backup catalog in compressed format. Specify one of the following values:

- 0** (Default.) Store catalog data in uncompressed format.
- 1** Store catalog data in compressed format.

**Note:** If backups of CMS minidisk or SFS file spaces are performed, enabling catalog data compression can reduce the DASD space requirement for the backup catalog SFS file space. Individual catalog data files are compressed in a format that is compatible with the CMS **COPYFILE** command **PACK** option. Enabling catalog data compression has the following implications:

- BKRCATLG processor demands increase slightly because data compression is performed as new information is inserted into the backup catalog file space.
- Processing of incremental backup jobs for CMS minidisks and SFS file spaces incur slight additional processor demands when they reference compressed backup catalog data. Incremental backup operations reference catalog information to perform change detection and must decompress catalog information.
- Worker service virtual machines (BKRWRK $mm$  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 8811E No entries returned or message 8808E No entries in catalog, or catalog is not accessible.

**BKR\_SSI\_InstanceSync**

Specify whether saved job instance numbers are stored on the BKRBKUP service virtual machine A-disk (default) or stored in a directory in the backup catalog file space. Enabling this feature allows BKRBKUP identities on each member of an SSI cluster to share a common set of job instance numbers among all SSI cluster members.

- 0** (Default) Job instance numbers for each backup template are kept on the A-disk of BKRBKUP.
- 1** Job instance numbers are maintained in a common SFS directory (*catalogpool:catalogspace.INSTANCEPOOL*) in the backup catalog SFS file space. Saved instances that are present on the A-disk of BKRBKUP are migrated to this location once the feature is enabled and BKRBKUP is re-initialized.

When a backup catalog file space is shared among all members of an SSI cluster, maintaining a common set of saved instance numbers ensures that each BKRBKUP identity generates a unique instance number each time a backup is submitted.

**Notes:**

- When Backup and Restore Manager is deployed in an SSI cluster, the recommended setting is 1 (enabled).
- If Backup and Restore Manager is not deployed in an SSI cluster, the recommended setting is 0 (disabled). If not defined in the BKRSYSTEM CONFIG file, this is the default.
- Once **BKR\_SSI\_InstanceSync** is enabled, saved instance numbers are automatically migrated from the A-disk of BKRBKUP to the INSTANCEPOOL directory. When multiple BKRBKUP identities are activated, and saved instance numbers exist on more than one identity in the cluster, the greatest saved instance value is retained when the same job template name is used by multiple identities.
- If the INSTANCEPOOL directory is found in the backup catalog file space, and **BKR\_SSI\_InstanceSync** is not enabled in the BKRSYSTEM CONFIG file, BKRBKUP service virtual machine initialization ends with the following error message:

```
BKRRVB9432E Conversion to SSI job instance sharing is pending.  
BKRRVB9432E BKR_SSI_InstanceSync is off, but the InstancePool directory was found.  
BKRRVB9432E Add BKR_SSI_InstanceSync = ON to 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 BKRBKUP, delete the INSTANCEPOOL directory, and remove or disable the **BKR\_SSI\_InstanceSync** setting from BKRSYSTEM CONFIG.

## Step 5i. Specify reserved worker service virtual machine settings

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, you can 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). 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). 0 indicates that all worker service machines can be used for backup or restore processing.

If one of these settings is non-zero, 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 could be forced into "backup-only" or "restore-only" mode. Jobs that are submitted for the other types of work are rejected because there are no worker machines available.

If the sum of these values is greater than the number of worker service virtual machines that are defined, some workers will be unable to process work because each of the two reservations excludes the other type of work. If both of these settings are equal to the number of worker service virtual machines, then all reserved worker machines are excluded from backup and restore processing. If this situation occurs, error messages that describe which worker service virtual machines cannot be used are written to the Backup and Restore Manager master console.

The following examples show how to use the reserved worker service virtual machines settings. The examples assume 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.

## Step 6. Create root catalog directory structures

From user ID 5697J06B, use the **SETUPCAT** command to generate a list of the SFS commands that are required to create the Backup and Restore Manager root catalog directory structures.

This step can be omitted. If omitted, BKRCATLG creates missing root directory structures during initialization. For each missing required directory, the following messages are displayed in the BKRCATLG console log. For example:

```
BKRCAT8891I DMSEXIST rc 8, reason 90230 validating "filepool:BKRCATLG.JOBCAT".  
BKRCAT9252W Root catalog structure FILEPOOL:BKRCATLG.JOBCAT failed validation.  
BKRCAT9252W Attempting to create required directory now...  
BKRCAT9253I Successfully created new catalog root structure FILEPOOL:BKRCATLG.JOBCAT.
```

Figure 5. BKRCATLG console log messages (missing root directory structures)

Where *filepool* is the name of the SFS file pool that hosts the BKRCATLG backup catalog file space.

Figure 6 shows an example of the output generated by the **SETUPCAT** function.

```
setupcat  
  
*** The following commands should be executed to create the  
*** base directory structures for the backup catalog engine.  
  
*** These must be executed either from user "BKRCATLG"  
*** or via a user with administrator authority to file pool "BKRPOOL2".  
  
CREATE DIRECTORY BKRPOOL:BKRCATLG.JOBCAT (DIRCONTROL  
CREATE DIRECTORY BKRPOOL:BKRCATLG.USERCAT (DIRCONTROL  
CREATE DIRECTORY BKRPOOL:BKRCATLG.SFSCAT (DIRCONTROL  
CREATE DIRECTORY BKRPOOL:BKRCATLG.MEDIACAT (DIRCONTROL  
CREATE DIRECTORY BKRPOOL:BKRCATLG.MEDIACAT.IBMTAPE (DIRCONTROL  
CREATE DIRECTORY BKRPOOL:BKRCATLG.MEDIACAT.IBMTAPE.JOBMEDIA (DIRCONTROL  
CREATE DIRECTORY BKRPOOL:BKRCATLG.MEDIACAT.IBMTAPE.VOLCHAIN (DIRCONTROL  
CREATE DIRECTORY BKRPOOL:BKRCATLG.MEDIACAT.LIVETAPE (DIRCONTROL  
Ready;
```

Figure 6. Example SETUPCAT output

**Note:** SETUPCAT EXEC generates and displays the **CREATE DIRECTORY** commands that are required to establish the root directory structures in the backup catalog file space. It does not run those commands directly. Use this

procedure to predefine the required root catalog structures during installation. If you use this process, you must run the **CREATE DIRECTORY** commands on the BKRCATLG service virtual machine, or they must be issued by a user that has SFS ADMIN authority over the file pool that contains the backup catalog file space.

## Step 7. Review and copy sample backup job templates

Complete the following steps to copy the sample backup job templates.

1. Review the sample backup job templates located on 5697J06B 2C2 or VMSYS:5697J06B.BKUPMGR.SAMPLES depending on your type of installation.
2. Copy the sample templates to the production job template minidisk (5697J06B 199) or directory (VMSYS:5697J06B.BKUPMGR.JOBDEFS).

## Step 8. Customize sample backup job templates

The following information provides instructions to customize sample backup job templates.

See “Creating backup jobs” on page 65 for instructions on modifying the sample job templates. For descriptions of the sample templates, see Appendix A, “Sample job templates,” on page 115.

## Step 9. Start the service virtual machines

After you complete the initial configuration, start the master backup and catalog service virtual machines with the **XAUTOLOG** command. Issue the command from a suitably privileged user using the following syntax.

```
CP AUTOLOG username
```

or,

```
CP XAUTOLOG username
```

Consider adding the master backup and catalog service virtual machines to the AUTOLOG1 configuration. Adding these machines to the to AUTOLOG1 configuration enables automatic startup of the Backup and Restore Manager tasks after a system IPL.

### Notes:

1. Ensure that the backup catalog file space and other required SFS resources are initialized at system IPL time prior to starting BKRBKUP and BKRCATLG.
2. You do not need to pre-initialize worker task service virtual machines BKRWRK01-04 with **XAUTOLOG**. The master backup service virtual machine, BKRBKUP, automatically starts these processes using CP **XAUTOLOG**, as needed.

## Managing job template files

There are several ways to manage job template files after Backup and Restore Manager is running.

**Note:** The same process to manage job template files can be used to manage your DISKPOOL files. See “Configuring DISKPOOL files to identify output resources” on page 61 for information.

Use the following procedure for managing DISKPOOL files:

1. From an authorized user ID, access the disk that contains the job template and DISKPOOL files using one of the following methods:
  - If the job templates and DISKPOOL files are on minidisk, link and access the 5697J06B 199 disk in read/write mode. For example:
 

```
LINK 5697J06B 199 199 MR
ACC 199 H
```
  - If the job templates and DISKPOOL files are in SFS, access the directory. For example:
 

```
ACC VMSYS:5697J06B.BKUPMGR.JOBDEFS H (FORCERW
```
2. Make your changes and save them to one or more of the job template or DISKPOOL files. All job template files have a file type of TEMPLATE. DISKPOOL files typically have a file type of DISKPOOL.

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

---

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

Backup and Restore Manager includes program support that allows it to take advantage of services provided by Tape Manager for z/VM.

To enable Backup and Restore Manager for use with Tape Manager, complete the steps outlined in Table 4.

*Table 4. Summary of steps to configure Backup and Restore Manager to work with Tape Manager*

| Step | Description                                                                                   | Required files                                                                                                                                      |
|------|-----------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------|
| 1    | Install and configure Tape Manager.                                                           | See the <i>IBM Tape Manager for z/VM Program Directory</i> and the <i>Tape Manager for z/VM Installation and Administration Guide</i> (See step 1.) |
| 2    | Provision Tape Manager resources for Backup and Restore Manager.                              | See step 2.                                                                                                                                         |
| 3    | Verify availability of support routines.                                                      | EUMBKRMT EXEC, EUMBKRUM EXEC, and EUMBKREV EXEC                                                                                                     |
| 4    | Modify the Backup and Restore Manager BKRSYSTM CONFIG configuration file to use Tape Manager. | BKRSYSTM CONFIG (located on the 5697J06B 198 minidisk or the SFS directory VMSYS:5697J06B.BKUPMGR.CONFIGURATION)                                    |
| 5    | Update the BKRWRKxx PROFILE EXEC to access Tape Manager components.                           | BKRWRKxx                                                                                                                                            |

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 appropriately 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 112.

## Step 1. Install and configure Tape Manager

The following provides information about installing and configuring Tape Manager for z/VM.

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)* at: <http://www.ibm.com/software/stormgmt/zvm/tape/> for information about installing and configuring Tape Manager for z/VM.

## Step 2. Provision 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/stormgmt/zvm/tape/> 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 sufficient privileges to request both scratch and specific volume tape mounts, and set or modify volume expiration dates:

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

To have sufficient privileges to set EXPDATE and EXPDAYS for pool volumes, give each service virtual machine TAPE privileges for the Backup and Restore Manager tape pools.

If Tape Manager manages pool access, 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/stormgmt/zvm/tape/> 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.

### Step 3. Verify support routines

Tape Manager for z/VM tape interaction exits are provided as part of the Backup and Restore Manager distribution on 5697J06B 591 (minidisk install) or VMSYS:5697J06B.BKUPMGR.RUNTIME (SFS install).

Before you configure Backup and Restore Manager to work with Tape Manager, verify that the following files are on the minidisk or SFS directory:

- EUMBKRMT EXEC. EUM-to-BKR tape mount interface routine.
- EUMBKRUM EXEC. EUM-to-BKR tape dismount interface routine.
- EUMBKREV EXEC. EUM-to-BKR tape end-of-volume interface routine.

### Step 4. Modify the BKRSYSTEM CONFIG file

To enable Backup and Restore Manager to work with Tape Manager, complete the following steps.

1. Wait until active backup or restore operations are complete and then shut down all Backup and Restore Manager service virtual machines.
2. Set `Tape_Handled_Via_EUM = 1` in the Backup and Restore Manager BKRSYSTEM CONFIG file. See “Step 5. Copy and customize the BKRSYSTEM CONFIG file” on page 36 for more information.
3. Remove the comment indicator (\*) from **EUM\_Pool\_Owner** in the BKRSYSTEM CONFIG file and change the `EUM_Pool_Owner = BKRADMIN` setting to reflect the user ID that owns the tape pool created for use by Backup and Restore Manager.
4. Remove the comment indicator (\*) from **EUM\_Pool\_Name** in the BKRSYSTEM CONFIG file and change the `EUM_Pool_Name = BKRPOOL` setting to reflect the tape pool name that is created for use by Backup and Restore Manager.
5. Save the modified BKRSYSTEM CONFIG file to the product configuration minidisk or directory.

If Tape Manager is operating in RMM mode, the following settings are required:

```
Tape_Handled_Via_EUM = 1
EUM_Pool_Owner =
EUM_Pool_Name =
```

When Tape Manager is configured in RMM mode, the pool construct is not used. Therefore, specify **EUM\_Pool\_Owner** and **EUM\_Pool\_Name** as null values.

When Tape Manager is configured in RMM mode, review the value 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 templates,” on page 115.

### Step 5. Update the BKRWRKxx PROFILE EXEC

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

If Tape Manager is operating in RMM mode, see “Step 5g. Configure Tape Manager for z/VM settings” on page 42 for more information.

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

```
'CP LINK 5697J08B 410 410 RR /* Tape Manager "User Code" */  
'ACCESS 410 T /* Access TM code as "T" */
```

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

```
'ACCESS VMSYS:5697J08B.TAPEMGR.PRODUSER T' /* TM User Code */
```

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



---

## Chapter 3. Administration

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

**Topics:**

- “Managing the master Backup and Restore Manager server”
- “Managing the catalog server” on page 54
- “Managing the backup catalog” on page 55
- “Managing worker service virtual machines” on page 59
- “Managing storage media” on page 61
- “Performing disaster recovery tasks” on page 63
- “Service virtual machine error recovery and diagnosis” on page 64

---

### Managing the master Backup and Restore Manager server

The master Backup and Restore Manager server (BKRBKUP) initiates the processing of backup jobs and restore requests by the worker servers and monitors them as they perform processing.

The master server also contains the sample job templates that define backup processing and monitors the master catalog server. As a Backup and Restore Manager administrator, you submit scheduled batch backup jobs and perform batch data recovery tasks using the master server.

#### Starting the master Backup and Restore Manager server

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

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

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

For information about the **AUTOLOG** command, see the *z/VM CP Command and Utility Reference*.

#### Stopping the master Backup and Restore Manager server

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

For example:

```
cp smsg BKRBKUP halt
```

For a description of the **HALT** command syntax, see “HALT” on page 96.

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

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

For example:

```
cp smsg BKRBKUP status
```

Figure 7 shows an example of the **STATUS** command that is issued to obtain runtime status for the master backup server (BKRBKUP).

```
smsg bkrbkup status
Ready;
SVM Name   : BKRBKUP - 5697-J06 IBM Backup and Restore Manager for z/VM - Master Backup SVM - Version 1.2.0
Compiled on: 24 Jul 2011 - 14:52:29
SVM Owner  : A User - a.user@address.com
SVM Started: Thursday, 27 Jul 2011 14:19:34
Catalog SVM: BKRCATLG
Worker info as of 15:23:28:
    No workers have been activated yet.
```

Figure 7. Displaying the status of the master backup server

For a description of the **STATUS** command syntax, see “STATUS” on page 97.

---

## Managing the catalog server

Each instance of a backup job generates catalog entries for all of the minidisks and file spaces processed by the job.

The catalog server (BKRCATLG) records this information in the backup catalog. See “Managing the backup catalog” on page 55 for more information.

### Stopping the catalog server

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

For example:

```
cp smsg BKRCATLG halt
```

For a description of the **HALT** command syntax, see “HALT” on page 96.

### Displaying the status of the catalog server

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

For example:

```
cp smsg bkrcatlg status
```

Figure 8 on page 55 shows an example of the **STATUS** command that is issued to obtain runtime status for the catalog server (BKRCATLG).

```

msg bkrctlg status
Ready;
SVM Name   : BKRCATLG - 5697-J06 IBM Backup and Restore Manager for z/VM - Backup Catalog
SVM - Version 1.2.0
Compiled on : 5 Jul 2011 - 11:11:53
SVM Owner  : A. User - any.user@address.com
SVM Started : Thursday, 27 Jul 2011 10:31:28
Backup SVM  : BKRBKUP
Catalog base: BKRPOOL:BKRCATLG.
Userid      Storage Group  4K Block Limit  4K Blocks Committed  Threshold
BKRCATLG    2                179804          51781-28%            90%

```

Figure 8. Displaying the status of the catalog server

For a description of the **STATUS** command syntax, see “STATUS” on page 97.

## Managing the backup catalog

The backup catalog is on the catalog server. The catalog entries contain information about the date and time of the backup, the owner of the minidisk 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 a variety of data and to generate reports about backup processing.

When working with the backup catalog, the following terms and concepts are applicable:

- **Job.** A unit of work that represents the packaging of a container for storage.
- **Container.** An object that contains user data such as a CMS minidisk, FBA DASD extent, an SFS file space, or a CKD DASD extent. A container holds zero or more files.

**Note:** A container might not contain files because some entities, such as SFS directories, can be “data-less.”

- **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.

## Catalog implementation

The catalog is implemented in an SFS file space. The catalog uses CMS SFS facilities to collect and organize metadata packages 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, and so on.
- **Record 2.** The data container description (the logical definition of the minidisk 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, and so on.
- **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 allows a description of every object processed by a backup to be recorded in the backup catalog.

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

## Catalog structure

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 9:

| Cmd | Filename                       | Filetype | Fm  | Format | Lrecl | Records | Blocks | Date    | Time     |
|-----|--------------------------------|----------|-----|--------|-------|---------|--------|---------|----------|
|     | Directory = BKRPOOL2:BKRCATLG. |          |     |        |       |         |        |         |          |
|     | 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 9. 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.

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

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

- 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.
- 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

For data containers that represent DASD-based objects, two catalog roots are provided: EXTENTBYJOB and EXTENTBYDASD.

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

- 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 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.

- 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 method 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 137.

## Retaining catalog content

Carefully consider the requirements for retention of catalog content. Backup data is typically 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, tape volumes are expired and returned to scratch status for future reuse.

#### Note:

- 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.

## Aging and expiration of catalog content

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.

Invoke catalog pruning operations manually through the catalog server command interface as follows:

- CP **MSG BKRCATLG EXPIRE ( PREVIEW**. Generate a list of jobs and job instances with expiration information.
- CP **MSG 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 aging and expiration of backup catalog content on a routine (usually daily) basis. Automate aging and expiration of backup catalog content by adding the appropriate command to the Backup and Restore Manager administrator (BKRADMIN) PROFILE EXEC, the Backup and Restore Manager new day exit (BKRNUDAY EXEC), or to your preferred automated operations tool, such as Operations Manager for z/VM. The decision as to when to invoke the pruning process is left to the installation. The pruning process is typically invoked with the routinely scheduled execution of incremental or full backup jobs.

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

## Sizing the catalog SFS file space

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

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

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

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

General guidelines for allocating SFS resources to the backup catalog file space are provided in “Step 5h. Configure backup catalog parameters” on page 42.

## 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 10 on page 59.

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

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

Figure 10. 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 BKRBKUP 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.

## Managing worker service virtual machines

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

**Note:** The master backup server automatically starts the worker service virtual machines as they are needed. When a worker service virtual machine starts running, it automatically registers with the master server (BKRBKUP). If a worker is idle for a specific amount of time, it automatically logs off the system. The **Worker\_Idle\_Timeout** setting specifies the amount of time that a worker service virtual machine remains idle before it logs off the system. For more information, see “Step 5i. Specify reserved worker service virtual machine settings” on page 45.

## Stopping a worker service virtual machine

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

For example:

```
CP SMSG bkrwrk05 HALT
```

or

```
CP SMSG BKRBKUP CANCEL bkrwrk05
```

For a description of the **HALT** command syntax, see “HALT” on page 96.

## Displaying the status of a worker service virtual machine

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

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

To display the status of a worker service virtual machine, issue the **STATUS** command. For example:

```
cp msg bkrwrk01 status
```

Figure 11 shows an example of the **STATUS** command that is issued to obtain runtime status for the worker service virtual machine bkrwrk01.

```
smsg bkrwrk01 status
Ready;
SVM Name   : BKRWRK01 - 5697-J06 IBM Backup and Restore Manager for z/VM
- Worker Task SVM - Version 1.2.0
Compiled on: 5 Jul 2011 - 12:08:49
SVM Owner  : A User - a.user@address.com
SVM Started: Thursday, 27 Jul 2011 15:23:35
Backup SVM : BKRBKUP
Catalog SVM : BKRCATLG
Idle Timeout: +00:15:00
```

Figure 11. Displaying the status of a worker service virtual machine

For a description of the **STATUS** command syntax, see “STATUS” on page 97.

## 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 BKRWRKxx user in the CP directory. Use an existing user as a model.
2. Set up the new BKRWRKxx 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.
4. Restart the master backup server.

## Removing an instance of a worker service virtual machine

To remove a worker service virtual machine, modify the BKRUSERS NAMES configuration file to delete the names of the worker service virtual machines you want to remove and then restart the master backup server.

---

## Managing storage media

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

### Determining storage media requirements

When using 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 additional storage media. In contrast, a shorter retention period means that media is recycled more frequently and therefore, less storage media is required.

### Configuring DISKPOOL files to identify output resources

When you back up data to disk rather than tape, Backup and Restore Manager uses the CMSFILE configuration statement to identify a pool of available output disks or SFS resources for the backup job. Specify the pool of disks or SFS resources or a mixture of both, in a DISKPOOL file.

As an administrator, you provision media and configuration files for DISKPOOL definitions as part of the configuration process. DISKPOOL files are on the master backup server configuration minidisk. 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.

#### 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.
- Minidisks in DISKPOOL files are linked in WR (non-shared write) mode by worker task service virtual machines during backup processing. 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.
- DISKPOOL definitions require at least as many minidisks defined as workers. That is, for each worker that is deployed to handle backup work, there must be at least one minidisk entry in the DISKPOOL.

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 particular pool. Allocating at least one extra minidisk to the pool helps ensure that a minidisk is available for a worker that requires a new minidisk volume during backup processing.

**Note:** If there are fewer minidisks than workers, some workers will not be able to acquire output media. This situation results in a worker task SVM abend for the affected workers.

### 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 (BKRWRKxx) 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 13 on page 63) 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*.

### DISKPOOL file format

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

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

```
username ccuu
```

or

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

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

### DISKPOOL file examples

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

Figure 12 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 12. DISKPOOL file example (minidisks)

In Figure 12 on page 62, the minidisks in the pool are identified in the range of 293 - 297 for owner ABCUSER.

Figure 13 shows an example of a DISKPOOL configuration file that specifies minidisks and an SFS resource.

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

Figure 13. DISKPOOL file example (minidisks and SFS)

In Figure 13, user ABCUSER owns minidisks at vdev address 100, 101, and 102. The SFS file pool BKRPOOL 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 (BKRPOOL.ABCUSER.OVERFLOW).

---

## Performing disaster recovery tasks

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

### Creating concurrent copies of output tapes

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

- The IBMTWIN output handler generates pairs of tapes that are true "twin set" backups. IBMTWIN backups create tape pairs that contain the same backup data blocks on each half of a volume pair. When an end-of-volume condition is encountered on either volume during the backup process, 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 5, "Job syntax," on page 73.

### Creating backups in DDR format

Backup and Restore Manager also produces image backups of ECKD 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 153.

## 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 6, “Service virtual machine commands,” on page 95.

---

## Service virtual machine error recovery and diagnosis

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

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

*SUSPEND mode* provides an opportunity to perform the following actions:

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

To resume virtual machine processing, issue the **RESUME** command to resume normal processing at the interruption point. See “RESUME” on page 100 for more information. Or, issue the **RESTART** command to reset the virtual machine environment and IPL CMS again. See “RESTART” on page 99 for more information.

For more information, see “*SUSPEND mode commands*” on page 98.

---

## Chapter 4. Performing backup and restore operations

These topics describe how to create backup jobs using the Backup and Restore Manager sample job templates and provides an overview of restore operations.

### Topics:

- “Creating backup jobs”
- “Performing restore operations using the catalog browser interface” on page 71
- “Using the RESTORE command to restore data” on page 72
- “Batch restore processing” on page 72

---

### Creating backup jobs

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

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

Figure 14 on page 66 shows an overview of the process of creating and submitting a batch job using a job template:

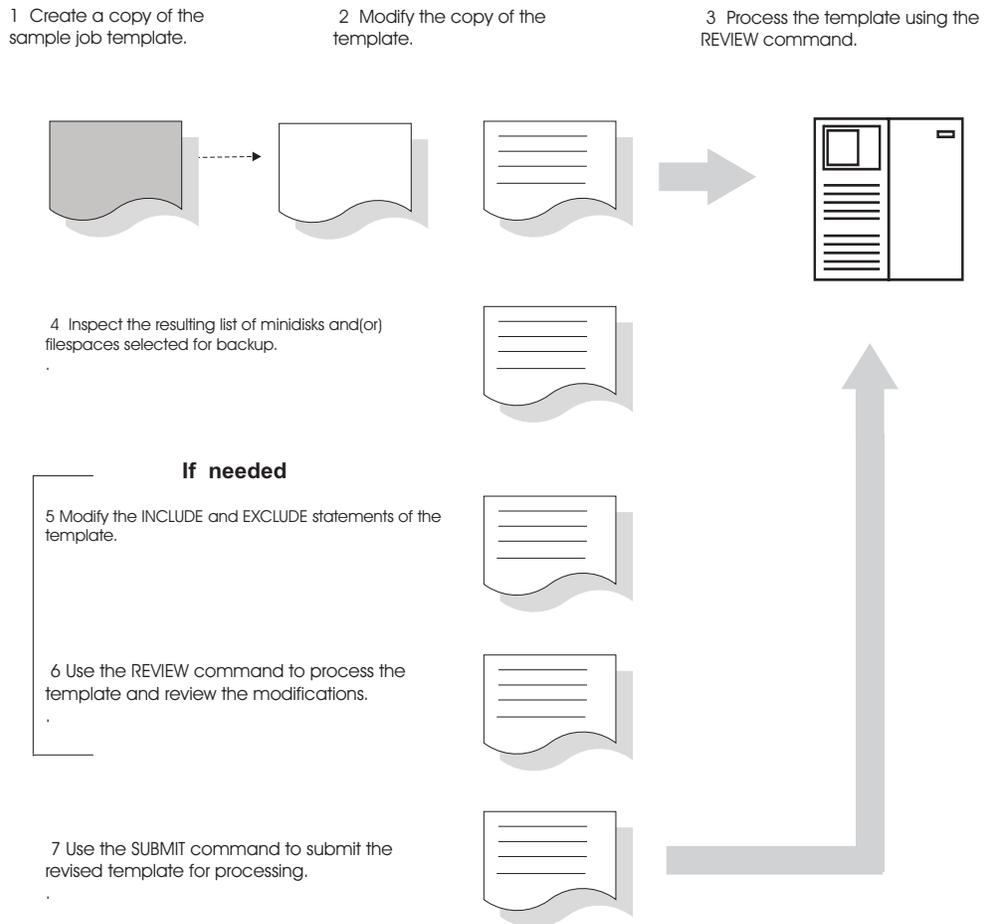


Figure 14. Creating and submitting backup jobs using a job template

The following is the process 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 templates,” 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 68.
3. 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.
4. Inspect the resulting list of minidisks and file spaces that are selected for backup processing.
5. If needed, modify the INCLUDE and EXCLUDE statements.
6. Issue the **REVIEW** command a second time to evaluate your modifications.
7. When you are satisfied with your changes, issue the **SUBMIT** command to submit the job to a worker virtual machine for processing.

**Note:** For descriptions of the **SUBMIT** and **REVIEW** commands, see “Master backup service virtual machine commands” on page 100.

## Sample job templates

Backup and Restore Manager provides the following sample backup job templates on the installation user (5697J06B) SAMPLES minidisk or directory.

Table 5. Sample job templates

| Job template file | Description                                                                                                                                                                                                                        |
|-------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| SAMPFULL TEMPSAMP | A sample template of a full system backup that incorporates 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 system backup job and references to the most recent instance of SAMPFULL as the baseline reference point for incremental processing.                                      |
| SFSONLY TEMPSAMP  | A sample template that illustrates an approach to back up SFS file pools to DASD instead of tape.                                                                                                                                  |
| DDRSAMP TEMPSAMP  | A sample template that is an example 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 system in the event of a disaster.                        |
| ZVM62 TEMPSAMP    | A sample template that illustrates one approach to the creation of a disaster recovery backup for a guest operating system in a VM-under-VM scenario.                                                                              |
| SAMPLNX TEMPSAMP  | A sample template that illustrates one method to automate a Linux guest backup using Operations Manager for z/VM and Backup and Restore Manager. The sample template performs an image backup of a single Linux guest file system. |

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

## Job template structure

A job template contains three sections.

- The configuration section contains runtime configuration information such as the name of the job, the job owner, and the master backup service virtual machine that is required to run the job.
- The INCLUDE and EXCLUDE selection record section contains statements that specify the objects to include and exclude from processing. When you submit the template to the master backup server for processing, the statements generate a series of DUMPxxx (DUMPEDF, DUMPCKD, DUMPFBA, and DUMPSFS) 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 or shared filesystems to include or exclude from backup processing.

For syntax descriptions, see Chapter 5, “Job syntax,” on page 73.

**Note:** Comments are permitted within jobs. 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 15 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 SAMPFULL $$SDATE$$
CP_Command TERM LINES 255

Config BKR_Job_Workers = 1
Config BKR_Job_Name = SAMPFULL
Config BKR_Job_Instance = $$INST$$
Config BKR_Job_Owner = $$ADMIN$$
Config BKR_Job_Master = $$MASTER$$
Config BKR_Job-Token = $$SDATE$$

Config BKR_Job_Tape_Retention = 30

Config BKR_Job_CMS_FileMask = * * *
Config BKR_Job_SFS_PathMask = *

Config BKR_Job_Catalog = Enabled
Config BKR_Catalog_Verbose = Disabled
Config BKR_Catalog_Master = $$CATALOG$$

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

Figure 15. Backup job (configuration information)

Note the following items in the example:

- CP\_Command. These statements issue the CP commands that a worker service virtual machine is privileged to issue. For more information, see “CP\_COMMAND” on page 84.
- Config. These 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 73.

## Including or excluding objects from processing (INCLUDE and EXCLUDE)

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

When you submit a modified copy of a template for processing, these statements generate a series of DUMPxxx (DUMPEDF, DUMPCKD, DUMPFBA, DUMPSFS, DUMPRDV) statements, which Backup and Restore Manager processes to perform the specified backup operations. For more information, see Appendix F, “Summary output overview,” on page 147.

See “Selection record syntax (INCLUDE, EXCLUDE, and SELECT statements)” on page 88 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   | VOLUME | DEVTYPE | START | END | SIZE | RESERVED |
|----------|-----------|------------|--------|--------|---------|-------|-----|------|----------|
| INCLUDE  | MINIDISK  |            | = *    | *      | *       | = *   | = * | = *  | *        |
| EXCLUDE  | MINIDISK  | FDISK      | = *    | *      | *       | = *   | = * | = *  | *        |
| EXCLUDE  | MINIDISK  | \$ALLOOC\$ | = *    | *      | *       | = *   | = * | = *  | *        |
| EXCLUDE  | MINIDISK  | AABB0*     | = *    | *      | *       | = *   | = * | = *  | *        |
| INCLUDE  | MINIDISK  | AABB0*     | = 019* | *      | *       | = *   | = * | = *  | *        |
| EXCLUDE  | MINIDISK  | ABITUX*    | = *    | *      | *       | = *   | = * | = *  | *        |
| INCLUDE  | MINIDISK  | ABITUX*    | = 019* | *      | *       | = *   | = * | = *  | *        |
| EXCLUDE  | MINIDISK  | MAINT      | = 0123 | *      | *       | = *   | = * | = *  | *        |
| EXCLUDE  | MINIDISK  | MAINT      | = 0124 | *      | *       | = *   | = * | = *  | *        |

Figure 16. INCLUDE and EXCLUDE selection records (minidisk selection)

Note the following items in the example:

A minidisk that passes INCLUDE and EXCLUDE filtering, but is not accessible with the CP **LINK** command during backup job processing, is identified by a link failure message in the BKRWRK $mm$  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.

**Note:** The job issues a warning message for non-linked minidisks to the worker service virtual machine console log during job processing.

## 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 |
| EXCLUDE  | SFS       | VMSYSU:  | *LIB*   | SFS |
| EXCLUDE  | SFS       | VMSYSU:  | ABCDLIB | SFS |

Figure 17. 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 18. INCLUDE and EXCLUDE selection records (real device selection by address)

Note the following items in the example:

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

**Real device selection by volume label (RDEVVOL)**

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

| FUNCTION | MEDIATYPE | VOLSER |
|----------|-----------|--------|
| -----    | -----     | -----  |
| INCLUDE  | RDEVVOL   | 510*   |
| INCLUDE  | RDEVVOL   | 510SPL |
| EXCLUDE  | RDEVVOL   | 510PAG |

Figure 19. 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 (BKRWRKxx) require CP class A and OPTION DEVMAINT attributes in the CP directory or equivalent ESM authorization. To temporarily gain access to DASD volumes that are selected for backup through RDEVVOL, workers require privileges to run the CP **DEFINE MDISK** command.
- Volumes included for processing are always treated as raw image backups.
- Volumes included for backup are entered into the backup catalog as owned by user SYSTEM under the appropriate real device address. The preferred method for restoring a volume that is assigned to SYSTEM in the catalog is to define an appropriate minidisk entry that is owned by a valid virtual machine, and then restoring the backup image to that minidisk definition.

**Specifying end of job processing**

The last portion of the job defines end of job processing.

For example:

```
Job_Trailer

* Tell the catalog service virtual machine to retain catalog contents and associated tape media
* for a period of 30 days. The output from CP QUERY TIME provides a record of elapsed time required
* to process this backup. Output from INDICATE USER provides additional information regarding
* worker virtual machine resource consumption.

Config BKR_Catalog_Retention = 30
CP_Command QUERY TIME
CP_Command INDICATE USER

Console *
Console * Sample full backup template created 09/19/2007.
Console * Job image generated $$UDATE$$ $$TIME$$
Console *

* Close the console log; this will deliver the job history to the backup administrator as "SAMPFULL yyyyymmdd".
* Any additional "idle worker" traffic will be sent to the administrator as a separate file named "WORKER OUTPUT".
CP_Quiet SPOOL CONSOLE CLOSE NAME SAMPFULL $$SDATE$$
CP_Quiet SPOOL CONSOLE NAME WORKER OUTPUT

* The "EOJ" (End-Of-Job) statement terminates the job. Tape drives or DISKPOOL members will be
* detached from the worker at EOJ depending on the setting for "Tape_Retain_After_EOJ" in BKRSYSTEM CONFIG.
* The worker service virtual machine will time out and automatically log off if it remains idle for
* the period of time defined for "Worker_Idle_Timeout" in BKRSYSTEM CONFIG.

EOJ
```

Figure 20. Specifying end of job processing

Note the following items shown in Figure 20:

- 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.
- 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 5, "Job syntax," on page 73 for descriptions of backup job syntax.

## Guidelines

When you create backup jobs, note the following guidelines.

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).

---

## 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*.

---

## 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, see the *Backup and Restore Manager User's Guide*.

For a description of the **RESTORE** command syntax, see the *Backup and Restore Manager User's Guide*.

---

## 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 about batch restore processing, see the *Backup and Restore Manager for z/VM User's Guide*.

---

## Chapter 5. 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* and the *z/VM REXX/VM User's Guide*.

---

### Specification of logical job template variables

Logical job template variables accept the following values. 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 21. CONFIG syntax

#### Authorization

System administrator.

#### Operands

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

#### Required operands

##### 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 (0). 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 93.

#### **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 93.

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

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

**Note:** CMS constraints for VM user names are applicable. The recommended setting is the `$$MASTER$$` substitution variable. For more information, see “Variable substitutions” on page 93.

#### **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 93.

#### **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 generating catalog content.) 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 93.

#### **BKR\_CATALOG\_RETENTION**

(Required only when generating catalog content.) 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 (0). 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 (0). 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 153.

### **IBMTAPE SCRATCH RW 1**

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

### **IBMTWIN SCRATCH RW 1 SCRATCH**

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

### **DUALTAPE SCRATCH RW 1 SCRATCH**

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

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

To specify the primary tape pool (virtual device 181) specify **EUM\_Pool\_Owner** and **EUM\_Pool\_Name** using CONFIG statements in the backup job template. For more information, see “Step 5g. Configure Tape Manager for z/VM settings” on page 42.

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 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 named *filename filetype* on a filemode 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 “Configuring DISKPOOL files to identify output resources” on page 61.

## **Optional variables**

### **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 filename, filetype, and filemode 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 filename and filetype. Specify the last token as an asterisk(\*) a percent sign (%), or a single valid filemode number (0-6).

**Note:** If you do not specify **BKR\_JOB\_CMS\_FILEMASK**, Backup and Restore Manager uses a default selection of "\*" \* \*"

### **BKR\_JOB\_CONSECUTIVE\_FAILED\_TASK\_LIMIT**

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

When a worker exceeds the **BKR\_Job\_Consecutive\_Failed\_Task\_Limit**, Backup and Restore Manager stops the job, flushes the remaining tasks in the job, clears the failed job from the workers queue, and sets the BKRBKUP STATUS response for the worker to the following response:

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

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

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

**Note:** To restart jobs that are interrupted by this feature, issue the command **RESTART jobname** to the master backup server (BKRBKUP). Issuing a **RESTART jobname** command to BKRBKUP is an appropriate method of recovery if you want to back up skipped minidisks or directories in the same instance instead of issuing the **SUBMIT** command to submit new backup instance for processing. For more information, see "RESTART" on page 104.

### **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\_RESTART\_ALLOWED**

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

- YES** (Default.) Process only minidisks or file spaces that are *not* contained in the previous execution of the instance.
- NO** Process all minidisks and file spaces again when the backup instance is restarted.

#### **BKR\_JOB\_SFS\_PATHMASK**

An SFS file space that is processed by the backup job has the directory path that is filtered by this definition. Backup and Restore Manager bypasses directory paths in a file space that do not pass the filter during backup processing. Specify an 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 “Step 5f. Configure tape handling exits” on page 39.

#### **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** (Default.) When a suitable minidisk for the next DUMP operation in a backup to DISKPOOL media cannot be obtained, trigger an abend.
- NO** Instead of entering abend processing, the worker task service virtual machine issues warning messages that indicate no suitable disk pool member could be 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.

### **Variables specific to CMSFILE output**

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

#### **BKR\_OUT\_EDF\_UDPE1**

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

#### **BKR\_OUT\_EDF\_REBLOCK**

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

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

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

#### **BKR\_OUT\_EDF\_UDPE1\_PARM**

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

**BKR\_OUT\_EDF\_UDPE1\_PLEN**

The length of **BKR\_OUT\_EDF\_UDPE1\_PARM**. This variable does not have a default. Explicitly declare it in the backup template, if used.

**BKR\_OUT\_EDF\_UDPE2**

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

**BKR\_OUT\_EDF\_UDPE2\_PARM**

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

**BKR\_OUT\_EDF\_UDPE2\_PLEN**

The length of **BKR\_OUT\_EDF\_UDPE2\_PARM**. This variable does not have a default. Explicitly declare it in the backup template, if used.

**Variables specific to IBMTAPE and IBMTWIN output**

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.

**Variables specific to DDRTAPE output****BKR\_Job\_DDRTAPE\_Verbose**

(Optional.) Specify the amount of information 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 9359I at the start of the backup for each object in the DDRTAPE backup job. Message 9359I displays the beginning tape position for the object.

**NO** (Default.) Generate less verbose output.

**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 = BKCRAB3
```

---

## CONSOLE

Specify the CONSOLE keyword to write output text to the console.

```
►►—CONSOLE—text—◄◄
```

Figure 22. 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

Issue CP\_COMMAND to run a CP command that a worker service virtual machine is privileged to issue. 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 those enforced by CP.

```
►►—CP_COMMAND—command—◄◄
```

Figure 23. CP\_COMMAND syntax

### Authorization

System administrator.

## Operands

### command

A valid CP command. For more information, see the *z/VM CP Command and Utility Reference*.

## Examples

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

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

The following example provides the job end time:

```
CP_COMMAND QUERY TIME
```

---

## CP\_QUIET

Issue the CP\_QUIET keyword to run a CP command that a worker service virtual machine is privileged to issue. The output is suppressed.

►►—CP\_QUIET—*command*—————►►

Figure 24. 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 those enforced by CP.

## Authorization

System administrator.

## Operands

### command

A valid CP command. See the *z/VM CP Command and Utility Reference* for more information about CP commands.

## 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 $m$  console log that Backup and Restore Manager creates during job processing.

►►—SUMMARIZE—————►►

Figure 25. SUMMARIZE syntax

## Authorization

System administrator.

## Example

Figure 26 shows an example of an EOJ summary that is inserted into the job log:

```
***
*** Activity Summary:
***
*** Start time: 09/06/11 07:20:44
*** Ended time: 09/06/11 07:22:28
***
*** Catalog entry insertion elapsed time (ss.uu): 7.619911
***
*** 19 minidisks could not be LINKed.
***
$TDISK$ 3185 (rc: 1152) "RPIMGR031E RESOURCE $TDISK$.3185 SPECIFIED BY LINK COMMAND NOT FOUND"
DATAMOVE 05F0 (rc: 108) "HCPLNM108E DATAMOVE 05F0 not linked; valid $$$$$$ not mounted"
DATAMOVE 05FF (rc: 108) "HCPLNM108E DATAMOVE 05FF not linked; valid $$$$$$ not mounted"
L2TMALLC E400 (rc: 108) "HCPLNM108E L2TMALLC E400 not linked; valid L2TMV1 not mounted"
L2TMALLC E410 (rc: 108) "HCPLNM108E L2TMALLC E410 not linked; valid L2TMV1 not mounted"
L2TMALLC F400 (rc: 108) "HCPLNM108E L2TMALLC F400 not linked; valid L2TMV1 not mounted"
L2TMALLC 1191 (rc: 108) "HCPLNM108E L2TMALLC 1191 not linked; valid L2TMV1 not mounted"
L2TMALLC 0200 (rc: 108) "HCPLNM108E L2TMALLC 0200 not linked; valid L2TMV1 not mounted"
L2TMALLC 0210 (rc: 108) "HCPLNM108E L2TMALLC 0210 not linked; valid L2TMV1 not mounted"
L2TMALLC 2191 (rc: 108) "HCPLNM108E L2TMALLC 2191 not linked; valid L2TMV1 not mounted"
L2TMALLC 3191 (rc: 108) "HCPLNM108E L2TMALLC 3191 not linked; valid L2TMV1 not mounted"
L2TMALLC 4191 (rc: 108) "HCPLNM108E L2TMALLC 4191 not linked; valid L2TMV1 not mounted"
L2TMALLC 5191 (rc: 108) "HCPLNM108E L2TMALLC 5191 not linked; valid L2TMV1 not mounted"
L2TMALLC 6191 (rc: 108) "HCPLNM108E L2TMALLC 6191 not linked; valid L2TMV1 not mounted"
L2TMALLC 7191 (rc: 108) "HCPLNM108E L2TMALLC 7191 not linked; valid L2TMV1 not mounted"
L2TMALLC 1000 (rc: 108) "HCPLNM108E L2TMALLC 1000 not linked; valid L2TMV1 not mounted"
L2TMALLC 0400 (rc: 108) "HCPLNM108E L2TMALLC 0400 not linked; valid L2TMV2 not mounted"
L2TMALLC 0410 (rc: 108) "HCPLNM108E L2TMALLC 0410 not linked; valid L2TMV2 not mounted"
L2TMALLC 1400 (rc: 108) "HCPLNM108E L2TMALLC 1400 not linked; valid L2TMV2 not mounted"
***
*** DUMPCKD tasks, Max RC: 14, 0
*** DUMPFBA tasks, Max RC: 0, 0
*** DUMPEDF tasks, Max RC: 840, 20
*** DUMPSFS tasks, Max RC: 17, 0
*** RESTORE tasks, Max RC: 0, 0
***
```

Figure 26. Example of an EOJ summary (SUMMARIZE)

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

- If the CP LINK failed during before DUMPEDF processing, the backup job log contains messages 9303W and 8158E. End-of-job summary information consolidates and repeats this information as shown in the example above. If LINK failures were encountered, the summary report displays the number of minidisks that were unavailable for LINK during backup execution. Each affected minidisk is also displayed with the CP LINK command return code, and the first line of any error response. These errors are not reflected in the DUMPEDF summary of tasks and maximum return code.
- If the CP LINK failed during DUMPEDF, DUMPCKD or DUMPFBA processing, Backup and Restore Manager displays a series of messages. For example:

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

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

---

## EOJ

Specify the EOI keyword to initiate end-of-job processing.

