



HiCommand® Protection Manager Command Reference

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Preface

This document describes the syntax and precautions for extended commands and basic commands in HiCommand Protection Manager. Readers of this manual should have a basic knowledge of the contents presented in the manual *HiCommand Protection Manager User's Guide* (MK-94HC070).

Note: For troubleshooting information on HiCommand Protection Manager, refer to the applicable user document (e.g., *HiCommand Protection Manager User's Guide* for CLI issues, *HiCommand Protection Manager Console User's Guide* for GUI issues).

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Software Version

This document revision applies to HiCommand Protection Manager version 5.7.

Convention for Storage Capacity Values

Storage capacity values displayed by HiCommand Protection Manager are calculated based on the following values:

- 1 KB (kilobyte) = 1,024 bytes
- 1 MB (megabyte) = 1,024² bytes
- 1 GB (gigabyte) = 1,024³ bytes
- 1 TB (terabyte) = 1,024⁴ bytes

Referenced Documents

- *HiCommand Protection Manager User's Guide*, MK-94HC070
- *HiCommand Protection Manager Console User's Guide*, MK-94HC071
- *HiCommand Protection Manager Messages*, MK-94HC073

Readme and Release Notes Contents

These files can be found on the installation CD. They contain requirements that may not be fully described in this manual. Be sure to review these files before installation.

Comments

Please send us your comments on this document. Make sure to include the document title, number, and revision. Please refer to specific section(s) and paragraph(s) whenever possible.

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Chapter 1 Extended Commands

This chapter describes the extended commands provided by HiCommand Protection Manager:

- Overview of Extended Commands (see section 1.1)
- Installation Directory (see section 1.2)
- List of Extended Commands (see section 1.3)
- Extended Commands for Backing Up a File System (see section 1.5)
- Common Extended Commands (see section 1.6)
- Tape-Related Extended Commands (see section 1.7)
- Extended Commands for Backing Up a SQL Server Database (see section 1.8)
- Extended Commands for Backing Up a Microsoft Exchange Database (see section 1.9)

1.1 Overview of Extended Commands

Extended commands are used to reduce the time and effort associated with performing data protection operations such as backup and restore. You can use extended commands to automatically perform backup and restoration, without needing to specify further complicated operations.

For example, suppose that you want to back up data to tape using the Protection Manager commands. In such a case, you must interactively execute commands that serve the following functions:

1. Unlock the secondary volume.
2. Mount the secondary volume.
3. Unmount the secondary volume.
4. Lock the secondary volume.
5. Back up data to the secondary volume.
6. Check the execution results of the backup.
7. Export the backup information to a temporary file.
8. Lock the primary volume.
9. Transfer the temporary file, control files, or metafile to the backup server.
10. Import the backup information from the temporary file.
11. Check the execution results of the import.
12. Back up the data of the secondary volume to a tape.
13. Check the execution results of the tape backup.
14. Unlock the primary volume.

For all of the above activities, specifying the resource information to be operated on as well as the information related to backup is a complicated task.

In an extended command, this detailed information is pre-defined, and you can use a tool such as operation management software to automatically execute extended commands. Therefore, you can perform backup without needing to specify further complicated operations, thereby reducing the effort required for data protection operations.

Note: OS administrator permissions and access permissions for databases are required to execute Protection Manager commands. For further information, see the description of permissions for command executions in the *HiCommand Protection Manager User's Guide*.

1.2 Installation Directory

Extended commands are installed in the following location:

```
Protection-Products-installation-directory\script\bin\
```

1.3 List of Extended Commands

Table 1.1 - Table 1.5 lists and describes the extended commands. For more information about an extended command, refer to the appropriate page.

Table 1.1 Extended Commands (Backing Up a File System)

Extended Command	Description	Section
EX_DRM_FS_BACKUP	Backs up a file system.	1.5.1
EX_DRM_FS_DEF_CHECK	Checks the contents of an operation definition file, and automatically creates a temporary directory.	1.5.2
EX_DRM_FS_RESTORE	Restores a file system to the primary volume.	1.5.3

Table 1.2 Extended Commands (Common Commands)

Extended Command	Description	Section
EX_DRM_BACKUPID_SET	Generates a backup ID file.	1.6.1
EX_DRM_CG_DEF_CHECK	Checks the contents of a copy-group list file.	1.6.2
EX_DRM_DB_EXPORT	Exports backup information to a file.	1.6.3
EX_DRM_DB_IMPORT	Imports the backup information from a file.	1.6.4
EX_DRM_FTP_GET	Acquires a backup information file from the backup server. Also acquires a metafile if backing up a SQL Server database.	1.6.5
EX_DRM_FTP_PUT	Transfers a backup information file to the backup server. Also, acquires a metafile if backing up a SQL Server database.	1.6.6
EX_DRM_HOST_DEF_CHECK	Checks the contents of a host environment settings file.	1.6.7
EX_DRM_RESYNC	Resynchronizes a copy group.	1.6.8

Table 1.3 Extended Commands (Tape-Related Commands)

Extended Command	Description	Section
EX_DRM_CACHE_PURGE	Clears the cache of the secondary volume.	1.7.1
EX_DRM_MOUNT	Mounts a secondary volume.	1.7.2
EX_DRM_TAPE_BACKUP	Backs up data of a secondary volume to tape. Also acquires a metafile if backing up the SQL Server database.	1.7.3
EX_DRM_TAPE_RESTORE	Restores backup data from a tape to the secondary volume.	1.7.4
EX_DRM_UMOUNT	Unmounts the secondary volume.	1.7.5

Table 1.4 Extended Commands (Backing Up a SQL Server Database)

Extended Command	Description	Section
EX_DRM_SQL_BACKUP	Backs up a SQL Server database.	1.8.1
EX_DRM_SQL_DEF_CHECK	Checks the contents of an operation definition file and automatically creates a temporary directory.	1.8.2
EX_DRM_SQL_RESTORE	Restores the SQL Server database from its backup to the primary volume.	1.8.3
EX_DRM_SQL_TLOG_BACKUP	Backs up the transaction log of the SQL Server.	1.8.4
EX_DRM_SQLFILE_EXTRACT	Deploys the SQL Server's metafile to the directory to be backed up to a tape.	1.8.5
EX_DRM_SQLFILE_PACK	Backs up the SQL Server's metafiles.	1.8.6

Table 1.5 Extended Commands (Backing Up a Microsoft Exchange Database)

Extended Command	Description	Section
EX_DRM_EXG_BACKUP	Backs up an Exchange database.	1.9.1
EX_DRM_EXG_DEF_CHECK	Checks the contents of an operation definition file and automatically creates a temporary directory.	1.9.2
EX_DRM_EXG_RESTORE	Restores the Exchange database from its backup to the primary volume.	1.9.3
EX_DRM_EXG_VERIFY	Verifies the consistency of the Exchange database.	1.9.4

1.4 Before Reading the Extended Command Descriptions

Note the following points before reading the extended command descriptions.

Do not perform a forced termination of an extended command that is executing. If you do so, the pair status of the copy group or the backup catalog might enter an unexpected status.

OS administrator permissions and access permissions for databases are required to execute Protection Manager commands. For further information, see the description of permissions for command executions in the manual *HiCommand Protection Manager User's Guide*.

1.4.1 Extended Command Path

Installation directory of extended commands

Extended commands are installed in the following location:

In Windows:

Protection-Products-installation-directory\script\bin\

In UNIX:

/opt/drm/script/bin

1.4.2 Extended Command Formats

In this section, all arguments that can be specified are described. If there are multiple argument conditions, the formats are described separately for each condition. Do not mix separate formats.

1.4.2.1 Argument Conventions

The syntax explanations for extended command arguments use the following conventions.

Table 1.6 Conventions in Syntax Explanations for Arguments

Symbol	Description
 (vertical bar)	Only one of the options separated by a vertical bar can be used at one time. Example: log number all Either log number or all can be specified.
[] (brackets)	Selection of an item or items enclosed in brackets is optional. If two or more items separated by a vertical bar () are enclosed, you can specify one or none of them. Example: [-a -b] This means that you specify nothing, or -a or -b.
{ }	An item enclosed in braces must be specified. If two or more items are enclosed, any one of them must be specified.

(braces)	Example: { lock unlock } This means that you must select lock or unlock (but not both).
----------	--

1.4.2.2 Viewing the Format

To display the extended command format, execute an extended command, specifying the `-h` option after the extended command name. You can specify the `-h` option with the following commands:

- EX_DRM_FS_DEF_CHECK
- EX_DRM_CG_DEF_CHECK
- EX_DRM_HOST_DEF_CHECK
- EX_DRM_SQL_DEF_CHECK
- EX_DRM_EXG_DEF_CHECK
- EX_DRM_ORA_DEF_CHECK

1.5 Extended Commands for Backing Up a File System

1.5.1 EX_DRM_FS_BACKUP

This extended command backs up a file system.

Formats

- To perform online backup:

```
EX_DRM_FS_BACKUP operation-ID
    [ -mode online ] [-comment backup-comment]
    [-rc [ name-identifying-the-generation]]
    [-pf copy-parameter-definition-file]
    [ -script user-script-file-name ]
    [ -s backup-server-name
      [ -auto_import
        [ -auto_mount [ mount-point-directory-name ]]
      ]
    [ -svol_check ]
  ]
```

- To perform cold backup:

```
EX_DRM_FS_BACKUP operation-ID
    -mode cold [-comment backup-comment]
    [ -rc [ name-identifying-the-generation]]
    [ -pf copy-parameter-definition-file]
    [ -script user-script-file-name ]
    [ -s backup-server-name
      [ -auto_import
        [ -auto_mount [ mount-point-directory-name ]]
      ]
    [ -svol_check]
  ]
```

- To perform a VSS backup:

```
EX_DRM_FS_BACKUP operation-ID
    -mode vss
    [-comment backup-comment]
    [ -rc [ name-identifying-the-generation]]
    [ -pf copy-parameter-definition-file]
    [ -vf VSS-definition-file-name ]
    [ -script user-script-file-name ]
    [ -s backup-server-name
      [ -auto_import
        [ -auto_mount [ mount-point-directory-name ]]
      ]
    [ -svol_check ]
  ]
```

Description

This extended command backs up a file system from the primary volume to the secondary volume. The file system has the operation ID specified by executing the `drmfbackup` command. At this time, the `EX_DRM_FS_BACKUP` command generates a backup ID.

Prerequisite

The following is the prerequisite for executing this extended command:

- The operation definition file corresponding to the specified operation ID must be available.

Arguments

-operation-ID

Specify a unique character string identifying the resource that is to be the processing target. Information about the operation definition file corresponding to the specified operation ID is used when executing the extended command.

-mode online

Specify this option to perform online backup. With the online backup method, you back up a file system without unmounting it.

If you specify online backup for a file system, this extended command only synchronizes the file system before the online backup. To ensure consistency in the backup data, you need to suppress the updating of data before backup processing.

When this option is omitted, online backup is assumed.

-mode cold

Specify this option to perform cold backup.

Use cold backup for a mounted file system. When executed, this extended command unmounts the specified file system and backs up the volume in the offline mode.

Once the backup processing has finished, the command mounts the file system again. If unmounting of the file system fails, the command displays an error message and cancels backup processing. If the target volume has already been unmounted, the command cancels backup processing.

If executed on a server with a cluster configuration, this extended command places the target disk resource in the offline mode instead of unmounting the file system, and then backs up the volume. When backup processing is completed, the command places the target disk resources in the online mode again.

Backup processing is cancelled if this command is executed in the following cases:

- Placing the disk resource in the offline mode failed.
- The disk resource has already been in the offline mode.

-mode vss

Specify this option to perform VSS backup.

To use this option, the Protection Manager service must be running on the backup server.

-comment *backup-comment*

Specify this argument to register a backup comment in the backup catalog.

The *backup-comment* value can be a string of up to 64 bytes, and can consist of alphanumeric, special, one-byte space, and multi-byte characters. The backup comment is case sensitive. When a special character or a one-byte space character is used, the entire backup-comment string must be enclosed in double quotation marks ("). If the backup-comment string contains a special character but is not enclosed in double quotation marks, the special character is not properly handled as a part of the backup-comment string and is parsed as a special character.

The following special characters cannot be used for backup comments:

`\ / ` | < > " * ? & ; ()`

Note: The first character must not be a hyphen (-). If you specify two double quotation marks after the `-comment` option, as in `-comment ""`, no backup comment will be registered in the backup catalog.

-rc *name-identifying-the-generation*

Use this option to specify the name identifying the generation of the copy group to be backed up. Execute the `drmfssdisplay` command with the `-cf` option specified, and then specify a value for the displayed `GEN-NAME`. For single volumes, a hyphen (-) appears. In this case, the `-rc` option cannot be specified.

Always specify this option when backing up from a primary volume to a secondary volume on the remote side. If this option is omitted, the secondary volume on the local side is backed up.

If *name-identifying-the-generation* is omitted, the secondary volume that has the smallest value among the generation numbers on the remote side becomes the backup destination. In this case, the generation number is `remote_n`, where *n* is the smallest generation number.

-pf *copy-parameter-definition-file*

Specify this option to use the number of retries and retry interval defined in the copy parameter definition file. Specify only the file name and not the path.

If this option is omitted, the value in the RAID Manager-linkage definition file (`DEFAULT.dat`) is used. The values in the RAID Manager-linkage definition file (`DEFAULT.dat`) are used for any parameters that are not coded in the copy parameter definition file.

Create the copy parameter definition file with an arbitrary name in the following location. Specify the file name using alphanumeric characters up to 64 bytes.

Protection-Products-installation-directory\conf\raid

-vf *VSS-definition-file-name*

Specify this option to switch the settings to be used for each VSS backup. You can use this option only when using VSS for backup. For *VSS-definition-file-name*, specify the file name only. Do not specify the folder name. The VSS definition file specified in this option must be stored in the following folder:

`Protection-Products-installation-directory\conf\vss`

If you omit this option, the command uses the following file as the VSS definition file:

```
Protection-Products-installation-directory\conf\vsscom.conf
```

For details about the VSS definition file, see the manual *HiCommand Protection Manager User's Guide*.

-script *user-script-file-name*

Specify this option to execute a user script. Use an absolute path name to specify *user-script-file-name*. Conditions for specifying a user script file name are as follows:

- Maximum number of bytes: 255
- Available characters: Characters that can be used in a file name in Windows. If the name contains one or more space characters, the entire name string must be enclosed in double quotation marks ("").

For details on the coding used for a user script file, see the explanation on how to create a user script in the *HiCommand Protection Manager User's Guide*.

If you specified `LOCATION=REMOTE` in the user script file, you must also specify the `-s` option.

-s *backup-server-name*

Specify this option to connect to a remote backup server to perform a backup. Specify the host name or the IP address of the backup server by using a character string that is no more than 255 bytes.

If you specify the backup server name in the `-s` option, the backup server names specified in the VSS definition file (`vsscom.conf`) and the VSS definition file specified in the `-vf` option will become invalid, and the backup server name specified in the `-s` option will be used.

-auto_import

Specify this option to automatically transfer a backup catalog to a backup server after completing a volume backup. This option must be specified concurrently with the `-s` option.

-auto_mount *mount-point-directory-name*

Specify this option to automatically mount a secondary volume on a backup server after completing a volume backup. This option must be specified concurrently with the `-s` and `-auto_import` options.

Specify *mount-point-directory-name* by using no more than 64 bytes of characters.

If you omit *mount-point-directory-name*, a mount destination for a secondary volume is automatically specified. Apply the same rule as when a mount point is not explicitly specified in the `drmmount` command.

To unmount the mounted secondary volume, use the `drmumount` command.

-svol_check

Specify this option to check the status of a secondary volume on a backup server. This option must be specified concurrently with the `-s` option. Checking the status of a secondary volume prevents backup or restoration failures. Items, targets, and conditions to be checked are as follows:

Table 1.7 Status Check of a Secondary Volume

Check item	Volume to be checked	Check condition
A secondary volume is hidden from a backup server	All secondary volumes defined for a backup-target primary volume	Checked when a primary volume is defined in pairs with secondary volumes of multiple generations and either of the following items is applicable: <ul style="list-style-type: none"> - A primary volume is a cluster resource. - A primary volume is a dynamic disk. - A backup by using VSS is performed.
A secondary volume is not mounted on a backup server	A secondary volume to be the next backup destination	Always checked.

Return Values

- 0: Normal termination.
- Any value other than 0: Termination with an error.

Notes

- The backup information in the backup catalog is managed based on use of a copy group as a key. Depending on the backup method, you might not be able to perform restoration, even though the backup data exists on the secondary volume.
- For further information, see the notes on running Protection Manager in the *HiCommand Protection Manager User's Guide (MK-94HC070)*.

Conditions Causing an Error

This extended command fails in the following cases:

- When an invalid option was specified.
- When the system failed to obtain information about the definition file corresponding to the operation ID.
- When the specified Protection Manager command option cannot be specified as an option of this extended command.
- When the system failed to record a backup ID in the backup ID record file.
- When a command executed inside the extended command has encountered an error.
- When information could not be acquired from the host environment settings file.
- When no storage directory for extended-command temporary files has been specified in the operation definition file.
- When the command fails to obtain the name of the dictionary map file storage directory.

Examples

- In this example, the command backs up the file system identified by the operation ID `operation01` to the secondary volume, using the cold backup method:

```
EX_DRM_FS_BACKUP operation01 -mode cold
```

- In this example, the command backs up the file system identified by the operation ID `operation01` to the secondary volume, using the VSS backup method:

```
EX_DRM_FS_BACKUP operation01 -mode vss
```

1.5.2 EX_DRM_FS_DEF_CHECK

This extended command checks the contents of an operation definition file and automatically creates a temporary directory.

Formats

- To check the contents of an operation definition file on the file server:

```
EX_DRM_FS_DEF_CHECK operation-ID -db
```

- To check the contents of an operation definition file on the backup server:

```
EX_DRM_FS_DEF_CHECK operation-ID -bk
```

- To view the command usage:

```
EX_DRM_FS_DEF_CHECK -h
```

Description

This extended command checks the contents of an operation definition file, and if no problem is found, also automatically creates a temporary directory that will be used by subsequent extended commands.

The definition file checking tool must be re-executed in the following cases:

- If the path to the dictionary map file storage directory was changed on the file server.
- If the directory path assigned to `FTP_HOME_DIR` was changed on the backup server.

When checking the contents of the operation definition file, this extended command first checks whether the operation definition file exists, and then checks all the entries in the operation definition file for the following:

- The item name and value have been specified.
- The item has been specified only once.
- The number of characters does not exceed the maximum allowable number of characters for that item.

In addition, this command checks the details listed in Table 1.8 for all items specified in the operation definition file. Table 1.9 lists the directories that are automatically created by the checking tool. If you want to check an operation definition file created with an old version of Protection Manager, see the description of backwards compatibility in the *HiCommand Protection Manager User's Guide (MK-94HC070)*.

Table 1.8 Details Checked in the Operation Definition File

Item Name	Details to be Checked
BACKUP_OBJECT	FILESYSTEM is specified.
DB_SERVER_NAME	If a value of 1 is specified in SET_DRM_HOSTNAME, the value of DB_SERVER_NAME must match the file server name specified in DRM_DB_PATH of the Protection Manager configuration definition file init.conf.
INSTANCE_NAME	The mount point directory specified in INSTANCE_NAME must exist. If a mount point list file is specified, both the specified file and the mount point's directory defined in it must exist.
TARGET_NAME	The specified file or directory must exist. In a Microsoft Windows environment, directory names are not case sensitive. The specified file and directories must be under the mount point directory assigned to INSTANCE_NAME.
FTP_HOME_DIR	The specified directory must exist. ^{#2#3} The absolute path must be specified.
FTP_SUB_DIR	The specified directory name must not contain a delimiter character (\). The directory name must not be specified as only one period (.) or two periods (..). The root directory must not be specified.
SET_DRM_HOSTNAME	The value 0 or 1 is specified.

Table 1.9 Directories Automatically Created by EX_DRM_FS_DEF_CHECK

Where EX_DRM_FS_DEF_CHECK is Executed	Temporary Directory for Extended Commands
File server	<i>script_work-directory-at-the-same-level-as-the-dictionary-map-file-storage-directory\operation-ID\</i> DB Example: When the dictionary map file storage directory is H:\PTM and the operation ID is Operation_A, the extended command temporary directory is H:\script_work\Operation_A\DB.
Backup server	<i>directory-specified-for-FTP_HOME_DIR\directory-specified-for-FTP_SUB_DIR\operation-ID\</i> BK

Prerequisites

The following are the prerequisites for executing this extended command:

- The command must be executed on the server that contains the target file.
- The same host must have the mount point directory specified in the operation definition file that is stored in the file server.

Arguments

-operation-ID

Specify a unique character string that indicates the target resource. The information in the operation definition file that corresponds to the specified operation ID is used for the execution of this extended command.

-db

Specify this option when you want to check the contents of an operation definition file on the file server.

-bk

Specify this operation when you want to check the contents of an operation definition file on the backup server.

-h

This option displays the command usage.

Return Values

0: Normal termination.

Any value other than 0: Termination with an error.

Conditions Causing an Error

This extended command fails in the following cases:

- When an invalid option was specified.
- When the operation definition file specified in the argument does not exist, or the system cannot access the file.
- When an error was detected when the file contents were checked.
- When the command fails to create a temporary directory.
- When the command fails to obtain the name of the dictionary map file storage directory.

Examples

- In this example, the command checks the definition file `C:\Program Files\drm\SCRIPT\conf_OP0001.dat` on the file server:

```
EX_DRM_FS_DEF_CHECK OP0001 -db
```

- In this example, the command checks the definition file `C:\Program Files\drm\SCRIPT\conf_OP0001.dat` on the backup server:

```
EX_DRM_FS_DEF_CHECK OP0001 -bk
```

1.5.3 EX_DRM_FS_RESTORE

This extended command restores a file system to the primary volume.

Format

- To resynchronize the primary and secondary volumes and then restore a file system:

```
EX_DRM_FS_RESTORE operation-ID -resync [ -force ]
                    [ -target file-name-or-directory-name
                    | -f list-file-name ]
                    [ -pf copy-parameter-definition-file]
```

Description

This extended command restores a specified file system from its backup data from the secondary volume to the primary volume by executing the `drmfsrestore` command.

Prerequisites

The following are the prerequisites for executing this extended command:

- The operation definition file corresponding to the specified operation ID must be available.
- Before this extended command is executed, `EX_DRM_BACKUPID_SET` or `EX_DRM_DB_IMPORT` must have been executed, and the backup ID must have been stored in the backup ID record file.

Arguments

-operation-ID

Specify a unique character string that indicates the target resource. The information in the operation definition file that corresponds to the specified operation ID is used for the execution of this extended command.

-resync

Specify this option to resynchronize the primary and secondary volumes for restoration. The backup data on the secondary volume is synchronized to the data on the primary volume.

-force

Specify this option to forcibly resynchronize the primary volume and the secondary volume and then restore the file system. With this option, forced resynchronization is performed if the copy group name of the primary volume obtained when the backup processing was performed on the file server matches the information on the file server, even though the LDEV and SERIAL numbers do not match the LDEV and SERIAL numbers when the backup processing was performed.

-target file-name-or-directory-name

Specify this option to restore a file system that contains a specific file or directory. You can specify more than one file name or directory name by separating each by a comma. Use an absolute path name to specify the file name or directory name.

The specified file name or directory name must have been registered in the backup catalog. However, if the specified file or directory has already been backed up, it does not need to be registered in the backup catalog to restore the file system.

If you omit this option along with the `-f` option, the command restores the entire file system.

-f *list-file-name*

To restore a file system that contains multiple files or directories, use this option to specify the name of the file that contains a list of absolute path names of the files or directories. Use an absolute path name to specify *list-file-name*.

If you omit this option along with the `-target` option, the command restores the entire file system.

-pf *copy-parameter-definition-file*

Specify this option to use the number of retries and retry interval defined in the copy parameter definition file. Specify only the file name and not the path.

If this option is omitted, the value in the RAID Manager-linkage definition file (`DEFAULT.dat`) is used. The values in the RAID Manager-linkage definition file (`DEFAULT.dat`) are used for any parameters that are not coded in the copy parameter definition file.

Create the copy parameter definition file with an arbitrary name in the following location. Specify the file name using alphanumeric characters up to 64 bytes.

Protection-Products-installation-directory\conf\raid

Notes

- The backup information in the backup catalog is managed based on using a copy group as a key. Depending on the backup method, you might not be able to perform restoration, even though the backup data exists on the secondary volume.
- For further information, see the notes on running Protection Manager in the *HiCommand Protection Manager User's Guide*.
- If `ONLINE` is set in `CLU_MSCS_RESTORE` in the Protection Products configuration definition file (`init.conf`), restoration can be performed while the cluster resources are online when you restore a volume within a cluster group in an MSCS environment.

Return Values

0: Normal termination.

Any value other than 0: Termination with an error.

Conditions Causing an Error

This extended command fails in the following cases:

- When an invalid option is specified.
- When acquisition of the definition file information corresponding to the operation ID fails.
- When the specified option of a Protection Manager command is not supported by this extended command.
- When acquisition of information from the backup ID record file fails.
- When a command executed inside the extended command has encountered an error.
- When the acquisition of the result of a command executed inside the extended command fails.
- When information could not be acquired from the host environment settings file.

- When no storage directory for extended-command temporary files has been specified in the operation definition file.
- When the command fails to obtain the name of the dictionary map file storage directory.

Example

In this example, the command resynchronizes and then restores the file system identified by the operation definition file `operation01`:

```
EX_DRM_FS_RESTORE operation01 -resync
```

1.6 Common Extended Commands

1.6.1 EX_DRM_BACKUPID_SET

This extended command generates a backup ID file.

Format

- To generate a backup ID file:

```
EX_DRM_BACKUPID_SET operation-ID -backup_id backup-ID
```

Description

This extended command generates a backup ID file that contains the specified backup ID and stores the file in the temporary directory for extended commands.

Execute this extended command as preparation before restoring the backed up file system or the database to the primary volume. Specify the backup ID to be used for restore (the backup ID generated when you backed up the file system or the database to the secondary volume) and execute the command.

Prerequisites

The following are the prerequisites for executing this extended command:

- The operation definition file corresponding to the specified operation ID must have been created.
- Before executing this extended command, you must confirm the backup ID to be specified with this extended command by viewing the backup catalog information. This information can be obtained by using the following command:
 - When the backup is of a file system, use the `drmfscat` command.
 - When the backup is of a SQL Server database, use the `drmsqlcat` command.
 - When the backup is of a storage group, use the `drmexgcat` command.

Arguments

-operation-ID

Specify the unique character string that indicates the resource to be operated.

-backup_id backup-ID

Specify the backup ID to be used when restoring the backed up file system or the database to the primary volume. A backup ID uniquely identifies backup data. It is registered in the backup catalog at backup.

Return Values

0: Normal termination.

Any value other than 0: Termination with an error.

Conditions Causing an Error

This extended command fails in the following cases:

- When an invalid option is specified.
- When information could not be acquired from the operation definition file corresponding to the operation ID.
- When the backup ID could not be recorded in the backup ID file.
- When a command executed inside the extended command has encountered an error.
- When information could not be acquired from the host environment settings file.
- When no storage directory for extended-command temporary files has been specified in the operation definition file.
- When the command fails to obtain the name of the dictionary map file storage directory.

Example

In this example, the command creates a backup ID file that contains the backup ID 0000000001:

```
EX_DRM_BACKUPID_SET operation01 -backup_id 0000000001
```

1.6.2 EX_DRM_CG_DEF_CHECK

This extended command checks the contents of a copy-group list file.

Format

- To check the contents of a copy-group list file:

```
EX_DRM_CG_DEF_CHECK -cg_file copy-group-list-file-name
```

- To display the command usage:

```
EX_DRM_CG_DEF_CHECK -h
```

Description

This extended command checks the contents of a copy-group list file. First, this command checks to see if the file specified in the argument exists. If it does exist, the command then checks all the copy groups set in the copy-group list file to make sure that:

- One copy group name is coded on each line.
- There is no duplication of copy group names in the file.
- The copy group names in the file are included in the list of copy groups displayed by the `drmcgctl` command.
- Copy group names are case sensitive.

Prerequisite

The following is the prerequisite for executing this extended command:

- This extended command must be executed on the machine that contains the copy-group list file to be checked.

Arguments

-cg_file *copy-group-list-file-name*

Use an absolute path name to specify the copy-group list file to be checked.

-h

Displays the usage of this command.

Return Values

0: Normal termination.

Any value other than 0: Termination with an error.

Conditions Causing an Error

This extended command fails in the following cases:

- When an invalid option is specified.
- When the file specified in the argument does not exist, or the system cannot access the file.
- When an error is detected in the copy-group list file.
- When a command executed inside the extended command has encountered an error.

Examples

- In this example, the command checks the copy-group list file `C:\WORK\CGDEF.txt`:

```
EX_DRM_CG_DEF_CHECK -cg_file C:\WORK\CGDEF.txt
```

1.6.3 EX_DRM_DB_EXPORT

This extended command exports backup information to a file.

Format

```
EX_DRM_DB_EXPORT operation-ID
```

Description

This extended command executes the `drmdbexport` command to export the backup information corresponding to the specified operation ID. The backup information that was exported is recorded in the backup information file of the temporary directory for extended commands.

The backup ID is used to specify the backup information to be exported during the `drmdbexport` command execution from the backup ID file in the temporary directory for extended commands.

Prerequisites

The following are the prerequisites for executing this extended command:

- The operation definition file corresponding to the specified operation ID must have been created.
- The backup ID to be referenced by this extended command must have already been stored in the backup ID file by executing the following extended command:
 - When the backup is of a file system, use the `EX_DRM_FS_BACKUP` or `EX_DRM_TAPE_RESTORE` command.
 - When the backup is of a SQL Server database, use the `EX_DRM_SQL_BACKUP` or `EX_DRM_TAPE_RESTORE` command.
 - When the backup is of a storage group, use the `EX_DRM_EXG_BACKUP` or `EX_DRM_TAPE_RESTORE` command.

Arguments

-operation-ID

Specify the unique character string that indicates the resource to be operated. The information in the operation definition file corresponding to the specified operation ID is used for executing this extended command.

Return Values

0: Normal termination.

Any value other than 0: Termination with an error.

Conditions Causing an Error

This extended command fails in the following cases:

- When an invalid option is specified.
- When information could not be acquired from the operation definition file corresponding to the operation ID.
- When information could not be acquired from the host environment settings file.
- When no storage directory for extended-command temporary files has been specified in the operation definition file.
- When information could not be acquired from the backup ID file.
- When a command executed inside the extended command has encountered an error.
- When the execution results of a command executed inside the extended command could not be acquired.
- When the command fails to obtain the name of the dictionary map file storage directory.

Example

In this example, the command exports the backup information that is identified by the operation ID `operation01`:

```
EX_DRM_DB_EXPORT operation01
```

1.6.4 EX_DRM_DB_IMPORT

This extended command imports backup information from a file.

Format

```
EX_DRM_DB_IMPORT operation-ID
```

Description

This extended command executes the `drmdbimport` command to import the backup information corresponding to the specified operation ID. This extended command also generates a backup ID and records it in a backup ID file in the temporary directory for extended commands.

The backup information to be imported by executing the `drmdbimport` command is obtained from the backup information file of the temporary directory for extended commands.

Prerequisites

The following are the prerequisites for executing this extended command:

- The operation definition file corresponding to the specified operation ID must have been created.
- The backup information file to be imported by executing this extended command must have been generated by executing the `EX_DRM_FTP_PUT` or `EX_DRM_FTP_GET` extended command.

Arguments

-operation-ID

Specify the unique character string that indicates the resource to be operated. The information in the operation definition file corresponding to the specified operation ID is used for executing this extended command.

Return Values

0: Normal termination.

Any value other than 0: Termination with an error.

Conditions Causing an Error

This extended command fails in the following cases:

- When an invalid option is specified.
- When information could not be acquired from the operation definition file corresponding to the operation ID.
- When the copy source folder of the file to be copied does not exist.
- When the backup ID could not be recorded in the backup ID file.
- When a command executed inside the extended command has encountered an error.
- When information could not be acquired from the host environment settings file.

- When no storage directory for extended-command temporary files has been specified in the operation definition file.
- When the command fails to obtain the name of the dictionary map file storage directory.

Example

In this example, the command imports the backup information, based on the settings in the operation definition file `operation01`:

```
EX_DRM_DB_IMPORT operation01
```

1.6.5 EX_DRM_FTP_GET

This extended command acquires the desired backup information file from the backup server.

Format

```
EX_DRM_FTP_GET operation-ID -server FTP-server
                -user FTP-user -password FTP-password
```

Description

The `EX_DRM_FTP_GET` command transfers the backup information file corresponding to the operation ID specified in the arguments from the temporary directory for the extended commands on the FTP server to the temporary directory for the extended commands on the FTP client. At this time, it deletes old backup information files stored in the directories of the FTP client before transferring the new file. The command also transfers the SQL Server metafile (when the backup is of a SQL Server database) at the same time.

Prerequisites

The following are the prerequisites for executing this extended command:

- The operation definition file corresponding to the specified operation ID must have been created.
- This extended command must be executed on the FTP client.
- The files that this extended command will transmit must have already been generated by executing the `EX_DRM_DB_EXPORT` extended command.
- Before this extended command can be executed, the `EX_DRM_FS_DEF_CHECK` command must be executed to create a directory on the FTP server that will contain the transferred files.

Arguments

Specify the arguments of this extended command in the following order:

```
operation-ID, -server FTP-server-name, -user FTP-user-name, -password
FTP-password.
```

-operation-ID

Specify the unique character string that indicates the resource to be operated. The information in the operation definition file corresponding to the specified operation ID is used for executing this extended command.

-server *FTP-server*

In *FTP-server*, specify the host name or the IP address of the FTP server from which you want to transmit the files.

-user *FTP-user*

In *FTP-user*, specify the FTP user name used when connecting to the FTP server.

-password *FTP-password*

In *FTP-password*, specify the FTP user password used when connecting to the FTP server.

Return Values

0: Normal termination.

Any value other than 0: Termination with an error.

Conditions Causing an Error

This extended command fails in the following cases:

- When an invalid option is specified.
- When information could not be acquired from the operation definition file corresponding to the operation ID.
- When connection to the FTP server or file transmission failed.
- When a command executed inside the extended command has encountered an error.
- The backup information file to be transferred by this extended command does not exist.
- When information could not be acquired from the host environment settings file.
- When the storage directory for extended-command temporary files specified in the operation definition file does not exist on the file server or the database server.
- When the command fails to obtain the name of the dictionary map file storage directory.

Example

In this example, the command performs file transmission from the FTP server to the FTP client, based on the settings in the operation definition file *operation01*. The command uses *serverA* as the FTP server, *ftp_user* as the FTP user, and *ftp_passwd* as the FTP password *ftp_passwd*.

```
EX_DRM_FTP_GET operation01 -server serverA -user ftp_user -password ftp_passwd
```

1.6.6 EX_DRM_FTP_PUT

This extended command transfers the backup information file to the backup server.

Format

```
EX_DRM_FTP_PUT operation-ID -server FTP-server  
-user FTP-user -password FTP-password
```

Description

The `EX_DRM_FTP_PUT` command transfers the backup information file corresponding to the operation ID specified in the arguments from the temporary directory for the extended commands on the FTP client to the temporary directory for the extended commands on the FTP server. It deletes old backup information files stored in the directories of the FTP server before transferring the new file. The command also transfers the SQL Server metafile (when the backup is of a SQL Server database) at the same time.

Prerequisites

The following are the prerequisites for executing this extended command:

- The operation definition file corresponding to the specified operation ID must have been created.
- This extended command must be executed on the FTP client.
- The backup information file that this extended command will transmit must have already been generated by executing the `EX_DRM_DB_EXPORT` extended command.
- Before this extended command can be executed, the `EX_DRM_FS_DEF_CHECK` command must be executed to create a directory on the FTP server that will contain the transferred files.

Arguments

Specify the arguments of this extended command in the following order:

operation-ID, *-server FTP-server-name*, *-user FTP-user-name*, *-password FTP-password*.

-operation-ID

Specify the unique character string that indicates the resource to be operated. The information in the operation definition file corresponding to the specified operation ID is used for executing this extended command.

-server *FTP-server*

In *FTP-server*, specify the host name or the IP address of the FTP server to which you want to transmit the files.

-user *FTP-user*

In *FTP-user*, specify the FTP user name used when connecting to the FTP server.

-password *FTP-password*

In *FTP-password*, specify the FTP user password used when connecting to the FTP server.

Return Values

0: Normal termination.

Any value other than 0: Termination with an error.

Conditions Causing an Error

This extended command fails in the following cases:

- When an invalid option is specified.
- When information could not be acquired from the operation definition file corresponding to the operation ID.
- When connection to the FTP server or file transmission failed.
- When a command executed inside the extended command has encountered an error.
- The backup information file to be transferred by this extended command does not exist.
- When information could not be acquired from the host environment settings file.
- When the storage directory for extended-command temporary files specified in the operation definition file does not exist on the file server or the database server.
- When the command fails to obtain the name of the dictionary map file storage directory.

Example

In this example, the command performs file transmission from the FTP client to the FTP server, based on the settings in the operation definition file `operation01`. The command uses `serverA` as the FTP server, `ftp_user` as the FTP user, and `ftp_passwd` as the FTP password.

```
EX_DRM_FTP_PUT operation01 -server serverA -user ftp_user -password ftp_passwd
```

1.6.7 EX_DRM_HOST_DEF_CHECK

This extended command checks the contents of a host environment settings file.

Format

- To check the contents of a host environment settings file on the file server or the database server:

```
EX_DRM_HOST_DEF_CHECK -db -f environment-settings-file-name
```

- To check the contents of a host environment settings file on the backup server:

```
EX_DRM_HOST_DEF_CHECK -bk -f environment-settings-file-name
```

- To display a help for the use of this extended command:

```
EX_DRM_HOST_DEF_CHECK -h
```

Description

This extended command checks the contents of the host environment settings file.

- First, this extended command checks whether the specified file exists.

- Then, when the file exists, this extended command checks the contents of the `HOST_ROLE` and `MAX_LOG_LINES` entries in the host environment settings file for the settings shown in Table 1.10.

Table 1.10 Items Checked for Host Environment Settings File

Item	Items Checked
<code>HOST_ROLE</code>	Both the name and value of the item are specified. Only one item is specified. The length of the value in characters does not exceed the maximum value. If the <code>-db</code> argument is specified in the extended command, <code>DB</code> is specified as the item. If the <code>-bk</code> argument is specified in the extended command, <code>BK</code> is specified as the item.
<code>MAX_LOG_LINES</code>	Both the name and value of the item are specified. Only one item is specified. The length of the value in characters does not exceed the maximum value. The specified value is an integer in the range from 1,000 to 100,000.
<code>MSG_OUTPUT#</code>	Only one item is specified. The length of the value in characters does not exceed the maximum value. Either <code>NORMAL</code> or <code>DETAIL</code> is specified.

