

BrightStor™ VM:Backup®

Operator's Guide

33B



Computer Associates™

SP 01
G0212

Symantec 2025
Veeam v. Symantec
IPR2013-00150

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Changes in BrightStor VM:Backup

BrightStor VM:Backup Release 3.3B, Gen Level 0212, is released as part of the CA-VM:Manager Release 2.8, Service Pack 01.

For a complete listing of all changes in CA-VM:Manager Service Pack 01, see the *Release Summary* document.

Documentation Changes

This section lists the documentation changes specific to BrightStor VM:Backup. Technical changes to existing information in this guide are identified by vertical bars in the outer page margins.

- ▶ References to the product name now contain the Computer Associates brand name. This change is reflected in product initialization messages, the copyright screen, and the initial screens for the end user, system operator, and system administrator. This change is reflected throughout the product documentation set, and in some messages.
- ▶ To address Computer Associates License Management Program (LMP) key support, all references to the CPUID have been removed from the product messages, and new messages have been added that pertain to CA LMP keys. Additionally, CPUID references have been removed from the product documentation set.
- ▶ The VMBSAR utility has been removed from BrightStor VM:Backup. For more information, see the *BrightStor VM:Backup System Programmer's Reference*.

About This Book

This book was written for all operators who are responsible for performing the following tasks:

- ▶ Starting, holding, releasing, and canceling jobs
- ▶ Mounting tapes and disks for jobs
- ▶ Monitoring job status
- ▶ Looking at or responding to BrightStor VM:Backup requests
- ▶ Suspending and resuming BrightStor VM:Backup job processing
- ▶ Viewing or printing out the volumes in resource pools
- ▶ Ending BrightStor VM:Backup

The book assumes you are familiar with VM, CMS, BrightStor VM:Backup, and the tape management system in your data center. It also assumes you know the conventions for naming CMS files, Byte File System (BFS) files, Shared File System (SFS) directories, and BFS directories. If you are not familiar with these, you may need help from someone who is.

This book introduces and describes BrightStor VM:Backup features that operators will find helpful for their own backup-related tasks. The information in this book is presented by task. Chapter 4 explains how to use BrightStor VM:Backup screens to perform operator functions. Chapter 5 lists and describes line-mode commands you can use to perform operator functions.

Example Conventions

Examples are shown throughout this book to illustrate when to use commands, how to use options, or how the system responds to your entries. The examples are illustrations only and may differ slightly from what appears on your screen.

Bold characters represent user entries. If the entry is a command, it appears in lowercase letters even though you can enter commands in either upper or lower case. A command you enter looks like this:

```
vmbackup cancel 10
```

Uppercase, nonbold characters represent system responses or prompts. A system response looks like this:

```
RESTORE REQUEST 00000010 HAS BEEN CANCELED.
```

Naming Conventions for Shared File System Objects

The Shared File System supports two types of file spaces, directories, and files. For clarity, this book refers to Shared File System objects in the following way:

Table 1. Naming Conventions for Shared File System Objects

Object	Description
BFS file	Byte File System (BFS) file
SFS directory	Directory that contains CMS files, authorizations, and aliases
BFS directory	Directory that contains BFS files, links, and other POSIX objects
SFS file space	File space that contains SFS directories, CMS files, authorizations, and aliases
BFS file space	File space that contains BFS directories, BFS files, links, and other POSIX objects

Related Documentation

The books described below make up the BrightStor VM:Backup library. Each book addresses a different type of user, depending on the tasks the user must perform. The BrightStor VM:Backup library includes the following:

- ▶ *BrightStor VM:Backup User's Guide*. Presents concepts and procedures for tasks that end users typically perform. It also includes end user commands and the format for those commands.
- ▶ *BrightStor VM:Backup Operator's Guide*. Presents concepts and procedures relevant to the day-to-day operation of BrightStor VM:Backup. This book also includes operator commands and the format for those commands.
- ▶ *BrightStor VM:Backup System Administrator's Guide*. Presents concepts and procedures for tasks required to customize BrightStor VM:Backup to fit site-specific requirements through full screens.
- ▶ *BrightStor VM:Backup System Programmer's Reference*. Explains BrightStor VM:Backup and its administration and contains reference information for performing BrightStor VM:Backup programming tasks, customizing BrightStor VM:Backup to fit site-specific requirements, and performing any required administrative operations.
- ▶ *BrightStor VM:Backup Template Programming Interface Guide*. Describes the BrightStor VM:Backup Template Programming Interface (TPI) and explains how to create and edit TPI job template, exception, and exclusion files for BrightStor VM:Backup jobs.

- ▶ *BrightStor VM:Backup Messages and Codes*. Lists messages and abend codes produced by BrightStor VM:Backup, the possible cause of the situation that generated the message, and any actions to take in response to the situation. The book also has a cross-reference that lists the first 60 characters of each BrightStor VM:Backup message in alphabetical order.

Other Computer Associates product manuals that are referenced in this book and to which you may want to refer include:

- ▶ *BrightStor VM:Archiver Operator's Guide*
- ▶ *BrightStor VM:Archiver System Administrator's Guide*
- ▶ *Unicenter VM:Schedule User's Guide*
- ▶ *Unicenter VM:Schedule Operator's Guide*
- ▶ *BrightStor VM:Tape Operator's Guide*
- ▶ *BrightStor VM:Tape Librarian's Guide*

Product References

Unless otherwise specified, the Computer Associates software product name BrightStor VM:Archiver in this book refers to BrightStor VM:Archiver Release 2.0 or later.

About BrightStor VM:Backup

BrightStor VM:Backup is a full-screen data backup and restore system for VM. During a backup, BrightStor VM:Backup writes data stored on minidisks or in file spaces to tape as a safeguard against errors or the destruction of data. The BrightStor VM:Backup system administrator controls what data is backed up, how the data is processed, and how frequently backup jobs are run.

To facilitate an operator's job, BrightStor VM:Backup:

- ▶ Provides screens from which you can submit backup jobs, monitor the status of jobs, hold and release jobs, cancel jobs, receive and respond to BrightStor VM:Backup messages, and temporarily suspend or end job processing
- ▶ Automatically selects the tapes needed for backup jobs and tells you which volumes to mount; for improved backup data protection, BrightStor VM:Backup also allows BrightStor VM:Tape to manage and select tapes for BrightStor VM:Backup jobs.
- ▶ Allows you to list the tapes required to fulfill a restore request so that you can have the volumes on hand before the job starts
- ▶ Automatically recovers from temporary or correctable tape I/O errors
- ▶ Restarts jobs automatically after permanent tape I/O errors
- ▶ Backs up data to DASDtape and to physical reels and cartridges
- ▶ Creates copies of backup tapes for offsite disaster recovery
- ▶ Allows users to select files, minidisks, and directories to restore from a full-screen list, without operator assistance
- ▶ Optionally holds restore requests submitted by users until you are ready to mount the required tapes

As an operator, your userid is authorized automatically to perform user functions as well as operator functions. User authorization allows you to submit requests to BrightStor VM:Backup to restore data backed up for your own userid. End user activities include:

- ▶ Restoring the most recently backed-up versions of your files, minidisks, and directories
- ▶ Specifying selection criteria to restore earlier backup versions of your files or to restore a group of files with similar names
- ▶ Reviewing the status of your restore requests, and canceling a request if you change your mind about submitting it

- ▶ Viewing and responding to BrightStor VM:Backup messages, for example, requests to detach your minidisk so that data can be restored
- ▶ Setting an expertise level according to your familiarity with BrightStor VM:Backup restore functions

Refer to the *BrightStor VM:Backup User's Guide* for a complete description of these activities.

Authorizations

You must be authorized as an operator in the BrightStor VM:Backup system to perform the tasks and use the commands described in this book. If you have Operator authorization, you are authorized automatically to perform operator functions and user restore functions.

The BrightStor VM:Backup system administrator provides your userid with Operator authorization and controls the types of messages you receive and to which you can respond. The system administrator can authorize you (or any userid) to receive and respond to any or all of the following three types of messages:

Message Type	Definition
System	Error and informational messages about BrightStor VM:Backup processing
Tape	Tape-related requests
Disk	Disk mount requests

Any userid authorized to receive a specific type of message receives all messages of that type that are issued. If a reply is required, any authorized userid can enter a response. If no userids are authorized to receive a certain type of message, those messages are routed to the operator console.

If your system uses BrightStor VM:Tape, tape mount requests are not displayed on the Respond to BrightStor VM:Backup Requests screen. You must have Tape Operator authorization in the VMTAPE CONFIG file (on the TAPEOPER configuration file record) to receive and respond to tape-related messages.

Contact the BrightStor VM:Backup system administrator if you experience difficulties relating to authorizations.

Hardware Requirements

You can access BrightStor VM:Backup through screens or line-mode commands. If you have a display or full-screen (3270-type) terminal with a minimum of 24 lines, you can access BrightStor VM:Backup through both screens and line-mode commands. If you have a line-mode terminal, you can access BrightStor VM:Backup through line-mode commands only.

Note: You cannot use a line-mode terminal to restore files backed up from SFS or BFS directories or to restore portions of a minidisk backed up in physical format. You must have a full-screen terminal to perform these restore functions.

Accessing and Leaving BrightStor VM:Backup

There are two ways to use BrightStor VM:Backup: through screens and menus, and through line-mode commands.

To access BrightStor VM:Backup through screens, from CMS enter **vmbackup**. BrightStor VM:Backup displays the Operator Main Menu.

To exit the BrightStor VM:Backup screens and return to CMS, press PF3 (End) until you reach the Operator Main Menu, then press PF3 (End) once more.

To access BrightStor VM:Backup through a line-mode command, from CMS type **vmbackup** and a space followed by a BrightStor VM:Backup command, then press ENTER.

For more information about using BrightStor VM:Backup screens, refer to *Moving Through Screens and Menus* below. Refer to *Using Commands* on page 5 for additional information about using BrightStor VM:Backup commands.

Note: VMBACKUP is the default name of the BrightStor VM:Backup service virtual machine. If your BrightStor VM:Backup service virtual machine has a different userid, use that name instead.

Moving Through Screens and Menus

You can move through BrightStor VM:Backup screens and menus by typing entries and using program function (PF) keys. This section explains how to move through screens.

Typing Entries

To enter information in fields on the screens, begin typing your entries anywhere in the space provided. Use the tab key to move between fields. Follow the instructions displayed on the screens.

Using PF Keys

To perform some tasks on the screens, you must use the PF keys instead of entering commands or filling in fields. The PF keys available for each screen are listed at the bottom of the specific screen.

PF Key Help

To view the PF key help screens, press PF1 (Help) from the Operator Main Menu. A description of PF key functions follows the explanation of the main menu options. Use PF7 (Backward) and PF8 (Forward) to move through the help screens. To return to the Operator Main Menu, press PF3 (End).

Help With Screens and Menus

You can get information about any currently displayed menu or screen by pressing PF1 (Help). This PF key displays a help screen that describes what you can do from the menu or screen.

When you are finished reading the help screen, press PF3 (End) to return to the original screen.

Using Commands

This section explains how to access BrightStor VM:Backup through line-mode commands.

Entering CMS and CP Commands From the BrightStor VM:Backup Service Virtual Machine

When you enter CMS and CP commands on the BrightStor VM:Backup console, include the prefix `cms` or `#cp`, respectively. These prefixes distinguish these commands from BrightStor VM:Backup commands. For example, to run BrightStor VM:Backup in disconnected mode, enter:

```
#cp disc
```

The `#cp` prefix tells BrightStor VM:Backup to execute the CP DISCONN command. If you do not enter `#cp`, BrightStor VM:Backup interprets `disc` as the BrightStor VM:Backup DISCARD command.

Entering BrightStor VM:Backup Commands From CMS

To enter BrightStor VM:Backup commands from CMS, type the name of the BrightStor VM:Backup service virtual machine, a space, and the command, then press ENTER. For example, to issue the SUSPEND command from CMS, enter:

```
vmbackup suspend
```

All responses to commands are edited according to your virtual machine's current EMSG setting.

Entering BrightStor VM:Backup Commands From CP

If issuing BrightStor VM:Backup commands from a VM operator userid running in CP mode, prefix the VMBACKUP command with the CP SMSG command. For example, to enter the SUSPEND command from a VM operator userid running in CP mode, enter:

```
cp smsg vmbackup suspend
```

Caution: Do not enter commands or use CP SMSG with commands that result in full-screen prompting, such as the RESTORE command.

Entering BrightStor VM:Backup Commands From the BrightStor VM:Backup Service Virtual Machine

You can enter commands on the BrightStor VM:Backup console if your BrightStor VM:Backup service virtual machine is running in connected mode. When you enter a command on the BrightStor VM:Backup console, enter only the command; do *not* prefix the command with the name of the BrightStor VM:Backup service virtual machine. For example, to issue the END command, enter **end**; do not enter **vmbackup end**.

When you enter commands at the BrightStor VM:Backup console, you must enter each command on a separate command line. You cannot enter two commands, separated by the pound sign (#) command delimiter, on a single command line; BrightStor VM:Backup does not support the # command delimiter.

Caution: Do not enter commands or use CP SMSG with commands that result in full-screen prompting, such as the RESTORE command.

Entering BrightStor VM:Backup, CMS, and CP Commands From BrightStor VM:Backup Screens

You can enter BrightStor VM:Backup, CMS, and CP commands from the command line on BrightStor VM:Backup screens. BrightStor VM:Backup processes commands entered in the Command column before it reads the command line.

Entering BrightStor VM:Backup Commands

You must use the CP SMSG command to enter any BrightStor VM:Backup command from the command line of a BrightStor VM:Backup screen. For example, to temporarily halt BrightStor VM:Backup job processing from the command line of a BrightStor VM:Backup screen, enter:

```
smsg vmbackup suspend
```

Entering CP and CMS Commands

When you enter CMS or CP commands, you do not have to prefix them with **cms** or **cp**, respectively. If the entered command is not valid for that screen, BrightStor VM:Backup passes the command to CMS for execution. Standard CMS search order rules apply.