▶▶—EOJ text—◀◀

Figure 27. EOI syntax

### Authorization

System administrator.

### Operands

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

### Example

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

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

---

## JOB\_HEADER

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

▶▶—JOB\_HEADER—◀◀

Figure 28. JOB\_HEADER syntax

### Authorization

System administrator.

### Example

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

```
JOB_HEADER
```

---

## JOB\_TRAILER

The JOB\_TRAILER keyword triggers the generation of end-of-dump housekeeping and console output.

▶—JOB\_TRAILER—▶

Figure 29. JOB\_TRAILER syntax

### Authorization

System administrator.

### Usage notes

Place the JOB\_TRAILER keyword after the block of DUMP $xxx$  (DUMPCKD, DUMPEDF, DUMPFBA, and DUMPSFS) statements.

### Example

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

JOB\_TRAILER

---

## Selection record syntax (INCLUDE, EXCLUDE, and SELECT statements)

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

▶—

|         |
|---------|
| INCLUDE |
| EXCLUDE |
| SELECT  |

—▶

Figure 30. Selection record syntax

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

### INCLUDE

Include the objects in backup processing.

### EXCLUDE

Exclude the objects from backup processing.

### SELECT

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

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

## Supported wildcard characters

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

Table 6. Supported wildcard characters for INCLUDE and EXCLUDE selection records

| Wildcard character | Represents                                                                         |
|--------------------|------------------------------------------------------------------------------------|
| Asterisk (*)       | Zero (0) or more of any character.                                                 |
| Percent sign (%)   | Any one character.                                                                 |
| Pound 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 quote (")   | 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.

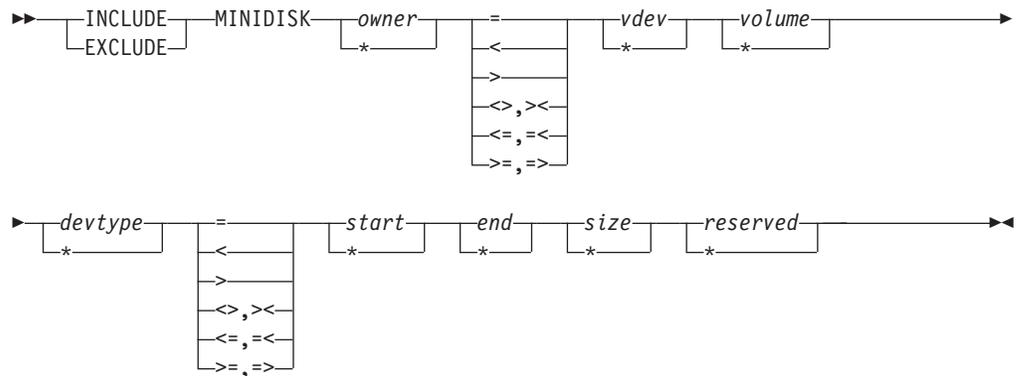


Figure 31. Minidisk selection record syntax

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

### MINIDISK

Specifying MINIDISK indicates 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 "=".

**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 "=".

**(Operator)**

The operator is the tenth keyword on a selection record.

**END** END is the eleventh 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 "=".

**(Operator)**

The operator is the twelfth keyword on a selection record.

**SIZE** SIZE is the thirteenth 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 "=".

**RESERVED**

RESERVED is the fourteenth keyword on a selection record. The maximum word length of RESERVED is eight characters. RESERVED represents reserved for later use by IBM. An asterisk (\*) is required if no selection criteria is specified. Regular expressions rules apply.

For more information, see "Minidisk selection (MINIDISK)" on page 69.

## Syntax to include and exclude SFS file pools

The following are keyword descriptions for SFS selection.

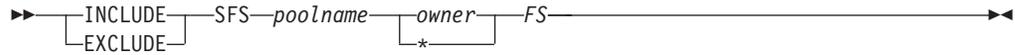


Figure 32. SFS selection record syntax

**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 third 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 fourth 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 fifth 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 69.

## Syntax to include and exclude real devices by address

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



Figure 33. Real device selection by address selection record syntax

### RDEVICE

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

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

### ADDRESS

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

For more information, see “Real device selection by address (RDEVICE)” on page 69.

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

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



Figure 34. 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 70.

## 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.

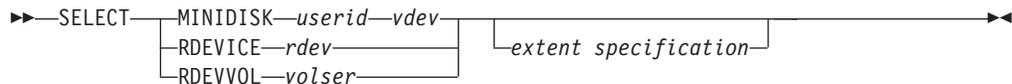


Figure 35. Explicit selection of minidisks or devices selection record syntax

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 (DDRSAMP TEMPSAMP)” on page 120.

---

## Variable substitutions

Variables are permitted within the job syntax. For example, if you specify CONFIG BKR\_JOB\_OWNER = \$\$ADMIN\$\$ instead of CONFIG BKR\_JOB\_OWNER = JDOE Backup and Restore Manager replaces the variable \$\$ADMIN\$\$ with the value of the **Local\_Backup\_Admin\_ID** setting from the BKRSYSTM CONFIG file.

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

### \$\$ADMIN\$\$

Replaced by the \$\$ADMIN\$\$ in any job template record. The value of **Local\_Backup\_Admin\_ID** from the BKRSYSTM CONFIG file is substituted.

### \$\$CATALOG\$\$

Replaced by the \$\$CATALOG\$\$ in any job template record. The value of **Local\_Backup\_Catalog\_ID** from the BKRSYSTM CONFIG file is substituted.

### \$\$INST\$\$

The variable \$\$INST\$\$ is replaced by an eight digit job instance number. The substitution is processed only for the **BKR\_JOB\_INSTANCE** record, and is processed only if the SUBMIT function was invoked. This substitution is implemented for the purpose of automatically tracking and incrementing

job instance numbers. Serialization is maintained in the file *jobname* SERIAL A on the master backup server (BKR BKUP).

#### **\$\$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 specified by *jobname*. See “Incremental backup (SAMPINCR TEMPSAMP)” on page 118 for an example. The sample job uses `$$INST SAMPFULL$$` to reference in the appropriate baseline backup job.

#### **\$\$JOBNAME\$\$**

Replaced by the value 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 6. Service virtual machine commands

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

---

### Common commands

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

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

### CMS

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

►►—CMS—*cms\_command*—◄◄

Figure 36. CMS command syntax

### Authorization

System administrator.

### Operands

**cms\_command**

A valid CMS command.

### Example

Figure 37 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  BKRPOOL:BKRCATLG.
B/B   R/O      2   DIR  BKRPOOL:BKRAADMIN.CONFIGURATION
C/C   R/O      25  DIR  BKRPOOL:BKRAADMIN.RUNTIME
D     R/W      1  DIRC BKRPOOL: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 37. CMS command example

## CP

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

►—CP—*cp\_command*—►

Figure 38. CP command syntax

### Authorization

System administrator.

### Operands

**cp\_command**

A valid CP command.

### Example

Figure 39 shows an example of the **CP** command that is used to issue the **QUERY TIME** CP command.

```
smsg bkrbkup cp q time
Ready;
TIME IS 12:29:41 CST WEDNESDAY 03/17/11
CONNECT= 99:59:59 VIRTCPU= 001:34.33 TOTCPU= 002:11.48
Return code: 0
```

Figure 39. CP command example

## HALT

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

►—HALT—►

Figure 40. 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 41 on page 97 shows an example of the **HALT** command that is issued to halt the master backup server.

```
cp msg BKRKBUP halt
```

Figure 41. HALT command example (master backup server)

## STATUS

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

►►—STATUS—◄◄

Figure 42. STATUS command syntax

### Authorization

System administrator.

### Example

Figure 43 shows an example of the **STATUS** command that is issued to obtain runtime status for a master backup server (BKRKBUP) that has no active workers.

```
msg bkrbkup status
Ready;
SVM Name   : BKRKBUP - 5697-J06 IBM Backup and Restore Manager for z/VM - Master Backup SVM - Version 1.2.0
Compiled on: 24 Jul 2006 - 14:52:29
SVM Owner  : A User - a.user@address.com
SVM Started: Thursday, 27 Jul 2005 14:19:34
Catalog SVM: BKRCATLG
Worker info as of 15:23:28:
  No workers have been activated yet.
```

Figure 43. STATUS command example (master backup server with no active workers)

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

Figure 44 shows an example of the **STATUS** command that is issued to obtain runtime status for a master backup server that has two active workers (BKRWRK02 and BKRWRK01).

```
sm bkrbkup status
Ready;
SVM Name   : BAKSRVR - 5697-J06 IBM Backup and Restore Manager for z/VM - Master Backup
SVM - Version 1.2.0
Compiled on: 24 Jul 2006 - 20:11:50
SVM Owner  : System Admin - sys.admin@some.corp.com
SVM Started: Wednesday, 2 Aug 2006 15:54:24
Catalog SVM: BKRCATLG
Worker info as of 15:57:19:
  BKRWRK02 - Processing job BENCH01/00000010, task 2 of 10; EDF file-level backup of
  MDISK AMVARKIV 0E00 since 15:57:10 on Wednesday, 2 Aug 2006.
  BKRWRK01 - Processing job BENCH01/00000010, task 3 of 9; CKD image backup of MDISK MAINT 0986 since 15:57:10 on Wednesday, 2 Aug 2006.
```

Figure 44. STATUS command example (master backup server with active workers)

**Note:** The status reply for a worker that is idle after end-of-job, but that has not yet logged out, identifies the job name and instance number of the last completed job.

Figure 45 shows an example of the **STATUS** command that is issued to obtain runtime status for the catalog server (BKRCATLG).

```
msg bkrctlg status
Ready;
SVM Name      : BKRCATLG - 5697-J06 IBM Backup and Restore Manager for z/VM - Backup Catalog
SVM - Version 1.2.0
Compiled on  : 5 Jul 2006 - 11:11:53
SVM Owner    : A. User - any.user@address.com
SVM Started  : Thursday, 27 Jul 2006 10:31:28
Backup SVM   : BKRBACKUP
Catalog base: BKRPOOL:BKRCATLG.
Userid      Storage Group  4K Block Limit  4K Blocks Committed  Threshold
BKRCATLG   2                179804         51781-28%           90%
```

Figure 45. 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 46 shows an example of the worker (WRKSRVR) response to a **STATUS** command.

```
SVM Name : WRKSRVR - 5697-J06 IBM Backup and Restore Manager for z/VM
- Worker Task SVM - Version 1.2.0
Compiled on: 21 Sep 2006 -
13:43:49 SVM Owner : Any
Smith - any.user@address.com SVM Started:
Monday, 27 Nov 2006 16:18:57 Backup
SVM : RVBACKUP
Catalog SVM :
BKRCATLG Idle
Timeout: +00:01:00
```

Figure 46. STATUS command example (worker response)

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

---

## SUSPEND mode commands

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

### CMS

Use the **CMS** command to issue a CMS command within a service virtual machine. This command is available when Backup and Restore Manager is in SUSPEND mode.

►►—CMS—*cms\_command*—◄◄

Figure 47. 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. This command is available when Backup and Restore Manager is in SUSPEND mode.

▶▶—CP—*cp\_command*—————▶▶

Figure 48. 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. This command is available when Backup and Restore Manager is in SUSPEND mode.

▶▶—RESTART—————▶▶

Figure 49. RESTART command syntax

When a **RESTART** command is processed, the following events occur:

- CP **DETACH** commands are issued for virtual device addresses reserved for use by the service virtual machine.
- CP **SET CONCEAL ON** is issued. This function enables a re-IPL of the virtual machine with the same parameters that were in effect at the previous logon or IPL.
- GLOBALV information used by task abnormal termination interception is reset.
- CP **SYSTEM CLEAR** is issued. With CP **SET CONCEAL ON** in effect, it triggers a re-IPL of the virtual machine subject to the limitations imposed by the **CONCEAL** facility. If re-IPL through the **CONCEAL** facility is not successful, the service virtual machine enters CP READ status.

See the *z/VM CP Commands and Utilities Reference* for additional information about **SET CONCEAL**.

## 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. The **RESUME** command is available when Backup and Restore Manager is in **SUSPEND** mode.

When a **RESUME** command is accepted, the count of abnormal task terminations encountered is reset to zero. If an excessive number of abnormal task terminations takes place after a **RESUME**, Backup and Restore Manager enters **SUSPEND** mode again.

▶▶—RESUME—▶▶

Figure 50. RESUME command syntax

## Authorization

Backup administrator.

## Operands

This command has no operands.

---

## Master backup service virtual machine commands

The following commands are applicable to the master backup server only.

## CANCEL

Use the **CANCEL** command to stop a specific worker, or all of the workers that are associated with a specified job.

▶▶—CANCEL— $\left\{ \begin{array}{l} \textit{worker} \\ \text{JOB—jobname—} \end{array} \right\}$ —(— $\left\{ \begin{array}{l} \text{PURGE} \\ \text{NOPURGE} \end{array} \right\}$ —▶▶

Figure 51. CANCEL command syntax

## Authorization

System administrator.

When you issue the **CANCEL** command and the worker service virtual machine (*worker*) registers as an active worker with the master backup server, the following actions occur.

When you issue the **CANCEL** command with the default option of **PURGE**, the following events occur:

- The affected worker service virtual machines are stopped. The master backup service virtual machine issues a CP **FORCE** command to stop the workers.
- All files on the workers virtual reader queue are removed. This action clears all current and pending activity from the worker's reader queue, regardless of class, thus completely resetting the state of the worker.

When you issue the **CANCEL** command with the **NOPURGE** option, the following events occur:

- The affected worker service virtual machines are stopped. The master backup service virtual machine issues a CP **FORCE** command to stop the workers.
- The current job and queued tasks on the workers reader queue are left in place. This action allows the system operator or system administrator the option of restarting the worker by means of a manual CP **XAUTOLOG** command, or the opportunity to manually reorder queued tasks. When the worker is restarted using a manual CP **XAUTOLOG** command, or when auto-logged by the master backup server at a later point in time, processing resumes with the first task that is queued on the virtual reader of the worker.

**Note:** To successfully process a **CANCEL** command, the master backup service virtual machine requires CP privilege class A for use of the CP **FORCE** command, and CP class D (class D **PURGE** command).

## Operands

### **worker**

The worker service virtual machine to cancel.

### **JOB *jobname***

The job to cancel. You can cancel processing across multiple workers with a single command.

### **PURGE**

(Default.) Purge all queued work from the virtual RDR of the worker when a **CANCEL** command is issued.

### **NOPURGE**

Retain work pending on the RDR queue of the worker when a **CANCEL** command is issued.

## Examples

You can use the CP SMSG interface to stop an active worker service virtual machine. Figure 52 shows an example of the **CANCEL** command that is issued to cancel worker service virtual machine BKRWRK03.

```
CP smsg bkrbkup cancel bkrwrk03
```

*Figure 52. CANCEL command example*

If the worker service virtual machine registered as an active worker with the master backup server (BKRBKUP), the following actions occur:

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

- A CP **PURGE BKRWRK03 RDR ALL** command is issued to clear the current and pending jobs from the virtual RDR queue of the worker service virtual machine.

In the example in Figure 53, all workers that are engaged in processing of SAMPFULL are forced from the system; queued jobs are purged.

```
MSG BKRBKUP CANCEL JOB SAMPFULL (PURGE
```

Figure 53. CANCEL JOB (PURGE) command example

In the example in Figure 54, all workers engaged in processing of SAMPINCR are forced from the system; queued jobs are retained. Processing can be resumed by using the **XAUTOLOG** command for the workers at a later point in time:

```
MSG BKRBKUP CANCEL JOB SAMPINCR (NOPURGE
```

Figure 54. CANCEL JOB (NOPURGE) command example

## PAUSE

Pause processing for the specified worker. If the worker service virtual machine is currently processing jobs, the **PAUSE** command causes the worker service virtual machine to suspend job processing.

The worker service virtual machine pauses after the current DUMP $xxx$  task completes processing. Once paused, the worker checks every 60 seconds to determine whether the pause condition was cleared. If the worker is not actively processing a backup job, the **PAUSE** command is ignored.



Figure 55. PAUSE command syntax

**Note:** Use the **RESUME** command to remove workers from the PAUSE state. For more information, see “RESUME” on page 105.

### 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 the JOB operand, all backup and restore job processing by all workers that are associated with the specified job, are paused.

## Example

Figure 56 shows an example of the **PAUSE** command that is issued to pause worker service virtual machine BKRWRK03.

```
CP smsg bkrbkup pause bkrwrk03
```

Figure 56. PAUSE command example

If the worker service virtual machine registered as an active worker with the master backup server (BKRBKUP), the worker processing is paused.

## QUERY DISKPOOL

Use the **QUERY DISKPOOL** command to obtain information about the storage resources that are listed in a specified DISKPOOL file. The **QUERY DISKPOOL** command returns the number of backup image files, the available free storage blocks for each minidisk or SFS resource in the DISKPOOL, and a summary for the entire DISKPOOL.

```
►►—QUERY DISKPOOL—poolspec—◄◄
```

Figure 57. 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 58 shows an example of the **QUERY DISKPOOL** command that is issued to obtain information about the storage resources 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 58. 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 59. 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 60 shows an example of the **QUERY INSTANCE** command that is issued to determine the current instance number for the SAMPFULL template.

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

Figure 60. QUERY INSTANCE command example

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

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

Figure 61. QUERY INSTANCE command example (job does not exist)

## RESTART

The **RESTART** command reprocesses and resubmits the specified job template without incrementing the associated job instance number. Use the **RESTART** command to reprocess a backup job after a **CANCEL (PURGE)** operation. Worker tasks identify and report the minidisks and SFS file spaces that were processed during the prior execution of the job instance, and continue processing only for objects that were not cataloged from the previous execution of the restarted job and instance.

►►—RESTART—*jobname*—◄◄

Figure 62. 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 73.

## Authorization

System administrator.

## Operands

**jobname**

The name of the backup job to restart.

## Example

Figure 63 shows an example of the **RESTART** command that is issued to restart a backup job named BKRJOB1.

```
CP SMSG BKRBKUP RESTART BKRJOB1
```

Figure 63. **RESTART** command example

## RESUME

Resume processing after a **PAUSE** command was issued. Issuing a **RESUME** command resumes processing on the worker service virtual machine 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.

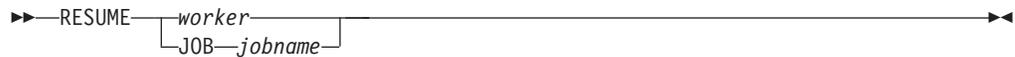


Figure 64. **RESUME** command syntax

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

```
CP smsg bkrbkup resume bkrwrk03
```

Figure 65. **RESUME** command example

If the worker service virtual machine registered as an active worker with the master backup server (BKRBKUP), processing resumes.

**Note:** All processing for BKRWRK03 resumes when the **RESUME** command is issued.

## REVIEW

Process the specified job template and send the resulting job file to the user that issued the **REVIEW** command. Use the **REVIEW** command to test a job template definition to determine if **INCLUDE** and **EXCLUDE** statement processing produces the expected result.

►►—**REVIEW**—*jobname*—◄◄

Figure 66. **REVIEW** command syntax

### Authorization

System administrator.

The **REVIEW** command processes a job template as if the job were submitted for regular processing. All **INCLUDE** and **EXCLUDE** definitions are processed to generate a list of **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 exceptions to **SUBMIT** command processing occur:

- Depending on the value 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 selected by the master backup server.
- The **REVIEW** command inserts an appropriate value for **\$\$INST\$\$** in the resulting job template, but the value that is stored on the master backup server is not updated by **REVIEW** command processing.
- **CP LINK** processing is not performed for each minidisk selected during **REVIEW** command processing. See “**SUBMIT**” on page 107 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 68 and Chapter 5, “Job syntax,” on page 73.

### Operands

*jobname*

The name of the job template to submit for review.

### Example

Figure 67 shows an example of the **REVIEW** command that is issued to submit a job template named **bkupjob5** for review processing.

```
smsg bkrbkup review bkupjob5
```

Figure 67. **REVIEW** command example

## SET INSTANCE

Use the **SET INSTANCE** command to create or alter the current instance number for the specified backup job template. This command can be useful in situations where you need to modify the instance number that is associated with a backup job for error recovery purposes.

▶▶—SET INSTANCE—*jobname*—*instnum*—◀◀

Figure 68. 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 69 shows an example of the **SET INSTANCE** command that is issued to modify the instance for a previously executed backup job.

```
CP SMSG BKR BKUP SET INSTANCE VMSYSU 5
Ready;
BKRBAK9191I Updating instance for job VMSYSU from 1 to 5.
```

Figure 69. SET INSTANCE command example (modify the instance value)

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

```
CP SMSG BKR BKUP SET INSTANCE NEWJOB 100
Ready;
BKRBAK9192I Setting initial instance for job NEWJOB to 100.
```

Figure 70. 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*—◀◀

Figure 71. SUBMIT command syntax

## Authorization

System administrator.

The **SUBMIT** command processes a job template for regular backup job submission. All **INCLUDE** and **EXCLUDE** definitions are processed to generate a list of **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 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 selected by the master backup server. After the backup job is delivered to the workers, each selected worker is activated using the CP **XAUTOLOG** command (if the worker is not already active).
- The substitution variable **\$\$INST\$\$** is incremented by 1. The saved instance value is updated on the master backup server after it is inserted into the resulting jobs.
- During **INCLUDE** and **EXCLUDE** processing, the master backup server issues a CP **LINK** command for each minidisk that is selected for backup processing. Any minidisk that passes **INCLUDE** and **EXCLUDE** filtering, but is not accessible by means of the CP **LINK** command during backup job processing, is identified by a link failure message in the **BKRWRKmm** 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 68.

## Operands

*jobname*

The name of the job template to submit for processing.

## Example

Figure 72 shows an example of the **SUBMIT** command that is issued to submit a job template named **bkupjob5** for processing.

```
smsg bkrbkup submit bkupjob5
```

Figure 72. **SUBMIT** command example

---

## Catalog commands

The following commands are applicable to the catalog server only.

# EXPIRE

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

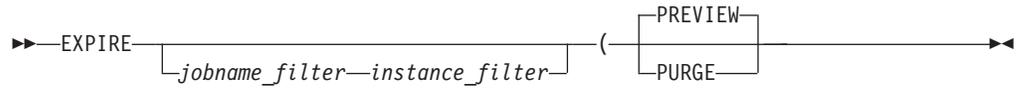


Figure 73. EXPIRE command syntax

## 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 74 on page 110 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.

```
msg bkrctlg expire ( purge
Ready;

BKRCAT8875I Job SAMPFULL instance 00000101 will expire after 20 Oct 2010.
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 2010.
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 2010.
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 2010.
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 2010.
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 2010.
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 2010.
BKRCAT8875I Job SAMPINCR instance 00000062 will expire after 24 Nov 2010.
BKRCAT8875I Job SAMPINCR instance 00000063 will expire after 30 Nov 2010.
BKRCAT8875I Job SAMPINCR instance 00000064 will expire after 2 Dec 2010.
BKRCAT8875I Job SAMPINCR instance 00000065 will expire after 2 Dec 2010.
BKRCAT8875I Job SAMPINCR instance 00000066 will expire after 8 Dec 2010.
Return code: 0
```

Figure 74. EXPIRE command example

Figure 75 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.

```
msg bkrctlg expire ( preview
Ready;

BKRCAT8875I Job SAMPINCR instance 00000061 will expire after 15 Nov 2010.
BKRCAT8875I Job SAMPINCR instance 00000062 will expire after 24 Nov 2010.
BKRCAT8875I Job SAMPINCR instance 00000063 will expire after 30 Nov 2010.
BKRCAT8875I Job SAMPINCR instance 00000064 will expire after 2 Dec 2010.
BKRCAT8875I Job SAMPINCR instance 00000065 will expire after 2 Dec 2010.
BKRCAT8875I Job SAMPINCR instance 00000066 will expire after 8 Dec 2010.
Return code: 0
```

Figure 75. 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 76. QUERY EXPIRE command syntax

## Authorization

System administrator.

## Operands

*jobname*

(Required.) A valid job name.

*instance*

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

To use wildcard characters to display expiration dates for multiple jobs or instances, use the **EXPIRE** command in PREVIEW mode.

## Example

Figure 77 shows an example of the **QUERY EXPIRE** command.

```
msg bkrcatlg query expire sampincr 1520
Ready;
BKRCAT8875I Job SAMPINCR instance 00001520 will expire after 9 Oct 2013.
Return code: 0
```

Figure 77. **QUERY EXPIRE** command example

## QUERY TAPES

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

```
►►—QUERY TAPES—┐
                   └─jobname_filter—instance_filter─┘
```

Figure 78. **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 79 on page 112 shows an example of the **QUERY TAPES** command that is issued to list tape volsers that are associated with instance 00000007 of job BKRJOB1.

```

smsg bkrcatlg query tapes bkrjob1 7
Ready; T=0.01/0.01 15:46:35
BKRCAT8959I Volumes in use by job BKRJOB1, instance 7:
P20098
P20099
P20100
BKRCAT8960I Total volumes: 3.
Return code: 0

```

Figure 79. QUERY TAPES command example

## SET EXPIRE

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

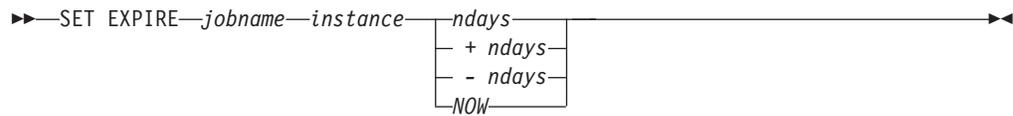


Figure 80. SET EXPIRE command syntax

### Authorization

System administrator.

### Operands

*jobname*

A valid job name.

*instance*

A valid instance for the job specified by *jobname*. The valid range is 00000001-99999999.

*ndays* Set the expiration date to *ndays* from today.

**+days** Extend the existing expiration date by *+days*.

**-days** Reduce the existing expiration date by *-days*.

**NOW** Mark the catalog content as expired and set the expiration date to today for associated Tape Manager handled tapes. The next **EXPIRE (PURGE)** command that is issued removes content from the catalog.

**Note:** NOW assumes Backup and Restore Manager is configured to interact with Tape Manager for z/VM. If Backup and Restore Manager is *not* configured to interact with Tape Manager, the associated tapes are also marked as expired.

For example:

When Backup and Restore Manager is *not* configured to interact with Tape Manager and you specify the NOW operand, the following actions occur:

- The catalog content is marked as expired.
- Catalog entries are removed from the catalog the next time the **EXPIRE (PURGE)** command is issued.
- The associated tapes are marked as expired.

- Backup and Restore Manager expires the tapes whenever **EXPIRE (PURGE)** processing removes a job from the catalog. All associated tapes are removed at that point.

When Backup and Restore Manager is configured to interact with Tape Manager and you specify the NOW operand, the following actions occur:

- The catalog content is marked as expired.
- Catalog entries are removed from the catalog the next time the **EXPIRE (PURGE)** command is issued.
- Backup and Restore Manager issues commands to Tape Manager to set the expiration date to today for tapes that are associated with the expired job and instance.
- Tape Manager manages the tape media accordingly.

Removal of tape information from the backup catalog does not occur until an **EXPIRE (PURGE)** command removes content from the catalog.

If you use an external tape management system such as Tape Manager, the tape management system might expire and recycle tapes even if an **EXPIRE (PURGE)** operation did not occur. In this scenario, it is possible for catalog content to be present, but for the associated media to be unavailable or no longer valid.

## Example

Figure 81 shows an example of the **SET EXPIRE** command that is issued to expire the job named BKUPJOB1, instance 7, in 10 days.

```
msg bkrcatlg set expire bkupjob1 7 10
```

Figure 81. SET EXPIRE command example



---

## Appendix A. Sample job templates

Sample templates are intended to 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) associated with the product installation and maintenance user ID 5697J06B. The following are the default locations:

- Minidisk installation: 5697J06B minidisk 2C2
- SFS installation: SFS directory VMSYS:5697J06B.BKUPMGR.SAMPLES

---

### Full backup (SAMPFULL TEMPSAMP)

The SAMPFULL TEMPSAMP file is a sample template of a full backup that incorporates 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 based on the SAMPFULL TEMPSAMP template request a single "scratch" tape volume for output, for each worker service virtual machine 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 filename 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 SAMPFULL $$SDATE$$
```

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 resulting from the template:

```
Config BKR_Job_Workers = 1
```

The job name, for cataloging purposes, is SAMPFULL:

```
Config BKR_Job_Name = SAMPFULL
```

The instance number is automatically generated and tracked by the master backup server. Numbering begins at 00000001:

```
Config BKR_Job_Instance = $$INST$$
```

The owner of this job is the owner specified by Local\_Backup\_Admin\_ID:

```
Config BKR_Job_Owner = $$ADMIN$$
```

| The associated master backup service virtual machine name is the service virtual  
| machine 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 be 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 CMS minidisk, verbose behavior is disabled:

| Config BKR\_Out\_EDF\_Verbose = Disabled

| 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 defined in the CP object directory:

Include Minidisk \* = \* \* \* = \* = \* = \* \*

Omit minidisk definitions owned by user FDISK:

Exclude Minidisk FDISK = \* \* \* = \* = \* = \* \*

Omit minidisk definitions owned by user \$ALLOC\$:

Exclude Minidisk \$ALLOC\$ = \* \* \* = \* = \* = \* \*

Omit minidisk definitions owned by any user matching MACK0\*:

```
Exclude Minidisk MACK0* = * * * = * = * = * *
```

Revise to include minidisks owned by users matching MACK0\*, in the address range 019\* (for example, in the range 0190-019F):

```
Include Minidisk MACK0* = 019* * * = * = * = * *
```

Exclude minidisks for users matching R54TUX\*:

```
Exclude Minidisk R54TUX* = * * * = * = * = * *
```

Do include minidisks for R54TUX\* in the range 0190-019F:

```
Include Minidisk R54TUX* = 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 BKRPOOL\*, SAMP\*, and VMSERV\* but include their 191 minidisks to back up their configuration files:

```
Exclude Minidisk BKRPOOL* = * * * = * = * = * *
Include Minidisk BKRPOOL* = 0191 * * = * = * = * *
Exclude Minidisk SAMP* = * * * = * = * = * *
Include Minidisk SAMP* = 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 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 created from the following statements:

```
FUNCTION MEDIATYPE POOLNAME OWNER
|-----|-----|-----|-----|---|
Include SFS VMSYSU: * SFS
Exclude SFS VMSYSU: DFSMS* *
Include SFS VMDEVU: * *
***
```

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.

**Note:** All worker service virtual machines (BKRWRKxx), and the master backup server (BKRBKUP) require file pool ADMIN authority for SFS file pools that are subject to backup 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. The Job\_Trailer keyword 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 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 dedicated to managing catalog updates, backup and restore task counts, and so on:

```
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 created 09/19/2007.  
Console * Job image generated $$UPDATE$$ $$TIME$$  
Console *
```

The console log is closed:

```
CP_Quiet SPOOL CONSOLE CLOSE NAME SAMPFULL $$SDATE$$
```

Further console output is named "WORKER OUTPUT":

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

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

```
EOJ
```

---

## Incremental backup (SAMPINCR TEMPSAMP)

The SAMPINCR TEMPSAMP sample backup template illustrates an incremental system backup job that refers to the most recent instance of SAMPFULL as the baseline reference point for incremental processing. Most of the job template content for an incremental backup is identical to a full backup. This information describes key differences between the SAMPFULL and the SAMPINCR TEMPSAMP templates.

## Configuration statements

An incremental backup requires a reference to the SFS file pool that contains the backup catalog:

```
Config BKR_Catalog_Pool = poolname
```

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_EDF_Incr_BaseInst = $$INST SAMPFULL$$
Config BKR_SFS_Incr_BaseJob = 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.

Setting the following values to 0n enables incremental backup processing for CMS EDF minidisks and SFS file spaces:

```
Config BKR_EDF_Incr_Toggle = 0n
Config BKR_SFS_Incr_Toggle = 0n
```

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 `Config BKR_Job_Suppress_Image = Yes`:

```
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 73.

## 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 to DASD (SFSONLY TEMPSAMP)

The SFSONLY TEMPSAMP sample template illustrates one approach to back up SFS file pools to DASD instead of tape. Most of the job template content for the SFSONLY TEMPSAMP template is identical to the full backup SAMPFULL TEMPSAMP. This information describes the key differences between the SAMPFULL TEMPSAMP and the SFSONLY TEMPSAMP templates.

### Configuration statements

When performing backups to DASD instead of tape, Backup and Restore Manager requires additional configuration information to be placed on the configuration minidisk or SFS directory shared among its service virtual machines (the *jobname* DISKPOOL file). For more information, see “Configuring DISKPOOL files to identify output resources” on page 61.

This job uses the CMSFILE output driver. The output media must be identified in an SFSONLY DISKPOOL file on the product configuration minidisk or directory:

```
CONFIG BKR_OUTPUT_SPEC = CMSFILE SFSONLY 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 matching VMSEVR\* are included:

| FUNCTION | MEDIATYPE | OWNER   | VDEV   | VOLUME | DEVTYPE | START | END | SIZE |
|----------|-----------|---------|--------|--------|---------|-------|-----|------|
| Exclude  | Minidisk  | *       | = *    | *      | *       | = *   | = * | = *  |
| Include  | Minidisk  | VMSEVR* | = 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 and EXCLUDE statements specify:

- All SFS file spaces in the VMSYSU: file pool are included.
- DFSMS file spaces from VMSYSU: are excluded.
- All SFS file spaces in the VMSYS: file pool are included.

| FUNCTION | MEDIATYPE | POOLNAME | OWNER  | FS  |
|----------|-----------|----------|--------|-----|
| Include  | SFS       | VMSYSU:  | *      | SFS |
| Exclude  | SFS       | VMSYSU:  | DFSMS* | SFS |
| Include  | SFS       | VMSYS:   | *      | SFS |

---

## DDR (DDRSAMP TEMPSAMP)

The sample job template DDRSAMP 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 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 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 are intended to restrict the scope of this backup to entire real DASD volumes, backing up only those 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 82 shows DDRSAMP 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 82. DDRSAMP 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.

---

## z/VM 6.2 guest (ZVM62 TEMPSAMP)

The sample job template ZVM62 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 ZVM62 TEMPSAMP template is identical to the full backup SAMPFULL TEMPSAMP. This information describes the key differences between the two templates.

In the sample job template ZVM62 TEMPSAMP, user ZVM62 is assumed to be a second-level VM system. The goal of the backup is to capture DASD images for all volumes that are owned by the guest.

**Note:** The ZVM62 TEMPSAMP template is configured to capture only the volumes required to allow CP to IPL. Recovery of guest systems, users, applications is 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:

```
/*
/* Include/Exclude definition for ZVM62 guest system volumes;
/* Also captures a snapshot of the catalog filespace.
/*
/*
/*
```

| FUNCTION | MEDIATYPE | OWNER | VDEV | VOLUME | DEVTYPE | START |
|----------|-----------|-------|------|--------|---------|-------|
| EXCLUDE  | Minidisk  | *     | = *  | *      | *       | = *   |
| INCLUDE  | Minidisk  | ZVM62 | = *  | *      | *       | = *   |

By default, all minidisks in the CP object directory are excluded from processing. All minidisks owned by user ZVM62 are included in this backup.

---

## Linux guest operating system (SAMPLNX TEMPSAMP)

The sample job template SAMPLNX TEMPSAMP illustrates one method you can use to automate the backup of a Linux guest using Operations Manager and Backup and Restore Manager. In the sample template, an image backup of a single Linux guest file system is performed. The file system resides on user BKRLNXD, minidisk 202. Backup data is stored on DASD resources identified in the file SAMPLNX DISKPOOL.

### Operations Manager configuration settings

The SAMPLNX TEMPSAMP template assumes that Operations Manager for z/VM is running in the service virtual machine OPMGRM1, with the following configuration settings in effect.

The first step defines a scheduled event, BKRLNX01, which triggers the scheduled action BKRLNX01. The event is scheduled to trigger every Saturday at 01:30. When

this event occurs, the scheduled action causes OPMGRM1 to issue a CP SIGNAL SHUTDOWN command for the Linux guest:

```
* * Step 1 - Scheduled shutdown of Linux guest BKRLNXD
* *
* DEFSCHD NAME(BKRLNX01),WHEN(SAT-01:30),ACTION(BKRLNX01)
* DEFACTN NAME(BKRLNX01),COMMAND(CP SIGNAL SHUTDOWN BKRLNXD WITHIN 60),+
* ENV(LVM)
```

Next, rule BKRLNX02 is triggered when the CP SIGNAL SHUTDOWN operation completes. When the rule is activated, action BKRLNX02 is invoked. This action causes OPMGRM1 to issue a CP SMSG command which submits the backup job SAMPLNX:

```
* * Step 2 - Detect BKRLNXD shutdown and start backup job SAMPLNX
* *
* DEFRULE NAME(BKRLNX02),MATCH(*HCPSIG211%I User BKRLNXD*),ACTION(BKRLNX02)
* DEFACTN NAME(BKRLNX02),COMMAND(CP SMSG BKR BKUP SUBMIT SAMPLNX),ENV(LVM)
```

Because the worker task virtual machine that is used to process the backup job submitted in step 2 is not known at this point, define a virtual machine group named BKRWRKRS with a wildcard match for BKRWRK0\*.

```
* DEFGROUP NAME(BKRWRKRS),USER(BKRWRK0*)
```

Next, rule BKRLNX03 is defined. This rule is activated when Operations Manager receives the message BACKUP COMPLETE - BKRLNXD. The rule can be activated by any member of group BKRWRKRS and triggers action BKRWRK03 when activated. This message is generated by a CP\_COMMAND statement at the end of this file.