#

If the item name and value are not specified, the default value (`NORMAL`) is applied.

Prerequisites

The following is the prerequisite for executing this extended command:

- This extended command must be executed on the machine that contains the host environment settings file to be checked.

Arguments

-db

Specify this option to check the contents of a host environment settings file on the file server or the database server.

-bk

Specify this option to check the contents of a host environment settings file on the backup server.

-f *environment-settings-file-name*

In *file-name*, specify the absolute path name of the host environment settings file you want to check.

-h

Specify this option to display a help for the usage of this extended command.

Return Values

0: Normal termination.

Any value other than 0: Termination with an error.

Conditions Causing an Error

This extended command fails in the following cases:

- When an invalid option is specified.
- When the file specified in the argument does not exist, or the system cannot access the file.
- When the check of the contents of the file for setting up the host environment detected an abnormality.

Examples

- In this example, the command checks the contents of the host environment settings file `C:\Program Files\drm\SCRIPT\conf\host.dat` that is placed on the file server or the database server:

```
EX_DRM_HOST_DEF_CHECK -db -f "C:\Program Files\drm\SCRIPT\conf\host.dat"
```

- In this example, the command checks the contents of the host environment settings file `C:\Program Files\drm\SCRIPT\conf\host.dat` that is placed on the backup server:

```
EX_DRM_HOST_DEF_CHECK -bk -f "C:\Program Files\drm\SCRIPT\conf\host.dat"
```

1.6.8 EX_DRM_RESYNC

This extended command resynchronizes a copy group.

Format

- To resynchronize the copy group when normal operation is in the pair state:

```
EX_DRM_RESYNC operation-ID  
  [ -copy_size copy-track-size ]  
  [ -pf copy-parameter-definition-file ]
```

- To resynchronize more than one copy group when normal operation is in the split state:

```
EX_DRM_RESYNC operation-ID  
  { -cg copy-group | -cg_file copy-group-list-file }  
  [ -copy_size copy-track-size ] [ -pf copy-parameter-definition-file ]
```

Description

The `EX_DRM_RESYNC` command executes the `drmresync` command and resynchronizes copy groups. Executing this extended command before you back up a file system or the database to the secondary volume enhances the speed of backup processing.

When usual operation is in the pair state, the specified copy group is resynchronized based on the backup ID created when data is backed up from the primary volume to the secondary volume. When usual operation is in the split state, you need to specify the copy group to be resynchronized because the copy group needs to be resynchronized before the backup. The copy group to be resynchronized is selected from the execution result of the `drmcgetl` or `drmfscat` command.

If there is a copy group that has not been used for backup processing, the extended command automatically specifies that copy group. If none of the copy groups has been used for backup processing, the command specifies the first copy group in the pair definitions.

If all copy groups have been used for backup processing, the command specifies the oldest copy group used for backup processing.

Resynchronization is required in the following cases:

- If the Thunder 9200 product is to be used.
- If ShadowImage is to be used with the Thunder 9500V Series product or TagmaStore AMS/WMS Series.

Prerequisites

The following are the prerequisites for executing this extended command:

- The operation definition file corresponding to the specified operation ID must have been created.
- The copy-group list file must have already been created when copy groups are resynchronized by using the copy-group list file.
- When usual operation is in the pair state, the file system or the database must have been backed up to the secondary volume by the following commands, and the backup ID file must have already been created.
 - When the backup is of a file system, use `EX_DRM_FS_BACKUP`.
 - When the backup is of a SQL Server database, use `EX_DRM_SQL_BACKUP`.
 - When the backup is of a storage group, use `EX_DRM_EXG_BACKUP`.

Arguments

Specify the arguments of this extended command in the following order:

operation-ID, -cg copy-group-name, -cg_file copy-group-list-file, -copy_size copy-track-size.

-operation-ID

Specify the unique character string that indicates the resource to be operated. The information in the operation definition file corresponding to the specified operation ID is used for executing this extended command.

-cg copy-group

When usual operation is in the split state, specify the name of a copy group you want to resynchronize. Specify the copy group to be used at the next backup.

-cg_file copy-group-list-file

When usual operation is in the split state, specify the absolute path name of the copy-group list file that contains the copy group you want to resynchronize. Use this item if you want to resynchronize many copy groups all at one time. Specify the copy group to be used at the next backup.

-copy_size copy-track-size

In copy-track-size, specify a numeric value (specifiable range from 1 to 15) as the copy track size to be used for copy group resynchronization. If you do not specify this option, the extended command uses the copy track size specified in the `DRM_COPY_SIZE` environment variable of Protection Manager.

-pf copy-parameter-definition-file

Specify this option to use the number of retries and retry interval defined in the copy parameter definition file. Specify only the file name and not the path.

If this option is omitted, the value in the RAID Manager-linkage definition file (`DEFAULT.dat`) is used. The values in `DEFAULT.dat` are used for any parameters that are not coded in the copy parameter definition file.

Create the copy parameter definition file with an arbitrary name in the following location. Specify the file name using alphanumeric characters up to 64 bytes.

Protection-Products-installation-directory\conf\raid

Return Values

0: Normal termination.

Any value other than 0: Termination with an error.

Conditions Causing an Error

This extended command fails in the following cases:

- When an invalid option is specified.
- When information could not be acquired from the operation definition file corresponding to the operation ID.
- When information could not be acquired from the backup ID file (when no copy group is specified).
- When information could not be acquired from the copy-group list file (when the file was specified).
- When an invalid copy track size is specified.
- When a command executed inside the extended command has encountered an error.
- When the acquisition of the result of a command executed inside the extended command failed.
- When information could not be acquired from the host environment settings file.
- When no storage directory for extended-command temporary files has been specified in the operation definition file.
- When the command fails to obtain the name of the dictionary map file storage directory.

Examples

- In this example, the command resynchronizes the pair volume of the copy group CG001, dev01:

```
EX_DRM_RESYNC operation01 -cg CG001,dev01
```

- In this example, the command resynchronizes the pair volumes of the copy group specified in the list file C:\temp\CGLIST.txt in batch mode:

```
EX_DRM_RESYNC operation01 -cg_file C:\temp\CGLIST.txt
```

- In this example, the command resynchronizes the pair volume of the copy group corresponding to the backup ID recorded in the backup ID file:

```
EX_DRM_RESYNC operation01
```

1.7 Tape-Related Extended Commands

1.7.1 EX_DRM_CACHE_PURGE

This extended command clears the cache of the secondary volume.

Format

- To clear the cache of the secondary volume when usual operation is in the pair state:

```
EX_DRM_CACHE_PURGE operation-ID
```

- To clear the cache of the secondary volume when usual operation is in the split state:

```
EX_DRM_CACHE_PURGE operation-ID  
    { -cg copy-group | -cg_file copy-group-list-file }
```

Description

This extended command sequentially executes the `drmmount` and `drmumount` commands to clear the cache of the secondary volume.

When usual operation is in the pair state, the cache of the secondary volume for the specified copy group is cleared based on the backup ID created when data is backed up from the primary volume to the secondary volume. When usual operation is in the split state, you need to specify the copy group to clear the cache of the secondary volume since the cache needs to be cleared before the backup.

Prerequisites

The following are the prerequisites for executing this extended command:

- The operation definition file corresponding to the specified operation ID must have been created.
- During ordinary paired operation, the file system or the database must have been backed up to a secondary volume by the following extended command, and a backup ID record file must have been generated by:
 - When the backup is of a file system, use the `EX_DRM_FS_BACKUP` command.
 - When the backup is of a SQL Server database, use the `EX_DRM_SQL_BACKUP` command.
 - When the backup is of a storage group, use the `EX_DRM_EXG_BACKUP` command.

Arguments

-operation-ID

Specify the unique character string that indicates the resource to be operated. The information in the operation definition file corresponding to the specified operation ID is used for executing this extended command.

-cg copy-group

When usual operation is in the split state, specify the name of the copy group to clear the cache of the secondary volume. When the copy group to be used at the next backup is identified, specify the copy group. When the copy group to be used at the next backup is not identified, specify all the copy groups.

-cg_file copy-group-list-file

When usual operation is in the split state, use an absolute path name to specify the copy-group list file that records the copy group for which you want to clear the cache of the secondary volume. Use this option if you want to clear the caches for many copy groups at the same time. When the copy group to be used at the next backup is identified, specify the copy group. When the copy group to be used at the next backup is not identified, specify all the copy groups.

Return Values

0: Normal termination.

Any value other than 0: Termination with an error.

Note: Before you try to back up the file system or the database to a secondary volume, execute this extended command for all secondary volumes of resources to be backed up. Assume that you back up data without clearing the cache of the secondary volume. In this case, when you mount the secondary volume, the existing cache is overwritten to the secondary volume and the backup data may be destroyed.

Conditions Causing an Error

This extended command fails in the following cases:

- When an invalid option is specified.
- When information could not be acquired from the operation definition file corresponding to the operation ID.
- When the backup ID could not be acquired from the backup ID file (when the copy group was not specified).
- When information could not be acquired from the copy-group list file (when the file was specified).
- When information could not be acquired from the host environment settings file.
- When no storage directory for extended-command temporary files has been specified in the operation definition file.
- When a command executed inside the extended command has encountered an error.
- When the acquisition of the result of a command executed inside the extended command failed.
- When the command fails to obtain the name of the dictionary map file storage directory.

Examples

- In this example, the command clears the cache of the secondary volume that belongs to the CG001, dev01 copy group:

```
EX_DRM_CACHE_PURGE operation01 -cg CG001,dev01
```

- In this example, the command clears the cache of the secondary volume that belongs to the copy group specified in the C:\temp\CGLIST.txt copy-group list file:

```
EX_DRM_CACHE_PURGE operation01 -cg_file C:\temp\CGLIST.txt
```

- In this example, the command clears the cache of the secondary volume that belongs to the copy group corresponding to the backup ID recorded in the backup ID file:

```
EX_DRM_CACHE_PURGE operation01
```

1.7.2 EX_DRM_MOUNT

This extended command mounts a secondary volume.

Format

To mount a volume in a basic disk configuration:

```
EX_DRM_MOUNT operation-ID [ -copy_group copy-group-name | -force ]  
[ -mount_pt mount-point-directory-name ]
```

To mount a volume in a dynamic disk configuration:

```
EX_DRM_MOUNT operation-ID  
[ -mount_pt mount-point-directory-name ] [ -force ] [ -conf ]
```

Description

The EX_DRM_MOUNT command mounts a secondary volume and locks the appropriate copy group. Use this command as follows:

1. Mount the secondary volume to be backed up or restored.
2. Clear the system cache before backing up the secondary volume.
3. Mount the secondary volume that is unmounted after it has been backed up or restored.

If the copy group mount definition file exists, the mount point specified in this file is used as the mount point for the secondary volume. For details about the copy group mount definition file, see the settings for mounting a secondary volume in the *HiCommand Protection Manager User's Guide (MK-94HC070)*.

The copy group locked by EX_DRM_MOUNT is unlocked by the EX_DRM_UMOUNT command. Therefore, if a secondary volume was mounted using the EX_DRM_MOUNT command, make sure that you unmount it by using the EX_DRM_UMOUNT command.

You cannot mount the secondary volume if it has not been formatted as a file system, nor can you mount mirrored secondary volumes.

The `EX_DRM_MOUNT` command can mount secondary volumes that are subject to disk-group configuration backup and restoration by the volume manager. To mount a secondary volume with dynamic disk configuration (same as the disk group) in a standard Windows Logical Disk Manager (LDM) environment or VERITAS Volume Manager for Windows environment, a copy group mount definition file must be created in advance. You can automatically create a copy group mount definition file by executing the `drmmount` command with the `-conf` option specified.

In the following cases, the `EX_DRM_MOUNT` command outputs a message, and results in an error without mounting the secondary volume:

- You execute this command on a host where the secondary volume cannot be referenced.
- The copy group name, LDEV number, and DKC serial number of the primary volume obtained when you execute backup do not match the current backup server information.
- You execute this command for a paired secondary volume (PAIR).

Arguments

-operation-ID

Specify the unique character string that indicates the resource to be operated.

-copy_group *copy-group-name*

Specifies the name of the copy group to be mounted. You must clear the system cache before backing up data. When doing so, specify a copy group from the backup server and mount the secondary volume. Then, when you unmount the secondary volume with the `EX_DRM_UMOUNT` command, the system cache is cleared.

To specify the `-copy_group` option in dynamic disk configuration in a standard Windows Logical Disk Manager (LDM) environment or VERITAS Volume Manager for Windows environment, a copy group mount definition file must be created in advance.

-mount_pt *mount-point-directory-name*

Specifies, with an absolute path name, the name of the mount point directory on which the secondary volume is to be mounted.

- Specify a mount point directory name with a drive character, or an absolute path name beginning with a drive character.
- Conditions for specifying a mount point directory name are as follows:
 - Maximum number of characters: Path lengths to be specified must comply with the specification of the mount or unmount function provided by RAID Manager.
 - Available characters: Characters that can be used in a directory name in Microsoft Windows (but not space characters).
- If you specify a drive character as the mount point directory name, the `EX_DRM_MOUNT` command searches for unused drives in alphabetical order using the specified drive as a base point, and mounts the appropriate secondary volume.

- If you specify an absolute path name beginning with a drive character as the mount point directory name, and then specify and mount a copy group name, the `EX_DRM_MOUNT` command mounts the secondary volume corresponding to the specified absolute path name.
- Even if the absolute path name does not end with a backslash (\), the command assumes that a backslash has been specified. For example, `D:` is assumed to be the same drive as `D:\`. Similarly, `D:\MOUNTDIR` is assumed to be the same directory as `D:\MOUNTDIR\`.

If you omit this option, one of the following mount points are used:

drive-not-used-when-the-EX_DRM_MOUNT-command-is-executed

-force

Specify this option when you want to forcibly mount the secondary volume. If the specified backup ID matches the copy group name of the mount volume, the command forcibly mounts the secondary volume even if the LDEV number or DKC serial number of the secondary volume does not match.

Note: If you specify the `-force` option, data may be destroyed, because the command mounts the secondary volume without checking the LDEV number and DKC serial number.

-conf

Specify this option to extract copy group mount definition information from the mounted secondary volume to create or update the copy group mount definition file. The copy group mount definition file must be created to mount a secondary volume and perform a tape backup or restoration in dynamic disk configuration in a standard Windows Logical Disk Manager (LDM) environment or VERITAS Volume Manager for Windows environment.

This option must be specified with the operation ID.

The created copy group mount definition file name is shown below:

Protection-Products-installation-directory\conf\vm\CG_MP.conf

Return Values

0: Normal termination.

Any value other than 0: Termination with an error.

1.7.3 EX_DRM_TAPE_BACKUP

This extended command backs up data such as a secondary volume to tape.

Format

```
EX_DRM_TAPE_BACKUP operation-ID  
                    [ -exopt [ -mount_pt mount-point-directory-name ]  
                    [ -raw ][ -force ] [ -bup_env configuration_definition_file_name ] ]
```

The command can be executed in the following format:

```
EX_DRM_TAPE_BACKUP operation-ID  
                    [ [ -mount_pt mount-point-directory-name ] [ -raw ] ]
```

Description

This extended command executes the `drmmount`, `drmmmediabackup`, and `drmumount` commands, mounts the secondary volume at a specific mount point on the backup server, and then backs up data from the secondary volume to a tape. When backup to the tape finishes, the secondary volume that was mounted is automatically unmounted. The command also backs up the SQL Server metafile (when the backup is of a SQL Server database) to a tape.

When the `drmmount` command terminates normally, the `drmumount` command is executed regardless of the `drmmmediabackup` command result.

Prerequisites

The following are the prerequisites for executing this extended command:

- The operation definition file corresponding to the specified operation ID must have been created.
- The backup management product must be used with Protection Manager.
- The backup ID must have been stored in the backup ID file by executing the `EX_DRM_DB_IMPORT` extended command.
- The mount point directory must have been created.
- Take the command retry period into consideration when you execute more than one `EX_DRM_TAPE_BACKUP` command concurrently. For details about the settings, see notes on command execution in the *HiCommand Protection Manager User's Guide* (MK-94HC070).

Arguments

-operation-ID

Specify the unique character string that indicates the resource to be operated. The information in the operation definition file corresponding to the specified operation ID is used for executing this extended command.

-exopt

Specify this option when you want to use extended functions. You have to specify `-exopt` if you specify any other option; however, you can omit `-exopt` if you do not specify the `-force` or `-bup_env` option (or both).

-mount_pt *mount-point-directory-name*

Specify the name of the mount point directory on which the secondary volume is to be mounted. The secondary volume is mounted at the specified mount point, and data is backed up from the secondary volume to a tape.

Specify the mount point directory name by the absolute path or the drive letter.

The mount point directory name must satisfy the following:

- Maximum number of characters: Path lengths to be specified must comply with the specification of the mount or unmount function provided by RAID Manager

Make sure that the lengths of the path on which the backup-target output volume has been mounted in the disk backup, as well as the path on which the secondary volume is to be mounted in the tape backup, are within the above limits.

- Characters: Characters that can be used for directory names in Microsoft Windows (you cannot use a space character)

If you specify a drive for the mount point directory name, the command searches for unused drive names in alphabetical order beginning from the specified drive, and then mounts the secondary volume on the first found drive.

If you specify an absolute path from the drive letter as the mount point directory name, the command mounts the secondary volume on the following location:

absolute-path-specified-for-mount-point-directory-name\drive-letters-for-primary-volume\absolute-path-for-primary-volume

(Example)

When a primary volume is mounted on C:\p_mnt\ and a mount point directory name specified for the -mount_pt option is D:\s_mnt\, a mount destination of a secondary volume is D:\s_mnt\C\p_mnt\.

When mounting the secondary volume by specifying the copy group name:

absolute-path-specified-for-mount-point-directory-name

Even if the path does not end with a backslash (\), the command assumes that a backslash has been specified. For example, D: and D:\ are assumed to be the same drive. D:\MOUNTDIR and D:\MOUNTDIR\ are assumed to be the same directory.

When this option is omitted, the following mount point will be used:

Any drive not being used when the extended command is executed.

-raw

Specify this option when you want to back up the secondary volume as a raw device. When this extended command backs up the secondary volume as a raw device, this extended command does not mount the secondary volume and performs a backup for each logical volume.

When this option is omitted, the extended command backs up the secondary volume as a file system (or a database).

-force

Specify this option to forcibly mount the secondary volume. If you specify this option and the copy group name of the primary volume obtained during backup processing on the file server (or the database server) matches the file server (or the database server) information, the extended command forcibly mounts the secondary volume, even if the `LDEV` or `SERIAL` numbers do not match.

If you omit this option, this extended command terminates with an error without performing mounting if the following condition also holds: the copy group name, `LDEV` number, and `SERIAL` number of the primary volume, that were obtained when backup was performed on the file server or database server, do not match the information on the file server or database server.

Specify this option when it is necessary to perform a forced mount on a secondary volume using only the copy group name of the primary volume as a key. For example, in cases such as when the secondary volume is to be replaced for a reason such as a failure, or when an `LDEV` number or `SERIAL` number was changed. Data may be damaged if you specify this option for a normal backup operation.

-bup_env configuration-definition-file-name

Specify this option if you wish to use a startup parameter in a user-created configuration definition file when backing up to, or restoring from a tape.

If you omit this option, the default configuration definition file is used. So, you need to create the default configuration definition file in advance.

Create the configuration definition file in the same directory as the default configuration definition file. For further information, see the description of configuration definition file creation in the *HiCommand Protection Manager User's Guide* (MK-94HC070).

The specified configuration definition file name must fulfill the following requirements:

- Maximum number of characters (total length of the directory name and file name): 255 bytes.
- Available characters: Characters that can be used for file names in Windows.

Return Values

0: Normal termination.

Any value other than 0: Termination with an error.

Conditions Causing an Error

This extended command fails in the following cases:

- When an invalid option is specified.
- When information could not be acquired from the operation definition file corresponding to the operation ID.
- When the arguments of this extended command include an option of a Protection Manager command that cannot be used for this extended command.
- When information could not be acquired from the backup ID file.
- When a command executed inside the extended command has encountered an error.

- When the acquisition of the result of a command executed inside the extended command failed.
- When information could not be acquired from the host environment settings file.
- When no storage directory for extended-command temporary files has been specified in the operation definition file.
- When the command fails to obtain the name of the dictionary map file storage directory.

Examples

- In this example, the command backs up the secondary volume as a raw device, based on the settings in the operation definition file `operation01`:

```
EX_DRM_TAPE_BACKUP operation01 -exopt -raw
```

- In this example, the command forcibly mounts the secondary volume identified by the operation ID `operation01` and execute tape backup:

```
EX_DRM_TAPE_BACKUP operation01 -exopt -backup -force
```

1.7.4 EX_DRM_TAPE_RESTORE

This extended command restores data from backup tape to the secondary volume.

Format

```
EX_DRM_TAPE_RESTORE operation-ID -backup_id backup-ID
                    [ -exopt [ -mount_pt mount-point-directory-name] [ -raw ]
                    [ -force ] [ -bup_env configuration-definition-file-name ] ]
```

The command can be executed in the following format:

```
EX_DRM_TAPE_RESTORE operation-ID -backup_id backup-ID
                    [ [ -mount_pt mount-point-directory-name] [ -raw ] ]
```

Description

This extended command executes the `drmmount`, `drmmmediarestore`, and `drmmumount` commands and restores backup data from a tape to the secondary volume. The extended command also creates a backup ID record file containing the backup ID. The command also restores the SQL Server metafile (when the backup is of a SQL Server database).

When you execute `EX_DRM_TAPE_RESTORE`, the `drmmmediarestore` command is executed and a window opens. During this processing, the window on which the extended command was started is in the `WAIT` status.

If Backup Exec is in use, the following message will appear in the window where the `drmmmediarestore` command was started. Follow the instructions contained in the message to perform restoration.

After restoration, enter one of the following keywords:

- YES (normal termination).
- NO (termination with an error).

- CANCEL (cancels the operation).

After the restore operation using Backup Exec finishes, enter the correct password.

If NetBackup is in use, the window closes after `drmmediarestore` command execution terminates.

Perform the subsequent processing in the window where the extended command was started.

When the `drmmount` command terminates normally, the `drmumount` command is executed, regardless of the `drmmediarestore` command results.

Prerequisites

The following are the prerequisites for executing this extended command:

- The operation definition file corresponding to the specified operation ID must have been created.
- The backup management product must be used with Protection Manager.
- The backup ID to be specified in this extended command must have already been determined by executing the `drmtapecat` command.
- The mount point directory must have been created.
- Take the command retry period into consideration when you execute more than one `EX_DRM_TAPE_RESTORE` command concurrently. For details about the settings, see notes on command execution in the *HiCommand Protection Manager User's Guide* (MK-94HC070).

Arguments

-operation-ID

Specify the unique character string that indicates the resource to be operated. The information in the operation definition file corresponding to the specified operation ID is used for executing this extended command.

-backup_id *backup-ID*

In *backup-ID*, specify the backup ID of the backup you want to use for restoration. The backup ID is a unique ID to identify backup data and registered in the backup catalog during backup. To check the desired backup ID, execute the `drmtapecat` command.

-exopt

Specify this option before any of the following four options: `-mount_pt`, `-raw`, `-force`, and `-bup_env configuration-definition-file-name`.

-mount_pt *mount-point-directory-name*

Specify the name of the mount point directory on which the secondary volume is to be mounted. The secondary volume is mounted at the specified mount point, and data is restored from a tape to the secondary volume.

- Specify the mount point directory name by the absolute path or the drive letter.
- The mount point directory name must satisfy the following:

- Maximum number of characters: Path lengths to be specified must comply with the limitation of the mount or unmount functionality provided by RAID Manager.
 - Characters: Characters that can be used for directory names in Microsoft Windows (you cannot use a space character).
- If you specify a drive for the mount point directory name, the command searches for unused drive names in alphabetical order beginning from the specified drive, and then mounts the secondary volume on the first found drive.
 - If you specify an absolute path from the drive letter as the mount point directory name, the command mounts the secondary volume on the following location:
absolute-path-specified-for-mount-point-directory-name\drive-letters-for-primary-volume\absolute-path-for-primary-volume
- Examples
 - When a primary volume is mounted on C:\p_mnt\ and a mount point directory name specified for the `-mount_pt` option is D:\s_mnt\, a mount destination of a secondary volume is D:\s_mnt\C\p_mnt\.
 - If a path does not end with \, the command assumes \ at the end of the path. For example, D: and D:\ are assumed to be the same drive. D:\MOUNTDIR and D:\MOUNTDIR\ are assumed to be the same directory.

When this option is omitted, the following mount point will be used:

Any drive not being used when the extended command is executed.

-raw

Specify this option when the data to be restored was backed up onto tape as raw device data.

If the target data has been backed up by the `EX_DRM_TAPE_BACKUP` extended command specifying the `-raw` option, this extended command executes restore processing normally, even when this option is omitted. If this option is specified when the target data was backed up without the `-raw` option specified, an error occurs for this extended command.

-force

Specify this option to forcibly mount the secondary volume. If you specify this option and the copy group name of the primary volume obtained during backup processing on the file server (or the database server) matches the file server (or the database server) information, the extended command forcibly mounts the secondary volume, even if the `LDEV` or `SERIAL` number does not match.

If you omit this option, this extended command terminates with an error without performing mounting if the following condition also holds: the copy group name, `LDEV` number, and `SERIAL` number of the primary volume, that were obtained when backup was performed on the file server or database server, do not match the information on the file server or database server.

Specify this option when it is necessary to perform a forced mount on a secondary volume using only the copy group name of the primary volume as a key. For example, in cases such as when the secondary volume is to be replaced for a reason such as a failure, or when an LDEV number or SERIAL number was changed. Data may be damaged if you specify this option for a normal backup operation.

-bup_env configuration-definition-file-name

Specify this option if you wish to use a startup parameter in a user-created configuration definition file, when backing up to, or restoring from a tape.

If you omit this option, the default configuration definition file is used. So, you need to create the default configuration definition file in advance.

Create the configuration definition file in the same directory as the default configuration definition file. For further information, see the description of configuration definition file creation in the *HiCommand Protection Manager User's Guide* (MK-94HC070).

The specified configuration definition file name must fulfill the following requirements:

- Maximum number of characters (total length of the directory name and file name): 255 bytes.
- Available characters: Characters that can be used for file names in Windows.

Return Values

0: Normal termination.

Any value other than 0: Termination with an error.

Conditions Causing an Error

This extended command fails in the following cases:

- When an invalid option is specified.
- When information could not be acquired from the operation definition file corresponding to the operation ID.
- When the arguments of this extended command include an option of a Protection Manager command that cannot be used for this extended command.
- When the backup ID could not be recorded in the backup ID file.
- When a command executed inside the extended command has encountered an error.
- When the acquisition of the result of a command executed inside the extended command failed.
- When information could not be acquired from the host environment settings file.
- When no storage directory for extended-command temporary files has been specified in the operation definition file.
- When the command fails to obtain the name of the dictionary map file storage directory.

Examples

- In this example, the command restores the backup data identified by the operation ID `operation01` from a tape to the secondary volume.

`0000000001` is the backup ID that was created when this data was backed up to the tape. The secondary volume is mounted on drive E:

```
EX_DRM_TAPE_RESTORE operation01 -backup_id 0000000001 -exopt -mount_pt E:
```

- In this example, the command restores the backup data identified by the operation ID `operation01` from a tape to the secondary volume by forcibly mounting it at the specified mount point.

`0000000001` is the backup ID that was created when this data was backed up to the tape. The secondary volume is mounted on drive E:.

```
EX_DRM_TAPE_RESTORE operation01 -backup_id 0000000001 -exopt -mount_pt E: -force
```

1.7.5 EX_DRM_UMOUNT

This extended command unmounts a secondary volume.

Format

```
EX_DRM_UMOUNT operation-ID [ -copy_group copy-group-name ]
```

Description

The `EX_DRM_UMOUNT` command unmounts the secondary volume mounted by the `EX_DRM_MOUNT` command and unlocks the appropriate copy group.

If the volume corresponding to the specified copy group name is already unmounted, the `EX_DRM_UMOUNT` command displays a warning message indicating that the volume is already unmounted and continues processing.

If you back up data with the `drmmmediabackup` command or restore data with the `drmmmediarestore` command, you must use the `EX_DRM_UMOUNT` command to unmount the secondary volume.

You must also stop all application programs that use the secondary volume that is to be unmounted, before executing this command.

Executing any of the following commands, when the secondary volume is already mounted by the `EX_DRM_MOUNT` command, makes it impossible for you to unmount the secondary volume with the `EX_DRM_UMOUNT` command:

- `EX_DRM_FS_BACKUP`
- `EX_DRM_RESYNC`
- `EX_DRM_TAPE_RESTORE`

If you cannot unmount the secondary volume by using the `EX_DRM_UMOUNT` command, unlock the copy group by using the `drmcgctl` command, and then follow the procedures the secondary volume using the unmount function provided by RAID Manager.

Arguments

-operation-ID

Specify the unique character string that indicates the resource to be operated.

-copy_group *copy-group-name*

Specifies the name of the copy group (mounted by the `EX_DRM_MOUNT` command) to be unmounted. You must clear the system cache before backing up data. At this time, specify a copy group from the backup server and mount the secondary volume with the `EX_DRM_MOUNT` command. Then, when you unmount the secondary volume with the `EX_DRM_UMOUNT` command, the system cache is cleared.

To check the copy group name, execute the `drmfscat` command or the `drmfdisplay` command.

Return Values

0: Normal termination.

Any value other than 0: Termination with an error.

1.8 Extended Commands for Backing Up a SQL Server Database

This section explains the extended commands that apply when the backup is of a SQL Server database.

1.8.1 EX_DRM_SQL_BACKUP

This extended command backs up a SQL Server database.

Format

```
EX_DRM_SQL_BACKUP operation-ID
                    [ -system ]
                    [-comment backup-comment ]
                    [ -rc [ name-identifying-the-generation ]]
                    [ -pf copy-parameter-definition-file ]
                    [ -script user-script-file-name ]
                    [ -s backup-server-name
                    [ -auto_import
                      [ -auto_mount [ mount-point-directory-name ]]
                    ]
                    [ -svol_check ]
                    ]
```

Description

This extended command executes the `drmsqlbackup` command to back up the SQL Server database of the instance that was specified by the operation ID from the primary volume to the secondary volume. When this extended command performs a backup, a backup ID is generated.

If the data files, databases, and other objects of the resolved instance exist on multiple volumes, all the primary volumes for them will be backed up to the secondary volumes. When the SQL Server instance is backed up, online backup is performed. If you specify an inactive instance when executing this extended command, the extended command error occurs.

Table 1.11 indicates the files to be backed up.

Table 1.11 SQL Server Database Files to Be Backed Up

Option Assigned by EX_DRM_SQL_BACKUP Command	Database of Interest	File Type of Interest	Backup File Name	Storage Destination for Backup Files
-system	master	Data file	Same as the backup source file name	Secondary volume
		Transaction log file	Same as the backup source file name	Secondary volume
		Meta file	Varies depending on the VDI metafile storage directory specified with the <code>drmsqlinit</code> command. This file is created when the <code>drmsqlbackup</code> command is executed. If you registered a VDI metafile storage directory by using the <code>drmsqlinit</code> command, the backup file is stored in the registered directory. The file name is <code>backup-ID_database-ID.dmp</code> . If you did not register a VDI metafile storage directory by using the <code>drmsqlinit</code> command, the backup file is stored in the directory that contains the file with the smallest management number (<code>file_id</code>) value for SQL Server in the database file. The file name is <code>META_database-ID.dmp</code> .	
	model	Data file	Same as the backup source file name	Secondary volume
		Transaction log file	Same as the backup source file name	Secondary volume
		Meta file	Varies depending on the VDI metafile storage directory specified with the <code>drmsqlinit</code> command. This file is created when the <code>drmsqlbackup</code> command is executed. If you registered a VDI metafile storage directory by using the <code>drmsqlinit</code> command, the backup file is stored in the registered directory. The file name is <code>backup-ID_database-ID.dmp</code> . If you did not register a VDI metafile storage directory by using the <code>drmsqlinit</code> command, the backup file is stored in the directory that contains the file with the smallest management number (<code>file_id</code>) value for SQL Server in the database file. The file name is <code>META_database-ID.dmp</code> .	
	msdb	Data file	Same as the backup source file name	Secondary volume
		Transaction log file	Same as the backup source file name	Secondary volume
		Meta file	Varies depending on the VDI metafile storage directory specified with the <code>drmsqlinit</code> command. This file is created when the <code>drmsqlbackup</code> command is executed. If you registered a VDI metafile storage directory by using the <code>drmsqlinit</code> command, the backup file is stored in the registered directory. The file name is <code>backup-ID_database-ID.dmp</code> . If you did not register a VDI metafile storage directory by using the <code>drmsqlinit</code> command, the backup file is stored in the directory that contains the file with the smallest management number (<code>file_id</code>) value for SQL Server in the database file. The file name is <code>META_database-ID.dmp</code> .	
	User database	Data file	Same as the backup source file name	Secondary volume
		Transaction log file	Same as the backup source file name	Secondary volume

		Meta file	Varies depending on the VDI metafile storage directory specified with the <code>drmsqlinit</code> command. This file is created when the <code>drmsqlbackup</code> command is executed. If you registered a VDI metafile storage directory by using the <code>drmsqlinit</code> command, the backup file is stored in the registered directory. The file name is <code>backup-ID_database-ID.dmp</code> . If you did not register a VDI metafile storage directory by using the <code>drmsqlinit</code> command, the backup file is stored in the directory that contains the file with the smallest management number (<code>file_id</code>) value for SQL Server in the database file. The file name is <code>META_database-ID.dmp</code> .	
	Distribution database	Data file	Same as the backup source file name	Secondary volume
		Transaction log file	Same as the backup source file name	Secondary volume
		Meta file	Varies depending on the VDI metafile storage directory specified with the <code>-drmsqlinit</code> command. This file is created when the <code>drmsqlbackup</code> command is executed. If you registered a VDI metafile storage directory by using the <code>drmsqlinit</code> command, the backup file is stored in the registered directory. The file name is <code>backup-ID_database-ID.dmp</code> . If you did not register a VDI metafile storage directory by using the <code>drmsqlinit</code> command, the backup file is stored in the directory that contains the file with the smallest management number (<code>file_id</code>) value for SQL Server in the database file. The file name is <code>META_database-ID.dmp</code> .	
No assignment for <code>-system</code>	User database	Data file	Same as the backup source file name	Secondary volume
		Transaction log file	Same as the backup source file name	Secondary volume
		Meta file	Varies depending on the VDI metafile storage directory specified with the <code>drmsqlinit</code> command. This file is created when the <code>drmsqlbackup</code> command is executed. If you registered a VDI metafile storage directory by using the <code>drmsqlinit</code> command, the backup file is stored in the registered directory. The file name is <code>backup-ID_database-ID.dmp</code> . If you did not register a VDI metafile storage directory by using the <code>drmsqlinit</code> command, the backup file is stored in the directory that contains the file with the smallest management number (<code>file_id</code>) value for SQL Server in the database file. The file name is <code>META_database-ID.dmp</code> .	

Prerequisite

The following is the prerequisite for executing this extended command:

- The operation definition file corresponding to the specified operation ID must have been created.

Arguments

operation-ID

Specify the unique character string that indicates the resource to be operated. The information in the operation definition file corresponding to the specified operation ID is used for executing this extended command.

-system

Use this option to specify the system databases (master, model, and msdb) as the database you want to back up. If this option is specified, SQL Server will be stopped when the restoration is carried out.

If this option is specified when a database name is assigned to `TARGET_NAME` in the operation definition file that corresponds to the specified operation ID, the extended command error occurs.

-comment *backup-comment*

Specify this argument to register a backup comment in the backup catalog.

The backup-comment value can be a string of up to 64 bytes that consists of alphanumeric, special, one-byte space, and multi-byte characters. The backup comment is case sensitive. When a special character, or a one-byte space character is used, the entire backup-comment string must be enclosed in double quotation marks ("). If the backup-comment string contains a special character but is not enclosed in double quotation marks, the special character is not properly handled as a part of the backup-comment string and is parsed as a special character.

The following special characters cannot be used for backup comments:

`\ / ` | < > " * ? & ; ()`

Note: The first character must not be a hyphen (-). If you specify two double quotation marks after the `-comment` option, as in `-comment ""`, no backup comment will be registered in the backup catalog.

-rc *name-identifying-the-generation*

Use this option to specify the name identifying the generation of the copy group to be backed up. Execute the `drmsqldisplay` command with the `-cf` option specified, and then specify a value for the displayed `GEN-NAME`. For single volumes, a hyphen (-) appears. In this case, the `-rc` option cannot be specified.

Always specify this option when backing up from a primary volume to a secondary volume on the remote side. If this option is omitted, the secondary volume on the local side is backed up.

If *name-identifying-the-generation* is omitted, the secondary volume that has the smallest value among the generation numbers on the remote side becomes the backup destination. In this case, the generation number is `remote_n`, where *n* is the smallest generation number.

-pf *copy-parameter-definition-file*

Specify this option to use the number of retries and retry interval defined in the copy parameter definition file. Specify only the file name and not the path.

If this option is omitted, the value in the RAID Manager-linkage definition file (DEFAULT.dat) is used. The values in the RAID Manager-linkage definition file (DEFAULT.dat) are used for any parameters that are not coded in the copy parameter definition file.

Create the copy parameter definition file with an arbitrary name in the following location: *Protection-Products-installation-directory\confraid*. Specify the file name using alphanumeric characters up to 64 bytes.

-script *user-script-file-name*

Specify this option to execute a user script. Use an absolute path name to specify *user-script-file-name*. Conditions for specifying *user-script-file-name* are as follows:

- Maximum number of bytes: 255.
- Available characters: Characters that can be used in a file name in Microsoft Windows. If the name contains one or more space characters, the entire name string must be enclosed in double quotation marks ("").

If you specified LOCAL_BACKUP=NO in the user script file, an error will occur when the command is executed. For details on the coding used for a user script file, see the explanation on how to create a user script in the *HiCommand Protection Manager User's Guide*.

If you specified LOCATION=REMOTE in the user script file, you must also specify the -s option.

-s *backup-server-name*

Specify this option to connect to a remote backup server to perform a backup. Specify the host name or the IP address of the backup server by using a character string that is no more than 255 bytes.

-auto_import

Specify this option to automatically transfer a backup catalog to a backup server after completing a volume backup. This option must be specified concurrently with the -s option.

-auto_mount *mount-point-directory-name*

Specify this option to automatically mount a secondary volume on a backup server after completing a volume backup. This option must be specified concurrently with the -s and -auto_import options.