Help With Commands

You can get help on BrightStor VM:Backup commands through the CMS HELP facility. To see an overview of BrightStor VM:Backup help and a list of commands for which help is available, enter **help vmbackup** from CMS.

To see the help screen for one of the commands listed in the overview, move the cursor to that command and press PF1 (Help). When you are finished reading the help screen,

press PF3 (End) to return to the help overview screen, and press PF3 (End) again to exit the CMS HELP facility.

You can bypass the help overview screen and get help on a command directly by entering **help vmbackup** and the name of the BrightStor VM:Backup command for which you need help. For example, to see the help screen on the BrightStor VM:Backup CANCEL command, enter **help vmbackup cancel** from CMS.

For more information about using the CMS HELP facility, refer to the CMS user's guide for your system.

Pattern Matching

Pattern matching allows you to easily specify more than one entity at a time when those entities have similar names. With pattern matching, you can specify all entities that begin with, contain, or end with particular characters. Characters you can use for pattern matching are listed below.

This character	Matches the following
*	Any number of characters from zero on up
%	One character only

Examples

- ▶ To specify all files whose filename ends in SALES, regardless of filetype, enter:

```
*sales*
```

- ▶ To specify any file whose 5-character filename ends in DEC and whose filetype contains the character string REP, enter:

```
%%dec *rep*
```

Help With Messages

For information about system messages you receive, you can either use the CMS HELP facility or refer to *BrightStor VM:Backup Messages and Codes*. Both explain the possible causes of these messages and tell you how to respond to them.

To use the CMS HELP facility for a BrightStor VM:Backup message, type **help**, a space, the 3-character product identifier (**vmb**), the message number, and the severity code, then press ENTER. Do not type the 3-letter code displayed after the product identifier; this

code is the routine or module that issued the message. For example, to get help on the message VMBCOM1091E, enter **help vmb1091e** from CMS.

When you have finished reading the message help, press PF3 (End) to exit the CMS HELP facility. For more information about using this facility, refer to the CMS user's guide for your system.

BrightStor VM:Backup Concepts

This chapter briefly discusses the following BrightStor VM:Backup concepts:

- ▶ BrightStor VM:Backup jobs
- ▶ Wait times for messages
- ▶ Tape management
- ▶ Restart recovery

BrightStor VM:Backup Jobs

The BrightStor VM:Backup system administrator creates and updates *job template files* that are the basis for the jobs you submit. There are job template files for the following jobs:

- ▶ Backup
- ▶ Restore
- ▶ Merge/purge/copy (MPC)
- ▶ Reinitialization (REINIT)
- ▶ AUTOCAT

Backup Jobs

Backup jobs copy data on a minidisk or in a file space to tape. BrightStor VM:Backup can perform two types of backups, full and incremental. *Full backups* copy all of the data on a minidisk or in a file space to tape. *Incremental backups* copy to tape only data that has changed since the previous backup of the minidisk or file space.

You can submit backup jobs that are based on job template file using the Submit System Backups screen or the SUBMIT command. Backup job template files specify which minidisks and file spaces BrightStor VM:Backup is to back up and how BrightStor VM:Backup is to process them.

Note: Unless otherwise specified, references in this book to backup jobs include those submitted by BrightStor VM:Backup and by other applications, such as BrightStor VM:Archiver or BrightStor VM:Migrate.

Restore Jobs

Restore jobs write backed-up data to a virtual reader, minidisk, or SFS entity (file pool, user storage group, SFS file space, BFS file space, SFS directory, or BFS directory). BrightStor VM:Backup system administrators can restore data backed up for individual users or from entire DASD volumes and file pools. BrightStor VM:Backup users can restore data backed up from minidisks or SFS directories they own, and they can restore BFS files backed up from BFS file spaces they own.

You can submit restore jobs (including SFS and BFS restore jobs) that are based on job template files using the SUBMIT command. Restore job template files specify which minidisks or portions of minidisks BrightStor VM:Backup is to restore and how BrightStor VM:Backup is to process them.

Note: Unless otherwise specified, references in this book to restore jobs include those submitted by BrightStor VM:Backup and by other applications, such as BrightStor VM:Archiver or BrightStor VM:Migrate.

MPC Jobs

Merge/purge/copy (MPC) jobs copy specified domains, CMS files, SFS files, and BFS files from named input tapes to output tapes. Only authorized clients, such as BrightStor VM:Archiver or BrightStor VM:Migrate, can submit MPC jobs.

REINIT Jobs

REINIT jobs reinitialize input tapes that have been processed by MPC jobs. Only authorized clients, such as BrightStor VM:Archiver or BrightStor VM:Migrate, can submit REINIT jobs.

AUTOCAT Jobs

AUTOCAT jobs condense and discard BrightStor VM:Backup catalogs. The BrightStor VM:Backup system administrator maintains one or more AUTOCAT job template files that specify job processing options. The system administrator can configure BrightStor VM:Backup so that an AUTOCAT job runs automatically every day at a predefined time, or you can submit AUTOCAT jobs manually using the SUBMIT command.

Job Processing

Normally, BrightStor VM:Backup processes jobs in the order they enter the job queue. The system administrator determines the total number of jobs and the number of each type of job BrightStor VM:Backup can process concurrently.

You can change the order in which BrightStor VM:Backup processes particular jobs, and you can have BrightStor VM:Backup restrict processing to just one job. To change the order in which BrightStor VM:Backup processes jobs, you can:

- ▶ Make a particular job a priority job using the PRIORITY option on the SUBMIT command or the JOBOPTIONS TPI record. A priority job is submitted at the top of the job queue, after any other priority jobs already in the queue.
- ▶ Change the order of the jobs in the job queue using the ORDER command.

To have BrightStor VM:Backup restrict processing to just one job, you can make that job exclusive using the EXCLUSIVE option on the SUBMIT command. BrightStor VM:Backup will not start an exclusive job until previous jobs have completed and will not start other jobs until the exclusive job completes.

Job Scheduling

An AUTOCAT job can run automatically if the system administrator configures it to do so. With a scheduling system such as Unicenter VM:Schedule, you can schedule other jobs to run at preset times as well.

The system administrator also establishes whether BrightStor VM:Backup should process user restore requests immediately or hold them for execution during a period of low data center activity. As an operator, you can tell BrightStor VM:Backup when to start processing requests that were put on hold.

Wait Times for Messages

The system administrator specifies how long BrightStor VM:Backup is to wait for you to respond to a message, such as a request to mount a tape, and how frequently BrightStor VM:Backup should issue a reminder message. If you do not respond within the time allowed, the job is put on hold.

Tape Management

The system administrator determines how a backup job is to be handled when an insufficient number of tapes has been allocated. If you do not use BrightStor VM:Tape, BrightStor VM:Backup may ask you to provide the volser of an available tape so that the job can continue.

Restart Recovery

If an abnormal system termination (abend) occurs (including external terminations), when the system is reinitialized the BrightStor VM:Backup restart recovery facility automatically restarts any jobs (including those jobs that were started by BrightStor VM:Archiver and BrightStor VM:Migrate) that were interrupted.

If a job is interrupted because of a permanent tape I/O error, a job rollback occurs, and BrightStor VM:Backup immediately restarts the job automatically.

If a job encounters a recoverable error (other than a permanent I/O error) or a procedural error, BrightStor VM:Backup does *not* restart the job but instead places the job on hold. A BrightStor VM:Backup operator or system administrator must restart the job later with the RELEASE command. For example, BrightStor VM:Backup will not automatically restart a job that failed because an operator ignored a tape mount request.

Unless the system administrator has specified otherwise, BrightStor VM:Backup uses the CHECKDISK minidisk to collect checkpoint data during backup and restore job processing. For backup jobs, BrightStor VM:Backup uses checkpoint data to restart interrupted backup jobs with the last completed domain (minidisk, file space, or directory) on the last completed tape volume for each tape stream. For restore jobs, BrightStor VM:Backup uses checkpoint data to restart interrupted restore jobs with the last completed domain.

For either type of job, you are asked to remount some volumes so that BrightStor VM:Backup can accurately reposition the tapes for restarting. BrightStor VM:Backup restarts from the beginning those domains that were not completely restored when the job was interrupted. When restarted, all jobs continue as though they were never interrupted.

Using Tape and DASD Resources

This chapter:

- ▶ Explains types of backup media
- ▶ Describes tape streams, tape copies, and resource pools
- ▶ Tells you how to handle tape and disk mount requests

Types of Backup Media

BrightStor VM:Backup backs up data from minidisks and file spaces to DASD, reels, or cartridges. BrightStor VM:Backup writes all backups as standard label data sets. It also verifies the volser and tape expiration date to prevent an incorrect tape from being used or to protect tapes from being overwritten inadvertently.

If you use BrightStor VM:Tape, BrightStor VM:Backup will deny the mount request for any tape selected by BrightStor VM:Tape that is part of an unexpired BrightStor VM:Backup catalog or owned by BrightStor VM:Archiver or BrightStor VM:Migrate.

Physical Tapes

As a job executes, BrightStor VM:Backup issues mount requests that state explicitly whether a reel, cartridge, enhanced capacity cartridge, or high performance cartridge is required.

Backup Jobs

For backup jobs, BrightStor VM:Backup handles tapes as follows:

- ▶ BrightStor VM:Backup (or BrightStor VM:Tape, if BrightStor VM:Backup is interfaced with BrightStor VM:Tape) selects the tapes to be mounted. If there are not enough tapes available for a job, and BrightStor VM:Backup is not interfaced with BrightStor VM:Tape, you may be asked to provide the volser of a usable tape.
- ▶ If the BrightStor VM:Tape interface is enabled, and there are not enough available tapes, the backup job is placed on hold.

Restore Jobs

For restore jobs, BrightStor VM:Backup performs the following tasks in this order:

1. Identifies the files to be restored
2. Locates the volsers of the tapes containing those files
3. Issues a request to have the tapes mounted

DASDtapes

BrightStor VM:Backup has complete control over the management of DASDtapes. *DASDtapes* are the CMS files created when data is backed up to disk instead of to physical media. BrightStor VM:Backup restores data from DASDtape without operator intervention.

During a backup, BrightStor VM:Backup automatically selects a tape from expired or unused DASDtape volsers. If all available volsers have been used, BrightStor VM:Backup either asks you to provide the volser of the next DASDtape to be used in the job, or BrightStor VM:Backup places the backup job on hold, depending on how the system administrator has set up tape handling at your data center.

Tape Streams

BrightStor VM:Backup can write data to multiple tape drives in a single backup by dividing the minidisks and file spaces being backed up between two or more tape streams. The number of tape streams used in a backup is determined by the BrightStor VM:Backup system administrator on the backup job template file or by the STREAMS option on the BrightStor VM:Backup SUBMIT command. BrightStor VM:Backup can manage a maximum of 15 tape streams at a time.

Tape Copies

Tape copies are duplicate tapes created at the same time on different drives. They are useful for offsite or vault storage, or when your system is recovering from tape I/O problems. Up to four copies can be created in addition to the primary (or first) tape.

The data written to each tape copy is identical. If one tape is longer than the other, the extra footage on the longer tape is not used.

The only differences between the tapes are the volser in the VOL1 label, certain control information in the header and trailer labels, and optionally, different expiration dates and data set names. Media types (that is, reels, cartridges, or enhanced-capacity cartridges) can also differ among tape copies. During a restore, any copy can be used in place of the primary tape or any corresponding copy.

Resource Pools

A *resource pool* is a collection of tapes that BrightStor VM:Backup can use during backup job processing. If you do not use BrightStor VM:Tape, all tapes used by BrightStor VM:Backup must belong to resource pools. The BrightStor VM:Backup system administrator must create all resource pools.

The tapes included in a particular resource pool must have the same physical characteristics. As each tape is used, BrightStor VM:Backup automatically continues the backup with the next volume in the pool. When the resource pool is empty (that is, all the volumes defined to it have been used), BrightStor VM:Backup either asks you to provide the volser of an available tape to continue processing or puts the job on hold.

Superpools

A *superpool* is a collection of DASDtape resource pools that are referenced and used as if they were a single entity. During a backup, if a DASDtape minidisk that is part of the referenced superpool runs out of space, or if the last volser in a DASDtape resource pool is used, BrightStor VM:Backup uses the next pool defined in the superpool to continue the backup. Only when the final resource pool in the superpool is used does BrightStor VM:Backup either ask you to provide the volser of an available volume or puts the job on hold; the action that BrightStor VM:Backup takes at this point is determined by how the system administrator has configured your system.

BrightStor VM:Tape Resource Pool Management

The BrightStor VM:Backup-BrightStor VM:Tape interface provides a single point of reference for defining the tapes BrightStor VM:Backup is to use for backup jobs. Although BrightStor VM:Backup continues to manage resource pools for DASDtapes, BrightStor VM:Tape assumes complete control over the maintenance of resource pools for physical media.

Depending on the options specified when the BrightStor VM:Tape resource pools are created, BrightStor VM:Tape either selects the volumes to be used in a backup (AUTOPICK) or the BrightStor VM:Tape operator chooses an available scratch volume. In either case, the volume can be drawn from a named scratch pool or from scratch volumes found in the BrightStor VM:Tape Tape Management Catalog (TMC).

An advantage of using BrightStor VM:Tape is that BrightStor VM:Tape handles all tape selection; you are not asked to provide the volser of an available tape.