```
* DEFRULE NAME(BKRLNX03),MATCH(*BACKUP COMPLETE - BKRLNXD*),+
```

Finally, action BKRLNX03 is defined. This action issues a CP XAUTOLOG command to reactivate Linux guest BKRLNXD at the end of the backup:

```
* GROUP(BKRWRKRS),ACTION(BKRLNX03)
* DEFACTN NAME(BKRLNX03),COMMAND(CP XAUTOLOG BKRLNXD),ENV(LVM)
```



---

## 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, notifying users about start and end of a DUMP task, or allowing the ability to implement an interface between Backup and Restore Manager and other users that must perform quiesce operations before a backup proceeds.
- BKREXI03 SAMPEXEC provides a mechanism to override the default algorithm that is used to select worker task service virtual machines (BKRWRK $nm$ ) during **SUBMIT**, **REVIEW**, **RESTART**, or **RESTORE** command processing.

The sample user exit files are located on the SAMPLES minidisk (or SFS directory) that is associated with the product installation and maintenance user 5697J06B.

---

### 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—Requestor—Admin\_Flag—Data\_Owner—JobCat\_Path—►►

Figure 83. BKREXI01 syntax (first invocation)

#### SOURCEDATA

A constant that indicates the invocation type.

#### Requestor

The VM user ID that is invoking the restore transaction.

#### Admin\_Flag

Specify one of the following values:

- 1 The requestor was given ADMIN privileges in the configuration file BKRUSERS NAMES.
- 0 The requestor 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)

►►—BKREXI01—DESTDATA—►  
►—Requestor—Admin\_Flag—Data\_Owner—JobCat\_Path—Dest\_Type—Dest\_Target1—Dest\_Target2—►◄

Figure 84. BKREXI01 syntax (second invocation)

### DESTDATA

A constant that indicates the invocation type.

### Requestor

The VM user ID that is invoking the restore transaction.

### Admin\_Flag

One of the following values:

- 1 The requestor was given ADMIN privileges in the configuration file BKRUSERS NAMES.
- 0 The requestor 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:FILESPEC.

### 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 7 shows the return codes for the BKREXI01 exit.

Table 7. BKREXI01 return codes

| Code | Description         |
|------|---------------------|
| 0    | Access granted      |
| 4    | Take default action |
| 8    | Access denied       |
| 12   | ABEND               |

---

## BKREXI02 exit

Use the BKREXI02 exit to notify a third-party virtual machine when a backup of a minidisk or file space is about to begin (or recently ended). For example, use the BKREXI02 exit to enable virtual machine-specific quiesce and resume of operations around a backup event.

### Required syntax and parameters

►►—BKREXI02—*operation—type—owner—object*—►►

Invoke BKREXI02 using the following arguments:

#### *operation*

A constant. Specify one of the following options:

##### **START**

Backup of the specified minidisk or SFS file space begins when the exit returns control to the calling routine. Specifying the START option provides an opportunity to run pre-backup actions, such as quiescing the owner virtual machine, before the object is backed up.

##### **END**

Backup of the specified minidisk or SFS file space completed. Specifying the END option provides an opportunity to perform post-backup activities such as restarting the owner virtual machine.

#### *type*

The object type. A constant. Specify one of the following options:

**CKD** ECKD track-image backup.

**EDF** CMS EDF-format or file-level backup.

**SFS** CMS file-level backup of an SFS file space.

#### *owner*

A variable. The name of the virtual machine that owns the minidisk or SFS file space to process.

#### *object*

A variable. The VDEV address or file pool name as follows:

For ECKD or EDF minidisk backups, *object* is the minidisk virtual device number to process. For example, if you are backing up MAINT 191, *owner* and *object* are passed to BKREXI02 as MAINT 0191.

For SFS file space backups, *object* is the name of the SFS file pool. For example, if you are backing up the VMSYSU:MAINT. SFS file space, *owner* and *object* are passed to BKREXI02 as MAINT VMSYSU.

### Return codes

Table 8 shows the BKREXI02 exit return codes.

Table 8. BKREXI02 return codes

| Code     | Description                                |
|----------|--------------------------------------------|
| 0        | Proceed with normal operations.            |
| non-zero | 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 $mm$ ) 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. One of the following is specified: BACKUP or RESTORE. (**REVIEW** and **RESTART** processing use a *JobType* of BACKUP.)

#### *JobName*

The template name that is used to construct the job. For restore operations, this value is always set to RESTORE.

#### *WorkerCount*

The number of workers that are requested for the job that is being processed. For backup operations, this value is determined by the **BKR\_Job\_Workers** job template setting. For restore operations, *WorkerCount* is always set to 1.

The following parameters must be set upon return from the calling routine:

**rc** The standard CMS return code that is set when BKREXI03 returns control to the calling routine. For more information, see Table 9 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 zero (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 to the total number of workers that are defined in the BKRUSERS NAMES file. Values that are outside the supported range cause the calling routine to ignore the BKREXI03 response. If this situation occurs, the default worker selection logic is used.

### *Worker1 ... WorkerN*

Character (alphanumeric). A blank-delimited list of one or more worker virtual machine names that are selected to process the job. Virtual machine names that are returned in this response must be consistent with the definitions in the BKRUSERS NAMES file. The number of virtual machine names that are returned must match the count specified by *WorkerCount*.

If the contents of the string that is returned through **BKR\_EXIT03\_RESPONSE** cannot be successfully parsed, or if the response contains inconsistencies (for example, if the value of *WorkerCount* does not match the number of virtual machine names returned) the response from BKREXI03 is ignored and the default worker service virtual machine selection logic is applied. If this situation occurs, warning messages are issued in the BKR BKUP 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*.

## Return codes

Table 9 shows the return codes for the BKREXI03 exit.

Table 9. BKREXI03 return codes

| Code | Description                                                                                            |
|------|--------------------------------------------------------------------------------------------------------|
| 0    | Normal return. The exit lists the worker virtual machines through GLOBALV.                             |
| 4    | The exit deferred decision making to the default selection algorithm. There is no response in GLOBALV. |

Table 9. BKREX103 return codes (continued)

| Code           | Description                                                                                                                    |
|----------------|--------------------------------------------------------------------------------------------------------------------------------|
| 8              | An insufficient number of workers are available to process the operation. The operation is abandoned. A job was not submitted. |
| 12 (and above) | The operation was abandoned for a reason other than "too few workers." A job was not submitted.                                |

---

## Appendix C. Sample processing exits

Backup and Restore Manager provides the following sample processing exits.

### Deferred processing exit

BKRNUDAY EXEC is a "start of new day" processing exit for the master backup server.

If the BKRNUDAY EXEC is present on any accessed filemode, 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 based on return codes from BKRNUDAY.

### User data processing exits (UDPEs)

You can call exits during both backup and restore operations so that you can see the data processed by Backup and Restore Manager. The following sample exits are provided.

#### BKREXT2A SAMPASM

A sample UDPE, provided in source form, that performs run-length encoding compression of backup data.

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

#### BKREXT3A TEXT

A supported UDPE, provided in object (TEXT) form, that calls CMS Compression Services to compress backup data.

---

## Deferred processing exit (BKRNUDAY SAMPEXEC)

BKRNUDAY SAMPEXEC is a "start of new day" processing exit for the master backup server.

If BKRNUDAY SAMPEXEC is present on any accessed filemode, 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 based on return codes from BKRNUDAY.

### Return codes

Table 10 shows return code-driven behaviors for BKRNUDAY EXEC.

Table 10. BKRNUDAY EXEC (return code behavior)

| Return code       | Description                                                                               |
|-------------------|-------------------------------------------------------------------------------------------|
| NewDay_Normal = 0 | Normal new-day processing. CURRENT BKRDAY is updated. Do not call again today.            |
| NewDay_Defer = 4  | It is a new day, but not the right time of day. Do not update CURRENT BKRDAY, call again. |
| NewDay_Error = 8  | Error from new-day routine. Do not update CURRENT BKRDAY (call again today).              |

Table 10. BKRNUDAY EXEC (return code behavior) (continued)

| Return code         | Description                                                                                                                                     |
|---------------------|-------------------------------------------------------------------------------------------------------------------------------------------------|
| NewDay_Serious = 12 | Error from new-day routine. Update CURRENT BKRDAY (do not call again today).                                                                    |
| NewDay_Disable = 16 | Error from new-day routine. Do not check the New Day processing state again (this effectively disables the exit until the server is restarted). |
| NewDay_Fatal = 20   | Fatal error from user exit. Invoke BKR_Dump_And_Die.                                                                                            |

**Note:** Other return codes causes the BKRNUDAY exit to be disabled until the master backup server is restarted.

---

## User data processing exits (UDPEs)

Backup and Restore Manager enables you to 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. 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. When these exits are called, Backup and Restore Manager feeds the output of the first exit to the second exit during the backup and automatically reverses the process during the restore. 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 of the data; 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 *CMS Command and Utility Reference*. CSRBDICV produces a dictionary as assembler 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 respectively) replace those 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 resides 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 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 both 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 assembler 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 any state information that they need from one call to the next. A fullword, which can be used for this purpose, either 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 (0) 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** Indicates that an input record is to be handled by the exit. The fifth and sixth fullwords of the parameter list contain the address and length of the source record. The exit is responsible for processing the input record and responding with an appropriate return code. For more information, see "Return codes."
  - TERM** Signal the exit to enter termination processing. The fifth and sixth fullwords of the parameter list are set to zero. If the exit responds with return code 4 or 8, the calling routine processes the data that is returned, and the TERM call is reissued. Successive termination calls are repeated until the exit responds with a return code of 0 (successful termination) or with a code that is greater than or equal to 12 (trigger an abend).
- CL4. The operation type of BKUP (backup) or REST (restore).
- AL4. A fullword which is zero on the first call within a particular data stream and whose contents Backup and Restore Manager preserves across other calls in the data stream. The exit could use this for any purpose, but 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 11 on page 135 shows the return codes and their descriptions.

Table 11. User data processing exit return codes

| Return code   | Description                                                                                                                                                                     |
|---------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 0             | The exit processed the input record successfully, but has no data to return now.                                                                                                |
| 4             | The exit did not process the input record, but has data to return. The caller is expected to process the returned data and then call the exit again with the same input record. |
| 8             | The exit processed the input record successfully and has data to return.                                                                                                        |
| 12 through 96 | Reserved. The exist can use codes 100 and higher to provide diagnostic information about unrecoverable errors.                                                                  |

Input and output records can be from 1 to 60K (61440 bytes) in length. If the exit has no data to return after processing an input record, it must use return code zero (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 this bundling, but it provides an example of a more complex exit.)

For example, suppose each input record 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 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 (record 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 (record 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 containing 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 (input 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. This information describes the Backup and Restore Manager tape management interface exits and provides a reference to the Tape Manager for z/VM exits.

The following sets of routines are provided:

- BKRMount, BKRUMNT, and BKREOV. Backup and Restore Manager uses these exits to perform stand-alone tape management.
- EUMBKRMT, EUMBKRUM, and EUMBKREV. Backup and Restore Manager invokes these exits to handle tape operations when it is configured to interact with Tape Manager for z/VM.

---

### 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 12 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 73.

*Table 12. Stand-alone tape handling exits*

| Stand-alone tape handling exit | Description              |
|--------------------------------|--------------------------|
| BKRMount                       | Tape mount handler       |
| BKRUMNT                        | Tape dismount handler    |
| BKREOV                         | End-Of-Volume (EOV) exit |

The supplied exit routines maintain specific content in the backup catalog SFS file space to track tapes that are associated with specific jobs, determine whether volumes supplied in response to a "scratch" mount request are considered to be in scratch status, and to maintain EOV old-volume to new-volume chaining information in the catalog.

**Note:** Because the backup catalog is not considered to be a user programming interface, implementation of alternate (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 85. BKRMOUNT syntax

### Parameters

*volser* The VOL1 label 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 returning 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** Read-only mount requested.
- RW** Read-write mount requested.

BKRMOUNT is responsible for verifying write-enable status prior to returning 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. (See the Runtime environment variables section for more information).

#### *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, BKR MOUNT is required to establish the following GLOBALV values in the BKR\$ENV group list. For more information, see *CMS Command and Utility Reference*.

**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 13. BKR MOUNT return codes

| Return code | Description                                                                                                   |
|-------------|---------------------------------------------------------------------------------------------------------------|
| 0           | Normal mount and positioning. The calling routine proceeds with normal processing.                            |
| Non-zero    | An error condition was encountered. The calling routine treats non-zero 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 86. BKRUMNT syntax

### Parameters

*volser* A VOL1 label provided by the calling routine. This value is used to verify VOL1 label integrity at dismount time.

### *devnum*

A valid virtual device address corresponding to either TAP1 or TAP2. Specify one of the following values:

- null
- blank
- 181
- 0181
- 182
- 0182

The value must represent a valid virtual device address 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 logic error in the calling code or corruption of the VOL1 label, a serious error.

### Return codes

Table 14. BKRUMNT return codes

| Return code | Description                                                                                            |
|-------------|--------------------------------------------------------------------------------------------------------|
| 0           | Normal dismount. The VOL1 label was successfully verified.                                             |
| Non-zero    | An error condition occurred. The calling routine treats non-zero 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 87. 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 currently mounted on *devnum*. In this state, BKREOV is expected to take the following actions:

1. Rewind the volume.
2. Verify the VOL1 label against the GLOBALV value of BKR\_ACTUAL\_SL\_LABEL.
3. Dismount the current volume.
4. Extract the GLOBALV values of BKR\_GLOBAL\_JOBNAME, BKR\_GLOBAL\_JOBINST, and BKR\_RWSTATUS.

5. Verify that BKR\_RWSTATUS is set to RW from the previous mount.
6. Invoke BKRMOUNT to request a SCRATCH mount of a new volume to continue output.
7. If BKRMOUNT was successful, extract the VOL1 label of the newly-mounted volume.
8. Record the old-volume to new-volume relationship for later reference on READDATA calls.

### READDATA

Indicates that the calling routine encountered input stream content that refers to a previously handled EOVRITDATA 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. This is typically accomplished through inspection of data that is recorded during WRITDATA processing.
3. After the appropriate successor volume is identified, the values of BKR\_GLOBAL\_JOBNAME and BKR\_GLOBAL\_JOBINST are extracted.
4. Invoke BKRMOUNT to procure 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 EOVR condition. Specify one of the following values:

- null
- blank
- 181
- 0181
- 182
- 0182

The value must represent a valid virtual device address that is associated with CMS tape device names TAP1 or TAP2.

**Note:** If *devnum* is blank or null, use TAP1 (device 181).

### Return codes

Table 15. BKREOV return codes

| Return code | Description                                                                         |
|-------------|-------------------------------------------------------------------------------------|
| 0           | Normal dismount. The VOL1 label was successfully verified.                          |
| Non-zero    | An error condition occurred. The calling routine treats this as a failure scenario. |

---

## Tape Manager for z/VM interaction exits

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

*Table 16. Tape Manager for z/VM interaction exits*

| <b>Tape Manager for z/VM interaction exits</b> | <b>Description</b> |
|------------------------------------------------|--------------------|
| EUMBKRMT                                       | Mount handler      |
| EUMBKRUM                                       | Dismount handler   |
| EUMBKREV                                       | EOV handler        |

The active set of exit routines is controlled by the `Tape_Handled_Via_EUM` parameter in the `BKRSYSTEM CONFIG` file. For more information, see “Step 4. Modify the `BKRSYSTEM CONFIG` file” on page 50.

For information about configuring Backup and Restore Manager to interface with Tape Manager for z/VM, see “Step 5g. Configure Tape Manager for z/VM settings” on page 42.

---

## Appendix E. DUMP<sub>xxx</sub> functions

DUMP<sub>xxx</sub> functions are not typically specified by users. Backup and Restore Manager generates them automatically, as a result of processing the INCLUDE and EXCLUDE definitions of a job template.

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

Invokes DUMPCKD processing to perform an image or raw CKD DASD backup.

```
▶▶—DUMPCKD—username—ccuu—$$DRIVER$$—————▶▶
```

Figure 88. 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 73.

#### Example

In the following example, DUMPCKD processing is performed for a CKD DASD backup. DUMPCKD indicates 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 the output is directed to tape. RW indicates the scratch tape is accessed as read-write. The file mode is 1.

```
DUMPCKD MAINT 190 $$DRIVER$$
```

---

### DUMPEDF

Invokes DUMPEDF processing to back up a CMS or EDF minidisk.

►►—DUMPEDF—*username*—*ccuu*—\$\$FMASK\$\$—\$\$DRIVER\$\$—◀◀

Figure 89. DUMPEDF syntax

## Authorization

System administrator.

## Operands

### *username*

The virtual machine ID of the minidisk owner. 1-8 characters, alphanumeric.

*ccuu* The virtual address of the source minidisk (the location of the data to be backed up) as defined in the CP directory.

## Variables

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

The file mask (derived from **BKR\_JOB\_CMS\_FILEMASK** = *fnmask ftmask fnnum*). See “CONFIG” on page 73 for more information.

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

The method of output as indicated by **BKR\_OUTPUT\_SPEC**. For more information, see “CONFIG” on page 73.

## Example

In the following example, DUMPEDF processing is performed for a CMS or EDF minidisk backup. DUMPEDF indicates 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

Invokes DUMPFBA processing to perform an image or raw FBA DASD backup.

►►—DUMPFBA—*username*—*ccuu*—\$\$DRIVER\$\$—◀◀

Figure 90. DUMPFBA syntax

## Authorization

System administrator.

## Operands

### *username*

The virtual machine ID of the minidisk owner. 1-8 characters, alphanumeric.

*ccuu* The virtual address of the source minidisk (the location of the data to be backed up) as defined in the CP directory.

## Variables

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

The method of output as directed by **BKR\_OUTPUT\_SPEC**. For more information, see “CONFIG” on page 73.

## Example

In the following example, DUMPFBA processing is performed for a FBA DASD backup. DUMPFBA indicates 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 the output is directed to tape. RW indicates the scratch tape is accessed as read-write. The file mode is 1.

```
DUMPFBA MAINT 190 $$DRIVER$$
```

---

## DUMPSFS

Invokes DUMPSFS processing to back up an SFS file space.

```
▶▶—DUMPSFS—poolname—spacename—$$PMASK$$—$$FMASK$$—$$DRIVER$$—————▶▶
```

Figure 91. 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**. See “CONFIG” on page 73 for more information).

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

The file mask (derived from **BKR\_JOB\_CMS\_FILEMASK = *fnmask ftmask fnum***). For more information, see “CONFIG” on page 73.

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

The method of output as indicated by **BKR\_OUTPUT\_SPEC**. For more information, see “CONFIG” on page 73.

## Example

In the following example, DUMPSFS processing is performed to back up an SFS file space. DUMPSFS indicates 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. This information describes the summary output generated by Backup and Restore Manager backup processing.

Figure 92 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 03/17/06 15:54:47 03/17/06 Dump OK.
MAINT 1CF1 RR EDF 4096 MNTCF1 00008100 00007529 00000045 00000045 00000015 15:54:48 03/17/06 15:54:54 03/17/06 Dump OK.
MAINT 1CF2 RR EDF 4096 MNTCF2 00008100 00008093 00000045 00000045 00000016 15:54:55 03/17/06 15:55:03 03/17/06 Dump OK.
MAINT 1CF3 RR EDF 4096 MNTCF3 00008100 00007529 00000045 00000045 00000015 15:55:04 03/17/06 15:55:11 03/17/06 Dump OK.
MAINT 0CF1 RR EDF 4096 MNTCF1 00016200 00010059 00000090 00000090 00000019 15:55:12 03/17/06 15:55:19 03/17/06 Dump OK.
MAINT 0CF2 RR EDF 4096 MNTCF2 00016200 00010049 00000090 00000090 00000018 15:55:20 03/17/06 15:55:27 03/17/06 Dump OK.
MAINT 0CF3 RR EDF 4096 MNTCF3 00016200 00010050 00000090 00000090 00000018 15:55:28 03/17/06 15:55:35 03/17/06 Dump OK.
MAINT 0190 RR EDF 4096 MNT190 00018000 00014288 00000100 00000107 00000837 15:55:36 03/17/06 15:55:58 03/17/06 OK/Recomp.
MAINT 0190 RR CKD 3390 3990 00000107 0015 00058786 00001604 00001605 15:55:59 03/17/06 15:56:16 03/17/06 Dump OK.
MAINT 02CC RR EDF 4096 MNT2CC 00000900 00000495 00000005 00000005 00000072 15:56:17 03/17/06 15:56:19 03/17/06 Dump OK.
MAINT 0191 RR EDF 4096 MNT191 00009900 00001787 00000055 00000055 00000185 15:56:19 03/17/06 15:56:24 03/17/06 Dump OK.
MAINT 0490 RR EDF 4096 MNT490 00018000 00014285 00000100 00000107 00000836 15:56:25 03/17/06 15:56:49 03/17/06 OK/Recomp.
MAINT 0490 RR CKD 3390 3990 00000107 0015 00058786 00001604 00001605 15:56:51 03/17/06 15:57:07 03/17/06 Dump OK.
MAINT 0123 RR CKD 3390 3990 00003339 0015 00058786 00050084 00050085 15:57:08 03/17/06 16:05:31 03/17/06 Dump OK.
MAINT 0124 RR CKD 3390 3990 00003339 0015 00058786 00050084 00050085 16:05:32 03/17/06 16:13:50 03/17/06 Dump OK.
MAINT 02D2 RR EDF 4096 MNT2D2 00018900 00000538 00000105 00000105 00000219 16:13:51 03/17/06 16:13:55 03/17/06 Dump OK.
VMSYSU AUSER SFS 00002 00020000 00008502 090% 00001499 00000026 00000001 00000000 0000 0000 00000280 12:46:16 03/17/06 12:46:57 03/17/06 Dump OK.
```

Figure 92. Sample summary output

## General information

The following general information is displayed in the summary output.

### Owner ID

The VM user ID that owns the object that was processed.

### Object ID

The identity of the object that was backed up (for example, a virtual address or file space name).

**Link mode (for DUMPEDF, DUMPFBA, and DUMPCKD statement processing only)** The type of CP LINK the worker obtained to the minidisk. One of the following CP LINK types:

**SR** Stable read.

**RR** Read-only.

**Note:** Not applicable for SFS.

### Object type

One of the following object types:

**EDF** CMS minidisk.

**CKD** Raw or image CKD dump.

**FBA** Raw FBA dump.

**SFS** Shared File System file space.

---

## EDF (DUMPEDF statement processing)

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

**Block size**

The EDF block size at which the minidisk is formatted.

**Label** The minidisk label.

**Total EDF blocks**

The number of available data blocks on the disk.

**Used EDF blocks**

The number of blocks in use.

**Formatted cylinders (ECKD) or blocks (FBA)**

The number of cylinders (ECKD) or blocks (FBA) that are formatted.

**Max cylinders (ECKD) or blocks (FBA)**

The maximum number of cylinders (ECKD) or blocks (FBA) that could be formatted on the DASD extent.

**Number of files**

The number of files 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**

The minidisk contents might have changed during dump processing.

**Dx210 Fault**

CP DIAG 210 could not extract virtual device description.

**LINK error**

The CP LINK command failed.

**Note:** For most cases, backup job processing detects and reports LINK issues outside of DUMPEDF. (See message 9303W.) However, if DUMPEDF is invoked outside of regular backup job processing (for example, by user-written code or the EDFDUMP sample EXEC) then it is possible DUMPEDF reports 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 85.

---

## CKD (DUMPCKD statement processing)

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

**Number of cylinders**

The CKD DASD extent size, in cylinders.

**Tracks per cylinder**

The number of tracks per cylinder.

**Max bytes per track**

The maximum data capacity of one track on the extent.

**Highest track number**

The greatest relative track number in the extent. The extent starts at track 0.

**Number of tracks dumped**

The number of tracks that were dumped.

**Note:** This value is normally 1 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 could not extract the virtual device description.

**LINK error**

The CP LINK command failed.

---

## FBA (DUMPFBA statement processing)

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

**Number of blocks**

The number of FBA blocks backed up.

**Number of bytes**

The number of bytes per block 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 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.

**Storage group number**

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

**4K block limit**

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

**4K blocks used**

The current number of committed 4K blocks.

**Number of base files**

The number of BASE FILE objects backed up.

**Number of directories**

The number of DIRECTORY objects backed up.

**Number of external objects**

The number of EXTERNAL OBJECT objects backed up.

**Number of aliases**

The number of ALIAS objects backed up.

**Number of erased aliases**

The number of ERASED ALIAS objects encountered.

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

**Number of revoked aliases**

The number of REVOKED ALIAS objects encountered.

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

**Number of auth records**

The number of access authorizations (resulting from GRANT commands) 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 CSL (Callable Service Library) routines employed during backup processing encountered an unrecoverable exception. The backup job log contains additional information which identifies the CSL routine name, return code and result code associated with this ending status.



---

## Appendix G. DDRTAPE output handler usage guidelines

The DDRTAPE output handler generates backups of ECKD DASD 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, rather than general users. 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 contain 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 created by DDRTAPE. To restore DDR-format backups, you must use either the CMS DDR command or the CP stand-alone DDR utility program (which can be IPLed if needed). For more information, see *z/VM CP Commands and Utilities Reference*.
- DDRTAPE requires the use of standard label (SL) tapes. Because the DDR utility does not support standard tape labels during restore operations, the following restrictions apply:
  - For the first volume in a set of tapes that are created with DDRTAPE, the VOL1 label is preserved. When restoring data from this volume, the SKIP 1 option of the DDR RESTORE command must be specified in order to bypass the VOL1 label.
  - Beginning with the second volume of any multi-volume set of tapes 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 re-initialize them by re-creating an appropriate VOL1 standard label before Backup and Restore Manager can reuse them.
- As noted, the DDR tape format does not support SL (Standard Label) tape labels. Label information is present only for the initial VOL1 label of the first tape that is used for output by each worker. If the backup that is being performed by a worker spans additional volumes, the VOL1 labels on any subsequent volumes are overwritten.

A DDRTAPE backup can use multiple workers. Each worker generates a set of tapes that can be restored either one set at a time (using stand-alone DDR) or one set per virtual machine (running stand-alone or CMS DDR). When generating the tapes sets, each worker creates an initial tape with a VOL1 label, followed by zero or more non-labeled tapes, as needed for the backup job.

**Note:** Keep track of the backup log for each worker so that you have the mount sequence for tapes. This is important because DDR does not tolerate out-of-sequence volumes when a restore is performed.

- DDRTAPE backups are processed only for ECKD DASD volumes and minidisks.
- DDRTAPE backups always produce an image-level (as opposed to CMS file-level) backup. This 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 in effect, the starting tape position for each DDR-format backup is recorded in the backup job log through message 9359I. This information 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 (DDRSAMP TEMPSAMP)” on page 120. For programming interface information, see the *Backup and Restore Manager User's Guide*.

---

## Appendix H. Messages and codes

All messages generated by Backup and Restore Manager have one of the following severity codes (E, I, R, S, T, or W) as the last character of the message ID.

Table 17. Severity codes

| Code | Description                                                                                                                 |
|------|-----------------------------------------------------------------------------------------------------------------------------|
| E    | Error message. Some errors might be user-correctable. Read the User Response to determine the appropriate course of action. |
| I    | Information message. No user action required.                                                                               |
| R    | Response message.                                                                                                           |
| S    | Severe.                                                                                                                     |
| T    | T (Terminating error or abend.)                                                                                             |
| W    | Warning message. Results might not be as expected.                                                                          |

---

**BKR8000I** Licensed Materials - Property of IBM 5697-J05 (c) Copyright IBM Corp. 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, 2015 All Rights Reserved. (c) Copyright Rocket Software, Inc. 2003 - 2015 All Rights Reserved. US Government Users Restricted Rights Use, duplication or disclosure restricted by GSA ADP Schedule Contract with IBM Corp.

**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* or the sample routines (EDFDUMP EXEC, EDFLOAD EXEC, and so on) that are shipped with Backup and Restore Manager for information about the appropriate command syntax.

---

**BKR8003E** Unrecognized output handler *handler* specified.

**Explanation:** Backup and Restore Manager for z/VM cannot recognize the specified output handler (*handler*).

**System action:** The issuing routine exits with a non-zero return code.

**User response:** Specify a valid output handler for the operation (backup or restore). See the *IBM Backup and Restore Manager for z/VM User's Guide* for descriptions of valid output handlers.

---

**BKR8004E** Output handler *handler* has been disabled.

**Explanation:** Backup and Restore Manager for z/VM disabled the specified output handler (*handler*).

**System action:** The issuing routine exits with a non-zero return code.

**User response:** An unsupported I/O handler routine was invoked. Revise the configuration to specify a supported I/O handler. See the *IBM Backup and Restore Manager for z/VM User's Guide* for information about

Backup and Restore Manager for z/VM input and output handlers.

---

**BKR8005E** Return code *rc* from output handler initialization.

**Explanation:** The selected I/O handler routine failed to initialize properly.

**System action:** The calling routine exits with a non-zero return code.

**User response:** This situation is typically the result of a runtime error or an omitted configuration variable that is required by the I/O handler. See the *IBM Backup and Restore Manager for z/VM User's Guide* for information about Backup and Restore Manager for z/VM output handlers. If the problem persists after ensuring the REXX environment is properly configured, contact your system programmer or IBM Software Support.

---

**BKR8006E** Return code *rc* from catalog data initialization.

**Explanation:** Catalog data creation is enabled for a backup job through the specification of Config `BKR_Job_Catalog = Yes` in the backup job, but an error was encountered when backup processing attempted to initialize catalog data creation. *rc* is the return code that is generated by the internal routine responsible for creating catalog content during backup job processing. For information about the `BKR_Job_Catalog` configuration variable, see "CONFIG" on page 73.

**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 9284E. For information about the `BKR_Job_Consecutive_Failed_Task_Limit` configuration variable, see "CONFIG" on page 73.

**User response:** This message is commonly associated with problems involving the BKRWRK*nm* 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*.

**System action:** The backup operation attempts to continue processing. The SFS file space backup cannot guarantee point-in-time consistency for the backup of the entire SFS file space, but SFS internal architecture ensures consistency on a file-by-file basis.

**User response:** This message is typically an indication that the backup worker service virtual machine (BKRWRK*nm*) lacks SFS file pool ADMIN authority for the associated SFS file pool. Ensure that all BKRWRK*nm* service virtual machines have file pool administrator privileges. For more information, see "Step 1d. Verify privileges for worker service virtual machines (BKRWRKxx)" on page 24. 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 DMSQLIMU return code and reason code respectively. For more information, see *z/VM CMS Callable Services Reference*.

**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 9284E. For information, see "CONFIG" on page 73.

**User response:** This message typically indicates that the backup worker service virtual machine (BKRWRK*nm*) lacks SFS file pool ADMIN authority for the associated SFS file pool. Ensure that all BKRWRK*nm* service virtual machines have file pool administrator privileges. See "Step 1d. Verify privileges for worker service virtual machines (BKRWRKxx)" on page 24 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 9284E. For information about the **BKR\_Job\_Consecutive\_Failed\_Task\_Limit** configuration variable, see “CONFIG” on page 73.

**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 I/O error or out-of-space condition during the initial phase of SFS file space backup processing. Inspect the contents of the backup job log and the system operator console log for additional messages that are related to the I/O error. If the problem persists or the cause cannot be determined, contact your system programmer or IBM Software Support.

---

**BKR8010E Catalog CTNRDATA(FILESPACE) return code *rc*.**

**Explanation:** The catalog data generation routine encountered a failure during a CTNRDATA call.

**System action:** Depending on severity of the error, the affected 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 non-zero 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* 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 8012E 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

additional messages in the backup job log. This message is usually associated with connectivity issues between the backup worker service virtual machine (BKRWRKmm) and the associated SFS file pool server, or with resource limit issues affecting the associated SFS file pool server. Inspect the contents of the SFS file pool server console log for additional diagnostic information. If the problem persists, contact your system programmer or IBM Software Support.

---

**BKR8012E DMSGETDA return code *rc*, reason code *reason*.**

**Explanation:** This message is displayed when SFS backup processing encounters a non-zero 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* 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 8058E 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 this threshold is exceeded, the backup job ends with message 9284E. For information about the **BKR\_Job\_Consecutive\_Failed\_Task\_Limit** configuration variable, see “CONFIG” on page 73.

**User response:** This message is accompanied by additional messages in the backup job log. This message is usually associated with connectivity issues between the backup worker service virtual machine (BKRWRKmm) and the associated SFS file pool server, or with resource limit issues affecting the associated SFS file pool server. Inspect the contents of the SFS file pool server console log for additional diagnostic information. If the problem persists, contact your system programmer or IBM Software Support.

---

**BKR8013I Base file: *dirname* / *filename*.**

**Explanation:** This message is issued during verbose mode processing of SFS objects. It indicates a base file was encountered. *dirname* is the SFS directory path (filepool:fileSPACE.dirid1...). *filename* is the CMS file encountered (*filename filetype*).

**System action:** Processing continues.

**User response:** No action is required.

---

**BKR8014E** DMSEXIST (base file) return code *rc*, reason code *reason*.

**Explanation:** A base file was erased or renamed during backup of an SFS file space.

**System action:** DUMPSFS issues message 9313W 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 9313W 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 (BKRWRK $mm$ ) and the associated SFS file pool server, or with resource limit or data corruption issues affecting the associated SFS file pool server. Inspect the contents of the backup catalog SFS file pool server console log for additional diagnostic information. If the problem persists, contact your system programmer or IBM Software Support.

---

**BKR8016W** BKR PICK return code *rc*; incremental processing disabled.

**Explanation:** This message is displayed during incremental backup processing if the change detection routine, BKR PICK, 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* for information about DMSOPDBK.

**System action:** If this situation occurs during backup of an SFS file space, the associated CMS file is omitted from the file space backup, but the backup operation attempts to continue with the next object in the SFS file space.

When this issue occurs during backup of a CMS EDF-format minidisk file system, DUMPEDF ends with a return code of 20 and the backup of the affected minidisk is attempted again as an ECKD track-image or FB-512 block-image backup.

**User response:** When issued with a backup of an SFS file space, this message generally indicates that another CMS virtual machine erased a file from the file space while backup processing is active. It also implies that DUMPSFS was unable to obtain a file space lock for backup processing.

When issued with backup of a CMS EDF-format minidisk, this message can indicate that the associated minidisk is being actively updated by another user during backup processing, or in some cases, can be symptomatic of loss of logical integrity of the CMS minidisk EDF file system. If the problem cannot be resolved after consideration of these issues, contact your system programmer or IBM Software Support.

---

**BKR8018W** Base file is active in SMS; reason code *reason*.

**Explanation:** An SFS base file was migrated to DFSMS managed storage. Further processing is bypassed.

**System action:** Processing of the next SFS object in the affected file space continues.

**User response:** No action is required.

---

**BKR8019E** FILEHEAD (base file) return code *rc*.

**Explanation:** This message is issued when DUMPSFS attempts to process a base file (a regular CMS SFS file) during backup processing. *rc* is an internal subroutine response that provides information to IBM Software Support.

**System action:** DUMPSFS ends with return code 32. This condition is not suitable for error recovery retry. Backup job processing attempts to continue with the next minidisk or file space that is selected for backup, unless the consecutive failed task limit specified by **BKR\_Job\_Consecutive\_Failed\_Task\_Limit** in the backup

job was exceeded. When this threshold is exceeded, the backup job ends with message 9284E. For information about the **BKR\_Job\_Consecutive\_Failed\_Task\_Limit** configuration variable, see “CONFIG” on page 73.

**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 DMSRddbK return code rc, reason code reason.**

**Explanation:** This message is displayed when an attempt to read data blocks from a CMS file through the CSL routine DMSRddbK completes abnormally. *rc* and *reason* are the return code and reason code generated by DMSRddbK. See *z/VM CMS Callable Services Reference* for information about DMSRddbK.

**System action:** If this error occurs during backup of an SFS file space, DUMPSFS ends with the same return code as DMSRddbK. Consider the backup of the SFS file space incomplete. The backup job processing attempts to continue with the next task in the job.

If this error occurs during backup of a CMS EDF-format minidisk, DUMPEDF ends with the same return code as DMSRddbK. Backup of the associated minidisk is retried as an ECKD track-image (or FB-512 block-image) backup.

**User response:** When issued with backup of an SFS file space this message can be a symptom of resource shortages or data corruption issues within the associated SFS file pool. Examine the SFS file pool server console log for additional diagnostic information.

When issued with backup of a CMS EDF-format minidisk, this message can indicate that the associated minidisk is being actively updated by another user during backup processing, or in some cases can be

symptomatic of loss of logical integrity of the CMS minidisk EDF file system. If the problem cannot be resolved after consideration of these issues, contact your system programmer or IBM Software Support.

---

**BKR8022E FILEDATA (base file) return code rc.**

**Explanation:** The output handler encountered an I/O error while 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 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 9284E. For information about the **BKR\_Job\_Consecutive\_Failed\_Task\_Limit** configuration variable, see “CONFIG” on page 73.

**User response:** Inspect the contents of the backup job log and the system operator console log for additional 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 9284E. For information about the **BKR\_Job\_Consecutive\_Failed\_Task\_Limit** configuration variable, see “CONFIG” on page 73.

**User response:** Inspect the contents of the backup job log and the system operator console log for additional messages that are related to the input/output error. If the problem persists or the cause cannot be determined,

## BKR8024E • BKR8030E

contact your system programmer or IBM Software Support.

---

**BKR8024E**    **GETAUTH (base file) return code *rc*; R1**  
                  = *parmaddr*.

**Explanation:** DUMPSFS encountered an error while attempting to extract permission attributes of an SFS base file. Retain the diagnostic data provided by *rc* and *parmaddr* for analysis.

**System action:** Backup processing attempts to continue. Backup of the base file associated with this message was accomplished, but the complete set of access permissions (such as those applied through the CMS **GRANT** command) might not be included in the resulting backup.

**User response:** This message can be displayed with additional diagnostic information. Review the console log for the SFS file pool service virtual machine that owns the affected SFS file space. The underlying cause might involve technical issues or resource constraints which are recorded on the SFS file pool service virtual machine. If the problem persists, contact your system programmer or IBM Software Support.

---

**BKR8025E**    **SFSATTR (base file) return code *rc*.**

**Explanation:** DUMPSFS encountered a failure.

**System action:** DUMPSFS exits with a non-zero return code.

**User response:** This message might be accompanied by supporting messages to the virtual machine console. If the problem persists, contact your system programmer or IBM Software Support.

---

**BKR8026E**    **DMSCLDBK return code *rc*, reason code**  
                  *reason*.

**Explanation:** The CSL routine DMSCLDBK ended abnormally during conclusion of the backup of an SFS object.

**System action:** Reason code 10000 is handled as a recoverable error. In this case, backup of the affected SFS file space attempts to continue. Other DMSCLDBK reason codes are handled as non-recoverable exceptions. DUMPSFS ends with *rc* 20. See *z/VM CMS Callable Services Reference* for information about DMSCLDBK.

**User response:** This message can be displayed with additional diagnostic information. Review the console log for the SFS file pool service virtual machine that owns the affected SFS file space. The underlying cause might involve technical issues or resource constraints which are to be recorded on the SFS file pool service virtual machine. This error can occur when there are resource shortages (virtual memory or catalog or attribute DASD space) that affects the SFS file pool that is being backed up. Another cause of this error can be

that communication between BKRWRK*nnn* 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 non-zero return code *rc* while attempting to extract the attributes of an SFS alias. For more information, see *z/VM CMS Callable Services Reference*.

**System action:** DUMPSFS attempts to continue the backup of the affected SFS file space, but the alias object associated with this condition is not included in the backup.

**User response:** This message can be displayed with additional diagnostic information. Review the console log for the SFS file pool service virtual machine that owns the affected SFS file space. The underlying cause can involve technical issues, resource constraints which are recorded on the SFS file pool service virtual machine, or loss of communication between BKRWRK*nnn* 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 8027W. This message identifies the unresolved alias.

**System action:** None.

**User response:** No action is required.

---

**BKR8029I**    **Alias: *dirnamefilename 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 9284E. For information about the **BKR\_Job\_Consecutive\_Failed\_Task\_Limit** configuration variable, see "CONFIG" on page 73.

**User response:** This message can be generated under a variety of circumstances when an attempt to write backup data to an output destination (either tape or a DISKPOOL resource) encounters an input/output error or out-of-space condition during the initial phase of SFS file space backup processing. Inspect the contents of the backup job log and the system operator console log for additional messages related to the input/output error. If the problem persists or the cause cannot be determined, contact your system programmer or IBM Software Support.

---

**BKR8034E** Catalog FILEHEAD (alias) return code *rc.*

**Explanation:** The catalog data generation routine encountered an error while attempting to record catalog information for an SFS alias.

**System action:** Depending on severity of the error, the affected 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 9284E. For information about the **BKR\_Job\_Consecutive\_Failed\_Task\_Limit** configuration variable, see "CONFIG" on page 73.

**User response:** Inspect the contents of the backup job log and the system operator console log for possible additional messages that are related to the input/output error. If the problem persists or you cannot determine the cause, contact your system programmer or IBM Software Support.

---

**BKR8036E** FILEEND (alias) return code *rc.*

**Explanation:** An I/O handler encountered an error while attempting to write SFS alias end-of-file attributes to backup media. *rc* is an internal subroutine response that can be useful to IBM Software Support.

**System action:** DUMPSFS ends with return code 32. This condition is not suitable for error recovery retry. Backup job processing attempts to continue with the next minidisk or file space selected for backup, unless the consecutive failed task limit specified by **BKR\_Job\_Consecutive\_Failed\_Task\_Limit** in the backup job was exceeded. When this threshold is exceeded, the backup job ends with message 9284E. For information about the **BKR\_Job\_Consecutive\_Failed\_Task\_Limit** configuration variable, see "CONFIG" on page 73.

**User response:** This message can be generated under a variety of circumstances when an attempt to write backup data to an output destination (tape or a DISKPOOL resource) encounters an input/output error or out-of-space condition during the initial phase of SFS file space backup processing. Inspect the contents of the backup job log and the system operator console log for additional messages that are related to the input/output error. If the problem persists or the cause

## BKR8037E • BKR8043E

cannot be determined, contact your system programmer or IBM Software Support.

---

### BKR8037E GETAUTH (alias) return code *rc*.

**Explanation:** An error occurred while extracting SFS authorization attributes for an SFS alias.

**System action:** The system attempts to continue backup of the associated SFS object (file, directory, or alias) but the backup might not include the full set of permissions associated with the object.

**User response:** This message can be generated under a variety of circumstances, from possible file pool data corruption to a loss of communication between BKRWRK*nn* and the SFS file pool server. It can be accompanied by supporting messages to the virtual machine console. If you cannot determine the cause of the problem or the problem persists, contact your system programmer or IBM Software Support.

---

### BKR8038W SFSATTR (alias) return code *rc*.

**Explanation:** An I/O handler encountered an error while processing SFS alias attributes.

**System action:** The system attempts to continue backup of the associated SFS object (file, directory, or alias) but the backup might not include the full set of permissions associated with the object.

**User response:** This message can be generated under a variety of circumstances, from possible file pool data corruption to a loss of communication between BKRWRK*nn* and the SFS file pool server. It can be accompanied by supporting messages to the virtual machine console. If you cannot determine the cause of the problem or the problem persists, contact your system programmer or IBM Software Support.

---

### BKR8039W Dropping erased alias *directory\_path/filename filetype*.

**Explanation:** DUMPSFS encountered an erased alias. The object is excluded from backup.

**System action:** None.

**User response:** Erased alias objects cannot be re-associated with useful content because the associated SFS content was deleted. If the problem persists, contact your system programmer or IBM Software Support.

---

### BKR8040W Dropping revoked alias *directory\_path/filename filetype*.

**Explanation:** DUMPSFS encountered a revoked alias. The object is excluded from backup.

**System action:** None.

**User response:** Revoked alias objects cannot be

re-associated with useful content because the associated SFS content was deleted. If the problem persists, contact your system programmer or IBM Software Support.

---

### BKR8041I ---SFS Directory: *directory*.

**Explanation:** This message is issued in verbose mode to identify processing of an SFS directory.

**System action:** None.

**User response:** No action is required.

---

### BKR8042E DMSEXIST (directory) return code *rc*, reason code *reason*.

**Explanation:** The CSL routine DMSEXIST issued a non-zero return code *rc* while processing an SFS directory. For more information, see *z/VM CMS Callable Services Reference*.

This message might be accompanied by supporting messages to the virtual machine console.

**System action:** Backup processing attempts to continue processing of the remaining objects (files, directories, or aliases) in the SFS file space.

**User response:** When issued with a backup of an SFS file space, this message usually indicates that another CMS virtual machine erased a file from the file space while backup processing is active. It also implies that DUMPSFS was unable to obtain a file space lock for backup processing.

If the problem cannot be resolved after consideration of these issues, contact your system programmer or IBM Software Support.

---

### BKR8043E CTNRDATA (directory) return code *rc*.

**Explanation:** The output handler encountered an I/O error while attempting to record data representing an SFS directory to backup media.

**System action:** DUMPSFS ends with return code 32. This condition is not suitable for error recovery retry. Backup job processing attempts to continue with the next minidisk or file space selected for backup, unless the consecutive failed task limit specified by BKR\_Job\_Consecutive\_Failed\_Task\_Limit in the backup job was exceeded. When this threshold is exceeded, the backup job ends with message 9284E. For information about the BKR\_Job\_Consecutive\_Failed\_Task\_Limit configuration variable, see "CONFIG" on page 73.

**User response:** This message can be generated under a variety of circumstances when an attempt to write backup data to an output destination (either tape or a DISKPOOL resource) encounters an input/output error or out-of-space condition during the initial phase of SFS file space backup processing. Inspect the contents of the backup job log and the system operator console

log for additional messages related to the input/output error. If the problem persists or you cannot determine the cause, contact your system programmer or IBM Software Support.

---

**BKR8044E** **Catalog CTNRDATA (directory) return code *rc*.**

**Explanation:** The catalog data generation routine encountered an error during an attempt to record catalog information for an SFS directory.

**System action:** Depending on severity of the error, the affected 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 is unable to successfully record the attributes of an SFS file space during backup processing. *rc* is an internal subroutine response that can be useful to IBM Software Support.

**System action:** The system attempts to continue backup of the SFS file space with the next object (file, alias, or directory). The full set of permission attributes for the affected directory might not have been captured for backup.

**User response:** This message might be accompanied by supporting messages to the virtual machine console. If the problem persists, contact your system programmer or IBM Software Support.

---

**BKR8047E** **DMSEXIST (external object) return code *rc*, reason code *reason*.**

**Explanation:** The CSL routine DMSEXIST issued a non-zero return code *rc* while processing an SFS

external object. For more information, see *z/VM CMS Callable Services Reference*.

**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* 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 9284E. For information about the **BKR\_Job\_Consecutive\_Failed\_Task\_Limit** configuration variable, see "CONFIG" on page 73.

**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* 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 non-zero return code *rc*. See *z/VM CMS Callable Services Reference* for information about DMSCLDIR.

**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.

---

**BKR8059E DMSENAFS return code** *rc*, **reason code**  
*reason.*

**Explanation:** The CSL routine DMSENAFS issued a non-zero return code. See *z/VM CMS Callable Services Reference* for information about DMSENAFS.

**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.

---

---

**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* for valid parameters.

---

**BKR8063E** IJPARML format inconsistency.

**Explanation:** A consistency check during processing of backup or catalog metadata failed.

**System action:** None.

**User response:** Collect available diagnostic information accompanying the message and contact your system programmer or IBM Software Support.

---

**BKR8065E** Return code *rc* attempting to recover BKR\_ACTUAL\_SL\_LABEL.

**Explanation:** An error occurred while attempting to extract the value of REXX variable BKR\_ACTUAL\_SL\_LABEL.

**System action:** The calling routine exits with either a non-zero return code or an abend.

**User response:** Collect available diagnostic information accompanying the message and contact your system programmer or IBM Software Support.

---

**BKR80066E** Return code *rc* attempting to recover BKR\_OUT\_TWIN\_PRIVOL.

**Explanation:** An error occurred while attempting to extract the value of REXX variable BKR\_OUT\_TWIN\_PRIVOL.

**System action:** The calling routine exits with either a non-zero return code or an abend.

**User response:** Collect available diagnostic information accompanying the message and contact your system programmer or IBM Software Support.

---

**BKR8067E** Return code *rc* attempting to recover BKR\_OUT\_TWIN\_SECVOL.

**Explanation:** An error occurred while attempting to extract the value of REXX variable BKR\_OUT\_TWIN\_SECVOL.

**System action:** The calling routine exits with either a non-zero return code or an abend.

**User response:** Collect available diagnostic information accompanying the message and contact your system programmer or IBM Software Support.

---

**BKR8068E** Invalid value for JOBSEQ: *value*.

**Explanation:** The JOBSEQ parameter was set to an unrecognized value during backup processing.

**System action:** The routine encountering the error exits with a non-zero return code.

**User response:** Attempt to correct the error in the calling environment. (See the *IBM Backup and Restore Manager for z/VM User's Guide* 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 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.

---

## BKR8072E • BKR8081E

**User response:** Examine the accompanying error messages and attempt to resolve the error. If the problem persists, contact your system programmer or IBM Software Support.

---

### BKR8072E Return code *rc* from BKRTIO on primary GETVOL1 request.

**Explanation:** An error occurred while attempting to read the VOL1 label of a tape.

**System action:** Processing ends with a non-zero return code or abend.

**User response:** Ensure the tape associated with the error has a valid VOL1 label.

---

### BKR8073E xxxMOUNT exit return code *rc* on secondary VOL1 mount request.

**Explanation:** The IBMTWIN I/O handler encountered a text error that occurred while mounting the secondary volume of a twin set.

**System action:** This situation indicates a tape mount failure. Processing stops.

**User response:** Examine accompanying error messages and attempt to resolve the error. (See the *IBM Backup and Restore Manager for z/VM User's Guide* for information about IBMTWIN.) If the problem persists, contact your system programmer or IBM Software Support.