Specify *mount-point-directory-name* by using no more than 64 bytes of characters.

If you omit *mount-point-directory-name*, a mount destination for a secondary volume is automatically specified. Apply the same rule as when a mount point is not explicitly specified in the drmmount command.

To unmount the mounted secondary volume, use the drmumount command.

-svol_check

Specify this option to check the status of a secondary volume on a backup server. This option must be specified concurrently with the -s option. Checking the status of a secondary volume prevents backup or restoration failures. Items, targets, and conditions to be checked are as follows:

Table 1.12 Status Check of a Secondary Volume

Check item	Volume to be checked	Check condition
A secondary volume is hidden from a backup server	All secondary volumes defined for a backup-target primary volume	Checked when a primary volume is defined in pairs with multiple generations of secondary volumes and if one of the following items is applicable: - A primary volume is a cluster resource. - A primary volume is a dynamic disk.
A secondary volume is not mounted on a backup server	A secondary volume to be the next backup destination	Always checked.

Return Values

0: Normal termination.

Any value other than 0: Termination with an error.

Note: The backup information in the backup catalog is managed based on the copy group used as a key. Depending on the backup method, you might not be able to perform restoration, even though the backup data exists on the secondary volume. For further information, see the notes on running Protection Manager in the *HiCommand Protection Manager User's Guide (MK-94HC070)*.

Conditions Causing an Error

This extended command fails in the following cases:

- When an invalid option is specified.
- When information could not be acquired from the operation definition file corresponding to the operation ID.
- When a Protection Manager command option that cannot be specified as an option of this extended command is specified.
- When the backup ID could not be recorded in the backup ID file.
- When a command executed inside the extended command has encountered an error.
- When the command fails to obtain the name of the dictionary map file storage directory.

Example

In this example, the command backs up the system databases (master, model, and msdb) to the secondary volume, based on the settings in the operation definition file operation01:

```
EX_DRM_SQL_BACKUP operation01 -system
```

1.8.2 EX_DRM_SQL_DEF_CHECK

This extended command checks the contents of an operation definition file and automatically creates a temporary directory.

Format

- To specify the operation ID to check the contents of an operation definition file on the database server, use:

```
EX_DRM_SQL_DEF_CHECK operation-ID -db
```

- To specify the operation ID to check the contents of an operation definition file on the backup server, use:

```
EX_DRM_SQL_DEF_CHECK operation-ID -bk
```

- To specify the definition file name to check the contents of an operation definition file on the database server, use:

```
EX_DRM_SQL_DEF_CHECK -db -f definition-file-name
```

- To specify the definition file name to check the contents of an operation definition file on the backup server, use:

```
EX_DRM_SQL_DEF_CHECK -bk -f definition-file-name
```

- To display a help for the use of this extended command, use:

```
EX_DRM_SQL_DEF_CHECK -h
```

Description

This extended command checks the contents of an operation definition file, and if no problem is found, automatically creates a temporary directory that will be used by subsequent extended commands.

Note that the definition file checking tool must be re-executed in the following cases:

- If the path to the dictionary map file storage directory is changed on the database server.
- If the directory path assigned to `FTP_HOME_DIR` is changed on the backup server.

When checking the contents of the operation definition file, this extended command first checks whether the file assigned to the argument exists, and then checks all the entries in the operation definition file for the following:

- Whether an item name and a value are specified.
- Whether only one item is specified.
- Whether the number of specified characters does not exceed the maximum.

For details on each item in the operation definition file, Table 1.13 shows the checked contents. Table 1.14 lists the directories that are automatically created by the checking tool. If you want to check an operation definition file created with an older version of Protection Manager, see the description of backward compatibility in the *HiCommand Protection Manager User's Guide* (MK-94HC070).

Table 1.13 Contents Checked in Operation Definition File

Entry Name	Contents Checked
BACKUP_OBJECT	Whether MSSQL is specified
DB_SERVER_NAME	Whether the database connection can be established by executing a combination of DB_SERVER_NAME and INSTANCE_NAME Whether the value of DB_SERVER_NAME matches the database server name set in DRM_DB_PATH of the Protection Manager configuration definition file init.conf, when 1 is specified to SET_DRM_HOSTNAME
INSTANCE_NAME	Whether the database connection can be established by executing a combination of DB_SERVER_NAME and INSTANCE_NAME
TARGET_NAME	Whether the database name exists (by checking the contents of the sysdatabases table in the master database): Database and folder names are not case sensitive. Whether the tempdb database is included in the databases to be backed up
FTP_HOME_DIR	Whether the specified directory exists. #1#2 Whether the absolute path is specified.
FTP_SUB_DIR	Whether the specified directory name contains a delimiter character (\). Whether the specified directory name consists only of one period (.) or two periods (..). Whether the root directory is specified.
SET_DRM_HOSTNAME	Whether the value is either 0 or 1

Table 1.14 Directories Automatically Created by EX_DRM_SQL_DEF_CHECK

Where EX_DRM_SQL_DEF_CHECK is Executed	Temporary Directory for Extended Commands	VDI Metafile Storage Directory
Database server	<i>script_work-directory-at-the-same-level-as-the-dictionary-map-file-storage-directory\operation-ID\DB</i> Example: When the dictionary map file storage directory is H:\PTM, and the operation ID is Operation_A, the extended command temporary directory is H:\script_work\Operation_A\DB.	The VDI metafile storage directory that was registered with the drmsqlinit command, or the directory that contains the smallest file_id of all the SQL Server database data files to be backed up (if the VDI metafile storage directory was not specified for drmsqlinit)
Backup server	<i>directory-specified-for-FTP_HOME_DIR\directory-specified-for-FTP_SUB_DIR\operation-ID\BK</i>	<i>directory-specified-for-FTP_HOME_DIR\directory-specified-for-FTP_SUB_DIR\operation-ID\AP</i>

Prerequisites

The following are the prerequisites for executing this extended command:

- The user account of the user currently logged into Microsoft Windows must allow connection to the database server.
- The SQL Server service must be running on the database server.
- The SQL Server instance specified in the file you want to check must exist on a host when the command is executed on the database server.
- Queries can be issued to the databases in the same SQL Server instance when the command is executed on the database server.
- The initial settings for the instance specified in `INSTANCE_NAME` must have been specified by executing the `drmsqlinit` command.

Arguments

-operation-ID

Specify a unique character string that indicates the target resource. The information in the operation definition file that corresponds to the specified operation ID is used for the execution of this extended command.

-db

Specify this option to check the contents of the operation definition file on the database server.

-bk

Specify this option to check the contents of the operation definition file on the backup server.

-f *definition-file-name*

Specify the absolute path name of the operation definition file you want to check.

-h

Specify this option to display a help for the usage of this extended command.

Return Values

0: Normal termination.

Any value other than 0: Termination with an error.

Conditions Causing an Error

This extended command fails in the following cases:

- When an invalid option is specified.
- When the file specified in the argument does not exist, or the system cannot access the file.
- When the system cannot access the database server (when the `-db` option is specified).
- When the system detects an error in the results of the file check.
- When the command fails to create a temporary directory.

- When the command fails to obtain the name of the dictionary map file storage directory.

Examples

- In this example, the command checks the contents of the operation definition file `C:\Program Files\drm\SCRIPT\conf_OP0001.dat` on the database server:

To specify an operation ID:

```
EX_DRM_SQL_DEF_CHECK OP0001 -db
```

To specify the operation definition file name:

```
EX_DRM_SQL_DEF_CHECK -db -f "C:\Program Files\drm\script\conf\_OP0001.dat"
```

- In this example, the command checks the contents of the operation definition file `C:\Program Files\drm\SCRIPT\conf_OP0001.dat` on the backup server:

To specify an operation ID:

```
EX_DRM_SQL_DEF_CHECK OP0001 -bk
```

To specify the operation definition file name:

```
EX_DRM_SQL_DEF_CHECK -bk -f "C:\Program Files\drm\script\conf\_OP0001.dat"
```

1.8.3 EX_DRM_SQL_RESTORE

This extended command restores the SQL Server database from its backup to the primary volume.

Format

- To restore the primary volume by resynchronizing it with the secondary volume, use:

```
EX_DRM_SQL_RESTORE operation-ID -resync [ -force ] [ -undo ]
                        [ -nochk_host ]
                        [ -target database(s) | -f database-list-file ]
                        [ -pf copy-parameter-definition-file]
```

- To apply only metafiles to the primary volume, use:

```
EX_DRM_SQL_RESTORE operation-ID -no_resync [ -undo ]
                        [ -nochk_host ]
                        [ -target database(s) | -f database-list-file ]
                        [ -pf copy-parameter-definition-file]
```

Description

This extended command executes the `drmsqlrestore` command to restore the backup data in the specified database from the secondary volume to the primary volume.

Prerequisites

The following are the prerequisites for executing this extended command:

- The operation definition file corresponding to the specified operation ID must have been created.
- The backup ID must have been stored in the backup ID file by executing the `EX_DRM_BACKUPID_SET` or `EX_DRM_DB_IMPORT` extended command.

Arguments

-operation-ID

Specify the unique character string that indicates the resource to be operated. The information in the operation definition file corresponding to the specified operation ID is used for executing this extended command.

-resync

Specify this option to restore the primary volume by resynchronizing it with the secondary volume. The backup data in the secondary volume is synchronized to the primary volume.

When executing the extended command with this option specified, stop the program services that reference the Microsoft Windows performance registry.

-no_resync

Specify this option if you want to apply only metafiles to the primary volume without restoring the backup data from the secondary volume to the primary volume. Use this option when the target data cannot be restored by the `drmsqlrestore` command (for example, when the target data must be directly restored to the primary volume because the disk has become corrupted).

-force

Specify this option to restore the primary volume by forcibly resynchronizing it with the secondary volume.

If the copy group name of the primary volume obtained at the time of backup processing on the database server matches the information on the database server, forced resynchronization is performed even though the LDEV and SERIAL numbers do not match the LDEV and SERIAL numbers from the time the backup processing was performed.

Use this option only when the restore operation cannot be performed by the resynchronization even though the `-resync` option is specified: for example, when the LDEV number was changed by LDEV replacement. Specifying this option while performing a normal restoration may damage the data.

-undo

Specify this option to restore the database in the standby mode. When this option is specified, the database can be used in the read-only mode after restoration. A temporary file is created for each database in the undo-log file storage directory registered by using the `drmsqlinit` command.

If this option is not specified, this extended command performs normal restoration. Immediately after normal restoration, the database will be placed in the loading status, in which you cannot use the database.

-nochk_host

Specify this option to restore the data to a host that differs from the one specified for the `drmsqlbackup` command. This option is useful when the host name has been changed, or the log-shipping functionality in Microsoft SQL Server 2000 Enterprise Edition or SQL Server 2005 is used.

This option is not available when you restore a system database (master, model, msdb, or distribution).

Note: When you specify the `-nochk_host` option, confirm that backup data is restored on the appropriate host, because the validity of the host name in the backup catalog is not checked when restoring backup data.

-target database(s)

Specify this option to restore the instance(s) containing the specified database(s). The database(s) you specify must be found in the backup catalog specified by the backup ID. If you specify a database not found in that backup catalog, this extended command does not restore the database. When you want to specify more than one database, use a comma to separate each file or directory name.

If you specify neither this option nor the `-f` option, this extended command restores the entire instance specified by the backup ID.

-f database-list-file

In the same way as the `-target` option, specify this option to restore the instance(s) containing the specified database(s). Unlike `-target`, this option uses an argument that is the name of a file that contains a list of databases you want to restore. This list file must be created beforehand. In `database-list-file`, specify the absolute path name of the list file.

If you specify neither this option nor the `-target` option, this extended command restores all the objects contained in the instance specified by the backup ID.

-pf copy-parameter-definition-file

Specify this option to use the number of retries and retry interval defined in the copy parameter definition file. Specify only the file name and not the path.

If this option is omitted, the value in the RAID Manager-linkage definition file (`DEFAULT.dat`) is used. The values in the RAID Manager-linkage definition file (`DEFAULT.dat`) are used for any parameters that are not coded in the copy parameter definition file.

Create the copy parameter definition file with an arbitrary name in the following location: *Protection-Products-installation-directory*\conf\raid. Specify the file name using alphanumeric characters up to 64 bytes.

Note:

- The backup information in the backup catalog is managed based on the copy group used as a key. Depending on the backup method, you might not be able to perform restoration, even though the backup data exists on the secondary volume.

For further information, see the notes on running Protection Manager in the *HiCommand Protection Manager User's Guide*.

- If `ONLINE` is set in `CLU_MSCS_RESTORE` in the Protection Products configuration definition file (`init.conf`), you can perform restoration of a user database while the cluster resources are online by specifying the `-resync` option. In this case, the cluster resource that manages the instance to be restored cannot be placed offline. However, if the restoration target is a system database (master, model, msdb, or distribution) or a database that contains a system database, restoration will be performed offline.

Conditions Causing an Error

This extended command fails in the following cases:

- When an invalid option is specified.
- When information could not be acquired from the operation definition file corresponding to the operation ID.
- When a Protection Manager command option that cannot be specified as an option of this extended command is specified.
- When information could not be acquired from the backup ID file.
- When a command executed inside the extended command has encountered an error.
- When the command fails to obtain the name of the dictionary map file storage directory.

Return Values

0: Normal termination.

Any value other than 0: Termination with an error.

Example

In this example, the command restores the primary volume by resynchronizing the primary volume with the secondary volume, based on the settings in the operation definition file `operation01`:

```
EX_DRM_SQL_RESTORE operation01 -resync
```

1.8.4 EX_DRM_SQL_TLOG_BACKUP

This extended command backs up the transaction log of the SQL Server.

Format

```
EX_DRM_SQL_TLOG_BACKUP operation-ID
                        [ -no_cat ]
                        [ -no_truncate ]
                        [ -target database-name | -f list-file-name ]
```

Description

This extended command executes the `drmsqllogbackup` command to back up the SQL Server's transaction log corresponding to the specified operation ID.

Prerequisite

The following is the prerequisite for executing this extended command:

- The operation definition file corresponding to the specified operation ID must have been created.

Arguments

-operation-ID

Specify the unique character string that indicates the resource to be operated. The information in the operation definition file corresponding to the specified operation ID is used for executing this extended command.

-no_cat

Specify this option only when the remote backup (not the local backup) is performed as the starting point of the transaction log backup. When the transaction log backup obtained by specifying this option is displayed by the `-v` option, a hyphen (-) is displayed for `ORIGINAL-ID` and `BACKUP-ID`.

-no_truncate

Specify this option to perform backup without truncating the transaction log. If a failure occurs, even if the database data file is damaged (providing that the transaction log is not damaged), the transaction log backup can be obtained by specifying this option.

-target database-name

Specify this option to display information about the specific database. When displaying multiple databases, specify each database name by separating them with a comma. When specifying a database name that includes spaces, place the name in quotes (").

When this option is specified, the specification of the `TARGET_NAME` parameter in the operation definition file is ignored.

-f list-file-name

Specify this option to display information about a specific database. Unlike the `-target` option, by creating a definition file in advance that describes a list of databases to be displayed, and by specifying the file name, you can specify in a single step the databases whose information is to be displayed. Use an absolute path name to specify `list-file-name`. When specifying a list file name that includes spaces, place the name in quotes (").

When this option is specified, the specification of the `TARGET_NAME` parameter in the operation definition file is ignored.

Return Values

0: Normal termination.

Any value other than 0: Termination with an error.

Conditions Causing an Error

This extended command fails in the following cases:

- When an invalid option is specified.

- When information could not be acquired from the operation definition file corresponding to the operation ID.
- When a command executed inside the extended command has encountered an error.
- When the command fails to obtain the name of the dictionary map file storage directory.

Example

In this example, the command backs up the transaction log for the resource, based on the settings in the operation definition file `operation01`:

```
EX_DRM_SQL_TLOG_BACKUP operation01
```

1.8.5 EX_DRM_SQLFILE_EXTRACT

This extended command deploys the SQL Server's metafile to the folder to be backed up to a tape.

Format

```
EX_DRM_SQLFILE_EXTRACT operation-ID
```

Description

This extended command deploys the SQL Server metafiles from the temporary directory for extended commands to the directory indicated below.

On the database server:

The VDI metafile storage directory that was registered with the `drmsqlinit` command

On the backup server:

```
directory-specified-for-FTP_HOME_DIR\directory-specified-for-FTP_SUB_DIR\operation-ID\AP
```

When this extended command is executed on the backup server, this extended command first deletes all the SQL Server's metafiles from the copy destination folder. Then, this extended command copies the SQL Server's metafiles from the copy source folder to the copy destination folder. By deleting old metafiles, this extended command prevents old metafiles from being backed up to a tape.

On the database server, all the SQL Server's metafiles generated when the database is backed up to the secondary volume are protected. Therefore, if this extended command is executed on the database server, the SQL Server's metafiles are not deleted.

Prerequisites

The following are the prerequisites for executing this extended command:

- The operation definition file corresponding to the specified operation ID must have been created.

- The backup ID file from which this extended command will acquire information must have been generated by executing the `EX_DRM_BACKUPID_SET` or `EX_DRM_DB_IMPORT` extended command.

Arguments

-operation-ID

Specify the unique character string that indicates the resource to be operated. The information in the operation definition file corresponding to the specified operation ID is used for executing this extended command.

Return Values

- 0: Normal termination.
- Any value other than 0: Termination with an error.

Conditions Causing an Error

This extended command fails in the following cases:

- When an invalid option is specified.
- When information could not be acquired from the operation definition file corresponding to the operation ID.
- When the copy destination folder for the target file does not exist.
- When a command executed inside the extended command has encountered an error.
- When the command fails to obtain the name of the dictionary map file storage directory.

Example:

In this example, the command deploys the SQL Server's metafiles, based on the settings in the operation definition file `operation01`:

```
EX_DRM_SQLFILE_EXTRACT operation01
```

1.8.6 EX_DRM_SQLFILE_PACK

This extended command backs up the SQL Server's metafiles.

Format

```
EX_DRM_SQLFILE_PACK operation-ID
```

Description

This extended command saves the SQL Server metafiles from the following directory to the temporary directory for extended commands.

On the database server:

The VDI metafile storage directory that was registered with the `drmsqlinit` command.

On the backup server:

```
directory-specified-for-FTP_HOME_DIR\directory-specified-for-FTP_SUB_DIR\operation-  
ID\AP
```

When this command is executed on the database server, all the SQL Server metafiles in the backup-target directory are deleted, and then back up the SQL Server metafiles from the backup-source directory to the backup-target directory.

If this extended command is executed on the backup server, the SQL Server's metafiles are not deleted from the temporary folder for extended commands.

Prerequisites

The following are the prerequisites for executing this extended command:

- The operation definition file corresponding to the specified operation ID must have been created.
- The temporary folder for extended commands must have been created.

Arguments

-operation-ID

Specify the character string that indicates the resource to be operated. The information in the operation definition file corresponding to the specified operation ID is used for executing this extended command.

Return Values

0: Normal termination.

Any value other than 0: Termination with an error.

Conditions Causing an Error

This extended command fails in the following cases:

- When an invalid option is specified.
- When information could not be acquired from the operation definition file corresponding to the operation ID.
- When the copy destination folder for the target file does not exist.
- When a command executed inside the extended command has encountered an error.
- When the command fails to obtain the name of the dictionary map file storage directory.

Example

In this example, the command backs up the SQL Server's metafiles, based on the settings in the operation definition file `operation01`:

```
EX_DRM_SQLFILE_PACK operation01
```

1.9 Extended Commands for Backing Up an Exchange Database

This section explains the extended commands that apply when the backup is of an Exchange database.

1.9.1 EX_DRM_EXG_BACKUP (When the backup is of an Exchange Database)

This extended command backs up an Exchange Server database.

Format

- To perform cold backup (Exchange 2000 Server or Exchange Server 2003):

```
EX_DRM_EXG_BACKUP operation-ID [ -mode cold ]
    [ -transact_log_del ]
    [ -c { online | offline } ]
    [ -hostname virtual-server-name ]
    [ -event_check ] [ -comment backup-comment ]
    [ -rc [name-identifying-the-generation]] [ -pf copy-parameter-definition-file]
    [ -script user-script-file-name ]
    [ -s backup-server-name
    [ -auto_import
    [ -auto_mount [ mount-point-directory-name ] ]
    ]
    [ -svol_check ]
]
```

- To perform online backup (Exchange 2000 Server or Exchange Server 2003):

```
EX_DRM_EXG_BACKUP operation-ID -mode online
    [ -hostname virtual-server-name ]
    [ -event_check ] [ -comment backup-comment ]
    [ -rc [ name-identifying-the-generation ] ] [ -pf copy-parameter-definition-
file]
    [ -script user-script-file-name ]
    [ -s backup-server-name
    [ -auto_import
    [ -auto_mount [ mount-point-directory-name ] ]
    ]
    [ -svol_check ]
]
```

- To perform backup using VSS (Exchange Server 2003):

```
EX_DRM_EXG_BACKUP operation-ID -mode vss
    [ -transact_log_del | -noverify | -noverify_log_del ]
    [ -hostname virtual-server-name ]
    [ -event_check ] [ -comment backup-comment ]
    [ -rc [ name-identifying-the-generation ] ] [ -pf copy-parameter-definition-
file]
    [ -vf VSS-definition-file-name ]
    [ -script user-script-file-name ]
    [ -s backup-server-name
    [ -auto_import
    [ -auto_mount [ mount-point-directory-name ] ]
    ]
    [ -svol_check]
]
```

- To perform backup using VSS (Exchange Server 2007):

```
EX_DRM_EXG_BACKUP operation-ID -mode vss
    [ -transact_log_del | -noverify | -noverify_log_del ]
    [ -hostname virtual-server-name ]
    [ -comment backup-comment ]
]
```

```
definition-file ] [ -rc [ name-identifying-the-generation ]] [ -pf copy-parameter-  
[ -vf VSS-definition-file-name ]  
[ -script user-script-file-name ]  
[ -s backup-server-name  
[ -auto_import  
[ -auto_mount [ mount-point-directory-name ]]  
]  
[ -svol_check ]  
]
```

Description

The `EX_DRM_EXG_BACKUP` command executes the `drmexgbackup` command and backs up the Exchange database of the storage group specified in the operation ID from the primary volume to the secondary volume. At this time, it generates a backup ID.

If the target database is an Exchange 2000 Server or Exchange Server 2003 Standard Edition database, the extended command always backs up the entire database. If the target database is an Exchange 2000 Enterprise Server, Exchange Server 2003 Enterprise Edition, or Exchange Server 2007 database, the command allows you to specify whether to back up the entire database or individual storage groups.

Table 1.15 shows the files to be backed up.

Table 1.15 Files Backed Up as Targets of Exchange Server Storage Group

Option	Database to be Backed Up	File to be Backed Up	
The target file type is fixed	Exchange Server storage groups	Data files	*.edb *.stm [#]
		Transaction log file	*.log
		Checkpoint files	*.chk

#

Files with this extension do not exist in Exchange Server 2007.

Prerequisite

The following is the prerequisite for executing this extended command:

- The operation definition file corresponding to the specified operation ID must be available.

Arguments

-operation-ID

Specify a unique character string identifying the resource that is to be the processing target. Information about the operation definition file corresponding to the specified operation ID is used when executing the extended command.

-mode cold

Specify this option when you perform cold backup of the Exchange database by using Protection Manager for Exchange (2000/2003 version).

If you omit the `-mode` option, this option is assumed.

-mode online

Specify this option when you perform online backup of the Exchange database by using Protection Manager for Exchange (2000/2003 version). When you specify this option, you cannot specify the `-transact_log_del` option, `-c online`, or the `-c offline` option.

When backing up to tape an Exchange database for which this command was used to perform an online backup of the database onto the secondary volume, you must first verify the consistency of the Exchange database. To verify the consistency of an Exchange database and then back it up onto tape, execute the `EX_DRM_EXG_VERIFY` command and then execute `EX_DRM_TAPE_BACKUP`.

-mode vss

Specify this option to back up the Exchange database by using VSS.

The Exchange database to be backed up is either Exchange Server 2003 or Exchange Server 2007.

To use this option, the Protection Manager service must be running on the backup server.

If you specify this option, you cannot specify the `-c online` or `-c offline` options.

-transact_log_del

Specify this option when you want to delete a committed transaction log file. By deleting the transaction log file, you can increase the amount of free disk space.

Executing the command with this option specified deletes the transaction log file.

The consequence of doing so is that you will no longer be able to restore data by specifying the `-recovery` option based on backup data you obtained earlier.

Specify this option if you did not specify the `-recovery` option when you restored data other than the recent backup data.

If you are using a circulating log, this option is ignored. For details about circulating logs, see the Exchange Server documentation.

-noverify

Specify this option if you do not verify the integrity of a database that is backed up by using VSS.

-noverify_log_del

Specify this option if you delete a transaction log file after backing up a database that is backed up by using VSS without verifying its integrity.

-c { offline | online }

To switch offline before backing up a cluster resource of a physical disk in a cluster environment, specify `-c offline`. To back up a cluster resource while still online, specify `-c online`. The default is `-c offline`. This option is ineffective in a non-cluster environment.

-hostname *virtual-server-name*

Specify the name of the Exchange virtual server you want to back up. You can also specify the name of the Exchange virtual server in the operation definition file. If you specify the name of the Exchange virtual server in both the operation definition file and this option, the value specified in the `-hostname` option has priority.

Specify this option only for a cluster environment. This option is effective only when you specified 1 for `SET_DRM_HOSTNAME` in the operation definition file. If you specified 0, this option is ineffective.

-event_check

Specify this option to check if an event log, which indicates that a database is corrupt, has been recorded or not by using Protection Manager for Exchange (2000/2003 version) to retrieve the event log of Exchange 2000 Server, Exchange 2000 Enterprise Server, or Exchange Server 2003. You cannot specify this option when using Protection Manager for Exchange 2007.

The target event log files to be retrieved are ones that were recorded after the last backup for the Exchange database. If the result of the previous backup does not exist, all the event logs recorded are retrieved. Retrieval of an event log is performed before resynchronizing a pair. If an event is detected indicating that a database is corrupt, an error message is displayed, and then the command terminates in error.

Protection Products determine that the database is corrupt when the following event is detected:

- Event category: Application
- Type: Error
- Source: ESE
- Event ID: No limitation
- Character string being included: "-1018", "-1019", or "-1022"

-comment *backup-comment*

Specify this argument to register a backup comment in the backup catalog.

The *backup-comment* value can be a string of up to 64 bytes, consisting of alphanumeric, special, one-byte space, and multi-byte characters. The backup comment is case sensitive. When a special character, or a one-byte space character is used, the entire backup-comment string must be enclosed in double quotation marks (""). If the backup-comment string contains a special character but is not enclosed in double quotation marks, the special character is not properly handled as a part of the backup-comment string and is parsed as a special character.

The following special characters cannot be used for backup comments:

`\ / ` | < > " * ? & ; ()`

Note: The first character must not be a hyphen (-). If you specify two double quotation marks after the `-comment` option, as in `-comment ""`, no backup comment will be registered in the backup catalog.

-rc *name-identifying-the-generation*

Use this option to specify the name identifying the generation of the copy group to be backed up. Execute the `drmexgdisplay` command with the `-cf` option specified, and then specify a value for the displayed `GEN-NAME`. For single volumes, a hyphen (-) appears. In this case, the `-rc` option cannot be specified.

Always specify this option when backing up from a primary volume to a secondary volume on the remote side. If this option is omitted, the secondary volume on the local side is backed up.

If *name-identifying-the-generation* is omitted, the secondary volume that has the smallest value among the generation numbers on the remote-side becomes the backup destination. In this case, the generation number is `remote_n`, where *n* is the smallest generation number.

-pf *copy-parameter-definition-file*

Specify this option to use the number of retries and retry interval defined in the copy parameter definition file. Specify only the file name and not the path.

If this option is omitted, the value in the RAID Manager-linkage definition file (DEFAULT.dat) is used. The values in the RAID Manager-linkage definition file (DEFAULT.dat) are used for any parameters that are not coded in the copy parameter definition file.

Create the copy parameter definition file with an arbitrary name in the following location: *Protection-Products-installation-directory*\conf\raid. Specify the file name using alphanumeric characters up to 64 bytes.

-vf VSS-definition-file-name

Specify this option to switch the settings to be used for each VSS backup. You can use this option only when using VSS for backup. For *VSS-definition-file-name*, specify a file name only. Do not specify the folder name. The VSS definition file specified in this option must be stored in the following folder:

```
Protection-Products-installation-directory\conf\vss
```

If you omit this option, the command uses the following file as the VSS definition file:

```
Protection-Products-installation-directory\conf\vsscom.conf
```

For details about the VSS definition file, see the manual *HiCommand Protection Manager User's Guide*.

-script user-script-file-name

Specify this option to execute a user script. Use an absolute path name to specify *user-script-file-name*. Conditions for specifying *user-script-file-name* are as follows:

- Maximum number of bytes: 255
- Available characters: Characters that can be used in a file name in Windows. If the name contains one or more space characters, the entire name string must be enclosed in double quotation marks (").

For details on the coding used for a user script file, see the explanation on how to create a user script in the *HiCommand Protection Manager User's Guide*.

If you specified LOCATION=REMOTE in the user script file, you must also specify the -s option.

-s backup-server-name

Specify this option to connect to a remote backup server to perform a backup. Specify the host name or the IP address of the backup server by using a character string that is no more than 255 bytes.

If you specify the backup server name in the -s option, the backup server names specified in the VSS definition file (vsscom.conf) and the VSS definition file specified in the -vf option will become invalid, and the backup server name specified in the -s option will be used.

-auto_import

Specify this option to automatically transfer a backup catalog to a backup server after completing a volume backup. This option must be specified concurrently with the -s option.

-auto_mount *mount-point-directory-name*

Specify this option to automatically mount a secondary volume on a backup server after completing a volume backup. This option must be specified concurrently with the `-s` and `-auto_import` options.

Specify *mount-point-directory-name* by using no more than 64 bytes of characters.

If you omit *mount-point-directory-name*, a mount destination for a secondary volume is automatically specified. Apply the same rule as when a mount point is not explicitly specified in the `drmmount` command.

To unmount the mounted secondary volume, use the `drmmount` command.

-svol_check

Specify this option to check the status of a secondary volume on a backup server. This option must be specified concurrently with the `-s` option. Checking the status of a secondary volume prevents backup or restoration failures. Items, targets, and conditions to be checked are as follows:

Table 1.16 Status Check of a Secondary Volume

Check item	Volume to be checked	Check condition
A secondary volume is hidden from a backup server	All secondary volumes defined for a backup-target primary volume	Checked when a primary volume is defined in pairs with multiple generations of secondary volumes and if either of the following items is applicable: - A primary volume is a cluster resource. - A primary volume is a dynamic disk. - A backup using VSS is performed.
A secondary volume is not mounted on a backup server	A secondary volume to be the next backup destination	Always checked.

Return Values

0: Normal termination.

Any value other than 0: Termination with an error.

Note: The backup information in the backup catalog is managed based on the copy group used as a key. Depending on the backup method, you might not be able to perform restoration, even though the backup data exists on the secondary volume. For further information, see the notes on running Protection Manager in the *HiCommand Protection Manager User's Guide* (MK-94HC070).

Conditions Causing an Error

This extended command fails in the following cases:

- When an invalid option is specified.
- When the system fails to obtain information about the definition file corresponding to the operation ID.
- When a specified Protection Manager command option cannot be specified as an option of this extended command.

- When the system failed to record a backup ID in the backup ID record file.
- When a command executed inside the extended command has encountered an error.
- When the command fails to obtain the name of the dictionary map file storage directory.

Examples

- In this example, the command deletes the transaction log file based on the settings in the operation definition file `operation01` and, using VSS, backs up the database to the secondary volume:

```
EX_DRM_EXG_BACKUP operation01 -mode vss -transact_log_del
```

- In this example, the command deletes the transaction log file based on the settings in the operation definition file `operation01` and backs up the database to the secondary volume:

```
EX_DRM_EXG_BACKUP operation01 -transact_log_del
```

1.9.2 EX_DRM_EXG_DEF_CHECK

This extended command checks the contents of an operation definition file and automatically creates a temporary directory.

Format

- To specify the operation ID to check the contents of an operation definition file on the database server, use:

```
EX_DRM_SQL_DEF_CHECK operation-ID -db
```

- To specify the operation ID to check the contents of an operation definition file on the backup server, use:

```
EX_DRM_EXG_DEF_CHECK operation-ID -bk
```

- To specify the definition file name to check the contents of an operation definition file on the database server, use:

```
EX_DRM_EXG_DEF_CHECK -db -f definition-file-name
```

- To specify the definition file name to check the contents of an operation definition file on the backup server, use:

```
EX_DRM_EXG_DEF_CHECK -bk -f definition-file-name
```

- To view the command usage:

```
EX_DRM_EXG_DEF_CHECK -h
```

Description

This extended command checks the contents of an operation definition file, and if no problem is found, automatically creates a temporary directory that will be used by subsequent extended commands.

Note that the definition file checking tool must be re-executed in the following cases:

- If the path to the dictionary map file storage directory is changed on the database server.
- If the directory path assigned to `FTP_HOME_DIR` is changed on the backup server.

When checking the contents of the operation definition file, this extended command first checks whether the file assigned to the argument exists, and then checks all the entries in the operation definition file for the following:

- The item name and value have been specified.
- The item has been specified only once.
- The number of characters does not exceed the maximum allowable number of characters for that item.

In addition, this command checks the details listed in Table 1.17 for all items specified in the operation definition file.

Table 1.18 lists the directories that are automatically created by the checking tool. If you want to check an operation definition file created with an older version of Protection Manager, see the description of backward compatibility in the *HiCommand Protection Manager User's Guide* (MK-94HC070).

Table 1.17 Details Checked in Operation Definition File

Item Name	Details to be Checked
BACKUP_OBJECT	MSEXCHANGE is specified.
DB_SERVER_NAME	The Exchange server name or virtual server name exists. If 1 is specified to <code>SET_DRM_HOSTNAME</code> , the value of <code>DB_SERVER_NAME</code> matches the database server name set in <code>DRM_DB_PATH</code> of the Protection Manager configuration definition file <code>init.conf</code> .
INSTANCE_NAME	A hyphen (-) is specified.
TARGET_NAME	A storage group name exists. This item is checked only if the target Exchange Server is an Exchange 2000 Enterprise Server or Exchange Server 2003 Enterprise Edition.
FTP_HOME_DIR	The specified directory exists. Specification of the folder name is not case sensitive. This item is checked only if the <code>-bk</code> option is specified. The absolute path is specified.
FTP_SUB_DIR	The specified directory name does not contain a delimiter character (\). The directory name is not specified as only one period (.) or two periods (..). The root directory is not specified.
SET_DRM_HOSTNAME	The value 0 or 1 is specified.

Table 1.18 Directories Automatically Created by EX_DRM_EXG_DEF_CHECK

Where EX_DRM_EXG_DEF_CHECK is Executed	Temporary Directory for Extended Commands
Database server	<p><i>script_work-directory-at-the-same-level-as-the-dictionary-map-file-storage-directory\operation-ID\DB</i></p> <p>Example: When the dictionary map file storage directory is H:\PTM and the operation ID is Operation_A, the extended command temporary directory is H:\script_work\Operation_A\DB.</p>
Backup server	<p><i>directory-specified-for-FTP_HOME_DIR\directory-specified-for-FTP_SUB_DIR\operation-ID\BK</i></p>

Prerequisites

The following are the prerequisites for executing this extended command:

- Protection Manager commands can only be executed by a user account currently logged on to Microsoft Windows.
- If the command is executed on the database server, it can access only the domain controller of the Microsoft Windows domain that manages the Exchange server. Also, the DNS service must have been started on the database server.

Arguments

-operation-ID

Specify a unique character string identifying the resource that is to be the processing target. Information about the operation definition file corresponding to the specified operation ID is used when executing the extended command.

-db

Specify this option when you want to check the contents of an operation definition file on the database server.

-bk

Specify this operation when you want to check the contents of an operation definition file on the backup server.

-f *definition-file-name*

Specify the absolute path name of the operation definition file you want to check.

-h

This option displays the command usage.

Return Values

- 0: Normal termination.
- Any value other than 0: Termination with an error.

Conditions Causing an Error

This extended command fails in the following cases:

- When an invalid option is specified.
- When the file specified in the argument does not exist, or the system cannot access the file.
- When the check of the contents of the operation definition file detected an abnormality.
- When the command fails to create a temporary directory.
- When the command fails to obtain the name of the dictionary map file storage directory.

Examples

- In this example, the command checks the definition file `C:\Program Files\drm\SCRIPT\conf_OP0001.dat` on the database server:

To specify an operation ID:

```
EX_DRM_EXG_DEF_CHECK OP0001 -db
```

To specify the operation definition file name:

```
EX_DRM_EXG_DEF_CHECK -db -f "C:\Program Files\drm\script\conf\_OP0001.dat"
```

- In this example, the command checks the definition file `C:\Program Files\drm\SCRIPT\conf_OP0001.dat` on the backup server:

To specify an operation ID:

```
EX_DRM_EXG_DEF_CHECK OP0001 -bk
```

To specify the operation definition file name:

```
EX_DRM_EXG_DEF_CHECK -bk -f "C:\Program Files\drm\script\conf\_OP0001.dat"
```

1.9.3 EX_DRM_EXG_RESTORE (restores a backed-up Exchange database to the primary volume)

Formats

- To restore backup data in units of storage groups, use:

```
EX_DRM_EXG_RESTORE operation-ID -resync  
[ -target storage-group-name | -f target-definition-file-name ]  
[-force] [-recovery]  
[-pf copy-parameter-definition-file]  
[-vf VSS-definition-file-name]
```

- To restore backup data obtained using VSS in units of Information Stores, use:

```
EX_DRM_EXG_RESTORE operation-ID -resync -recovery  
{-target storage-group-name\Information-Store-name | -f target-definition-file-name}  
[-force] [-pf copy-parameter-definition-file]  
[-vf VSS-definition-file-name]
```

Description

This extended command executes the `drmexgrestore` command to restore the backup data in the specified database from the secondary volume to the primary volume.

Prerequisites

The following are the prerequisites for executing this extended command:

- The operation definition file corresponding to the specified operation ID has been created.
- The backup ID has been stored in the backup ID file by executing the `EX_DRM_BACKUPID_SET` or `EX_DRM_DB_IMPORT` extended command.

Arguments

operation-ID

Specify a unique character string that indicates the resource on which the operation is to be performed. The information in the operation definition file corresponding to the specified operation ID is used for executing this extended command.

-resync

Specify this option to restore the primary volume by resynchronizing it with the secondary volume. The backup data in the secondary volume is synchronized to the primary volume.

-target storage-group-name

Specifies that databases related to a particular storage group or storage groups be restored. When multiple storage group names are specified, be sure to separate each one with a comma. Put any storage group names that contain space characters in double quotation marks ("). If this option is omitted, all storage groups on the server on which this command was executed will be restored.