Protecting Client Tapes

BrightStor VM:Backup manages tapes belonging to authorized clients such as BrightStor VM:Archiver and BrightStor VM:Migrate in the same manner that it manages tapes for its own backup and restore jobs. This includes tapes that were created with BrightStor VM:Archiver for 370, BrightStor VM:Archiver Release 1.0, and later releases of BrightStor VM:Archiver. For every resource pool defined to the client, a corresponding resource pool must be defined to BrightStor VM:Backup. For more information about defining BrightStor VM:Archiver or BrightStor VM:Migrate resource pools, see the *BrightStor*

VM:Archiver System Administrator's Guide or the *BrightStor VM:Migrate System Administrator's Guide*, respectively.

If BrightStor VM:Backup is interfaced with BrightStor VM:Tape, BrightStor VM:Tape manages the tapes for the client.

To protect BrightStor VM:Archiver volumes from being used by BrightStor VM:Backup (or other non-BrightStor VM:Archiver jobs), all BrightStor VM:Archiver tapes have an expiration date of PERM, which means that they never expire, and are owned by the BrightStor VM:Archiver service virtual machine, which means that they cannot be used by BrightStor VM:Backup or any other application.

Handling Tape Mount Requests

BrightStor VM:Backup (or BrightStor VM:Tape if it is used) issues tape mount requests as it processes jobs. The requests are sent to authorized operator consoles, to the BrightStor VM:Backup console, and to the job detail report.

If your userid has been authorized to receive and respond to tape-related messages, use the Respond to BrightStor VM:Backup Requests screen to view the mount requests and enter replies to BrightStor VM:Backup. For more information about this screen, refer to *Responding to BrightStor VM:Backup Requests* on page 36.

If your system uses BrightStor VM:Tape, tape mount requests are not displayed on the Respond to BrightStor VM:Backup Requests screen. Your userid must have tape operator authorization on the TAPEOPER configuration file record in the VMTAPE CONFIG file to receive and respond to tape-related messages.

If your userid has been authorized to perform operator functions (such as starting system backups) but has not been authorized to respond to tape-related messages, you can view outstanding tape mount requests by using the REVIEW command on the Manage System Activity screen. This function does not allow you to enter replies to BrightStor VM:Backup. For more information about the REVIEW command, refer to *Viewing Outstanding Messages From BrightStor VM:Backup* on page 29.

Request Format

BrightStor VM:Backup issues message 623I to ask you to mount a tape:

```
MOUNT medium volser AT vaddr (DENSITY densityname, RING [ IN | OUT ] ) [WITHIN minutes MINUTES].
```

Definitions

medium

identifies the tape medium to mount. Refer to the Media Type column in Table 2 below for values.

volser

identifies the volume serial number of the tape to mount.

vaddr

identifies the virtual address at which to mount the tape.

density

identifies the recording density of the input tape. Refer to the Density Names column in Table 2 below for values.

[IN | OUT]

indicates whether a write ring is required (IN) or not required (OUT).

minutes

indicates the time frame within which you must mount the tape. The [WITHIN *minutes* MINUTES] portion of the tape mount request appears only the first time BrightStor VM:Backup issues the request.

Tape Medium and Density

Table 2 lists density names for combinations of tape medium and recording format.

Note: Tapes written on 3590 devices must be read from 3590 devices; tapes written on 3490E devices must be read from 3490E devices. A cartridge written with data compaction must be read from a device that supports data compaction.

Table 2. *Density Names for Media Type and Recording Format Combinations*

Media Type	Recording Format	Density Name	Tape Drives
HPT (high performance 3590 cartridge)	128TRack	<u>HPTC</u> †	3590, using data compaction
	128TRack	HPTB	3590
ENH (enhanced capacity 3490E cartridge)	36TRack	ENHXF	3490E, using IDRC‡
	36TRack	ENH	3490E
	36TRack	EXF	3490E, using IDRC
CART (3480 or 3490 tape cartridge)	36TRack	E	3490E
	18TRack	XF	3480 or 3490, using IDRC
	18TRack	<u>38K</u>	3480 or 3490

† The default density name for each media type is underlined.

‡ Improved Data Recording Capability feature.

(continued)

Table 2. Density Names for Media Type and Recording Format Combinations (continued)

Media Type	Recording Format	Density Name	Tape Drives
	9TRack	6250	
<u>REEL</u> (tape reel, usually 3420)	9TRack	1600	Usually 3420
	9TRack	800	

† The default density name for each media type is underlined.

‡ Improved Data Recording Capability feature.

Changing Tape Streams Before Job Processing

The STREAMS option on the SUBMIT command lets you specify a different number of streams from the number listed in the job template file *before* you submit a backup job. For this job submission, the number you specify overrides the number displayed in the job template file. The job template file remains unchanged during processing. Use this option if a tape drive that you normally use is unavailable for a particular job, or if more drives become available for a job. For more information about the STREAMS option, refer to *SUBMIT Command* on page 62.

Reducing Tape Streams During Job Processing

You can restart a backup job and have it run with fewer streams than originally specified. Once a tape mount request for a stream has been satisfied, that stream will begin processing.

Note: You cannot use the STREAMS option on the SUBMIT command to change the number of streams *after* a job has been submitted.

You can restart a backup job with fewer streams if the job meets one of the following criteria:

- ▶ The operator places the job on hold any time after the first tape mount request for each stream has been satisfied.
- ▶ An I/O error occurs on one of the streams any time after the second tape for each stream has been successfully mounted. (If the I/O error occurs when the first tape of the stream is being written to, you must restart the job with the original number of streams.)

To restart a job and run it with fewer streams than originally specified, follow these steps:

1. Place the job on hold by using either the line-mode HOLD command or by typing **hold** next to the job name in the **Command** column on the Manage System Activity screen and pressing ENTER.
2. Release the job by using either the line-mode RELEASE command or by typing **release** next to the job name in the **Command** column on the Manage System Activity screen and pressing ENTER.
3. When BrightStor VM:Backup asks for tapes to be mounted for each stream, reply **wait** to the mount requests for the streams you no longer want to use.

If BrightStor VM:Backup is interfaced with BrightStor VM:Tape, BrightStor VM:Tape, not BrightStor VM:Backup, requests the tapes to be mounted. Ignore the mount requests for the streams you no longer want to use.

Note: The BrightStor VM:Backup job may be held if the mount request is ignored longer than the value on the REMINDER record in the VMTAPE CONFIG file. Ask the BrightStor VM:Tape system administrator to modify the value accordingly to allow a job to restart with fewer streams.

4. When all the data has been backed up, the tapes have been unloaded, and there are no more mount requests for the active streams, satisfy the outstanding mount requests for the inactive streams you ignored by mounting tapes for those streams. BrightStor VM:Backup writes trailer labels to the ends of the tapes to close the streams, and the job ends.

Example

You are running a backup job with four streams. After the second tape of each stream has been mounted, you receive an I/O error on one of the drives and BrightStor VM:Backup places the job on hold. Because you can no longer use one of the drives, you want to restart the job to run with three streams instead of four.

To reduce the number of streams, type **release** next to the job name in the **Command** column on the Manage System Activity screen and press ENTER. When BrightStor VM:Backup issues the four tape mount requests, reply **wait** to any one of them. BrightStor VM:Backup then begins backing up data (including data originally intended for the fourth stream) to the three active streams.

When all the data has been backed up, mount a tape for the inactive stream. Once a tape is mounted on any available drive, BrightStor VM:Backup writes a trailer label to the tape to close the stream, and the job ends.

Tape Mounts for Backup Jobs

If you reject a tape mount request issued during a backup, BrightStor VM:Backup (or BrightStor VM:Tape) automatically allocates another tape and asks you to mount this tape instead. Refer to *Responding to BrightStor VM:Backup Requests* on page 36 for more information about reviewing and replying to BrightStor VM:Backup messages.

Requests to Remount Tapes

Under certain circumstances, BrightStor VM:Backup rewinds and unloads a tape and asks you to remount the previous tape. This is *not* an error. For example, if BrightStor VM:Backup encounters an invalid file while backing up a minidisk in CMS format, BrightStor VM:Backup must backspace to the point on the tape where the minidisk began and then back up the entire minidisk in physical format. If the backup of the minidisk started on a previous tape and your system is configured for reduced tape usage, the current tape is rewound and unloaded. You must remount the previous tape before BrightStor VM:Backup can continue the job.

Remember that BrightStor VM:Backup immediately returns the unloaded tape to the scratch pool; it may or may not reuse the tape in the job. Before sending tapes offsite, check the backup job detail report for the list of tapes actually used by the job.

Attaching the Wrong Device Type

If you attach the wrong device type during a backup (for example, you attached a reel device when a cartridge device was requested), BrightStor VM:Backup sends you an error message and then issues another tape mount request. You are given three chances to attach the correct device. If after three tries the correct device type is still not attached, BrightStor VM:Backup issues another error message and places the backup job on hold.

Note: This situation does not occur if you use BrightStor VM:Tape because BrightStor VM:Tape automatically attaches the drive for BrightStor VM:Backup.

Tape Mounts for Restore Jobs

If data was backed up to both DASD and physical tapes, BrightStor VM:Backup first tries to restore from the DASDtape, regardless of whether it is the primary copy. If all copies of the DASDtape are unavailable, reused, or damaged, BrightStor VM:Backup asks you to mount the physical tape.

If tape copies were created during a backup, the tape mount request includes the volsers of all tapes that have the same medium and density as the primary tape; you can use any copy in place of the primary tape. If you cannot mount any of the requested volsers (for example, if you are unable to locate any of the required reels), you can reject the mount request.

Tape Copy Search Order

When you reject a tape mount request, BrightStor VM:Backup searches for a copy that exists on a different medium. BrightStor VM:Backup starts the search with the highest density medium (refer to the Density Names column in Table 2, where densities are listed from highest to lowest, for search order). If a copy is available, BrightStor VM:Backup reissues the mount request. If no other copies exist, the job is put on hold. If you are unable to mount any of the requested tapes, you must cancel the restore job. Refer to *Responding to BrightStor VM:Backup Requests* on page 36 for information about reviewing and replying to BrightStor VM:Backup messages.

Attaching the Wrong Tape Medium

If you mount the wrong tape medium during a restore (for example, you mounted a reel when a cartridge was requested), BrightStor VM:Backup issues an informational message stating that the medium mounted was not what was expected, and then continues the job. This situation can occur when a tape copy created on a different device type is mounted in place of the primary tape.

Tape Mounts for MPC Jobs

If you reject a tape mount request for an output tape issued during an MPC job, BrightStor VM:Backup (or BrightStor VM:Tape) automatically allocates another tape and asks you to mount this tape instead.

When you reject a tape mount request for an input tape issued during an MPC job, BrightStor VM:Backup searches for a copy that exists on a different medium. BrightStor VM:Backup starts the search with the highest density medium (refer to the Density Names column in Table 2, where densities are listed from highest to lowest, for search order). If a copy is available, BrightStor VM:Backup reissues the mount request. If no other copies exist, the job is put on hold. If you are unable to mount any of the requested tapes, you must cancel the restore job.

Refer to *Responding to BrightStor VM:Backup Requests* on page 36 for information about reviewing and replying to BrightStor VM:Backup messages.

Tape Mounts for REINIT Jobs

If you reject a tape mount request during a REINIT job, BrightStor VM:Backup does not reinitialize the tape. BrightStor VM:Backup does expire the tape in the BrightStor VM:Backup resource pool or the BrightStor VM:Tape TMC. BrightStor VM:Backup continues the job with the next tape.

Physical Tape I/O Errors

BrightStor VM:Backup handles physical tape I/O errors differently for backup jobs and restore jobs.

Backup Jobs

If recoverable I/O errors occur while BrightStor VM:Backup is processing a job, BrightStor VM:Backup sends informational messages to describe the errors. To recover, BrightStor VM:Backup repositions the tape to the last full block written and continues with the job.

If permanent I/O errors are encountered during BrightStor VM:Backup backup jobs, BrightStor VM:Backup tries to recover instead of terminating or abnormally ending the job. When recovering from the error, if the backup of the domain being backed up begins on the previous tape, and your system is configured to reduce tape remounts, BrightStor VM:Backup asks you to mount the previous tape again, then continues the job from the last completed domain on the tape. Next, BrightStor VM:Backup asks you to mount a

new volser to continue the job, skipping the tape with the error. BrightStor VM:Backup reports all tape I/O errors to CP using service call SVC 76.

Restore Jobs

If a restore job encounters a permanent tape I/O error, a job rollback occurs, and BrightStor VM:Backup automatically resumes the job immediately.

If a restore job encounters an I/O error (other than a permanent I/O error) or a procedural error, BrightStor VM:Backup does *not* restart the restore job but instead places the job on hold. You must restart the job later with the RELEASE command. For example, BrightStor VM:Backup will not automatically restart a job that failed because you ignored a tape mount request.

If checkpoint data is not available, BrightStor VM:Backup restarts interrupted restore jobs from the beginning. If checkpoint data is available, BrightStor VM:Backup restarts interrupted restore jobs with the last completed domain. BrightStor VM:Backup restarts from the beginning those domains that were not completely restored when the job was interrupted.

MPC Jobs

If recoverable I/O errors occur on an MPC output tape while BrightStor VM:Backup is processing an MPC job, BrightStor VM:Backup sends informational messages to describe the errors. To recover, BrightStor VM:Backup repositions the tape to the last full block written and continues with the job.

If permanent I/O errors are encountered on an MPC output tape during an MPC job, BrightStor VM:Backup tries to recover instead of terminating or abnormally ending the job. When recovering from the error, if the domain being written to the output tape begins on the previous tape, and your system is configured to reduce tape remounts, BrightStor VM:Backup asks you to mount the previous tape again, then continues the job from the last completed domain on the tape. Next, BrightStor VM:Backup asks you to mount a new volser to continue the job, skipping the tape with the error. BrightStor VM:Backup reports all tape I/O errors to CP using service call SVC 76.