---

### BKR8074E Return code *rc* from BKRTIO on secondary GETVOL1 request.

**Explanation:** An error occurred while attempting to read the VOL1 label of a tape.

**System action:** Processing ends with a non-zero return code or abend.

**User response:** Ensure the tape associated with the error has a valid VOL1 label.

---

### BKR8075I Output handler IBMTWIN initializing.

**Explanation:** This message indicates the IBMTWIN output handler is initializing.

**System action:** None.

**User response:** No action is required.

---

### BKR8076I Job name is: *job\_name*.

**Explanation:** This message indicates the job name.

**System action:** None.

**User response:** No action is required.

---

### BKR8077E Recursive INIT call encountered.

**Explanation:** A recurring initialization call was issued to an I/O handler routine.

**System action:** The affected routine exits with a non-zero return code.

**User response:** This message might be accompanied by supporting messages to the virtual machine console. If the problem persists, contact your system programmer or IBM Software Support.

---

### BKR8078E FILEHEAD called prior to initialization.

**Explanation:** The calling routine attempted to pass information to an I/O handler prior to initialization.

**System action:** The calling routine exits with a non-zero return code.

**User response:** This message might be accompanied by supporting messages to the virtual machine console. If the problem persists, contact your system programmer or IBM Software Support.

---

### BKR8079E Recursive FILEHEAD call encountered.

**Explanation:** An I/O handler received a FILEHEAD call before processing of the previous file was stopped.

**System action:** The calling routine exits with a non-zero return code.

**User response:** This message might be accompanied by supporting messages to the virtual machine console. If the problem persists, contact your system programmer or IBM Software Support.

---

### BKR8080E FHPARML inconsistency encountered.

**Explanation:** An internal consistency check between a data handling routine and an I/O handler failed.

**System action:** Processing stops.

**User response:** Collect available diagnostic information accompanying the message and contact your system programmer or IBM Software Support.

---

### BKR8081E Malformed FILEHEAD; unrecognized FHFTYPE value.

**Explanation:** An internal consistency check between a data handling routine and an I/O handler failed.

**System action:** Processing stops.

**User response:** This message might be accompanied by supporting messages to the virtual machine console. If the problem persists, contact your system programmer or IBM Software Support.

---

**BKR8082E FILEDATA called prior to initialization.**

**Explanation:** An internal consistency check between a data handling routine and an I/O handler failed.

**System action:** Processing stops.

**User response:** This message might be accompanied by supporting messages to the virtual machine console. If the problem persists, contact your system programmer or IBM Software Support.

---

**BKR8083E FILEDATA called prior to FILEHEAD.**

**Explanation:** An internal consistency check between a data handling routine and an I/O handler failed.

**System action:** Processing stops.

**User response:** This message might be accompanied by supporting messages to the virtual machine console. If the problem persists, contact your system programmer or IBM Software Support.

---

**BKR8084E FDPARML inconsistency encountered.**

**Explanation:** An internal consistency check between a data handling routine and an I/O handler failed.

**System action:** Processing stops.

**User response:** This message might be accompanied by supporting messages to the virtual machine console. If the problem persists, contact your system programmer or IBM Software Support.

---

**BKR8085E FILEEND called prior to initialization.**

**Explanation:** An internal consistency check between a data handling routine and an I/O handler failed.

**System action:** Processing stops.

**User response:** This message might be accompanied by supporting messages to the virtual machine console. If the problem persists, contact your system programmer or IBM Software Support.

---

**BKR8086E FILEEND called prior to FILEHEAD.**

**Explanation:** An internal consistency check between a data handling routine and an I/O handler failed.

**System action:** Processing stops.

**User response:** This message might be accompanied by supporting messages to the virtual machine console. If the problem persists, contact your system programmer or IBM Software Support.

---

**BKR80087E FEPARML inconsistency encountered.**

**Explanation:** An internal consistency check between a data handling routine and an I/O handler failed.

**System action:** Processing stops.

**User response:** This message might be accompanied by supporting messages to the virtual machine console. If the problem persists, contact your system programmer or IBM Software Support.

---

**BKR8088E TERMINAT called prior to initialization.**

**Explanation:** An internal consistency check between a data handling routine and an I/O handler failed.

**System action:** Processing stops.

**User response:** This message might be accompanied by supporting messages to the virtual machine console. If the problem persists, contact your system programmer or IBM Software Support.

---

**BKR80889E TERMINAT invoked with files still open.**

**Explanation:** An internal consistency check between a data handling routine and an I/O handler failed.

**System action:** Processing stops.

**User response:** This message might be accompanied by supporting messages to the virtual machine console. If the problem persists, contact your system programmer or IBM Software Support.

---

**BKR8090E EOJPARML inconsistency encountered.**

**Explanation:** An internal consistency check between a data handling routine and an I/O handler failed.

**System action:** Processing stops.

**User response:** This message might be accompanied by supporting messages to the virtual machine console. If the problem persists, contact your system programmer or IBM Software Support.

---

**BKR8091E xxxUMNT exit return code rc from primary dismount.**

**Explanation:** The IBMTAPE I/O handler received a non-zero return code from a tape dismount exit routine.

**System action:** Processing stops.

**User response:** This message might be accompanied by supporting messages to the virtual machine console. If the problem persists, contact your system programmer or IBM Software Support.

---

---

**BKR8092E** xxxUMNT exit return code *rc* from secondary dismount.

**Explanation:** The IBMTWIN I/O handler received a non-zero return code from a tape dismount exit routine.

**System action:** Processing stops.

**User response:** This message might be accompanied by supporting messages to the virtual machine console. If the problem persists, contact your system programmer or IBM Software Support.

---

**BKR8093E** CTNRDATA called prior to initialization.

**Explanation:** An internal consistency check between a data handling routine and an I/O handler failed.

**System action:** Processing stops.

**User response:** This message might be accompanied by supporting messages to the virtual machine console. If the problem persists, contact your system programmer or IBM Software Support.

---

**BKR8094E** Out-of-sequence CTNRDATA call; state is not EOF.

**Explanation:** An internal consistency check between a data handling routine and an I/O handler failed.

**System action:** Processing stops.

**User response:** This message might be accompanied by supporting messages to the virtual machine console. If the problem persists, contact your system programmer or IBM Software Support.

---

**BKR8095E** CDPARML inconsistency encountered.

**Explanation:** An internal consistency check between a data handling routine and an I/O handler failed.

**System action:** Processing stops.

**User response:** This message might be accompanied by supporting messages to the virtual machine console. If the problem persists, contact your system programmer or IBM Software Support.

---

**BKR8096E** Unrecognized CTNRDATA call type.

**Explanation:** An internal consistency check between a data handling routine and an I/O handler failed.

**System action:** Processing stops.

**User response:** This message might be accompanied by supporting messages to the virtual machine console. If the problem persists, contact your system programmer or IBM Software Support.

---

**BKR8097E** SFSATTR called prior to initialization.

**Explanation:** An internal consistency check between a data handling routine and an I/O handler failed.

**System action:** Processing stops.

**User response:** This message might be accompanied by supporting messages to the virtual machine console. If the problem persists, contact your system programmer or IBM Software Support.

---

**BKR8098E** SFSATTR called prior to end-of-file.

**Explanation:** An internal consistency check between a data handling routine and an I/O handler failed.

**System action:** Processing stops.

**User response:** This message might be accompanied by supporting messages to the virtual machine console. If the problem persists, contact your system programmer or IBM Software Support.

---

**BKR8099E** SAPARML inconsistency encountered.

**Explanation:** An internal consistency check between a data handling routine and an I/O handler failed.

**System action:** Processing stops.

**User response:** This message might be accompanied by supporting messages to the virtual machine console. If the problem persists, contact your system programmer or IBM Software Support.

---

**BKR8100E** FEOV (Forced End-of-Volume) failure for device *device*.

**Explanation:** A tape handling error occurred during FEOV processing.

**System action:** Processing stops.

**User response:** This message might be accompanied by supporting messages to the virtual machine console. If the problem persists, contact your system programmer or IBM Software Support.

---

**BKR8101E** BKRTIO return code *rc*, reason code *reason*.

**Explanation:** An I/O error occurred reading or writing a tape device.

**System action:** Processing stops.

**User response:** This message might be accompanied by supporting messages to the virtual machine console. If the problem persists, contact your system programmer or IBM Software Support.

---

---

**BKR8102E CMSFILE output handler invoked with unrecognized parameter.**

**Explanation:** The CMSFILE output handler encountered an unrecognized parameter.

**System action:** Processing stops.

**User response:** Review the parameters specified for CMSFILE to determine the incorrect parameter. See the *IBM Backup and Restore Manager for z/VM User's Guide* 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* for information about DMSOPEN.

**System action:** The routine encountering the error condition might attempt recovery or exit with a non-zero 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 non-zero return code *rc* from CSL routine DMSWRITE. See *z/VM CMS Callable Services Reference* 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* 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* 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* 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* 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* 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* 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* 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* 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* 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.

**System action:** Processing stops.

**User response:** This situation could result from an I/O error or an internal logic failure. 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 8119T. It displays up to the first 80 bytes of the out-of-sequence I/O buffer.

**System action:** Processing stops.

**User response:** This situation could result from an I/O error or an internal logic failure. 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** BKR210 return code *rc* during extract of target description.

**Explanation:** CP DIAG 210 returned an error during backup or restore processing.

**System action:** Processing stops.

**User response:** This message might be accompanied by additional supporting messages to the virtual machine console. If the problem persists, contact your system programmer or IBM Software Support.

---

**BKR8133E** Source and target device types do not match.

**Explanation:** Incompatible source and destination devices encountered while attempting to restore a CKD image backup.

**System action:** Processing stops.

**User response:** Try the restore operation again specifying a compatible output destination.

---

**BKR8134E** Target extent has too few cylinders to contain source image.

**Explanation:** A CKD image backup cannot be restored to the target minidisk because the target extent is too small.

**System action:** Processing stops.

**User response:** Try the restore operation again specifying a sufficiently large destination minidisk.

---

**BKR8135I** Operation complete; *n* tracks restored to target extent.

**Explanation:** Restoration of a CKD image backup completed successfully.

**System action:** None.

**User response:** No action is required.

---

**BKR8136E** Input handler *handler* return code *rc*, reason code *reason* on TERMINAT.

**Explanation:** An internal consistency check between a data handling routine and an I/O handler failed.

**System action:** Processing stops.

**User response:** This message might be accompanied by additional supporting messages to the virtual machine console. If the problem persists, contact your system programmer or IBM Software Support.

---

**BKR8137E** Invalid numeric data in target storage group number *number*.

**Explanation:** An invalid value was specified for use as an SFS storage group during LOADSFS processing.

**System action:** Processing stops.

**User response:** Try the operation again specifying a valid storage group number.

---

**BKR8138I** Found *filename filetype*, owner *owner*, source *source*.

**Explanation:** This message identifies a source file during verbose restore processing. Message 8138I is issued if verbose mode is enabled during restoration of CMS files. *filename filetype* indicates the CMS file ID encountered. *owner* is the virtual machine name/user ID of the file owner. *source* is the minidisk or SFS file pool ID from which the file was originally backed up.

**System action:** None.

**User response:** No action is required.

---

**BKR8139W** File skipped; *file* already exists on restore destination.

**Explanation:** A pre-existing file was encountered during restore processing. The file is left in place instead of being overlaid by the restore operation.

**System action:** Processing continues.

**User response:** If you want to restore the version of the file contained on backup media, remove the colliding file from the restore destination and try the restore operation again.

---

**BKR8140E** DMSOPDBK (EDF) return code *rc*, reason code *reason*.

**Explanation:** CSL routine DMSOPDBK issued a non-zero return code to the calling routine while restoring data to a CMS minidisk. See *z/VM CMS Callable Services Reference* 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* 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* 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* for information about DMSCLDBK.

**System action:** Processing stops.

**User response:** This message might be accompanied by additional supporting messages to the virtual machine console. If the problem persists, contact your system programmer or IBM Software Support.

**BKR8145W Filespace *filespace* is already enrolled; present limits will apply.**

**Explanation:** During restore of SFS data to an SFS destination, the target file space was found to be already enrolled in the target file pool.

**System action:** None.

**User response:** The restore operation proceeds, subject to the pre-existing limits on the target file space.

**BKR8146E Filespace enrollment failed, return code *rc*, reason code *reason*.**

**Explanation:** An attempt to enroll a file space during SFS restore processing failed.

**System action:** Processing stops.

**User response:** This message might be accompanied by additional supporting messages to the virtual machine console. If the problem persists, contact your system programmer or IBM Software Support.

**BKR8147E DEFSFDIR return code *rc*, reason code *reason*.**

**Explanation:** Creation of an SFS directory failed during SFS restore processing.

**System action:** Processing stops.

**User response:** This message might be accompanied by additional supporting messages to the virtual machine console. If the problem persists, contact your system programmer or IBM Software Support.

**BKR8148W ALIAS skipped; *filename filetype directory\_path* already exists.**

**Explanation:** During SFS restore processing, Backup and Restore Manager attempted to restore an ALIAS definition, which already exists.

**System action:** Processing continues.

**User response:** If you want to restore the version of the alias that is contained in the backup, delete the pre-existing alias from the target file space and try the restore operation again.

**BKR8149W ALIAS not restored; DEFALIAS return code *rc*, reason code *reason*.**

**Explanation:** An error occurred while attempting to reconstruct an SFS alias from backup data.

**System action:** Processing continues.

**User response:** The alias was not restored. If you want to restore the skipped alias, examine additional messages, take corrective action if possible, and try the restore operation again.

**BKR8150E DEFAUTH return code *rc*, reason code *reason*.**

**Explanation:** An attempt to restore SFS authorizations from backup data failed.

**System action:** Processing continues.

**User response:** The authorization attributes were not restored. Manually re-create them or try the restore operation again.

---

**BKR8151W** **EXTERNAL OBJECT skipped;** *filename filetype directory\_path* **already exists.**

**Explanation:** A name collision occurred while trying to restore an external object to a file space. The external object definition Backup and Restore Manager encountered during restore processing already exists in the target file space.

**System action:** Processing continues.

**User response:** To restore the external object from backup data, delete the colliding external object definition and try the restore operation again.

---

**BKR8152E** **DEFEXOBJ return code *rc*, reason code *reason*.**

**Explanation:** An attempt to re-create an external object definition from backup data failed.

**System action:** Processing continues.

**User response:** The external object was not restored. Examine additional messages and try the restore operation again. If the problem persists, contact your system programmer or IBM Software Support.

---

**BKR8153W** **Dropping SFS ALIAS definition; not applicable to non-SFS target.**

**Explanation:** An SFS alias definition was skipped while restoring SFS data to a CMS EDF minidisk.

**System action:** Processing continues.

**User response:** Only SFS base files can be restored to CMS EDF minidisk. No action is required.

---

**BKR8154W** **Dropping SFS AUTH definition; not applicable to non-SFS target.**

**Explanation:** SFS permission definitions were skipped while restoring SFS data to a CMS EDF minidisk.

**System action:** Processing continues.

**User response:** No action is required.

---

**BKR8155W** **Dropping SFS External Object; not applicable to non-SFS target.**

**Explanation:** An SFS external object was skipped during restoration of SFS data to a CMS EDF minidisk.

**System action:** Processing continues.

**User response:** No action is required. Only SFS base files can be restored to CMS EDF minidisk.

---

**BKR8156I** **Operation complete; restored *n* files to target.**

**Explanation:** This message indicates that the restore operation successfully restored the specified number of files to the designated target.

**System action:** None.

**User response:** No action is required.

---

**BKR8157E** **CP return code *rc* from command *command*.**

**Explanation:** A non-zero CP return code was encountered during backup or restore processing.

**System action:** The affected routine might attempt recovery action or processing might stop.

**User response:** This message might be accompanied by additional supporting messages to the virtual machine console. If the problem persists, contact your system programmer or IBM Software Support.

---

**BKR8158E** **CP response: *response*.**

**Explanation:** An unexpected CP reply was encountered. This message displays the response that was not handled.

**System action:** Processing stops.

**User response:** This message might be accompanied by additional supporting messages to the virtual machine console. If the problem persists, contact your system programmer or IBM Software Support.

---

**BKR8159E** **CMS return code *rc* from command ACCESS 3F0 Z (MODE0).**

**Explanation:** Backup and Restore Manager for z/VM reserves virtual address 3F0 and file mode Z for backup and restore processing of CMS EDF minidisks. In this instance, an **ACCESS** command failed.

**System action:** Processing stops.

**User response:** This message might be accompanied by additional supporting messages to the virtual machine console. If the problem persists, contact your system programmer or IBM Software Support.

---

**BKR8160E** **Return code *rc* from VMUDQ inquiry.**

**Explanation:** The VMUDQ interface responded with a non-zero return code.

**System action:** Processing stops.

**User response:** This message might be accompanied by additional supporting messages to the virtual machine console. If the problem persists, contact your system programmer or IBM Software Support.

---

**BKR8161E Incomprehensible response from VMUDQ.**

**Explanation:** The calling routine could not 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 8161E.

**System action:** None.

**User response:** Record the message for diagnostic purposes.

---

**BKR8163E ADT search failure.**

**Explanation:** DUMPEDF could not 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* 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

## BKR8172E • BKR8181E

machine console. If the problem persists, contact your system programmer or IBM Software Support.

---

### BKR8172E Catalog FILEHEAD return code *rc*.

**Explanation:** An internal consistency check between a data handling routine and an I/O handler failed.

**System action:** Processing stops.

**User response:** This message might be accompanied by additional supporting messages to the virtual machine console. If the problem persists, contact your system programmer or IBM Software Support.

---

### BKR8173E Unrecognized / unsupported EDF block size.

**Explanation:** An unrecognized CMS EDF minidisk data block size was encountered.

**System action:** Processing stops.

**User response:** Ensure Backup and Restore Manager is operating on a supported release of CMS. If the problem persists, contact your system programmer or IBM Software Support.

---

### BKR8174E FILEDATA return code *rc*.

**Explanation:** An internal consistency check between a data handling routine and an I/O handler failed.

**System action:** Processing stops.

**User response:** This message might be accompanied by additional supporting messages to the virtual machine console. If the problem persists, contact your system programmer or IBM Software Support.

---

### BKR8175E FILEEND return code *rc*.

**Explanation:** An internal consistency check between a data handling routine and an I/O handler failed.

**System action:** Processing stops.

**User response:** This message might be accompanied by additional supporting messages to the virtual machine console. If the problem persists, contact your system programmer or IBM Software Support.

---

### BKR8176E Output handler refused CKD CTNRDATA, return code *rc*.

**Explanation:** An internal consistency check between a data handling routine and an I/O handler failed.

**System action:** Processing stops.

**User response:** This message might be accompanied by additional supporting messages to the virtual machine console. If the problem persists, contact your system programmer or IBM Software Support.

---

### BKR8177E Catalog handler refused CKD CTNRDATA, return code *rc*.

**Explanation:** An internal consistency check between a data handling routine and an I/O handler failed.

**System action:** Processing stops.

**User response:** This message might be accompanied by additional supporting messages to the virtual machine console. If the problem persists, contact your system programmer or IBM Software Support.

---

### BKR8178E BKRRTRK return code *rc* trying to read track *track*.

**Explanation:** An I/O error was encountered during a CKD track image backup operation.

**System action:** Processing stops.

**User response:** This message might be accompanied by additional supporting messages to the virtual machine console. If the problem persists, contact your system programmer or IBM Software Support.

---

### BKR8179E WRTAPE return code *rc* during EOVSUSPEND processing.

**Explanation:** A tape I/O error occurred during end-of-volume processing.

**System action:** Processing stops.

**User response:** Attempt to resolve the I/O error and try the backup operation again.

---

### BKR8180E Return code *rc* from xxxEOV exit during EOVSUSPEND processing.

**Explanation:** The IBMTAPE I/O handler encountered a non-zero return code from the End-Of-Volume tape handling exit.

**System action:** Processing stops.

**User response:** Attempt to resolve the tape subsystem problem and try the restore operation again. If the problem persists, contact your system programmer or IBM Software Support.

---

### BKR8181E WRTAPE return code *rc* while finalizing EOVSUSPEND processing.

**Explanation:** A tape I/O error occurred during end-of-volume processing.

**System action:** Processing stops.

**User response:** Attempt to resolve the I/O error and try the failing backup operation again.

---

**BKR8182E**    **WRTAPE return code *rc*.**

**Explanation:** A tape I/O error occurred.

**System action:** Processing stops.

**User response:** Resolve the tape I/O error and try the failed backup operation again.

---

**BKR8183T**    **New volume with no VOL1 label during 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:** Try the restore operation again using a different tape drive.

---

**BKR8185E**    **TAPECTL return code *rc* during WTM.**

**Explanation:** An I/O error occurred during a WTM operation.

**System action:** Processing stops.

**User response:** Correct the I/O error and try the failing backup operation again.

---

**BKR8186E**    **TAPECTL return code *rc* during RDBLKID.**

**Explanation:** An I/O error occurred during a RDBLKID operation.

**System action:** Processing continues.

**User response:** Further RDBLKID operations are disabled. (This might slow performance during restore operations against the affected media.)

---

**BKR8187I**    **Caller has invoked FEOV processing for device *device*.**

**Explanation:** Forced end-of-volume (FEOV) processing was invoked. This occurs when an 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 LOCBLK.**

**Explanation:** A TAPECTL LOCBLK operation failed.

**System action:** Processing stops.

**User response:** Try the restore operation again using alternate media or a different tape drive.

---

**BKR8190E**    **RDTAPE return code *rc*.**

**Explanation:** An I/O error occurred during a RDTAPE operation.

**System action:** Processing stops.

**User response:** Try the restore operation again using alternate media or a different tape drive.

---

**BKR8191W**    **Hardware 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 is 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

---

## BKR8193E • BKR8202E

identify the appropriate successor volume. Restore processing continues after the next tape in sequence is mounted.

---

**BKR8193E** Return code *rc* from xxxEOV exit during READDATA EOV.

**Explanation:** A non-zero return code from an EOV tape handling exit was encountered.

**System action:** Processing stops.

**User response:** This message might be accompanied by additional supporting messages to the virtual machine console. If the problem persists, contact your system programmer or IBM Software Support.

---

**BKR8194E** RDTAPE return code *rc* while validating EOV RESUME.

**Explanation:** An I/O error occurred during end-of-volume processing.

**System action:** Processing stops.

**User response:** Try the restore operation again using alternate media or a different tape drive.

---

**BKR8195E** New volume EOVTYP is not RESUME after xxxEOV exit return.

**Explanation:** An out-of-sequence volume was mounted during EOV processing.

**System action:** Processing stops.

**User response:** Try the restore operation again with the correct sequence of input volumes.

---

**BKR8196W** TAPECTL RDBLKID return code *rc*; suppressing further RDBLKIDs.

**Explanation:** An I/O error was encountered on a RDBLKID operation.

**System action:** Processing continues.

**User response:** Processing is continues without further RDBLKID operations. (This might reduce performance of future restore operations which use the affected tape media.)

---

**BKR8197E** GETVOL1 processing encountered missing or damaged VOL1 label.

**Explanation:** A missing, damaged, or unrecognizable VOL1 label was encountered.

**System action:** Processing stops.

**User response:** Try the operation again after ensuring all tapes have a valid VOL1 label.

---

**BKR8198E** BKRTIO invoked with unsupported call type *type*.

**Explanation:** An internal consistency check between a data handling routine and an I/O handler failed.

**System action:** Processing stops.

**User response:** This message might be accompanied by additional supporting messages to the virtual machine console. If the problem persists, contact your system programmer or IBM Software Support.

---

**BKR8199E** Unrecognized catalog data generation parameter *parameter*.

**Explanation:** Backup and Restore Manager for z/VM encountered an unrecognized parameter (*parameter*) during catalog data generation.

**System action:** Processing stops.

**User response:** This message might be accompanied by additional supporting messages to the virtual machine console. If the problem persists, contact your system programmer or IBM Software Support.

---

**BKR8200I** New file *file* created to contain catalog granule contents.

**Explanation:** This message indicates that Backup and Restore Manager for z/VM created a new file (*file*) to contain catalog granule contents.

**System action:** None.

**User response:** No action is required.

---

**BKR8201E** DMSOPEN return code *rc*, reason *rsn* for catalog data file.

**Explanation:** Backup and Restore Manager received an error indication from DMSOPEN.

**System action:** Processing stops.

**User response:** If the problem persists, contact your system programmer or IBM Software Support.

---

**BKR8202E** DMSQFMOD return code *rc*; reason code *reason*.

**Explanation:** CSL routine DMSQFMOD responded with a non-zero return code. See z/VM CMS Callable Services Reference 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* for information about DMSWRITE.

**System action:** Processing stops.

**User response:** This message might be accompanied by supporting messages to the virtual machine console. This message typically is associated with an out of disk space condition. It might be necessary to enlarge the worker service virtual machine work area and then try the failed backup operation again. If the problem persists, contact your system programmer or IBM Software Support.

---

**BKR8204E** Catalog metadata record length mismatch.

**Explanation:** An internal consistency check between a data handling routine and an I/O handler failed.

**System action:** Processing stops.

**User response:** This message might be accompanied by supporting messages to the virtual machine console. If the problem persists, contact your system programmer or IBM Software Support.

---

**BKR8205E** DMSWRITE return code *rc*, reason code *reason* during GRANCTNR.

**Explanation:** CSL routine DMSWRITE responded with a non-zero return code. See *z/VM CMS Callable Services Reference* for information about DMSWRITE.

**System action:** Processing stops.

**User response:** This message might be accompanied by supporting messages to the virtual machine console. This message typically is associated with an out of disk space condition. It might be necessary to enlarge the worker service virtual machine work area and then try the failed backup operation again. If the problem persists, contact your system programmer or IBM Software Support.

---

**BKR8206E** GRANCTNR call encountered prior to initialization.

**Explanation:** An internal consistency check between a data handling routine and an I/O handler failed.

**System action:** Processing stops.

**User response:** This message might be accompanied by supporting messages to the virtual machine console. If the problem persists, contact your system programmer or IBM Software Support.

---

**BKR8207E** Recursive GRANCTNR call.

**Explanation:** An internal consistency check between a data handling routine and an I/O handler failed.

**System action:** Processing stops.

**User response:** This message might be accompanied by supporting messages to the virtual machine console. If the problem persists, contact your system programmer or IBM Software Support.

---

**BKR8208E** DMSWRITE return code *rc*, reason code *reason* during GRANOBJ.

**Explanation:** An output routine received a non-zero return code from CSL routine DMSWRITE. See *z/VM CMS Callable Services Reference* for information about DMSWRITE.

**System action:** Processing stops.

**User response:** This message might be accompanied by supporting messages to the virtual machine console. This message typically is associated with an out of disk space condition. It might be necessary to enlarge the worker service virtual machine work area and then try the failed backup operation again. If the problem persists, contact your system programmer or IBM Software Support.

---

**BKR8209E** GRANOBJ call encountered prior to GRANJOB.

**Explanation:** An internal consistency check between a data handling routine and an I/O handler failed.

**System action:** Processing stops.

**User response:** This message might be accompanied by supporting messages to the virtual machine console. If the problem persists, contact your system programmer or IBM Software Support.

---

**BKR8210E** GRANOBJ call encountered prior to GRANCTNR.

**Explanation:** An internal consistency check between a data handling routine and an I/O handler failed.

**System action:** Processing stops.

**User response:** This message might be accompanied by supporting messages to the virtual machine console. If the problem persists, contact your system programmer or IBM Software Support.

---

**BKR8211E** DMSWRITE return code *rc*, reason code *reason* during GRANEND.

**Explanation:** An output routine received a non-zero return code from CSL routine DMSWRITE.

**System action:** Processing stops.

**User response:** This message might be accompanied by supporting messages to the virtual machine console. This message typically is associated with an out of disk space condition. It might be necessary to enlarge the worker service virtual machine work area and then try the failed backup operation again. If the problem persists, contact your system programmer or IBM Software Support.

---

**BKR8212E DMSCLOSE return code *rc*, reason code *reason* closing granule.**

**Explanation:** CSL routine DMSCLOSE issued a non-zero return code during catalog data processing. See *z/VM CMS Callable Services Reference* for information about DMSCLOSE.

**System action:** Processing stops.

**User response:** This message might be accompanied by supporting messages to the virtual machine console. This message typically is associated with an out of disk space condition. It might be necessary to enlarge the worker service virtual machine work area and then try the failed backup operation again. If the problem persists, contact your system programmer or IBM Software Support.

---

**BKR8213E GRANEND call encountered prior to GRANJOB.**

**Explanation:** An internal consistency check between a data handling routine and an I/O handler failed.

**System action:** Processing stops.

**User response:** This message might be accompanied by supporting messages to the virtual machine console. If the problem persists, contact your system programmer or IBM Software Support.

---

**BKR8214E GRANEND call encountered prior to GRANCTNR.**

**Explanation:** An internal consistency check between a data handling routine and an I/O handler failed.

**System action:** Processing stops.

**User response:** This message might be accompanied by supporting messages to the virtual machine console. If the problem persists, contact your system programmer or IBM Software Support.

---

**BKR8215I Input handler IBMTAPE initializing with tape exit context *context*.**

**Explanation:** The IBMTAPE input handler is initializing. For Backup and Restore Manager, the context should be 'BKR'.

**System action:** None.

**User response:** No action is required.

---

**BKR8216E GETDATA call received prior to initialization.**

**Explanation:** An internal consistency check between a data handling routine and an I/O handler failed.

**System action:** Processing stops.

**User response:** This message might be accompanied by supporting messages to the virtual machine console. If the problem persists, contact your system programmer or IBM Software Support.

---

**BKR8217E BKRTIO return code *rc* while reading input stream.**

**Explanation:** The IBMTAPE I/O handler encountered a tape I/O error occurred during a read operation.

**System action:** Processing stops.

**User response:** The restore operation is interrupted. Try the restore operation again using alternate media or a different tape drive. If the problem persists, contact your system programmer or IBM Software Support.

---

**BKR8218E DMSOPEN return code *rc*, reason code *reason* opening input stream.**

**Explanation:** The CMSFILE I/O handler received an error from the DMSOPEN CSL routine. See *z/VM CMS Callable Services Reference* 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* for information about DMSREAD.

**System action:** Processing stops.

**User response:** The restore operation is interrupted. This message might be accompanied by additional diagnostic information. If the problem persists, contact your system programmer or IBM Software Support.

---

**BKR8220E Encountered end-of-file condition while reading input stream.**

**Explanation:** An I/O handler encountered a premature end-of-file indication during restore processing.

**System action:** Processing stops.

**User response:** The restore operation is interrupted. Try the restore operation again using alternate media or a different tape drive. If the problem persists, contact your system programmer or IBM Software Support.

---

**BKR8221W** DMSCLOSE return code *rc*, reason code *reason* closing input stream.

**Explanation:** The CMSFILE I/O handler received an error indication from the DMSCLOSE CSL routine. See *z/VM CMS Callable Services Reference* for information about DMSCLOSE.

**System action:** Processing stops.

**User response:** The restore operation might have completed successfully despite this error. CMSFILE does not issue a CLOSE for the input stream until restore processing is complete. If the problem persists, contact your system programmer or IBM Software Support.

---

**BKR8222E** Please specify a valid tape drive address.

**Explanation:** The tape drive address provided to the issuing routine is not associated with a valid tape drive, or is an invalid virtual device address.

**System action:** Processing stops.

**User response:** Try the operation again specifying a valid tape drive address.

---

**BKR8223E** Usage: TPSENSE *ccuu* ( STACK TYPE

**Explanation:** The TPSENSE routine was invoked with incorrect syntax.

**System action:** Processing stops.

**User response:** Try the operation again using correct syntax for the TPSENSE command.

---

**BKR8224E** CC=3 on SENSE I/O request.

**Explanation:** The TPSENSE routine received condition code 3 on a SENSE I/O operation.

**System action:** Processing stops.

**User response:** Ensure the specified tape device is attached to the virtual machine, and that at least one I/O path is online. If the problem persists, contact your system programmer or IBM Software Support.

---

**BKR8225E** CC=2 on SENSE I/O; UE or SILI received.

**Explanation:** The TPSENSE routine received condition code 2 on a SENSE I/O operation.

**System action:** Processing stops.

**User response:** Ensure the specified tape device is

attached to the virtual machine, and that at least one I/O path is online. If the problem persists, contact your system programmer or IBM Software Support.

---

**BKR8226E** CC=1 on SENSE I/O; target *vdev* is busy or non-existent.

**Explanation:** The TPSENSE routine received condition code 1 on a SENSE I/O operation.

**System action:** Processing stops.

**User response:** The target tape drive responded with a "device busy" indication. Try the operation again.

---

**BKR8227E** Error reason granting permission to user on *sfs\_object*.

**Explanation:** SFSLOAD could not restore permissions to a file, alias, or directory during restore processing. This message can be issued when restoring an SFS file space backup to an SFS file space destination. SFS restore processing attempts to reapply permissions that are present at the time of backup to SFS files or directories recreated during restore operations.

*reason* is the CMS DMSGRANT CSL routine reason code that is supplied as part of an error response from DMSGRANT. *permission* is the set of permissions the restore operation attempted to apply. *sfs\_object* is the SFS file or directory to which Backup and Restore Manager attempted to restore permissions.

**System action:** Processing continues with the next file or directory in the backup stream.

**User response:** This message can indicate that the specified user *user* is no longer enrolled in the file pool. If appropriate, manually apply the permission setting using the GRANT command or try the restore operation again.

---

**BKR8228I** VMUDQ responded with *n* bytes of data.

**Explanation:** GETMDSK received a reply *n* bytes long from a VMUDQ interrogation of the CP object directory.

**System action:** Processing continues.

**User response:** No action is required.

---

**BKR8229E** Insufficient CMS free storage available.

**Explanation:** Insufficient CMS free storage was available during processing of a CMSSTOR OBTAIN request.

**System action:** Processing stops.

**User response:** Define a larger virtual machine storage size and try the failed operation again.

---

**BKR8230E** BKRDLBL return code *rc*; I/O error or malformed DASD label.

**Explanation:** BKRDLBL could not read a DASD volume label (cylinder 0, track 0, record 3) from the target device, or the label data on the minidisk was severely corrupted.

**System action:** Error recovery is attempted. Processing continues with the next minidisk in the INCLUDE and EXCLUDE selection results.

**User response:** Determine whether the label of the subject minidisk was damaged. Correct the label and try 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 1.2.0. 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 master 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 master backup service virtual machine. If the error occurs on the master 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 “Step 5. Copy and customize the BKRSYSTEM CONFIG file” on page 36 for more information.

---

**BKR8507E** BKRSYSTEM CONFIG \* identifies user ID *user\_id* as the master backup server.

**Explanation:** This message is issued with message 8506E.

**System action:** Processing stops.

**User response:** BAKSRVR can only be run by a master backup service virtual machine. If the error occurs on the master backup service virtual machine, make sure that the 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 “Step 5. Copy and customize the BKRSYSTEM CONFIG file” on page 36 for more information.

---

**BKR85081** Backup Server: Entering processing loop at *hh:mm:ss*.

**Explanation:** The master backup server process was successfully initialized. *hh:mm: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:mm: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:mm: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 8512I.

**System action:** None.

**User response:** No action is required.

---

**BKR8514I** Console stack entry dump:

**Explanation:** This message is issued with message 8512I.

**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 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\*. *command* is the text string received for command processing. This message is issued with message 8512I.

**System action:** None.

**User response:** No action is required.

---

**BKR8516I**    **Null command received via console.**

**Explanation:** A service virtual machine process encountered a null entry on the console input queue.

**System action:** Processing continues.

**User response:** No action is required.

---

**BKR8517I**    **Null command received via *origin*.**

**Explanation:** A service virtual machine process encountered a null entry on the program stack. *origin* is the origin source of the command.

This message is typically displayed if the service virtual machine console is connected to a terminal session, and a null or blank line is entered. For example, the ENTER key is pressed (causing a VM READ condition to be entered) and then pressed again (causing a null line to be entered on the console stack).

**System action:** Processing continues.

**User response:** No action is required.

---

**BKR8518W**    **Rejecting WRKRSTAT command command from *origin user\_id*.**

**Explanation:** A WRKRSTAT command was received from a user that was not identified as a worker service virtual machine in the BKRUSERS NAMES file.

*command* represents additional arguments that are supplied through the WRKRSTAT command. *origin* is the origin source of the command. For commands that are from an external source, the value is \*SMSG. For commands that are entered through the service virtual machine console, the value is \*CONS. For commands that are from an external source such as CP SMSG, *user\_id* is the virtual machine user ID that issued the

command. For commands that are entered through the service virtual machine console, the value is \*MYSELF\*. WRKRSTAT is reserved for interaction between BKRWRK*nnn* service virtual machines and the master backup server (BKRBKUP).

**System action:** None.

**User response:** The worker status update operation is rejected. If the source is a valid worker service virtual machine, verify that the user ID is listed in the BKRUSERS NAMES file. See “Step 4. Copy and customize the BKRUSERS NAMES file” on page 34 for more information.

---

**BKR8519I**    **Processing WRKRSTAT command command from *origin user\_id*.**

**Explanation:** A WRKRSTAT command was received from a known worker service virtual machine. *command* represents additional arguments that are supplied through the WRKRSTAT command. *origin* is the origin of the command. For commands that are from an external source, the value is \*SMSG. For commands that are entered through the service virtual machine console, the value is \*CONS. For commands from an external source such as CP SMSG, *user\_id* is the virtual machine user ID that issued the command. For commands that are entered through the service virtual machine console, the value is \*MYSELF\*.

**System action:** Worker service virtual machine status information is updated.

**User response:** No action is required.

---

**BKR8520W**    **Rejecting STATUS command *args* from *originuser\_id*.**

**Explanation:** A STATUS command was received from a user that was not granted ADMIN privileges in the BKRUSERS NAMES file. *args* represents additional arguments that are supplied on the STATUS command. *origin* is the origin source of the command. For commands that are from an external source, the value is \*SMSG. For commands that are entered through the service virtual machine console, this value is \*CONS. For commands that are from an external source such as CP SMSG, *user\_id* is the virtual machine user ID that issued the command. For commands that are entered through the service virtual machine console, the value is \*MYSELF\*.

**System action:** The command is ignored. Commands from unauthorized users are acknowledged by the response: Unrecognized command.

**User response:** If the issuing user is a valid backup administrator, verify that the user ID is identified as an administrator in the BKRUSERS NAMES file. See “Step 4. Copy and customize the BKRUSERS NAMES file” on page 34 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 “Step 4. Copy and customize the BKRUSERS NAMES file” on page 34.

---

**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 “Step 4. Copy and customize the BKRUSERS NAMES file” on page 34.

---

**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 “Step 4. Copy and customize the BKRUSERS NAMES file” on page 34 for more information.

**BKR8527I** *som\_type* ended by HALT command from *origin user\_id* at *mm/dd/yy hh:mm:ss*.

**Explanation:** A HALT command was received from a valid backup administrator. *som\_type* is BAKSRVR (the master backup service virtual machine, BKRKBKUP), 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:mm: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 “Step 4. Copy and customize the BKRUSERS NAMES file” on page 34 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 “Step 4. Copy and customize the BKRUSERS NAMES file” on page 34 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 “Step 4. Copy and customize the BKRUSERS NAMES file” on page 34 for more information.

---

**BKR8534I** Processing **CANCEL** *command* command for *originuser\_id*.

**Explanation:** A **CANCEL** command was received from a valid backup administrator. *origin* is the origin source of the command. For commands that are from an external source, this value is \*SMSG. For commands entered through the service virtual machine console, this value is \*CONS. For commands from an external source such as CP SMSG, the *user\_id* value is the virtual machine user ID that issued the command. For commands that are entered through the service virtual machine console, this value is \*MYSELF\*.

**System action:** The specified worker service virtual machine is logged off using CP **FORCE**. The workers

virtual RDR is cleared of all pending jobs.

**User response:** No action is required.

---

**BKR8535E** *worker* is not a valid worker task SVM name.

**Explanation:** A **CANCEL** command was accepted for processing, but the specified virtual machine is not a valid worker service virtual machine name.

**System action:** None.

**User response:** Specify a valid worker name.

---

**BKR8536I** Worker *worker* **FORCED** from system; all queued work has been purged.

**Explanation:** A **CANCEL** command resulted in the successful termination of a worker service virtual machine.

**System action:** None.

**User response:** No action is required.

---

**BKR8537E** Worker *worker* has not registered with server as an active worker.

**Explanation:** A **CANCEL** command was accepted for processing, but the specified worker service virtual machine did not identify itself as an active worker process with the master backup service virtual machine.

**System action:** The **CANCEL** operation is rejected.

**User response:** If the master backup service virtual machine was restarted and the worker service virtual machine did not register with the master service virtual machine again, cancel the worker manually by issuing the CP **FORCE** command.

---

**BKR8538E** Unrecognized command: *var1 var2* received from *var3var4*.

**Explanation:** An unrecognized command was encountered on the console or program stack.

**System action:** The command is rejected.

**User response:** No action is required.

---

**BKR8539T** **WAKEUP** exited with a non-handled return code. The actual return code was *rc*.

**Explanation:** An unexpected WAKEUP exit condition was encountered.

**System action:** A diagnostic dump of the active REXX environment is issued and the worker service virtual machine process exits.

**User response:** Verify that only a current, supported version of WAKEUP MODULE is present in the worker

## BKR8540E • BKR8548E

service virtual machine CMS environment and attempt to restart the service virtual machine. If the problem persists, contact your system programmer or IBM Software Support.

---

**BKR8540E**    **Rejecting spool file *file* from *var2* (failed MASTER origin test).**

**Explanation:** A worker received a spool file which did not originate from a master backup service virtual machine.

**System action:** The file is placed in a hold state and returned to the originating user.

**User response:** No action is required.

---

**BKR8541E**    **Rejecting spool file *file* from *var2* (type is not PUN).**

**Explanation:** A worker received a spool file which was not a 'PUN' (punch) file.

**System action:** The file is placed in a hold state and returned to the originating user.

**User response:** No action is required.

---

**BKR8542E**    **Rejecting spool file *file* from *var2* (class is not "J").**

**Explanation:** A worker received a spool file which was not spool class J.

**System action:** The file is placed in a hold state and returned to the originating user.

**User response:** No action is required.

---

**BKR8543E**    **Rejecting spool file *file* from *var2* (filetype is not "JOB").**

**Explanation:** A worker received a spool file that did not have a file type of JOB.

**System action:** The file is placed in a hold state and returned to the originating user.

**User response:** No action is required.

---

**BKR8544T**    **ABEND: Return code *rc* trying to RECEIVE job to filemode D. Job processing is being halted.**

**Explanation:** A worker service virtual machine encountered an unrecoverable error during job processing.

**System action:** A diagnostic dump of the active REXX environment is issued. The worker service virtual machine process exits with the **RECEIVE** return code.

**User response:** If an SFS directory was provisioned for the worker service virtual machine to use as a holding place for temporary files, verify that the SFS file pool

server is online, that the worker service virtual machine has sufficient access privileges to create files in the directory, and that the file space block limit was not exceeded. If a minidisk was provisioned, verify that the worker has read/write access to the minidisk, that the minidisk is formatted correctly, and that the minidisk is large enough to contain the RDR file that is being processed. Verify that the associated RDR file is structured correctly.

---

**BKR8545I**    **Received file *file* from master SVM *server*.**

**Explanation:** A worker service virtual machine accepted a job stream from the master backup server.

**System action:** Job processing ensues.

**User response:** No action is required.

---

**BKR8546I**    **Initiating job processing at *var1*.**

**Explanation:** A worker service virtual machine initiated processing of a backup or restore job.

**System action:** Job processing ensues.

**User response:** No action is required.

---

**BKR8547W**    **Job completed with return code *rc*. Purging job from RDR and invoking task abend dump.**

**Explanation:** A worker service virtual machine encountered a non-zero return code from a backup or restore job.

**System action:** A diagnostic dump of the active REXX environment is performed. The worker service virtual machine attempts to continue normal operations.

**User response:** Examine the related job output for additional information. If additional jobs are queued for the affected worker, it attempts to continue processing of the next task in queue.