-target storage-group-name\Information-Store-name

Specify this option to restore backup data that was obtained using VSS by specifying the Information Store name. Specify the Information Store name after the storage group name and separate them with a backslash (\). If you specify this Information Store name for backup data other than backup data that was obtained using VSS, an error occurs.

When you want to specify multiple Information Store names, use a comma to separate them. If an Information Store name contains a blank, enclose the entire name in quotation marks. The Information Store name is not case sensitive.

If this option is omitted, all storage groups on the server on which this command was executed will be restored.

-f target-definition-file-name

Like the `-target` option, this option specifies that databases related to particular storage groups be restored. Unlike the `-target` option, however, this option allows you to view information about multiple storage groups with one setting, so long as those storage groups are already contained in a definition file. Specify the absolute path for this definition file.

If you want to restore backup data that was obtained using VSS in units of Information Stores, then, like the `-target` option, create a target definition file that states `\Information-Store-name` after the storage group name. Then specify the name of the target definition file.

-force

Specify this option to perform restoration by forced resynchronization of the primary and secondary volumes.

With this option, forced resynchronization is performed if the copy group name of the primary volume obtained when the backup processing was performed on the database server matches the information on the database server, even though the LDEV and SERIAL numbers do not match the LDEV and SERIAL numbers when the backup processing was performed.

Specify this option only if restoration by resynchronization could not be performed with the `-resync` option, such as when the LDEV number changed when the volume was replaced. If this option is specified for a normal restoration, data might be corrupted.

-recovery

Specifies that recovery is to be executed by roll-forward. When the command is executed, post-backup transactions are recovered, and the database is returned to the latest status. However, this is only true if everything was stored properly in Exchange Server from the time the backup was acquired until the time the command was executed.

If this option is omitted, the database will return to the status it was in when the backup was acquired.

This option is essential if you want to restore backup data that was obtained using VSS in units of Information Stores. If you have specified an Information Store name in the `-target` option or `-f` option and you have not specified the `-recovery` option, this extended command terminates with an error. However, if all Information Store names within the storage group that is the restoration target have been specified, you can restore backup data even without specifying the `-recovery` option.

If the `-recovery` option is not used to restore a backup obtained by cold backup, the `-recovery` option cannot be used for backups obtained after the restored cold backup.

-pf copy-parameter-definition-file

Specify this option when using the number of retries and the retry interval defined in the copy parameter definition file. Specify the file name only, without specifying the path.

When you omit this option, the value of the RAID Manager-linkage definition file (DEFAULT.dat) is used. The value of DEFAULT.dat is used for parameters that are not coded in the copy parameter definition file.

Create the copy parameter definition file with an arbitrary name in the following location. Specify the file name using alphanumeric characters totaling up to 64 bytes.

```
Protection-Products-installation-directory\conf\raid
```

-vf VSS-definition-file-name

This option specifies the VSS definition file used at VSS backup. You can use this option only when restoring backup data that was obtained using VSS. If you specify this option when restoring data other than backup data obtained using VSS, it will be ignored.

For *VSS-definition-file-name*, specify a file name only. Do not specify the folder name. The VSS definition file specified in this option must be stored in the following folder:

```
Protection-Products-installation-directory\conf\vss
```

If you omit this option, the command uses the following file as the VSS definition file:

```
Protection-Products-installation-directory\conf\vsscom.conf
```

For details about the VSS definition file, see the manual *HiCommand Protection Manager User's Guide*.

Return Values

0: Normal termination

Any value other than 0: Termination with an error

Note

- Note the following when restoring backup data obtained using VSS in units of Information Stores:
 - When restoring backup data in units of Information Stores, if you specify both an Information Store name and a storage group name, operation will be as described below.

If you specify a storage group name and an Information Store name of the same storage group, an error will occur.

If you specify a storage group name and an Information Store name of different storage groups, the backup data is restored in units of storage groups and Information Stores respectively.
 - If you specify an Information Store name of data other than backup data obtained using VSS, an error will occur.
 - If you specify *storage-group-name*, an error will occur.

- When you want to specify an Information Store name, check the value displayed in `INFORMATIONSTORE` of the `drmexgcat` command and specify exactly the same Information Store name.
- At restoration, this command dismounts all Information Stores within the storage group to which the specified Information Store belongs.
- If the restoration target disk contains Information Store files that are not restoration targets, an error will occur.
- If the restoration target disk contains data from different storage groups, an error will occur.
- If `ONLINE` is set in `CLU_MSCS_RESTORE` in the Protection Products configuration definition file (`init.conf`), restoration while the cluster resources are online can be performed.

Conditions Causing an Error

This extended command fails in the following cases:

- When an invalid option was specified
- When the system failed to obtain information about the definition file corresponding to the operation ID
- When the specified Protection Products command option cannot be specified as an option of this extended command
- When the system failed to record a backup ID in the backup ID record file
- When a command executed inside the extended command has encountered an error
- When the command fails to obtain the name of the dictionary map file storage directory

Examples

- In this example, the command restores the primary volume by resynchronizing the primary volume with the secondary volume, based on the settings in the operation definition file `operation01`:

```
EX_DRM_EXG_RESTORE operation01 -resync
```

- In this example, the command restores Information Store `IS12` of storage group `SG1`, based on the settings in the operation definition file `operation01`:

```
EX_DRM_EXG_RESTORE operation01 -resync -recovery -target SG1\IS12
```

1.9.4 EX_DRM_EXG_VERIFY (verifies the consistency of an Exchange database)

This extended command verifies the consistency of an Exchange database.

Format

```
EX_DRM_EXG_VERIFY operation-ID
[ -mount_pt mount-point-directory-name ] [ -force ]
```

Description

This extended command executes the `drmmount` command, the `drmexgverify` command, and the `drmmount` command to verify the consistency of the Exchange database that was backed up onto the secondary volume.

The target databases to be verified are as follows:

- Exchange database backed up online
- Exchange database backed up by using VSS

When using `EX_DRM_TAPE_BACKUP` to back up the Exchange database from the secondary volume onto tape, execute this extended command to prepare for the tape backup.

If an error is detected in the consistency of the Exchange database, you must re-execute the backup to the secondary volume.

When using Protection Manager Copy Controller (x64), the target database is restricted to Exchange Server 2007.

Prerequisites

The following are the prerequisites for executing this extended command:

- The backup catalog to be verified by this extended command must have been imported to the backup server.
- The backup ID of the backup catalog must have been set in the backup ID record file by the `EX_DRM_DB_IMPORT` or `EX_DRM_BACKUPID_SET` command.
- When using Exchange Server 2003, the files used by the `ESEUTIL` utility (`ESEUTIL.exe`, `ESE.dll`, `EXOSAL.dll`, `EXCHMEM.dll`), required to execute this extended command, have been copied to the backup server.

For details on the `ESEUTIL` utility, see the description of the settings for using VSS in the manual *HiCommand Protection Manager User's Guide*.

Arguments

operation-ID

Specify a unique character string that indicates the resource on which the operation is to be performed. The information in the operation definition file corresponding to the specified operation ID is used for executing this extended command.

-mount_pt mount-point-directory-name

Specify the name of the mount point directory for mounting the secondary volume. When this option and the `-force` option are both specified, specify them in the order `-mount_pt, -force`.

When only the drive name is specified, this command searches for unused drives in alphabetical order and mounts the secondary volume onto the specified drive. When a drive is specified by a path including a drive character, this command mounts the volume onto *path-specified-in -mount_pt\drive-character-of-primary-volume\mount-point-of-primary-volume*. For example, if the primary volume is mounted on `M:\MNT`, and `S:\SVOLMNT` is specified in `-mount_pt`, the secondary volume is mounted on `S:\SVOLMNT\M\MNT`.

The mount point directory name must satisfy the following:

- Maximum number of characters: Path lengths to be specified must comply with the specification of the mount or unmount function provided by RAID Manager.
- Available characters: Characters that can be used in a directory name in Microsoft Windows (space characters cannot be used).

If you specify a drive for the mount point directory name, the command searches for unused drive names in alphabetical order, starting with the specified drive, and then performs the mount.

If you specify an absolute path from the drive letter as the mount point directory name, the command mount point is as follows:

```
absolute-path-specified-as-the-mount-point-directory-  
name\primary-volume-drive-letter\primary-volume-mount-point
```

Even if the path does not end with a backslash (\), the command assumes that a backslash has been specified. For example, D: and D:\ are assumed to be the same drive. Similarly, D:\MOUNTDIR and D:\MOUNTDIR\ are assumed to be the same directory.

If you omit this option, a drive that is not being used when the extended command is executed will be used as the mount point.

-force

Specify this option to execute a forced-mount operation. When this option and the `-mount_pt` option are both specified, specify them in the order `-mount_pt, -force`.

If the copy group name of the primary volume obtained at the time of backup processing on the database server matches the information on the database server, forced resynchronization is performed even though the LDEV and SERIAL numbers do not match the LDEV and SERIAL numbers from the time the backup processing was performed.

Specify this option when it is necessary to perform a forced mount on a secondary volume using only the copy group name of the primary volume as a key. For example, in cases such as when the secondary volume is to be replaced for a reason such as a failure, or when an LDEV number or SERIAL number was changed.

If you omit this option, this extended command terminates with an error without performing mounting, if the following condition also holds: the copy group name, LDEV number, and SERIAL number of the primary volume, that were obtained when backup was performed on the database, do not match the information on the backup server.

Return Values

- 0: Normal termination.
- Any value other than 0: Termination with an error.

Conditions Causing an Error

This extended command fails in the following cases:

- When an invalid option is specified.
- When information could not be acquired from the definition file corresponding to the operation ID.

- When a command executed inside the extended command has encountered an error.

Example

In this example, the command verifies the consistency of the Exchange database determined by the operation ID `operation01`:

```
EX_DRM_EXG_VERIFY operation01
```

Chapter 2 Basic Commands

This chapter describes the basic commands provided by HiCommand Protection Manager:

- List of Basic Commands (see section 2.1)
- Basic Command Path (see section 2.2)
- Basic Command Formats (see section 2.3)
- Conventions for Creating a Target Definition File (see section 2.4)
- Coding Rules for Creating a Transaction Log Target Definition File (see section 2.5)
- Basic Commands for Backing Up a File System (see section 2.6)
- Common Basic Commands (see section 2.7)
- Tape-Related Basic Commands (see section 2.8)
- Basic Utility Commands (see section 2.9)
- Basic Commands for Backing Up a SQL Server Database (see section 2.10)
- Basic Commands for Backing Up an Exchange Database (see section 2.11)

2.1 List of Basic Commands

Table 2.1 - Table 2.6 lists and describes the basic commands. For more information about a basic command, refer to the appropriate section.

Note: Do not perform a forced termination of a basic command that is executing. If you do so, the pair status of the copy group or the backup catalog might enter an unexpected status.

Table 2.1 Basic Commands (Backing Up a File System)

Basic Command	Description	Section
drmfbackup	Backs up a file system to a secondary volume.	2.6.1
drmfscat	Displays a listing of the backup information for a file system.	2.6.2
drmfdisplay	Displays a listing of file system information and updates the dictionary map file to the latest status.	2.6.3
drmfrestore	Restores a file system.	2.6.4

Table 2.2 Basic Commands (Common)

Basic Command	Description	Section
drmappcat	Display backup information for file systems and applications saved in the backup catalog on the server on which the command was executed.	2.7.1
drmcgctl	Locks a copy group that contains the backup data so that it is not overwritten at the next backup, unlocks a copy group, and displays a list of copy groups.	2.7.2
drmclusinit	Registers the parameters of the cluster product.	2.7.3
drmdbexport	Exports backup information to a file.	2.7.4
drmdbimport	Imports backup information from a file.	2.7.5
drmdevctl	Conceals or unconceals a physical volume.	2.7.6
drmhostinfo	Displays a list of host information.	2.7.7
drmlicense	Displays, adds, or updates license information.	2.7.8
drbresync	Resynchronizes copy groups and deletes the backup data.	2.7.9
drmvssimport	Starts/stops the VSS import server.	2.7.10

Table 2.3 Basic Commands (Tape-Related Commands)

Basic Command	Description	Section
drmmediabackup	Backs up backup data to tape.	2.8.1
drmmediarestore	Restores backup data from tape.	2.8.2
drmmount	Mounts a secondary volume.	2.8.3
drmtapebackup	Copies the backup data to tape.	2.8.4
drmtapecat	Displays a listing of backup information for a tape.	2.8.5
drmtapeinit	Registers the parameters for a backup management product.	2.8.6
drmtaperestore	Restores data from a backup on tape.	2.8.7
drmmount	Unmounts a secondary volume.	2.8.8

Table 2.4 Basic Commands (Utility Commands)

Basic Command	Description	Section
drmdbconvert	Allows backup catalogs earlier than version 3.5 to be used on the latest Protection Manager.	2.9.1
drmdbsetup	Creates or deletes a Protection Manager database.	2.9.2

Table 2.5 Basic Commands (Backing Up a SQL Server Database)

Basic Command	Description	Section
drmsqlbackup	Backs up a SQL Server database to a secondary volume.	2.10.1
drmsqlcat	Displays a listing of the backup information for a SQL Server database.	2.10.2
drmsqldisplay	Displays a listing of SQL Server database information and updates the SQL Server database information in the dictionary map file.	2.10.3
drmsqlinit	Registers SQL Server parameters.	2.10.4
drmsqllogbackup	Backs up the SQL Server transaction log file.	2.10.5
drmsqlrecover	Recovers a restored SQL Server database.	2.10.6
drmsqlreverttool	Recovers a restored SQL Server database via a GUI.	2.10.7
drmsqlrestore	Restores a SQL Server database.	2.10.8

Table 2.6 Basic Commands (Backing Up a Microsoft Exchange Database)

Basic Command	Description	Section
drmexgbackup	Backs up a storage group to a secondary volume.	2.11.1
drmexgcat	Displays a listing of the backup information for a storage group.	2.11.2
drmexgdisplay	Displays a listing of storage group information and updates the storage group information in the dictionary map file.	2.11.3
drmexgrestore	Restores a storage group.	2.11.4
drmexgverify	Verifies the integrity between a storage group and backup information.	2.11.5

2.2 Basic Command Path

Basic commands are stored in the following directory:

Protection-Products-installation-directory\bin

2.3 Basic Command Formats

In this section, all arguments that can be specified are described. If there are multiple argument conditions, the formats are described separately for each condition. Do not mix separate formats.

2.3.1 Argument Conventions

The syntax explanations for basic command arguments use the conventions in Table 2.7.

Table 2.7 Conventions in Syntax Explanations for Arguments

Symbol	Description
 (vertical bar)	Only one of the options separated by a vertical bar can be used at one time. Example: log number all Either log number or all can be specified.
[] (brackets)	An item or items enclosed in brackets are optional. If two or more items separated by a vertical bar () are enclosed, you can specify one or none of them. Example: [-a -b] This means that you specify nothing, or -a, or -b.
{ } (braces)	An item enclosed in braces must be specified. If two or more items are enclosed, any one of them must be specified. Example: { lock unlock } This means that you must select lock or unlock (but not both).

2.3.2 Viewing the Format

To display the basic command format, execute a basic command, specifying the `-h` option after the basic command name.

2.4 Conventions for Creating a Target Definition File

When you want to specify two or more files, databases, or storage groups in a basic command option, you can specify them all at once by using a target definition file. A target definition file contains a list of the desired files, directories, database, or storage groups, and must be created beforehand.

2.4.1 Basic Commands that Support a Target Definition File

You can use a target definition file with the following basic commands:

- `drmexgbackup`
- `drmexgcat`
- `drmexgdisplay`
- `drmexgrestore`
- `drmfbackup`
- `drmfscat`
- `drmfdisplay`
- `drmfrestore`
- `drmsqlbackup`
- `drmsqlcat`
- `drmsqldisplay`
- `drmsqlrecover`
- `drmsqlrestore`
- `drmsqllogbackup`

2.4.2 File Name

Use alphanumeric characters to specify the file name.

2.4.3 File Contents

The contents of the file must follow these conventions:

- Each parameter (file name, directory name, SQL Server database name, or storage group name) must be specified on one line.
- Lines beginning with # are assumed to be comment lines. However, if SQL Server database name or storage group name starts with #, the line will be assumed as SQL Server database name or storage group name, not as comment lines.
- The file names and directory names must be specified using absolute path names.

Example of entries in a target definition file:

```
# Example of specifying files
D:\data1\batch_0001\Tokyo_output_dir
D:\data1\batch_0001\Osaka_output_dir
D:\data1\transact.log
```

2.5 Coding Rules for Creating a Transaction Log Target Definition File

A transaction log target definition file, when specified as an option of the `drmsqlrecover` command, specifies the order in which transaction log files are to be applied during recovery.

2.5.1 File Name

Use alphanumeric characters to specify the file name.

2.5.2 File Contents

The contents of the file must follow these coding rules:

- Enter the name of the database, followed by the name of the transaction log file.
- Enclose the name of the database in square brackets “[” and “]”.
- Enter the transaction log files for each database in the order in which they are to be applied.
- Each transaction log file name must be specified on one line.
- Each transaction log file name must be specified using the absolute path name.
- A transaction log file name must be left justified with no leading spaces.
- Lines beginning with # are assumed to be comment lines.

Example of entries in a target definition file:

```
# Protection Manager 3.5
# Log Backup Files
[SQLDB001]
C:\MSSQL\BackupLog\SQLDBLog001.bak
C:\MSSQL\BackupLog\SQLDBLog002.bak
C:\MSSQL\BackupLog\SQLDBLog003.bak

[SQLDB002]
C:\MSSQL\BackupLog\SQLDB2Log001.bak
C:\MSSQL\BackupLog\SQLDB2Log002.bak
C:\MSSQL\BackupLog\SQLDB2Log003.bak
```

2.6 Basic Commands for Backing Up a File System

2.6.1 drmfbackup

This basic command backs up a file system to a secondary volume.

Format

- To perform an online backup:

```
drmfbackup { mount-point-directory-name | mount-point-directory-target-definition-  
file-name } [ -mode online ]  
    [ -target file-or-directory-name(s) | -f target-definition-file-name ]  
    [ -rc [ name-identifying-the-generation ] ] [ -pf copy-parameter-definition-file ]  
    [ -comment backup-comment ]  
    [ -script user-script-file-name ]  
    [ -s backup-server-name  
    [ -auto_import  
    [ -auto_mount [ mount-point-directory-name ] ]  
    ]  
    [ -svol_check ]  
]
```

- To perform a cold backup:

```
drmfbackup { mount-point-directory-name | mount-point-directory-target-definition-  
file-name } -mode cold  
    [ -rc [ name-identifying-the-generation ] ] [ -pf copy-parameter-definition-file ]  
    [ -comment backup-comment ]  
    [ -script user-script-file-name ]  
    [ -s backup-server-name  
    [ -auto_import  
    [ -auto_mount [ mount-point-directory-name ] ]  
    ]  
    [ -svol_check ]  
]
```

- To perform a VSS backup:

```
drmfbackup { mount-point-directory-name | mount-point-directory-target-definition-  
file-name } -mode vss  
    [ -rc [ name-identifying-the-generation ] ] [ -pf copy-parameter-definition-file ]  
    [ -comment backup-comment ]  
    [ -vf VSS-definition-file-name ]  
    [ -script user-script-file-name ]  
    [ -s backup-server-name  
    [ -auto_import  
    [ -auto_mount [ mount-point-directory-name ] ]  
    ]  
    [ -svol_check ]  
]
```

Description

The `drmfbackup` command backs up the volume that contains the file system for the specified mount point directory to the secondary volume. You can back up an entire file system or only some files and directories in a file system. You can also back up more than one file system at a time. If the file system for the mount point directory consists of more than one volume, all the primary volumes are backed up to the secondary volumes.

Before executing this command, the following operations are needed:

- All the application programs using the volume to be backed up must be stopped. The volume being used by the operating system cannot be backed up.
- If you use this command the cache of the secondary volume must be cleared. To clear the system cache, mount the secondary volume on the backup server and then unmount the secondary volume.

When the `drmfsbackup` command is executed in a local site, and the pair status is `SMPL`, the command does not automatically create a pair. In such a case, if the `PAIR_CREATE` parameter in the RAID Manager-linkage definition file (`DEFAULT.dat`) is set to `ENABLE`, the command automatically creates a pair.

When the `drmfsbackup` command is executed while the pair status is `SMPL`, `paircreate` is not run automatically. Execute the `paircreate` command only when the `PAIR_CREATE` parameter of the RAID Manager-linkage definition file (`DEFAULT.dat`) is set to `ENABLE`.

After installation, if the `drmfsbackup` command is executed without executing the `drmfssdisplay` command with the `-refresh` option specified, and no dictionary map file is created, a dictionary map file is created using the `drmfsbackup` command. In such a case, the processing time required to create the dictionary map file is added to the time required to execute the backup command.

Arguments

mount-point-directory-name

Specify the mount point directory for the file system you want to back up. You must specify the drive letter for a mounted file system or the absolute path from the drive letter.

Specify the drive letter of the name of the mount point directory to which the secondary volume is to be mounted or specify the absolute path from the drive letter.

The mount point directory name must satisfy the following:

- Maximum number of characters: The specifiable path length depends on the limitation for the RAID Manager mount or unmount functionality.

This limitation applies to the length of the path to which the volume to be subject to cold backup operations has been mounted.

- Characters: Characters that can be used for directory names in Microsoft Windows (you cannot use a space character)

If a path does not end with `\`, the command assumes `\` at the end of the path. For example, `D:` and `D:\` are assumed to be the same drive. `D:\MOUNTDIR` and `D:\MOUNTDIR\` are assumed to be the same directory.

mount-point-directory-target-definition-file-name

Specify the name of the file that specifies the mount point directories for the file systems you want to back up. To specify this file, you must specify the file name alone. The following shows where the target definition file for mount point directories is stored and gives examples of specifying the file.

The location of the file:

Protection-Products-installation-directory\conf\fs

Example of specifying the file:

```
D:  
E:  
F:\MNT
```

-mode online

Specify this to perform an online backup. This will perform a backup without unmounting the file system.

If you specify an online backup, only resynchronization processing for the file system will be performed, before the online backup. If applications using the file system are not prevented from updating data, the validity of the backed-up data cannot be guaranteed.

When this option is omitted, online backup is assumed.

-mode vss

Specify this option to perform VSS backup.

To use this option, the Protection Manager service must be running on the backup server.

-target *file-or-directory-name(s)*

Regardless of this option's specification, backup is performed for either the mount point whose name is specified with this command, or the entire mount points described in the mount point directory target definition file specified with this command.

-f *target-definition-file-name*

Regardless of this option's specification, backup is performed for either the mount point whose name is specified with this command, or the entire mount points described in the mount point directory target definition file specified with this command.

-rc *name-identifying-the-generation*

Use this option to specify the name identifying the generation of the copy group to be backed up. Execute the `drmfssdisplay` command with the `-cf` option, and specify the displayed `GEN-NAME` value. In a single volume, a hyphen (-) appears. In this case, you cannot specify the `-rc` option.

Always specify this option when backing up from a primary volume to a secondary volume on the remote side. If this option is omitted, the secondary volume on the local side is backed up.

When you omit *name-identifying-the-generation*, the secondary volume that has the smallest value among the generation numbers on the remote-side becomes the backup destination. In this case, the generation number is `remote_n`, where *n* is the smallest generation number.

-pf *copy-parameter-definition-file*

Specify this option when using the number of retries and the retry interval defined in the copy parameter definition file. Specify only the file name, without specifying the path.

When you omit this option, the value of the RAID Manager-linkage definition file (`DEFAULT.dat`) is used. The `DEFAULT.dat` values are also used for parameters not specified in the copy parameter definition file.

Create the copy parameter definition file with an arbitrary name in the following location. Specify the file name using alphanumeric characters totaling up to 64 bytes.

Protection-Products-installation-directory\conf\raid

-mode *cold*

Specify when you perform a cold backup.

You can perform a cold backup only for a mounted file system. The command unmounts the file system and performs an offline backup for the volume(s) containing the file system. When the backup terminates, the command mounts the file system again. If the command cannot unmount the file system, the command displays an error message and cancels the backup processing. If the volume to be backed up has been unmounted, the command cancels the backup processing.

When the command is executed on the server in a cluster configuration, instead of unmounting the file system, the disk resource to be backed up is placed offline to back up the volume. The disk resource is placed online after backup.

The backup processing is cancelled even if the command is executed when the following case is applied:

- When operations to place the disk resource offline failed.
- When the disk resource is placed offline from the beginning.

-comment *backup-comment*

Specify this argument to register a backup comment in the backup catalog.

The *backup-comment* value can be a string of up to 64 bytes, consisting of alphanumeric, special, one-byte space, and multi-byte characters. The backup comment is case-sensitive. When a special character, or a one-byte space character is used, the entire backup-comment string must be enclosed in double quotation marks ("). If the backup-comment string contains a special character but is not enclosed in double quotation marks, the special character is not properly handled as a part of the backup-comment string and is parsed as a special character.

The following special characters cannot be used for backup comments:

`\ / ` | < > " * ? & ; ()`

Note: The first character must not be a hyphen (-). If you specify two double quotation marks after the `-comment` option, as in `-comment ""`, no backup comment will be registered in the backup catalog.

-vf *VSS-definition-file-name*

Specify this option to switch the settings to be used for each VSS backup. You can use this option only when using VSS for backup. For *VSS-definition-file-name*, specify a file name only. Do not specify the folder name. The VSS definition file specified in this option must be stored in the following folder:

```
Protection-Products-installation-directory\conf\vss
```

If you omit this option, the command uses the following file as the VSS definition file:

```
Protection-Products-installation-directory\conf\vsscom.conf
```

For details about the VSS definition file, see the manual *HiCommand Protection Manager User's Guide*.

-script *user-script-file-name*

Specify this option to execute a user script. Use an absolute path name to specify *user-script-file-name*. Conditions for specifying *user-script-file-name* are as follows:

- Maximum number of bytes: 255
- Available characters: Characters that can be used in a file name in Windows. If the name contains one or more space characters, the entire name string must be enclosed in double quotation marks (").

For details on coding used for a user script file, see the explanation on how to create a user script in the *HiCommand Protection Manager User's Guide*.

If you specified `LOCATION=REMOTE` in the user script file, you must also specify the `-s` option.

-s *backup-server-name*

Specify this option to connect to a remote backup server to perform a backup. Specify the host name or the IP address of the backup server by using a character string that is no more than 255 bytes.

If you specify the backup server name in the `-s` option, the backup server names specified in the VSS definition file (`vsscom.conf`) and the VSS definition file specified in the `-vf` option will become invalid, and the backup server name specified in the `-s` option will be used.

-auto_import

Specify this option to automatically transfer a backup catalog to a backup server after completing a volume backup. This option must be specified concurrently with the `-s` option.

-auto_mount *mount-point-directory-name*

Specify this option to automatically mount a secondary volume on a backup server after completing a volume backup. This option must be specified concurrently with the `-s` and `-auto_import` options.

Specify *mount-point-directory-name* by using no more than 64 bytes of characters.

If you omit *mount-point-directory-name*, a mount destination for a secondary volume is automatically specified. Apply the same rule as when a mount point is not explicitly specified in the `drmmount` command.

To unmount the mounted secondary volume, use the `drumumount` command.

-svol_check

Specify this option to check the status of a secondary volume on a backup server. This option must be specified concurrently with the `-s` option. Checking the status of a secondary volume prevents backup or restoration failures. Items, targets, and conditions to be checked are as follows:

Table 2.8 Status Check of a Secondary Volume

Check item	Volume to be checked	Check condition
A secondary volume is hidden from a backup server	All secondary volumes defined for a backup-target primary volume	Checked when a primary volume is defined in pairs with multiple generations of secondary volumes and if either of the following items is applicable: - A primary volume is a cluster resource. - A primary volume is a dynamic disk. - A backup using VSS is performed.
A secondary volume is not mounted on a backup server	A secondary volume to be the next backup destination	Always checked.

Notes

- Make sure that another volume is not mounted on the directory of the volume to be backed up when performing an online backup. If such a mounted volume exists, the online backup error occurs.
- The backup information in the backup catalog is managed based on using the copy group as a key. Depending on the backup method, you might not be able to perform restoration, even though the backup data exists on the secondary volume. For further information, see the notes on running Protection Manager programs in the *HiCommand Protection Manager User's Guide* (MK-94HC070).
- When specifying on the command line a file name or directory name containing space characters for the `-target` or `-f` options, you must enclose the file name in double quotation marks (").
- Note that enclosing with double quotation marks is not necessary for target path names specified in batch definition files.

Return Values

0: Normal termination.

Any value other than 0: Termination with an error.

Examples

- In this example, the command performs a cold backup for the entire D drive:

```
PROMPT> drmfbackup D: -mode cold
```

- In this example, the command performs an online backup concurrently for the mount point directories D:, E:, and F:\MNT specified in the mount point directory target definition file APP1:

```
PROMPT> drmfbackup APP1
```

- The location of the mount point directory drive letter target definition file:
Protection-Products-installation-directory\conf\fs\APP1
- Contents of the mount point directory target definition file:
D:
E:
F:\MNT

- In this example, the command performs an online backup onto a remote site:

```
PROMPT> drmfbackup F: -rc remote_0
```

- In this example, the command backs up by using VSS:

```
PROMPT> drmfbackup H: -mode vss
KAVX0001-I The drmfbackup command will now start.
KAVX0019-I Copying file(s) now...
KAVX5108-I Resynchronizing a copy group.
           Copy group name = EVS1,EVS1_000
KAVX0256-I Connecting to the Protection Manager Service is performed.
           Host name = BackupServer
KAVX0040-I The backup ID has been assigned as follows:
           Backup ID = 0000000050
KAVX0002-I The drmfbackup command will now end.
```

2.6.2 drmfscat

This basic command displays backup information for a file system.

Format

```
drmfscat { mount-point-directory-name | mount-point-directory-target-definition-file-name }  
[ -target file-or-directory-name(s) | -f target-definition-file-name ]  
[ -device device-file-name ][ -l ][ -v ]  
[ -backup_id backup-ID ][ -hostname host-name ]  
[ -comment backup-comment ]
```

Description

The `drmfscat` command displays information about the backups performed for the file system. You can also display information about the backup performed for more than one file system. Table 2.9 lists the displayed items. Each item is separated by a space. A hyphen (-) is displayed for any item that cannot be displayed. If none of the items can be displayed, an error message is displayed.

Table 2.9 Items Displayed by drmfscat Command (continues on the next page)

Displayed Item	Description
INSTANCE	Mount point directory name.
BACKUP-COMMENT	Backup comment.
BACKUP-ID	Backup ID.
BACKUP-MODE	Backup mode: COLD, ONLINE, or VSS.
INSTANCE	Mount point directory name.
ORIGINAL-ID	Original backup ID obtained by the <code>drmfbackup</code> command.
START-TIME	Start time of a snapshot backup.
END-TIME	End time of a snapshot backup.
HOSTNAME	Server name where the snapshot backup was performed.
T	Object type: F, which means file, is always displayed.
FILE	File name.
FS	Mount point directory name.
FSTYPE	File system type: NTFS.
DG	The name of the disk group (for an environment with a logical volume manager), or a hyphen (-) (for a basic disk configuration).
LVM-DEVICE	The name of the logical device file (for an environment with a logical volume manager) or GUID (for an environment without a logical volume manager).
DEVICE	Physical device file name (raw device file name) or <code>Harddiskn</code> (where <i>n</i> is an integer). If this command is executed with the <code>-device</code> option, this will be displayed after T.
COPY-GROUP	Copy group name (RAID Manager volume group name and device name).
PORT#	Port name on the server host side.
TID#	Target ID on the server host side.

Displayed Item	Description
LUN#	Logical unit number on the server host side.
MU#	Pair identifier.
LDEV#	Logical device number across RAID devices.
P/S	Letter to identify whether the volume is primary or secondary: P: Primary volume of a pair. S: Secondary volume of a pair.
SERIAL#	Serial number across RAID devices.
VIRTUAL-SERVERNAME	Virtual server name (value of the <code>DRM_HOSTNAME</code> environment variable). The command executed with the <code>-v</code> option displays this information.
DB-PATH	Name of the directory storing the backup catalog. The command executed with the <code>-v</code> option displays this information.
CATALOG-UPDATE-TIME	Time when the backup catalog was created. The command executed with the <code>-v</code> option displays this information.
BACKUP-COMMENT	Backup comment.

Arguments

mount-point-directory-name

Specify the name of the mount point directory for the file system you want to back up. Specify the absolute path.

Use the drive letter of the file system for which you want to display backup information, or use an absolute path (beginning with the drive letter). If a path does not end with `\`, the command assumes `\` at the end of the path. For example, `D:` and `D:\` are assumed to be the same drive. `D:\MOUNTDIR` and `D:\MOUNTDIR\` are assumed to be the same directory.

mount-point-directory-target-definition-file-name

Specify the name of the file that specifies the mount point directories for the file systems for which you want to display backup information. To specify this file, you must specify the file name alone. The following shows where the target definition file for mount point directories is stored and the examples of specifying the file.

The location of the file: *Protection-Products-installation-directory\conf\fs*

Example of specifying the file:

```
D:
E:
F:\MNT
```

-target file-or-directory-name(s)

Specify this argument when you want to display backup information for specific files or directories on the file system specified by the *mount-point-directory-name* argument. You can only specify the names of the files or directories that exist on the file system specified by the *mount-point-directory-name* argument. If you specify a file or directory that does not exist on the specified file system, the backup information of the file or directory is not displayed.

Use absolute path names to specify the file names or directory names. To display information for two or more files or directories, use commas to separate each of the file names or directory names you specify. Make sure that the name of each individual folder or file is the same as the path returned by the `drmfbackup` command. If these names are not in complete agreement, the correct backup information will not be displayed.

If you specify neither this option nor the `-f` option, the command displays information for the entire file system specified by `mount-point-directory-name`.

`-f target-definition-file-name`

Specify this argument when you want to display backup information for specific files or directories on the file system specified by the `mount-point-directory-name` argument. Unlike `-target`, this argument lets you collectively specify files or directories for which you want to display information by specifying a target definition file that contains a list of absolute paths of the files or directories. The target definition file must be created beforehand. Use an absolute path name to specify the target definition file name. Make sure that the name of each individual folder or file is the same as the path returned by the `drmfbackup` command. If these names are not in complete agreement, the correct backup information will not be displayed.

If you specify neither this option nor the `-target` option, the command displays information for the entire file system specified by `mount-point-directory-name`.

`-device device-file-name`

Specify this argument when you want to display only the file system information, physical disk information, and logical-volume configuration information about a specific device file.

`-l`

Specify this argument to display information in the long format.

`-v`

Specify this option to display information about the backup catalog. The following information is displayed:

- Name of the directory storing the backup catalog.

Displays the path that is set in `DRM_DB_PATH` in the Protection Manager configuration definition file (`init.conf`).

If `DRM_DB_PATH` has not been set, the default storage directory for a dictionary map file, which is created automatically during installation, is displayed.

- Virtual server name (value of the `DRM_HOSTNAME` environment variable).

If the `DRM_HOSTNAME` environment variable has not been set, a hyphen (-) appears.

- Time when the backup catalog was created.

For each backup ID, displays the time when the backup catalog was created.

-backup_id *backup-ID*

Specify this argument when you want to display only the backup information of a specific backup ID. A backup ID uniquely identifies backup data and is registered in the backup catalog during the backup processing.

-hostname *host-name*

Specify this argument to display only information pertaining to a specific host.

-comment *backup-comment*

Specify this argument to display only information on a specific backup comment.

The *backup-comment* value is case insensitive.

You can specify a wildcard (*) as the value of *backup-comment*. You can specify a string by using only the first few characters (specifying a few specific characters at the beginning of the string, and not designating any particular characters for the rest of the string—such as in the specification `XYZ*`). When a wildcard, special character, or one-byte space character is used, the entire backup-comment string must be enclosed in double quotation marks ("). If the backup-comment string contains a special character but is not enclosed in double quotation marks, the special character is not properly handled as a part of the backup-comment string and is parsed as a special character. If you specify `-comment "*"` , the command will display all backup catalogs.

If two double quotation marks are specified after the `-comment` option (as in: `-comment ""`), a message is displayed indicating that no backup data exists.

Notes

- When specifying on the command line a file name or directory name containing space characters for the `-target` option or `-f` option, you must enclose the file name in double quotation marks (").
- Enclosing with double quotation marks is not necessary for target path names specified in batch definition files.

Return Values

0: Normal termination.

Any value other than 0: Termination with an error.