If permanent I/O errors are encountered on an MPC input tape, a job rollback occurs, and BrightStor VM:Backup automatically resumes the job.

If an I/O error (other than a permanent I/O error) or a procedural error occurs on an MPC input tape, BrightStor VM:Backup does *not* restart the job, but instead places the job on hold. You must restart the job later with the RELEASE command. For example, BrightStor VM:Backup will not automatically restart a job that failed because you ignored a tape mount request.

If checkpoint data is not available, BrightStor VM:Backup restarts the interrupted job from the beginning. If checkpoint data is available, BrightStor VM:Backup restarts the interrupted MPC job with the last domain completely copied to an output tape.

REINIT Jobs

If any I/O error or a procedural error occurs on a tape during a REINIT job, BrightStor VM:Backup does not reinitialize the tape. The tape is not expired in the BrightStor VM:Backup resource pool or the BrightStor VM:Tape TMC. BrightStor VM:Backup continues the job with the next tape.

DASDtape I/O Errors

If BrightStor VM:Backup encounters a DASDtape I/O error, BrightStor VM:Backup places the backup or restore job on hold.

Responding to Requests

If you are unable to mount a particular tape, you must put the job on hold and correct the problem, or reject the request. Refer to *Responding to BrightStor VM:Backup Requests* on page 36 for a description of the commands you can enter to respond to a tape-related request.

Handling Disk Mount Requests

BrightStor VM:Backup issues disk-related requests for backup jobs if the disk is offline and there is a minidisk in the directory defined on that volume. BrightStor VM:Backup issues disk mount requests for restore jobs if data is being restored to a volume not currently attached to the system. BrightStor VM:Backup sends the requests to authorized operator consoles, to the BrightStor VM:Backup console, and to the backup and restore job detail reports.

If your userid has been authorized to receive and respond to disk-related requests, use the Respond to BrightStor VM:Backup Requests screen to view the mount requests and enter replies to BrightStor VM:Backup. For more information about this screen, refer to *Responding to BrightStor VM:Backup Requests* on page 36.

If your userid has been authorized to perform operator functions (such as starting system backups) but has not been authorized to respond to disk-related messages, you can view outstanding disk mount requests by using the REVIEW command on the Manage System Activity screen. This function does not allow you to enter replies to BrightStor VM:Backup.

Request Format

BrightStor VM:Backup issues message 150R to ask you to mount a disk:

```
MOUNT DISK volser ON SYSTEM [WITHIN minutes MINUTES].
```

Definitions

volser

identifies the volser of the disk to mount.

minutes

specifies the time frame within which the disk must be mounted. The [WITHIN *minutes* MINUTES] portion of the disk mount request appears only the first time BrightStor VM:Backup issues the request.

Responding to Requests

If you are unable to mount a particular disk, you must reject the request, cancel the job, or correct the problem and ask BrightStor VM:Backup to retry the request. Refer to *Responding to BrightStor VM:Backup Requests* on page 36 for a description of the commands you can enter in response to a disk-related request.

Using the Operator Screens

When you enter the userid of the BrightStor VM:Backup service virtual machine (usually VMBACKUP) from CMS, BrightStor VM:Backup displays the Operator Main Menu, shown in Figure 1.

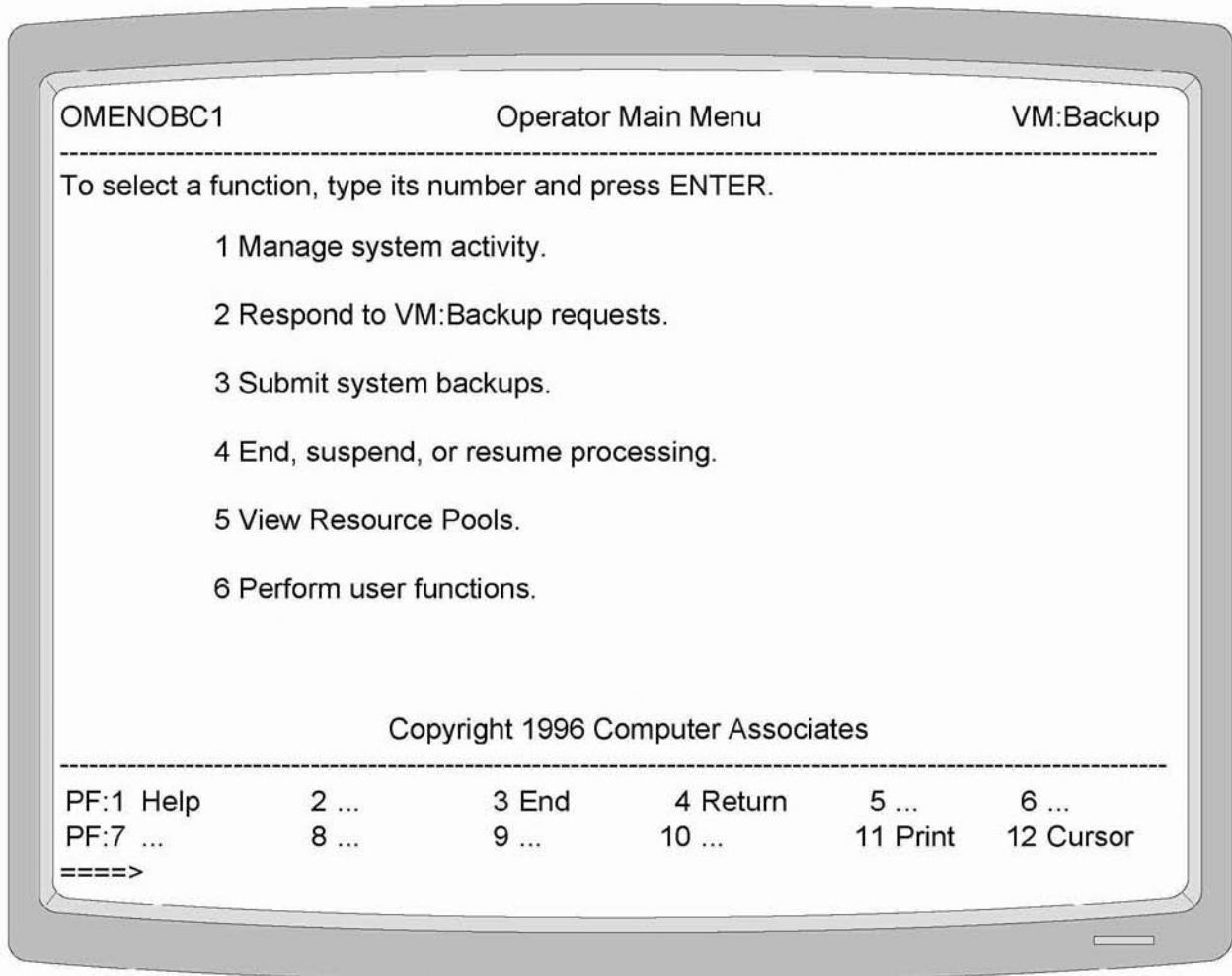


Figure 1. Operator Main Menu

Table 3 summarizes each option available through the Operator Main Menu. To select an option, enter the option number on the command line. Before processing any requests, BrightStor VM:Backup verifies that you are an authorized BrightStor VM:Backup operator.

Table 3. *Operator Main Menu Options*

Number	Options	Use To
1	Manage system activity	View the status of BrightStor VM:Backup jobs, put jobs on hold, cancel jobs, or see what resources are needed to complete a pending job
2	Respond to VM:Backup requests	See whether BrightStor VM:Backup has sent any messages to your userid, such as a request to mount a tape, and send replies to BrightStor VM:Backup
3	Submit system backups	Submit system backups to BrightStor VM:Backup for processing
4	End, suspend, or resume processing	Stop BrightStor VM:Backup, temporarily halt job processing, or restart job processing that had been suspended
5	Perform user functions	Perform end-user functions, such as restoring your own files, minidisks, and directories
6	View resource pools	Look at information about volumes contained in a resource pool

The following sections explain how to use the options on this menu.

Managing System Activity

Option 1, **Manage system activity**, on the Operator Main Menu lets you do the following:

- ▶ View outstanding messages from BrightStor VM:Backup
- ▶ Monitor the status of active and pending jobs
- ▶ List the tapes required to fulfill a restore request
- ▶ Cancel jobs, put jobs on hold, and release jobs that are on hold
- ▶ Reorder jobs in the job queue
- ▶ View certain job processing options used when the job was submitted

Enter **1** on the command line of the Operator Main Menu to select the **Manage system activity** option. BrightStor VM:Backup displays the Manage System Activity screen. This screen displays the following information about active and pending jobs:

- ▶ **Job Name.** This column lists the name of each job that is executing or waiting to be processed. End-user and administrative SFS restore requests are identified by RESTORE. Job template file-defined backup and restore jobs, including those submitted by an authorized client such as BrightStor VM:Archiver and BrightStor VM:Migrate, are identified by the job template file name.
- ▶ **Status.** This column indicates the job's status, as follows:

This status	Means the following
Compile	BrightStor VM:Backup is compiling the job template file for the job.
Ended	BrightStor VM:Backup has finished processing the job.
On hold	BrightStor VM:Backup is not currently processing the job. You must release the job so that BrightStor VM:Backup can process it.
Ordered	BrightStor VM:Backup has moved the job to the front of the job queue in response to the ORDER command.
Released	The job has been released from on hold status and BrightStor VM:Backup will process it as soon as possible.
Restarted	BrightStor VM:Backup has restarted the job.
Running	BrightStor VM:Backup is currently processing the job.
Waiting	The job is ready to run and is queued for processing. When a job is waiting, no further operator action is needed. However, resource availability might delay processing.

- ▶ **Job Type.** This column indicates whether a job is a system backup, restore, MPC, REINIT, or AUTOCAT job.
- ▶ **Time Started.** This column displays the time BrightStor VM:Backup began processing the job.

- **Domains.** This column indicates the following for each type of job:

Job	Column indicates:
Backup	Total number of domains included in the backup job and number of domains backed up so far.
Restore	Detailed information about the backup instances used in this job. In a chain of incremental backup jobs, a domain might be represented once or as many times as there are backup jobs in the chain, depending on whether the domain changed before the incremental backup. When BrightStor VM:Backup builds a restore job, it creates a restore selection list entry for each backup instance from which there is data to be restored from that domain. The list of all of these restore selection entries represents the actual number of times BrightStor VM:Backup must obtain access to a domain to restore the data contained in one backup job within the incremental backup chain. The Manage System Activity screen displays the cumulative total of all restore selection list entries for all domains involved in the job and how many have been processed up to this time. This provides an accurate representation of the job's progress.
MPC	Total number of input domains BrightStor VM:Backup is to copy and number of input domains processed so far.
REINIT	Total number of tapes BrightStor VM:Backup is to reinitialize and number of tapes reinitialized so far.

- **Job Origin or Job Options.** This column indicates either the userid that submitted the job or certain processing options with which the job was submitted. Option **e** means the job is an exclusive job, **p** means it is a priority job, and **b** means it is a job that backs up BrightStor VM:Backup. Toggle between these two columns by pressing PF5 ([Options] when the **Job Origin** column is displayed, [Origin] when the **Job Options** column is displayed). Refer to *SUBMIT Command* on page 62 for information on job processing options.
- **Jobid.** This column indicates the job identification number assigned to this job by BrightStor VM:Backup.

BrightStor VM:Backup displays the message **VM:Backup is Suspended** in the upper right corner of the Manage System Activity screen when BrightStor VM:Backup job processing is temporarily halted, either through the SUSPEND command or operator screens.

BrightStor VM:Backup automatically updates the information on this screen every 10 seconds. To remove outdated information, press PF2 (Refresh).

You can display additional information on some jobs by pressing PF6 (Contents). For backup jobs, BrightStor VM:Backup lists up to 10 file spaces or minidisks contained in the job. For restore jobs, BrightStor VM:Backup lists up to 10 paired sources and targets. This option allows you to distinguish between multiple end-user restore jobs listed on the screen.

Viewing Outstanding Messages From BrightStor VM:Backup

BrightStor VM:Backup may be waiting for a tape to be mounted or for a minidisk to be detached before continuing a job. You can use the REVIEW command on the Manage System Activity screen to see whether there are any outstanding messages from BrightStor VM:Backup for a job. Enter **review** in the **Command** column next to the backup or restore job whose messages you want to check.

When you enter the REVIEW command for a particular job, BrightStor VM:Backup displays the View Outstanding Requests screen. This screen lists any messages relating to the job you selected along with the time the message was issued and the userid to which it was sent.

BrightStor VM:Backup automatically updates the information on the View Outstanding Requests screen every 10 seconds. To remove outdated information, press PF2 (Refresh).

The REVIEW command allows you to view outstanding messages only. If a response is required, contact the user to whom BrightStor VM:Backup originally sent the message. If your userid is authorized to receive and respond to BrightStor VM:Backup messages, you can respond to BrightStor VM:Backup yourself through Option 2, **Respond to VM:Backup requests**, on the Operator Main Menu. Refer to *Responding to BrightStor VM:Backup Requests* on page 36 for more information about reviewing and responding to BrightStor VM:Backup requests.

Monitoring the Status of Active and Pending Jobs

Detailed status information is available for all jobs as they run. You can use the DETAIL command on the Manage System Activity screen to see this information for a currently running job. Enter **detail** in the **Command** column next to the job for which you want to see additional information. BrightStor VM:Backup displays one of the following screens depending on the type of job you selected:

- ▶ Backup Job Status Information
- ▶ Restore Job Status Information
- ▶ Merge/Purge/Copy Job Status Information
- ▶ Tape Reinit Status Information

Backup Job Status Information Screen

The top part of the Backup Job Status Information screen displays the job you selected and the status information from the Manage System Activity screen. The lower part of this screen provides the following detailed status:

- ▶ **Elapsed Time.** This column indicates how long the backup job has been processing.
- ▶ **Tape Drives in Use.** This column indicates the number of tape drives currently being used to process the backup job.