If the worker encounters more than five consecutive abnormal terminations, the service virtual machine enters SUSPEND mode. For more information, see "Service virtual machine error recovery and diagnosis" on page 64.

---

**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 BKRSYSTEM CONFIG \*.

**Explanation:** An error occurred during an attempt to process the BKRSYSTEM CONFIG file.

**System action:** The issuing function exits with a non-zero return code.

**User response:** Ensure that the BKRSYSTEM CONFIG file is available on a currently accessed minidisk or directory, and try the function again. If the problem persists, contact your system programmer or IBM Software Support.

---

**BKR8551E** Return code *rc* from NAMEFIND while enumerating workers.

**Explanation:** The CMS NAMEFIND function exited with a non-zero return code during an attempt to process BKRUSERS NAMES.

**System action:** The issuing function exits with a non-zero return code.

**User response:** Ensure that a correctly formatted BKRUSERS NAMES file is available on a currently accessed minidisk or directory, and try the function again. If the problem persists, contact your system programmer or IBM Software Support.

---

**BKR8552E** Return code *rc* reading *jobname* TEMPLATE *var3*.

**Explanation:** A CMS file I/O error occurred during an attempt to read file *jobname* TEMPLATE.

**System action:** The issuing function exits with a non-zero return code.

**User response:** Verify the indicated file is available on a currently accessed minidisk or directory. If the problem persists, contact your system programmer or IBM Software Support.

---

**BKR8553E** Return code *rc* reading *jobname* JOBHEAD *var3*.

**Explanation:** A CMS file I/O error occurred during an attempt to read file *jobname* JOBHEAD.

**System action:** The issuing function exits with a non-zero return code.

**User response:** Verify the indicated file is available on a currently accessed minidisk or directory. If the problem persists, contact your system programmer or IBM Software Support.

---

**BKR8554E** Return code *rc* reading *jobname* INCLEXCL *var3*.

**Explanation:** A CMS file I/O error occurred during an attempt to read file *jobname* INCLEXCL.

**System action:** The issuing function exits with a non-zero return code.

**User response:** Verify the indicated file is available on a currently accessed minidisk or directory. If the problem persists, contact your system programmer or IBM Software Support.

---

**BKR8555E** Return code *rc* reading *jobname* JOBTAIL *var3*.

**Explanation:** A CMS file I/O error occurred during an attempt to read file *jobname* JOBTAIL.

**System action:** The issuing function exits with a non-zero return code.

**User response:** Verify the indicated file is available on a currently accessed minidisk or directory. If the problem persists, contact your system programmer or IBM Software Support.

---

**BKR8556W** More than *n* workers in BKRUSERS NAMES; only the first *n* will be utilized.

**Explanation:** More than 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 16 worker virtual machines. For more information, see "Step 4. Copy and customize the BKRUSERS NAMES file" on page 34.

---

**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 BKRKBKUP 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 73 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 73 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 73 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 73 for more information about BKR\_JOB\_CMS\_FILEMASK. If the problem persists, contact your system programmer or IBM Software Support.

---

**BKR8568I** CMS files will be filtered against file mask *mask*.

**Explanation:** Setting of BKR\_JOB\_CMS\_FILEMASK was processed successfully.

**System action:** Processing of the backup job template continues.

**User response:** No action is required.

---

**BKR8569E** Invalid value *value* for BKR\_JOB\_NAME.

**Explanation:** An invalid CMS file name was specified as a job name.

**System action:** Further command processing is abandoned.

**User response:** Try the command again specifying a

valid job name. Specify a job name of 1-8 characters, alphanumeric (A-Z,0-9). If the problem persists, contact your system programmer or IBM Software Support.

---

**BKR8570I** Instance number *number* has been assigned for job *job*.

**Explanation:** The stored instance number for the specified job was incremented. The specified job instance number was assigned for the current backup operation.

**System action:** Submit processing continues.

**User response:** No action is required.

---

**BKR8571I** Instance tracking started for new job *job*; the initial instance number is *n*.

**Explanation:** Job instance number tracking was initiated for the specified backup job.

**System action:** Submit processing continues.

**User response:** No action is required.

---

**BKR8572I** BKRSER10 return code *rc* generating new instance number for *var2*.

**Explanation:** An error occurred during generation of a job instance number.

**System action:** Submit processing is abandoned.

**User response:** Ensure that BKRJOBKUP has a read-write minidisk or directory accessed at filemode A and that free space is available on the minidisk or directory. If the problem persists, contact your system programmer or IBM Software Support.

---

**BKR8573E** Encountered a non-numeric value *value* for JOB\_INSTANCE.

**Explanation:** A non-numeric job instance number was specified in a job template.

**System action:** Submit processing is abandoned.

**User response:** Verify that the value specified for BKR\_JOB\_INSTANCE is a valid integer. Specify 8 characters, numeric, padded on the left with zeros (0). 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 64 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** *var2*.

**Explanation:** The SUBMIT or REVIEW commands could not locate the specified job template file.

**System action:** Further processing is abandoned.

**User response:** Ensure that the file *jobname* **TEMPLATE** exists on the BKR8584I 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 could not obtain the base name for one or more instances. The return code is listed.

**System action:** Processing continues.

**User response:** If the problem persists, contact your system programmer or IBM Software Support.

---

**BKR8827E**    **File too large - out of storage.**

**Explanation:** The file is too large. There is no more storage space.

**System action:** Processing continues.

**User response:** If the problem persists, contact your system programmer or IBM Software Support.

---

**BKR8828E**    **BKRFCAT failure - token was *token*.**

**Explanation:** A BKRFCAT failure occurred. The specified token *token* is indicated.

**System action:** Processing continues.

**User response:** If the problem persists, contact your system programmer or IBM Software Support.

---

**BKR8850E**    **The userid of the master backup server must be provided.**

**Explanation:** You must provide the user ID of the master backup server.

**System action:** Processing continues.

**User response:** Provide the user ID of the master

backup server. If the problem persists, contact your system programmer or IBM Software Support.

---

**BKR8851E**    **Both a userid and device are required.**

**Explanation:** You must provide both a user ID and device.

**System action:** Processing continues.

**User response:** Provide both a user ID and device. If the problem persists, contact your system programmer or IBM Software Support.

---

**BKR8852E**    **Device is not a valid hexadecimal address.**

**Explanation:** The hexadecimal address is not valid.

**System action:** Processing continues.

**User response:** If the problem persists, contact your system programmer or IBM Software Support.

---

**BKR8853E**    **Device address must be between 0x0001 and 0xFFFF.**

**Explanation:** The device address must be between 0x0001 and 0xFFFF.

**System action:** Processing continues.

**User response:** If the problem persists, contact your system programmer or IBM Software Support.

---

**BKR8854E**    **Please fill in only one set (EDF, RDR, or SFS) of values.**

**Explanation:** Only one set (EDF, RDR, or SFS) of values can be specified.

**System action:** Processing continues.

**User response:** Specify one set of values (EDF, RDR, or SFS). If the problem persists, contact your system programmer or IBM Software Support.

---

**BKR8855E**    **No restore parameters were supplied.**

**Explanation:** No restore parameters were provided.

**System action:** Processing continues.

**User response:** Provide restore parameters. If the problem persists, contact your system programmer or IBM Software Support.

---

**BKR8856E**    **A userid is required for RDR restore.**

**Explanation:** RDR restore requires a user ID.

**System action:** Processing continues.

**User response:** Provide a user ID. If the problem persists, contact your system programmer or IBM Software Support.

---

**BKR8857E** Both pool and filesystem are required for SFS restores.

**Explanation:** SFS restores require both a pool and filesystem.

**System action:** Processing continues.

**User response:** Specify a pool and filesystem. If the problem persists, contact your system programmer or IBM Software Support.

---

**BKR8858E** The files to be restored must be explicitly specified.

**Explanation:** You must specify the files you want to restore.

**System action:** Processing continues.

**User response:** Specify the files to be restored. If the problem persists, contact your system programmer or IBM Software Support.

---

**BKR8859E** Please fill in either path or storage group, not both.

**Explanation:** Specify the path or the storage group, not both.

**System action:** Processing continues.

**User response:** Specify the path or the storage group. If the problem persists, contact your system programmer or IBM Software Support.

---

**BKR8860E** EXECIO return code *rc* while attempting to read BKRSYSTEM CONFIG \*. Configuration processing cannot continue.

**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.

---

**BKR8861E** DMSCSR return code *rc* during configuration; Variable name *name* Attempted value *value*.

**Explanation:** While attempting to configure Backup and Restore Manager for z/VM, DMSCSR encountered a problem with the variable and value listed in the message.

**System action:** Processing continues.

**User response:** If the problem persists, contact your system programmer or IBM Software Support.

---

**BKR8862T** A fatal error has occurred. Additional diagnostic information will be followed by a U200 abend.

**Explanation:** An error occurred that must be corrected. Diagnostic information is provided to help determine the source of the problem.

**System action:** Processing continues.

**User response:** Read the diagnostic information to help determine the steps to take next. Contact IBM Software Support.

---

**BKR8863T** Return code *rc* from Process\_Config\_file; abending.

**Explanation:** An error occurred while processing the configuration file, causing an abend. A return code is listed.

**System action:** Processing continues.

**User response:** If the problem persists, 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.

---

**BKR8866T** Return code *rc* from EXECIO while setting expiration date; abending.

**Explanation:** An abend occurred when the EXECIO module was attempting to set the expiration date.

**System action:** Processing continues.

**User response:** If the problem persists, 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.

---

**BKR8868T** Return code *rc* from EXECIO while reading expiration date; abending.

**Explanation:** An abend occurred while the EXECIO module was reading the expiration date.

**System action:** Processing continues.

**User response:** If the problem persists, 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:** 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.

---

**BKR8871T** Return code *rc* from EXECIO while reading expiration date; abending.

**Explanation:** An abend occurred while the EXECIO module was reading the expiration date.

**System action:** Processing continues.

**User response:** If the problem persists, 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*.

---

**BKR8874T** Return code *rc* from EXECIO while reading expiration date; abending.

**Explanation:** An abend occurred while the EXECIO module was reading the expiration date.

**System action:** Processing continues.

**User response:** If the problem persists, 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 109 for more information.

---

**BKR8877T** Return code *rc* from ACCESS *var1 var2*; abending.

**Explanation:** An abend occurred while performing the ACCESS processing specified in the message (identified by *var1* and *var2*).

**System action:** Processing continues.

**User response:** No action is required.

---

**BKR8878W** No EXPIRE CONTROL file for *jobname instance*; catalog content will never expire.

**Explanation:** No EXPIRE CONTROL file for the catalog entry *jobname instance* could be 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 8878W is generated when an expiration stamp is not defined for a catalog entry. This situation usually occurs when a backup job ends abnormally (for example, if a tape mount does not occur within the mount timeout window). This state is intended to indicate a warning to the backup administrator that a job did not run to completion.

**System action:** Processing continues.

**User response:** Create the missing file and try the expiration process again using one of the following methods:

- To assign an expiration timer to the catalog entry, issue the CP `SMSG BKRCATLG SET EXPIRE jobname instance #days` command from BKRADMIN (or other user that was granted ADMIN privileges in BKRSERS 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 112.
- If the job did not run to completion, and you want to process minidisks or SFS file spaces that were not backed up in the previous effort, issue the `BKRCATLG RESTART` command (CP `SMSG BKRCATLG RESTARTjobname`) to submit the failed job again without incrementing the backup instance number. If job restart processing is enabled in the job template, it results in an attempt to run the failed job again, backing up only the objects that are not already cataloged under the same job name and instance.

---

**BKR8879T** Return code *rc* from EXECIO reading *value1* for *value2 value3*; abending.

**Explanation:** An abend occurred while the EXECIO module was reading the specified values.

**System action:** Processing continues.

**User response:** If the problem persists, contact your system programmer or IBM Software Support.

---

**BKR8880W** Catalog for job *job name* instance *instance name* has expired.

**Explanation:** The catalog for the specified job and instance expired and can no longer be used.

**System action:** Processing continues.

**User response:** No action is required.

---

**BKR8881I** Removing catalog contents for job *job name* instance *instance name*.

**Explanation:** The catalog contents are being emptied for the specified job and instance.

**System action:** Processing continues.

**User response:** No action is required.

---

**BKR8882W** Tape Manager (EUM) mode is enabled, but TAPCMD MODULE is not available.

**Explanation:** Tape Manager for z/VM provides a program (TAPCMD), to assist with the processing of commands. The TAPCMD program runs on the ID of the user and performs a variety of processes, such as translating a file mode (file mode A) to a virtual address, before sending the command to Tape Manager for z/VM. This message indicates there might be a problem with the installation or configuration of the TAPCMD program on your system.

**System action:** Processing continues.

**User response:** See the *IBM Tape Manager for z/VM Installation and Administration Guide* (SC18-9344) for information about TAPCMD.

---

**BKR8883W** No tape volumes are associated with *var1 var2*.

**Explanation:** The items specified in the message are not associated with any tape volumes, therefore the requested process cannot be completed.

**System action:** Processing continues.

**User response:** Assign tape volumes to the items (identified by *var1* and *var2*) in the message.

---

**BKR8884I** [Message text varies]

**Explanation:** This message varies depending upon the type of information that is displayed. Possible messages are:

- Stage\_VDEV: *text*
- Stage\_FM : *text*
- BlockSize : *text*
- BlockReqd : *text*

**System action:** Processing continues.

**User response:** No action is required.

---

**BKR8885E** Staging area EDF block size *number* is out of range.

**Explanation:** The block size for staging area EDF is either too low or too high.

**System action:** Processing continues.

**User response:** Reassign a block size for EDF, ensuring the number is within the expected range.

---

**BKR8886E** Improper call to routine; null value for EDF\_BlockSize.

**Explanation:** A routine encountered a problem with EDF\_BlockSize containing a null value.

**System action:** Processing continues.

**User response:** If the problem persists, contact your system programmer or IBM Software Support.

---

**BKR8887E** Improper call to routine; null value for EDF\_Blocks required.

**Explanation:** A routine encountered a problem with EDF\_BlockSize containing a null value.

**System action:** Processing continues.

**User response:** If the problem persists, contact your system programmer or IBM Software Support.

---

**BKR8888W** Unrecognized value *value* for Worker\_Stage\_Type. Assuming same 4K blocks/cyl as 3390. Supported values are T3390, T3380, and VFB-512.

**Explanation:** The value assigned to Worker\_Stage\_Type is not valid, so Backup and Restore Manager for z/VM is defaulting to the same 4K blocks/cyl as 3390.

**System action:** Processing continues.

**User response:** Specify one of these valid values for Worker\_Stage\_Type:

- T3390
- T3380
- VFB-512

---

**BKR8889I** Estimated staging volume size is *number* cylinders/blocks.

**Explanation:** This message lists the estimated size of the staging volume, using cylinders/blocks.

**System action:** Processing continues.

**User response:** No action is required.

---

**BKR8890E** Return code *rc* from CP DEFINE command. Unable to obtain staging area storage; aborting.

**Explanation:** This message provides the return code resulting from an error in the CP DEFINE command.

**System action:** Processing continues.

**User response:** No action is required.

---

**BKR8891I** DMSEXIST return code *rc*, reason *rsn* validating *var*.

**Explanation:** The DMSEXIST module encountered a problem while attempting to validate the *var* item listed in the message. The return code and reason code provide more information.

**System action:** Processing continues.

**User response:** If the problem persists, contact your system programmer or IBM Software Support.

---

**BKR8892E** Null value passed for Restore\_Granule\_Loc.

**Explanation:** An invalid catalog reference was encountered during RESTORE processing or the backup catalog file space could not be accessed.

**System action:** Processing for the DELFILES option of the RESTORE command was 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 $nm$  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 could not be accessed.

**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 $nm$  service virtual machine can access the backup catalog file space during RESTORE command processing.

---

**BKR8894E** Return code *rc* from command ACCESS *var1 var2*. Restore processing cannot continue.

**Explanation:** An error occurred when the ACCESS command was applied to *var1* and *var2*.

**System action:** Processing ends.

**User response:** If the problem persists, contact your system programmer or IBM Software Support.

---

**BKR8895E** Return code *rc* while attempting to read GRANJOB from catalog entry. Restore processing cannot continue.

**Explanation:** An error occurred while trying to read the GRANJOB catalog entry.

**System action:** Processing ends.

**User response:** If the problem persists, contact your system programmer or IBM Software Support.

---

**BKR8896E** Return code *rc* while attempting to read GRANCTNR from catalog entry. Restore processing cannot continue.

**Explanation:** An error occurred while trying to read GRANCTNR from the catalog entry.

**System action:** Processing continues.

**User response:** No action is required.

---

**BKR8897I** Original backup job summary: --- Job Name: *job name*, instance *instance name* --- Backup time: *backup time* (Local zone) --- Source data: *source data*.

**Explanation:** This message contains information about the backup job.

**System action:** Processing continues.

**User response:** No action is required.

---

**BKR8898E** Malformed GRANCTNR tag *tag name* in catalog data.

**Explanation:** There is a problem with the GRANCTNR tag in the catalog.

**System action:** Processing continues.

**User response:** If the problem persists, contact your system programmer or IBM Software Support.

---

**BKR8899I** Original source type is SFS file space: --- Original pool: *var1:var2* --- Original group: *group*; *n* blocks of *var5* in use. --- Warning threshold: *n%*.

**Explanation:** This message contains information about the SFS file space.

**System action:** Processing continues.

**User response:** No action is required.

---

**BKR8900I** Original source type is CMS EDF Minidisk: --- Owner, vdev: *var1 var2*. --- EDF block size: *var3*; *var4* of *var5* blocks in use. --- *var6* cyls of *var7* formatted; "(RECOMP" *var8* in effect.

**Explanation:** This message contains information about the CMS EDF minidisk.

**System action:** Processing continues.

**User response:** No action is required.

---

**BKR8901I** Original source type is CKD minidisk: --- Owner, vdev: *var1 var2*. --- Original CKD device type: *var3-var4*. --- Original extent size: *var5* cylinders; *var6* tracks per cylinder. --- Original Control Unit type is *var7-var8*.

**Explanation:** This message contains information about the CKD minidisk.

**System action:** Processing continues.

**User response:** No action is required.

---

**BKR8902E** Restore operation rejected; unknown source data container type.

**Explanation:** A problem with the source data container type occurred while attempting to perform a restore operation. The restore operation was halted.

**System action:** Processing continues.

**User response:** No action is required.

---

**BKR8903E** Format error in source data location descriptor.

**Explanation:** A format error occurred in a source data location descriptor.

**System action:** Processing continues.

**User response:** If the problem persists, contact your system programmer or IBM Software Support.

---

**BKR8904E** *type* is not a valid restore data source type.

**Explanation:** The specified value is not a valid restore data source type.

**System action:** Processing continues.

**User response:** Try the restore procedure again using a valid source type.

---

**BKR8905E** Format error in restore destination location descriptor.

**Explanation:** The format used for the location descriptor for the restore procedure is incorrect.

**System action:** Processing continues.

**User response:** Try the restore procedure again after changing the location descriptor to a valid format.

---

---

**BKR8906E** *type is not a valid restore destination type.*

**Explanation:** The destination type is not valid, so the restore procedure does not work. You must use a valid destination type.

**System action:** Processing continues.

**User response:** Try the restore procedure again using a valid destination type.

---

**BKR8907I** **Restore source: --- Media is: *media* --- Identifier is: *identifier* --- Supplemental: *supplemental* --- Filter mask: *mask*.**

**Explanation:** This message contains information about the restore source.

**System action:** Processing continues.

**User response:** No action is required.

---

**BKR8908I** **Restore destination: --- Media is *media* --- Identifier is: *identifier* --- Supplemental: *supplemental* --- Filter Mask: *mask*.**

**Explanation:** This message contains information about the restore destination.

**System action:** Processing continues.

**User response:** No action is required.

---

**BKR8909I** **Additional: --- Original source: *source* --- Source container type: *source type* --- Destination container type: *destination type*.**

**Explanation:** This message contains additional information about the source and destination container type.

**System action:** Processing continues.

**User response:** No action is required.

---

**BKR8910E** **Malformed Restore\_Loc\_Identifier *identifier* encountered.**

**Explanation:** A error occurred involving the Restore\_Loc\_Identifier.

**System action:** Processing continues.

**User response:** If the problem persists, contact your system programmer or IBM Software Support.

---

**BKR8911E** **Unparseable Restore\_Loc\_Type *type* encountered.**

**Explanation:** An error occurred while parsing Restore\_Loc\_Type.

**System action:** Processing continues.

**User response:** If the problem persists, contact your system programmer or IBM Software Support.

---

**BKR8912E** **CKD backups can only be restored to a CKD destination. Requested destination type *type* is incompatible.**

**Explanation:** The indicated destination type is not compatible with CKD backups.

**System action:** Processing continues.

**User response:** Try the restore procedure again using a CKD compatible destination.

---

**BKR8913E** **CKD restore operations do not support regular expression filters. The supplied expression *expression* is unacceptable.**

**Explanation:** An error occurred due to the supplied regular expression filter.

**System action:** Processing continues.

**User response:** Try the restore procedure again using a supported regular expression filter.

---

**BKR8914E** **CP return code *rc* while trying to link *var2 var3* EF0 WR. CP response was *var4*. User running restore needs OPTION LNKNOPAS or equivalent RACF authorization. The target minidisk must not be linked by any other virtual machine.**

**Explanation:** An error occurred during a LINK operation.

**System action:** Processing continues.

**User response:** If the problem persists, contact your system programmer or IBM Software Support.

---

**BKR8915E** **Return code *rc* from ACCESS *var2 var3*.**

**Explanation:** An error occurred from an ACCESS operation.

**System action:** Processing continues.

**User response:** If the problem persists, contact your system programmer or IBM Software Support.

---

**BKR8916E** **CP return code *rc* while trying to LINK *var2 var3* EF1 RR. CP response was *response*.**

**Explanation:** An error occurred during a LINK operation.

**System action:** Processing continues.

**User response:** If the problem persists, contact your system programmer or IBM Software Support.

---

**BKR8917E** ESTATE return code *rc* for *var2 var3 var4*.  
The selected input file is inaccessible.

**Explanation:** An error occurred while attempting to access the selected input file.

**System action:** Processing continues.

**User response:** If the problem persists, contact your system programmer or IBM Software Support.

---

**BKR8918I** Invoking LOADCKD for CKD-to-CKD restore.

**Explanation:** The LOADCKD routine was invoked.

**System action:** Processing continues.

**User response:** No action is required.

---

**BKR8919I** Restore operation succeeded;  
LOADCKD return code 0.

**Explanation:** The restore operation from LOADCKD routine succeeded with a return code of zero (0).

**System action:** Processing continues.

**User response:** No action is required.

---

**BKR8920E** Restore operation failed; LOADCKD return code was *rc*.

**Explanation:** An error occurred while attempting a restore operation by LOADCKD.

**System action:** Processing continues.

**User response:** If the problem persists, contact your system programmer or IBM Software Support.

---

**BKR8921E** Warning: Restoration of SFS data to an EDF destination will only include EDF-compatible base files. Directories, aliases and SFS permissions cannot be restored to a CMS minidisk.

**Explanation:** This message indicates that directories, aliases and SFS permissions cannot be restored to a CMS minidisk.

**System action:** Processing continues.

**User response:** If the problem persists, contact your system programmer or IBM Software Support.

---

**BKR8922E** SFS restore requires a four-token regular expression. The supplied filter, *filter*, is unacceptable.

**Explanation:** An error occurred because the supplied filter is not valid.

**System action:** Processing continues.

**User response:** Try the SFS restore operation again with a valid filter.

---

**BKR8923E** The target minidisk for this restore operation is unformatted, and BKR\_Allow\_EDF\_Target\_Format has been set to FALSE.

**Explanation:** An error occurred while attempting to restore 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 LOADEDf routine succeed with a return code of zero (0).

**System action:** Processing continues.

**User response:** No action is required.

---

**BKR8927E** Restore operation failed; LOADEDf return code was *rc*.

**Explanation:** The restore operation from LOADEDf failed with the specified return code.

**System action:** Processing continues.

**User response:** If the problem persists, contact your system programmer or IBM Software Support.

---

**BKR8928I** Invoking LOADSFS for SFS-to-SFS restore.

**Explanation:** The restore operation from the LOADSFS routine was invoked.

**System action:** Processing continues.

**User response:** No action is required.

---

**BKR8929I** Restore operation succeeded; LOADSFS return code 0.

**Explanation:** The restore operation from the LOADSFS routine succeeded with a return code of zero (0).

**System action:** Processing continues.

**User response:** No action is required.

---

**BKR8930E** Restore operation failed; LOADSFS return code was *rc*.

**Explanation:** The restore operation from the LOADSFS routine failed with the specified return code.

**System action:** Processing continues.

**User response:** If the problem persists, contact your system programmer or IBM Software Support.

---

**BKR8931I** This restore operation requires a temporary staging area; obtaining one now.

**Explanation:** The restore operation needs a staging area so one is being obtained.

**System action:** Processing continues.

**User response:** No action is required.

---

**BKR8932E** Return code *rc* from Obtain\_Staging\_Area.

**Explanation:** The specified return code was received when attempting to set up a staging area for a restore operation.

**System action:** Processing continues.

**User response:** If the problem persists, contact your system programmer or IBM Software Support.

---

**BKR8933W** Warning: Restoration of SFS data to a RDR destination will only include EDF-compatible base files. Directories, aliases and SFS permissions cannot be restored to a RDR destination.

**Explanation:** This message indicates that directories, aliases and SFS permissions cannot be restored to a RDR destination.

**System action:** Processing continues.

**User response:** If the problem persists, contact your system programmer or IBM Software Support.

---

**BKR8934I** Invoking LOADEDf for SFS-to-RDR restore via EDF staging minidisk.

**Explanation:** The restore operation from the LOADEDf routine was invoked.

**System action:** Processing continues.

**User response:** No action is required.

---

**BKR8935I** Restore to staging area complete; LOADEDf return code 0. Sending files from staging area to destination.

**Explanation:** The restore operation from the LOADEDf routine is sending files from staging area to the destination.

**System action:** Processing continues.

**User response:** No action is required.

---

**BKR8936I** Delivery from staging area completed normally.

**Explanation:** This message informs you that this process completed successfully.

**System action:** Processing continues.

**User response:** No action is required.

---

**BKR8937W** Error(s) detected during delivery from staging area.

**Explanation:** This message indicates that there were errors during the process of delivery from the staging area.

**System action:** Processing continues.

**User response:** No action is required.

---

**BKR8938E** Valid restore destinations for SFS data are SFS, EDF, or RDR. Destination type *type* is incompatible.

**Explanation:** The restore operation failed because the destination type is not valid.

**System action:** Processing continues.

**User response:** Try the restore operation again using one of the valid destination types.

---

**BKR8939E** EDF restore requires a three-token regular expression. The supplied filter, *filter name*, is unacceptable.

**Explanation:** An error occurred because the supplied filter is not valid.

**System action:** Processing continues.

**User response:** Try to the restore operation again using a supported filter.

---

**BKR8940E** Return code *rc* from BKR\_Format\_Target\_Mdisk; Restore operation failed; unable to format destination minidisk.

**Explanation:** An error occurred from a restore operation because the destination minidisk could not be formatted.

## BKR8941I • BKR8951E

**System action:** Processing continues.

**User response:** If the problem persists, contact your system programmer or IBM Software Support.

---

**BKR8941I** Invoking LOADED<sub>DF</sub> for EDF-to-EDF restore.

**Explanation:** The LOADED<sub>DF</sub> 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 LOADED<sub>DF</sub> for EDF-to-SFS restore.

**Explanation:** The LOADED<sub>DF</sub> routine was invoked.

**System action:** Processing continues.

**User response:** No action is required.

---

**BKR8944I** Invoking LOADED<sub>DF</sub> for EDF-to-RDR restore via EDF staging minidisk.

**Explanation:** The LOADED<sub>DF</sub> routine was invoked.

**System action:** Processing continues.

**User response:** No action is required.

---

**BKR8945E** Valid restore destinations for EDF data are EDF, SFS, or RDR. Destination type *type* is incompatible.

**Explanation:** The indicated destination type is not valid.

**System action:** Processing continues.

**User response:** Try the restore procedure action using a supported destination type.

---

**BKR8946T** Unrecognized source container type *type* escaped parsing; abending.

**Explanation:** An error occurred during a parse operation.

**System action:** Processing ends.

**User response:** If the problem persists, contact your system programmer or IBM Software Support.

---

**BKR8947E** Automatic formatting of EDF minidisks is disabled. To enable, set BKR\_Allow\_EDF\_Target\_Format = 1. in BKRSYSTEM CONFIG.

**Explanation:** An error occurred because automatic formatting of minidisks is disabled.

**System action:** Processing continues.

**User response:** Try operation again after setting BKR\_Allow\_EDF\_Target\_Format to 1.

---

**BKR8948E** No value supplied for minidisk label; FORMAT abandoned.

**Explanation:** An error occurred while attempting to format the minidisk.

**System action:** Processing continues.

**User response:** Be sure to supply a minidisk label prior to formatting the minidisk.

---

**BKR8949E** Return code *rc* from CMS FORMAT command.

**Explanation:** An error occurred with the specified return code after the CMS **FORMAT** command was issued.

**System action:** Processing continues.

**User response:** Issue the command again after resolving the issue indicated by the return code.

---

**BKR8950E** Return code *rc* from CMS FORMAT ... (RECOMP command.

**Explanation:** An error occurred with the specified return code after the CMS **FORMAT** command was issued.

**System action:** Processing continues.

**User response:** Issue the command again after resolving the issue indicated by the return code.

---

**BKR8951E** Syntax error in RELOAD command.

**Explanation:** An error occurred while attempting to process the **RELOAD** command.

**System action:** Processing continues.

**User response:** Correct the syntax error in the **RELOAD** command.

---

**BKR8952E** ACCESS return code *rc* encountered while trying to access catalog branch *branch name*. Catalog filespace access is necessary in order to use the RELOAD interface.

**Explanation:** An error occurred when attempting to access the catalog.

**System action:** Processing continues.

**User response:** If the problem persists, contact your system programmer or IBM Software Support.

---

**BKR8953E** STATE return code *rc* attempting to validate access to catalog content. A fully-qualified catalog branch containing a valid CATALOG GRANULE file is required.

**Explanation:** An error occurred while attempting to validate access to the catalog.

**System action:** Processing continues.

**User response:** If the problem persists, contact your system programmer or IBM Software Support.

---

**BKR8954E** *Type is not a valid destination media type. Valid types are valid\_types.*

**Explanation:** The indicated destination type is not valid.

**System action:** Processing continues.

**User response:** Try again using a valid destination type.

---

**BKR8955T** Return code *rc* from Process\_Config\_File; abending.

**Explanation:** An error occurred from Process\_Config\_File.

**System action:** Processing ends.

**User response:** If the problem persists, contact your system programmer or IBM Software Support.

---

**BKR8956E** No tape volumes are associated with job *jobname*, instance *instance*.

**Explanation:** The QUERY TAPES command found no tape volumes associated with the specified job name and instance.

**System action:** Processing continues.

**User response:** No action is required.

---

**BKR8957T** Unable to access media catalog entry, *rc*; abending.

**Explanation:** An error occurred while attempting to access the media catalog.

**System action:** Processing ends.

**User response:** If the problem persists, contact your system programmer or IBM Software Support.

---

**BKR8958W** Media catalog for job *job name*, instance *instance* is empty.

**Explanation:** An error occurred because the media catalog for the specified job is empty.

**System action:** Processing continues.

**User response:** If the problem persists, contact your system programmer or IBM Software Support.

---

**BKR8959I** Volumes in use by job *job name*, instance *instance*.

**Explanation:** This messages indicates that the specified job is using the indicated volumes.

**System action:** Processing continues.

**User response:** No action is required.

---

**BKR8960I** Total volumes: *number*.

**Explanation:** This message contains information about the total volumes.

**System action:** Processing continues.

**User response:** No action is required.

---

**BKR8961W** WARNING  
TAPE\_HANDLED\_VIA\_EUM = 1 is specified in BKRSYSTM CONFIG, but required file *file name* cannot be found.

**Explanation:** An error occurred because the required file could not be found.

**System action:** Processing continues.

**User response:** If the problem persists, contact your system programmer or IBM Software Support.

---

**BKR8962I** Resuming after PAUSE at *var1 var2*.

**Explanation:** This message contains processing status.

**System action:** Processing continues.

**User response:** No action is required.

---

**BKR8963W** Unrecognized CKD DASD type *type*; space requirement estimate will be based on 3390.

**Explanation:** This message contains a processing warning.

**System action:** Processing continues.

**User response:** No action is required.

---

**BKR8964E** No value supplied for Worker\_Pool\_Minidisk\_Mode in BKRSYSTM CONFIG.

**Explanation:** An error occurred because no value was supplied for the Worker\_Pool\_Minidisk\_Mode parameter in the BKRSYSTM CONFIG file.

**System action:** Processing continues.

**User response:** Specify a valid value for Worker\_Pool\_Minidisk\_Mode. This variable is required for DISKPOOL support. The default setting is R. Do not modify this setting.

---

**BKR8965E** No value supplied for Worker\_Pool\_Link\_Address in BKRSYSTM CONFIG.

**Explanation:** An error occurred because no value was supplied for the Worker\_Pool\_Link\_Address parameter in the BKRSYSTM CONFIG file.

**System action:** Processing continues.

**User response:** Specify a valid value for Worker\_Pool\_Link\_Address. This variable is required for DISKPOOL support. The default setting is 03F1. Do not modify this setting.

---

**BKR8966E** Filemode *file mode* is already in use by a non-pool minidisk or directory.

**Explanation:** An error occurred because the specified filemode is already in use by a non-pool minidisk directory.

**System action:** Processing continues.

**User response:** If the problem persists, contact your system programmer or IBM Software Support.

---

**BKR8967E** Return code *rc* attempting to ESTATE *var \**.

**Explanation:** An error occurred. The return code is provided.

**System action:** Processing continues.

**User response:** If the problem persists, contact your system programmer or IBM Software Support.

---

**BKR8968E** Return code *rc* attempting to read *var \**.

**Explanation:** An error occurred. The return code is provided.

**System action:** Processing continues.

**User response:** If the problem persists, contact your system programmer or IBM Software Support.

---

**BKR8969E** Return code *rc* attempting to ACCESS *var2 var3* as filemode *file mode*.

**Explanation:** An error occurred. The return code is provided.

**System action:** Processing continues.

**User response:** If the problem persists, contact your system programmer or IBM Software Support.

---

**BKR8970E** Pool *poolname* has no available minidisk with at least *n* blocks of free space.

**Explanation:** An error occurred because there is no available minidisk space.

**System action:** Processing continues.

**User response:** If the problem persists, contact your system programmer or IBM Software Support.

---

**BKR8971T** Return code *rc* from Process\_Config\_File; abending.

**Explanation:** An error occurred. The return code is provided.

**System action:** Processing ends.

**User response:** If the problem persists, contact your system programmer or IBM Software Support.

---

**BKR8972W** No supporting JOBCAT entry found for tape volume *volume*; the volume will be returned to SCRATCH status. Referenced job ID is job *job name*, instance *instance*.

**Explanation:** An error occurred because the supporting JOBCAT entry was not found for the specified tape volume.

**System action:** Processing continues.

**User response:** If the problem persists, contact your system programmer or IBM Software Support.

---

**BKR8973W** Incomplete entry in MEDIACAT.LIVETAPE structure - Instance qualifier is missing. Problem entry: *var1.var2.var3*.

**Explanation:** A warning was issued because there is an incomplete entry.

**System action:** Processing continues.

**User response:** If the problem persists, contact your system programmer or IBM Software Support.

---

**BKR8974W Incomplete entry in MEDIACAT.LIVETAPE structure - Job name qualifier is missing. Problem entry: *var1.var2*.**

**Explanation:** A warning was issued because there is an incomplete entry.

**System action:** Processing continues.

**User response:** If the problem persists, contact your system programmer or IBM Software Support.

---

**BKR8975I Expiring volume *vol name* in EUM Tape Manager.**

**Explanation:** This message contains information about an expired volume.

**System action:** Processing continues.

**User response:** No action is required.

---

**BKR8976W Return code *rc* from TAPCMD interface; EUM Tape Manager volume expiration reset failed.**

**Explanation:** A warning was issued because the Tape Manager volume expiration reset failed.

**System action:** Processing continues.

**User response:** If the problem persists, contact your system programmer or IBM Software Support.

---

**BKR8977W Return code *rc* from command *command*; Will retry command in *number* seconds.**

**Explanation:** A warning was issued because a problem was encountered from the specified command.

**System action:** Processing continues.

**User response:** No action is required.

---

**BKR8978E Unable to successfully execute command *command* after *n* attempts.**

**Explanation:** An error occurred while attempting to issue the indicated command after multiple attempts.

**System action:** Processing continues.

**User response:** If the problem persists, contact your system programmer or IBM Software Support.

---

**BKR8979I QUERY ACCESSORS *var* result:**

**Explanation:** This message contains information about query accessors.

**System action:** Processing continues.

**User response:** No action is required.

---

**BKR8980I Return code: *rc*.**

**Explanation:** This message contains a processing return code.

**System action:** Processing continues.

**User response:** No action is required.

---

**BKR8981I QUERY LOCK *var* result:**

**Explanation:** This message contains information about query lock.

**System action:** Processing continues.

**User response:** No action is required.

---

**BKR8982E NAMEFIND return code *rc* accessing BKRUSERS NAMES \*; assuming user *userid* is not a worker task SVM.**

**Explanation:** An error occurred while attempting to access the BKRUSER NAMES file.

**System action:** Processing continues.

**User response:** If the problem persists, contact your system programmer or IBM Software Support.

---

**BKR8983T EXECIO return code *rc* reading job stream; abending.**

**Explanation:** An error occurred while reading the job stream.

**System action:** Processing ends.

**User response:** If the problem persists, contact your system programmer or IBM Software Support.

---

**BKR8984W DUMPEDF *rc rc* while processing backup of *ownerid vdev* File system error(s) encountered during EDF backup; retrying as DASD image backup.**

**Explanation:** A CMS file system error was detected during a file-level minidisk backup. *rc* is the DUMPEDF return code. The affected minidisk is identified by *ownerid vdev*.

**System action:** The backup operation is tried again as a DASD image backup (either ECKD track image or FBA-512 block image, depending on device type). Prior to this message, DUMPEDF might issue additional messages which provide more details about error

condition encountered during file-level backup.

**User response:** No action is required. Error recovery processing attempts a low-level DASD image backup of the affected minidisk. This condition indicates the CMS file system on the affected minidisk suffered logical damage. The steps required to resolve the problem vary according to the nature and extent of corruption of the minidisk file system. If you cannot resolve the problem, contact IBM Software Support for guidance.

**BKR8985T Unrecognized statement in job stream at record *record\_id*. The offending record is: *record\_name*. An abend is being forced.**

**Explanation:** An error occurred because of an unrecognized statement in the job stream at the indicated record ID.

**System action:** Processing ends.

**User response:** If the problem persists, contact your system programmer or IBM Software Support.

**BKR8986T Return code *rc* processing job record *record\_id1*. The problem record is: *record\_id2*. An abend is being forced.**

**Explanation:** An error occurred while processing the specified job record.

**System action:** Processing continues.

**User response:** If the problem persists, contact your system programmer or IBM Software Support.

**BKR8987T Malformed job stream; no EOJ record encountered.**

**Explanation:** An error occurred because no end-of-job record was encountered.

**System action:** Processing continues.

**User response:** If the problem persists, contact your system programmer or IBM Software Support.

**BKR8988W BKR\_JOB\_TAPE\_RETENTION does not match BKR\_JOB\_CATALOG\_RETENTION. Expiration date in tape VOL1 label(s) may be inconsistent with backup catalog retention period.**

**Explanation:** A warning was issued because there is an inconsistency with the tape label and catalog retention period.

**System action:** Processing continues.

**User response:** No action is required.

**BKR8989T Fatal runtime error; CSL routine DMSCSR return code *rc* encountered while attempting to set variable *var* to value *value*.**

**Explanation:** An unrecoverable runtime error occurred.

**System action:** Processing continues.

**User response:** If the problem persists, contact your system programmer or IBM Software Support.

**BKR8990E DUMPEDF statement syntax error; BKR\_EDF\_METHOD is not set to "\$\$DRIVER\$".**

**Explanation:** An error occurred from a DUMPEDF statement syntax error.

**System action:** Processing continues.

**User response:** Correct the syntax and try again.

**BKR8991E DUMPEDF statement syntax error; BKR\_JOB\_CMS\_FILEMASK is not set to "\$\$FMASK\$".**

**Explanation:** An error occurred from a DUMPEDF statement syntax error.

**System action:** Processing continues.

**User response:** Correct the syntax and try again.

**BKR8992E DUMPEDF statement syntax error; Unsupported value *value* specified for BKR\_EDF\_METHOD.**

**Explanation:** An error occurred due to a DUMPEDF statement syntax error.

**System action:** Processing continues.

**User response:** Correct the syntax error and try again. Valid values for BKR\_EDF\_METHOD are CMSFILE, IBMTAPE, or IBMTWIN.

**BKR8993T Limit of 999,999 objects per backup to minidisk exceeded; abending.**

**Explanation:** An error occurred because the limit of backup objects was exceeded.

**System action:** Processing ends.

**User response:** If the problem persists, contact your system programmer or IBM Software Support.

**BKR8994W Disk pool *diskpool* unavailable or depleted; pick return code was *pick\_rc*. Unable to obtain pool object with at least *blocks* 4K blocks available.**

**Explanation:** The specified DISKPOOL has no

available minidisks or SFS directories with *blocks* 4K blocks of free space available. The affected backup operation cannot be performed because there are no available DASD resources with sufficient free space.

**System action:** If the associated job template specifies `BKR_Job_Tolerate_DiskPool_Depletion = 1`, backup of the associated resource is skipped. Otherwise, the backup job ends.

**User response:** DISKPOOL resources are reclaimed from expired job instances during BKRCATLG processing of an EXPIRE (PURGE operation. If an EXPIRE (PURGE operation does not free sufficient space from the DISKPOOL resources, consider provisioning additional DASD space for the DISKPOOL or converting the backup job to a tape-based output method.

---

**BKR8995T** Unable to insert location info into catalog granule; abending.

**Explanation:** An error occurred while attempting to insert location information into catalog granule.

**System action:** Processing ends.

**User response:** If the problem persists, contact your system programmer or IBM Software Support.

---

**BKR8996E** DUMPSFS statement syntax error; BKR\_SFS\_METHOD is not set to "\$\$DRIVER\$\$".

**Explanation:** An error occurred from a DUMPSFS statement syntax error.

**System action:** Processing continues.

**User response:** Correct the syntax error and try again.

---

**BKR8997E** DUMPSFS statement syntax error; BKR\_JOB\_CMS\_FILEMASK is not set to "\$\$FMASK\$\$".

**Explanation:** An error occurred from a DUMPSFS statement syntax error.

**System action:** Processing continues.

**User response:** Correct the syntax error and try again.

---

**BKR8998E** DUMPSFS statement syntax error; Unsupported value *value* specified for BKR\_SFS\_METHOD.

**Explanation:** An error occurred from a DUMPSFS statement syntax error.

**System action:** Processing continues.

**User response:** Correct the syntax error and try again.

---

**BKR8999E** DUMPSFS statement syntax error; BKR\_JOB\_SFS\_PATHMASK is not set to "\$\$PMASK\$\$".

**Explanation:** An error occurred from a DUMPSFS statement syntax error.

**System action:** Processing continues.

**User response:** Correct the syntax error and try again.

---

**BKR9000W** Skipping SFS backup of *var1:var2*; worker task needs FILEPOOL ADMIN privileges.

**Explanation:** A warning was issued because the SFS backup is being skipped.

**System action:** Processing continues.

**User response:** Give the worker task FILEPOOL ADMIN privileges.

---

**BKR9001E** DUMPCKD statement syntax error; BKR\_CKD\_METHOD is not set to "\$\$DRIVER\$\$".

**Explanation:** An error occurred from a DUMPCKD statement syntax error.

**System action:** Processing continues.

**User response:** Correct the syntax error and try again.

---

**BKR9002E** DUMPCKD statement syntax error; Unsupported value *value* specified for BKR\_CKD\_METHOD.

**Explanation:** An error occurred from a DUMPCKD statement syntax error.

**System action:** Processing continues.

**User response:** Valid values for the BKR\_CKD\_METHOD parameter are CMSFILE, IBMTAPE, or IBMTWIN. See the *IBM Backup and Restore Manager for z/VM User's Guide* for more information. Correct the syntax error and try again.