Examples

- In this example, the command displays the backup information for the file system under the D drive:

```
PROMPT> drmfscat D:
INSTANCE: D:
BACKUP-ID:0000000001 BACKUP-MODE: COLD INSTANCE: D: ORIGINAL-ID:0000000001
START-TIME:2002/06/01 10:00:00 END-TIME: 2002/06/01 10:03:00 HOSTNAME: FILESERV1
T FILE FS DG DEVICE COPY-GROUP
F - D: - Harddisk1 VG01,dev01
F - - - - VG01,dev01
```

- In this example, the command displays backup information, in the long format, about the file system related to the disk volume Harddisk1:

```
PROMPT> drmfscat D: -device Harddisk1 -l
INSTANCE: D:
BACKUP-ID: 0000000001 BACKUP-MODE: COLD INSTANCE: D: ORIGINAL-ID:0000000001
START-TIME:2002/06/01 10:00:00 END-TIME: 2002/06/01 10:03:00 HOSTNAME: FILESERV1
T FILE FS FSTYPE DG LVM-DEVICE
DEVICE COPY-GROUP PORT# TID# LUN# MU# LDEV# P/S SERIAL#
F Harddisk1 D:\temp\file1.txt D: NTFS - \\?\Volume{df66a5b0-5583-12d5-a410-806d6172696f}\ harddisk1 VG01,dev01 CLI-A 2 10 0 10000 P 15044
F - - - - -
VG01,dev01 CLI-A 2 11 0 10001 P 15044

INSTANCE: D:
BACKUP-ID: 0000000002 BACKUP-MODE: ONLINE INSTANCE: D: ORIGINAL-ID:0000000001
START-TIME:2002/06/01 10:30:00 END-TIME: 2002/06/01 10:33:00 HOSTNAME: FILESERV1
T FILE FS FSTYPE DG LVM-DEVICE
DEVICE COPY-GROUP PORT# TID# LUN# MU# LDEV# P/S SERIAL#
F Harddisk1 D:\temp\file1.txt D: NTFS - \\?\Volume{df66a5b0-5583-12d5-a410-806d6172696f}\ harddisk1 VG01,dev01 CLI-A 2 10 0 10000 P 15044
F - - - - -
VG01,dev01 CLI-A 2 11 0 10001 P 15044
```

- In this example, the command displays backup information about the file system of the D drive. The host name is FILESERV1:

```
PROMPT> drmfscat D: -hostname FILESERV1
INSTANCE: D:
BACKUP-ID:0000000001 BACKUP-MODE: COLD INSTANCE: D: ORIGINAL-ID:0000000001
START-TIME:2002/06/01 10:00:00 END-TIME: 2002/06/01 10:03:00 HOSTNAME: FILESERV1
T FILE FS DG DEVICE COPY-GROUP
F - D: - Harddisk1 VG01,dev01
F - - - - VG01,dev01
```

- In this example, the command displays backup information for the file system under the D drive and management information for the backup catalog:

```
PROMPT> drmfscat D: -v
VIRTUAL-SERVERNAME: host1
DB-PATH: D:\Program Files\Hitachi\DRM\db2
INSTANCE: D:
BACKUP-ID:0000000001 BACKUP-MODE: COLD INSTANCE: D: ORIGINAL-ID:0000000001
START-TIME: 2002/06/01 10:00:00 END-TIME: 2002/06/01 10:03:00 HOSTNAME: FILESERV1
CATALOG-UPDATE-TIME: 2002/06/01 10:02:00
T FILE FS DG DEVICE COPY-GROUP
F - D: - Harddisk1 VG01,dev01
F - - - - VG01,dev01
```

- In this example, the command displays backup information for the file system under the D drive and management information for the backup catalog (when a backup is not performed):

```
PROMPT> drmfscat D: -v
VIRTUAL-SERVERNAME: host1
DB-PATH: D:\Program Files\Hitachi\DRM\db2
KAVX0024-E The specified backup data does not exist.
```

- In this example, the command displays backup information for the file system specified by the mount point D:\MNT:

```
PROMPT> drmfscat D:\MNT
INSTANCE: D:\MNT
BACKUP-ID:0000000001 BACKUP-MODE: COLD INSTANCE: D:\MNT ORIGINAL-ID:0000000001
START-TIME:2002/06/01 10:00:00 END-TIME: 2002/06/01 10:03:00 HOSTNAME: FILESERV1
T FILE FS DG DEVICE COPY-GROUP
F - D:\MNT - Harddisk1 VG01,dev02
F - - - - VG01,dev02
```

- In this example, the command concurrently displays the backup information for the file systems in the mount point directories D:, E:, and F:\MNT specified in the mount point directory target definition file APP1:

```
PROMPT> drmfscat APP1
INSTANCE: APP1
BACKUP-ID:0000000001 BACKUP-MODE: COLD INSTANCE: APP1 ORIGINAL-ID:0000000001
START-TIME:2002/06/01 10:00:00 END-TIME: 2002/06/01 10:03:00 HOSTNAME: FILESERV1
T FILE FS DG DEVICE COPY-GROUP
F - D: - Harddisk1 VG01,dev01
F - E: - Harddisk2 VG01,dev02
F - F:\MNT - Harddisk3 VG01,dev03
```

2.6.3 drmfdisplay

This basic command displays or updates file system information.

Format

- To display the file system information:

```
drmfdisplay [ mount-point-directory-name ]  
            [ -target file-or-directory-name(s) | -f target-definition-file-name ]  
            [ -device device-file-name ][ -l ] [ -v ][ -cf ]
```

- To update the information in the dictionary map file:

```
drmfdisplay -refresh
```

Description

The `drmfdisplay` command has the following three functions:

1. Displays the resource information for the file system on the server where the command is executed.
2. Displays the information, organized by mount point directory, for a file system on the system where the command is executed.
3. Updates the file system information for the dictionary map file. Execute this command before performing a backup.

Table 2.10 lists the items displayed by the above functions 1 and 2. Each item is separated by a space. A hyphen (-) is displayed for any item that cannot be displayed. If none of the items can be displayed, an error message is displayed.

Table 2.10 Items Displayed by `drmfdisplay` Command

Displayed Item	Description
INSTANCE	Mount point directory name.
T	Object type. (F, which means file, is displayed.)
FILE	File name.
FS	Mount point directory name.
FSTYPE	File system type: NTFS.
DG	The name of the disk group (for an environment with a logical volume manager), or a hyphen (-) (for a basic disk configuration).
LVM-DEVICE	The name of the logical device file (for an environment with a logical volume manager) or GUID (for an environment without a logical volume manager).
DEVICE	Physical device file name (raw device file name) or <code>Harddiskn</code> (where <i>n</i> is an integer). If this command is executed with the <code>-device</code> option, this will be displayed after T.
COPY-GROUP	Copy group name. (RAID Manager volume group name and device name.)

Displayed Item	Description
PORT#	Port name on the server host side.
TID#	Target ID on the server host side.
LUN#	Logical unit number on the server host side.
MU#	Pair identifier.
LDEV#	Logical device number across RAID devices.
P/S	Letter to identify whether the volume is primary or secondary: P: Primary volume of a pair. S: Secondary volume of a pair. -: A volume that is not part of a pair.
SERIAL#	Serial number across RAID devices.
COPY-FUNC	Copy type. Copy type: The name of the copy type varies depending on the DKC software product (storage subsystem unit) and microcode version. -: Indicates a volume where a pair volume has not been configured. (Do not create a program that operates using this display.)
GEN-NAME	Generation identifier. local_ <i>n</i> : for a local pair volume (where <i>n</i> is a generation number from 0 to 999). remote_ <i>n</i> : for a remote pair volume (where <i>n</i> is a generation number from 0 to 999). -: Indicates a volume where a pair volume has not been configured.
VIRTUAL-SERVERNAME	Virtual server name (value of the <code>DRM_HOSTNAME</code> environment variable). The command executed with the <code>-v</code> option displays this information.
DB-PATH	Name of the directory storing the dictionary map file. The command executed with the <code>-v</code> option displays this information.
CORE-MAPFILE-UPDATE-TIME	Update time for the core map file. The command executed with the <code>-v</code> option displays this information.
APP.-MAPFILE-UPDATE-TIME	Update time for the application map file. The command executed with the <code>-v</code> option displays this information.

Arguments

mount-point-directory-name

Specify the drive letter of the file system for which you want to display the information, or specify its absolute path starting with the drive letter. If a path does not end with `\`, the command assumes `\` at the end of the path. For example, `D:` and `D:\` are assumed to be the same drive. `D:\MOUNTDIR` and `D:\MOUNTDIR\` are assumed to be the same directory.

If this argument is not specified, the command targets all file systems.

-target *file-or-directory-name(s)*

Specify this argument when you want to display the information about specific files or directories. Use absolute path names to specify the file names or directory names. To display the information for two or more files or directories, use commas to separate each of the file names or directory names you specify.

-f *target-definition-file-name*

Specify this argument when you want to display the information about specific files or directories. Unlike `-target`, this argument lets you collectively specify files or directories for which you want to display information by specifying a target definition file that contains a list of absolute paths of the files or directories. The target definition file must be created beforehand. Use an absolute path name to specify the target definition file name.

-device *device-file-name*

Specify this argument when you want to display only the information about a specific device file. With this option specified, the command displays the information about the specified device file for the file system specified in the *mount-point-directory-name* argument. If you do not specify this option, the command displays the information about the specified device file for all the file systems.

-l

Specify this argument to display information in the long format.

-v

Specify this option to display management information for the dictionary map file. The following information is displayed:

- Name of the directory storing the dictionary map file.

Displays the path that is set in `DRM_DB_PATH` in the Protection Manager configuration definition file (`init.conf`).

If `DRM_DB_PATH` has not been set, the default storage directory for a dictionary map file, which is created automatically during installation, is displayed.

- Virtual server name (value of the `DRM_HOSTNAME` environment variable).

If the `DRM_HOSTNAME` environment variable has not been set, a hyphen (-) appears.

- Update time for the dictionary map file.

Displays the update time separately for the core map file and the application map file. The same time is displayed when you execute the `drmfssdisplay` command.

-cf

Specify this to display local or remote copy types, or the name identifying the generation corresponding to the copy group name. The remote information is also displayed.

-refresh

Specify this argument when you want to update the information in the dictionary map file to the latest state. The command updates the information in the dictionary map file for all file systems. At this time, the contents of the core map file are deleted once during the update, and then are updated. Specify this option even if disk information for `snapshot` is set up in the dictionary map file.

The dictionary map file is updated on the DB server.

When the disk configuration has been changed, always update the dictionary map file.

Notes

- When specifying on the command line a file name or directory name containing space characters for the `-target` option or `-f` option, you must enclose the file name in double quotation marks (").
- Enclosing with double quotation marks is not necessary for target path names specified in batch definition files.

Return Values

0: Normal termination.

Any value other than 0: Termination with an error.

Examples

- In this example, the command outputs information about the file system on the D drive:

```
PROMPT> drmfssdisplay D:
INSTANCE: D:
T FILE      FS      DG      DEVICE      COPY-GROUP
F -         D:      -       Harddisk1    VG01,dev01
```

- In this example, the command displays information about the file system specified by the mount point `\mnt`:

```
PROMPT> drmfssdisplay D:\MNT
INSTANCE: D:\MNT
T FILE      FS      DG      DEVICE      COPY-GROUP
F -         D:\MNT  -       Harddisk1    VG01,dev01
```

- In this example, the command outputs file system information, in the long format, about the file `D:\temp\file1.txt` existing on the D drive:

```
PROMPT> drmfssdisplay D: -target D:\temp\file1.txt -l
INSTANCE: D:
T FILE      FS  FSTYPE  DG  LVM-DEVICE
DEVICE      COPY-GROUP  PORT#  TID#  LUN#  MU#  LDEV#  P/S  SERIAL#
F D:\temp\file1.txt  D:  NTFS    -    0    0    0    10000  P    15044
Harddisk1  VG01,dev01  CL1-A  0    0    0    0    10000  P    15044
```

- In this example, the command outputs file system information, in the long format, about the disk volume `Harddisk1`:

```
PROMPT> drmfssdisplay -device Harddisk1 -l
INSTANCE: D:
T DEVICE      FILE                FS  FSTYPE DG  LVM-DEVICE
COPY-GROUP PORT#  TID# LUN# MU# LDEV# P/S SERIAL#
F Harddisk1 D:\temp\file1.txt D:  NTFS  -  \?\Volume{df67a5b0-5583-11d5-a410-806d6172696f}\ VG01,dev01 CL1-A 0 0 0 10000 P 15044
```

- In this example, the command outputs information about the file system on the D drive and management information for the dictionary map file:

```
PROMPT> drmfssdisplay D: -v
VIRTUAL-SERVERNAME: host1
DB-PATH: D:\Program Files\Hitachi\DRM\db2
INSTANCE: D:
CORE-MAPFILE-UPDATE-TIME: 2002/06/01 10:00:00
APP.-MAPFILE-UPDATE-TIME: 2002/06/01 10:00:00
T FILE      FS      DG      DEVICE          COPY-GROUP
F -         D:      -       Harddisk1       VG01,dev01
```

- In this example, the command outputs information about the file system on the D drive and management information for the dictionary map file (when the dictionary map file does not exist):

```
PROMPT> drmfssdisplay D: -v
VIRTUAL-SERVERNAME: host1
DB-PATH: D:\Program Files\Hitachi\DRM\db2
KAVX0039-E The core map file(s) cannot be found.
```

- In this example, the command outputs the type (local copy or remote copy) of the file system on the D drive, as well as the name identifying the generation:

```
PROMPT> drmfssdisplay D: -l -cf
INSTANCE: /mnt
T FILE      FS  FSTYPE DG  LVM-DEVICE
DEVICE      COPY-GROUP PORT# TID# LUN# MU# LDEV# P/S SERIAL# COPY-FUNC  GEN-NAME
F D:\file1 D:  NTFS  -  \?\Volume{df67a5b0-5583-11d5-a410-806d6172696f}\ Harddisk1
VG01,dev01 CL1-A 0 0 0 10000 P 15044 ShadowImage local_0
```

2.6.4 drmsrestore

This basic command restores a file system from a backup.

Format

```
drmsrestore backup-ID -resync [ -force ]  
                        [ -target file-or-directory-name(s) | -f target-definition-  
file-name ]  
                        [ -pf copy-parameter-definition-file]
```

Description

The `drmsrestore` command performs disk resynchronization to restore data to the primary volume from the secondary volume. The backup data used for restoration is specified by a backup ID.

On file systems that consist of multiple physical volumes, all volumes will be restored.

The following explains the command processing in restoration by disk resynchronization:

1. When the file system to be restored has been mounted, the command automatically unmounts the file system.

If the file system cannot be unmounted, the command displays an error message and the restoration processing fails.

When the file system has already been unmounted, the command processing goes to the next step.

2. The command confirms that the file system has been unmounted, and then performs disk resynchronization to restore the backup data from the secondary volume to the primary volume.
3. The command mounts the file system again.

The following explains the command processing for restoration in a cluster configuration:

1. The command automatically places the disk resource offline when the disk resource in the file system to be restored is placed online.

If operations to place the disk resource offline fail, the command displays an error message and the restoration processing fails.

When the disk resource has already been placed offline, go on to the next step.

2. The command confirms that the disk resource has been successfully placed offline, and then performs disk resynchronization to restore the backup data from the secondary volume to the primary volume.
3. The command places the disk resource online.

If `ONLINE` is set in `CLU_MSCS_RESTORE` in the Protection Products configuration definition file (`init.conf`), restoration can be performed while the cluster resources are online when you restore a volume within a cluster group in an MSCS environment.

Restoration overwrites the entire primary volume with the entire secondary volume that contains a backup of the primary volume. Therefore, additions and changes to the primary volume after the backup was created are not applied.

Before executing this command, all the application programs using the volume to be restored must be stopped. The volume being used by the operating system cannot be restored.

This command should be used to restore the primary volume to the secondary volume. This command should not be used when the data is being backed up from the secondary volume to tape with the `drmtapebackup` or `drmmmediabackup` command, when the data is being restored from tape to the secondary volume with the `drmtaperestore` or `drmmmediarestore` command, or when the secondary volume is being mounted with the `drmmount` command.

Arguments

backup-ID

Specify the backup ID of the backup data you want to use for restoration. A backup ID uniquely identifies backup data. A backup ID is assigned to each backup and stored in the backup catalog. To check backup IDs, execute the `drmfscat` command.

-resync

Specify this argument to resynchronize the primary volume with the secondary volume for restoration. With this argument specified, the command uses the backup data on the secondary volume as the base for synchronization between the primary and secondary volumes.

-force

Specify this option to perform restoration by forced resynchronization of the primary and secondary volumes.

With this option, forced resynchronization is performed if the copy group name of the primary volume obtained when the backup processing was performed on the file server matches the information on the file server, even though the LDEV and SERIAL numbers do not match the LDEV and SERIAL numbers when the backup processing was performed.

Specify this option only if restoration by resynchronization could not be performed with the `-resync` option, such as when the LDEV number changes when the volume is replaced. If this option is specified under a normal restoration, data might be corrupted.

-target file-or-directory-name(s)

Specify this argument when you want to restore the file system that contains the specific file or directory. Use the file or directory name registered in the backup catalog specified with the backup ID.

Use the absolute path name to specify the file name or directory name. The data is restored to the same location from where it was backed up. Therefore, make sure that the file name or directory name that you specify identically matches the name of the file or directory that was backed up. If an incorrect path is specified, restoration will not be performed correctly. To display the information for two or more files or directories concurrently, use commas to separate each of the file or directory names you specify.

If you omit both this option and the `-f` option, the whole file system registered in the backup catalog will be restored.

-f target-definition-file-name

Specify this argument when you want to restore the file system that contains the specific file or directory. Use the file or directory name registered in the backup catalog specified with the backup ID.

When you create a definition file in advance, where a list of absolute paths for files or directories to be restored is described, you can specify a target definition file name together with this option to restore files and directories concurrently. This is the distinction between this option and the `-target` option. Use the absolute path name to specify the target definition file name. If the `-target` or `-f` options of the `drmfbackup` command are specified, specify for this option, for each file or directory name, the exact same absolute path name as specified for the `drmfbackup` command.

If you omit both this option and the `-target` option, the whole file system registered in the backup catalog will be restored.

-pf copy-parameter-definition-file

Specify this option when using the number of retries and the retry interval defined in the copy parameter definition file. Specify only the file name, without specifying the path.

When you omit this option, the value of the RAID Manager-linkage definition file (`DEFAULT.dat`) is used. The `DEFAULT.dat` values are also used for parameters not specified in the copy parameter definition file.

Create the copy parameter definition file with an arbitrary name in the following location. Specify the file name using alphanumeric characters totaling up to 64 bytes.

Protection-Products-installation-directory\conf\raid

Notes

- The backup information in the backup catalog is managed based on using the copy group as a key. Depending on the backup method, you might not be able to perform restoration, even though the backup data exists on the secondary volume. For further information, see the notes on running Protection Manager programs in the *HiCommand Protection Manager User's Guide* (MK-94HC070).
- When specifying on the command line a file name or directory name containing space characters for the `-target` or `-f` options, you must enclose the file name in double quotation marks (").
- Enclosing with double quotation marks is not necessary for target path names specified in batch definition files.

Return Values

0: Normal termination.

Any value other than 0: Termination with an error .

Examples

- In this example, the command performs disk resynchronization to restore data from the backup identified by the backup ID 0000000001:

```
PROMPT> drmfrestore 0000000001 -resync
```

- In this example, the command performs disk resynchronization to restore data from the backup identified by the backup ID 0000000001. The command uses the parameters defined during restoration in the copy parameter definition file `remote0.dat`.

```
PROMPT> drmfrestore 0000000001 -resync -pf remote0.dat
```

2.7 Common Basic Commands

2.7.1 drmapcat

This basic command displays catalog information on a host.

Format

- To display backup information for a particular backup ID:

```
drmapcat backup-ID [ -l ][ -hostname host-name ][ -v ]  
[ -comment backup-comment ][ -template ]
```

- To display backup information:

```
drmapcat [ backup-ID ][ -l ][ -hostname host-name ][ -v ]  
[ -comment backup-comment ][ -template ]
```

- To delete backup information:

```
drmapcat backup-ID -delete
```

Description

This command lets you display backup information for file systems and applications. This backup information is saved in the backup catalog on the server on which the command is executed. Table 2.11 lists the displayed items.

Table 2.11 Items Displayed by drmapcat Command

Displayed Item	Description
BACKUP-COMMENT	Backup comment. When the <code>-comment</code> option is specified, this information is displayed.
BACKUP-ID	Backup ID (10 characters).
ORIGINAL-ID	The original backup ID. When the <code>-l</code> option is specified, these items are displayed.
BACKUP-MODE	Backup mode.
HOSTNAME	Name of the server where the snapshot backup was performed. When the <code>-l</code> option is specified, these items are displayed.
BACKUP-OBJECT	Snapshot backup object type.
INSTANCE	<ul style="list-style-type: none">▪ The name of the instance of the backup target (for a database).▪ The name of the mount point directory (for a file system). When the <code>-l</code> option is specified, these items are displayed. A hyphen (-) is displayed for Protection Manager for Exchange Server.
START-TIME	Start time of a snapshot backup.
END-TIME	End time of a snapshot backup.
VIRTUAL-SERVERNAME	Virtual server name (value of the <code>DRM_HOSTNAME</code> environment variable).
DB-PATH	Name of the directory storing the backup catalog.

Arguments

backup-ID

Specify this to display or delete backup information for a particular backup ID. A *backup ID* uniquely identifies backup data, and is registered in the backup catalog during backup.

-l

Specify this option to display the following items:

- ORIGINAL-ID
- HOSTNAME
- INSTANCE

-hostname *host-name*

Specify this argument to display only information pertaining to a specific host. This argument can be used when, for example, backup information executed on multiple servers is imported to the server on which you are executing the command.

-v

Specify this option to display information about the backup catalog.

The following information is displayed:

- Name of the directory storing the backup catalog.
Displays the path that is set in `DRM_DB_PATH` in the Protection Manager configuration definition file (`init.conf`).
If `DRM_DB_PATH` has not been set, the default storage directory for a dictionary map file, which is created automatically during installation, is displayed.
- Virtual server name (value of the `DRM_HOSTNAME` environment variable).
If the `DRM_HOSTNAME` environment variable has not been set, a hyphen (-) appears.

-comment *backup-comment*

Specify this argument to display only information on a specific backup comment.

The *backup-comment* value is case insensitive.

You can specify a wildcard (*) as the value of *backup-comment*. You can specify a string by using only the first few characters (specifying a few specific characters at the beginning of the string, and not designating any particular characters for the rest of the string—such as in the specification `XYZ*`). When a wildcard, special character, or one-byte space character is used, the entire backup-comment string must be enclosed in double quotation marks ("). If the backup-comment string contains a special character but is not enclosed in double quotation marks, the special character is not properly handled as a part of the backup-comment string and is parsed as a special character. If you specify `-comment "*"` , the command will display all backup catalogs.

If two double quotation marks are specified after the `-comment` option (as in: `-comment ""`), a message is displayed indicating that no backup data exists.

-template

Specify this to display information for a template catalog.

The times at which template catalog creation started and ended are displayed in `START-TIME` and `END-TIME`, respectively.

The template catalogs displayed when this option is specified are only those for the SQL Server database for which backup operations are to be performed.

-delete

Specify this argument to delete the backup information for the backup catalog.

Return Values

0: Normal termination.

Any value other than 0: Termination with an error.

Examples

- In this example, the command, with the host name `stdg7` specified, displays the detailed backup catalog list:

```
PROMPT> drmappcat -l -hostname stdg7
BACKUP-ID ORIGINAL-ID BACKUP-MODE HOSTNAME BACKUP-OBJECT INSTANCE START-TIME
END-TIME
0000000162 0000000162 ONLINE stdg7 FILESYSTEM F: 2003/10/02 18:24:35
2003/10/02 18:59:37
0000000251 0000000251 ONLINE stdg7 MSSQL DEFAULT 2003/10/03 18:55:15
2003/10/03 18:59:37
PROMPT>
```

- In this example, the command displays the detailed backup catalog list for the backup ID `0000000162`:

```
PROMPT> drmappcat 0000000162 -l -comment "*"
BACKUP-COMMENT BACKUP-ID ORIGINAL-ID BACKUP-MODE HOSTNAME BACKUP-OBJECT INSTANCE
START-TIME END-TIME
Comment 0000000162 0000000162 ONLINE stdg7 FILESYSTEM F:
2003/10/02 18:24:35 2003/10/02 18:59:37
PROMPT>
```

- In this example, the command displays the backup catalog list and backup catalog management information, with backup comments:

```
PROMPT> drmappcat -v -comment "Comment*"
VIRTUAL-SERVERNAME: host1
DB-PATH: D:\Program Files\Hitachi\DRM
BACKUP-COMMENT BACKUP-ID BACKUP-MODE BACKUP-OBJECT START-TIME END-TIME
Comment1 0000000162 ONLINE FILESYSTEM 2003/10/02 18:24:35 2003/10/02
18:59:37
Comment2 0000000251 ONLINE MSSQL 2003/10/03 18:55:15 2003/10/03
18:59:37
PROMPT>
```

- In this example, the command gives a displayed display of the catalog created by using `drmsqlbackup -template` command:

```
PROMPT> drmappcat -l -template
BACKUP-ID ORIGINAL-ID BACKUP-MODE HOSTNAME BACKUP-OBJECT INSTANCE START-TIME END-TIME
0000000252 0000000252 ONLINE stdg7 MSSQL DEFAULT 2003/10/03 18:55:15
2003/10/03 18:59:37
PROMPT>
```

- In this example, the command deletes the backup catalog of the backup ID 0000000162:

```
PROMPT> drmappcat 0000000162 -delete
KAVX0424-I The backup information corresponding to the specified backup ID has been
deleted.
Backup ID = 0000000162
PROMPT>
```

2.7.2 drmcgctl

This basic command locks or unlocks a copy group.

Format

- To list copy groups:

```
drmcgctl
```

- To lock or unlock a copy group by specifying a copy group name:

```
drmcgctl -copy_group copy-group-name -mode { lock | unlock }
```

- To lock or unlock a copy group by specifying a backup ID:

```
drmcgctl -backup_id backup-ID -mode { lock | unlock }
```

Description

The `drmcgctl` command locks a copy group that contains the backup data so that it is not overwritten at the next backup. This command can also unlock a copy group. The lock on the copy group is valid only on the server where this command was executed. Operations from this server to the copy group cannot be performed until the copy group is unlocked.

When you execute this command with no option specified, a list of copy groups will be displayed. This allows you to check the following:

- The lock status of the copy group.
- The backup ID (if a backup has been made).

Arguments

-copy_group *copy-group-name*

Specify the name of the copy group you want to lock or unlock.

In environments where one logical volume group is comprised of multiple copy groups, if the multiple generation backup function is used, the number of generations of all copy groups comprising the logical volume group must match. If the copy group generations do not match, backup generation management cannot be performed correctly in Protection Manager.

-mode { lock | unlock }

Specify whether to lock or unlock the copy group. To lock the copy group, specify lock. To unlock the copy group, specify unlock.

-backup_id *backup-ID*

Specify the backup ID associated with the copy groups you want to lock or unlock. By specifying a backup ID, you can lock or unlock all the copy groups used for the backup identified by the specified ID at one time. Specify the backup ID created when the backup was performed from the primary volume to the secondary volume.

To check backup IDs, execute either of the following commands, according to what was backed up:

- When the backup is of a file system, use the `drmfscat` command.
- When the backup is of a SQL Server database, use the `drmsqlcat` command.
- When the backup is of a storage group, use the `drmexgcat` command.
- You cannot specify a backup ID that was created when a backup was performed from the secondary volume to tape. (You can use the `drmtapecat` command to check such a backup ID.) If such an ID is specified, a command error occurs.

Return Values

0: Normal termination.

Any value other than 0: Termination with an error.

Examples

- In this example, the command displays a listing of lock information for each copy group:

```
PROMPT> drmcgctl
COPY GROUP          LOCK STATUS  BACKUP-ID
VG01,dev01          LOCKED      0000000001
VG01,dev02          LOCKED      0000000001
VG01,dev03          UNLOCKED
VG02,dev01          UNLOCKED
```

- In this example, the command unlocks the copy group VG01, dev01:

```
PROMPT> drmcgctl -copy_group VG01,dev01 -mode lock
```

- In this example, the command locks the copy group VG01, dev01:

```
PROMPT> drmcgctl -copy_group VG01,dev01 -mode unlock
```

- In this example, the command locks the copy groups used for the backup identified by the backup ID 0000000001:

```
PROMPT> drmcgctl -backup_id 0000000001 -mode lock
```

- In this example, the command unlocks the copy groups used for the backup identified by the backup ID 0000000001:

```
PROMPT> drmcgctl -backup_id 0000000001 -mode unlock
```

2.7.3 drmlusinit

This basic command registers parameters for a cluster product.

Format

- To register the parameters for a cluster product:

```
drmlusinit cluster-product-name
```

- To view the parameters registered for a cluster product:

```
drmlusinit -v cluster-product-name
```

Description

```
For a cluster configuration, the drmlusinit command uses an interactive format to register the parameters necessary to control a cluster product. The parameters registered using this command are stored in the following location:  
Protection-Products-installation-directory\conf\cluster\cluster-name.dat
```

Table 2.12 shows the parameters registered using the `drmclusinit` command.

Table 2.12 Cluster Product Parameters

Registered Item	Description
Virtual server name (required)	Enter the name of the virtual server managed by the cluster product.
Resource group name (required)	Enter the service group name.
Name of the instance or application to be backed up (required)	<ul style="list-style-type: none"> ▪ For a file system: Enter a hyphen (-). ▪ For SQL Server: Enter the SQL instance name. ▪ For Exchange Server: Enter the storage group name.
Resource type (required)	Enter <code>D</code> .
Resource name (required)	Enter the disk resource name. You do not need to enter the service resource name: <ul style="list-style-type: none"> ▪ For an environment with VERITAS Volume Manager for Windows: Enter the cluster resource name for the <i>mount-point</i> (logical volume)*¹ and <i>disk-group</i>^{#2}.
Disk name (required when <code>D</code> has been specified for the resource type)	Enter the following information, based on the resource name: <ul style="list-style-type: none"> ▪ When the <i>mount-point</i> is specified: Enter the mount point (such as <code>D:</code>). ▪ When the <i>disk-group</i> is specified: Enter the disk group name (such as <code>DG01</code>).

#1 A resource whose resource type is `MountV`

#2 A resource whose resource type is `VMDg`

Arguments

`-v`

Specify this to display the registered parameters.

cluster-product-name

Specify the keyword that identifies the cluster product being used.

If you are using VERITAS Cluster Server for Windows for the cluster product, the keyword will be `VCS`.

Registering parameter information is not required when using Microsoft Cluster Service.

The specified cluster product name is stored in the following file:

Protection-Products-installation-directory\conf\cluster\DEFAULT.dat

Notes

- Execute the `drmclusinit` command before performing backup.
- If the cluster configuration has been changed, you must use the `drmclusinit` command to set up the cluster information again.

To delete the setup information for the `drmclusinit` command, perform the following:

```
PROMPT> del C:\Program Files\HITACHI\DRM\conf\cluster\DEFAULT.dat  
PROMPT> del C:\Program Files\HITACHI\DRM\conf\cluster\VCS.dat
```

`C:\Program Files\HITACHI\DRM` indicates the installation destination for Protection Manager. If Protection Manager have been installed in a different location, specify that path.

- Execute the `drmclusinit` command on both the active server and standby server.
- The virtual server name registered by using the `drmclusinit` command must satisfy the following conditions:
 - The specified virtual server name must match with the `VirtualName` attribute of the Lanman resource of VERITAS Cluster Server.
 - The specified virtual server name must match with the virtual server name specified in the `DRM_DB_PATH` parameter that is defined in the Protection Products configuration definition file (`init.conf`).
- Resource information registered by using the `drmclusinit` command must completely match with the resource information registered with a cluster product.
- A mount point to be registered with a cluster product as a mount point for a mount point resource (MountV source) must be in the same format as the mount point registered with a dictionary map file.
- Only the following resources are registered by the `drmclusinit` command:
Mount point resource (MountV resource) and disk group resource (VMDg resource) created on the physical disks that can be monitored by Protection Manager programs.
Do not use the `drmclusinit` command to register the following resources:
 - Service resource of a SQL Server or Exchange Server, Lanman resource (virtual server), RegRep resource (registry replication resource).
 - When a dictionary map has been placed on a shared disk and configured as a cluster resource in the same service group, mount point resource (MountV/Mount resource), disk group resource, or physical disk resource (VMDg/DiskRes resource).

Examples

- In this example, the commands registers, for a disk configuration that uses VERITAS Volume Manager for Windows, the parameters for controlling the cluster product (for Exchange Server).

This example is based on the following configuration. Also, for SQL Server, the storage group portion is the SQL instance:

- Virtual server name: `VHOST1`
- Service group name: `ServiceGroup-Exc`

- Disk configuration: See Table 2.13.

Table 2.13 Disk Configuration (Example 1 of drmclusinit)

Storage Group	Mount Point	Disk Group	Physical Disk
STR1	E: (resource name is MountV-E)	DG1 (resource name is VMDG-1)	Harddisk1
			Harddisk2
	F: (resource name is MountV-F)	DG2 (resource name is VMDG-2)	Harddisk3

```
PROMPT> drmclusinit VCS
KAVX0313-I Enter the virtual host name: VHOST1
KAVX0310-I Enter the resource group name: ServiceGroup-Exc
KAVX0317-I Enter the instance name: STR1
KAVX0311-I Enter the resource name: MountV-E
KAVX0314-I Enter the resource type (S for service. D for disk): D
KAVX0316-I Enter the disk name: E:
KAVX0311-I Enter the resource name: MountV-F
KAVX0314-I Enter the resource type (S for service. D for disk): D
KAVX0316-I Enter the disk name: F:
KAVX0311-I Enter the resource name: VMDG-1
KAVX0314-I Enter the resource type (S for service. D for disk): D
KAVX0316-I Enter the disk name: DG1
KAVX0311-I Enter the resource name: VMDG-2
KAVX0314-I Enter the resource type (S for service. D for disk): D
KAVX0316-I Enter the disk name: DG2
KAVX0311-I Enter the resource name:
KAVX0317-I Enter the instance name:
KAVX0310-I Enter the resource group name:
KAVX0313-I Enter the Virtual host name:
KAVX0312-I Cluster information was updated.
PROMPT>
```

- In this example, the command registers, for a disk configuration that uses VERITAS Volume Manager for Windows, the parameters for controlling the cluster product (for a file system).

This example is based on the following configuration:

- Virtual server name: VHOST1
- Service group name: ServiceGroup-FS
- Disk configuration: See Table 2.14.

Table 2.14 Disk Configuration (Example 2 of drmclusinit)

Storage Group	Mount Point	Disk Group	Physical Disk
STR1	E: (resource name is MountV-E)	DG1 (resource name is VMDG-1)	Harddisk1
			Harddisk2
	F: (resource name is MountV-F)	DG2 (resource name is VMDG-2)	Harddisk3
	F:\mnt (resource name is MountV-F-mnt)	DG3 (resource name is VMDG-3)	Harddisk4

```

PROMPT> drmclusinit VCS
KAVX0313-I Enter the virtual host name: VHOST1
KAVX0310-I Enter the resource group name: ServiceGroup-FS
KAVX0317-I Enter the instance name: -
KAVX0311-I Enter the resource name: MountV-E
KAVX0314-I Enter the resource type (S for service. D for disk): D
KAVX0316-I Enter the disk name: E:
KAVX0311-I Enter the resource name: MountV-F
KAVX0314-I Enter the resource type (S for service. D for disk): D
KAVX0316-I Enter the disk name: F:
KAVX0311-I Enter the resource name: MountV-F-mnt
KAVX0314-I Enter the resource type (S for service. D for disk): D
KAVX0316-I Enter the disk name: F:\mnt
KAVX0311-I Enter the resource name: VMDG-1
KAVX0314-I Enter the resource type (S for service. D for disk): D
KAVX0316-I Enter the disk name: DG1
KAVX0311-I Enter the resource name: VMDG-2
KAVX0314-I Enter the resource type (S for service. D for disk): D
KAVX0316-I Enter the disk name: DG2
KAVX0311-I Enter the resource name: VMDG-3
KAVX0314-I Enter the resource type (S for service. D for disk): D
KAVX0316-I Enter the disk name: DG3
KAVX0311-I Enter the resource name:
KAVX0317-I Enter the instance name:
KAVX0310-I Enter the resource group name:
KAVX0313-I Enter the Virtual host name :
KAVX0312-I Cluster information was updated.
PROMPT>

```

2.7.4 drmdbexport

This basic command exports backup information to a file.

Format

```
drmdbexport backup-ID -f export-destination-file-name
```

Description

The `drmdbexport` command exports the backup information from the backup catalog to a file. You can use the `drmdbimport` command to import data into a backup catalog on another server from a file that contains the exported backup information.

Arguments

backup-ID

Specify the backup ID of the backup catalog you want to export. To check backup IDs, execute either of the following commands according to what was backed up:

- When the backup is of a file system, use the `drmfscat` command.
- When the backup is of a SQL Server database, use the `drmsqlcat` command.
- When the backup is of a storage group, use the `drmexgcat` command.

-f export-destination-file-name

Use an absolute path name to specify the file to which you want to export the backup information. Use a maximum of 511 bytes for a file name. If the specified export destination file already exists, the existing file is overwritten.

When specifying on the command line a file name or directory name containing space characters for the `-f` option, you must enclose the path name in double quotation marks (").

Return Values

0: Normal termination.

Any value other than 0: Termination with an error.

Example

In this example, the command exports information for the backup with backup ID 0000000001 to the file `D:\tmp\0000000001.drm`:

```
PROMPT> drmdbexport 0000000001 -f D:\tmp\0000000001.drm
```

2.7.5 drmdbimport

This basic command imports backup information from a file.

Format

```
drmdbimport -f import-source-file-name
```

Description

The `drmdbimport` command imports, into a backup catalog, backup-information from a file that was exported by the `drmdbexport` command. Protection Manager programs manage backup information based on copy groups, which are used as a key. If the backup information of the same copy group exists in the backup catalog when you attempt to import the backup information, the old backup information is overwritten.

Arguments

-f import-source-file-name

Use an absolute path name to specify the file whose backup information is to be imported into the backup catalog. Use a maximum of 511 bytes for a file name.

When specifying on the command line a file name or directory name containing space characters for the `-f` option, you must enclose the path name in double quotation marks (").

Return Values

0: Normal termination.

Any value other than 0: Termination with an error.

Example

In this example, the command imports the backup information from the file
D:\tmp\0000000001.drm:

```
PROMPT> drmdbimport -f D:\tmp\0000000001.drm
```

2.7.6 drmdevctl

This basic command conceals and unconceals a physical volume.

Formats

- To conceal the secondary volumes of all copy groups:

```
drmdevctl -detach [ -noscan ]
```

- To conceal the secondary volumes of copy groups registered in a backup catalog:

```
drmdevctl backup-ID -detach [ -noscan ]
```

- To conceal the secondary volumes of a specified copy group:

```
drmdevctl -copy_group copy-group-name -detach [ -noscan ]
```

- To unconceal (publish) the secondary volumes of all copy groups:

```
drmdevctl -attach [ -noscan ]
```

- To unconceal (publish) the secondary volumes of copy groups registered in a backup catalog:

```
drmdevctl backup-ID -attach [ -noscan ]
```

- To unconceal (publish) the secondary volumes of a specified copy group:

```
drmdevctl -copy_group copy-group-name -attach [ -noscan ]
```

- To perform a disk rescan on the server:

```
drmdevctl -rescan
```

- To display the disk signature of the local volume of all copy groups:

```
drmdevctl -sigview
```

- To display the disk signature of the local volume of copy groups registered in a specified backup catalog:

```
drmdevctl backup-ID -sigview
```

- To display the disk signature of the local volume of a specified copy group:

```
drmdevctl -copy_group copy-group-name -sigview
```

- To update the disk signature of the local volume to the value generated at the time of backup (targeting copy groups registered in a specified backup catalog):

```
drmdectl backup-ID -sigset
```

- To update the disk signature of the local volume to the specified value (targeting a specified copy group):

```
drmdectl -copy_group copy-group-name -sigset disk-Signature
```

Description

This command conceals or unconceals physical volumes of storage subsystem devices connected to the server. By concealing physical volumes from the server and controlling access, you can prevent errors caused by user operations.

In addition, you can conceal physical volumes to obtain backups in Windows-standard Logical Disk Manager (LDM) environments or VERITAS Volume Manager for Windows environments, or to obtain backups using QuickShadow. You can then store these backups in multiple generations of secondary volumes and back up each generation to the tape device via the backup server.

Since you can target all copy groups managed by Protection Manager, you can perform an initial setup of a volume-concealed environment for backup servers. By specifying a backup ID and copy group, you can also execute this command after narrowing the list of potential targets.