- ▶ **Minidisks and Storage Groups Linked.** For backups of data on DASD volumes, this column indicates the number of minidisks that are currently linked. For backups of data in file pools, this column shows the number of user storage groups that are currently linked.
- ▶ **Current Minidisk or File Space.** This column lists the userids and virtual addresses of the minidisks and the names of the file spaces currently being processed. One minidisk or file space can be active for each tape stream.

BrightStor VM:Backup automatically updates the information on this screen every 10 seconds. To remove outdated information, press PF2 (Refresh).

Restore Job Status Information Screen

The top part of the Restore Job Status Information screen displays the job name you selected and the status information from the Manage System Activity screen. The lower part of the screen provides the following detailed status:

- ▶ **Elapsed Time.** This column indicates how long the restore job has been running.
- ▶ **Volser Mounted.** This column indicates the volser of the tape that BrightStor VM:Backup is currently processing.
- ▶ **DSSN.** This column indicates the data set sequence number of the data set that BrightStor VM:Backup is currently processing.
- ▶ **Searching Tape For.** This column indicates the userid and virtual address of the minidisk or a shortened version of the directory name of the directory that BrightStor VM:Backup is currently scanning. For information about how BrightStor VM:Backup displays the directory name, refer to *Shortened Version of the Directory Name* on page 31.
- ▶ **In Backup Instance.** This column displays the type of backup (full or incremental) and the date and time of creation of the backup from which BrightStor VM:Backup is currently scanning. The number of backup instances already scanned and the total number of backup instances for the domain currently being scanned is also displayed.
- ▶ **Next To Be Restored.** This column indicates the next domain that BrightStor VM:Backup will restore for this restore job. If the domain is a directory, BrightStor VM:Backup displays a shortened version of the directory name. Refer to *Shortened Version of the Directory Name* on page 31.
- ▶ **Restoring To.** This column displays the target (file space, directory, minidisk, or reader) to which BrightStor VM:Backup is restoring the data from the indicated backup instance. If BrightStor VM:Backup is restoring to a directory, it displays a shortened version of the directory name. Refer to *Shortened Version of the Directory Name* on page 31.

If BrightStor VM:Backup is restoring data to a minidisk and is waiting for users to detach links to this minidisk before restoring data, BrightStor VM:Backup displays **waiting for link** next to the target minidisk. For restore jobs defined by a restore job

template file, BrightStor VM:Backup also sends message 7971 to the local console and the tape operator to identify the linked target minidisk.

- **From Backup Instance.** This column displays the type of backup (full or incremental) and the date and time of creation of the backup from which BrightStor VM:Backup is currently restoring. The number of backup instances already restored and the total number of backup instances for the domain currently being restored is also displayed.

If a catalog does not exist for the backup instance from which BrightStor VM:Backup is restoring data, BrightStor VM:Backup must scan the tapes, then mount them to read the tape labels before restoring the data. While BrightStor VM:Backup is scanning the tapes and reading the tape labels, it displays the message **Scanning tapes; no detail available**.

BrightStor VM:Backup automatically updates the information on this screen every 10 seconds. To remove outdated information, press PF2 (Refresh).

Shortened Version of the Directory Name

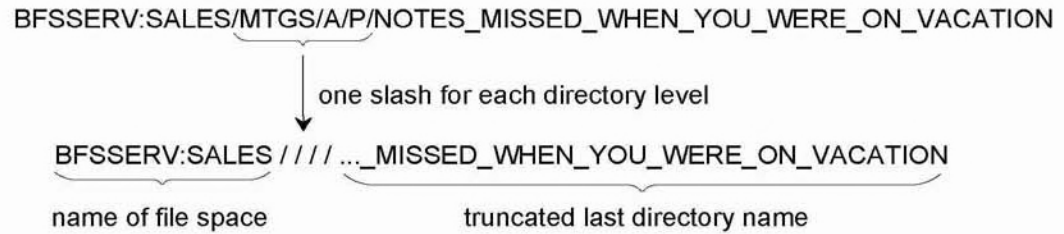
To shorten the fully-qualified directory name of an SFS directory, BrightStor VM:Backup displays the name of the file space, followed by a period for each directory level, followed by the last directory name.



To shorten the full directory pathname of a BFS directory, BrightStor VM:Backup displays the name of the file space, followed by a slash for each directory level, followed by the last directory name.



If the shortened version of a BFS full directory pathname is too long, BrightStor VM:Backup precedes the last directory name with ... and truncates characters from the front of the last directory name as needed.



Merge/Purge/Copy Job Status Information Screen

The top part of the Merge/Purge/Copy Job Status Information screen displays the job you selected and the status information from the Manage System Activity screen. The lower part of this screen provides the following detailed status:

- ▶ **Elapsed Time.** This row indicates how long the MPC job has been processing.
 - ▶ **Reading volses.** This row indicates the volses of the input tape and its tape copies that the MPC job is currently processing. If BrightStor VM:Backup is ready to process the tape but the tape has not yet been mounted, BrightStor VM:Backup displays **(Waiting for tape mount)**.
 - ▶ **DSSN.** This row indicates the data set number of the data set that BrightStor VM:Backup is currently processing on the input tape. This row is blank if BrightStor VM:Backup is waiting for an input tape to be mounted or if no input tape is mounted.
 - ▶ **Domain.** This row describes the domain on the input tape that is being processed. BrightStor VM:Backup displays one of the following types of domains followed by the name of the domain:
 - Abstract domain
 - Directory
 - File space
 - Minidisk
- If BrightStor VM:Backup is not processing a domain, this field is blank.
- ▶ **Writing output groups.** This section of the screen lists:
 - Name of the output group to which data is being written
 - Volses of the output tapes used for each output group
 - Current data set number of the data set to which BrightStor VM:Backup is writing

If BrightStor VM:Backup is waiting for one or more output tapes to be mounted, BrightStor VM:Backup displays (**Waiting for tape mounts for groups**) and displays an asterisk next to the group for which tapes need to be mounted.

BrightStor VM:Backup automatically updates the information on this screen every 10 seconds. To remove outdated information, press PF2 (Refresh).

Tape REINIT Status Information Screen

The top part of the REINIT Status Information screen displays the job you selected and the status information from the Manage System Activity screen. The lower part of this screen provides the following detailed status:

- ▶ **Elapsed Time.** This row indicates how long the REINIT job has been processing.
- ▶ **Reinitializing volser.** This row indicates the volser of the tape that BrightStor VM:Backup is currently reinitializing.
- ▶ **Next volser.** This row indicates the volser of the next tape that BrightStor VM:Backup will reinitialize.

BrightStor VM:Backup automatically updates the information on this screen every 10 seconds. To remove outdated information, press PF2 (Refresh).

Listing Tapes Required to Fulfill Mount Requests

For CATSEARCH, VOLSER, MPC, and REINIT jobs, you can use the VOLIST command on the Manage Systems Activity screen to see a list of the tapes required for the job so that you can have them on hand before the job starts. You cannot use this command for backup jobs or VOLSEARCH restore jobs.

Enter **volist** in the **Command** column next to the job whose tape list you want to see. BrightStor VM:Backup displays the Tapes Required for a Restore Job screen, which lists the tapes.

The top part of this screen displays the job name, the number of tape mounts required, the request date and time, and the job origin. The bottom part of this screen displays the volsers of the primary tapes that may need to be mounted along with the volsers of any tape copies that can be mounted instead. BrightStor VM:Backup adds a tape descriptor to each volser to help you determine whether it needs to be pulled. The tape descriptors for each job type are described below.

Tape Descriptors for Restore Jobs

Descriptor	Indicates the tape is...
dasd	A DASDtape that BrightStor VM:Backup will mount without your assistance.
dasd*	A DASDtape that may be mounted. BrightStor VM:Backup cannot determine whether the tape is needed because the catalog is either condensed or encrypted.
pull	A reel, cartridge, or enhanced-capacity cartridge that you must pull to fulfill the restore request.
pull*	A reel, cartridge, or enhanced-capacity cartridge that you may need to pull. BrightStor VM:Backup cannot determine whether it is needed because the catalog is either condensed or encrypted.
pull+	A reel, cartridge, or enhanced-capacity cartridge that you must pull, but BrightStor VM:Backup cannot locate it. The catalog specifies this volser, but it does not belong to a BrightStor VM:Backup resource pool and BrightStor VM:Backup is not interfaced with BrightStor VM:Tape.
pull*+	A reel, cartridge, or enhanced-capacity cartridge that you may need to pull. BrightStor VM:Backup cannot determine whether the tape is needed because the catalog is either condensed or encrypted. Also, BrightStor VM:Backup cannot locate the tape because the tape does not belong to one of its resource pools and BrightStor VM:Backup is not interfaced with BrightStor VM:Tape.

Tape Descriptors for MPC Jobs

Descriptor	Indicates the tape is...
dasd	A DASDtape that BrightStor VM:Backup will mount without your assistance.
dasd*	A DASDtape base tape; BrightStor VM:Backup may request more tapes not listed in tape pull list to complete the MPC job.
pull	A reel, cartridge, or enhanced-capacity cartridge that you must pull to fulfill the restore request.
pull*	A reel, cartridge, or enhanced-capacity cartridge that is a base tape. BrightStor VM:Backup may request more tapes not listed in tape pull list to complete the MPC job.
pull+	A reel, cartridge, or enhanced-capacity cartridge that you must pull, but BrightStor VM:Backup cannot locate it. The job specifies this volser, but it does not belong to a BrightStor VM:Backup resource pool and BrightStor VM:Backup is not interfaced with BrightStor VM:Tape.
pull*+	A reel, cartridge, or enhanced-capacity cartridge that is a base tape and BrightStor VM:Backup cannot locate it. The job specifies this volser, but it does not belong to a BrightStor VM:Backup resource pool and BrightStor VM:Backup is not interfaced with BrightStor VM:Tape. BrightStor VM:Backup may request more tapes not listed in tape pull list to complete the MPC job.

Tape Descriptors for REINIT Jobs

Descriptor	Indicates the tape is...
dasd	A DASDtape that BrightStor VM:Backup will mount without your assistance.
pull	A reel, cartridge, or enhanced-capacity cartridge that you must pull to fulfill the restore request.
pull+	A reel, cartridge, or enhanced-capacity cartridge that you must pull, but BrightStor VM:Backup cannot locate it. The catalog specifies this volser, but it does not belong to a BrightStor VM:Backup resource pool and BrightStor VM:Backup is not interfaced with BrightStor VM:Tape.

Canceling Jobs

You can cancel jobs at any time using the CANCEL command on the Manage System Activity screen. Enter **cancel** in the **Command** column next to the job you want to cancel. BrightStor VM:Backup ends this job and it is not processed.

Putting Jobs on Hold

You can temporarily interrupt a job at any time, either before it begins or during processing, using the HOLD command on the Manage System Activity screen. You can interrupt jobs whose status is anything other than **compile**. Enter **hold** in the **Command** column next to the job you want to put on hold.

Releasing Held Jobs

You can start or restart jobs that are on hold using the RELEASE command on the Manage System Activity screen. Jobs that are on hold are listed on this screen with the status **on hold**. Enter **release** in the **Command** column next to the held job you want BrightStor VM:Backup to start or restart.

When you release a job that was placed on hold before it began processing, BrightStor VM:Backup starts it from the beginning. When you release a job that was placed on hold during processing, the point at which BrightStor VM:Backup restarts the job depends on whether restart recovery is enabled and whether the job is a backup, restore, MPC, or REINIT job.

If restart recovery is not enabled, BrightStor VM:Backup restarts the job from the beginning. If restart recovery is enabled, BrightStor VM:Backup restarts interrupted jobs as follows:

- ▶ Backup jobs from the last completed domain on the last completed tape for each tape stream
- ▶ Restore jobs from the last completed domain; BrightStor VM:Backup restarts those domains that were not completely restored when the job was interrupted from the beginning

- ▶ MPC jobs from the last completed input domain
- ▶ REINIT jobs from the last completely reinitialized tapes

Reordering Jobs in the Job Queue

Jobs that are not on hold automatically run in the order in which they appear on the Manage System Activity screen. You can use the ORDER command to move a job to the front of the waiting job queue. Enter **order** in the **Command** column next to the job you want to move. BrightStor VM:Backup moves the job to the beginning of the queue and changes its status to *ordered*. To see the jobs listed in the new order, press PF2 (Refresh). When you refresh the screen, the jobs display their original statuses.

You can reorder more than one job at a time using the line-mode ORDER command. Refer to *ORDER Command* on page 54.

Responding to BrightStor VM:Backup Requests

BrightStor VM:Backup issues requests when it needs you to perform a particular task, such as mounting a tape or overriding a tape expiration date, before it can continue processing a backup or restore job.

Option 2, **Respond to VM:Backup requests**, on the Operator Main Menu lets you view and reply to messages from BrightStor VM:Backup. Enter **2** on the command line of the Operator Main Menu to select this option. BrightStor VM:Backup displays the Respond to BrightStor VM:Backup Requests screen. This screen provides the following information about BrightStor VM:Backup messages:

- ▶ **Id.** This column displays the reply identification number for the message.
- ▶ **VM:Backup Message.** This column displays the message text and the responses you can make. For example, if BrightStor VM:Backup asks you to mount a tape, the message tells you which tape needs to be mounted and the virtual address at which a tape drive should be attached.
- ▶ **Time Issued.** This column displays the time BrightStor VM:Backup issued the message. If you do not respond when you first receive the message, BrightStor VM:Backup resends it periodically. If you do not respond within the time limit set by the BrightStor VM:Backup system administrator, BrightStor VM:Backup puts the job on hold.