---

**BKR9003I** Initiating restore task *task*.

**Explanation:** This message contains information about the indicated task.

**System action:** Processing continues.

**User response:** No action is required.

---

**BKR9004I** RELOAD return code *rc*.

**Explanation:** This message contains return code information about RELOAD.

**System action:** Processing continues.

**User response:** No action is required.

---

**BKR9005I** Executing CP command *command*.

**Explanation:** This message contains information about the CP command.

**System action:** Processing continues.

**User response:** No action is required.

---

**BKR9006I** CP return code *rc*.

**Explanation:** This message contains return code information for CP.

**System action:** Processing continues.

**User response:** No action is required.

---

**BKR9007W** Dump task completed with return code *rc*; attempting recovery.

**Explanation:** This message is issued because the dump task completed with the specified return code.

**System action:** Processing continues.

**User response:** No action is required.

---

**BKR9008T** Return code *rc* from QUERY ACCESSED *var*; abending.

**Explanation:** An error occurred from QUERY ACCESSED.

**System action:** Processing ends.

**User response:** If the problem persists, contact your system programmer or IBM Software Support.

---

**BKR9009T** BKRCFL return code *rc* during error recovery; abending.

**Explanation:** An error occurred during error recovery.

**System action:** Processing ends.

**User response:** If the problem persists, contact your system programmer or IBM Software Support.

---

**BKR9010T** ACCESS return code *rc* during error recovery; abending.

**Explanation:** An error occurred during error recovery.

**System action:** Processing continues.

**User response:** If the problem persists, contact your system programmer or IBM Software Support.

---

**BKR9011I** Job name: *job\_name*, instance identifier *instance\_id* starting at *var1* on *var2*. Job owner: *owner\_id*. Master backup server: *server\_name*; worker virtual machine *machine\_id*. Job token value is *value*.

**Explanation:** This message contains information about the backup job.

**System action:** Processing continues.

**User response:** No action is required.

---

**BKR9012I** Catalog content creation is enabled. Catalog content will be delivered to backup catalog server *svm\_name*. Temporary catalog granule data will be generated in CMS file *filename filetype fm*.

**Explanation:** The backup job that is associated with this message is configured to generate data which is added to the backup catalog file space. The CMS file *filename filetype fm* identifies the destination file ID for catalog information created during backup creation. This file is passed to the master backup catalog service virtual machine (*svm\_name*, normally BKRCATLG) upon successful completion of each backup task.

**System action:** Processing continues.

**User response:** No action is required.

---

**BKR9013W** WARNING: Catalog content creation is disabled. Retain this listing for job history.

**Explanation:** This warning message is issued because catalog content was disabled.

**System action:** Processing continues.

**User response:** No action is required.

---

**BKR9014I** Job completed at *var1* on *var2*.

**Explanation:** This message contains information about the completed job.

**System action:** Processing continues.

**User response:** No action is required.

---

**BKR9015T** Data length of EOF1 / HDR1 records is not 80 bytes.

**Explanation:** An error occurred because the data length of records is not 80 bytes.

**System action:** Processing ends.

**User response:** If the problem persists, contact your system programmer or IBM Software Support.

---

**BKR9016E** Return code *rc* from processing of BKRSYSTM CONFIG \*; unable to continue.

**Explanation:** An error occurred while processing the BKRSYSTM CONFIG file. Processing of the file could not continue.

**System action:** Processing continues.

**User response:** If the problem persists, contact your system programmer or IBM Software Support.

---

**BKR9017E**    **Incorrectly formatted catalogspec spec.**

**Explanation:** An error occurred because the catalogspec was incorrectly formatted.

**System action:** Processing continues.

**User response:** If the problem persists, contact your system programmer or IBM Software Support.

---

**BKR9018E**    **Unrecognized source data type type; valid types are list of types.**

**Explanation:** An error occurred because of an unrecognized source data type.

**System action:** Processing continues.

**User response:** If the problem persists, contact your system programmer or IBM Software Support.

---

**BKR9019E**    **Unrecognized destination data type type; valid types are list of types.**

**Explanation:** An error occurred because of an unrecognized destination data type.

**System action:** Processing continues.

**User response:** If the problem persists, contact your system programmer or IBM Software Support.

---

**BKR9020E**    **Invalid data location qualifier qual\_name for minidisk source data type.**

**Explanation:** An error occurred because of an invalid data location qualifier for the minidisk source data type.

**System action:** Processing continues.

**User response:** If the problem persists, contact your system programmer or IBM Software Support.

---

**BKR9021E**    **Unable to locate JOBCAT entry; return code rc. Target catalog path: path\_name.**

**Explanation:** An error occurred while attempting to locate JOBCAT entry.

**System action:** Processing continues.

**User response:** If the problem persists, contact your system programmer or IBM Software Support.

---

**BKR9022T**    **ABEND processing invoked via BKREXI01 during requestor-to-source validation.**

**Explanation:** An error occurred while attempting 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 “Step 4. Copy and customize the BKRUSERS NAMES file” on page 34 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 “Step 5h. Configure backup catalog parameters” on page 42 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. See “Step 5h. Configure backup catalog parameters” on page 42 for more information.

---

**BKR9035E** EXECIO return code *rc*; while extracting GRANCTNR entry from file *file*.

**Explanation:** An error occurred while extracting GRANCTNR entry from the specified file.

**System action:** Processing continues.

**User response:** If the problem persists, contact your system programmer or IBM Software Support.

---

**BKR9036E** Catalog metadata error; malformed GRANJOB record.

**Explanation:** A catalog metadata error occurred.

**System action:** Processing continues.

**User response:** If the problem persists, contact your system programmer or IBM Software Support.

---

**BKR9037E** Catalog metadata error; malformed GRANCTNR record.

**Explanation:** A catalog metadata error occurred.

**System action:** Processing continues.

**User response:** If the problem persists, contact your system programmer or IBM Software Support.

---

**BKR9038E** Catalog metadata error; malformed INITILZ record.

**Explanation:** A catalog metadata error occurred.

**System action:** Processing continues.

**User response:** If the problem persists, contact your system programmer or IBM Software Support.

---

**BKR9039E** Catalog metadata error; malformed CTNRDATA record.

**Explanation:** A catalog metadata error occurred.

**System action:** Processing continues.

**User response:** If the problem persists, contact your system programmer or IBM Software Support.

---

**BKR9040E** Catalog metadata error; metadata version mismatch in GRANJOB record.

**Explanation:** A catalog metadata error occurred.

**System action:** Processing continues.

**User response:** If the problem persists, contact your system programmer or IBM Software Support.

---

**BKR9041E** Catalog metadata error; metadata version mismatch in GRANJOB/INITILZ record.

**Explanation:** A catalog metadata error occurred.

**System action:** Processing continues.

**User response:** If the problem persists, contact your system programmer or IBM Software Support.

---

**BKR9042E** Catalog metadata error; metadata version mismatch in GRANCTNR record.

**Explanation:** A catalog metadata error occurred.

**System action:** Processing continues.

**User response:** If the problem persists, contact your system programmer or IBM Software Support.

---

**BKR9043E** Catalog metadata error; metadata version mismatch in GRANCTNR/CTNRDATA record.

**Explanation:** A catalog metadata error occurred.

**System action:** Processing continues.

**User response:** If the problem persists, contact your system programmer or IBM Software Support.

---

**BKR9044I** Adding SFS Filespace: *var1:var2*.

**Explanation:** This message contains information about the added SFS file space.

**System action:** Processing continues.

**User response:** No action is required.

---

**BKR9045W** WARNING: Catalog branch *branchname* already exists. Granule contents will be replaced.

**Explanation:** This warning message is issued because the catalog branch already exists.

**System action:** Processing continues.

**User response:** No action is required.

---

**BKR9046I** Adding CKD Minidisk entry --- Real Volume: *vol\_name* --- Start / Size: *start / number for size* --- Owner - VDEV: *ownerid - var*.

**Explanation:** This message contains information about the added CKD minidisk entry.

**System action:** Processing continues.

**User response:** No action is required.

---

**BKR9047I** Adding EDF Minidisk entry --- Real Volume: *vol\_name* --- Start / Size: *start / number for size* --- Owner - VDEV: *ownerid - var*.

**Explanation:** This message contains information about the added EDF minidisk entry.

**System action:** Processing continues.

**User response:** No action is required.

---

**BKR9048E** Unrecognized container type - Granule has not been added to catalog.

**Explanation:** An error occurred and the granule was not added to the catalog.

**System action:** Processing continues.

**User response:** If the problem persists, contact your system programmer or IBM Software Support.

---

**BKR9049E** Return code *rc*; from CREATE ALIAS. Base path: *path\_name1* Alias path: *path\_name2* Catalog entry creation failure.

**Explanation:** An error occurred while attempting to CREATE ALIAS.

**System action:** Processing continues.

**User response:** If the problem persists, contact your system programmer or IBM Software Support.

---

**BKR9050E** GRANT return code *rc*; while attempting to give *userid* USERCAT access.

**Explanation:** An error occurred while attempting to give the specified user USERCAT access.

## BKR9051E • BKR9060E

**System action:** Processing continues.

**User response:** If the problem persists, contact your system programmer or IBM Software Support.

---

**BKR9051E** Return code *rc*; on attempt to create USERCAT branch; Related JOBCAT branch: *branch\_name*.

**Explanation:** An error occurred while attempting to create USERCAT branch.

**System action:** Processing continues.

**User response:** If the problem persists, contact your system programmer or IBM Software Support.

---

**BKR9052E** Return code *rc*; on attempt to create SFSCAT branch; Related JOBCAT branch: *branch\_name*.

**Explanation:** An error occurred while attempting to create SFSCAT branch.

**System action:** Processing continues.

**User response:** If the problem persists, contact your system programmer or IBM Software Support.

---

**BKR9053E** Return code *rc*; on attempt to create DIRCONTROL directory *directory*; Catalog entry creation failure.

**Explanation:** An error occurred while attempting to create the specified DIRCONTROL directory.

**System action:** Processing continues.

**User response:** If the problem persists, contact your system programmer or IBM Software Support.

---

**BKR9054E** Return code *rc*; on attempt to create FILECONTROL directory *directory*; Catalog entry creation failure.

**Explanation:** An error occurred while attempting to create the specified FILECONTROL directory.

**System action:** Processing continues.

**User response:** If the problem persists, contact your system programmer or IBM Software Support.

---

**BKR9055E** ACCESS return code *rc*; on attempt to access *var* in R/W mode. Catalog entry creation failure.

**Explanation:** An error occurred while attempting to access the specified item in R/W mode.

**System action:** Processing continues.

**User response:** If the problem persists, contact your system programmer or IBM Software Support.

---

**BKR9056W** A catalog entry already exists at location *location*; The old entry will be replaced.

**Explanation:** This warning message is issued because the catalog entry already exists.

**System action:** Processing continues.

**User response:** No action is required.

---

**BKR9057E** COPYFILE return code *rc*; during replacement of granule at *var*; Catalog entry creation failure.

**Explanation:** An error occurred while creating a catalog entry.

**System action:** Processing continues.

**User response:** If the problem persists, contact your system programmer or IBM Software Support.

---

**BKR9058W** GRANT return code *rc*; giving *var* access to JOBCAT entry: *entry*.

**Explanation:** This warning message is issued during access to JOBCAT entry.

**System action:** Processing continues.

**User response:** No action is required.

---

**BKR9059E** CatalogPool has not been defined in BKRSYSTEM CONFIG.

**Explanation:** An error occurred because the CatalogPool parameter was not defined in the BKRSYSTEM CONFIG file.

**System action:** Processing continues.

**User response:** See "Step 5h. Configure backup catalog parameters" on page 42 for more information. If the problem persists, contact your system programmer or IBM Software Support.

---

**BKR9060E** 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:** See "Step 5h. Configure backup catalog parameters" on page 42 for more information. If the problem persists, contact your system programmer or IBM Software Support.

---

**BKR9061E** Local\_Backup\_Master\_ID has not been defined in BKRSYSTEM CONFIG.

**Explanation:** An error occurred because the Local\_Backup\_Master\_ID parameter was not defined.

**System action:** Processing continues.

**User response:** See “Step 5b. Identify the administrator user, master backup, and backup catalog service virtual machines” on page 37 for more information. If the problem persists, contact your system programmer or IBM Software Support.

---

**BKR9062E** Routine CATSRVR should only be executed by the backup catalog server.

**Explanation:** An error occurred because an entity other than the backup catalog server attempted to run CATSRVER.

**System action:** Processing continues.

**User response:** If the problem persists, contact your system programmer or IBM Software Support.

---

**BKR9063E** 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.

---

**BKR9075T** **RECEIVE return code *rc*; while loading catalog entry to work area. Catalog processing cannot continue.**

**Explanation:** An error occurred with the specified return code while loading catalog entry to work area.

**System action:** Processing ends.

**User response:** If the problem persists, 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.

---

**BKR9077T** **Return code *rc*; from BUILD CAT EXEC; Catalog processing cannot continue.**

**Explanation:** An error occurred from BUILD CAT EXEC while processing the catalog.

**System action:** Processing ends.

**User response:** If the problem persists, contact your system programmer or IBM Software Support.

---

**BKR9078E** **Local\_Backup\_Master\_ID has not been defined in BKRSYSTEM CONFIG.**

**Explanation:** An error occurred because Local\_Backup\_Master\_ID was not defined.

**System action:** Processing continues.

**User response:** Define a value for Local\_Backup\_Master\_ID and try again. See "Step 5b. Identify the administrator user, master backup, and

backup catalog service virtual machines" on page 37 for more information.

---

**BKR9079E** **Worker\_Idle\_Timeout has not been defined in BKRSYSTEM CONFIG.**

**Explanation:** An error occurred because Worker\_Idle\_Timeout was not defined.

**System action:** Processing continues.

**User response:** Define a value for Worker\_Idle\_Timeout. See "Step 5c. Specify worker service virtual machine settings" on page 37 for more information.

---

**BKR9080I** **Catalog Server: Entering processing loop at *var*. Idle timeout is set to *time*.**

**Explanation:** This message contains information about the catalog server.

**System action:** Processing continues.

**User response:** No action is required.

---

**BKR9081I** **Idle timeout limit of *time* reached; logging off.**

**Explanation:** This message contains information about the idle timeout limit.

**System action:** Processing continues.

**User response:** No action is required.

---

**BKR9082W** **Worker *workerid* automatically clearing PAUSE signal; no jobs being processed at present time.**

**Explanation:** This warning message was issued because no jobs are being processed.

**System action:** Processing continues.

**User response:** No action is required.

---

**BKR9083I** **CatalogPool: *poolname*; CatalogSpace: *spacename*.**

**Explanation:** This message contains information about the CatalogPool and CatalogSpace.

**System action:** Processing continues.

**User response:** No action is required.

---

**BKR9084E** **Catalog job root *rootid* does not exist.**

**Explanation:** An error occurred because the specified catalog job root does not exist.

**System action:** Processing continues.

**User response:** If the problem persists, contact your system programmer or IBM Software Support.

---

**BKR9085E** Catalog job instance *instance* does not exist.

**Explanation:** An error occurred because the specified catalog job instance does not exist.

**System action:** Processing continues.

**User response:** If the problem persists, contact your system programmer or IBM Software Support.

---

**BKR9086I** Instance root *root* contains data for *var* owner(s).

**Explanation:** This message contains information about the instance root and its owners.

**System action:** Processing continues.

**User response:** No action is required.

---

**BKR9087I** Owner *ownerid* has *var* container types in this catalog branch.

**Explanation:** This message contains information about an owner and the number of container types it possess in the catalog branch.

**System action:** Processing continues.

**User response:** No action is required.

---

**BKR9088I** For owner *ownerid*, found *var2 var3* containers.

**Explanation:** This message indicates the containers that were found for the specified owner ID.

**System action:** Processing continues.

**User response:** No action is required.

---

**BKR9089I** Pruning related ExtentCat entries for volume *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 try again.

---

**BKR9096E** Return code *rc*; from STATE CATALOG GRANULE *granule*.

**Explanation:** An error occurred with the indicated return code.

**System action:** Processing continues.

**User response:** If the problem persists, contact your system programmer or IBM Software Support.

---

---

**BKR9097I** Job summary: \*\*\* Job Name / Instance: *job instance* \*\*\* Backup Time: *time* (Local zone) \*\*\* Source data: *data*.

**Explanation:** This message contains job summary information.

**System action:** Processing continues.

**User response:** No action is required.

---

**BKR9098I** Original backup data type was CMS EDF minidisk: \*\*\* Owner, vdev: *owner vdev* \*\*\* EDF Blocksize: *size of n blocks* in use. \*\*\* Minidisk label: *label* \*\*\* *n* of *n* cylinders formatted.

**Explanation:** This message contains backup information about the CMS EDF format minidisk.

**System action:** Processing continues.

**User response:** No action is required.

---

**BKR9099I** \*\*\* "(RECOMP" *var* in effect for this minidisk.

**Explanation:** This message contains information about the minidisk.

**System action:** Processing continues.

**User response:** No action is required.

---

**BKR9100I** Original backup data type was CKD track-image: \*\*\* Owner, vdev: *owner vdev* \*\*\* CKD minidisk (*n-n*); *n* cylinders. \*\*\* *n* tracks per cylinder. \*\*\* *n* total tracks in backup image. \*\*\* Source CU type is *type*.

**Explanation:** This message contains information about the this CKD backup.

**System action:** Processing continues.

**User response:** No action is required.

---

**BKR9101I** Original backup data type was CMS SFS filesystem: \*\*\* 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:** This warning message is issued because the specified minidisks could not be CP LINKed.

**System action:** Processing continues.

**User response:** No action is required.

---

**BKR9103I** Instance number *nn* for job *job* is being restarted.

**Explanation:** This message contains information about a job restart.

**System action:** Processing continues.

**User response:** No action is required.

---

**BKR9104E** EXECIO return code *rc*; while obtaining instance number for job *job*.

**Explanation:** An error occurred while obtaining instance number for the specified job.

**System action:** Processing continues.

**User response:** If the problem persists, contact your system programmer or IBM Software Support.

---

**BKR9105E** DMSQLIMU return code *rc*; reason *reason* on catalog free space check.

**Explanation:** An error occurred while attempting a catalog free space check.

**System action:** Processing continues.

**User response:** If the problem persists, contact your system programmer or IBM Software Support.

---

**BKR9106E** Insufficient catalog free space (*space*) to contain new granule (*granule*). Please increase the size of the catalog filesystem and restart the catalog server.

**Explanation:** An error occurred because of insufficient catalog free space.

**System action:** Processing continues.

**User response:** Increase the file space and restart the catalog server.

---

**BKR9107E** New catalog entry will occupy *nn* 4K blocks of catalog storage.

**Explanation:** An error occurred. The new catalog entry will occupy the specified number of 4K blocks of storage space.

**System action:** Processing continues.

**User response:** If the problem persists, contact your

system programmer or IBM Software Support.

---

**BKR9108E** DMSGETWU return code *rc*; reason *reason*, during freespace check.

**Explanation:** An error occurred while attempting a freespace check.

**System action:** Processing continues.

**User response:** If the problem persists, contact your system programmer or IBM Software Support.

---

**BKR9109E** DMSPUSWU return code *rc*; reason *reason*, during freespace check.

**Explanation:** An error occurred while attempting a freespace check.

**System action:** Processing continues.

**User response:** If the problem persists, contact your system programmer or IBM Software Support.

---

**BKR9110E** DMSPOPWU return code *rc*; reason *reason*, during freespace check.

**Explanation:** An error occurred while attempting a freespace check.

**System action:** Processing continues.

**User response:** If the problem persists, contact your system programmer or IBM Software Support.

---

**BKR9111E** Invalid numeric character in BKR\_DDL\_RECORD\_LIMIT (*value*).

**Explanation:** An error occurred because an invalid value was specified for BKR\_DDL\_RECORD\_LIMIT.

**System action:** Processing continues.

**User response:** See the *IBM Backup and Restore Manager for z/VM User's Guide* for more information. If the problem persists, contact your system programmer or IBM Software Support.

---

**BKR9112W** Return code *rc* from NETDATA output handler during WRITE operation.

**Explanation:** This warning message was issued from the output handler during WRITE operation.

**System action:** Processing continues.

**User response:** No action is required.

---

**BKR9113W** Return code *rc* from NETDATA output handler during TERMINATE operation.

**Explanation:** A warning message was issued from the output handler during a TERMINATE operation.

**System action:** Processing continues.

**User response:** No action is required.

---

**BKR9114I** Restore complete; *n* files delivered to spool destination.

**Explanation:** This message contains information about the restore operation.

**System action:** Processing continues.

**User response:** No action is required.

---

**BKR9115I** Invoking LOADDDL for SFS-to-RDR restore as NETDATA output...

**Explanation:** The restore operation from the LOADDDL routine was invoked.

**System action:** Processing continues.

**User response:** No action is required.

---

**BKR9116I** Invoking LOADDDL for EDF-to-RDR restore as NETDATA output...

**Explanation:** The restore operation from the LOADDDL routine was invoked.

**System action:** Processing continues.

**User response:** No action is required.

---

**BKR9117W** Spool output record limit reached for file; output has been flushed. Processing continues with next file.

**Explanation:** A warning was issued because the spool output record limit was reached.

**System action:** Processing continues.

**User response:** No action is required.

---

**BKR9118I** Starting restore of raw FBA dump; block range *n1* - *n2*.

**Explanation:** This message contains information about the restore operation.

**System action:** Processing continues.

**User response:** No action is required.

---

**BKR9119I** Source data is a FBA image dump for *var1 var2*.

**Explanation:** This message contains information about the image dump.

**System action:** Processing continues.

**User response:** No action is required.

---

**BKR9120I** Operation complete; *n* blocks restored to target extent.

**Explanation:** This message contains information about the restore operation.

**System action:** Processing continues.

**User response:** No action is required.

---

**BKR9121I** Target extent size \**n* blks) is compatible with source data.

**Explanation:** This message contains information about the restore operation.

**System action:** Processing continues.

**User response:** No action is required.

---

**BKR9122E** Target extent has too few cylinders to contain source image.

**Explanation:** An error occurred during a restore operation because the target has too few cylinders.

**System action:** Processing continues.

**User response:** If the problem persists, contact your system programmer or IBM Software Support.

---

**BKR9123E** CTNRDATA is not flagged as FBA.

**Explanation:** The CTNRDATA was not flagged as FBA.

**System action:** Processing continues.

**User response:** If the problem persists, contact your system programmer or IBM Software Support.

---

**BKR9124E** Output handler refused FBA CTNRDATA, return code *rc*.

**Explanation:** The output handler refused FBA CTNRDATA.

**System action:** Processing continues.

**User response:** If the problem persists, contact your system programmer or IBM Software Support.

---

**BKR9125E** Catalog handler refused FBA CTNRDATA, return code *rc*.

**Explanation:** An error occurred from the catalog handler.

**System action:** Processing continues.

**User response:** If the problem persists, contact your system programmer or IBM Software Support.

---

---

**BKR9126E** BKRFBA return code *rc*; trying to read track *track*.

**Explanation:** An error occurred while trying to read the specified track.

**System action:** Processing continues.

**User response:** If the problem persists, contact your system programmer or IBM Software Support.

---

**BKR9127I** Sending PAUSE signal to worker *worker* (job *jobname*).

**Explanation:** Backup and Restore Manager is sending a PAUSE signal to the specified worker for the specified job.

**System action:** Processing continues.

**User response:** No action is required.

---

**BKR9128I** No workers for job *jobname* were found.

**Explanation:** While processing a CANCEL, PAUSE, or RESUME command, Backup and Restore Manager could not find any workers processing the specified job.

**System action:** Processing continues.

**User response:** No action is required.

---

**BKR9129I** Syntax error in PAUSE command. Single worker: PAUSE *worker*. Multi-worker: PAUSE JOB *jobname*.

**Explanation:** Backup and Restore Manager for z/VM encountered an error occurred while trying to perform a PAUSE operation. The worker and job name where Backup and Restore Manager for z/VM encountered the problem are specified in this error message.

**System action:** Processing continues.

**User response:** If the problem persists, contact your system programmer or IBM Software Support.

---

**BKR9130I** Sending RESUME signal to worker *worker* (job *jobname*).

**Explanation:** Backup and Restore Manager is sending a RESUME signal to the specified worker for the specified job.

**System action:** Processing continues.

**User response:** No action is required.

---

**BKR9131I** Canceling worker *worker* (job *jobname*).

**Explanation:** Backup and Restore Manager is canceling the specified worker for the specified job.

**System action:** Processing continues.

**User response:** No action is required.

---

---

**BKR9132I** Queued work for worker *worker* has been purged.

**Explanation:** Backup and Restore Manager purged the queued work for the specified worker.

**System action:** Processing continues.

**User response:** No action is required.

---

**BKR9133I** Queued work for worker *worker* has been retained.

**Explanation:** Backup and Restore Manager retained queued work for the specified worker.

**System action:** Processing continues.

**User response:** No action is required.

---

**BKR9134E** FORMAT allowed/required values must be NO, YES or blank.

**Explanation:** An error occurred while trying to perform a **RESTORE** command operation. An invalid value was specified for the **RESTORE** command.

**System action:** Processing continues.

**User response:** Verify the **RESTORE** command syntax and issue the command again. See the *IBM Backup and Restore Manager for z/VM User's Guide* 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* for more information.

---

**BKR9136I** Failed job owner, name and instance: *owner name / instance*.

**Explanation:** An error occurred while a **RESTORE** operation was being processed. This message identifies the owner of the failed **RESTORE** job and the job name and instance.

**System action:** The **RESTORE** operation is stopped. No data was restored.

**User response:** This message is issued with additional diagnostic information. If it is not possible to take corrective action based on the supplied information, contact your system programmer or IBM Software Support.

---

**BKR9137E** User *userid* does not exist.

**Explanation:** A CP **LINK** command returned a "user does not exist" indication during **RESTORE** command processing.

**System action:** The **RESTORE** operation is stopped. No data was restored.

**User response:** Try the **RESTORE** command again, specifying a valid virtual machine name and user ID as the destination. See the *IBM Backup and Restore Manager for z/VM User's Guide* 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 could not 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 could not retrieve a value for variable BKR\_ACTUAL\_DR\_LABEL from the REXX runtime environment.

**System action:** Initialization of the DDRTAPE backup operation ends.

**User response:** Contact your system programmer or IBM Software Support.

---

**BKR9145I** **Output handler DDRTAPE initializing...**

**Explanation:** The DDRTAPE output handler started initialization processing.

**System action:** Initialization processing continues.

**User response:** No action is required.

---

**BKR9146E** **Internal error while decoding BKRRTRK buffer.**

**Explanation:** The DDRTAPE output handler encountered unexpected data while processing the track image data returned from internal subroutine BKRRTRK.

**System action:** The backup operation stops.

**User response:** Contact your system programmer or IBM Software Support.

---

**BKR9147E** **Non-standard home address / record zero encountered.**

**Explanation:** A track image containing a non-standard home address or record zero was encountered during a DDRTAPE backup.

**System action:** The backup operation stops.

**User response:** Contact your system programmer or IBM Software Support.

---

**BKR9148E** Data length error encountered during THR creation.

**Explanation:** A logical inconsistency in track image data was encountered during DDRTAPE backup processing.

**System action:** The backup operation stops.

**User response:** Contact your system programmer or IBM Software Support.

---

**BKR9149E** BKRDRUMT exit return code *rc* on dismount operation.

**Explanation:** The DDR-mode tape dismount exit routine, BKRDRUMT, completed with a non-zero return code.

**System action:** DUMPCKD termination processing completes, exiting with return code 20. Error recovery for the backup task is attempted and, if successful, the backup continues.

**User response:** Review the backup job log for additional diagnostic information. If the problem persists, contact your system programmer or IBM Software Support.

---

**BKR9150I** This backup job is configured to use the DDRTAPE output method. All DASD extents will be backed up in DDR format, and can only be restored via DDR. If this backup spans multiple tape volumes, the VOL1 labels for subsequent tapes will be overwritten, and tapes must be re-initialized after expiration.

**Explanation:** The associated backup job was configured to create backup tapes in DASD Dump Restore (DDR) format. This backup format does not support the use of Standard Label (SL) tapes.

**System action:** Processing continues.

**User response:** DDRTAPE-generated tapes might need to have a new VOL1 label applied before using them again.

---

**BKR9151W** Ignoring override of default tape pool; EUM Tape Manager handshaking is not enabled.

**Explanation:** The associated backup job was configured with tape pool override settings, but the BKRSYSTEM CONFIG file indicates interaction with 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 Tape Manager for z/VM. For more information, see "Configuring Backup

and Restore Manager to work with Tape Manager for z/VM" on page 48.

---

**BKR9152I** A job-level tape pool owner value of *value* is now in effect.

**Explanation:** Interaction with Tape Manager for z/VM is enabled, and a job-level override of the associated Tape Pool owner was accepted.

**System action:** Processing continues.

**User response:** No action is required.

---

**BKR9153I** A job-level tape pool name value of *value* is now in effect.

**Explanation:** Interaction with Tape Manager for z/VM is enabled, and a job-level override of the associated Tape Pool name was accepted.

**System action:** Processing continues.

**User response:** No action is required.

---

**BKR9154W** EDF backup will be retried as an image backup; tape mount attempt is being re-driven.

**Explanation:** An error occurred during an attempt to perform a file-level backup of a CMS minidisk. Error recovery processing determined that a tape mount request must be issued again as part of the recovery process.

**System action:** Processing continues.

**User response:** Examine the associated minidisk to determine why the file-level backup was unsuccessful.

---

**BKR9155W** Skipping DUMPRDV *var1 var2*; CP DEFINE MDISK *rc* was *rc*.

**Explanation:** During processing of a DUMPRDV (Dump Real Device) directive in a backup job, the CP DEFINE MDISK command resulted in a non-zero return code.

**System action:** The associated real DASD volume is not backed up. Job processing attempts to continue with the next step of the backup job.

**User response:** Correct the situation based on the return code from CP DEFINE MDISK. This message usually indicates that the backup worker task virtual machine (BKRWRK*nn*) needs additional privileges to successfully issue the CP DEFINE MDISK command.

---

**BKR9156W** Image backup of *var1 var2* suppressed by job configuration.

**Explanation:** A backup job has the specification CONFIG BKR\_Job\_Suppress\_Image = Yes in effect.

**System action:** A minidisk which is not formatted for

use by CMS was encountered. The minidisk would normally be backed up as a DASD image, but the image backup operation was suppressed by job configuration settings.

**User response:** No action is required. Image backup suppression is intended for use in CMS file-level incremental backup operations. If the associated backup job is intended to process both CMS and non-CMS data, enable image backup processing by removing this configuration option, or setting the value to No.

---

**BKR9157E** Unable to generate unique filename/filetype for backup to DASD.  
**Reason:** *reason*.

**Explanation:** An error occurred during an attempt to generate a unique CMS file name and file type for backup data created during a CMSFILE (DISKPOOL) backup.

**System action:** The backup job ends.

**User response:** Contact your system programmer or IBM Software Support.

---

**BKR9158E** Backups produced in DDRTAPE format can only be restored by CMS or stand-alone DDR.

**Explanation:** A RESTORE command was issued for a backup that was created by the DDRTAPE output handler. DDR-format backup data can only be restored by the CMS or stand-alone DASD Dump Restore (DDR) utility.

**System action:** The RESTORE command is rejected.

**User response:** DDR-format backup entries in the backup catalog are visible only to backup administrators. The catalog entries allow you to determine the tape volume and FSF offset for each DDR-format DASD image backup. These images can only be restored by the CMS or stand-alone DDR utility.

---

**BKR9159E** Return code *rc* from BKR DREOV exit during End-Of-Volume processing.

**Explanation:** A backup job using the DDRTAPE output handler encountered an abnormal return code from the BKR DREOV 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 *var* cylinder range *n1* - *n2*.

**Explanation:** A DDRTAPE backup successfully backed up cylinders *n1* to *n2* from the *var*.

**System action:** Processing continues.

**User response:** No action is required.

---

**BKR9171E** Invalid value *value* provided for boolean variable.

**Explanation:** A value that cannot be interpreted as TRUE or FALSE was specified for a logical (boolean) variable in a configuration setting.

Valid TRUE options are: 1, Y, YES, T, TRUE, ENABLE, ENABLED, ON (not case-sensitive).

Valid FALSE options are: 0, N, NO, F, FALSE, DISABLE, DISABLED, OFF (not case-sensitive).

**System action:** Processing of the associated job template or configuration file stops.

**User response:** Modify the job template or configuration file record and correct the syntax. See Chapter 5, "Job syntax," on page 73 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 5, "Job syntax," on page 73 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,

## BKR9174E • BKR9181E

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 failed. The return code displayed in the message is from the internal subroutine which handles the encode and decode operations.

**System action:** If error recovery is successful, processing continues. Otherwise, the affected operation might abend or produce unexpected results.

**User response:** Notify your system programmer or IBM Software Support.

---

**BKR9177W** RESTART processing disabled; worker needs SFS ADMIN authority to catalog file space *filespace*.

**Explanation:** A backup job is attempting to run restart or recovery procedures, but lacks the required SFS authority for the backup catalog file space.

**System action:** Processing continues, but restart or

recovery for previous instances of the job is disabled.

**User response:** Ensure that the backup worker task service virtual machines (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 failed because no DISKPOOL files matching the selection argument *arg* were found.

**System action:** The QUERY DISKPOOL command ends.

**User response:** Specify a valid selection argument. Use "\*" or omit to display results for all DISKPOOL files. See "QUERY DISKPOOL" on page 103 for more information.

---

**BKR9180I** Processing *var1*...

**Explanation:** QUERY DISKPOOL is about to display information about minidisk and SFS resources listed in *filename* DISKPOOL *fn*.

**System action:** Processing continues. Information about each minidisk or SFS resource listed in the indicated DISKPOOL file is displayed.

**User response:** No action is required.

---

**BKR9181E** EXECIO return code *rc* reading *file*.

**Explanation:** The CMS EXECIO command exited with return code *rc* during an attempt to read contents of file *file*.

**System action:** The system action varies depending on context of the file read operation. Additional diagnostic data are displayed with this message.

**User response:** Examine the accompanying diagnostic information and attempt to determine why the indicated file could not be read. If you cannot resolve

the situation, contact your system programmer or IBM Software Support.

---

**BKR9182E** CP LINK return code *rc* for DISKPOOL member *member*; skipping volume.

**Explanation:** The **QUERY DISKPOOL** command encountered return code *rc* during an attempt to inspect the minidisk volume *userid vdev*. The volume is not available for inspection.

**System action:** Processing continues with the next entry in the DISKPOOL file.

**User response:** Use the CP **LINK** return code and accompanying diagnostic information from the master backup service virtual machine (BKR9182E) console log to determine why the volume was not available.

---

**BKR9183E** ACCESS return code *rc* for DISKPOOL member *member*; skipping volume.

**Explanation:** The **QUERY DISKPOOL** command encountered return code *rc* from the CMS **ACCESS** command during an attempt to inspect the indicated minidisk or directory.

**System action:** Processing continues with the next entry in the DISKPOOL file.

**User response:** Use the ACCESS return code and accompanying diagnostic information from the master backup service virtual machine (BKR9183E) console log to determine why the operation failed.

---

**BKR9184I** *var1* volume *volume* contains *n* files, *n* free blocks.

**Explanation:** This message 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 could not locate automatically tracked instance data for job template names matching filter *filter*.

**System action:** The **QUERY INSTANCE** command ends.

**User response:** Issue the **QUERY INSTANCE** command again with a different job template name filter. Specify an asterisk or omit the filter parameter entirely to display the current instance number for all job templates with automatic instance tracking in effect.

---

**BKR9188I** Current instance for job *job* is set to *value*.

**Explanation:** The **QUERY INSTANCE** command issues this message to display the current instance value for a job template.

**System action:** Processing continues.

**User response:** No action is required.

---

**BKR9189E** Job name omitted.

**Explanation:** The **SET INSTANCE** command was issued, but the *jobname* parameter was omitted.

**System action:** The **SET INSTANCE** command ends.

**User response:** Issue the **SET INSTANCE** command with correct syntax. See "SET INSTANCE" on page 107 for more information.

---

**BKR9190W** Rejecting command SET *var1* from *var2* *var3*.

**Explanation:** The indicated **SET** operation was rejected because the originating source and user ID lacks the required privileges.

**System action:** The **SET** operation stops. No changes to system configuration were made.

**User response:** Issue the **SET** command from a source with correct privileges, or have the backup administrator grant additional privileges.

---

**BKR9191I** Updating instance for job *job\_template* from *old\_value* to *new\_value*.

**Explanation:** The **SET INSTANCE** command is updating the saved instance value for the indicated job template from *old\_value* to *new\_value*.

**System action:** The instance value for the job template is updated.

**User response:** No action is required.

---

**BKR9192I** Setting initial instance for job *job\_template* to *new\_value*.

**Explanation:** The **SET INSTANCE** command is creating a new saved instance value for the indicated job template. The instance is initialized to *new\_value*.

**System action:** New instance tracking information for the indicated job template, is created.

**User response:** No action is required.

---

**BKR9193E** Invalid job instance value *value* specified.

**Explanation:** The **SET INSTANCE** command was invoked with invalid data supplied for the new instance value. The value must be a whole number in the range 0-99999999.

**System action:** The **SET INSTANCE** command ends. No changes were applied.

**User response:** Try the operation again with an acceptable new instance value. See "SET INSTANCE" on page 107 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 9196I for more information. Error recovery processing attempts to continue. If error recovery succeeds, the operation continues. Otherwise, the operation ends with an error response or an abend of the backup catalog service virtual machine.

**User response:** Proceed or to resolve the error condition based on accompanying diagnostic information. If the problem cannot be resolved, contact your system programmer or IBM Software Support.

---

**BKR9196I** Response: *response*.

**Explanation:** This message reports the output of CMS or CP commands invoked during service virtual machine functions.

**System action:** The system action varies depending on context of the operation.

**User response:** Review the additional messages that are displayed with this message.

---

**BKR9197W** Invalid record in DISKPOOL file *file*; Record: *record*. Skipping to next record in DISKPOOL file.

**Explanation:** An invalid record was encountered in a DISKPOOL file. DISKPOOL entries are either: *userid vdev* (for minidisk volumes), or *filepool:filespace.dirid* (for SFS volumes).

**System action:** The record is ignored. Processing continues.

**User response:** Edit the indicated DISKPOOL file and remove (or correct) the invalid record.

---

**BKR9198W** No write permissions for DISKPOOL volume *volume*. Skipping to next record in DISKPOOL file.

**Explanation:** A worker task service virtual machine (BKRWRK*nn*) encountered an SFS volume in a DISKPOOL file and the worker does not have sufficient privileges to write backup data to the SFS resource.

**System action:** Processing continues. DISKPOOL volume selection continues to the next resource in the DISKPOOL being processed.

**User response:** Ensure all workers have the required SFS access privileges to DISKPOOL volumes.

---

---

**BKR9199W** Unable to erase *var1* (ERASE rc *rc*) from directory *directory*; please ensure server has SFS ADMIN authority to this file pool.

**Explanation:** The backup catalog service virtual machine (BKRCATLG) attempted to remove expired data from an SFS DISKPOOL volume. An ERASE for the indicated file gave a non-zero return code.

**System action:** Processing continues, but the information associated with this failure remains in the backup catalog until the situation is resolved.

**User response:** Ensure that BKRCATLG has sufficient privileges to ERASE data from the indicated SFS resource. If the situation cannot be resolved, contact your system programmer or IBM Software Support.

---

**BKR9200E** Return code *rc* from command. ACCESS *userid vdev* DISKPOOL cleanup processing cannot continue.

**Explanation:** DISKPOOL media cleanup processing encountered a non-zero return code from the CMS ACCESS command when attempting to process the minidisk volume (*userid vdev*) displayed in the second line of the message. This return code might indicate a damaged CMS minidisk file system.

**System action:** DISKPOOL media cleanup processing ends.

**User response:** Evaluate the problem minidisk and attempt to determine why the ACCESS command failed. If the problem cannot be resolved, contact your system programmer or IBM Software Support.

---

**BKR9201E** File mode must be 0-6 or \*

**Explanation:** The file mode must be either an asterisk (any file mode) or a numerical value 0-6.

**System action:** Processing continues.

**User response:** Provide a valid file mode number or '\*' to continue.

---

**BKR9202W** Unable to obtain work unit; cannot process DISKPOOL volume *volume*.

**Explanation:** The QUERY DISKPOOL command could not obtain state information for the indicated SFS volume because an attempt to obtain a work unit failed.

**System action:** Processing continues with the next entry in the DISKPOOL definition.

**User response:** Issue the QUERY DISKPOOL command again. If the issue persists, examine accompanying messages and attempt to determine why the operation failed. If the issue cannot be resolved, contact your system programmer or IBM Software Support.

---

**BKR9203W** Unable to catalog *var1 var2* - real DASD volume label is null.

**Explanation:** BKRCATLG received information for a new catalog entry, which contained a null real DASD volume label. The entry cannot be incorporated into the backup catalog.

**System action:** The catalog entry is rejected and discarded.

**User response:** This situation usually results from an attempt to back up an uninitialized real DASD volume. Exclude the device from backup processing until it is properly initialized.

---

**BKR9204W** Excluding *system rdev* from backup - real DASD volume label is null.

**Explanation:** During SUBMIT, REVIEW, or RESTART command processing, BKRBKUP detected that a real DASD volume that has a null label was selected for inclusion in a backup.

**System action:** The device (*system rdev*) is automatically excluded from backup.

**User response:** This situation usually results from an attempt to back up an uninitialized real DASD volume. Exclude the device from backup processing until it is properly initialized.

---

**BKR9205W** Source minidisk: *userid vdev*.

**Explanation:** An error was encountered during processing of the indicated minidisk (*userid vdev*).

**System action:** Diagnostic information regarding the error condition is displayed with this message.

**User response:** Review the accompanying messages.

---

**BKR9206W** Problem file: *file*.

**Explanation:** An error condition was encountered during an attempt to process the indicated file (filename filetype).

**System action:** Additional diagnostic messages are displayed to identify the minidisk or SFS directory associated with the file and to further describe the error condition. Error and recovery processing continues.

**User response:** Review the accompanying messages.

---

**BKR9207W** FST (hex) is: *hex\_dump*.

**Explanation:** An error or inconsistency in FST (File Status Table) contents was detected during a file-level backup operation. This message displays a hexadecimal dump of the problem FST, and is issued with other diagnostic information.

**System action:** Error and recovery processing continues. File-level backup processing continues, if

possible. For minidisk file systems, an image backup of the affected minidisk is performed after the file-level backup operation ends.

**User response:** Inspect the minidisk or SFS resource associated with this message and attempt to further evaluate the damaged file system. Contact your system programmer or IBM Software Support.

**BKR9208W** This file cannot be processed. Attempting to continue backup with next file.

**Explanation:** Error recovery processing encountered a situation, which prevents complete backup of one or more CMS files. File-level backup operations are continuing with the next file on the minidisk or SFS directory involved. This message is accompanied by diagnostic output that identifies the minidisk or directory and other information about the problem, which prevented backup.

**System action:** An attempt to continue processing of the remaining files on the minidisk or directory is made. For minidisk file systems, an image backup of the associated minidisk is added to the backup job.

**User response:** Inspect the minidisk or SFS resource that is associated with this message and evaluate the damaged file system. Contact your system programmer or IBM Software Support.

**BKR9209E** Expiration is prior to today; use SET EXPIRE *jobname instance* NOW to expire immediately.

**Explanation:** Evaluation of the arguments that were supplied for a SET EXPIRE command resulted in an expiration date prior to the current day. The NOW operand must be used to mark a catalog entry as immediately expired.