You can also use this after starting operation, to conceal or unconceal physical volumes of storage subsystem devices connected to the server.

When the restoration command is terminated by an error on the file server or database server, the disk signature of the copy group can be displayed and updated on the backup server. This helps recovery from the error that occurred during the restoration.

Note that you must set `DEVICE_DETACH=ENABLE` in the RAID Manager-linkage definition file (`DEFAULT.dat`) when specifying the `-detach`, `-attach`, or `-rescan` option.

Arguments

backup-ID

Specify the backup ID of the corresponding backup catalog. When a backup ID is specified, the target physical volumes are the secondary volumes of the copy groups registered in the backup catalog.

-copy_group copy-group-name

Specify a valid copy group name. The target physical volumes are the secondary volumes of the copy group specified.

-detach

Conceals the physical volumes of the storage subsystem from the server, and instructs the server to perform a disk rescan.

-attach

Unconceals (publishes) physical volumes of the storage subsystem that are concealed from the server, and instructs the server to perform a disk rescan.

-noscan

Specify this to stop the operating system from being instructed to perform a disk rescan, after a volume conceal or unconceal is performed. Note that if even one volume conceal or unconceal is performed, an operating system disk rescan instruction (`-rescan`) is necessary. Since an inconsistency may develop between the operating system and the actual disk configuration if no disk rescan instruction is performed, operation is not guaranteed if operations other than `drmdevctl -detach` or `drmdevctl -attach` are executed.

This option must be specified when either the `-detach` or `-attach` option is specified.

-rescan

Instructs the operating system to perform a disk rescan. A disk rescan is required after a volume conceal or unconceal is performed. The time required to process a disk rescan depends on the hardware configuration, and the number of disks connected in particular.

This option cannot be specified with other options.

-sigview

Displays the disk signature of the physical volume. Use this option to restore the operation when the KAVX5137-E message is output and the restoration command terminates with an error.

- When the backup ID is specified to the `-sigview` option: the disk signature recorded at backup is displayed. This helps to compare disk signature values of the backup and the current.
- When both the `-sigview` option and `-copy_group copy-group-name` are specified at the same time, or neither the backup ID for the `-sigview` option nor the `-copy_group copy-group-name` is specified, only the current disk signature is displayed. The disk signature registered at backup is displayed as `--`
`-----`.

The following table shows the items displayed when the `-sigview` option is specified:

Table 2.15 Items Displayed by the `drmdevctl -sigview` Command

Displayed item	Description
COPY_GROUP	When the backup ID is specified: the name of the copy group to be backed up When the copy group is specified: the name of the specified copy group When none is specified: all copy groups
DEVICE	The physical volume name corresponding to the copy groups. Example: <code>Harddisk0</code> UNKNOWN is shown when the physical volume is unable to be obtained because the disk is concealed.
TYPE	The partition style of the physical volume displayed on the <code>DEVICE</code> . (One of MBR, GPT, RAW, or --- #1) When UNKNOWN is displayed for <code>DEVICE</code> , --- is displayed.
CUR_DISKID	The current disk signature (in hexadecimal) of the physical volume displayed for <code>DEVICE</code> . When UNKNOWN is displayed for <code>DEVICE</code> , ----- is displayed.
BKU_DISKID	The disk signature recorded on the backup catalog (in hexadecimal). When the disk signature is not set (for example, because backup was performed in an environment of Protection Products version 04-10 or earlier), or when the backup ID is not specified, ----- is displayed.

#1

For Windows 2000, only MBR is displayed.

-sigset *disk-signature*

Updates the disk signature of the physical volume. Use this option to restore the operation when the KAVX5137-E message is output and the restoration command terminates with an error.

When you specify the `-sigset` option, you must specify either the backup ID or the `-copy_group copy-group-name` at the same time.

- When the `-sigset` option and the *backup-ID* are specified at the same time, the current disk signature is updated in accordance with the disk signature that was recorded at the time of backup. The optional disk signature cannot be specified here.
- When the `-sigset` option and the `-copy_group copy-group-name` are specified at the same time, the current disk signature is updated in accordance with the specified disk signature that follows the `-sigset` option. This disk signature must be specified in hexadecimal (maximum 8 digits).

Notes

- The `backup-ID` and `-copy_group` options cannot be specified at the same time.
- If neither the `backup-ID` option nor the `-copy_group` option is specified, the secondary volumes of all copy groups managed by Protection Manager will be targeted. RAID Manager instances used by Protection Manager are specified in the RAID Manager-linkage definition file (`DEFAULT.dat`), by `HORCMINST=n`. Of the two volumes defined as pair volumes in a RAID Manager instance, the volume directly managed by the RAID Manager instance used by Protection Manager is the secondary volume.
- The following limitations exist for specifying the `-detach`, `-attach`, or `-rescan` options on Microsoft Windows 2000 Server:
 - Since `diskpart.exe` is not installed by default on Windows 2000 Server, you must install the Windows resource kit.
 - `diskpart.exe` must be installed in the Windows system directory. An error will occur if it is not.
 - When this command is executed with the `-detach` option specified, the Device Eject Warning dialog box will appear. Close the dialog box.
- When a volume conceal and disk configuration rescan instruction is performed, an error message indicating that “the device has been ejected” is recorded in the Microsoft Windows event log. We recommend that you delete the event log regularly.
- If this command is executed for a dynamic disk copy group with the `-detach` option specified, **Missing** disks and **Failed** volumes may be displayed to the Microsoft Windows disk manager and VERITAS Enterprise Administrator. This happens because another dynamic disk on the server records the existence of a volume concealed by the `drmdevctl` command. This can be avoided by performing the following:

For an environment with Microsoft Windows-standard Logical Disk Manager (LDM):

Restart the server to rescan dynamic disk configuration information. Information will no longer be displayed for **Missing** disks and **Failed** volumes.

You can also perform the following to delete information about **Missing** disks and **Failed** volumes from other dynamic disks on the server:

 - Start the Microsoft Windows disk manager.
 - Select a **Failed** volume, and from the right-click contextual menu, choose **Delete Volume**.

Select a **Missing** disk, and from the right-click contextual menu, choose **Delete Disk**.

For an environment with VERITAS Volume Manager for Windows: **Missing** disks are displayed when volume conceal are performed for some of the disks in the disk group. Perform volume conceal for copy groups of **Foreign** disks and **Online** disks as well.

- When the command is executed with the `-sigview` option specified, the current disk signature cannot be viewed. The output result of the command is displayed as `-----`.
- When the command is executed with the `-sigset` option specified, the disk signature cannot be updated.

To display and update the current disk signature, the copy group must be unconcealed and the local volume must be mapped to the physical volume.

- If the disk signature is updated with the `-sigset` option specified, execute the command again with the `-sigview` option specified and make sure that the disk signature is updated properly.

Note that, if a volume with the same updated signature already exists, the command might update to a different disk signature, set by Windows. If this happens, execute the `-sigset` option, and specify the copy group to the physical volume for which you want to update the disk signature. Then, update the disk signature to a different value, making sure to avoid signature overlap.

Return Values

0: Normal termination.

Any value other than 0: Termination with an error.

Examples

- In this example, the command conceals the secondary volumes of all copy groups, and performs a disk rescan:

```
PROMPT> drmddevctl -detach
```

- In this example, the command conceals secondary volumes of the copy groups registered in the backup catalog, and performs a disk rescan:

```
PROMPT> drmddevctl 0000000002 -detach
```

- In this example, the commands repeat conceal operations for secondary volumes of the copy group, and perform a disk rescan at the end:

```
PROMPT> drmddevctl -copy_group G1,d1 -detach -noscan
PROMPT> drmddevctl -copy_group G1,d2 -detach -noscan
PROMPT> drmddevctl -copy_group G1,d3 -detach -noscan
PROMPT> drmddevctl -rescan
```

- In this example, the command unconceals (publishes) the secondary volumes of all copy groups, and performs a disk rescan:

```
PROMPT> drmddevctl -attach
```

- In this example, the command unconceals (publishes) the secondary volumes of the copy groups registered in the backup catalog, and performs a disk rescan:

```
PROMPT> drmddevctl 0000000002 -attach
```

- In this example, the commands repeat unconceal (publish) operations for secondary volumes of the copy group and perform a disk rescan at the end:

```
PROMPT> drmddevctl -copy_group G1,d1 -attach -noscan
PROMPT> drmddevctl -copy_group G1,d2 -attach -noscan
PROMPT> drmddevctl -copy_group G1,d3 -attach -noscan
PROMPT> drmddevctl -rescan
```

- In this example, the command displays the current disk signature of the local volume for all copy groups:

```
PROMPT> drmddevctl -sigview
COPY_GROUP  DEVICE      TYPE  CUR_DISKID  BKU_DISKID
VG01,dev01  Harddisk10  MBR   ABCDEF01   -----
VG01,dev02  Harddisk11  MBR   ABCDEF02   -----
VG01,dev03  UNKNOWN    ---   -----   -----
```

- In this example, the command displays the current disk signature of the local volume, and, for the copy group recorded in the backup catalog that corresponds to the backup ID 000000002, the disk signature at the time of backup.

```
PROMPT> drmddevctl 000000002 -sigview
COPY_GROUP  DEVICE      TYPE  CUR_DISKID  BKU_DISKID
VG01,dev01  Harddisk10  MBR   ABCDEF01   ABCDEF00
VG01,dev02  Harddisk11  MBR   ABCDEF02   ABCDEF03
```

- In this example, the command displays the current disk signature of the local volume for the copy group VG01, dev01.

```
PROMPT> drmddevctl -copy_group VG01,dev01 -sigview
COPY_GROUP  DEVICE      TYPE  CUR_DISKID  BKU_DISKID
VG01,dev01  Harddisk10  MBR   ABCDEF01   -----
```

- In this example, for the copy group recorded in the backup catalog that corresponds to the backup ID 000000002, the command updates the disk signature of the local volume to the disk signature at the time of backup.

```
PROMPT> drmddevctl 000000002 -sigset
```

- In this example, the command updates the disk signature of the local volume to ABCDEF00 for the copy group VG01, dev01.

```
PROMPT> drmddevctl -copy_group VG01,dev01 -sigset ABCDEF00
```

2.7.7 drmhostinfo

This basic command displays host information.

Format

```
drmhostinfo [-p]
```

Description

The `drmhostinfo` command displays the information about Protection Manager programs installed on the host as well as differential-patch history information, as listed in Table 2.16. Also, you can use Protection Manager Console to display the Protection Manager Console information.

Table 2.16 Host Information Displayed by `drmhostinfo` Command

Displayed Item	Description
PRODUCT	Product name.
VERSION	The product version is displayed in the following format. For example, the following indicates the version <code>vv.r1.r2-mm</code> : <code>vv.r1.r2.00mm</code> <code>vv</code> : Version number <code>r1</code> : Release number <code>r2</code> : Revision number <code>mm</code> : Maintenance Level (00 is displayed for the Base Level)
PATCH	The service pack version is displayed in the following format. For example, the following indicates the service pack version <code>vv.r1.r2-mmP</code> : <code>vvr1r2mm</code> <code>vv</code> : Version number <code>r1</code> : Release number <code>r2</code> : Revision number <code>mm</code> : Service Pack number
DATE	Date when the service pack was applied.

Argument

-P

Specify this option when you want to display differential-patch history information.

If you omit this option, the `drmhostinfo` command displays only product information.

Return Values

0: Normal termination.

Any value other than 0: Termination with an error.

Examples

- In this example, the `drmhostinfo` command displays host information:

```
PROMPT> drmhostinfo
PRODUCT                               VERSION
HiCommand Protection Manager Copy Controller  04.3.0.0000 (04-30)
HiCommand Protection Manager for SQL         04.3.0.0000 (04-30)
HiCommand Protection Manager Console         04.3.0.0000 (04-30)
PROMPT>
```

- In this example, the `drmhostinfo` command displays differential-patch history information:

```
PROMPT> drmhostinfo -p
PRODUCT  HiCommand Protection Manager Copy Controller
VERSION  04.3.0.0000 (04-10)
PATCH   DATE
041001   2005/07/20
PROMPT>
```

- In this example, the `drmhostinfo` command displays differential-patch history information (when there is no differential-patch history):

```
PROMPT> drmhostinfo -p
PRODUCT  HiCommand Protection Manager Copy Controller
VERSION  04.3.0.0000 (04-30)
PATCH   DATE

PRODUCT  HiCommand Protection Manager for SQL
VERSION  04.3.0.0000 (04-30)
PATCH   DATE

PRODUCT  HiCommand Protection Manager Console
VERSION  04.3.0.0000 (04-30)
PATCH   DATE
PROMPT>
```

2.7.8 drmlicense

This basic command displays, adds, or updates license information.

Formats

- To display license information:

```
drmlicense product-code -l
```

- To add a license or update the existing license to the latest license:

```
drmlicense product-code -k license-key
or
drmlicense product-code -f license-key-file
```

Description

The `drmlicense` command displays, adds, or updates license information for Protection Manager programs.

Arguments

product-code

Specify the product code of Protection Manager, for displaying license information:

- For Protection Manager for SQL: MSSQL.
- For Protection Manager for Exchange: MSEXCHANGE.

-l

Specify this option to display Protection Manager license information, as listed in Table 2.17.

Table 2.17 License Information

Displayed Item	Description
STATUS	License type: Permanent: Permanent license Temporary: Temporary license Emergency: Emergency license Bundle: Free license
EXPIRE	License expiration: For a permanent or free license:-is displayed. For a temporary or emergency license: the license expiration is displayed in the format <i>MM/DD/YYYY</i> .
TYPE	Device type. This item is displayed for the permanent license: <i>RAID</i> : displayed for Universal Storage Platform, Lightning 9900V, and Lightning 9900. <i>DF</i> : displayed when using the Thunder 9200 series, Thunder 9500V series, or TagmaStore AMS/WMS series.
SERIAL NO	Serial number or logical number of the storage subsystem corresponding to the license key. This item is displayed for the permanent license. If licenses are not obtained for each disk controller (DKC), a hyphen (-) is displayed.
LICENSED CAPACITY	License capacity. This item is displayed for the permanent license.

-k license-key

Specify this option to enter the license key, to add a license or to update the existing license to the latest license.

-f license-key-file

Specify this option to add a license or update the existing license to the latest license by using the license key file.

Return Values

0: Normal termination.

Any value other than 0: Termination with an error.

Examples

- In this example, the `drmlicense` command updates the license for Protection Manager for SQL (MSSQL):

When entering the license key
(0123456789ABCDEFGHIJKLMN0PQRSTUVWXYZ0123456789AB):

```
PROMPT> drmlicense MSSQL -k 0123456789ABCDEFGHIJKLMN0PQRSTUVWXYZ0123456789AB
```

When using the license key file:

```
PROMPT> drmlicense MSSQL -f license-key-file-path
```

- In this example, the `drmlicense` command displays the license information for Protection Manager for SQL (MSSQL):

When using a temporary license:

```
PROMPT> drmlicense MSSQL -l
STATUS Temporary
EXPIRE 12/10/2004
```

When using an emergency license:

```
PROMPT> drmlicense MSSQL -l
STATUS Emergency
EXPIRE 12/10/2004
```

When using a permanent license (if licenses are not obtained for each disk controller (DKC), a hyphen (-) is displayed for SERIAL NO):

```
PROMPT> drmlicense MSSQL -l
STATUS Permanent
EXPIRE -
TYPE SERIAL NO          LICENSED CAPACITY
RAID 12345678901234567890 0123
DF   01234567890123456789 0012
```

When the permanent license for DKC capacity is used:

```
PROMPT> drmlicense MSSQL -l
STATUS Permanent
EXPIRE -
TYPE SERIAL NO          LICENSED CAPACITY
RAID 12345678901234567890 0123
DF   01234567890123456789 0012
```

2.7.9 drmresync

This basic command resynchronizes copy groups.

Format

- To resynchronize a copy group:

```
drmresync -copy_group copy-group-name [ -pf copy-parameter-definition-file ]
```

- To resynchronize the copy groups associated with a backup ID:

```
drmresync -backup_id backup-ID [ -pf copy-parameter-definition-file ]
```

- To resynchronize a copy group target definition file:

```
drmresync -cg_file copy-group-list-file [ -pf copy-parameter-definition-file ]
```

Description

The `drmresync` command resynchronizes the specified copy group or the copy groups associated with the specified backup ID and returns them to the mirror status. The corresponding backup information is then deleted from the backup catalog. Since this command uses the primary volume as the base for synchronization with the secondary volume, the backup data contained in the secondary volume will be overwritten. We recommend that you copy the contents of the secondary volume to tape or another secondary storage medium before executing this command.

This command should not be used when the data is being backed up from the secondary volume to tape with the `drmtapebackup` or `drmmmediabackup` command, when the data is being restored from tape to the secondary volume with the `drmtaperestore` or `drmmmediarestore` command, or when the secondary volume is being mounted with the `drmmount` command.

When the copy group of a remote site is specified with this command, a message is output indicating that the specified copy group is not a processing target for Protection Manager.

When the `drmresync` command is executed while the pair status is `SMPL`, `paircreate` is not run automatically. Execute the `paircreate` command only when the `PAIR_CREATE` parameter of the RAID Manager-linkage definition file (`DEFAULT.dat`) is set to `ENABLE`.

Arguments

-copy_group *copy-group-name*

Specify the name of the copy group you want to resynchronize.

To check the copy group name, execute either of the following commands according to what was backed up:

- When the backup is of a file system, use the `drmfscat` command.
- When the backup is of a SQL Server database, use the `drmsqlcat` command.
- When the backup is of a storage group, use the `drmexgcat` command.

-backup_id backup-ID

Specify the backup ID associated with the copy groups you want to resynchronize. By specifying a backup ID, you can resynchronize all the copy groups used for the backup identified by the specified ID at one time.

To check backup IDs, execute either of the following commands according to what was backed up:

- When the backup is of a file system, use the `drmfscat` command.
- When the backup is of a SQL Server database, use the `drmsqlcat` command.
- When the backup is of a storage group, use the `drmexgcat` command.

-cg_file copy-group-target-definition-file-name

Specifies the absolute path name of the copy group target definition file, in which the copy groups to be resynchronized are listed. If there are multiple target copy groups, specify this to resynchronize the copy groups in batch.

To check the copy group name, execute either of the following commands according to what was backed up:

- When the backup is of a file system , use the `drmfscat` command.
- When the backup is of a SQL Server database, use the `drmsqlcat` command.
- When the backup is of a storage group, use the `drmexgcat` command.

-pf copy-parameter-definition-file

Specify this option when using the number of retries and the retry interval defined in the copy parameter definition file. Specify only the file name, without specifying the path.

When you omit this option, the value of the RAID Manager-linkage definition file (`DEFAULT.dat`) is used. The value of the RAID Manager-linkage definition file (`DEFAULT.dat`) is used for parameters that are not coded in the copy parameter definition file.

Create the copy parameter definition file with an arbitrary name in the following location. Specify the file name using alphanumeric characters totaling up to 64 bytes.

Protection-Products-installation-directory\confraid

Return Values

0: Normal termination.

Any value other than 0: Termination with an error.

Examples

- In this example, the command resynchronizes the copy group `VG01,dev01`:

```
PROMPT> drmresync -copy_group VG01,dev01
```

- In this example, the command locks the copy groups used in the backup identified by the backup ID `0000000001`:

```
PROMPT> drmresync -backup_id 0000000001
```

2.7.10 drmvssimport

This basic command starts/stops the VSS import server.

Format

- When starting the VSS import server:

```
drmvssimport start
```

- When starting the VSS import server from job management software or a task scheduler:

```
drmvssimport start  
drmvssimport startjob  
drmvssimport stop
```

- When stopping the VSS import server:

```
drmvssimport stop
```

Description

Use this command to secure compatibility among commands that start and stop the VSS import server in Protection Products version 4.4 or earlier. This command does not perform any actions other than displaying messages.

Supplementary explanation

In Protection Products version 5.5 or later, you do not need to start the VSS import server if the Protection Manager service has started. For details about the Protection Manager service, see the *HiCommand Protection Manager User's Guide*.

Arguments

start

Displays the same message as the one that is displayed when the version of the VSS import server being started is 4.4 or earlier.

startjob

Displays the same message as the one that is displayed when the version of the VSS import server being started is 4.4 or earlier.

stop

Displays the same message as the one that is displayed when the version of the VSS import server being started is version 4.4 or earlier.

Return Values

0: The command completed successfully.

Usage Examples

- In this example, the command starts the VSS import server:

```
PROMPT> drmvssimport start  
KAVX5009-I This VSS import server will now start.  
KAVX5010-I The VSS import server has started.
```

- In this example, the command stops the VSS import server:

```
PROMPT> drmvssimport stop  
KAVX5015-I The VSS import server will now stop.  
KAVX5016-I The VSS import server has stopped.
```

2.8 Tape-Related Basic Commands

2.8.1 drmmmediabackup

This basic command backs up data from a secondary volume to tape.

Format

```
drmmmediabackup backup-ID [ -raw ] [ -bkdir backup-file-directory ] [-bup_env  
configuration-definition-file-name]
```

Description

The `drmmmediabackup` command backs up data to tape based on the backup information specified by the backup ID. Before executing this command, you must execute the `drmmmount` command to mount the secondary volume to the specified mount point directory on the backup server. After executing the `drmmmediabackup` command, you must also execute the `drmmumount` command to unmount the secondary volume.

The `drmmmediarestore` command can restore data backed up by the `drmmmediabackup` command.

Error Handling

If an error occurs during execution of this command, check the contents of the trace log of the backup management product that is provided by Protection Manager. Then, take action for the error according to what was output to the log.

For NetBackup

The trace log is output to the following file:

```
Protection Manager-installation-directory\log\drm_nbu_backup.log
```

For Backup Exec

Protection Manager programs do not provide trace logs for Backup Exec. If an error occurred, check the log provided by Backup Exec or use the GUI to check the status, and then take appropriate action.

Prerequisites

The following are the prerequisites for executing this command:

- The volume must be linked to the backup management product.
- The `drmmmount` command must have been executed, and the secondary volume to be backed up must be mounted.
- The copy group including the secondary volume to be backed up must be locked to prevent servers other than a backup server from performing operations on that secondary volume.
- A definition file for the tape backup must have been created.
- The secondary volume must not be in the mirror status.

- Take the command retry period into consideration when you execute more than one `drmmmediabackup` command concurrently. For details about the settings, see the notes on command execution in the *HiCommand Protection Manager User's Guide* (MK-94HC070).

Arguments

backup-ID

Specify the backup ID for the secondary volume that contains the backup data to be copied to tape. A backup ID uniquely identifies backup data and is registered in the backup catalog during backup.

To check backup IDs, execute one of the following commands according to what was backed up:

- When the backup is of a file system, use the `drmfscat` command.
- When the backup is of a SQL Server database, use the `drmsqlcat` command.
- When the backup is of a storage group, use the `drmexgcat` command.
- When using the `drmmmediabackup` command, make sure that you specify the backup ID for use with the `drmmount` command and perform the mount beforehand. If you use the `drmmount` command to mount with a copy group name specified, you cannot use the `drmmmediabackup` command.

-raw

Specify this option to back up the secondary volume as a raw device. This backs up data per logical volume.

You can specify this option only for NetBackup.

-bkdir backup-file-directory

Specify this option to change the backup file directory when the backup is of a SQL server database.

If this option is omitted, the backup will be performed for the directory registered in the backup catalog at the time the command is executed.

The conditions for specifying a backup file directory name are as follows:

- Maximum number of characters: 255 bytes.
- Characters: Characters that can be used for directory names in Microsoft Windows. Enclose in double quotation marks (") any backup file directory names containing space characters.
- You cannot specify a drive as a backup file directory name, nor can you specify a backslash (\) as the last character of a backup file directory name.

Specify this option when the data on the secondary volume that is to be backed up to tape is backed up with directories. A backup with directories indicates that backup operations have been performed with one of the following options specified:

- When the backup is of a SQL Server database: the `drmsqlbackup` command was executed with an option other than the `-template` option.

For details on each option, see `drmsqlbackup` (see section 2.10.1).

Do not specify the length of the backup file directory with a length that exceeds the maximum backup path length that the backup software (such as NetBackup or Backup Exec) in use can accept.

-bup_env configuration-definition-file-name

Specify this option when you want to specify a start parameter for the user-defined configuration definition file, when either backup operations are performed to tape or restore operations are performed from tape.

If you omit this option, the default configuration definition file is used. So, you need to create the default configuration definition file in advance.

Create a configuration definition file in the directory containing the default configuration definition file. For details, see the descriptions of creating a configuration definition file in the *HiCommand Protection Manager User's Guide* (MK-94HC070).

The conditions for specifying a configuration definition file name are as follows:

- Maximum number of characters (total length of the directory name and file name): 255 bytes.
- Specifiable characters: Those characters specifiable for file names in Windows.

Return Values

0: Normal termination.

Any value other than 0: Termination with an error.

Example

In this example, the commands mount the secondary volume to the D drive, and then copy the backup data identified by the backup ID 0000000002 from the secondary volume to tape:

```
PROMPT> drmmount 0000000002 -mount_pt D:
PROMPT> drmmmediabackup 0000000002
PROMPT> drmmount 0000000002
```

2.8.2 drmmmediarestore

This basic command restores data from tape to a secondary volume.

Format

```
drmmmediarestore backup-ID [ -raw ] [-bup_env configuration-definition-file-name]
```

Description

The `drmmmediarestore` command restores data from tape to the secondary volume according to the backup information specified by the backup ID. Before executing this command, you must execute the `drmmount` command to mount the secondary volume to the specified mount point directory on the backup server. After executing the `drmmmediarestore` command, you must also execute the `drmmount` command to unmount the secondary volume.

The `drmmediarestore` command can restore data that is backed up by the `drmmediabackup` command or the `drmtapebackup` command.

To restore backed-up data from tape in an environment that uses Backup Exec, use the Protection Manager commands in the Backup Exec for Microsoft Windows.

When you set `BEWS` in the `drmtapeinit` command for working with Backup Exec, the `drmmediarestore` command mounts the secondary volume for restoration, and then displays the following message. Use the Backup Exec for Windows to restore the data according to the instructions shown in the message.

When the restore operation terminates, enter one of the following keywords:

- YES (normal termination).
- NO (termination with an error).
- CANCEL (cancels the operation).

Enter the correct keyword after the restoration operation with Backup Exec has finished.

Error Handling

If an error occurs during execution of this command, check the contents of the trace log of the backup management product that is provided by Protection Manager. Then, take action for the error according to what was output to the log.

For NetBackup

The trace log is output to the following file:

```
Protection-Products-installation-directory\log\drm_nbu_restore.log
```

For Backup Exec

Protection Manager programs do not provide trace logs for Backup Exec. If an error occurred, check the log provided by Backup Exec, or use the GUI to check the status, and then take appropriate action.

Prerequisites

The following are the prerequisites for executing this command:

- The backup management product must have been linked.
- The `drmmount` command must have been executed, and the secondary volume to be backed up must be mounted.
- A definition file for the tape backup must have been created.
- The secondary volume must not be in the mirror status.
- Take the command retry period into consideration when you execute more than one `drmmediarestore` command concurrently. For details about the settings, see the notes on command execution in the *HiCommand Protection Manager User's Guide (MK-94HC070)*.

backup-ID

Specify the backup ID of the backup data to be restored. A backup ID uniquely identifies backup data and is registered in the backup catalog during backup. To check backup IDs, execute the `drmtapecat` command.

When using the `drmmediarestore` command, make sure that you specify the backup ID for use with the `drmmount` command and perform the mount beforehand. If you use the `drmmount` command to mount with a copy group name specified, you cannot use the `drmmediarestore` command.

-raw

Indicates that the backup data specified by the backup ID has been backed up as a raw device with the `-raw` option specified. Even if you do not specify this option, if the `-raw` option is specified at the time of the backup, the command restores the data normally as though this option was specified. However, if the `-raw` option is not specified at the time of the backup, and this option is specified in an attempt to restore the data from the backup, then a command error occurs and a message is output.

You can specify this option for NetBackup only.

-bup_env configuration-definition-file-name

Specify this option when you want to specify a start parameter for the user-defined configuration definition file, when either backup operations are performed to tape, or restore operations are performed from tape.

If you omit this option, the default configuration definition file is used. So, you need to create the default configuration definition file in advance.

Create a configuration definition file in the directory containing the default configuration definition file. For details, see the descriptions of creating a configuration definition file in the *HiCommand Protection Manager User's Guide (MK-94HC070)*.

The conditions for specifying a configuration definition file name are as follows:

- Maximum number of characters (total length of the directory name and file name): 255 bytes.
- Specifiable characters: Those characters specifiable for file names in Windows.

Return Values

0: Normal termination.

Any value other than 0: Termination with an error.

Example

In this example, the commands mount the secondary volume to the D drive, and restore the backup data identified by the backup ID 0000000002 from tape:

```
PROMPT> drmmount 0000000002 -mount_pt D:  
PROMPT> drmmediarestore 0000000002  
PROMPT> drmmount 0000000002
```

2.8.3 drmmount

This basic command mounts a secondary volume.

Formats

To perform a mount by specifying the name of a copy group:

```
drmmount -copy_group copy-group-name  
[ -mount_pt mount-point-directory-name ]
```

- To perform a mount by specifying the name of a backup ID:

```
drmmount backup-ID  
[ -mount_pt mount-point-directory-name ][ -force ][ -conf]
```

Description

The `drmmount` command mounts the secondary volume, and locks the corresponding copy groups. Use this command in the following cases:

- To mount the secondary volume for backup or restoration.
- To clear the system caches before backup.
- To mount the secondary volume that was unmounted after backup or restoration.

If the copy group mount definition file exists, the mount point specified in this file is used as the mount point for the secondary volume. For details about the copy group mount definition file, see the settings for mounting a secondary volume in the manual *HiCommand Protection Manager User's Guide (MK-94HC070)*.

When a backup ID is specified, the copy group corresponding to the specified backup ID is locked. Since copy groups locked by the `drmmount` are unlocked by the `drmumount` command, when you use the `drmmount` command to mount a secondary volume, be sure to use the `drmumount` command to unmount it.

The secondary volume that is not formatted as a file system or that is in the mirror status cannot be mounted.

The `drmmount` command can be used to mount secondary volumes that are backup or restoration targets configured as a disk group by the volume manager. To mount a secondary volume configured as a dynamic disk (the same as a disk group) in an environment with the Windows-standard Logical Disk Manager (LDM) or VERITAS Volume Manager for Windows, you must create a copy group mount definition file beforehand. This file is created automatically when the `drmmount` command is executed with the `-conf` option specified.

In the following cases, this command outputs a message, and results in an error without mounting the secondary volume:

- You execute this command on a host that cannot reference the secondary volume.
- The primary volume's copy group name, LDEV number and DKC serial number that were acquired when the backup was executed does not match the information on the current backup server.
- You execute this command on the secondary volume in the paired status (PAIR).

Arguments

-copy_group *copy-group-name*

Specify the name of the copy group to mount. The system cache must be cleared before a data backup. Specify the copy group from the backup server to mount the secondary volume and then unmount the secondary volume by using the `drmmount` command to clear the system cache.

When the `-copy_group` option is specified with a dynamic disk configuration in an environment with the Windows-standard Logical Disk Manager (LDM) or VERITAS Volume Manager for Windows, you must create a copy group mount definition file before executing the command.

To check the name of a copy group, execute either the `drmfscat` command or the `drmfssdisplay` command.

-mount_pt *mount-point-directory-name*

Use an absolute path name to specify the mount point directory to which the secondary volume is to be mounted:

- Specify the drive letter as the mount point directory name or specify the absolute path from the drive letter:
 - Maximum number of characters: The specifiable path length depends on the limitations for the RAID Manager mount or unmount functionality.
 - Characters: Characters that can be used for directory names in Microsoft Windows (you cannot use a space character).
- If you specify a drive for the mount point directory name, the command searches for unused drive names in alphabetical order beginning from the specified drive, and then mounts the secondary volume on the first found drive.
- If you specify an absolute path from the drive letter as the mount point directory name, the command mounts the secondary volume on the following location:
 - When mounting the secondary volume by specifying the copy group name:
absolute-path-specified-for-mount-point-directory-name
 - When mounting the secondary volume by specifying the backup ID:
absolute-path-specified-for-mount-point-directory-name\primary-volume-drive-letter\primary-volume-mount-point

If a path does not end with `\`, the command assumes `\` at the end of the path. For example, `D:` and `D:\` are assumed to be the same drive. `D:\MOUNTDIR` and `D:\MOUNTDIR\` are assumed to be the same directory.

When this option is omitted, the following mount point will be used:

Any drive not being used when the `drmmount` command is executed.

backup-ID

Specify the backup ID associated with the copy groups you want to resynchronize. When two or more copy groups were used for the backup identified by the specified backup ID, the secondary volumes of all the copy groups are mounted.

To check backup IDs, execute either of the following commands according to what was backed up:

- When the backup is of a file system, use the `drmfscat` command.
- When the `drmmount` command is executed, and then restoration is performed by using the `drmmediarestore` command, use the `drmtapecat` command.
- When the backup is of a SQL Server database, use the `drmsqlcat` command.
- When the backup is of a storage group, use the `drmexgcat` command.

-force

Specify this option to forcibly mount a secondary volume. If the copy group name of the target volume matches the specified backup ID, the command forcibly mounts that volume even if its LDEV number or DKC serial number does not match the specification.

Note: The `-force` option causes the command to mount the secondary volume without checking its LDEV number and DKC serial number. This may damage the data.

-conf

Specify this option to extract copy group mount definition information from the mounted secondary volume to create or update the copy group mount definition file. The copy group mount definition file must be created in order to mount a secondary volume and perform a tape backup or restoration in dynamic disk configuration in a standard Windows Logical Disk Manager (LDM) environment or VERITAS Volume Manager for Windows environment.

This option must be specified with a backup ID.

The name of the copy group mount definition file is created as follows:

```
Protection-Products-installation-directory\conf\vm\CG_MP.conf
```

Return Values

0: Normal termination.

Any value other than 0: Termination with an error.

Examples

- In this example, the command mounts the secondary volume identified by the backup ID 0000000001 to D:

```
PROMPT> drmmount 0000000001 -mount_pt D:
```

If several secondary volumes have been backed up with the backup ID 0000000001, the command searches for an unused drive in alphabetical order beginning from the D drive, and mounts the secondary volume to the first found drive.

- In this example, the command mounts the secondary volume identified by the backup ID 0000000001 to E:\SVOLMNT.

```
PROMPT> drmmount 0000000001 -mount_pt E:\SVOLMNT
```

If the configuration of the mount point of the primary volume is as follows:

```
P:  
P:\MNT  
Q:
```

then the `drmmount` command mounts the secondary volume to the following paths:

```
E:\SVOLMNT\P  
E:\SVOLMNT\P\MNT  
E:\SVOLMNT\Q
```

2.8.4 drmtapebackup

This basic command backs up data from a secondary volume to tape.

Format

```
drmtapebackup backup-ID [ -mount_pt mount-point-directory-name ] [ -raw ]
```

Description

The `drmtapebackup` command mounts a secondary volume to the specified mount point directory on the backup server, and backs up data from the backup server to tape based on the backup information of the specified backup ID. After the data is backed up to tape, the secondary volume is automatically unmounted.

Both the `drmtaperestore` command and the `drmmediarestore` command can restore the data backed up by the `drmtapebackup` command.

Note: Use this command and the `drmtaperestore` command only if the operation environment has not changed from Protection Products version 01-04 or earlier. In other cases, use the `drmmediabackup` and `drmmediarestore` commands, or extended commands.

Error Handling

If an error occurs during execution of this command, check the contents of the trace log of the backup management product that is provided by Protection Manager. Then, take appropriate action in accordance with what was output to the log.

For NetBackup

The trace log is output to the following file:

```
Protection Manager-installation-directory\log\drm_nbu_backup.log
```

For Backup Exec:

Protection Manager programs do not provide trace logs for Backup Exec. If an error occurred, check the log provided by Backup Exec, or activate the GUI to check the status, and then take appropriate action.

Prerequisites

The following are the prerequisites for executing this command:

- The volume must be linked to a backup management product.
- The configuration definition file for the tape backup must have been created.
- The secondary volume must not be in the mirror status.

Arguments

backup-ID

Specify the backup ID for the secondary volume that contains the backup data to be copied to tape. A backup ID uniquely identifies backup data, and is registered in the backup catalog during the backup processing.

To check backup IDs, execute either of the following commands according to what was backed up:

- When the backup is of a file system, use the `drmfscat` command.
- When the backup is of a SQL Server database, use the `drmsqlcat` command.
- When the backup is of a storage group, use the `drmexgcat` command.

-mount_pt mount-point-directory-name

Specify the name of the mount point directory to which you want to mount the secondary volume. The secondary volume will be mounted on the specified mount point, and the backup management product will back up the secondary volume to tape:

- Specify the drive letter of the name of the mount point directory to which the secondary volume is to be mounted.
- The mount point directory name must satisfy the following:
 - Characters: Characters that can be used for drive letter in Windows.

If the drive is specified as the mount point directory name, an unused drive is searched for in alphabetical order and then mounted.

If a drive does not end with `\`, the command assumes `\` at the end of the drive. For example, `D:` and `D:\` are assumed to be the same drive.

When this option is omitted, the following mount point will be used:

- Any drive not being used when the `drmtapebackup` command is executed.

-raw

Use this option to perform backup of the secondary volume as a raw device. When backup as a raw device is performed, the secondary volume is not unmounted, and backup is performed per logical volume.

You can specify this option only for NetBackup.

Return Values

0: Normal termination.

Any value other than 0: Termination with an error.

Example

In this example, the command mounts the secondary volume to the D drive, and copies the backup data identified by the backup ID 0000000002 from the secondary volume to tape:

```
PROMPT> drmtapebackup 0000000002 -mount_pt D:
```

2.8.5 drmtapecat

This basic command displays or deletes backup information in a backup catalog.

Format

- To display information for the backup performed from the secondary volume to tape:

```
drmtapecat [ backup-ID ][ -l ][ -hostname host-name ] [ -v ][ -comment backup-comment ]  
[ -bkdir backup-file-storage-directory ]
```

- To display information for the backup performed from the primary volume to the secondary volume:

- When the backup is of a file system:

```
drmtapecat -o FILESYSTEM mount-point-or-drive-name | mount-point-directory-target-  
definition-file-name[ drmfscat-command-options ]
```

- When the backup is of a SQL Server database:

```
drmtapecat -o MSSQL instance-name [ drmsqlcat-command-options ]
```

- When the backup is of a storage group:

```
drmtapecat -o MSEXCHANGE [ drmexgcat-command-options ]
```

- To delete the backup information:

```
drmtapecat backup-ID -delete
```

Description

The `drmtapecat` command lists the backup information about tape backups, which is stored in the backup catalog on the server where the command was executed. The backup catalog displayed is that created with the `drmtapebackup` command or `drmmmediabackup` command. By checking the backup information, you can confirm information about the objects corresponding to the backup ID, and hence confirm the backup ID to be used for restoration.