The following sections describe the replies you can make to BrightStor VM:Backup messages on the Respond to BrightStor VM:Backup Requests screen. When you reply to a message on this screen, BrightStor VM:Backup displays its response to your reply under the message. For example, if you enter **ok** in the **Command** column next to a tape mount request, BrightStor VM:Backup displays **<REPLY OK HAS BEEN ACCEPTED>** under the mount request.

BrightStor VM:Backup automatically updates the information on the Respond to BrightStor VM:Backup Requests screen every 10 seconds. To remove outdated information, press PF2 (Refresh).

Putting Jobs on Hold

When BrightStor VM:Backup issues a tape mount request for a job (message 624R), you can use the HOLD reply to temporarily interrupt a job and place it on hold. You can put any job whose status is other than **compile** on hold. Enter **hold** in the **Command** column next to the tape mount request for the job you want to put on hold.

Use the RELEASE command to restart a held job. Refer to *Releasing Jobs on Hold* on page 35 for information.

Canceling Requests

You can use the CANCEL reply to reject a BrightStor VM:Backup disk mount request (message 151R) that you cannot comply with. Enter **cancel** in the **Command** column next to the disk mount request you want to reject or the tape mount request you want to refuse.

If you reject a disk mount request, BrightStor VM:Backup continues the job but skips the data on the requested DASD volume. If the disk is part of an SFS user storage group, BrightStor VM:Backup skips all of the file spaces in that user storage group.

Finishing a Backup

When BrightStor VM:Backup is interfaced with BrightStor VM:Tape and you run a backup or MPC job, BrightStor VM:Tape writes its own checkpoint files on the BrightStor VM:Tape service virtual machine. When the job finishes processing, BrightStor VM:Tape erases those files.

If BrightStor VM:Tape becomes unavailable after the job completes but before BrightStor VM:Tape has erased the checkpoint files, the job continues to be in **running** status and BrightStor VM:Backup periodically checks the status of BrightStor VM:Tape. Each time BrightStor VM:Backup checks BrightStor VM:Tape and finds it unavailable, BrightStor VM:Backup sends you a message that tells you to start BrightStor VM:Tape or enter the FINISH reply for the job.

If you restart BrightStor VM:Tape, BrightStor VM:Tape erases the checkpoint files and the job ends normally. If you enter **finish** in the **Command** column next to the message for the job, the job ends normally but the BrightStor VM:Tape checkpoint files still exist on the BrightStor VM:Tape service virtual machine.

If you do not either restart BrightStor VM:Tape or enter the FINISH response, BrightStor VM:Backup waits until BrightStor VM:Tape becomes available.

Continuing a Job

You can use the OK response to let BrightStor VM:Backup know that you have complied with a request or that BrightStor VM:Backup can do what it asked permission to do. Enter **ok** in the **Command** column next to the request.

Depending on the options specified by the BrightStor VM:Backup system administrator, BrightStor VM:Backup may ask you for permission to override the expiration date on a tape volume or overwrite an existing BrightStor VM:Archiver data set.

Overriding Tape Expiration Dates

When a tape is mounted for use in a BrightStor VM:Backup backup job, BrightStor VM:Backup verifies that the tape's labels are valid, it is an expired or new tape, and the tape can be used in the job.

If the tape can be used in the job, BrightStor VM:Backup rewrites the tape labels to reflect the new information for this backup job. Included in this new information is a new tape expiration date. However, only the tape labels are updated now; the resource pool information is not updated until the end of the backup job. BrightStor VM:Backup uses the resource pool information to select volumes to use in backup jobs.

If the tape expiration date previously written in the tape labels has not yet been reached and the system administrator has authorized you to override the tape expiration date, BrightStor VM:Backup will ask you for permission to overwrite the tape.

If you have not been authorized to override the tape expiration date, BrightStor VM:Backup will not ask for permission to overwrite the tape. Instead, BrightStor VM:Backup rejects the tape, selects another volume to use in the job, and asks you to mount this new volume. If BrightStor VM:Backup is configured to enable tape chaining in tape trailer labels, before making the mount request, BrightStor VM:Backup may ask the tape operator to mount the previously used volume again so that it can update its trailer label to reflect the newly selected volume.

Overwriting Existing Data Sets

BrightStor VM:Archiver tapes can contain multiple data sets. Each data set on the tape contains its own tape header labels. A valid data set is any data set that contains valid header labels. BrightStor VM:Archiver protects its tapes from being used inadvertently in three ways:

Tape expiration date	All BrightStor VM:Archiver tapes have an expiration date of PERM (permanent), which means that they never expire. The PERM designation protects them from being reused by other userids.
Ownership	All tapes created for BrightStor VM:Archiver jobs are owned by the BrightStor VM:Archiver service virtual machine that submitted the jobs. BrightStor VM:Backup makes sure that the requesting user is the owner of the tape before it uses the tape.
Data set	BrightStor VM:Archiver tells BrightStor VM:Backup which data sets to write to so that BrightStor VM:Backup does not inadvertently overwrite a BrightStor VM:Archiver data set.

When appending data sets to a tape, BrightStor VM:Archiver may provide BrightStor VM:Backup with a starting volser for that job. BrightStor VM:Archiver always asks BrightStor VM:Backup to write to a specific data set. If the job is canceled while BrightStor VM:Backup is processing it, part of the data set may have been written to the BrightStor VM:Archiver tape volume; therefore, correct and valid header labels may exist. When BrightStor VM:Archiver submits the next job, it asks BrightStor VM:Backup to write to the same data set that was specified in the canceled job, but when BrightStor VM:Backup encounters the valid tape header labels, it assumes that the entire data set exists. If the system administrator has authorized you to overwrite existing data sets, BrightStor VM:Backup will request permission to overwrite the existing BrightStor VM:Archiver data set.

You can reply OK to this request if the BrightStor VM:Archiver backup job still exists in the BrightStor VM:Archiver job queue. Enter the BrightStor VM:Archiver QUERY JOBS command to display the BrightStor VM:Archiver job queue. The BrightStor VM:Backup job name must match one of the BrightStor VM:Archiver jobs listed in the BrightStor VM:Archiver job queue; if no BrightStor VM:Archiver job exists, do *not* allow BrightStor VM:Backup to overwrite the data set. The job name will be the name of the job template file. Refer to the *BrightStor VM:Archiver Command Reference* for detailed information about the QUERY command.

If you have not been authorized to overwrite existing data sets, BrightStor VM:Backup puts the job on hold.

Rejecting a Request

If you do not want BrightStor VM:Backup to override a tape expiration date or overwrite a data set on a BrightStor VM:Archiver or BrightStor VM:Migrate tape, or if you cannot comply with a request (for example, if you cannot locate a required tape), you can use the REJECT reply. Enter **reject** in the **Command** column next to the request you want to reject.

BrightStor VM:Backup Backup Jobs

Depending on the options specified by the BrightStor VM:Backup system administrator, BrightStor VM:Backup may ask you for permission to override the expiration date on a tape volume. If you reply REJECT to a request to override a tape expiration date, BrightStor VM:Backup will not overwrite the data on the requested volume. If an alternate volume is available, BrightStor VM:Backup will issue a request to have it mounted. If an alternate volume is not available, BrightStor VM:Backup will place the job on hold.

If BrightStor VM:Backup is interfaced with BrightStor VM:Tape and BrightStor VM:Backup asks for permission to override a tape expiration date, do *not* reply REJECT; if you do, BrightStor VM:Backup will not be allowed to overwrite the tape.

Authorized Client Backup Jobs

Depending on the options specified by the BrightStor VM:Backup system administrator, BrightStor VM:Backup may ask you for permission to overwrite an existing data set on a tape owned by an authorized client. Tapes used during a BrightStor VM:Archiver or BrightStor VM:Migrate backup are protected by data sets, not expiration dates; BrightStor VM:Archiver and BrightStor VM:Migrate tapes are permanent. If you respond REJECT to a request to overwrite an existing data set, BrightStor VM:Backup will not overwrite the data on the requested data set of the requested tape. Instead, it will select a scratch tape from the same resource pool and issue a mount request again. If a scratch tape is not available, BrightStor VM:Backup puts the job on hold.

BrightStor VM:Backup Restore Jobs

For restore jobs, if the data was backed up to a different medium and a tape copy is available, the REJECT reply causes BrightStor VM:Backup to search for an alternate volume and issue a mount request again. If an alternate volume is not available, BrightStor VM:Backup puts the job on hold.

Trying a Request Again

When you have corrected a problem with the security system service virtual machine, you can use the RETRY reply to have BrightStor VM:Backup try the Surrogate request again. Refer to *Suspending the Request*, below, for more information about responding to requests relating to the Surrogate facility.

Suspending the Request

If you are unable to fulfill a request when BrightStor VM:Backup issues it, if the Surrogate facility is not available, or if a problem with the security service virtual machine cannot be readily corrected, you can use the WAIT reply to suspend the request. The WAIT reply causes BrightStor VM:Backup to wait until either the problem is corrected or you end BrightStor VM:Backup processing.

Enter **wait** in the **Command** column next to the request you want to suspend. BrightStor VM:Backup ignores the wait time limit defined by the BrightStor VM:Backup system

administrator and waits indefinitely, sending reminder messages periodically until you respond to the request.

When the problem is corrected, use the RETRY reply to have BrightStor VM:Backup try the Surrogate request again. If the request cannot be fulfilled within a reasonable period of time, you can enter the REJECT response. Refer to *Rejecting a Request* on page 39 for information about this reply.

Specifying a Volser

If a resource pool runs out of available tape volumes, BrightStor VM:Backup may ask you for the volser of a tape that can be used. This request should appear only if BrightStor VM:Backup is not interfaced with BrightStor VM:Tape. To provide a tape, enter the volser of a standard label tape that can be used with the specified resource pool (one that is of the same medium and density), then press PF2 to refresh the Respond to BrightStor VM:Backup Requests screen. Reenter the volser as a safeguard against specifying an incorrect volume, then press PF2 (Refresh) again to refresh the screen and receive the tape mount request from BrightStor VM:Backup.

The way in which the BrightStor VM:Backup system administrator has set up tape handling procedures determines whether the volser you specify is added to the resource pool.

Submitting System Backup Jobs

Option 3, **Submit system backups**, on the Operator Main Menu lets you submit backup jobs to BrightStor VM:Backup. (You can also use the BrightStor VM:Backup SUBMIT command from CMS to submit backup jobs; refer to *SUBMIT Command* on page 62 for information.)

Backup jobs are normally run on a daily, weekly, or monthly basis. All backup jobs are controlled by job template files created by the BrightStor VM:Backup system administrator. The BrightStor VM:Backup system administrator can define job template files broadly, to back up entire DASD volumes and file pools, or narrowly, to process a specific group of minidisks, file spaces, directories, account numbers, or access control interface (ACI) security groups.

For instructions on monitoring the status of your jobs, canceling a job you submitted accidentally, or releasing a held job, refer to *Managing System Activity* on page 26.

Starting a Backup Job

Enter 3 on the command line of the Operator Main Menu to select the **Submit system backups** option. BrightStor VM:Backup displays the Submit System Backups screen. This screen lists the names of the backup job template files defined by the BrightStor VM:Backup system administrator, along with any descriptive comments specified when the job template file was created.

To compile and queue a job for execution, type **submit** in the **Command** column next to the appropriate job template file name, then press ENTER. You can type **submit** next to more than one job template file name at a time; however, BrightStor VM:Backup processes each backup as a separate job.

You can enter the following options when you submit the job. Each of these options overrides a corresponding parameter value specified in the job template file. Refer to *SUBMIT Command* on page 62 for more information about the options.

Specifying the Number of Output Tape Streams

To specify the number of output streams to use for the job, enter **submit / (streams number**, where *number* is an integer from 1 through 15, in the **Command** column.

Indicating Whether to Remount Tapes Already Written To

If you want BrightStor VM:Backup to remount tapes it has already written to, minimizing the number of tapes needed for the job, enter **submit / (reduce tapeuse** in the **Command** column. If you want to prevent BrightStor VM:Backup from remounting tapes, potentially making the job run more quickly, enter **submit / (reduce remounts**.

If your data center uses automatic cartridge loaders (ACLs), you might want to specify REMOUNTS. Depending on the control setting for your ACL, it might not be able to remount a tape that has already been mounted in the currently running job. This is true if the control setting on the ACL is set to AUTOMATIC. This might also be true if the control setting is set to SYSTEM and the software you use to mount tapes cannot handle this situation.

Making the Job Run Exclusively

To prevent other jobs from running while this job runs, enter **submit / (exclusive** in the **Command** column. BrightStor VM:Backup will not start an exclusive job until all running jobs have completed and will not allow other jobs to start until the exclusive job has completed. If you want BrightStor VM:Backup to allow other jobs to run, enter **submit / (exclusive no**. Jobs that back up BrightStor VM:Backup are always exclusive and ignore this option.

Submitting the Job at the Top of the Job Queue

If you want to make the job a priority job, enter **submit / (priority** in the **Command** column. BrightStor VM:Backup will submit the job at the top of the job queue, after any existing priority jobs. The only way another job can run ahead of a priority job is if the jobs are reordered using the ORDER command. If you want to submit the job at the bottom of the queue, enter **submit / (priority no**.

Submitting the Job On Hold

If you want to submit the job in held status, enter **submit / (hold** in the **Command** column. You can release a held job from the Manage System Activity screen or from CMS using the BrightStor VM:Backup RELEASE command. If you want the job to run as soon as possible after submission, enter **submit / (hold no**.

Notifying the Submitting Userid at Job Completion

If you want BrightStor VM:Backup to notify the userid that submitted the job when the job completes or is canceled, enter **submit/ (jobend notify** in the **Command** column. If you do not want BrightStor VM:Backup to notify the userid, enter **submit/ (jobend quiet**.