**System action:** The expiration date for the associated job name and instance is unchanged.

**User response:** If you want immediate expiration, issue the SET EXPIRE command again specifying the NOW operand. See "SET EXPIRE" on page 112 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 BKRSYSTEM CONFIG file are set to enable interaction with Tape Manager for z/VM, commands were issued to mark tape volumes that are associated with the catalog entry as expired.

**User response:** No action is required. The affected backup catalog entry is removed the next time an EXPIRE (PURGE) operation is issued.

**BKR9211W** Attempting to remove truncated JOBCAT entry.

**Explanation:** BKRCATLG detected an incomplete or truncated directory structure in the backup catalog file space during EXPIRE (PURGE) processing.

**System action:** Error recovery procedures are attempting to remove the partial entry.

**User response:** If the operation completes successfully, no additional action is required. A truncated catalog entry might result if the backup catalog file space exceeds its storage capacity during creation of a new catalog entry. If this situation persists, increase the SFS storage capacity limits for the backup catalog file space.

**BKR9212E** Option *option* is not valid.

**Explanation:** Command parsing detected an invalid argument to the associated command or panel interaction.

**System action:** The operation is rejected.

**User response:** Try the operation again with the correct syntax or operands.

**BKR9213E** BKRREDF return code *rc*, reason code *reason*; An I/O error or corrupt EDF minidisk label data was encountered.

**Explanation:** Internal subroutine BKRREDF encountered an input/output error or an inconsistency in the label data during an attempt to inspect a CMS EDF-format minidisk.

**System action:** Additional diagnostic data is displayed. If possible, file-level backup of the associated minidisk continues. An image backup of the affected minidisk is added to the backup job.

**User response:** Review the other associated messages for additional detail. Evaluate the problem minidisk and attempt to correct the issue and recover data from the file system. Contact your system programmer or IBM Software Support.

**BKR9214W** The DIRECTOR FST for this minidisk appears to be damaged. Attempting to continue backup processing.

**Explanation:** An EDF-format CMS minidisk with errors or inconsistencies in the DIRECTOR FST was encountered.

**System action:** Additional diagnostic information is displayed with this message. Error recovery processing attempts to continue a file-level backup of the affected

minidisk. An image backup of the minidisk is added to the backup job.

**User response:** Review other associated messages for additional information. Evaluate the problem minidisk and attempt to correct the issue and recover data from the file system. Contact your system programmer or IBM Software Support.

---

**BKR9215E DUALTAPE output handler invoked with unrecognized parameter.**

**Explanation:** The DUALTAPE output handler encountered an unexpected parameter.

**System action:** None.

**User response:** Verify the parameters are valid. See the *IBM Backup and Restore Manager for z/VM User's Guide* 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 5697J06B 2C2 or VMSYS:5697J06B.BKUPMGR.SAMPLES. A locally customized version of this file must be placed on the product configuration minidisk (5697J06B 198) or directory (VMSYS:5697J06B.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 "Step 5. Copy and customize the BKRSYSTEM CONFIG file" on page 36.

---

**BKR9220W Continuing service virtual machine start-up.**

**Explanation:** Service virtual machine start-up processing encountered a problem that could interfere with normal operation. The condition is not severe enough to prevent initialization from continuing.

**System action:** Service virtual machine initialization continues.

**User response:** Examine accompanying error messages to identify the condition responsible for this warning 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 5697J06B 2C2 or VMSYS:5697J06B.BKUPMGR.SAMPLES. A locally customized version of this file must be placed on the product configuration minidisk (5697J06B 198) or directory (VMSYS:5697J06B.BKUPMGR.CONFIGURATION during product installation. Backup and Restore Manager for

z/VM service virtual machines should access this resource as file mode B in their PROFILE EXEC. For more information, see “Step 5. Copy and customize the BKRSYSTEM CONFIG file” on page 36.

---

**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 Tape Manager for z/VM. The command interface (TAPCMD MODULE) must be available as part of the CMS environment in order to enable this function. This message indicates that TAPCMD MODULE could not be 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 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.

---

**BKR9224W** Return code *rc* from QUERY FILEPOOL CATALOG *var*.

**Explanation:** Service virtual machine initialization processing attempts to check 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 results in a non-zero return code.

**System action:** Service virtual machine initialization continues.

**User response:** To enable this check, the backup catalog service virtual machine (BKRCATLG) must have 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 could fail. This check can provide early detection and warning of this resource constraint.

---

**BKR9225W** Unable to check catalog file pool server storage group 1 thresholds.

**Explanation:** Service virtual machine initialization processing attempts to check utilization of SFS storage group 1 for the SFS file pool that contains the backup catalog file space using the command **QUERY FILEPOOL CATALOG** *catalogpool* during initialization. This message is issued with message 9224W or 9226W.

**System action:** Service virtual machine initialization continues.

**User response:** To enable this check, the backup catalog service virtual machine (BKRCATLG) requires SFS ADMIN authority for the catalog file pool.

Backup catalog processing generates a relatively large volume of data in SFS storage group 1 for the backup catalog file pool. If storage group 1 completely fills up, interactions with the backup catalog might fail. This check can provide early detection and warning of this resource constraint.

---

**BKR9226W** Unable to parse catalog file pool storage group 1 utilization info.

**Explanation:** Service virtual machine initialization processing attempts to check the utilization of SFS storage group 1 for the SFS file pool holding the backup catalog file space using the command **QUERY FILEPOOL CATALOG** *catalogpool* during initialization. This message is issued if the **QUERY** command response cannot be successfully parsed.

**System action:** Service virtual machine initialization continues.

**User response:** Retain a copy of the BKRCATLG console message log and report the problem to your system programmer or IBM Software Support.

---

**BKR9227I** Backup catalog file pool server storage group 1 is *n*% utilized. *n* 4K blocks in use; *n* 4K blocks free.

**Explanation:** The backup catalog SFS file pool's storage group 1 utilization is displayed in this message.

**System action:** Service virtual machine initialization continues.

**User response:** No action is required.

---

**BKR9228W** Storage group 1 utilization exceeds warning threshold of *n* percent. You may need to add additional minidisk capacity to storage group 1 for the *var* SFS file pool server.

**Explanation:** The storage group 1 of the backup catalog SFS file pool utilization exceeds the warning threshold of *n* percent.

**System action:** Service virtual machine initialization continues.

**User response:** It might be possible to recover some space in storage group 1 by issuing an **EXPIRE (PURGE)** command on the backup catalog (BKRCATLG) service virtual machine.

If no expired backup information is removed from the backup catalog, it might become necessary to add additional minidisk capacity to storage group 1 of the SFS file pool server which contains the backup catalog file space. See *z/VM CMS File Pool Planning, Administration and Operation* 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* 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 Tape Manager for z/VM. The command interface (TAPCMD MODULE) must be available as part of the CMS environment to enable this function. This message indicates that TAPCMD MODULE could not be 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*, could not be found.

**System action:** Service virtual machine initialization stops.

**User response:** Inspect the installation of Backup and Restore Manager for z/VM to determine why the required file is unavailable. If the problem cannot be identified and corrected, contact your system programmer or IBM Software Support.

---

**BKR9234I**    **A new required components state tracking file, *file*, is being created.**

**Explanation:** Backup and Restore Manager for z/VM service virtual machines use state tracking files to enable version and change tracking of required program components. This message indicates that a new state tracking file *file* was created on file mode A.

**System action:** Processing continues.

**User response:** No action is required. File \$BKR\$ SVMFILES A maintains state information about required service virtual machine program files. File \$BKR\$ CFGFILES A maintains state information for required configuration files.

---

**BKR9235E**    **EXECIO return code *rc* during update to required components state tracking file.**

**Explanation:** An unexpected EXECIO return code was encountered during an attempt to update contents of \$BKR\$ SVMFILES A or \$BKR\$ CFGFILES A.

**System action:** Service virtual machine initialization ends.

**User response:** Ensure that the A-disk (or SFS directory) for the affected service virtual machine is accessed in read-write mode. If the A-disk is accessed in read-write mode, make sure the disk (or directory) is not full.

**BKR9236E** Required component *file* not found; LISTFILE rc rc.

**Explanation:** The CMS LISTFILE command could not locate a required file (*file*). The LISTFILE return code is rc.

**System action:** Service virtual machine initialization stops.

**User response:** Inspect the installation of Backup and Restore Manager for z/VM to determine why the required file is unavailable. If the problem cannot be identified and corrected, contact your system programmer or IBM Software Support.

**BKR9237E** BKRMD5 rc rc for component *file*; unable to continue. BKRMD5 output: msg.

**Explanation:** The BKRMD5 command ended with an unexpected return code, rc, during an attempt to calculate checksum information for file *file*.

**System action:** Service virtual machine initialization stops. The BKRMD5 error message, if any, is displayed on the second line of this message as msg.

**User response:** Restart the affected service virtual machine. If the problem persists, contact your system programmer or IBM Software Support.

**BKR9238W** Required component *file* was found on file mode *file\_mode*. The expected filemode for this component is *file\_mode\_letter*.

**Explanation:** A required file, *file*, was found in an unexpected location at file mode *file\_mode*. The expected file mode letter is *file\_mode\_letter*.

**System action:** Service virtual machine initialization continues.

**User response:** Inspect your installation of Backup and Restore Manager for z/VM and attempt to determine why the required file is not installed on the expected file mode. If the problem cannot be identified and corrected, contact your system programmer or IBM Software Support.

**BKR9239W** Server startup will continue, but this installation is inconsistent with documented configuration requirements.

**Explanation:** A required file was found on an unexpected file mode, or multiple copies of a required file were detected.

**System action:** Service virtual machine initialization continues. If multiple copies of a required file were detected, standard CMS search order rules determine which file is actually in use.

**User response:** Review accompanying error messages and attempt to resolve the warning scenario.

**BKR9240W** *n* copies of required component *file* were found. The expected filemode for this component is *file\_mode*.

**Explanation:** Multiple copies (total of *n*) of a required file *file* were encountered. The expected file mode letter for a single copy of the file is *file\_mode*.

**System action:** Service virtual machine initialization continues.

**User response:** Inspect your installation of Backup and Restore Manager for z/VM and attempt to determine why multiple copies of the file are present in the service virtual machine configuration. If the issue cannot be corrected, contact your system programmer or IBM Software Support.

**BKR9241E** PIPE rc rc during state tracking file search.

**Explanation:** The CMS PIPE command exited with an unexpected return code during a search of \$BKR\$ SVMFILES A or \$BKR\$ CFGFILES A.

**System action:** Service virtual machine initialization is stopped.

**User response:** If the problem persists, contact your system programmer or IBM Software Support.

**BKR9242I** A new required component file has been found. New component: *file*.

**Explanation:** A new required component file was found, and is added to state tracking information.

**System action:** Service virtual machine initialization continues.

**User response:** No action is required.

**BKR9243I** An update to a required component file has been detected. Changed component: *component*.

**Explanation:** A changed version of a required file was encountered. Information for the changed file is added

to state tracking information.

**System action:** Service virtual machine initialization continues.

**User response:** No action is required.

**BKR9244I** Privileged virtual machine settings are based on *file* located *directory* accessed as file mode *fm*.

**Explanation:** Virtual machines (users) with additional privileges are being configured. The privileged user definitions are based on contents of file *file* (normally BKRUSERS NAMES) from the minidisk or SFS directory *directory* accessed as file mode letter *fm*.

**System action:** Service virtual machine initialization continues.

**User response:** No action is required.

**BKR9245E** NAMEFIND return code *rc* during attempt to enumerate *var*. Service virtual machine start-up cannot continue.

**Explanation:** The CMS NAMEFIND command exited with an unexpected return code *rc* during an attempt to extract information from BKRUSERS NAMES. *var* is either "administrators", "workers" or "masters".

**System action:** Service virtual machine initialization stops.

**User response:** Examine BKRUSERS NAMES and correct omissions or syntax errors in the file. If the problem persists, contact your system programmer or IBM Software Support.

**BKR9246I** *n* virtual machine(s) are granted *var* authority.

**Explanation:** A number of users (*n*) were granted additional privileges. (*var*) is one of "worker", "administrator" or "master backup." This message is followed by a list of privileged virtual machine names.

**System action:** Service virtual machine initialization continues.

**User response:** No action is required.

**BKR9247I** Temporary work area at file mode D is a *var* minidisk with *n* cylinders/blocks formatted at block size of *size*. Work area contains *n* files. *n* blocks in use; *n*% utilized.

**Explanation:** Every service virtual machine deployed for Backup and Restore Manager for z/VM requires a temporary work area at file mode D. This message is issued to summarize the state of minidisk-based temporary space during service virtual machine initialization.

**System action:** Service virtual machine initialization continues.

**User response:** No action is required.

**BKR9248I** Temporary work area at file mode D is an SFS directory: *directory*. This file space is limited to *n* 4K blocks. *n* blocks are in use; *n*% of capacity is utilized.

**Explanation:** Every service virtual machine deployed for Backup and Restore Manager requires a temporary work area at file mode D. This message is issued to summarize the state of SFS directory-based temporary space during service virtual machine initialization.

**System action:** Service virtual machine initialization continues.

**User response:** No action is required.

**BKR9249E** File mode *mode* is read-only, but is required to be read-write.

**Explanation:** The minidisk or SFS directory at file mode *mode* is available in read-only mode. The current operation requires this space to be available in read-write mode.

**System action:** Service virtual machine initialization is stopped.

**User response:** This message is issued when the temporary work area at file mode D is not writable. Render the space available to the service virtual machine in read-write mode and restart the service virtual machine.

**BKR9250E** Storage group 1 occupancy exceeds start-up threshold limit of *limit* percent.

**Explanation:** Utilization of storage group 1 in the SFS file pool server for the backup catalog file space exceeds the start-up threshold limit of *limit* percent.

**System action:** Service virtual machine initialization is stopped.

**User response:** It might be possible to recover some space in storage group 1 through execution of an EXPIRE (PURGE operation on the backup catalog (BKRCATLG) service virtual machine.

If no expired backup information is removed from the backup catalog, it might become necessary to add additional minidisk capacity to storage group 1 of the SFS file pool server which contains the backup catalog file space. See *z/VM CMS File Pool Planning, Administration and Operation* for more information.

---

**BKR9251E** Validation of root catalog structures failed. The backup catalog service virtual machine cannot be started.

**Explanation:** One or more required root SFS directories for the backup catalog service virtual machine (BKRCATLG) were not found, and could not be successfully created.

**System action:** Service virtual machine initialization ends.

**User response:** Review the accompanying error messages correct the problem. 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.

---

**BKR9252W** Root catalog structure *structure* failed validation. Attempting to create required directory now.

**Explanation:** A required root SFS directory for the backup catalog, *structure* was not found.

**System action:** BKRCATLG start-up processing attempts to create the SFS directory. If successful, BKRCATLG continues with initialization.

**User response:** If the directory is created successfully, no response is required. This message might be encountered by a new installation, or during creation of a new backup catalog file space if root directories were not created during the installation process.

---

**BKR9253I** Successfully created new catalog root structure *structure*.

**Explanation:** This message is issued with message 9252W. It indicates the successful creation of a root directory structure for the backup catalog.

**System action:** BKRCATLG initialization continues.

**User response:** No action is required.

---

**BKR9254E** Unable to create new catalog root structure *structure*.

**Explanation:** This message is issued with message 9252W. It indicates a failed attempt to create a root directory structure for the backup catalog.

**System action:** BKRCATLG initialization stops.

**User response:** Ensure that the SFS file pool server for the backup catalog file space is available, and that BKRCATLG is enrolled as a user of the file pool. If you cannot resolve the problem, contact your system programmer or IBM Software Support.

---

**BKR9255W** Unable to replace *file*; ERASE failed. This file has not been restored.

**Explanation:** Replacement of pre-existing files was enabled, but the existing copy of file *file* could not be 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 could not be erased from the minidisk or SFS directory. If the file can be removed, try the restore operation again. If the problem persists, contact your system programmer or IBM Software Support.

---

**BKR9256W** Existing copy of *file* erased. This file has been replaced by the backup version.

**Explanation:** Replacement of pre-existing files was enabled. A copy of file *file* was found on the restore destination, and was erased. The file was replaced with the backup version.

**System action:** Processing continues.

**User response:** No action is required.

---

**BKR9257E** Use the SFS administrator ENROLL command to create the backup catalog file space (*filespace*.) before starting the backup catalog server.

**Explanation:** The backup catalog service virtual machine (BKRCATLG) encountered a condition during start-up processing, which indicates the backup catalog SFS file space does not exist.

**System action:** Initialization stops. The backup catalog service virtual machine cannot start if the required SFS file space is unavailable.

**User response:** Verify that the SFS file pool service virtual machine for file pool *filepool* is active. The backup catalog SFS file space *filespace* needs to be added to the file pool using the SFS administrator ENROLL command. If the file pool and file space are already available, contact your system programmer or IBM Software Support.

---

**BKR9258I** Positioning tape to block ID *id*.

**Explanation:** A tape positioning operation is starting.

**System action:** An attempt to position the associated tape volume through Locate Block ensues.

**User response:** No action is required.

---

---

**BKR9259E** TAPECTL LOCBLK operation failed with return code *rc*.

**Explanation:** An attempt to position a tape volume via Locate Block failed with the indicated return code.

**System action:** When this message is displayed, the volume position cannot be determined. The system rewinds the tape volume and attempt to position the volume through FSF (Forward Space File) operations instead.

**User response:** No action is required.

---

**BKR9260I** Source data is a CMS EDF minidisk backup of *id source*.

**Explanation:** During a restore operation, this message identifies the original virtual machine ID and minidisk source of the CMS files being restored.

**System action:** Restore processing continues.

**User response:** No action is required.

---

**BKR9261I** Source data is a CMS SFS file space backup of *file pool:source*.

**Explanation:** During a restore operation, this message identifies the original SFS file pool and file space source of the CMS files being restored.

**System action:** Restore processing continues.

**User response:** No action is required.

---

**BKR9262I** Successfully verified source data owner *owner*, container *container*.

**Explanation:** During a restore operation, the source data owner (virtual machine ID) and container (minidisk address or SFS file space) were confirmed to match the expected source.

**System action:** Restore processing continues.

**User response:** No action is required.

---

**BKR9263E** Source data validation failure; expected owner *user1*, found owner *user2*.

**Explanation:** During a restore operation, the source data owner was expected to be *user1*, but the system encountered data originally owned by user ID *user2*.

**System action:** The restore operation is stopped.

**User response:** Verify that the restore job was generated by a correctly formatted **RESTORE** command, and that the user issuing the RESTORE command has sufficient privileges to access the source data. If the problem does not appear to result from incorrect command syntax or privilege level issues, contact your system programmer or IBM Software Support.

---

**BKR9264E** Source data validation failure; expected minidisk address *addr1*, found *addr2*.

**Explanation:** During a restore operation, the source data minidisk address was expected to be *addr1*, but the system encountered a source minidisk address *addr2*.

**System action:** The restore operation is stopped.

**User response:** Verify that the restore job was generated by a correctly formatted **RESTORE** command, and that the user issuing the **RESTORE** command has sufficient privileges to access the source data. If the problem does not appear to result from incorrect command syntax or privilege level issues, contact your system programmer or IBM Software Support.

---

**BKR9265E** Source data validation failure; expected SFS file pool name *name1*, found *name2*.

**Explanation:** During a restore operation, the source SFS file pool name was expected to be *name1*, but the system encountered a source SFS file pool name of *name2*.

**System action:** The restore operation is stopped.

**User response:** Verify that the restore job was generated by a correctly formatted **RESTORE** command, and that the user issuing the **RESTORE** command has sufficient privileges to access the source data. If the problem does not appear to result from incorrect command syntax or privilege level issues, contact your system programmer or IBM Software Support.

---

**BKR9266W** RESTORE processing is terminating due to error(s).

**Explanation:** An error condition which prevented a RESTORE operation from completing successfully was encountered.

**System action:** The affected RESTORE operation stops.

**User response:** This message is preceded by additional messages which provide detail about the problems that were encountered during the failed restore operation.

---

**BKR9267E** PIPE return code *rc* while reading file *file*.

**Explanation:** The CMS PIPE utility exited with an unexpected return code, *rc*, during an attempt to read file *file*.

**System action:** Where possible, processing continues. Otherwise, the affected operation ends and additional diagnostic information is displayed.

**User response:** See the *CMS Commands and Utilities Reference* regarding the PIPE return code. If the problem cannot be resolved based on the information, contact your system programmer or IBM Software Support.

---

**BKR9268E** Batch restore terminated. Pre-processing stage generated no usable records.

**Explanation:** A batch mode RESTORE job was received by BKR9268E, but after initial processing no valid RESTORE commands were produced.

**System action:** The entire batch mode operation is rejected. BKR9268E continues normal processing.

**User response:** This message is preceded by additional diagnostic information. This condition could result from incorrect RESTORE command syntax, or from insufficient Backup and Restore Manager privileges.

---

**BKR9269I** Processing batch restore transaction; *n* records.

**Explanation:** BKR9269I received a batch-mode restore transaction.

**System action:** The master backup service virtual machine, BKR9269I, initiates processing for the set of RESTORE commands contained in the job.

**User response:** No action is required.

---

**BKR9270I** Batch restore options: *options*.

**Explanation:** This message displays the set of options that are specified in a batch mode restore transaction. The options can be derived from an OPTION statement as the first record of the job, or from options that are specified on the first RESTORE command in a job (if no separate OPTION statement was specified).

**System action:** Processing continues.

**User response:** No action is required.

---

**BKR9271E** Batch restore transaction rejected due to invalid record. Problem record: *record*.

**Explanation:** A batch restore operation was rejected due to an invalid record in the job file.

**System action:** The entire batch restore transaction is rejected.

**User response:** Inspect the contents of the job file, correct syntax of the affected statement, and try the operation again.

---

**BKR9272E** Batch restore transaction rejected; BKRESTOR BATCH INIT return code *rc*.

**Explanation:** A batch restore operation was rejected because the internal BKRESTOR function exited with a non-zero return code during initialization processing.

**System action:** The entire batch restore transaction is rejected.

**User response:** This message is accompanied by

additional diagnostic information. If the problem cannot be resolved based on the information, contact your system programmer or IBM Software Support.

---

**BKR9273W** Batch restore transaction rejected; BKRESTOR BATCH TASK return code *rc*. Problem record: *record*. Processing continues; this transaction will not be processed.

**Explanation:** One operation that was packaged as part of a batch-mode restore transaction was rejected by the internal BKRESTOR function.

**System action:** Processing continues with the next statement in the batch mode restore job.

**User response:** Verify the syntax and access privileges for the RESTORE command is correct. Additional diagnostic information is displayed with this message. If the problem cannot be resolved, contact your system programmer or IBM Software Support.

---

**BKR9274I** Batch restore transaction accepted; accepted record: *n*.

**Explanation:** One operation packaged as part of a batch-mode restore transaction was accepted.

**System action:** Processing continues with the next statement in the batch-mode restore job.

**User response:** No action is required.

---

**BKR9275I** Batch restore transaction processing complete; *n* tasks accepted. Submitting resulting job for worker processing.

**Explanation:** Initial processing of a batch-mode restore operation completed. The job resulted in *n* RESTORE tasks.

**System action:** The resulting job is submitted to a worker service virtual machine for further processing.

**User response:** No action is required.

---

**BKR9276E** Batch restore transaction error; BKRESTOR BATCH SEND return code *rc*.

**Explanation:** The internal BKRESTOR function exited with a non-zero return code during an attempt to submit the results of a batch-mode restore transaction to a worker service virtual machine.

**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.

---

**BKR9284E**    **Job terminated; the consecutive failed task limit of *n* tasks has been exceeded. Remaining tasks in this job have not been processed.**

**Explanation:** Job processing was interrupted because *n* consecutive backup or restore tasks ended without successful error recovery.

**System action:** The job stops.

**User response:** This message is accompanied by diagnostic information in the job log. If the problem cannot be resolved based on that information, contact your system programmer or IBM Software Support.

---

**BKR9285E**    **Fast tape positioning is enabled for this image.**

**Explanation:** A restore operation is in progress and the source data for the restore resides on a tape volume. The catalog information includes information which allows the volume to be positioned through the Locate Block function.

**System action:** A Locate Block tape positioning I/O operation is issued to the tape drive.

**User response:** No action is required.

---

**BKR9286I** Fast tape positioning is not enabled for this image; volume positioning will be performed via FSF / BSF.

**Explanation:** A restore operation is in progress, and the source data for the restore resides on a tape volume. The catalog information does not include supplemental information which would allow volume positioning through the Locate Block function.

**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. The backup that is associated with this message might have been 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 could be delayed due to longer elapsed times required to perform FSF or BSF positioning functions.

---

**BKR9287I** Restore operation succeeded; LOADDDL return code 0.

**Explanation:** A restore-to-RDR operation completed normally.

**System action:** Processing continues with either end-of-job or the next task.

**User response:** No action is required. LOADDDL can exit with return code 0 even if the restore operation completed without restoring files. This situation can occur if file selection parameters for the **RESTORE** command excluded all files in the backup image from restoration.

---

**BKR9288E** Restore operation failed; LOADDDL return code was *rc*.

**Explanation:** A restore-to-RDR operation encountered an error and stopped.

**System action:** Processing continues with either end-of-job or the next task.

**User response:** This message might be issued with other diagnostic information. If the problem can not be resolved based on associated messages, contact your system programmer or IBM Software Support.

---

**BKR9289I** Options specify worker *worker* will process this job.

**Explanation:** A batch restore job designated that worker service virtual machine *worker* is to process the job that is associated with this message.

**System action:** Processing continues. RESTORE commands from this batch are submitted to the specified worker after BKRBACKUP finishes processing the contents of the batch restore job.

**User response:** No action is required.

---

**BKR9290W** The specified worker, *worker*, is not configured as a worker in BKRUSERS NAMES. Standard worker selection will be used.

**Explanation:** A batch restore job attempted to assign worker service virtual machine *worker* to process the job, but the specified user ID is not listed as a worker in BKRUSERS NAMES.

**System action:** Processing continues. The WORKER specification is ignored. The job is submitted to a worker service virtual machine that is selected by the ordinary worker selection algorithm.

**User response:** If the batch restore operation must be processed by a specific worker, you can cancel the batch restore operation. In this case, modify the batch restore job to specify a valid worker service virtual machine.

If a specific worker is not required for the restore operation, no changes are required. The job is submitted to a worker service virtual machine as chosen by the normal worker selection process.

---

**BKR9291E** Invalid function passed to BKRESTOR; options were *options*.

**Explanation:** The internal BKRESTOR function was invoked with one or more invalid options.

**System action:** The operation is rejected.

**User response:** Review the contents of the batch restore job associated with this message. If the job contains no apparent errors, contact your system programmer or IBM Software Support.

---

**BKR9295W** Unable to process incremental backup deleted file history. Attempting to continue with restore.

**Explanation:** The DELFILES option was specified for RESTORE processing. Restore processing could not obtain or process deleted file information during restoration of an incremental backup.

**System action:** RESTORE processing continues.

**User response:** 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. This message is preceded by additional diagnostic information.

---

**BKR9296W** There are no free file modes available.

**Explanation:** Backup and Restore Manager needed to temporarily allocate an unused file mode letter for temporary access to a minidisk or SFS file space, but no free file mode letters were available.

**System action:** Processing continues (if possible).

**User response:** This message is issued in with other diagnostic information. If the affected action cannot proceed successfully, attempt to free up additional file mode letters by temporarily releasing unnecessary minidisks or SFS directories.

---

**BKR9297W** Get\_GranDelFile result *result*.

**Explanation:** Backup and Restore Manager for z/VM encountered an error while attempting to extract deleted file information from the catalog entry for an incremental backup.

**System action:** Processing continues (if possible). Otherwise the affected routine exits with additional diagnostic information.

**User response:** Contact your system programmer or IBM Software Support.

---

**BKR9298W** Unrecognized FILEHEAD container type.

**Explanation:** Backup and Restore Manager encountered unrecognized information in a backup catalog entry.

**System action:** Processing continues (if possible). Otherwise the affected routine exits with additional diagnostic information.

**User response:** Contact your system programmer or IBM Software Support.

---

**BKR9299I** Incremental restore processing is removing file *file*.

**Explanation:** The DELFILES option was specified for a RESTORE operation; restore processing removed the indicated file from the restore destination as part of normal activity.

**System action:** The restore operation continues.

**User response:** No action is required.

---

**BKR9300I** Recovered *n* blocks on restore destination.

**Explanation:** The DELFILES option was specified for a RESTORE operation; restore processing removed one or more files from the restore destination, and recovered the indicated number of DASD blocks.

**System action:** The restore operation continues.

**User response:** No action is required.

---

**BKR9301W** Catalog DELFILE return code *rc*. DELFILE recording disabled; attempting to continue.

**Explanation:** An incremental backup operation encountered an error while attempting to record deleted file information in a backup catalog entry.

**System action:** Recording of deleted file information was disabled. The system attempts to continue backup processing.

**User response:** Contact your system programmer or IBM Software Support.

---

**BKR9302W** 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 8158 with this message.

**User response:** Based on the error response from the CP LINK command that is displayed in message 8158, 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 will be made.

**User response:** No action is required.

---

**BKR9305W** Lock retry attempt *attempt* will occur in *n* seconds.

**Explanation:** Access to portions of the backup catalog SFS file space is serialized through SFS lock mechanisms. An attempt was made to lock the catalog file space, but the lock could not be obtained. This message displays the number of retry attempts, and the delay interval until the next attempt is made.

**System action:** Processing is delayed. After a brief delay, another attempt to obtain the lock will be made.

**User response:** No action is required.

---

**BKR9306E** A JOBCAT lock could not be obtained after *n* retries.

**Explanation:** Repeated attempts to obtain a lock on the backup catalog JOBCAT structure failed. The maximum number of retry attempts was exceeded.

**System action:** Processing stops.

**User response:** Examine the accompanying diagnostic information and attempt to determine why the SFS LOCK attempts were unsuccessful. Check the SFS file pool service virtual machine console log for additional information. If the problem cannot be resolved, contact your system programmer or IBM Software Support.

---

**BKR9307W** DELETE LOCK *lock* return code *rc*; tolerating as a transient issue...

**Explanation:** An attempt to release an SFS resource lock resulted in an unexpected return code.

**System action:** Processing continues. The unlock attempt occurred at a point in processing where the lock release can be tolerated as a transient issue.

**User response:** No action is required. If the situation persists, contact your system programmer or IBM Software Support.

---

**BKR9308E** DELETE LOCK *lock* return code *rc*; no toleration or recovery enabled for this condition.

**Explanation:** An attempt to release an SFS resource lock resulted in an unexpected return code.

**System action:** Processing is stopped. The unlock attempt occurred at a point in processing where recovery from the failed lock release was not possible.

**User response:** Examine accompanying diagnostic information for details. Additional information might be recorded in the backup catalog file spaced SFS file pool server console log. Contact your system programmer or IBM Software Support.

---

**BKR9309W** DELETE LOCK *lock* return code 70; Unlock retry attempt *attempt* will occur in *n* seconds.

**Explanation:** An attempt to release an SFS resource lock exited with return code 70.

**System action:** RC 70 from a "delete lock" operation indicates a transient resource conflict. The unlock attempt is attempted again after a brief pause.

**User response:** No action is required.

---

**BKR9310E** A JOBCAT unlock could not be completed after *n* retries.

**Explanation:** Repeated attempts to release an SFS resource lock on the backup catalog file space JOBCAT structure failed. The maximum number of unlock retries was exceeded.

**System action:** Processing stops.

**User response:** Examine the job log for additional diagnostic information. Check the SFS file pool server console log for additional information. If the situation cannot be resolved, contact your system programmer or IBM Software Support.

---

**BKR9311W** Unable to erase *var*. DMSERASE return code *rc*, reason *reason*. The original version of this file has been left in place.

**Explanation:** A RESTORE command is in progress, and the DELFILES option is in effect. DELFILES processing is attempting to remove an old file from the minidisk or SFS directory path that is indicated in *var*. The DMSERASE CSL routine exited with the reason and return codes indicated by *code* and *rc* respectively. See *z/VM CMS Callable Services Reference* 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 9313 identifies the file name, file type, and SFS directory path that is involved in the error.

**System action:** DUMPSFS attempts to continue the backup operation with the next item in the SFS file space.

**User response:** No response is required. The system services that are used to back up an SFS file provide a consistent point-in-time view of individual CMS files that are stored in SFS, but DUMPSFS does not lock the entire file space during backup processing. If point-in-time consistency of an entire SFS file space is required, quiesce processes that create or delete objects in the file space before the backup.

---

**BKR9314I** Creation of EOF1 / HDR1 tape labels is *status*.

**Explanation:** The backup job that is associated with this message uses the IBMTAPE, IBMTWIN, or DUALTAPE output method. This message displays whether tape volumes are created with EOF1 / HDR1 label sequences between backup output files. *status* indicates either "enabled" (tape volumes are created with EOF1 / HDR1 label sequences) or "disabled" (tape volumes are not created with EOF1 / HDR1 label sequences).

**System action:** Job processing continues.

**User response:** None required. For more information, see the description of the Tape\_Enable\_EOF1HDR1 BKRSYSTEM CONFIG file parameter described in "CONFIG" on page 73.

---

**BKR9315W** Backup and Restore Manager for z/VM service virtual machine *svm\_id* has entered SUSPEND mode because the task abend limit has been reached.

**Explanation:** A service virtual machine entered SUSPEND mode because too many abnormal task terminations have occurred. This message is issued when the affected service virtual machine initially enters SUSPEND mode.

**System action:** Normal service virtual machine operations are suspended.

**User response:** The SUSPEND environment provides a limited set of functions which allow the system programmer to gather additional diagnostic information, reset the service virtual machine, or resume processing. See "Service virtual machine error recovery and diagnosis" on page 64 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 64 for information about suspended mode recovery options.

---

**BKR9316W** *svm\_id* entered SUSPEND mode on *mm/dd/yy* at *hh:mm:ss*.

**Explanation:** A service virtual machine entered SUSPEND mode because too many abnormal task terminations occurred. This message is issued with message 9315W.

**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 64 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 9315W, 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 64 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 9315W. 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 64.

---

**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 9319W. 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 64.

---

**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 64 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 (0). 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 64.

---

**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 (0). 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 99.

**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 64.

---

**BKR9325W** **PIPE return code *piperc* from attempt to unpack reference granule for *resource*. A full backup will be taken if incremental processing is not possible.**

**Explanation:** This message is issued when an incremental backup operation requires a compressed catalog entry to be staged to the affected workers temporary work area, but an error occurred during the **UNPACK** operation. Additional information generated by the CMS **PIPE** command might be issued with this message. The return code displayed originates from the CMS **PIPE** command.

**System action:** The worker attempts to continue processing. If an incremental backup cannot be performed, a full backup of the related minidisk or SFS file space is performed.

**User response:** If the problem occurred due to an out-of-space condition on the workers temporary files work area, increase the size of the minidisk or SFS directory and try the operation again. If the problem persists, contact IBM Software Support.

---

**BKR9326I** **Catalog entry data compression is *status*.**

**Explanation:** This message is issued during **BKRCATLG** initialization. It confirms whether compression of newly-created catalog content is enabled or disabled. *status* indicates either enabled (compression is enabled) or disabled (compression is disabled).

**System action:** **BKRCATLG** initialization continues.

**User response:** No action is required. See “Step 5h. Configure backup catalog parameters” on page 42 for information about catalog data compression.

---

**BKR9327W** **Reader file *spool\_id* vanished during processing.**

**Explanation:** The specified spool file was being processed, but was unexpectedly removed from the virtual machine **RDR** queue.

**System action:** The affected service virtual machine attempts to continue processing.

**User response:** No action is required. This message might be issued if files are purged or transferred from a

service virtual machine by another user.

---

**BKR9328W** **Receive attempt limit for file *spool\_id* exceeded. Placing file on **HOLD** and attempting to continue.**

**Explanation:** An error prevented successful processing of the specified spool file.

**System action:** The file is placed on hold, changed to class H and left on the service virtual machine's reader queue. When the affected service virtual machine is started, held files are released and an attempt is made to process them again.

**User response:** This message might be issued if the affected service virtual machine lacks sufficient free space on its temporary files work area. Increase the DASD space allocated for the temporary work minidisk (or SFS directory), and restart the affected service virtual machine.

---

**BKR9329E** **Job terminated; the task **ABEND** limit of *abendedtasks* tasks has been exceeded. Remaining tasks in this job have not been processed.**

**Explanation:** The number of abnormal task terminations for the current job exceeded the acceptable threshold.

**System action:** The job stops. Remaining tasks in the backup or restore job are not processed.

**User response:** Examine the job log for additional diagnostic information that involves the abnormally ended backup or restore tasks. If you can resolve the underlying cause, start or submit the job again after resolving the issues. If the underlying cause is not apparent, contact your system programmer or IBM Software Support.

---

**BKR9330E** **Job terminated; required **DISKPOOL** resources are not available. Remaining tasks in this job have not been processed.**

**Explanation:** The current backup job is configured to use the **CMSFILE** output method. The job associated with this message stopped before normal end-of-job because DASD resources in the **DISKPOOL** associated with this job were not available. This situation can indicate a **DISKPOOL** resource with too few minidisks or SFS directories for the number of workers that are configured to handle this job, or a lack of sufficient free DASD capacity in the **DISKPOOL**.

**System action:** The job stops. Remaining tasks in the backup job are not processed.

**User response:** Issue the **BKRCATLG EXPIRE** (**PURGE**) command to delete expired job instances from the backup catalog, and reclaim **DISKPOOL** DASD space occupied by expired backup job instances. If this effort

## BKR9333I • BKR9336W

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 / EXCLUDE statements in a backup job template completed with a non-zero return code. No additional diagnostic output was generated by the INCLUDE / EXCLUDE / SELECT 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 in conjunction with additional diagnostic messages during **SUBMIT**, **REVIEW**, or **RESTART** command processing. 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.

---

### 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 the response that was returned in GLOBALV variable **BKR\_Exit03\_Response** could not be interpreted.

**System action:** Processing continues. The default algorithm for selection of worker task service virtual machines (BKRWRK $m$ ) 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 (zero), but the response that was returned in GLOBALV variable **BKR\_Exit03\_Response** could not be interpreted. This message is issued with message 9334W. It is displayed when the first character of the response string is not an asterisk ("\*").

**System action:** Processing continues. The default algorithm for selection of worker task service virtual machines (BKRWRK $m$ ) 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 the response that was returned in GLOBALV variable **BKR\_Exit03\_Response** could not be interpreted. This message is issued with message 9334W, and is displayed when the number of workers returned is a non-numeric string.

**System action:** Processing continues. The default algorithm for selection of worker task service virtual machines (BKRWRK $m$ ) is used to pick workers for the backup or restore operation that is being handled.

**User response:** Review the response that is supplied by exit BKREXI03 EXEC, and correct the value that was returned through **BKR\_Exit03\_Response** to comply with requirements for the exit routine.

---

**BKR9337W Worker count *count* exceeds maximum worker limit (*workerlimit*).**

**Explanation:** Exit BKREXI03 EXEC ended with return code 0 (zero), but the response that was returned in GLOBALV variable **BKR\_Exit03\_Response** could not be interpreted. This message is issued with message 9334W, and is displayed when the number of workers that are returned exceeds the total number of workers available as configured in BKRUSERS NAMES.

**System action:** Processing continues. The default algorithm for selection of worker task service virtual machines (BKRWRK*nm*) 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.

---

**BKR9338W Number of workers returned not equal to worker count.**

**Explanation:** Exit BKREXI03 EXEC ended with return code 0 (zero), but the response that was returned in the GLOBALV variable **BKR\_Exit03\_Response** could not be interpreted. This message is issued with message 9334W. The expected response includes both a count of workers selected to process the backup or restore operation, and a list of worker service virtual machine user IDs. This message is issued when the count of workers selected is inconsistent with the number of user IDs returned by the exit.

**System action:** Processing continues. The default algorithm for selection of worker task service virtual machines (BKRWRK*nm*) 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.

---

**BKR9339W Operation aborted due to user exit BKREXI03 rc *rc*;**

**Explanation:** Exit BKREXI03 EXEC ended with a return code that is greater than or equal to 8. Return code 8 is a signal from the exit routine to stop the associated backup or restore operation because of a “not enough workers available” condition. Return codes greater than 8 are not supported, but are interpreted as an “abort operation” signal from the exit. This message is issued with message 9340W or message 9341W.

**System action:** The backup or restore operation that is associated with this message stops. No backup or restore job is generated.

**User response:** If the exit routine ended with RC 8 (not enough workers available), try the operation again

when more workers are available, or modify the site configuration for Backup and Restore Manager to provision more BKRWRK*nm* service virtual machines. For return codes that are greater than 8, evaluate logic that is implemented in the exit routine to determine why the exit responded with an invalid return code.

---

**BKR9340W Not enough workers are available.**

**Explanation:** Exit BKREXI03 EXEC ended with return code 8, which indicates that too few worker service virtual machines were available to process the backup or restore operation.

**System action:** Processing of the associated backup or restore operation is abandoned. No jobs were submitted.

**User response:** Try the operation when more workers are available, or modify the site configuration for Backup and Restore Manager to provision additional BKRWRK*nm* service virtual machines.

---

**BKR9341W Unsupported user exit return code.**

**Explanation:** Exit BKREXI03 EXEC ended with return code greater than 8. Return codes greater than 8 are unsupported, but are interpreted as an indication to abandon the associated backup or restore operation.

**System action:** Processing of the associated backup or restore operation is abandoned. No jobs were submitted.

**User response:** Evaluate the logic that is implemented in the exit routine to determine why the exit responded with an invalid return code.

---

**BKR9342W Operation terminated due to user exit signal.**

**Explanation:** Exit BKREXI03 EXEC is in use in the service virtual machine runtime environment, and the exit ended with a response to abandon the associated backup or restore operation.

**System action:** Processing of the associated backup or restore operation is abandoned. No jobs were submitted.

**User response:** This message is issued with additional console messages, which provide supporting details, and could also be associated with output generated by the exit routine. The course of action is determined based on the additional messages.

---

**BKR9343E Operation terminated; too few workers available.**

**Explanation:** This message is issued during **SUBMIT** command processing when no worker service virtual machines are available to process the resulting job.

**System action:** No backup or restore jobs were generated.

**User response:** Try the operation when more workers are available, or modify the site configuration for Backup and Restore Manager to provision more BKRWRK $nn$  service virtual machines.

**BKR9344W** Job template specified *count1* workers; selection routine returned *count2*. Continuing with *count2* workers.

**Explanation:** Exit BKREXI03 EXEC overrode the number of workers (*count1*) that are specified in the backup job template, which indicates that *count2* workers are to be deployed to handle the operation.

**System action:** SUBMIT processing continues. The job is divided among *count2* workers, instead of among *count1* workers as specified in the job template.

**User response:** No action is required.

**BKR9345I** Job will be processed by:

**Explanation:** This message is issued as part of summary information once a SUBMIT, RESTART or REVIEW command completed processing of a job template.

**System action:** Processing continues. One or more instances of message 9346I 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 execution of an incremental backup job when the baseline full backup that is configured for use as a change detection reference point is not present in the backup catalog file space. *jobname instance* identifies the full backup job name and instance specified in the backup job. *type* is either EDF (CMS minidisk) or SFS (CMS Shared File System).

**System action:** Processing continues. Because the baseline reference job was not found in the backup catalog file space, all CMS EDF (minidisk) or CMS SFS (Shared File System) objects 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 this job refers to a valid baseline full backup job for EDF and SFS objects. For either 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 could also occur if the SFS file pool server which owns the backup catalog file space is not functional when the backup job is run.

---

**BKR9358E Filemode A must be accessed R/W to use this EXEC.**

**Explanation:** This message is issued by the catalog browsing tools (such as BKRJOB) when invoked without first having a read-write A-disk or directory available.

**System action:** The command stops.

**User response:** Access a read-write minidisk or SFS directory as file mode "A" and then try the command again.

---

**BKR9359I DDR-format backup of *userid devno* starts on volume *volser* file *offset* block ID *blockid*.**

**Explanation:** For DDRTAPE backup jobs with Config BKR\_Job\_DDRTAPE\_Verbose = Yes in effect, this message

is issued at the start of backup for each object in the backup job. It documents the tape volser *volser*, the starting tape position *offset*, and the block ID *blockid* for a new DDR-format backup image.