The backup information for the backup from the primary volume to the secondary volume contains the information about the primary volume that stores objects that were backed up onto tape, and the information about the database files that were backed up.

Table 2.18 shows the backup information, from the secondary volume to tape that is displayed when the `drmtapecat` command is executed. Each item is separated by a space. A hyphen (-) is displayed for any item that cannot be displayed. If none of the items can be displayed, an error message is displayed.

This information provides further details than the backup information for a backup from the secondary volume to tape. This same information can also be obtained by using the following:

- When the backup is of a file system, use the `drmfscat` command.
- When the backup is of a SQL Server database, use the `drmsqlcat` command.
- When the backup is of a storage group, use the `drmexgcat` command.

Table 2.18 Backup Information Displayed by drmtapecat Command

Displayed Item	Description
BACKUP-COMMENT	Backup comment. When the <code>-comment</code> option is specified, these items are displayed.
BACKUP-ID	Backup ID (10 characters).
ORIGINAL-ID	Original backup ID obtained by the <code>drmtapebackup</code> command. When the <code>-l</code> option is specified, these items are displayed.
HOSTNAME	Server name where the snapshot backup was performed. When the <code>-l</code> option is specified, these items are displayed.
BACKUP-OBJECT	Snapshot backup object type.
INSTANCE	Name of the instance that was backed up: <ul style="list-style-type: none"> ▪ When the backup is of a file system, the name of the mount point directory is displayed. ▪ When the backup is of a SQL Server database, the name of the SQL Server instance is displayed. ▪ When the backup is of an Exchange database, is displayed. When the <code>-l</code> option is specified, these items are displayed.
SNAPSHOT TIME	Time when a snapshot backup was performed.
EXPIRATION TIME	Duration of the backup data on tape.
BACKUP-MEDIA	Name of the medium label that the backup management product used when backing up data to tape.
BACKUP-FILE-DIRECTORY	The backup file storage directory backed up with the <code>drmediabackup</code> command. When the <code>-bkdir</code> option is specified, this information is displayed.
VIRTUAL-SERVERNAME	Virtual server name (value of the <code>DRM_HOSTNAME</code> environment variable). When the <code>-v</code> option is specified, this information is displayed.
DB-PATH	Name of the directory storing the backup catalog. When the <code>-v</code> option is specified, this information is displayed.
CATALOG-UPDATE-TIME	Time when the backup catalog was created. When the <code>-v</code> and <code>-o</code> options are specified, this information is displayed.

Arguments

backup-ID

Specify this argument to display the backup information for the specified backup ID, or to delete the backup information for the specified backup ID.

-l

Specify this argument when you want to display the following items acquired by the `drmtapebackup` command:

- ORIGINAL-ID
- HOSTNAME
- INSTANCE

-hostname *host-name*

Specify this argument to display only information pertaining to a specific host. This argument can be used when, for example, backup information executed on multiple servers is imported to the server on which you are executing the command.

-v

Specify this option to display information about the backup catalog.

The following information is displayed:

- VIRTUAL-SERVERNAME
If the `DRM_HOSTNAME` environment variable has not been set, a hyphen (-) appears.
- DB-PATH
Displays the path that is set in `DRM_DB_PATH` in the Protection Manager configuration definition file (`init.conf`).
If `DRM_DB_PATH` has not been set, the default storage directory for a dictionary map file, which is created automatically during installation, is displayed.
- CATALOG-UPDATE-TIME
For each backup ID, displays the time when the backup catalog was created. This information is displayed only when the `-o` option is specified.

-o FILESYSTEM

Specify this option when you want to display the information for a backup from a primary volume to a secondary volume, and the type of backup object is a file system.

-o MSSQL

Displays detailed information for the backup that was registered when a snapshot backup was performed for the backup information about the instance for the backup object type.

-o MSEXCHANGE

Displays detailed information for the backup that was registered when a snapshot backup was performed for the backup information about the instance for the backup object type.

mount-point-or-drive-name

Specify the name of the mount point directory or drive for the file system for which you want to display backup information.

mount-point-directory-target-definition-file-name

Specify the name of the mount point directory target definition file for the file system or drive for which you want to display backup information.

instance-name

Specify the instance name for the database for which you want to display backup information.

drmfscat-command-options

You can specify the following options for the `drmfscat` command. For details about the functions of the options, see the description of the `drmfscat` command.

```
-target  
-f  
-device  
-l  
-v  
-backup_id  
-hostname
```

drmsqlcat-command-options

You can specify the following options for the `drmsqlcat` command. For details about the functions of the options, see the description of the `drmsqlcat` command.

```
-target  
-f  
-device  
-transact_log  
-datafile  
-metafile  
-l  
-v  
-backup_id  
-hostname
```

drmexgcat-command-options

You can specify the following options for the `drmexgcat` command. For details about the functions of the options, see the description of the `drmexgcat` command.

```
-target  
-f  
-device  
-transact_log  
-datafile  
-l  
-v  
-backup_id  
-hostname
```

-delete

Specify this argument to delete the backup information for the backup catalog. By using this option, you can delete backup information for a tape backup before the record's duration specified by the `drmtapeinit` command expires. You can also delete backup information that is to be stored permanently.

-comment *backup-comment*

Specify this argument to display only information on a specific backup comment.

The *backup-comment* value is case insensitive.

You can specify a wildcard (*) as the value of *backup-comment*. You can specify a string by using only the first few characters (specifying a few specific characters at the beginning of the string, and not designating any particular characters for the rest of the string such as in the specification `XYZ*`). When a wildcard, special character, or one-byte space character is used, the entire backup-comment string must be enclosed in double quotation marks ("). If the backup-comment string contains a special character but is not enclosed in double quotation marks, the special character is not properly handled as a part of the backup-comment string and is parsed as a special character. If you specify `-comment "*"` , the command will display all backup catalogs.

If two double quotation marks are specified after the `-comment` option (as in: `-comment ""`), a message is displayed indicating that no backup data exists.

-bkdir *backup-file-directory*

Specify this option to display the backup directory that was backed up using the `drmmediabackup` command.

Return Values

0: Normal termination.

Any value other than 0: Termination with an error.

Examples

- In this example, the command displays the backup information for tape backups performed by a backup management product:

```
PROMPT> drmtapecat
BACKUP-ID    BACKUP-OBJECT  SNAPSHOT TIME      EXPIRATION TIME    BACKUP-MEDIA
0000000002  FILESYSTEM    2002/02/01 11:00:00  2002/05/01 11:00:00  MEDIA3
0000000003  FILESYSTEM    2002/02/01 11:30:00  2002/05/01 11:30:00  MEDIA4
```

- In this example, the command displays the backup information of the backup ID 0000000002:

```
PROMPT> drmtapecat -backup_id 0000000002
BACKUP-ID    BACKUP-OBJECT  SNAPSHOT TIME      EXPIRATION TIME    BACKUP-MEDIA
0000000002  FILESYSTEM    2002/02/01 10:30:00  2002/05/01 10:30:00  MEDIA2
```

- In this example, the command displays detailed information for the backup backed up to tape by the backup management product:

```
PROMPT> drmtapecat -l
BACKUP-ID ORIGINAL-ID HOSTNAME BACKUP-OBJECT INSTANCE SNAPSHOT TIME EXPIRATION TIME
BACKUP-MEDIA
0000000001 0000000001 FILESV FILESYSTEM D: 2002/02/01 10:00:00 2002/05/01
10:00:00 MEDIA1
0000000002 0000000001 APPSV FILESYSTEM E: 2002/02/01 11:00:00 2002/05/01
11:00:00 MEDIA2
```

- In this example, the command, with the host name FILESV specified, displays the detailed information for tape backups performed by the backup management product:

```
PROMPT> drmtapecat -l -hostname FILESV
BACKUP-ID ORIGINAL-ID HOSTNAME BACKUP-OBJECT INSTANCE SNAPSHOT TIME EXPIRATION TIME
BACKUP-MEDIA
0000000001 0000000001 FILESV FILESYSTEM D: 2002/02/01 10:00:00 2002/05/01
10:00:00 MEDIA1
```

- In this example, the command displays the backup catalog information for tape backups performed by a backup management product, and management information for the backup catalogs:

```
PROMPT> drmtapecat -v
VIRTUAL-SERVERNAME: host1
DB-PATH: D:\Program Files\Hitachi\DRM\DB2
BACKUP-ID BACKUP-OBJECT SNAPSHOT TIME EXPIRATION TIME BACKUP-MEDIA
0000000001 FILESYSTEM 2002/02/01 10:00:00 2002/05/01 10:00:00 MEDIA1
0000000002 MSSQL 2002/02/01 11:00:00 2002/05/01 11:00:00 MEDIA3
0000000003 MSEXCHANGE 2002/02/01 11:30:00 2002/05/01 11:30:00 MEDIA4
```

- In this example, the command displays backup catalogs for tape backups performed by a backup management product, and management information for the backup catalogs (when a backup is not performed):

```
PROMPT> drmtapecat -v
VIRTUAL-SERVERNAME: host1
DB-PATH: D:\Program Files\Hitachi\DRM\DB2
KAVX0024-E The specified backup data does not exist.
```

- In this example, the command displays information for the backup performed from the primary volume to the secondary volume:

```
PROMPT> drmtapecat -o FILESYSTEM D:
INSTANCE: D:
BACKUP-ID:0000000010 BACKUP-MODE: COLD INSTANCE: D: ORIGINAL-ID:0000000001
START-TIME:2002/06/01 10:00:00 END-TIME: 2002/06/01 10:03:00 HOSTNAME: FILESERV1
T FILE FS DG DEVICE COPY-GROUP
F - D: - Harddisk1 VG01,dev01
F - - - - VG01,dev01
```

- In this example, the command displays information about the backup performed from the primary volume to the secondary volume (when the backup is of a SQL Server database):

```
PROMPT> drmtapecat -o MSSQL SQL1
INSTANCE: SQL1
BACKUP-ID: 0000000010 BACKUP-MODE: ON-LINE INSTANCE: SQL1 ORIGINAL-ID: 0000000001
START-TIME: 2002/06/01 10:00:00 END-TIME: 2002/06/01 10:03:00 HOSTNAME: DB_SVR1
T DB OBJECT FILE FS DG DEVICE COPY-GROUP
M DB1 METAFILE C:\METADIR\Meta1 C: - - -
D DB1 DATAFILE D:\SQL\data1.mdf D: - Harddisk2 VG02,dev02
- - - - - VG02,dev02
T DB1 TRANSACT D:\SQL\tlog1.ldf D: - Harddisk2 VG02,dev02
- - - - - VG02,dev02
M DB2 METAFILE C:\METADIR\Meta2 C: - - -
D DB1 DATAFILE D:\SQL\data2.mdf D: - Harddisk2 VG02,dev02
- - - - - VG02,dev02
T DB1 TRANSACT D:\SQL\tlog2.ldf D: - Harddisk2 VG02,dev02
- - - - - VG02,dev02
```

- In this example, the command displays information about the backup performed from the primary volume to the secondary volume (when the backup is of a storage group):

```
PROMPT> drmtapecat -o MSEXCHANGE STR1
STORAGEGROUP: STR1
BACKUP-ID: 0000000010 BACKUP-MODE: ONLINE STORAGEGROUP: STR1 ORIGINAL-ID: 0000000001
START-TIME: 2002/06/01 10:00:00 END-TIME: 2002/06/01 10:01:00 HOSTNAME: EXG_SVR1
T OBJECT INFORMATIONSTORE FILE FS DG DEVICE
COPY-GROUP
M MAILBOXSTORE MAILBOX1 (STR1) D:\STR1\priv1.edb D: -
Harddisk1 VG01,dev01
- - - - -
VG01,dev01
M MAILBOXSTORE MAILBOX1 (STR1) D:\STR1\priv1.stm D: -
Harddisk1 VG01,dev01
- - - - -
VG01,dev01
P PUBLICSTORE PUBLIC1 (STR1) D:\STR1\pub1.edb D: -
Harddisk1 VG01,dev01
- - - - -
VG01,dev01
P PUBLICSTORE PUBLIC1 (STR1) D:\STR1\pub1.stm D: -
Harddisk1 VG01,dev01
- - - - -
VG01,dev01
T TRANSACT - E:\STR1\E00.log E: -
Harddisk2 VG01,dev02
- - - - -
VG01,dev02
T TRANSACT - E:\STR1\E000001.log E: -
Harddisk2 VG01,dev02
- - - - -
VG01,dev02
T TRANSACT - E:\STR1\E000002.log E: -
Harddisk2 VG01,dev02
- - - - -
VG01,dev02
T TRANSACT - E:\STR1\E000003.log E: -
Harddisk2 VG01,dev02
- - - - -
VG01,dev02
C CHECKPOINT - E:\STR1\E00.chk E: -
Harddisk2 VG01,dev02
- - - - -
VG01,dev02
```

- In this example, the command displays the backup catalog beginning with SQL2-DB:

```
PROMPT> drmtapecat -comment "SQL-DB*"
BACKUP-COMMENT BACKUP-ID BACKUP-OBJECT SNAPSHOT TIME          EXPIRATION TIME      BACKUP-
MEDIA
SQL-DB-1      0000000002 MSSQL          2003/09/05 15:50:54 2003/12/05 15:50:54
C:\NBU_BACKUP\stdg11_1070608229_C1_F1
SQL-DB-2      0000000002 MSSQL          2003/09/05 15:50:54 2003/12/05 15:50:54
C:\NBU_BACKUP\stdg11_1070608250_C1_F1
SQL-DB-3      0000000008 MSSQL          2003/09/06 15:50:54 2003/12/06 15:50:54
C:\NBU_BACKUP\stdg11_1070608251_C1_F1
SQL-DB-4      0000000008 MSSQL          2003/09/06 15:50:54 2004/12/06 15:50:54
C:\NBU_BACKUP\stdg11_1070608252_C1_F1
```

- In this example, the command displays the backup file storage directory:

```
PROMPT> drmtapecat -bkdir
BACKUP-ID BACKUP-OBJECT SNAPSHOT TIME          EXPIRATION TIME      BACKUP-MEDIA
BACKUP-FILE-DIRECTORY
0000000001 FILESYSTEM      2002/02/01 10:00:00 2002/05/01 10:00:00 MEDIA1      -
0000000002 MSSQL          2002/02/01 11:00:00 2002/05/01 11:00:00 MEDIA3
c:\tmp\bkfiledir
0000000003 MSEXCHANGE     2002/02/01 11:30:00 2002/05/01 11:30:00 MEDIA4      -
```

2.8.6 drmtapeinit

This basic command registers parameters for a backup management product.

Format

- To register the parameters for the backup management product:

```
drmtapeinit
```

- To display the parameters registered for the backup management product:

```
drmtapeinit -v
```

Description

The `drmtapeinit` command provides an interactive interface that lets you register the parameters for controlling a backup management product that works with Protection Manager. The following shows the location where the parameters registered by this command are stored.

Protection-Products-installation-directory\conf\tape\DEFAULT.dat

Table 2.19 lists the parameters for backup management products that can be registered by using this command.

Table 2.19 Parameters for Backup Management Products

Registration Item	Description
Name of the backup management product	Specify NBU or BEWS. When using NetBackup, specify NBU. When using Backup Exec, specify BEWS.
Period to store a backup catalog used when backing up to tape	Specify the number of days to store backup information. If you specify 0, the backup information is stored permanently. When 0 is specified, PERMANENT is displayed for this item in the parameter display result of the command with the -v option specified.

Argument

-v

Specify this argument to display the settings of the parameters currently registered.

Notes

- If you specify a storage period for backup information that is longer than the protection period for the backup management product media, you cannot use the `drmmmediarestore` command to restore data from a tape because the media information in the backup management product will have been deleted. Because of this, specify a storage period for backup information that is shorter than the protection period for the backup management product media.
- If you no longer require a configuration definition file defined for the tape backup management product, directly delete the file. You must also delete this file if you need to change the configuration definition.

Return Values

0: Normal termination.

Any value other than 0: Termination with an error.

Examples

- In this example, the command registers the parameter settings for working with NetBackup:

```
PROMPT> drmtapeinit
KAVX0411-I Enter the backup management product name: NBU
KAVX0417-I Enter the number of days to store the backup catalog: 1
KAVX0414-I Backup parameters were updated.
PROMPT>
```

- In this example, the command displays the parameter settings for working with NetBackup:

```
PROMPT> drmtapeinit -v
backup-application-name: NBU
days-to-keep-the-backup-catalog: 1
PROMPT>
```

- In this example, the command changes the parameters for working with Backup Exec:

```
PROMPT> drmtapeinit
KAVX0411-I Enter the backup management product name : BEWS
KAVX0417-I Enter the number of days to store the backup catalog: 1
```

```
KAVX0414-I Backup parameters were updated
PROMPT>
```

- In this example, the command displays the parameters for working with Backup Exec:

```
PROMPT> drmtapeinit -v
backup-application-name : BEWS
days-to-keep-backup-catalog : 1
PROMPT>
```

2.8.7 drmtaperestore

This basic command restores data from tape to a secondary volume.

Format

```
drmtaperestore backup-ID [ -mount_pt mount-point-directory-name ]
```

Description

The `drmtaperestore` command mounts a secondary volume to the specified mount point directory on the backup server, and restores data from tape to the secondary volume. After the data is restored, the secondary volume is automatically unmounted.

The `drmtaperestore` command can restore data that is backed up by the `drmtapebackup` command.

Note: Use this command and the `drmtapebackup` command only if the operation environment has not changed from Protection Products version 01-04 or earlier. In other cases, use the `drmmmediabackup` and `drmmmediarestore` commands, or extended commands.

This command requires a supported backup management product.

To restore backed-up data from tape using Backup Exec, use the Protection Manager command in the Backup Exec for Windows.

When you set `BEWS` in the `drmtapeinit` command for working with Backup Exec, the `drmtaperestore` command mounts the secondary volume for restoration, and then displays the following message. Use the Backup Exec for Windows to restore the data according to the instructions shown in the message.

After the restore operation finishes, enter one of the following keywords:

- YES (normal termination).
- NO (termination with an error).
- CANCEL (cancels the operation).

After Backup Exec is used and the restoration operation finishes, enter the correct keyword.

Before executing the `drmtaperestore` command, make sure the secondary volume is not in a mirrored status.

Error Handling

If an error occurs during execution of this command, check the contents of the trace log of the backup management product that is provided by Protection Manager. Then, take appropriate action in accordance with what was output to the log.

For NetBackup

The trace log is output to the following file:

```
Protection Manager-installation-directory\log\drm_nbu_restore.log
```

For Backup Exec:

Protection Manager programs do not provide trace logs for Backup Exec. If an error occurred, check the log provided by Backup Exec, or activate the GUI to check the status, and then take appropriate action.

Arguments

backup-ID

Specify the backup ID of the backup data you want to use for restoration. A backup ID uniquely identifies backup data, and is registered in the backup catalog during the backup processing. To check backup IDs, execute the `drmtapecat` command.

-mount_pt *mount-point-directory-name*

Use an absolute path to specify the name of the mount point directory to which the secondary volume is to be mounted:

- Specify the drive letter of the name of the mount point directory to which the secondary volume is to be mounted.
- The mount point directory name must satisfy the following:
 - Characters: Characters that can be used for drive letter in Microsoft Windows.

If the drive is specified as the mount point directory name, an unused drive is searched for in alphabetical order and then mounted.

If a drive does not end with `\`, the command assumes `\` at the end of the drive. For example, `D:` and `D:\` are assumed to be the same drive.

If you do not specify this argument, the data is restored to the same directory as the mount point directory used when the data was backed up to tape.

Return Values

0: Normal termination.

Any value other than 0: Termination with an error.

Example

- In this example, the command mounts the secondary volume to the D drive, and restores the backup data identified by the backup ID `0000000002` from tape:

```
PROMPT> drmtaperestore 0000000002 -mount_pt D:
```

2.8.8 drmmount

This basic command unmounts secondary volumes.

Format

- To perform unmount by specifying the name of a copy group:

```
drmmount -copy_group copy-group-name
```

- To perform unmount by specifying the name of a backup ID:

```
drmmount backup-ID
```

Description

The `drmmount` command unmounts the secondary volume mounted with the `drmmount` command, and unlocks the corresponding copy groups.

If the volume for the specified backup ID or copy group has already been unmounted, the command displays a warning that the target volume has been unmounted, and then continues processing.

If you use the `drmmediabackup` or `drmmediarestore` command to back up or restore data, you must use this command to unmount the secondary volume.

Before executing this command, all the application programs using the secondary volume to be unmounted must be stopped.

If you execute any of the following commands when the secondary volumes have been mounted by the `drmmount` command, you will no longer be able to use the `drmmount` command to unmount the secondary volumes:

- `drmfbackup`
- `drmmresync`
- `drmtaperrestore`

If the unmount cannot be performed using the `drmmount` command, unlock the copy group corresponding to the backup ID specified for the `drmcgctl` command, and unmount the secondary volume using the `unmount` functionality of RAID Manager.

Arguments

-copy_group copy-group-name

Specify the name of the copy group to be unmounted (a copy group mounted by using the `drmmount` command). The system cache must be cleared before a data backup. Specify the copy group from the backup server to mount the secondary volume and then unmount the secondary volume by using the `drmmount` command to clear the system cache.

To check the name of a copy group, execute either the `drmfscat` command or the `drmfdisplay` command.

backup-ID

Specify the backup ID associated with the copy groups you want to unmount. When two or more copy groups were used for the backup identified by the specified backup ID, the secondary volumes of all the copy groups are unmounted.

To check backup IDs, execute the `drmfscat` command.

To check backup IDs, execute either of the following commands according to what was backed up:

- When the backup is of a file system, use the `drmfscat` command.
- When the `drmmount` command was executed, and then restoration was performed by using the `drmmediarestore` command, use the `drmtapecat` command.
- When the backup is of a SQL Server database, use the `drmsqlcat` command.
- When the backup is of a storage group, use the `drmexgcat` command.

Return Values

0: Normal termination.

Any value other than 0: Termination with an error.

Example

- In this example, the command unmounts the secondary volume identified by the backup ID 0000000001:

```
PROMPT> drmmount 0000000001
```

2.9 Basic Utility Commands

2.9.1 drmdbconvert

This basic command enables backup catalogs earlier than version 3.5 to be used with the latest Protection Manager.

Formats

- To display the version of the current data structure:

```
drmdbconvert -v
```

- To convert the current data structure to the most recent data structure:

```
drmdbconvert -c
```

Make sure that you specify an absolute path name when executing the `drmdbconvert` command. The absolute path name of this command is as follows:

```
Protection-Products-installation-directory\bin\util\drmdbconvert.exe
```

Description

This command is used during Protection Manager upgrades, to convert dictionary map files (object maps and backup catalogs), created with versions earlier than 3.5, to the data structure of the upgraded Protection Manager.

Arguments

-v

Displays the version of the data structure of the dictionary map file currently used by Protection Manager. The data structure versions are classified as shown in Table 2.20.

-c

Converts the data structure of the dictionary map file currently used by Protection Manager programs to the most recent data structure.

Table 2.20 Data Structure Versions

Protection Manager Version	Version Displayed
Protection Manager versions earlier than 3.5 (not including 3.5)	01-00
Protection Manager version 3.5 or later	03-50 (v3.5), 04-00 (v4.0)

Notes

- If the DRM-10118 message appears after the Protection Manager command was executed, use the `drmdbconvert` command to convert the data structures for the dictionary map file.
- The `-v` option displays a version number for data structures. This version number will not necessarily be the same as the version number of the Protection Manager products.

Return Values

0: Normal termination.

Any value other than 0: Termination with an error.

Examples

- In this example, the command displays the current data structure version (for Protection Manager versions earlier than 03-50):

```
PROMPT> "C:\Program Files\HITACHI\DRM\bin\util\drmdbconvert.exe" -v
DATA STRUCTURE VERSION: 01-00
CURRENT PRODUCT VERSION: 03-50
PROMPT>
```

- In this example, the command displays the current data structure version (for Protection Manager version 03-50 or later):

```
PROMPT> "C:\Program Files\HITACHI\DRM\bin\util\drmdbconvert.exe" -v
DATA STRUCTURE VERSION: 03-50
CURRENT PRODUCT VERSION: 03-50
PROMPT>
```

- In this example, the command converts the current data structure to the most recent data structure:

```
PROMPT> "C:\Program Files\HITACHI\DRM\bin\util\drmdbconvert.exe" -c
PROMPT>
```

2.9.2 drmdbsetup

This basic command creates and deletes Protection Manager databases.

Formats

- To create backup catalog information and a dictionary map file:

```
drmdbsetup -i
```

- To delete backup catalog information and a dictionary map file:

```
drmdbsetup -u
```

Make sure that you specify an absolute path name when executing the `drmdbsetup` command. The absolute path name of this command is as follows:

```
Protection-Products-installation-directory\bin\util\drmdbsetup.exe
```

Description

The `drmdbsetup` command creates and deletes the contents of dictionary map files. Dictionary map files for creation and deletion are stored as defined by the path information in `DRM_DB_PATH`, in the Protection Manager configuration definition file (`init.conf`).

For details about the Protection Manager configuration definition file, in the *HiCommand Protection Manager User's Guide (MK-94HC070)*, see the explanation about Protection Manager operation settings. For details about `DRM_DB_PATH` see the explanation about creating dictionary map files in the same manual.

Arguments

-i

Creates backup catalog information and dictionary map files, based on the path information (the value of `DRM_DB_PATH`) specified in the Protection Manager configuration definition file. An error will occur if the specified directory already contains a dictionary map file.

-u

Deletes created backup catalog information and dictionary map files. Use this option to delete existing dictionary map files.

Return Values

0: Normal termination.

Any value other than 0: Termination with an error.

2.10 Basic Commands for Backing Up a SQL Server Database

2.10.1 drmsqlbackup

This basic command backs up a SQL Server database to a secondary volume.

Format

- To back up:

```
drmsqlbackup { instance-name | DEFAULT }
              [ -system | target database-name | -f target-definition-file-name ]
              [ -rc [ name-identifying-the-generation ] ]
              [ -pf copy-parameter-definition-file ]
              [ -comment backup-comment ]
              [ -script user-script-file-name ]
              [ -s backup-server-name
                [ -auto_import
                  [ -auto_mount [ mount-point-directory-name ] ]
                ]
              [ -svol_check ]
            ]
```

- To create a backup catalog:

```
drmsqlbackup { instance-name | DEFAULT }
              [ -system | target database-name | -f target-definition-file-name ]
              -template
              [ -comment backup-comment ]
```

Description

The `drmsqlbackup` command takes the volume that contains the specified instance in memory, and backs it up to the secondary volume. If the instance's objects (such as data files and various databases) exist across several volumes, all primary volumes will be backed up to secondary volumes.

When SQL Server instances are backed up, an online backup will be performed. If instances that are not running are specified when executing a command, a command error occurs.

When a command is executed, SQL Server's VDI (Virtual Device Interface) is used to create a snapshot of the database within the instance.

Snapshot data (metafiles) are stored in one of the following directories, depending on the situation:

- If you registered a VDI metafile storage directory by using the `drmsqlinit` command:
The metafile is stored in the registered directory. The file name is `backup-ID_database-ID.dmp`.
- If you did not register a VDI metafile storage directory by using the `drmsqlinit` command:

The metafile is stored in the directory that contains the file with the smallest management number (`file_id`) value for SQL server in the database file. The file name is `META_database-ID.dmp`.

If the metafile storage directory is blank, no metafiles exist in the primary volume after backup finishes. Only the secondary volume contains metafiles.

Do not use `META_database-ID.dmp` as the name of the data file or transaction log file stored in the location where the primary data file is stored. If a file with such a name exists, the backup will fail.

The backup ID used in the metafile is a ten-digit numerical value assigned during command execution. The database ID is a ten-digit numerical value, assigned by the SQL server that identifies a database.

If you specify an instance that is not running, the command fails. All the user databases included in the instance are to be backed up. The system databases (master, model, and msdb) for SQL server is not included. When you back up a system database, execute the command with the `-system` option.

The system cache of the secondary volume must be cleared before executing this command. Mount or unmount the secondary volume on the backup server to clear the system cache.

When you execute this command on the copy group in the paired status (PAIR), the status of the copy group is changed to PSUS.

When the `drmsqlbackup` command is executed while the pair status is SMPL, `paircreate` is not run automatically. Execute the `paircreate` command only when the `PAIR_CREATE` parameter of the RAID Manager-linkage definition file (DEFAULT.dat) is set to ENABLE.

When the `drmsqlbackup` command is executed in a local site and the pair status is SMPL, the command does not automatically create a pair. In such a case, if the `PAIR_CREATE` parameter in the RAID Manager-linkage definition file (DEFAULT.dat) is set to ENABLE, the command automatically creates a pair.

After installation, if the `drmsqlbackup` command is executed without executing the `drmsqldisplay` command with the `-refresh` option specified, and no dictionary map file is created, a dictionary map file is created using the `drmsqlbackup` command. In this case, the processing time required to create the dictionary map file is added to the time required to execute the backup command. Therefore, before you execute the `drmsqlbackup` command, be sure to execute the `drmsqldisplay` command with the `-refresh` option specified to create the dictionary map file beforehand.

Backup can only be performed for files described in Table 2.21.

Table 2.21 Files for which SQL Server Database Backup can be Performed

Option Assigned by <code>drmsqlbackup</code> Command	Database of Interest	File Type of Interest	Backup File Name	Storage Destination for Backup Files
<code>-system</code>	master	Data file	Same as the backup source file name	Secondary volume
		Transaction log file	Same as the backup source file name	Secondary volume
		Meta file	Varies depending on the VDI metafile storage directory specified with the <code>drmsqlinit</code> command. This meta file is created when the <code>drmsqlbackup</code> command is executed. If you registered a VDI metafile storage directory by	

Option Assigned by drmsqlbackup Command	Database of Interest	File Type of Interest	Backup File Name	Storage Destination for Backup Files	
			using the <code>drmsqlinit</code> command, the backup file is stored in the registered directory. The file name is <code>backup-ID_database-ID.dmp</code> . If you did not register a VDI metafile storage directory by using the <code>drmsqlinit</code> command, the backup file is stored in the directory that contains the file with the smallest management number (<code>file_id</code>) value for SQL Server in the database file. The file name is <code>META_database-ID.dmp</code> .		
	model	Data file	Same as the backup source file name	Secondary volume	
		Transaction log file	Same as the backup source file name	Secondary volume	
		Meta file	Varies depending on the VDI metafile storage directory specified with the <code>drmsqlinit</code> command. This meta file is created when the <code>drmsqlbackup</code> command is executed. If you registered a VDI metafile storage directory by using the <code>drmsqlinit</code> command, the backup file is stored in the registered directory. The file name is <code>backup-ID_database-ID.dmp</code> . If you did not register a VDI metafile storage directory by using the <code>drmsqlinit</code> command, the backup file is stored in the directory that contains the file with the smallest management number (<code>file_id</code>) value for SQL Server in the database file. The file name is <code>META_database-ID.dmp</code> .		
	Distribution database	Data file	Same as the backup source file name	Secondary volume	
		Transaction log file	Same as the backup source file name	Secondary volume	
		Meta file	Varies depending on the VDI metafile storage directory specified with the <code>drmsqlinit</code> command. This meta file is created when the <code>drmsqlbackup</code> command is executed. If you registered a VDI metafile storage directory by using the <code>drmsqlinit</code> command, the backup file is stored in the registered directory. The file name is <code>backup-ID_database-ID.dmp</code> . If you did not register a VDI metafile storage directory by using the <code>drmsqlinit</code> command, the backup file is stored in the directory that contains the file with the smallest management number (<code>file_id</code>) value for SQL Server in the database file. The file name is <code>META_database-ID.dmp</code> .		
	msdb	Data file	Same as the backup source file name	Secondary volume	
		Transaction log file	Same as the backup source file name	Secondary volume	
		Meta file	Varies depending on the VDI metafile storage directory specified with the <code>drmsqlinit</code> command. This meta file is created when the <code>drmsqlbackup</code> command is executed. If you registered a VDI metafile storage directory by using the <code>drmsqlinit</code> command, the backup file is stored in the registered directory. The file name is <code>backup-ID_database-ID.dmp</code> . If you did not register a VDI metafile storage directory by using the <code>drmsqlinit</code> command, the backup file is stored in the directory that contains the file with the smallest management number (<code>file_id</code>) value for SQL Server in the database file. The file name is <code>META_database-ID.dmp</code> .		
	User database	Data file	Same as the backup source file name	Secondary volume	
		Transaction log file	Same as the backup source file name	Secondary volume	

Option Assigned by drmsqlbackup Command	Database of Interest	File Type of Interest	Backup File Name	Storage Destination for Backup Files
		Meta file	Varies depending on the VDI metafile storage directory specified with the <code>drmsqlinit</code> command. This meta file is created when the <code>drmsqlbackup</code> command is executed. If you registered a VDI metafile storage directory by using the <code>drmsqlinit</code> command, the backup file is stored in the registered directory. The file name is <code>backup-ID_database-ID.dmp</code> . If you did not register a VDI metafile storage directory by using the <code>drmsqlinit</code> command, the backup file is stored in the directory that contains the file with the smallest management number (<code>file_id</code>) value for SQL Server in the database file. The file name is <code>META_database-ID.dmp</code> .	
No assignment for <code>-system</code>	User database	Data file	Same as the backup source file name	Secondary volume
		Transaction log file	Same as the backup source file name	Secondary volume
		Meta file	Varies depending on the VDI metafile storage directory specified with the <code>drmsqlinit</code> command. This meta file is created when the <code>drmsqlbackup</code> command is executed. If you registered a VDI metafile storage directory by using the <code>drmsqlinit</code> command, the backup file is stored in the registered directory. The file name is <code>backup-ID_database-ID.dmp</code> . If you did not register a VDI metafile storage directory by using the <code>drmsqlinit</code> command, the backup file is stored in the directory that contains the file with the smallest management number (<code>file_id</code>) value for SQL Server in the database file. The file name is <code>META_database-ID.dmp</code> .	

Arguments

instance-name

Specify the database instance to be backed up. If the instance to be backed up is the default, specify `DEFAULT`.

`-system`

Specify this option to back up the system databases (master, model, and msdb) other than the `tempdb` database. If this option is specified, SQL Server will be stopped when the restoration is carried out.

-target *database-name(s)*

Specify this option to back up a particular database in the specified instance.

When specifying multiple databases to be backed up, use a comma to separate each database name. If you specify a database name containing a space character, enclose the database name in double quotation marks ("). Make sure that you specify the database in the instance specified by the *instance-name* option. If you specify databases in separate instances, those databases will not be backed up.

The database names specified in this option will be registered in the backup catalog, and can be checked using the `drmsqlcat` command.

-f *target-definition-file-name*

Like the `-target` option, this option performs a backup related to specific databases only. Unlike the `-target` option, this option lets you specify a target definition file that collectively specifies all the databases for which backup is to be performed. The target definition file containing the list of databases must be created before you attempt to use this option. Use an absolute path name to specify the target definition file. If you specify a target definition file name containing a space character, enclose the target definition file name in double quotation marks (").

The database specified in the target definition file must exist in the instance specified in the *instance-name* option. If you specify databases in separate instances, those databases will not be backed up.

-rc *name-identifying-the-generation*

Use this option to specify the name identifying the generation of the copy group to be backed up. Execute the `drmsqldisplay` command with the `-cf` option, and specify the displayed `GEN-NAME` value. In a single volume, a hyphen (-) appears. In this case, you cannot specify the `-rc` option.

Always specify this option when backing up from a primary volume to a secondary volume on the remote side. If this option is omitted, the secondary volume on the local side is backed up.

When you omit *name-identifying-the-generation*, the secondary volume that has the smallest value among the generation numbers on the remote-side becomes the backup destination. In this case, the generation number is `remote_n`, where *n* is the smallest generation number.

-pf *copy-parameter-definition-file*

Specify this option when using the number of retries and the retry interval defined in the copy parameter definition file. Specify only the file name, without specifying the path.

When you omit this option, the value of the RAID Manager-linkage definition file (`DEFAULT.dat`) is used. The `DEFAULT.dat` values are also used for parameters not specified in the copy parameter definition file.

Create the copy parameter definition file with an arbitrary name in the following location. Specify the file name using alphanumeric characters totaling up to 64 bytes: *Protection-Products-installation-directory*\conf\raid

-comment *backup-comment*

Specify this argument to register a backup comment in the backup catalog.

The *backup-comment* value can be a string of up to 64 bytes, consisting of alphanumeric, special, one-byte space, and multi-byte characters. The backup comment is case-sensitive. When a special character, or a one-byte space character is used, the entire backup-comment string must be enclosed in double quotation marks ("). If the backup-comment string contains a special character but is not enclosed in double quotation marks, the special character is not properly handled as a part of the backup-comment string and is parsed as a special character.

The following special characters cannot be used for backup comments:

`\ / ` | < > " * ? & ; ()`

Note: The first character must not be a hyphen (-). If you specify two double quotation marks after the `-comment` option, as in `-comment ""`, no backup comment will be registered in the backup catalog.

-script *user-script-file-name*

Specify this option to execute a user script. Use an absolute path name to specify *user-script-file-name*. Conditions for specifying *user-script-file-name* are as follows:

- Maximum number of bytes: 255
- Available characters: Characters that can be used in a file name in Windows. If the name contains one or more space characters, the entire name string must be enclosed in double quotation marks (").

For details on coding used for a user script file, see the explanation on how to create a user script in the *HiCommand Protection Manager User's Guide*.

If you specified `LOCATION=REMOTE` in the user script file, you must also specify the `-s` option.

-s *backup-server-name*

Specify this option to connect to a remote backup server to perform a backup. Specify the host name or the IP address of the backup server by using a character string that is no more than 255 bytes.

-auto_import

Specify this option to automatically transfer a backup catalog to a backup server after completing a volume backup. This option must be specified concurrently with the `-s` option.

-auto_mount *mount-point-directory-name*

Specify this option to automatically mount a secondary volume on a backup server after completing a volume backup. This option must be specified concurrently with the `-s` and `-auto_import` options.

Specify *mount-point-directory-name* by using no more than 64 bytes of characters.

If you omit *mount-point-directory-name*, a mount destination for a secondary volume is automatically specified. Apply the same rule as when a mount point is not explicitly specified in the `drmmount` command.

To unmount the mounted secondary volume, use the `drmumount` command.

-svol_check

Specify this option to check the status of a secondary volume on a backup server. This option must be specified concurrently with the `-s` option. Checking the status of a secondary volume prevents backup or restoration failures. Items, targets, and conditions to be checked are as follows:

Table 2.22 Status Check of a Secondary Volume

Check item	Volume to be checked	Check condition
A secondary volume is hidden from a backup server	All secondary volumes defined for a backup-target primary volume	Checked when a primary volume is defined in pairs with multiple generations of secondary volumes and if either of the following items is applicable: - A primary volume is a cluster resource. - A primary volume is a dynamic disk.
A secondary volume is not mounted on a backup server	A secondary volume to be the next backup destination	Always checked.