Erasing the Job Template File at Job Completion

If you want BrightStor VM:Backup to erase the job template file and any associated exception and exclusion files from the BrightStor VM:Backup 191 minidisk when the job either runs successfully or is canceled, enter **submit/ (onetime** in the **Command** column. If you want to keep the files, enter **submit/ (onetime no**.

Ending, Suspending, and Resuming BrightStor VM:Backup

Option 4, **End, suspend, or resume processing**, on the Operator Main Menu lets you end BrightStor VM:Backup or temporarily suspend job processing.

Note: Because BrightStor VM:Backup runs as a disconnected service virtual machine, it is normally autologged at system startup and left running in disconnected mode. Leaving BrightStor VM:Backup disconnected means that it is available to process backup and restore jobs as needed. Under normal circumstances, BrightStor VM:Backup should be stopped *only* when all service virtual machine processing is being quiesced.

Enter **4** on the command line of the Operator Main Menu to select the **End, suspend, or resume processing** option. BrightStor VM:Backup displays the End, Suspend, or Resume Processing menu. From this menu, you can do the following:

- ▶ End processing when currently running jobs are complete
- ▶ End processing immediately
- ▶ Suspend processing temporarily
- ▶ Resume suspended processing

Ending Processing When Currently Running Jobs are Complete

Select this option when you want all currently running backup and restore jobs, or commands to complete before BrightStor VM:Backup execution ends. BrightStor VM:Backup notifies you of the pending termination and sends you a message that indicates whether there are any active jobs. If no jobs or commands are currently running, BrightStor VM:Backup ends immediately.

Ending Processing Immediately

Select this option to force BrightStor VM:Backup to *immediately* cease processing. All currently running backup and restore jobs, and commands stop running.

When you restart BrightStor VM:Backup, BrightStor VM:Backup restarts jobs that were interrupted. The point at which BrightStor VM:Backup restarts jobs that were interrupted during processing depends on whether restart recovery is enabled and the type of the job.

If restart recovery is not enabled, BrightStor VM:Backup restarts the job from the beginning. If restart recovery is enabled, BrightStor VM:Backup restarts an interrupted backup job from the last completed domain on the last completed tape volume for each tape stream, and restarts an interrupted restore job from the last completed domain. For a restore job, BrightStor VM:Backup restarts those domains that were not completely restored when the job was interrupted from the beginning.

Suspending Processing Temporarily

Select this option to temporarily suspend BrightStor VM:Backup job processing. When you suspend execution, BrightStor VM:Backup allows all currently running backup and restore jobs to complete and prevents other jobs from starting. If a job is in progress, you will continue receiving messages (such as tape mount requests) relating to that job, but no other jobs will be started. Commands can still execute while BrightStor VM:Backup is suspended.

When BrightStor VM:Backup job processing is suspended, BrightStor VM:Backup displays the message **VM:Backup is Suspended** in the upper right corner of the Manage System Activity screen.

Resuming Suspended Processing

Select this option to resume job processing that you previously suspended. This option is only applicable if you previously either selected the **Suspend Processing Temporarily** option or used the SUSPEND command to temporarily stop BrightStor VM:Backup job execution.

Performing User Functions

Option 5, **Perform user functions**, on the Operator Main Menu lets you send a restore request for your own userid and perform other end-user tasks.

Enter 5 on the command line of the Operator Main Menu to select the **Perform user functions** option. BrightStor VM:Backup displays the Expert User Main Menu. As an operator, you are automatically authorized to perform expert user restore functions. Refer to the *BrightStor VM:Backup User's Guide* for detailed information about using end-user screens and line-mode commands.

Viewing Resource Pools

Option 6, **View resource pools**, lets you check information about resource pools. Enter **6** on the command line of the Operator Main Menu to select the **View resource pools** option. BrightStor VM:Backup displays the View Resource Pools screen, which shows the following information about resource pools:

- ▶ Name of the pool
- ▶ Medium and density of the tapes in the pool
- ▶ Number of tapes in the pool
- ▶ Action BrightStor VM:Backup is to take if the pool runs out of tapes
- ▶ For tapes mounted by BrightStor VM:Tape, whether tapes come from a specific resource pool (**pool** appears on the screen) or a general scratch pool (**scratch** appears on the screen)

For the last item, **pool** means that BrightStor VM:Tape allocates tapes from a specific scratch pool with the same name as the BrightStor VM:Backup pool, and **scratch** means that BrightStor VM:Tape allocates tapes from the general scratch pool.

From this screen you can view (but not change) information about resource pools, and you can send copies of resource pool definitions to your virtual printer.

Displaying Resource Pool Information

You can use the BROWSE command to view detailed information about a resource pool. Enter **browse** in the **Command** column next to the resource pool for which you want to see additional information. BrightStor VM:Backup displays the Tape List for Resource Pool screen. This tape list shows the following information about each volume in the resource pool:

- ▶ Volser
- ▶ Backup time and date
- ▶ Job template file name
- ▶ Dumpjob number
- ▶ Expiration date
- ▶ Owner

Printing Resource Pool Information

You can use the PRINT command to send a copy of a resource pool definition to your virtual printer. This definition contains the same information that is displayed when you enter the BROWSE command. Enter **print** in the **Command** column next to the resource pool whose definition you want to print.

If you want to print the resource pool definition screens one screen at a time, use PF11 (Print).

Commands

BrightStor VM:Backup provides line-mode commands you can enter from either a display (full-screen) or line-mode terminal. When you use line-mode commands, you bypass some or all BrightStor VM:Backup screens.

You must prefix each command with the userid of the BrightStor VM:Backup service virtual machine. VMBACKUP is the default name of the BrightStor VM:Backup service virtual machine. If your BrightStor VM:Backup machine has a different name, use that name instead.

Table 4 lists these commands, and the pages that follow describe them in detail.

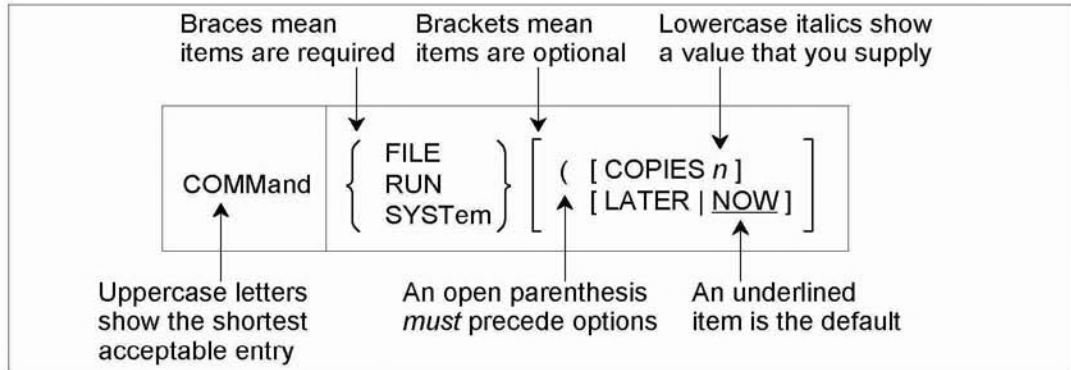
Table 4. Summary of BrightStor VM:Backup Commands for Operators

Command	Use	Page
CANCEL	Cancels a job at any time, regardless of whether it is running or waiting to execute	50
END	Terminates BrightStor VM:Backup processing	51
HOLD	Interrupts or temporarily halts execution of a job either before it begins or during processing	52
ORDER	Moves a job to the front of the waiting job queue	54
QUERY	Displays outstanding messages from BrightStor VM:Backup, status information about active and pending jobs, or type of encryption used to back up data	55
RELEASE	Restarts held jobs	57
REPLY	Responds to BrightStor VM:Backup requests	58
RESUME	Restarts suspended BrightStor VM:Backup job processing	61
SUBMIT	Submits jobs for processing	62
SUSPEND	Temporarily stops BrightStor VM:Backup job processing	65

Syntax Conventions

Syntax for commands follows the conventions illustrated and described below.

Note that the brackets, braces, and underscore symbols are used only to define the format; do not type them as part of your entry.



Vertically listed items enclosed in braces or not enclosed in anything are required, as follows:

This format:	Means you must select:
$\left\{ \begin{array}{c} A \\ B \\ C \end{array} \right\}$	One item only
$\begin{array}{c} A \\ B \\ C \end{array}$	At least one item

Vertically listed items enclosed in brackets are optional, as follows:

This format:	Means you can select:
$\left[\begin{array}{c} A \\ B \\ C \end{array} \right]$ or $\left[\begin{array}{c} A \\ B \\ C \end{array} \right]$ or $[A B C]$	One item only
$\left(\left[\begin{array}{c} A \\ B \\ C \end{array} \right] \right)$ or $\left[\begin{array}{c} A \\ B \\ C \end{array} \right]$ or $[A][B][C]$	One or more items
$[A [B [C]]]$	The first, the first two, or all three items

You can use upper or lower case when you enter commands. Enter these special characters exactly as shown:

* asterisk : colon - hyphen = equal sign
, comma . period () open/close parentheses

Some syntax boxes include an ellipsis (...). If the ellipsis is shown in a list (for example, vaddr₁ vaddr₂ ... vaddr_n), it implies values not shown. If ellipses are shown at the end of one line and at the beginning of the next line, the syntax does not fit on one line and is continued on the next. The ellipses are not part of the syntax.

CANCEL Command

Use the CANCEL command to end BrightStor VM:Backup jobs.

You can cancel a job at any time, regardless of whether it is running or waiting to execute. If an inactive job is canceled, BrightStor VM:Backup drops it from the queue. If an active job is canceled, the job ends abnormally (abends). To view a job's status, use the QUERY REQUESTS command.

CANcel	{ ALL <i>jobid</i> }
--------	------------------------

ALL

cancels all of the requesting userid's pending restore requests.

jobid

specifies the job identification number, assigned by BrightStor VM:Backup when the job is submitted, of a single job to cancel. You do not have to specify the leading zeros. To view a job's jobid, use the QUERY REQUESTS command.

Example

To cancel pending restore job 00000010, enter:

```
vmbackup cancel 10
```


END Command

Use the END command to end BrightStor VM:Backup operation, either after all active commands are complete or immediately using the FORCE option.

After you enter the END command, users cannot invoke BrightStor VM:Backup. If BrightStor VM:Backup issues a message (for example, to request a tape mount) while completing a currently running job, you can respond to the request, but you cannot enter new commands.

When BrightStor VM:Backup ends, you cannot submit new jobs until the system is restarted. To see a list of active and pending jobs before ending BrightStor VM:Backup, use the QUERY REQUESTS command.

END	[(FORCE]
-----	-------------

[FORCE]

terminates BrightStor VM:Backup without waiting for active processing to complete. All currently running jobs and commands stop executing immediately. The table indicates how BrightStor VM:Backup handles jobs interrupted by the END (FORCE command when you restart BrightStor VM:Backup.

Type of job	BrightStor VM:Backup restarts job from:
AUTOCAT job	Last completed catalog
Backup, restore, MPC, or REINIT job, restart recovery <i>not</i> enabled	Beginning
Backup job, restart recovery enabled	Last completed domain on last completed tape for each tape stream
Restore job, restart recovery enabled	Last completed domain; restarts restores of incompletely restored domains from beginning of domain
MPC job, restart recovery enabled	Last domain from input tape that was successfully copied to output tapes
REINIT job, restart recovery enabled	Last reinitialized tape

Example

To immediately end BrightStor VM:Backup processing without waiting for all active commands and currently processing backup and restore jobs to complete, enter:

```
vmbackup end (force
```

HOLD Command

Use the HOLD command to interrupt or temporarily halt the execution of a specified job. You can place a job on hold at any time before or during processing *except* when a job is compiling. Jobs placed on hold with the HOLD command are left in the job queue with a status of **on hold**. (Use the QUERY REQUESTS command to view the status of a job.)

If you put a job on hold before it begins processing, BrightStor VM:Backup starts the job from the beginning when you release it. If you put a job on hold during processing, the point at which BrightStor VM:Backup restarts the job varies depending on the type of job and other conditions. The table indicates how BrightStor VM:Backup handles interrupted jobs when you release them.

If you put on hold, then release:	BrightStor VM:Backup restarts job from:
AUTOCAT job	Last completed catalog
Backup, restore, MPC, or REINIT job, restart recovery <i>not</i> enabled	Beginning
Backup job, restart recovery enabled	Last completed domain on last completed tape for each tape stream
Restore job, restart recovery enabled	Last completed domain; restarts restores of incompletely restored domains from beginning of domain
MPC job, restart recovery enabled	Last domain from input tape that was successfully copied to output tapes
REINIT job, restart recovery enabled	Last reinitialized tape

There are two special cases for backup jobs.

- ▶ If you put an incremental backup job on hold, and while it is on hold the catalog on which the job is based is discarded, BrightStor VM:Backup restarts the job from the beginning, but performs a full backup instead of an incremental backup.
- ▶ If you put an incremental backup job specifying file-level detail change detection on hold, and while it is on hold the catalog on which the job is based is condensed, BrightStor VM:Backup restarts the job from the beginning, but performs a full backup instead of an incremental backup.

Refer to *Restart Recovery* on page 12 for more information about the restart recovery process. Refer to *RELEASE Command* on page 57 for information about releasing held jobs.

Hold	<i>jobid</i>
------	--------------

jobid

specifies the job identification number, assigned by BrightStor VM:Backup when the job is submitted, of the job to put on hold. You do not have to specify the leading zeros. To view a job's jobid, use the QUERY REQUESTS command.

Example

To place backup job 00000024 on hold, enter:

vmbackup hold 24

ORDER Command

Use the ORDER command to move one or more jobs to the front of the waiting job queue so BrightStor VM:Backup will execute them sooner.

You can order any jobs, as long as it is queued but not already running. You cannot order jobs that are being compiled or have begun execution.