**System action:** Backup processing continues.

**User response:** No action is required. The information contained in this message can be useful when the resulting backup tapes are used for later restore operations with DDR.

---

**BKR9361W CP QUERY DIAG 2CC return code 3; unable to determine system SSI configuration or support status.**

**Explanation:** The command CP QUERY DIAG 2CC was issued to determine whether the current system supports SSI cluster configuration. A return code of 3 indicates that the service virtual machine (BKRKBUP, BKRCATLG, or BKRWRKmm) lacks sufficient CP privileges to issue the CP QUERY DIAGNOSE command.

**System action:** Processing continues.

**User response:** CP QUERY DIAGNOSE requires CP privilege class A, C, or E or equivalent RACF, or other ESM authorization. Grant the CP directory entries for Backup and Restore Manager service virtual machines the lowest necessary privilege class (CP privilege class E) to determine whether SSI support is present on the current system.

If this message is encountered on systems running a release of z/VM prior to release 6.2, or if SSI support is not configured for 6.2 or later systems, this message can be ignored.

---

**BKR9362W CP QUERY DIAG 2CC return code *rc*; SSI support is presumed to be absent from this system.**

**Explanation:** The command CP QUERY DIAG 2CC was issued to determine whether the current system supports SSI cluster configuration. A non-zero return code indicates that the CP DIAG 2CC does not exist on the current system.

**System action:** Processing continues.

**User response:** The CP QUERY DIAGNOSE command requires CP privilege class A, C, or E (or equivalent RACF, or other ESM authorization). Grant the CP directory entries for Backup and Restore Manager service virtual machines the lowest necessary privilege class (CP privilege class E) to determine whether SSI support is present on the current system.

If this message is encountered on systems running a release of z/VM prior to release 6.2, or if SSI support is not configured for 6.2 or later systems, this message can be ignored.

---

---

**BKR9363I** Local system is not a member of an SSI cluster; not configured for SSI.

**Explanation:** Information obtained through CP DIAG 2CC indicates that the current z/VM system is not configured as a member of an SSI cluster.

**System action:** Processing continues.

**User response:** No action is required.

---

**BKR9364W** Local system has been IPLed in REPAIR mode; any SSI configuration has been ignored.

**Explanation:** Information obtained through CP DIAG 2CC indicates that the current z/VM system is configured as a member of an SSI cluster, but is currently IPLed in REPAIR mode.

**System action:** Processing continues.

**User response:** No action is required.

---

**BKR9365W** Unrecognized diag 2cc return code *rc* encountered.

**Explanation:** Information obtained in response to CP DIAG 2CC is in an unrecognizable format. *rc* is the CP DIAG 2CC return code.

**System action:** Processing continues. Special accommodations for operation in an SSI environment are disabled.

**User response:** If the current z/VM system is configured as a member of an SSI cluster, contact your system programmer or IBM Software Support.

---

**BKR9366I** (multiple line message; see Explanation.)

**Explanation:** SSI Configuration is active

Cluster name: *cluster\_name*

Member name: *member\_name*

Slot Number: *ssi\_slot\_number*

Bitmap Info: *ssi\_bitmap\_1 ssi\_bitmap\_2*

This message documents the current active SSI configuration.

**System action:** Processing continues.

**User response:** No action is required.

---

**BKR9367I** SSI is configured but not active. DIAG2CC *rc* was *rc*.

**Explanation:** The response to CP DIAG 2CC indicates that SSI support is available, but not active. The value returned for *rc* is the corresponding return code from CP DIAG 2CC.

**System action:** Processing continues.

**User response:** No action is required.

---

**BKR9369W** File space *filespace* is used more than once in this DISKPOOL definition.

**Explanation:** The indicated SFS file space (filepool:filespace) is referenced more than once in the associated DISKPOOL file. Although this is permitted, the available free space calculation for the DISKPOOL is based on the limits associated with the entire file space. Use of multiple directories in the same file space does not increase the available capacity.

**System action:** Processing continues.

**User response:** If this is the appropriate DISKPOOL configuration, no action is required.

---

**BKR9370W** Default catalog filepool override is in effect. BKRSYSTM CONFIG defines CatalogPool as *filepool*. Job defines BKR\_Catalog\_Pool as *filepool*.

**Explanation:** This message displays the baseline catalog file pool overrides that are currently in effect through the Config BKR\_Catalog\_Pool parameter when Backup and Restore Manager is processing an incremental backup job.

**System action:** Processing continues.

**User response:** No action is required.

---

**BKR9371W** Worker *BKRWRKnn*, job *jobname* is already canceled and logged off.

**Explanation:** This message is displayed if a CANCEL or CANCEL JOB operation is issued for a worker or a job that was already canceled.

**System action:** Processing continues.

**User response:** No action is required.

---

**BKR9372W** No workers found for job *jobname*.

**Explanation:** This message is displayed if a CANCEL JOB command is issued, and no workers are actively processing the specified job name.

**System action:** Processing continues.

**User response:** No action is required.

---

**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: BKRKBKUP).

**System action:** The service virtual machine continues normal processing.

**User response:** Verify the associated command is a

valid command for the service virtual machine, that command syntax is correct, and that the issuing user ID has correct privileges to issue the command.

---

**BKR9427W** No objects are catalogued for job *jobname* instance *instance*; check for failed backup.

**Explanation:** BKRCATLG EXPIRE command processing encountered an empty catalog entry for the backup job *jobname*, instance *instance*. There are no references to any minidisks or file spaces 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 execution, but ended without backing up minidisks or file spaces. For tape or DISKPOOL-based backup jobs, this situation can occur if a job is cancelled 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 selected for backup. To determine why the backup was not successful, review the job logs for the backup job and instance.

---

**BKR9428I** Reblocking of *media* output is *status*.

**Explanation:** This message is issued at the start of each job to document the configuration setting of data reblocking services. *media* is TAPE or EDF. *status* is enabled or disabled.

**System action:** Job processing continues.

**User response:** No action is required. This message is displayed in the job log to document settings of tape and EDF output reblocking services.

---

**BKR9429I** UDPE configuration: *media* UDPE*n* is *status*.

**Explanation:** This message is issued at the start of each job to document the configuration setting of User Data Processing Exits (UDPE) 1 and 2. UDPE*n* is UDPE1 or UDPE2. *media* is set to Tape or EDF. *status* indicates whether the individual tape or EDF UDPE routine is disabled, set to the embedded default, or enabled. If the routine is set to the embedded default or enabled, the exit routine name is displayed.

**System action:** Job processing continues.

**User response:** No action is required.

---

**BKR9430W** *media* UDPE*n* is enabled, but data reblocking is disabled. UDPE routines can only be used with reblocking enabled.

**Explanation:** This message is issued when a backup job is configured to enable UDPE exit point UDPE1 or UDPE2 for *media* (Tape or EDF) output, but data reblocking services were not enabled. Data reblocking must be enabled to use UDPE exit routines.

**System action:** Job processing continues. The backups that are created are generated without having backup data processed by site-configured UDPE routines.

**User response:** Ensure the associated job template specifies BKR\_Out\_Tape\_Reblock = YES (for tape-based backups) or BKR\_Out\_EDF\_Reblock = YES (for DISKPOOL-based backups) and re-submit the job.

---

**BKR9431E** EXECIO return code *rc* writing *file\_ID*.

**Explanation:** During an attempt to write to file *file\_ID*, the CMS EXECIO utility exited with a non-zero return code.

**System action:** The system action varies depending on severity of the error. If possible, the write attempt is attempted again. If the file cannot be updated, the process exits with a non-zero return code and additional diagnostic messages.

**User response:** Ensure the affected service virtual machine has read/write access to the associated minidisk or SFS directory, and that sufficient free space is available on the destination file mode.

---

**BKR9432E** Conversion to SSI job instance sharing is pending. BKR\_SSI\_InstanceSync is off, but the InstancePool directory was found in the catalog file space. Add BKR\_SSI\_InstanceSync = ON to BKRSYSTEM CONFIG to proceed.

**Explanation:** This message is issued when the InstancePool directory (*catalogpool:catalogspace*.INSTANCEPOOL) is found in the backup catalog file space, but configuration file 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:** An attempt to obtain a SESSION UPDATE lock for a directory or file resulted in a non-zero return code (*rc*).

**System action:** This message is issued after all wait and retry attempts to obtain a lock have been exhausted. Further action depends on the nature and severity of the associated errors. This message can be displayed with several different operations. The details of the failure, severity and recoverability is documented by additional messages.

**User response:** This message is issued with messages 9304, 9305 and 9196. Additional information provided by the messages help determine why a lock could not be obtained. If it is possible to continue processing, service virtual machine execution continues. If error recovery is unsuccessful, additional diagnostic information is displayed.

---

**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 non-zero return code. *resource* identifies the minidisk or SFS directory involved. *result* identifies the ACCESS return code and can include more information.

**System action:** If possible, processing continues. If recovery is unsuccessful, the process ends.

**User response:** Assess the nature and severity of the problem based on the ACCESS return code. If *resource* is a CMS SFS directory, ensure that the service virtual machine has sufficient privileges to access the directory and that the file pool is online. If *resource* is a minidisk, verify that the service virtual machine can LINK to the virtual device and that the minidisk contains a valid CMS EDF file system.

---

**BKR9436W** Error moving *jobname* SERIAL A to InstancePool directory. Result was: *result*  
Move will be retried at next svm initialization.

**Explanation:** Conversion to shared job instance management encountered an error while attempting to move file *jobname* SERIAL A from the A-disk of BKRBKUP to the InstancePool directory.

**System action:** Processing continues, but the saved instance value for *jobname* is not consolidated into the InstancePool directory. The operation is attempted again the next time BKRBKUP is initialized.

**User response:** Verify that the SFS file pool server containing the backup catalog file space is online and available to all members of the SSI cluster. Verify that BKRBKUP has file pool administrator privileges for the associated file pool, and attempt the operation again.

---

**BKR9437E** Unable to create the InstancePool directory. Result: *result*. Verify that *svm\_name* has sufficient file pool privileges for file pool *catalogpool* and that the file pool is available.

**Explanation:** Initial migration of job instance numbers from the A-disk of BKRBKUP to the InstancePool directory in the catalog file space was unsuccessful. Creation of the InstancePool directory failed. *result* provides additional diagnostic information.

**System action:** Service virtual machine start-up ends.

**User response:** Verify that the SFS file pool server that contains the backup catalog file space is online and available to all members of the SSI cluster. Verify that BKRBKUP has file pool administrator privileges for the associated file pool, and attempt the operation again.

---

**BKR9438W** ACCESS *dirpath* *filemode* (FORCERW return code *rc*).

**Explanation:** The CMS ACCESS command exited with a non-zero return code (*rc*) on an attempt to access directory *dirpath* as file mode *filemode* with the FORCERW option in effect.

**System action:** The associated process ends.

**User response:** Verify that the affected service virtual machine has sufficient privileges (ownership of the associated SFS file space, or SFS file pool administrator authority) to access the resource and attempt the operation again or restart the affected service virtual machine.

---

**BKR9439W** ACCESS retry attempt *count* will occur in *delay* seconds.

**Explanation:** A CMS ACCESS command exited with a non-zero return code. The operation is eligible for error recovery efforts. *count* is the current number of retry

attempts. *delay* is the number of seconds in which the retry will occur.

**System action:** After *delay* seconds, the operation is attempted again.

**User response:** Error recovery processing pauses for several seconds. If the retry limit was not reached, try the operation again. If the retry limit was reached, additional diagnostics are issued.

---

**BKR9440W** ACCESS *dirpath* *filemode* (FORCERO return code *rc*).

**Explanation:** The CMS ACCESS command exited with a non-zero return code (*rc*) on an attempt to access directory *dirpath* as file mode *filemode* with the FORCERO option in effect.

**System action:** The associated process ends.

**User response:** Verify that the affected service virtual machine has ownership of the associated SFS file space, or SFS file pool administrator authority to access the resource and attempt the operation again or restart the affected service virtual machine.

---

**BKR9441W** COPYFILE return code *rc* on attempt to move *jobname* SERIAL A to InstancePool directory. The operation will be retried at the next svm initialization.

**Explanation:** Migration to shared job instance management encountered a non-zero return code (*rc*) from the CMS COPYFILE command while merging data for *jobname* into the InstancePool directory.

**System action:** Processing continues. The operation is attempted again at the next BKR9441W 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 BKR9441W 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 BKR9442W initialization.

**User response:** If the A-disk of BKR9442W is a minidisk, ensure that the virtual device is available in read/write mode. If the A-disk of BKR9442W is an SFS directory, ensure that BKR9442W 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 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 BKR9443E, BKRCATLG or BKR9443E is active. Once the file pool server is restarted, re-initialize the affected service virtual machine to continue processing.



---

## Notices

This information was developed for products and services offered in the U.S.A. This material may be available from IBM in other languages. However, you may be required to own a copy of the product or product version in that language in order to access it. IBM may not offer the products, services, or features discussed in this document in other countries. Consult your local IBM representative for information on the products and services currently available in your area. Any reference to an IBM product, program, or service is not intended to state or imply that only that IBM product, program, or service may be used. Any functionally equivalent product, program, or service that does not infringe any IBM intellectual property right may be used instead. However, it is the user's responsibility to evaluate and verify the operation of any non-IBM product, program, or service.

IBM may have patents or pending patent applications covering subject matter described in this document. The furnishing of this document does not give you any license to these patents. You can send license inquiries, in writing, to:

IBM Director of Licensing  
IBM Corporation  
North Castle Drive  
Armonk, NY 10504-1785  
U.S.A.

For license inquiries regarding double-byte (DBCS) information, contact the IBM Intellectual Property Department in your country or send inquiries, in writing, to:

Intellectual Property Licensing  
Legal and Intellectual Property Law  
IBM Japan Ltd.  
19-21, Nihonbashi-Hakozakicho, Chuo-ku  
Tokyo 103-8510 Japan

**The following paragraph does not apply to the United Kingdom or any other country where such provisions are inconsistent with local law:**

INTERNATIONAL BUSINESS MACHINES CORPORATION PROVIDES THIS PUBLICATION "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF NON-INFRINGEMENT, MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. Some states do not allow disclaimer of express or implied warranties in certain transactions, therefore, this statement may not apply to you.

This information could include technical inaccuracies or typographical errors. Changes are periodically made to the information herein; these changes will be incorporated in new editions of the publication. IBM may make improvements and/or changes in the product(s) and/or the program(s) described in this publication at any time without notice.

Any references in this information to non-IBM Web sites are provided for convenience only and do not in any manner serve as an endorsement of those Web sites. The materials at those Web sites are not part of the materials for this IBM product and use of those Web sites is at your own risk.

IBM may use or distribute any of the information you supply in any way it believes appropriate without incurring any obligation to you.

Licensees of this program who wish to have information about it for the purpose of enabling: (i) the exchange of information between independently created programs and other programs (including this one) and (ii) the mutual use of the information which has been exchanged, should contact:

IBM Corporation  
J46A/G4  
555 Bailey Avenue  
San Jose, CA 95141-1003  
U.S.A.

Such information may be available, subject to appropriate terms and conditions, including in some cases, payment of a fee.

The licensed program described in this information and all licensed material available for it are provided by IBM under terms of the IBM Customer Agreement, IBM International Program License Agreement, or any equivalent agreement between us.

Any performance data contained herein was determined in a controlled environment. Therefore, the results obtained in other operating environments may vary significantly. Some measurements may have been made on development-level systems and there is no guarantee that these measurements will be the same on generally available systems. Furthermore, some measurements may have been estimated through extrapolation. Actual results may vary. Users of this document should verify the applicable data for their specific environment.

Information concerning non-IBM products was obtained from the suppliers of those products, their published announcements or other publicly available sources. IBM has not tested those products and cannot confirm the accuracy of performance, compatibility or any other claims related to non-IBM products. Questions on the capabilities of non-IBM products should be addressed to the suppliers of those products.

All statements regarding IBM's future direction or intent are subject to change or withdrawal without notice, and represent goals and objectives only.

This information contains examples of data and reports used in daily business operations. To illustrate them as completely as possible, the examples include the names of individuals, companies, brands, and products. All of these names are fictitious and any similarity to the names and addresses used by an actual business enterprise is entirely coincidental.

#### COPYRIGHT LICENSE:

This information contains sample application programs in source language, which illustrate programming techniques on various operating platforms. You may copy, modify, and distribute these sample programs in any form without payment to IBM, for the purposes of developing, using, marketing or distributing application programs conforming to the application programming interface for the operating platform for which the sample programs are written. These examples have not been thoroughly tested under all conditions. IBM, therefore, cannot guarantee or imply reliability, serviceability, or function of these programs. You may copy, modify, and distribute these sample programs in any form without payment to

IBM for the purposes of developing, using, marketing, or distributing application programs conforming to IBM's application programming interfaces.

If you are viewing this information softcopy, the photographs and color illustrations may not appear.

---

## Trademarks

IBM, the IBM logo, and [ibm.com](http://www.ibm.com)<sup>®</sup> are trademarks or registered trademarks of International Business Machines Corporation in the United States, other countries, or both. These and other IBM trademarked terms are marked on their first occurrence in this information with the appropriate symbol (<sup>®</sup> or <sup>™</sup>), indicating US registered or common law trademarks owned by IBM at the time this information was published. Such trademarks may also be registered or common law trademarks in other countries. A complete and current list of IBM trademarks is available on the Web at <http://www.ibm.com/legal/copytrade.shtml>.

Linux is a registered trademark of Linus Torvalds in the United States, other countries, or both.

Microsoft, Windows, Windows NT, and the Windows logo are trademarks of Microsoft Corporation in the United States, other countries, or both.

UNIX is a registered trademark of The Open Group in the United States and other countries.

Other company, product, and service names may be trademarks or service marks of others.



---

## Bibliography

You might need to refer to other sources of information when you are using Backup and Restore Manager.

This section lists the documentation that supports Backup and Restore Manager. Use the appropriate library for the version of z/VM that you are using.

**Tip:** To quickly locate a specific book, use the IBM Publications Center, which is located at [www.elink.ibm.com/public/applications/publications/cgi-bin/pbi.cgi](http://www.elink.ibm.com/public/applications/publications/cgi-bin/pbi.cgi). After you enter your country information, click **Search for publications**, and enter the publication number (xxxx-xxxx) of the book that you want.

- *IBM Backup and Restore Manager for z/VM Program Directory, GI10-8664*
- *RACF V2R1.0 External Security Interface (RACROUTE) Macro Reference, GC23-3733*
- *RACF V1R10 Security Administrator's Guide, SC28-1340*
- *RACF V5R3.0 Security Server Security Administrator's Guide, SC24-6142*
- *z/VM V4R4.0 CMS User's Guide, SC24-60091*
- *z/OS® V1R3.0 MVS™ Assm Services Reference, SA22-7606*
- *z/VM V4R4.0 CMS Command and Utility Reference, SC24-60103*
- *z/VM V4R1.0 CMS Macros and Functions Reference, SC24-60050*
- *z/VM V4R4.0 CP Command and Utility Reference, SC24-6008*
- *z/VM V4R4.0 CP Planning and Administration, SC24-60431*
- *z/VM V4R1.0 CP Programming Services, SC24-6001*
- *z/VM V5R1.0 TCP/IP Planning and Customization, SC24-6125*
- *z/VM: REXX/VM Reference, SC24-6113*
- *z/VM: RACF Security Server Command Language Reference, SC24-6144*
- *z/VM: CMS Callable Services Reference, SC24-6072*



---

# Index

## Special characters

\$\$ADMIN\$\$ 93  
\$\$CATALOG\$\$ 93  
\$\$DRIVER\$ 143  
\$\$DRIVER\$\$ 143, 145  
\$\$FMASK\$\$ 143, 145  
\$\$INST jobname\$\$ 93  
\$\$INST\$\$ 93, 106, 107  
\$\$MASTER\$\$ 93  
\$\$PMASK\$\$ 145  
\$\$SDATE\$\$ 93  
\$\$SUBMITTER\$\$ 93  
\$\$TIME\$\$ 93  
\$\$UPDATE\$\$ 93

## A

ACCESS commands 27  
access control exits 17  
    sample 125  
ACCESSM0 MODULE 29, 31, 32  
adding  
    worker service virtual machines 60  
administration 53  
administrator  
    privileges 22  
administrator service virtual machine  
    identifying 37  
ADMPROF SAMPEXEC 27  
    modification 27  
ALTEXIO3 SAMPEXEC 128  
applications  
    REXX 12, 16  
audience xi  
AUTOLOG 53  
Automated Tape Library (ATL) 9  
automatic format  
    and unformatted CMS minidisks 39

## B

backup  
    catalog 14, 23  
    disaster recovery 12, 122  
    full 12, 115, 121  
    hierarchy 14  
    incremental 12, 119  
    jobs 11, 12  
    levels 14  
    methods 12  
    operations 11, 65  
    routines 12  
    sample 122  
    scheduling 13  
    SFS resources 120  
Backup and Restore Manager  
    and disaster recovery tasks 17  
    components 8  
    configuring 21  
    overview 1  
Backup and Restore Manager (*continued*)  
    processing 9  
backup catalog 8, 17, 119  
    accessing 9  
    allocating SFS resources 25  
    expiring contents 15  
    file pool 26  
    file space 26  
    managing 55  
    requirements 18  
    restoring 59  
    SFS file space 42  
    storage requirements 26  
backup catalog entries  
    viewing 9  
backup catalog parameters  
    configuring 42  
backup catalog service virtual machine  
    identifying 37  
backup job template  
    instance number 107  
    instance number of 104  
    processing 107  
backup job templates  
    customizing 47  
    reviewing and copying 47  
backup jobs 9  
    creation of 65  
    guidelines 71  
backups  
    catalog SFS file space 58  
    notification of completion 14  
    notification of start 14  
    retaining 15  
    types of 12  
baseline copy 12  
batch  
    restore requests 16  
batch restore  
    processing 72  
BKR\_Allow\_EDF\_Target\_Format 39  
BKR\_Catalog\_Compression\_Enabled 42  
BKR\_Catalog\_ExtentCat\_Enabled 42  
BKR\_CATALOG\_MASTER 73  
BKR\_CATALOG\_POOL 73  
BKR\_Catalog\_Retention 32  
BKR\_CATALOG\_RETENTION 57, 73  
BKR\_CATALOG\_VERBOSE 73  
BKR\_EDF\_INCR\_BASEINST 73  
BKR\_EDF\_INCR\_BASEJOB 73  
BKR\_EDF\_INCR\_TOGGLE 73  
BKR\_Global\_Default\_Tape\_DSN 39, 50  
BKR\_Global\_Product\_ID 37  
BKR\_Global\_Product\_Name 37  
BKR\_Global\_Product\_Version 37  
BKR\_JOB\_BACKUP\_RESERVED\_AS\_IMAGE 73  
BKR\_JOB\_CATALOG 73  
BKR\_JOB\_CMS\_FILEMASK 73, 143  
BKR\_JOB\_CONSECUTIVE\_FAILED\_TASK\_LIMIT 73  
BKR\_Job\_DDRTAPE\_Verbose 73  
BKR\_JOB\_EUM\_ALT\_POOL\_NAME 73

- BKR\_JOB\_EUM\_ALT\_POOL\_NAME 42
- BKR\_JOB\_EUM\_ALT\_POOL\_OWNER 73
- BKR\_JOB\_EUM\_POOL\_NAME 73
- BKR\_JOB\_EUM\_POOL\_OWNER 73
- BKR\_JOB\_INSTANCE 73
- BKR\_JOB\_MASTER 73
- BKR\_JOB\_NAME 73
- BKR\_JOB\_OWNER 73
- BKR\_JOB\_SFS\_PATHMASK 73, 145
- BKR\_JOB\_SUPPRESS\_IMAGE 73
- BKR\_JOB\_TAPE\_DSN 50, 73
- BKR\_Job\_Tape\_Enable\_EOFHDR1 73
- BKR\_JOB\_TAPE\_RETENTION 73
- BKR\_JOB\_TOKEN 73
- BKR\_Job\_Tolerate\_DiskPool\_Depletion 119
- BKR\_JOB\_TOLERATE\_DISKPOOL\_DEPLETION 73
- BKR\_JOB\_WORKERS 73, 106, 107
- BKR\_OUT\_EDF\_REBLOCK 73
- BKR\_OUT\_EDF\_UDPE1 73
- BKR\_OUT\_EDF\_UDPE1\_PARM 73
- BKR\_OUT\_EDF\_UDPE1\_PLEN 73
- BKR\_OUT\_EDF\_UDPE2 73
- BKR\_OUT\_EDF\_UDPE2\_PARM 73
- BKR\_OUT\_EDF\_UDPE2\_PLEN 73
- BKR\_OUT\_EDF\_VERBOSE 73
- BKR\_OUT\_TAPE\_VERBOSE 73
- BKR\_OUTPUT\_SPEC 73, 143
- BKR\_SFS\_INCR\_BASEJOB 73
- BKR\_SFS\_INCR\_TOGGLE 73
- BKRADMIN 22, 27, 29, 31, 37, 42, 53
  - user account 22
- BKRBKUP 16, 22, 27, 31, 34, 37, 47, 51, 53, 59, 60
  - privileges 23
  - user account 23
- BKRCATLG 22, 26, 27, 29, 37, 42, 46, 47, 54, 56, 59, 62, 109
  - status 54
  - user account 23
- BKREOV 57, 137
  - parameters 140
  - return codes 140
- BKREXI01 125
- BKREXI01 EXEC 17
- BKREXI02 125, 127
- BKREXI02 EXEC 14
- BKREXI03 125
- BKREXI03 SAMPEXEC 128
- BKREXT2A 131, 132
- BKREXT2A SAMPASM 132
- BKREXT3A 131, 132
- BKREXT3A TEXT 132
- BKREXT3C 132
- BKREXT3E 132
- BKRMOUNT 57, 137
  - environment variables 138
  - parameters 138
  - return codes 138
- BKRNUDAY EXEC 57
- BKRNUDAY SAMPEXEC 131
- BKRPOOL 42
- BKRSYSTEM CONFIG 21, 26, 36, 37, 48, 59, 93
  - modifying 50
- BKRUMNT 57, 137
  - parameters 139
  - return codes 139
- BKRUSERS NAMES 21, 34, 60, 61
- BKRWRKxx 22
  - user account 24

- BKRWRKxx PROFILE EXEC
  - updating 51
- BKRXNTD 42

## C

- CANCEL command 100
- catalog
  - backup 23
  - expiration processing 109
  - granule 55
  - implementation of 55
  - service virtual machine 8, 54
  - structure 56
- catalog browser interface 9
  - using to restore data 16
- catalog commands
  - EXPIRE 109
  - QUERY TAPES 111
  - SET EXPIRE 112
- catalog content
  - expiration of 57
  - retention 57
- catalog file pool
  - estimating the amount of space required 26
- CATALOG GRANULE
  - file 56
- catalog granules 8, 9
- catalog server
  - commands 109
  - managing 54
- catalog service virtual machine 8, 9
- catalog SFS file space
  - backups 58
  - sizing 58
- CatalogPool 42
- CatalogSpace 42
- CATPROF SAMPEXEC 27
  - modifying 29
- CKD
  - image 11, 12
  - object type 16
- CKDLOAD 16
- client 8
- CMS 8, 9
  - Compression Services 131
  - formatted minidisks 17
  - minidisk 11, 12
- CMS command 95, 98
- CMS COPYFILE command 42
- CMS CREATE DIRECTORY command 29, 31
- CMSFILE 73, 88
- CMSSTOR OBTAIN 38
- command line interface 9
- commands
  - CANCEL 23
  - catalog server 109
  - common 95
  - EXPIRE (PURGE) 29
  - master backup server 100
  - operator 9
  - PURGE 23
  - RESTORE 16, 72
  - SET EXPIRE 29
  - SUSPEND mode 98
- common commands 95

- common server commands
  - CMS 95
  - CP 96
  - HALT 96
  - RESTART 104
  - STATUS 97
- compatibility with prior versions 18
- components
  - Backup and Restore Manager 8
- concurrent copies
  - of output tapes 63
- CONFIG keyword 73
- configuration
  - Backup and Restore Manager 21
  - backup catalog parameters 42
  - steps 22
- configuration files
  - ADMPROF SAMPEXEC 21
  - BKRSYSTEM CONFIG 26, 36, 37
  - BKRSYSTEM CONFSAMP 21
  - BKRUSERS NAMES 34
  - BKRUSERS NAMESAMP 21
  - CATPROF SAMPEXEC 21
  - MASTPROF SAMPEXEC 21
  - WRKPROF SAMPEXEC 21
- configuration information
  - specifying 68
- configuring
  - Backup and Restore Manager 21
  - tape handling exit variables 39
- CONSOLE keyword 84
- controlling
  - ability to restore data 17
- conventions
  - highlighting xi
- CP command 96, 99
- CP\_COMMAND keyword 84
- CP\_QUIET keyword 85
- customizing
  - backup job templates 47
  - BKRSYSTEM CONFIG 36

## D

- DASD Dump Restore (DDR) utility 12
- DASD Dump Restore utility 153
- DASD extent
  - tracking 56
- DASD management 25
- data
  - restoring 17
- data types
  - and full and incremental backups 12
- DDLLOAD 16
- DDR 64, 121
- DDRSAMP TEMPSAMP 67, 121
- DDRTAPE 12, 39, 64, 72, 73, 88, 153
- deferred processing 131
- DEFINE MDISK command 24
- definitions
  - DISKPOOL 17
- devices
  - disk 17
  - tape 17
- DIRCONTROL directories 62
- disaster recovery 25
  - and Backup and Restore Manager 17

- disaster recovery (*continued*)
  - backup 12
  - tasks 63
- disk
  - devices 17
- DISKPOOL 39
  - files 17
  - media 39
  - statements 23
  - support 37
- DISKPOOL file
  - performing a query of 103
- DISKPOOL files
  - configuring 61
  - examples 62
  - format 62
  - managing 47
  - minidisks specification 61
  - specifying SFS resources in 62
- DMSPARMS
  - file 22
- DUALTAPE 39, 63, 73, 88, 137
- DUMPCKD 67, 147
  - processing 149
- DUMPCKD keyword 143
- DUMPEDF 67, 147
  - processing 148
- DUMPEDF keyword 143
- DUMPFBA 67, 147
  - processing 149
- DUMPFBA keyword 144
- DUMPSFS 67, 147
  - processing 150
- DUMPxxx
  - functions 143
  - statements 88
- DUMPxxx statements 68, 106, 107
- DUMPxxx task 102

## E

- ECKD
  - minidisk extents 42
- EDF
  - object type 16
- EDFLOAD 16
- end of job
  - processing 71
- end-of-job
  - processing 87
- ENROLL PUBLIC 17
- environment variables 73
  - BKRMOUNT 138
- EOJ keyword 87
- EOJ summary 85
- error recovery 64
- ESM authorization 17
- EUM\_Pool\_Name 42, 50
- EUM\_Pool\_Owner 42, 50
- EUMBKREV 137, 142
- EUMBKREV EXEC 50
- EUMBKRMT 137, 142
- EUMBKRMT EXEC 50
- EUMBKRUM 137, 142
- EUMBKRUM EXEC 50
- example
  - DISKPOOL files 62

- EXCLUDE 67, 88
  - selection records 68, 69
- EXECs
  - BKREXI01 17
- exit register processing 133
- exit routines
  - tape management functions 9
- exits 132
  - BKREXI01 125
  - BKREXI02 127
  - deferred processing 131
  - sample processing 131
  - tape handling 137
  - Tape Manager for z/VM 137, 142
- EXPDATE 49
- EXPDAYS 49
- expiration date 15
- expire
  - job and instance 112
- EXPIRE 57
- EXPIRE command 109
- expiring backup catalog contents 15
- EXTENTBYDASD 42, 56
- EXTENTBYJOB 42, 56
- external security manager 17
- external security managers (ESMs) 22

## F

- FBA
  - image 11, 12
  - minidisk extents 42
  - object type 16
- FBALOAD 16
- file
  - CATALOG GRANULE 56
- file pool
  - backup catalog 26
- file space
  - backup catalog 26
- FILECONTROL directories 62
- files
  - DMSPARMS 22
- format
  - DDR 64
  - DISKPOOL file 62
- full backup 12
- full system
  - backup 12

## G

- global settings 37
- GLOBALV 139
- granule 55
- granules
  - catalog 8, 9
- guidelines
  - backup jobs 71

## H

- HALT command 53, 54, 60, 96
- hardware requirements 18
- hierarchy
  - backup 14

- highlighting conventions xi

## I

- IBM Alternate Library for REXX 18
- IBM Library for REXX 18
- IBMTAPE 39, 73, 88, 137
- IBMTWIN 39, 63, 73, 88, 137
- image
  - CKD 16
  - FBA 16
- INCLUDE 67, 88
  - selection records 68, 69
- INCLUDE and EXCLUDE selection records
  - wildcard characters 89
- incremental
  - backup 12
- incremental backup
  - considerations 12
- input/output handlers 137
- installation contact
  - specifying 37
- instance number
  - backup job template 107
- instance number of
  - backup job template 104
- interface
  - command line 9
  - tape management system 9

## J

- job
  - backup 12
  - configuration 68
  - syntax 67
  - syntax descriptions 73
  - templates 9
  - variables 93
- job header output
  - generating 87
- job syntax
  - CONFIG 73
  - CONSOLE 84
  - CP\_COMMAND 84
  - CP\_QUIET 85
  - DUMPCKD 143
  - DUMPEDF 143
  - DUMPFBA 144
  - EOJ 87
  - JOB\_HEADER 87
  - JOB\_TRAILER 88
  - processing
    - end-of-job 87
  - SUMMARIZE 85
- job template
  - processing 38
  - variables 73
- job template definition
  - testing 106
- job templates 65
  - managing 47
  - sample 12, 115
- JOB\_HEADER keyword 87
- JOB\_TRAILER keyword 88
- JOBCAT 56

jobs  
  backup 65

## L

legal notices  
  notices 255  
  trademarks 257  
levels  
  of backups 14  
lists  
  tape 64  
local configuration options 36  
Local\_Backup\_Admin\_ID 37  
Local\_Backup\_Catalog\_ID 37, 42  
Local\_Backup\_Master\_ID 37  
Local\_SVM\_Contact 37

## M

MAKEJOB command 22  
master Backup and Restore Manager server  
  managing 53  
master backup server  
  commands 100  
  description 8  
  starting 53  
  status of 54  
  stopping 53, 54  
master backup service virtual machine 8, 9, 60  
master catalog server 22  
  privileges 23  
master server commands  
  CANCEL 100  
  PAUSE 102  
  QUERY DISKPOOL 103  
  QUERY EXPIRE 110  
  QUERY INSTANCE 104  
  RESUME 105  
  REVIEW 106  
  SET INSTANCE 107  
  SUBMIT 107  
master service virtual machine 16  
  identifying 37  
MASTPROF SAMPEXEC 27  
  modifying 31  
media  
  DISKPOOL 39  
MEDIACAT 57  
messages and codes 155  
minidisk  
  selection 69  
  tracking 56  
minidisk extents  
  ECKD 42  
  FBA 42  
minidisks  
  specification in DISKPOOL file 61  
  unformatted 39  
MSGNOH command 23

## N

NAMES file 39  
notices 255

## O

Operations Manager for z/VM 57, 67, 122  
operator commands 9  
OPTION DEVINFO 24  
OPTION DEVMAINT 24  
OPTION LNKNOPAS 22, 23, 24  
OPTION LNKSTABL 24  
output handlers 63, 88  
output methods 39  
output resources  
  identifying 61  
output tapes  
  concurrent copies 17, 63

## P

parameters  
  BKREOV 140  
  BKRMOUNT 138  
  BKRUMNT 139  
PAUSE command 102, 105  
privileges  
  administrator 22  
  BKRADMIN 22  
  BKRBKUP 23  
  master Backup and Restore Manager server 23  
  master catalog server 23  
  worker virtual machines 24  
processing  
  Backup and Restore Manager 9  
  backup job template 107  
  backups 9  
  batch restore 72  
  defining 9  
  DUMPCKD 149  
  DUMPEDF 148  
  DUMPFBA 149  
  DUMPSFS 150  
  end of job 71  
  exit register 133  
  job template 38  
  restore 9  
  sample exit 135  
PROFILE EXECs  
  ADMPROF SAMPEXEC 27  
  CATPROF SAMPEXEC 27, 29  
  MASTPROF SAMPEXEC 27, 31  
  sample 27  
  WRKPROF SAMPEXEC 27, 32

## Q

QUERY DISKPOOL command 103  
QUERY EXPIRE command 110  
QUERY INSTANCE command 104  
QUERY TAPES command 64, 111

## R

RACF 22  
RACF OPERATIONS 22, 24  
RDEVICE 70  
RDEVVOL 70  
Real device  
  selection 70

- removing
  - worker service virtual machines 61
- requirements
  - hardware 18
  - software 18
- reserved
  - worker service virtual machines 45
- resources
  - output 61
  - SFS 61
  - Tape Manager for z/VM 49
- RESTART 64
- RESTART command 104
  - suspend mode 99
- restore
  - operations 65
  - routines 16
- RESTORE
  - command 72
- RESTORE command 9, 16
- restore operations 15
- restore requests
  - batch 16
- restoring
  - backup catalog 59
  - data 17
- restoring data
  - methods of 16
- RESUME 64
- RESUME command 100, 102, 105
- retaining
  - backups 15
- retention period 61
- return codes
  - BKREOV 140
  - BKRMOUNT 138
  - BKRUMNT 139
  - UDPE 134
- REVIEW 65
- REVIEW command 106
- REXX 14
  - applications 12, 16
  - environment variables 73
- REXX TIME() function 93
- RMM mode 42
  - and Tape Manager for z/VM 50, 51
- root catalog
  - directory structures 46
- routines
  - backup 12

## S

- SAMPFULL TEMPSAMP 67, 115
- SAMPINCR TEMPSAMP 67, 119
- sample
  - access control exits 17, 125
  - backup 122
  - disaster recovery
    - backup 122
  - full backup 115, 120, 121
  - incremental backup 119
  - job templates 12, 115
  - PROFILE EXECs 27
  - templates 67
- sample exit
  - processing 135

- SAMPLNX TEMPSAMP 67, 122
- scheduling
  - backups 13
- SCSI devices 91, 92
- SELECT 88
- SELECT statement 92
- selection
  - SFS 69
- selection records 69, 70
  - EXCLUDE 68, 69
  - INCLUDE 68, 69
  - MINIDISK 89
  - minidisk selection 89
  - RDEVICE 70
  - RDEVVOL 70
  - real device by volume label 92
  - real device selection 91
  - selecting devices 92
  - SFS file pool selection 91
  - syntax 88
- SENDFILE command 16
- server privileges
  - verifying 22
- service virtual machine
  - catalog 8
  - master 8
- service virtual machines
  - starting 47
  - worker 8
- SET EXPIRE 48, 57
- SET EXPIRE command 112
- SET INSTANCE command 107
- settings
  - Tape Manager for z/VM 42
- SETUPCAT function 46
- SFS
  - image 11
  - object type 16
  - resources 61
  - selection 69
- SFS file space
  - backup catalog 42
- SFS filespace 12
- SFS only
  - backup 12
- SFS resources
  - allocating for backup catalog 25
  - backup 120
  - specifying in a DISKPOOL file 62
- SFSCAT 56
- SFSLOAD 16
- SFSONLY TEMPSAMP 67, 120
- Shared File System 18
- size
  - catalog SFS file space 58
- software requirements 18
- stand-alone tape handling exits 137
- starting
  - service virtual machines 47
- statements
  - ACCESS 31, 32
  - CP LINK 31, 32
  - CP SPOOL CONSOLE 27
  - DISKPOOL 23
  - SELECT RDEVICE 24
  - SELECT RDEVVOL 24
- STATUS 58

- STATUS command 54, 60, 97
- storage media
  - considerations 17
  - managing 61
- storage media requirements 61
- storage requirements
  - backup catalog 26
- structure
  - catalog 56
- SUBMIT 65
- SUBMIT command 107, 109
- substitution variables 107
- SUMMARIZE keyword 85
- summary output 147
  - general information 147
- support routines
  - verifying 50
- suspend commands
  - RESUME 100
- SUSPEND mode 64
  - commands 98
- suspend mode commands
  - CMS 98
  - CP 99
  - RESTART 99
- syntax
  - ALTEXI03 SAMPEXEC 128
  - BKREXI03 SAMPEXEC 128
  - job 67, 73
- syntax diagrams
  - how to read xi

## T

- TAP1\_Virtual\_Address 39
- TAP2\_Virtual\_Address 39
- TAPCMD TAPEMNT command 32
- tape 11
  - devices 17
- tape handling exit variables
  - configuring 39
- tape lists 17, 64
- tape management interface
  - exits 137
- tape management services 29
- tape management system interface 9
- Tape Manager for z/VM 9, 17, 27, 29, 31, 32, 36, 49, 112
  - and RMM mode 50, 51
  - configuring 48
  - interaction exits 142
  - resources 49
  - settings 42
- tape media
  - tracking 57
- tape media management functions 36, 42
- Tape\_Delay\_Interval 39
- Tape\_Enable\_EOF1HDR1 39
- Tape\_Exit\_Context 39, 42
- TAPE\_EXIT1\_NAME 73
- TAPE\_EXIT1\_PARM 73
- TAPE\_EXIT1\_PLEN 73
- TAPE\_EXIT2\_NAME 73
- TAPE\_EXIT2\_PARM 73
- TAPE\_EXIT2\_PLEN 73
- Tape\_Handled\_Via\_EUM 42, 50
- Tape\_Operator 39
- Tape\_Request\_Method 39

- Tape\_Retain\_After\_EOJ 39
- Tape\_Times\_To\_Poll 39
- tapes
  - twin 11, 39
- Template\_MDISK\_Buffer\_Pages 38
- templates
  - job 9
  - sample 67
  - structure 67
- tracking
  - DASD extent 56
  - minidisk 56
  - tape media 57
- trademarks 257
- twin tapes 24, 39

## U

- UDPE 131
  - return codes 134
- UDPE (user data processing exit) 132
- unformatted CMS minidisks
  - and automatic format 39
- user ability to restore data
  - controlling 17
- user accounts 22
  - BKRADMIN 22
  - BKRBKUP 23
  - BKRCATLG 23
  - BKRWRKxx 24
- user classes
  - identifying 34, 36
- user data processing exit (UDPE) 132
- USERCAT 56

## V

- variable substitutions
  - \$\$ADMIN\$\$ 93
  - \$\$CATALOG\$\$ 93
  - \$\$DATE\$\$ 93
  - \$\$INST jobname\$\$ 93
  - \$\$INST\$\$ 93
  - \$\$MASTER\$\$ 93
  - \$\$SUBMITTER\$\$ 93
  - \$\$TIME\$\$ 93
  - \$\$UPDATE\$\$ 93
- variables 93
  - job template 73
  - tape handling exit 39
- verifying
  - server privileges 22
- virtual tape systems (VTS) 18
- VM Tools Library web page xiii
- VMSYS: 25
- VMSYSU: 25

## W

- what's new in Backup and Restore Manager 1
- wildcard characters
  - INCLUDE and EXCLUDE selection records 89
- worker service virtual machine 9
  - adding 60
  - removing 61
  - settings 37

- worker service virtual machine (*continued*)
  - starting 60
  - status of 60
- worker service virtual machines 8, 22, 39
  - description 8
  - managing 59
  - reserved 45
- worker virtual machines
  - privileges 24
- Worker\_Idle\_Timeout 37, 59
- Worker\_Pool\_Link\_Address 37
- Worker\_Pool\_Minidisk\_Mode 37
- Worker\_Stage\_Type 37
- Workers\_Reserved\_For\_Backup 45
- Workers\_Reserved\_For\_Restore 45
- WRKPROF SAMPEXEC 27, 60
  - modifying 32

## **X**

XAUTOLOG 47, 58

## **Z**

z/VM guest system 12

ZVM51 TEMPSAMP 67

ZVM62 TEMPSAMP 122





Product Number: 5697-J06

Printed in USA

SC18-9346-15