Jobs that are not on hold run in the order in which QUERY REQUESTS lists them or as they appear on the Manage System Activity screen.

ORDER	<i>jobid₁ [jobid₂ ... jobid_n]</i>
-------	--

jobid₁ [jobid₂ ... jobid_n]

specifies the job identification numbers, assigned by BrightStor VM:Backup when the jobs are submitted, of the jobs to move to the front of the queue. You can specify more than one job, but you cannot specify the same job more than once in a list. You do not have to specify the leading zeros.

To view the jobids for specific jobs, use the QUERY REQUESTS command or view them from the Manage System Activity screen. If you specify an invalid jobid, the ORDER command does not complete and no jobs are reordered.

Example

Suppose Jobs 10, 11, and 12 are in the waiting job queue, in that order. To reverse the order of these jobs, enter this command:

```
vmbackup order 12 11 10
```

QUERY Command

Use the QUERY command to display outstanding messages from BrightStor VM:Backup or status information about active and pending jobs.

Query	{ ENCRypt MSG [(STACK] REQuests [(CONTents STACK] }
-------	---

ENCRYPT

lists the types of encryption facilities available in this release of BrightStor VM:Backup; for example, Data Encryption Standard (DES), RC2, or NONE.

MSG [(STACK]

displays all outstanding messages. Each message is identified by a reply identification number that can be used to respond to BrightStor VM:Backup, and the time the request was issued. STACK specifies that BrightStor VM:Backup is to place the response from the QUERY command in the requesting userid's program stack in first-in, first-out (FIFO) order. If you use the STACK option, check for a nonzero return code; this indicates that there are no outstanding messages or requests.

If a user is being asked to detach a minidisk, the user can detach the minidisk, log off, or use the CANCEL command to cancel the job. If you have outstanding messages related to your own end user restore requests, you can use either the REPLY command to respond to the request or the CANCEL command to cancel the job.

REQuests [(CONTents | STACK]

displays information about active and pending jobs, as follows:

- ▶ Job name
- ▶ Job status (on hold, released, restarted, running, waiting, or ended)
- ▶ Job type (backup, restore, MPC, REINIT, or AUTOCAT)
- ▶ Time the job was started
- ▶ Number of domains processed so far
- ▶ Job origin (or submitting userid)
- ▶ Jobid
- ▶ Certain processing options specified for the job (e for exclusive, p for priority, b for backup of BrightStor VM:Backup)

You can view the status of all jobs submitted to BrightStor VM:Backup; users can only view information concerning their own restore requests.

Use the CONTENTS option to specify that BrightStor VM:Backup is to list backup job content or restore job sources and targets. For backup jobs, BrightStor VM:Backup lists a maximum of 10 file spaces or minidisks contained in the backup; for restore jobs, BrightStor VM:Backup lists a maximum of 10 paired

sources and targets. This option allows you to distinguish between multiple end user restore jobs listed on the display.

Use the STACK option to specify that BrightStor VM:Backup is to place the response from the QUERY command in the requesting userid's program stack in first-in, first-out (FIFO) order. If you use the STACK option, check for a nonzero return code; this indicates that there are no outstanding messages or requests.

Example

To display the status of each job submitted to BrightStor VM:Backup, enter:

vmbackup query requests

BrightStor VM:Backup displays:

JOB NAME	STATUS	JOB TYPE	STARTED	PROCESSED	ORIGIN	JOBID	OPTION
RESTORE	RUNNING	RESTORE	13:55:53	0 OF 1	MARY2	00000002	.e.....
RESTORE	ON HOLD	RESTORE			MARY2	00000004	p.....
RESTORE	ON HOLD	RESTORE			ALEX1	00000005
DAILY	WAITING	BACKUP			OPER	00000007	pe.....

RELEASE Command

Use the RELEASE command to submit held jobs to BrightStor VM:Backup for processing.

Refer to *HOLD Command* on page 52 for an explanation of how BrightStor VM:Backup processes jobs that have been put on hold and then released.

RELease	<i>jobid</i>
---------	--------------

jobid

specifies the job identification number, assigned by BrightStor VM:Backup, of a held job to be released to BrightStor VM:Backup for processing. You do not have to specify leading zeros. To view a job's *jobid*, use the QUERY REQUESTS command.

Example

To release restore job 00000024 from on hold status, enter:

```
vmbackup release 24
```

REPLY Command

Use the REPLY command to respond to messages and requests from BrightStor VM:Backup.

REPLY	<i>replyid</i> { CANCEL FINISH HOLD OK REJECT RETRY WAIT <i>volser</i> }
-------	---

replyid

specifies the reply identification number, assigned by BrightStor VM:Backup and displayed along with the message text when the QUERY MSG command is entered, of the request to which you are replying.

CANCEL

tells BrightStor VM:Backup to cancel a request because it cannot be fulfilled. If the request was to have a minidisk detached, BrightStor VM:Backup skips the minidisk and the job continues. If the request was for a DASD volume, the job continues, but BrightStor VM:Backup does not process the minidisks on the requested DASD volume.

FINISH

tells BrightStor VM:Backup to end a backup job that has finished processing but whose status remains **running**. This occurs when BrightStor VM:Tape becomes unavailable during a job and the job's checkpoint files remain on the BrightStor VM:Tape service virtual machine. FINISH tells BrightStor VM:Backup to end the job normally and erase its own checkpoint files (the checkpoint files remain on the BrightStor VM:Tape service virtual machine). If you do not use FINISH, the job's status remains **running** until BrightStor VM:Tape becomes available.

HOLD

tells BrightStor VM:Backup to place on hold the job that is making the request.

OK

indicates that a request (for example, to mount a tape) has been fulfilled, or that BrightStor VM:Backup can do what it requested (for example, override a tape expiration date). OK tells BrightStor VM:Backup to continue processing immediately.

REJECT

tells BrightStor VM:Backup that a request cannot be fulfilled or that BrightStor VM:Backup cannot do what it requested. BrightStor VM:Backup does the following based on the purpose of the tape mount:

Type of job	BrightStor VM:Backup does this:
Backup or MPC (output tapes)	If a tape mount is rejected, reissues the request, specifying an alternate tape. Tape operator might be asked to remount the preceding tape so that BrightStor VM:Backup can update the trailer label information with the correct volser.
Restore or MPC (input tapes)	If a tape copy is not available, puts the job on hold.
REINIT	Does not reinitialize the tape or expire the tape in the BrightStor VM:Backup resource pool or BrightStor VM:Tape TMC; continues with the next tape specified in the job.

RETRY

indicates that a problem with the security system service virtual machine using the Surrogate facility has been corrected, and that BrightStor VM:Backup should try the surrogate request again. Refer to the WAIT response for more information about responding to messages related to the Surrogate facility.

WAIT

causes BrightStor VM:Backup to ignore the configured maximum wait interval for the type of request; BrightStor VM:Backup waits indefinitely for the request to be fulfilled. Use this response when the request cannot be immediately fulfilled or because the security system service virtual machine is not available. BrightStor VM:Backup continues to send reminder messages until the operator responds with another command. Refer to the OK and REJECT parameters for information about responding to mount requests. Refer to the RETRY response for more information about responding to messages related to the Surrogate facility.

volser

indicates the volser of an available tape that can be used to satisfy the request. The specified volser must be one that can be used with the indicated resource pool (that is, it must be of the same medium and density) or a scratch volume. To make sure that the correct volume is mounted, BrightStor VM:Backup asks you to specify the volser twice.

Examples

- To respond OK to the BrightStor VM:Backup request (with replyid 1) to override the tape expiration date, enter:

```
vmbackup reply 1 ok
```

- ▶ To tell BrightStor VM:Backup to temporarily suspend a job that issued a tape mount request (with replyid 2) until you can locate the requested tape volume, enter:

vmbackup reply 2 wait

RESUME Command

Use the RESUME command to restart BrightStor VM:Backup job processing after it has been suspended.

You can use this command only if BrightStor VM:Backup job processing was previously halted by using either the SUSPEND command or the End, Suspend, or Resume Processing operator screen.

Any userid with Operator authorization can restart suspended BrightStor VM:Backup job processing by entering the RESUME command; this action is not limited to the userid that originally suspended BrightStor VM:Backup.

RESUME	
--------	--

SUBMIT Command

Use the SUBMIT command to submit jobs defined in job template files to BrightStor VM:Backup for processing.

The default values for all options except MDSKLIST are the values specified on corresponding JOBOPTIONS record parameters in the job template file. Specify SUBMIT command options only if you want to override the values in the job template file.

You can also use the Submit System Backups operator screen to submit job template-defined backup jobs.

Submit	<i>jobname</i> [(<i>options</i>) Options: [EXclusive [Yes No]] [Hold [Yes No]] [JOBend [NOTify QUIet]] [ONEtime [Yes No]] [PRiority [Yes No]] [REDuce [REMounts TAPeuse]] [Streams <i>number</i>] [TAPemount [Yes No]] [MDSKlist [<i>filename</i> [<i>filetype</i>]]]
--------	---

jobname

specifies the filename of the job template file for the job to submit.

[EXclusive [Yes| No]]

specifies whether BrightStor VM:Backup is to prevent other jobs from running while this job runs. BrightStor VM:Backup will not start an exclusive job until all running jobs have completed and will not allow other jobs to start until the exclusive job has completed. Specifying EXCLUSIVE is the same as specifying EXCLUSIVE YES.

Jobs that back up BrightStor VM:Backup are always exclusive and ignore this option.

[Hold [Yes| No]]

specifies whether BrightStor VM:Backup is to place the job in the job queue in **on hold** status. Specifying HOLD is the same as specifying HOLD YES.

To run a held job, the operator or system administrator must release it using the Manage System Activity operator screen or the RELEASE command.

[JOBend [NOTify | QUIet]]

specifies whether BrightStor VM:Backup is to issue the JOBEND command to the submitting userid to inform it that the job completed or was canceled. NOTIFY tells BrightStor VM:Backup to notify the submitting userid. QUIET tells BrightStor VM:Backup not to notify the submitting userid.

[ONetime [Yes | No]]

specifies whether BrightStor VM:Backup is to erase the job template file and any associated exception and exclusion files from the BrightStor VM:Backup 191 minidisk when the job either runs successfully or is canceled. Specifying ONETIME is the same as specifying ONETIME YES.

[PRIority [Yes| No]]

specifies whether to submit the job at the top of the job queue, after any existing priority jobs. BrightStor VM:Backup runs priority jobs before any other job in the queue. The only way another job can run ahead of a priority job is if the jobs are reordered using the ORDER command. Specifying PRIORITY is the same as specifying PRIORITY YES.

[REDuce [REMounts | TAPEuse]]

for backup jobs, indicates whether BrightStor VM:Backup is to remount tapes already written to.

REMounts prevents BrightStor VM:Backup from remounting tapes in most situations, which can make backup jobs run more quickly. If your data center uses automatic cartridge loaders (ACLs), you might want to specify REMounts. Depending on the control setting for your ACL, it might not be able to remount a tape that has already been mounted in the currently running job. This is true if the control setting on the ACL is set to AUTOMATIC. This might also be true if the control setting is set to SYSTEM and the software you use to mount tapes cannot handle this situation.

TAPEUSE allows BrightStor VM:Backup to remount tapes that have already been written to in the currently running backup job, minimizing the number of tapes needed for the job.

Refer to the *Managing Tape and DASD Resources* chapter for more information about tape remounts.

[Streams *number*]

for backup jobs, specifies the number of output streams the job is to use. Specify an integer from 1 through 15.

[TAPemount [Yes | No]]

for REINIT jobs, specifies whether BrightStor VM:Backup is to mount tapes during the job. YES tells BrightStor VM:Backup to mount the tapes specified in the job and rewrite the tape labels. NO tells BrightStor VM:Backup to not mount the tapes specified in the job; the tape labels are *not* rewritten. Whether YES or NO is specified, BrightStor VM:Backup updates either the resource pool information or the BrightStor VM:Tape TMC (if the tape is from a BrightStor VM:Tape pool) to indicate that the tape is expired and available for use. Specifying TAPEMOUNT is the same as specifying TAPEMOUNT YES.

[MDSKlist [*filename* [*filetype*]]]

for restore jobs, specifies that BrightStor VM:Backup is to ignore the input guidelines specified in the restore job template file and instead restore only those minidisks listed in the *filename filetype* file.

You can specify a file coded manually or a file generated by the MDSKLIST command. The file you specify must reside on the A-disk of the userid submitting the restore job template. The default is VMBACKUP MDSKLIST, which is the default name of the file generated by the MDSKLIST command.

If you use this parameter, specify it last.

Examples

- ▶ To submit the job defined by job template file AUTOCAT to run by itself as soon as possible, regardless of other jobs waiting in the job queue, enter the following command:

vmbackup submit autocat (exclusive priority

- ▶ To submit a system backup defined by a job template file named MONTHLY, enter the following command:

vmbackup submit monthly

- ▶ To submit a system backup defined by a job template file named WEEKLY, place the job in the queue, and place the job on hold, enter the following command:

vmbackup submit weekly (hold

- ▶ To submit a restore job defined by a job template file named WEEKLY, place the job on hold, and tell BrightStor VM:Backup to restore only those minidisks listed in the VMBACKUP MDSKLIST file, enter the following command:

vmbackup submit weekly (hold mdsklist

- ▶ To submit a system backup defined by a job template file named MONTHLY and specify that it should use two streams instead of one, enter the following command:

vmbackup submit monthly (streams 2

SUSPEND Command

Use the SUSPEND command to temporarily halt BrightStor VM:Backup job processing.

When processing is suspended, BrightStor VM:Backup allows all currently running jobs to complete, and prevents other jobs from starting. Only job processing stops; commands can still execute.

For instructions on resuming BrightStor VM:Backup job processing, refer to *RESUME Command* on page 61.

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