-template

Specify this option to create only a backup catalog, without resynchronizing or splitting pairs, or freezing databases.

Even if you create a template catalog with the `-template` option specified, the old metafile will be deleted.

For example, in a two-generation environment, suppose that the following commands are executed:

1. Execute `drmsqlbackup default`
2. Execute `drmsqlbackup default`
3. Execute `drmsqlbackup default -template`

In this case, after performing step 3, the metafile and catalog acquired by performing step 1 are deleted.

This backup catalog can only be used for restoring data backed up remotely.

Notes

- If you use the `-target` or `-f` option, specify all the databases that are contained in the same logical volume. If this option is not specified, a command error occurs.
- The backup information in the backup catalog is managed based on using the copy group as a key. Depending on the backup method, you might not be able to perform restoration, even though the backup data exists on the secondary volume. For further information, see the notes on running Protection Manager programs in the *HiCommand Protection Manager User's Guide (MK-94HC070)*.
- When specifying on the command line a file name or directory name containing space characters for the `-target` option or `-f` option, you must enclose the file name in double quotation marks (").

Note that enclosing with double quotation marks is not necessary for target path names specified in batch definition files.

- If the following error occurred when you used the `-script` option, an error message is output from the SQL Server following the user script error message because the database was thawed.
 - An error occurs in a command specified by `SPLIT_PROC` when `END_CODE` in the user script file is set to `TERMINATE_NZ`.

Return Values

0: Normal termination.

Any value other than 0: Termination with an error.

Examples

- In this example, the command performs online backup of all databases in the instance `SQLDB`:

```
PROMPT> drmsqlbackup SQLDB
```

- In this example, the command performs online backup of databases `DB01` and `DB02` in the instance `SQLDB`:

```
PROMPT> drmsqlbackup SQLDB -target DB01,DB02
```

- In this example, the command performs backup by specifying the backup comment:

```
PROMPT>drmsqlbackup default -comment comment
KAVX0001-I drmsqlbackup command will now start.
KAVX1017-I SQL Server information will now be retrieved.
KAVX1207-I The database is being backed up.
KAVX0040-I The backup ID has been assigned as follows:
          Backup ID = 0000000021
KAVX0002-I drmsqlbackup command will now end.
```

- In this example, the command creates the template of the backup catalog:

```
PROMPT> drmsqlbackup default -template
KAVX0001-I drmsqlbackup command will now start.
KAVX1017-I SQL Server information will now be retrieved.
KAVX0085-I Now making backup information...
KAVX0086-I The backup information has been assigned as follows:
        Backup ID = 0000000001
KAVX0002-I drmsqlbackup command will now end.
```

- To create backups in the local and remote destinations using the script:

```
PROMPT> drmsqlbackup default -script C:\Uscript.txt
KAVX0001-I The drmsqlbackup command will now start.
KAVX1017-I SQL Server information is being collected now.
KAVX1207-I Backing up the database...
KAVX0210-I The user script will now start.
        Procedure section = RESYNC_PROC
KAVX0212-I A command from the user script will now execute.
        Command line = C:\HORCM\etc\pairresync.exe -g TC01 -d sql01 -FBC 0
KAVX0213-I A command from the user script has ended.
        End code = 0
KAVX0212-I A command from the user script will now execute.
        Command line = C:\HORCM\etc\pairresync.exe -g TC01 -d sql02 -FBC 0
KAVX0213-I A command from the user script has ended.
        End code = 0
KAVX0211-I Execution of the user script has finished.
KAVX0210-I The user script will now start.
        Procedure section = SPLIT_PROC
KAVX0212-I A command from the user script will now execute.
        Command line = C:\HORCM\etc\pairsplit.exe -g TC01 -d sql01 -FBC 0
KAVX0213-I A command from the user script has ended.
        End code = 0
KAVX0212-I A command from the user script will now execute.
        Command line = C:\HORCM\etc\pairsplit.exe -g TC01 -d sql02 -FBC 0
KAVX0213-I A command from the user script has ended.
        End code = 0
KAVX0211-I Execution of the user script has finished.
KAVX0040-I The backup ID has been assigned as follows:
        Backup ID = 0000000001
KAVX0002-I The drmsqlbackup command will now end.
>PROMPT
```

- To create a backup only in the remote destination using the script:

```
PROMPT> drmsqlbackup default -script C:\Uscript.txt
KAVX0001-I The drmsqlbackup command will now start.
KAVX1017-I SQL Server information is being collected now.
KAVX1207-I Backing up the database...
KAVX0210-I The user script will now start.
      Procedure section = RESYNC_PROC
KAVX0212-I A command from the user script will now execute.
      Command line = C:\HORCM\etc\pairresync.exe -g TC01 -d sql01 -FBC 0
KAVX0213-I A command from the user script has ended.
      End code = 0
KAVX0212-I A command from the user script will now execute.
      Command line = C:\HORCM\etc\pairresync.exe -g TC01 -d sql02 -FBC 0
KAVX0213-I A command from the user script has ended.
      End code = 0
KAVX0211-I Execution of the user script has finished.
KAVX0210-I The user script will now start.
      Procedure section = SPLIT_PROC
KAVX0212-I A command from the user script will now execute.
      Command line = C:\HORCM\etc\pairsplit.exe -g TC01 -d sql01 -FBC 0
KAVX0213-I A command from the user script has ended.
      End code = 0
KAVX0212-I A command from the user script will now execute.
      Command line = C:\HORCM\etc\pairsplit.exe -g TC01 -d sql02 -FBC 0
KAVX0213-I A command from the user script has ended.
      End code = 0
KAVX0211-I Execution of the user script has finished.
KAVX0002-I The drmsqlbackup command will now end.
PROMPT>
```

2.10.2 drmsqlcat

This basic command displays backup information for a SQL Server database.

Format

```
drmsqlcat instance-name
      [ -target database-name | -f target-definition-file-name ]
      [ -transact_log ][ -datafile ][ -metafile ]
      [ -device device-file-name ][ -l ][ -v ]
      [ -backup_id backup-ID ][ -hostname host-name ]
      [ -comment backup-comment ] [ -template ]
```

Description

The `drmsqlcat` command displays the backup information of the SQL Server database on the server where the command is executed. The items displayed are shown in Table 2.20. Each item is separated by a space. A hyphen (-) is displayed for any item that cannot be displayed. If none of the items can be displayed, an error message is displayed.

Table 2.23 Items Displayed by drmsqlcat Command

Displayed Item	Meaning
INSTANCE	SQL Server instance name.
BACKUP-COMMENT	Backup comment.
BACKUP-ID	Backup ID.
BACKUP-MODE	Backup mode (ONLINE).
ORIGINAL-ID	Original backup ID obtained by the <code>drmsqlbackup</code> command.
INSTANCE	SQL Server instance name.
START-TIME	Snapshot backup start time.
END-TIME	Snapshot backup end time .
HOSTNAME	Server name where the snapshot backup was performed.
T	Object type: D: Data file T: Transaction log M: Metafile
DB	SQL Server database name.
OBJECT	SQL Server object name: DATAFILE: Data file name TRANSACT: Transaction file name METAFILE: VDI metafile name
FILE	File name.
FS	Mount point directory name.
FSTYPE	File system type (NTFS).
DG	The name of the disk group (for an environment with a logical volume manager), or a hyphen (-) (for a basic disk configuration).
LVM-DEVICE	The name of the logical device file (for an environment with a logical volume manager) or GUID (for an environment without a logical volume manager).
DEVICE	<code>Harddiskn</code> (where <i>n</i> is an integer). When this command is executed with the <code>-device</code> option specified, this will be displayed after <code>OBJECT</code> .
COPY-GROUP	Copy group name, displayed as follows: RAID Manager volume group name, device name.
PORT#	Port name on the host server.
TID#	Target-ID on the host server.
LUN#	Logical unit number on host server.
MU#	Pair ID.
LDEV#	Logical device number inside the RAID device.
P/S	A letter identifying the primary or secondary volume: P: Primary volume

Displayed Item	Meaning
	S: Secondary volume -: Others
SERIAL#	Serial number inside the RAID device.
VIRTUAL-SERVERNAME	Virtual server name (value of the <code>DRM_HOSTNAME</code> environment variable). The command executed with the <code>-v</code> option displays this information.
DB-PATH	Name of the directory storing the backup catalog. The command executed with the <code>-v</code> option displays this information.
CATALOG-UPDATE-TIME	Time when the backup catalog was created. The command executed with the <code>-v</code> option displays this information.
BACKUP-COMMENT	Backup comment.

Arguments

instance-name

Specify the instance name of the database to display the information for backup. If the instance to be recovered is the default, specify `DEFAULT`.

-target database-name(s)

Displays backup information for a specific database:

- File name.
- File system information.
- Structural information about the logical volume.
- Physical disk information.

To display the information for multiple storage groups, use a comma to separate each database name. If you specify a database name containing a space character, enclose the database name in double quotation marks (").

When both this option and the `-f` option are omitted, all database information about the instance specified by the instance name will be displayed.

-f target-definition-file-name

Specifies that backup information for specific databases is to be referenced. Unlike the `-target` option, this option lets you specify a target definition file that collectively specifies all the databases whose backup information you want to display. The target definition file containing the list of databases must be created before you attempt to use this option. Use an absolute path name to specify the target definition file. If you specify a database name containing a space character, enclose the database name in double quotation marks (").

When both this option and the `-target` option are omitted, all information about the instance specified by the instance name will be displayed.

-transact_log

Specifies that only information relating to the transaction log file is to be displayed. This option will display the following information:

- The name of the transaction log file.

- File system information.
- Structural information about the logical volume.
- Physical disk information.

-datafile

Specifies that only information relating to the data file is to be displayed. This option will display the following information:

- The name of the data file.
- File system information.
- Logical volume structure information.
- Physical disk information.

-metafile

Specifies that only information relating to the metafile is to be displayed. This option will display the following information:

- The name of the metafile.
- File system information.
- Logical volume structure information.
- Physical disk information.

-device *device-file-name*

Specifies that only the information for the specified device files about the instance specified by the instance-name option is to be displayed. This option will display the following information:

- Database information.
- The name of the transaction log file.
- Data file information.
- File system information.
- Physical disk information.
- Logical volume structure information.

-l

Specifies that information is to be displayed in the long format.

-v

Specify this option to display information about the backup catalog. The following information is displayed:

- Name of the directory storing the backup catalog.

Displays the path that is set in `DRM_DB_PATH` in the Protection Manager configuration definition file (`init.conf`).

If `DRM_DB_PATH` has not been set, the default storage directory for a dictionary map file, which is created automatically during installation, is displayed.

- Virtual server name (value of the `DRM_HOSTNAME` environment variable).

If the `DRM_HOSTNAME` environment variable has not been set, a hyphen (-) appears.

- Time when the backup catalog was created.

For each backup ID, displays the time when the backup catalog was created.

-backup_id *backup-ID*

Specifies that backup information for a certain backup ID is to be displayed. A backup ID, which uniquely identifies a certain piece of backup data, is registered in the backup catalog during backup.

-hostname *host-name*

Specify this argument to display information pertaining a specific host only.

-comment *backup-comment*

Specify this argument to display only information on a specific backup comment.

The *backup-comment* value is case insensitive.

You can specify a wildcard (*) as the value of *backup-comment*. You can specify a string by using only the first few characters (specifying a few specific characters at the beginning of the string, and not designating any particular characters for the rest of the string-such as in the specification XYZ*). When a wildcard, special character, or one-byte space character is used, the entire backup-comment string must be enclosed in double quotation marks ("). If the backup-comment string contains a special character but is not enclosed in double quotation marks, the special character is not properly handled as a part of the backup-comment string and is parsed as a special character. If you specify `-comment "*"` , the command will display all backup catalogs.

If two double quotation marks are specified after the `-comment` option (as in: `-comment ""`), a message is displayed indicating that no backup data exists.

-template

Specify this option if you want to display the template catalog to be specified, in a situation where you want to perform restoration, by using a template catalog that was created by executing the `drmsqlbackup` command with the `-template` option specified. The `START-TIME` and `END-TIME` of a template catalog specified using the `-template` option are the times at which creation of the template catalog started and finished.

Notes

- When specifying on the command line a file name or directory name containing space characters for the `-target` or `-f` option, you must enclose the file name in double quotation marks (").
- Enclosing with double quotation marks is not necessary for target path names specified in batch definition files.

Return Values

0: Normal termination.

Any value other than 0: Termination with an error.

Examples

- In this example, the command outputs information about the SQL Server database specified in instance SQL1:

```
PROMPT> drmsqlcat SQL1
INSTANCE: SQL1
BACKUP-ID: 000000001 BACKUP-MODE: ON-LINE INSTANCE: SQL1 ORIGINAL-ID: 000000001
START-TIME: 2002/06/01 10:00:00 END-TIME: 2002/06/01 10:03:00 HOSTNAME: DB_SVR1
T DB      OBJECT      FILE              FS              DG              DEVICE           COPY-GROUP
M DB1     METAFILE     C:\METADIR\Meta1 C:              -              -              -
D DB1     DATAFILE    D:\SQL\data1.mdf D:              -              Harddisk2        VG02, dev02
- -      -            -                -              -              -              VG02, dev02
T DB1     TRANSACT     D:\SQL\tlog1.ldf D:              -              Harddisk2        VG02, dev02
- -      -            -                -              -              -              VG02, dev02
M DB2     METAFILE     C:\METADIR\Meta2 C:              -              -              -
D DB1     DATAFILE    D:\SQL\data2.mdf D:              -              Harddisk2        VG02, dev02
- -      -            -                -              -              -              VG02, dev02
T DB1     TRANSACT     D:\SQL\tlog2.ldf D:              -              Harddisk2        VG02, dev02
- -      -            -                -              -              -              VG02, dev02
```

- In this example, the command displays two generations of backup information, in the long format, about the SQL Server database specified in instance SQL1:

```
PROMPT> drmsqlcat SQL1 -l
INSTANCE: SQL1
BACKUP-ID: 0000000001 BACKUP-MODE: ON-LINE INSTANCE: SQL1 ORIGINAL-ID: 0000000001
START-TIME: 2002/06/01 10:00:00 END-TIME: 2002/06/01 10:03:00 HOSTNAME: DB_SVR1
T DB OBJECT FILE FS FSTYPE DG LVM-DEVICE
DEVICE COPY-GROUP PORT# TID# LUN# MU# LDEV# P/S SERIAL#
M DB1 METAFILE C:\METADIR\Meta1 C: NTFS - \\?\Volume{df66a5b0-5583-12d5-a410-806d6172696f}\ Harddisk1 VG11,dev01 CLI-A 2 10 0 10010 P 15044
D DB1 DATAFILE D:\SQL\data1.mdf D: NTFS - \\?\Volume{df67a5b0-5583-11d5-a410-806d6172696f}\ Harddisk2 VG12,dev02 CLI-A 2 20 0 10020 P 15044
- - - - -
- VG12,dev02 CLI-A 2 21 0 10021 S 15044
T DB1 TRANSACT D:\SQL\tlog1.ldf D: NTFS - \\?\Volume{df67a5b0-5583-11d5-a410-806d6172696f}\ Harddisk2 VG12,dev02 CLI-A 2 20 0 10020 P 15044
- - - - -
- VG12,dev02 CLI-A 2 21 0 10021 S 15044
M DB2 METAFILE C:\METADIR\Meta2 C: NTFS - \\?\Volume{df66a5b0-5583-12d5-a410-806d6172696f}\ Harddisk1 VG11,dev01 CLI-A 2 10 0 10010 P 15044
D DB1 DATAFILE D:\SQL\data2.mdf D: NTFS - \\?\Volume{df67a5b0-5583-11d5-a410-806d6172696f}\ Harddisk2 VG12,dev02 CLI-A 2 20 0 10020 P 15044
- - - - -
- VG12,dev02 CLI-A 2 21 0 10021 S 15044
T DB1 TRANSACT D:\SQL\tlog2.ldf D: NTFS - \\?\Volume{df67a5b0-5583-11d5-a410-806d6172696f}\ Harddisk2 VG12,dev02 CLI-A 2 20 0 10020 P 15044
- - - - -
- VG12,dev02 CLI-A 2 21 0 10021 S 15044

INSTANCE: SQL1
BACKUP-ID: 0000000002 BACKUP-MODE: ON-LINE INSTANCE: SQL1 ORIGINAL-ID: 0000000002
START-TIME: 2002/06/02 10:00:00 END-TIME: 2002/06/02 10:03:00 HOSTNAME: DB_SVR1
T DB OBJECT FILE FS FSTYPE DG LVM-DEVICE
DEVICE COPY-GROUP PORT# TID# LUN# MU# LDEV# P/S SERIAL#
M DB1 METAFILE C:\METADIR\Meta1 C: NTFS - \\?\Volume{df66a5b0-5583-12d5-a410-806d6172696f}\ Harddisk1 VG11,dev01 CLI-A 2 10 0 10010 P 15044
D DB1 DATAFILE D:\SQL\data1.mdf D: NTFS - \\?\Volume{df67a5b0-5583-11d5-a410-806d6172696f}\ Harddisk2 VG12,dev02 CLI-A 2 20 0 10020 P 15044
- - - - -
- VG12,dev02 CLI-A 2 21 0 10021 S 15044
T DB1 TRANSACT D:\SQL\tlog1.ldf D: NTFS - \\?\Volume{df67a5b0-5583-11d5-a410-806d6172696f}\ Harddisk2 VG12,dev02 CLI-A 2 20 0 10020 P 15044
- - - - -
- VG12,dev02 CLI-A 2 21 0 10021 S 15044
M DB2 METAFILE C:\METADIR\Meta2 C: NTFS - \\?\Volume{df66a5b0-5583-12d5-a410-806d6172696f}\ Harddisk1 VG11,dev01 CLI-A 2 10 0 10010 P 15044
D DB1 DATAFILE D:\SQL\data2.mdf D: NTFS - \\?\Volume{df67a5b0-5583-11d5-a410-806d6172696f}\ Harddisk2 VG12,dev02 CLI-A 2 20 0 10020 P 15044
- - - - -
- VG12,dev02 CLI-A 2 21 0 10021 S 15044
T DB1 TRANSACT D:\SQL\tlog2.ldf D: NTFS - \\?\Volume{df67a5b0-5583-11d5-a410-806d6172696f}\ Harddisk2 VG12,dev02 CLI-A 2 20 0 10020 P 15044
- - - - -
- VG12,dev02 CLI-A 2 21 0 10021 S 15044
```

- In this example, the command displays information, in the long format, about the SQL server database in the instance SQL1. The host name is specified as DB_SVR1:

```
PROMPT> drmsqlcat SQL1 -l -hostname DB_SVR1
INSTANCE: SQL1
BACKUP-ID: 0000000001 BACKUP-MODE: ON-LINE INSTANCE: SQL1 ORIGINAL-ID: 0000000001
START-TIME: 2002/06/01 10:00:00 END-TIME: 2002/06/01 10:03:00 HOSTNAME: DB_SVR1
T DB OBJECT FILE FS FSTYPE DG LVM-DEVICE
DEVICE COPY-GROUP PORT# TID# LUN# MU# LDEV# P/S SERIAL#
M DB1 METAFILE C:\METADIR\Meta1 C: NTFS - \\?\Volume{df66a5b0-5583-12d5-a410-806d6172696f}\ Harddisk1 VG11,dev01 CLI-A 2 10 0 10010 P 15044
D DB1 DATAFILE D:\SQL\data1.mdf D: NTFS - \\?\Volume{df67a5b0-5583-11d5-a410-806d6172696f}\ Harddisk2 VG12,dev02 CLI-A 2 20 0 10020 P 15044
- - - - -
- VG12,dev02 CLI-A 2 21 0 10021 S 15044
T DB1 TRANSACT D:\SQL\tlog1.ldf D: NTFS - \\?\Volume{df67a5b0-5583-11d5-a410-806d6172696f}\ Harddisk2 VG12,dev02 CLI-A 2 20 0 10020 P 15044
- - - - -
- VG12,dev02 CLI-A 2 21 0 10021 S 15044
M DB2 METAFILE C:\METADIR\Meta2 C: NTFS - \\?\Volume{df66a5b0-5583-12d5-a410-806d6172696f}\ Harddisk1 VG11,dev01 CLI-A 2 10 0 10010 P 15044
D DB1 DATAFILE D:\SQL\data2.mdf D: NTFS - \\?\Volume{df67a5b0-5583-11d5-a410-806d6172696f}\ Harddisk2 VG12,dev02 CLI-A 2 20 0 10020 P 15044
- - - - -
- VG12,dev02 CLI-A 2 21 0 10021 S 15044
T DB1 TRANSACT D:\SQL\tlog2.ldf D: NTFS - \\?\Volume{df67a5b0-5583-11d5-a410-806d6172696f}\ Harddisk2 VG12,dev02 CLI-A 2 20 0 10020 P 15044
- - - - -
- VG12,dev02 CLI-A 2 21 0 10021 S 15044
```

- In this example, the command outputs information about the SQL Server database specified by the instance SQL1 and management information for the backup catalog:

```
PROMPT> drmsqlcat SQL1 -v
VIRTUAL-SERVERNAME: DB_SVR1
DB-PATH: D:\Program Files\Hitachi\DRM\db2
INSTANCE: SQL1
BACKUP-ID: 0000000001 BACKUP-MODE: ON-LINE INSTANCE: SQL1 ORIGINAL-ID: 0000000001
START-TIME: 2002/06/01 10:00:00 END-TIME: 2002/06/01 10:03:00 HOSTNAME: DB_SVR1
CATALOG-UPDATE-TIME: 2002/06/01 11:00:00
T DB OBJECT FILE FS DG DEVICE COPY-GROUP
M DB1 METAFILE C:\METADIR\Meta1 C: - - -
D DB1 DATAFILE D:\SQL\data1.mdf D: - Harddisk2 VG02,dev02
- - - - - VG02,dev02
T DB1 TRANSACT D:\SQL\tlog1.ldf D: - Harddisk2 VG02,dev02
- - - - - VG02,dev02
M DB2 METAFILE C:\METADIR\Meta2 C: - - -
D DB1 DATAFILE D:\SQL\data2.mdf D: - Harddisk2 VG02,dev02
- - - - - VG02,dev02
T DB1 TRANSACT D:\SQL\tlog2.ldf D: - Harddisk2 VG02,dev02
- - - - - VG02,dev02
```

- In this example, the command outputs information about the SQL Server database specified by the instance SQL1 and management information for the backup catalog (when a backup is not performed):

```
PROMPT> drmsqlcat SQL1 -v
VIRTUAL-SERVERNAME: DB_SVR1
DB-PATH: D:\Program Files\Hitachi\DRM\db2
KAVX0024-E The specified backup data does not exist.
```

- In this example, the command displays the backup catalog beginning with SQL2-DR-10.0:

```
PROMPT>drmsqlcat default -comment "SQL2-DR-10.01*"
INSTANCE: default
BACKUP-COMMENT: SQL2-DR-10.01-03:56-001
BACKUP-ID: 0000000010 BACKUP-MODE: ONLINE INSTANCE: default ORIGINAL-ID: 0000000010
START-TIME: 12.12.03 14:25:40 END-TIME: 12.12.03 14:25:41 HOSTNAME: flora4
T DB OBJECT FILE FS DG DEVICE COPY-GROUP
M UserDB1 METAFILE C:\meta\0000000010_0000000005.dmp - - - -
D UserDB1 DATAFILE O:\UserDB1_Data.MDF O: -
Harddisk3 STD03,sqlstd022
- - - -
- STD03,sqlstd022
T UserDB1 TRANSACT O:\UserDB1_Log.LDF O: -
Harddisk3 STD03,sqlstd022
- - - -
- STD03,sqlstd022
```

- In this example, the command displays the template catalog:

```
PROMPT>drmsqlcat default -template
INSTANCE: default
BACKUP-ID: 0000000001 BACKUP-MODE: ONLINE INSTANCE: default ORIGINAL-ID: 0000000002
START-TIME: 04.02.04 13:01:35 END-TIME: 04.02.04 13:02:33 HOSTNAME: flora4
T DB OBJECT FILE FS DG DEVICE COPY-GROUP
M UserDB1 METAFILE O:\MSSQL\0000000002_0000000001.dmp - - - -
D UserDB1 DATAFILE O:\UserDB1_Data.MDF O: -
Harddisk4 SI01,sql01
- - - -
SI01,sql01
T UserDB1 TRANSACT O:\UserDB1_Log.LDF O: -
Harddisk4 SI01,sql01
- - - -
SI01,sql01
```

2.10.3 drmsqldisplay

This basic command displays or updates information for a SQL Server database.

Format

- To display the information for the SQL Server database:

```
drmsqldisplay [ instance-name ]  
              [ -target database-name | -f target-definition-file-name ]  
              [ -transact_log ][ -datafile ]  
              [ -device device-file-name ][ -l ][ -v ][ -cf ]
```

- To display information with linking for copy groups for both the local site and the remote site:

```
drmsqldisplay [ instance-name ]  
              [ -target database-name | -f target-definition-file-name ]  
              [ -transact_log ][ -datafile ]  
              [ -v ][ -remote ]
```

- To update the information in the dictionary map file:

```
drmsqldisplay [instance-name ] -refresh [ -coremap ]
```

Description

The `drmsqldisplay` command does the following:

1. Displays the resource information of the SQL Server database on the server on which the command was executed. The items displayed are shown in Table 2.24.
2. Displays resource information pertaining to optional instances for the system on which the command was executed. The items displayed are shown in Table 2.24.
3. Updates the SQL Server database information of the dictionary map file. Execute this command before performing a backup.

Each item is separated by space. A hyphen (-) will be displayed in columns that contain items that cannot be displayed. An error message will be displayed when none of the items can be displayed.

Table 2.24 Items Displayed by drmsqldisplay Command

Displayed Item	Meaning
INSTANCE	The name of the SQL server instance.
T	The object type: D: Data file T: Transaction log
DB	The name of the SQL server database.
OBJECT	The name of the SQL server object: DATAFILE: The name of the data file TRANSACTION: The name of the transaction log file
FILE	The file name.
FS	The mount point directory name.
FSTYPE	The type of file system (NTFS).
DG	The name of the disk group (for an environment with a logical volume manager), or a hyphen (-) (for a basic disk configuration).
LVM-DEVICE	The name of the logical device file (for an environment with a logical volume manager) or GUID (for an environment without a logical volume manager).
DEVICE	Harddisk n (where n is an integer). When this command is executed with the <code>-device</code> option specified, this will be displayed after OBJECT.
COPY-GROUP	The copy group name, shown in the following format: The name of the RAID Manager Volume Group, the loop name, and the device name.
L-COPY-GROUP	Copy group name of the local site, displayed as follows: RAID Manager volume group name, device name.
R-COPY-GROUP	Copy group name of the remote site and the pair identifier (MU#) of the SVOL at the remote destination, displayed as follows: <i>RAID Manager Volume Group, device name remote-destination-SVOL-pair-identifier-(MU#)</i> .
PORT#	The port name on the host server.
TID#	The target ID on the host server.
LUN#	The logical unit number on the host server.
MU#	Paired ID.
LDEV#	The logical device number within the RAID setup.
P/S	A letter to distinguish the primary volume from the secondary volume: P: Primary volume S: Secondary volume -: A volume that is not part of a pair.
SERIAL#	The serial number within the RAID device.
GEN-NAME	Generation identifier: <ul style="list-style-type: none"> ▪ <code>local_n</code>: for a local pair volume (where n is a generation number from 0 to 999). ▪ <code>remote_n</code>: for a remote pair volume (where n is a generation number

Displayed Item	Meaning
	<p>from 0 to 999).</p> <ul style="list-style-type: none"> ▪ -: Indicates a volume where a pair volume has not been configured.
COPY-FUNC	<p>Copy type:</p> <p>Copy type: The name of the copy type varies depending on the DKC software product (storage subsystem unit) and microcode version.</p> <p>-: Indicates the volume where a pair volume has not been configured.</p> <p>(Do not create a program that operates using this display.)</p>
VIRTUAL-SERVERNAME	<p>Virtual server name (value of the <code>DRM_HOSTNAME</code> environment variable). The command executed with the <code>-v</code> option displays this information.</p>
DB-PATH	<p>Name of the directory storing the dictionary map file. The command executed with the <code>-v</code> option displays this information.</p>
CORE-MAPFILE-UPDATE-TIME	<p>Update time for the core map file. The command executed with the <code>-v</code> option displays this information.</p>
APP.-MAPFILE-UPDATE-TIME	<p>Update time for the application map file. The command executed with the <code>-v</code> option displays this information.</p>

Arguments

instance-name

Specify the name of the SQL Server database instance for which information is to be updated or displayed. If the instance to be backed up is the default, specify `DEFAULT`. If the instance name is omitted, use the `drmsqlinit` command to display information for all registered instances.

-target *database-name(s)*

Specifies that information is to be displayed or updated regarding specific databases of the instance *instance-name*. To display or update information for more than one database, separate the database names using commas. If you specify a database name containing a space character, enclose the database name in double quotation marks (").

-f *target-definition-file-name*

Displays information regarding specific databases of the instance *instance-name*. Unlike `-target`, this option lets you specify a target definition file that specifies a list of databases for which the information is to be displayed. The target definition file containing the list of databases must be created before you attempt to use this option. Use an absolute path to specify the file name. If you specify a target definition file name containing a space character, enclose the target definition file name in double quotation marks (").

-transact_log

Displays information relating to the transaction log file only. This option will display the following information:

- The name of the transaction log file.
- File system information.
- Logical volume structure information.
- Physical disk information.

When you specify this option with the *instance-name* option, only the information about the transaction log of the specified instance will be displayed. When the *instance-name* option is omitted, information about all instance transaction logs will be displayed.

-datafile

Displays only the information about the data file of the specified instance. This option will display the following information:

- The name of the data file.
- File system information.
- Logical volume structure information.
- Physical disk information.

When you specify this option with the *instance-name* option, the command displays only information about the data file of the specified instance. When the *instance-name* option is omitted, information about the data files of all instances will be displayed.

-device *device-file-name*

Displays information relating to the device file only. This option will display the following information:

- The name of the SQL Server database.
- The transaction log.
- Data file information.
- File system information.
- Physical disk information.
- Logical volume structure information.

When you specify this option with the *instance-name* option, the command displays only information about the device files of the specified instance. When the *instance-name* option is omitted, information about the device files of all instances will be displayed.

-l

Specifies that SQL Server database information is to be displayed in the long format.

-v

Specify this option to display management information about the dictionary map file. The following information is displayed:

- Name of the directory storing the backup catalog.
Displays the path that is set in `DRM_DB_PATH` in the Protection Manager configuration definition file (`init.conf`).
If `DRM_DB_PATH` has not been set, the default storage directory for a dictionary map file, which is created automatically during installation, is displayed.
- Virtual server name (value of the `DRM_HOSTNAME` environment variable).
If the `DRM_HOSTNAME` environment variable has not been set, a hyphen (-) appears.
- Update time for the dictionary map file.
Displays the update time separately for the core map file and the application map file.

-refresh

Updates dictionary map file information to the latest status.

When you specify this option with the *instance-name* option, only the information about the specified instance in the application map file will be updated. The processing of the core map file differs depending on the following:

- When the core map file already exists, the file is not updated.
- When the core map file does not exist, a new core map file is created.

When the *instance-name* option is omitted, the core map file and the information about all the instances in the application map file will be updated. At this time, if the update of the dictionary map file fails, the contents of the core map file are deleted.

The dictionary map file must be updated to the latest status by using this command when any of the following cases apply:

- When an instance of SQL Server is created.
- When the SQL server database configuration has been changed.
- When the RAID Manager configuration definition file has been changed and a pair of volumes has been changed.
- When the mount point has been changed.
- When the disk configuration such as adding or removing a hard disk has been changed.
- When the storage location of the dictionary map has been changed by executing the `drmdbsetup` utility.
- When disk information for `snapshot` is set up in the dictionary map file.

-coremap

Specify this option to update the core map file. This option is available only when it is specified together with the *instance-name* option. If the core map file does not exist, a new core map file is created.

At this time, if the update of the dictionary map file fails, the contents of the core map file are deleted.

-cf

Specify this to display local or remote copy types, or the name identifying the generation corresponding to the copy group name. The remote information is also displayed.

-remote

Specify this option to display information with linking for copy groups for both the local site and the remote site.

Notes

- When specifying on the command line a file name or directory name containing space characters for the `-target` or `-f` option, you must enclose the file name in double quotation marks ("").
- Enclosing with double quotation marks is not necessary for target path names specified in batch definition files.

Return Values

0: Normal termination.

Any value other than 0: Termination with an error.

Examples

- In this example, the command outputs information about the database SQL1:

```
PROMPT> drmsqldisplay SQL1
INSTANCE: SQL1
T DB  OBJECT      FILE                      FS          DG    DEVICE          COPY-GROUP
D DB1  DATAFILE    D:\SQL\data1.mdf         D:          -    Harddisk1       VG01,dev01
- - - - -
T DB1  TRANSACT     D:\SQL\tlog1.ldf        D:          -    Harddisk1       VG01,dev01
- - - - -
D DB2  DATAFILE    E:\SQL\data2.mdf         E:          -    Harddisk2       VG02,dev02
- - - - -
T DB2  TRANSACT     E:\SQL\tlog2.ldf        E:          -    Harddisk2       VG02,dev02
- - - - -
```

- In this example, the command outputs information, in the long format, about the database SQL1:

```
PROMPT> drmsqldisplay SQL1 -l
INSTANCE: SQL1
T DB  OBJECT      FILE                      FS FSTYPE  DG  LVM-DEVICE
DEVICE  COPY-GROUP  PORT#  TID#  LUN#  MU#  LDEV#  P/S  SERIAL#
D DB1  DATAFILE    D:\SQL\data1.mdf D: NTFS   -    \?\Volume{df67a5b0-5583-11d5-a410-806d6172696f}\ Harddisk1 VG01,dev01 CLI-A  2    10    0    10000 P  15044
- - - - -
-          VG01,dev01  CLI-A  2    20    0    10020 S  15044
D DB1  DATAFILE    D:\SQL\data2.mdf D: NTFS   -    \?\Volume{df67a5b0-5583-11d5-a410-806d6172696f}\ Harddisk1 VG01,dev01 CLI-A  2    10    0    10000 P  15044
- - - - -
-          VG01,dev01  CLI-A  2    20    0    10020 S  15044
T DB1  TRANSACT     D:\SQL\tlog1.ldf D: NTFS   -    \?\Volume{df67a5b0-5583-11d5-a410-806d6172696f}\ Harddisk1 VG01,dev01 CLI-A  2    10    0    10000 P  15044
```

```

- - - - -
-          VG01,dev01  CLI-A  2    20    0  10020 S  15044
T DB1 TRANSACT D:\SQL\tlog2.ldf D: NTFS  -  \\?\Volume{df67a5b0-5583-11d5-a410-
806d6172696f}\ Harddisk1 VG01,dev01  CLI-A  2    10    0  10000 P  15044
- - - - -
-          VG01,dev01  CLI-A  2    20    0  10020 S  15044
D DB2 DATAFILE E:\SQL\data1.mdf E: NTFS  -  \\?\Volume{df67a5b0-5583-11d5-a410-
806d6172696f}\ Harddisk1 VG02,dev01  CLI-A  2    11    0  10001 P  15044
- - - - -
-          VG02,dev01  CLI-A  2    21    0  10021 S  15044
D DB2 DATAFILE E:\SQL\data2.mdf E: NTFS  -  \\?\Volume{df67a5b0-5583-11d5-a410-
806d6172696f}\ Harddisk1 VG02,dev01  CLI-A  2    11    0  10001 P  15044
- - - - -
-          VG02,dev01  CLI-A  2    21    0  10021 S  15044
T DB2 TRANSACT E:\SQL\tlog1.ldf E: NTFS  -  \\?\Volume{df67a5b0-5583-11d5-a410-
806d6172696f}\ Harddisk1 VG02,dev01  CLI-A  2    11    0  10001 P  15044
- - - - -
-          VG02,dev01  CLI-A  2    21    0  10021 S  15044
T DB2 TRANSACT E:\SQL\tlog2.ldf E: NTFS  -  \\?\Volume{df67a5b0-5583-11d5-a410-
806d6172696f}\ Harddisk1 VG02,dev01  CLI-A  2    11    0  10001 P  15044
- - - - -
-
VG02,dev01  CLI-A  2    21    0  10021 S  15044

```

- In this example, the command only outputs information, in the long format, about the data file specified with the instance SQL1:

```

PROMPT> drmsqldisplay SQL1 -l -transact_log
INSTANCE: SQL1
T DB OBJECT FILE FS FSTYPE DG LVM-DEVICE
DEVICE COPY-GROUP PORT# TID# LUN# MU# LDEV# P/S SERIAL#
T DB1 TRANSACT D:\SQL\tlog1.ldf D: NTFS - \\?\Volume{df67a5b0-5583-11d5-a410-
806d6172696f}\ Harddisk1 VG01,dev01 CLI-A 2 10 0 10000 P 15044
- - - - -
-          VG01,dev01  CLI-A  2    20    0  10020 S  15044
T DB1 TRANSACT D:\SQL\tlog2.ldf D: NTFS  -  \\?\Volume{df67a5b0-5583-11d5-a410-
806d6172696f}\ Harddisk1 VG01,dev01  CLI-A  2    10    0  10000 P  15044
- - - - -
-          VG01,dev01  CLI-A  2    20    0  10020 S  15044
T DB2 TRANSACT E:\SQL\tlog1.ldf E: NTFS  -  \\?\Volume{df67a5b0-5583-11d5-a410-
806d6172696f}\ Harddisk1 VG02,dev01  CLI-A  2    11    0  10001 P  15044
- - - - -
-          VG02,dev01  CLI-A  2    21    0  10021 S  15044
T DB2 TRANSACT E:\SQL\tlog2.ldf E: NTFS  -  \\?\Volume{df67a5b0-5583-11d5-a410-
806d6172696f}\ Harddisk1 VG02,dev01  CLI-A  2    11    0  10001 P  15044
- - - - -
-          VG02,dev01  CLI-A  2    21    0  10021 S  15044

```

- In this example, the command outputs information about the SQL Server database specified by the instance `SQL1` and management information for the dictionary map file:

```
PROMPT> drmsqldisplay SQL1 -v
VIRTUAL-SERVERNAME: host1
DB-PATH: D:\Program Files\Hitachi\DRM\db2
INSTANCE: SQL1
CORE-MAPFILE-UPDATE-TIME: 2002/06/01 10:00:00
APP.-MAPFILE-UPDATE-TIME: 2002/06/01 10:00:00
T DB  OBJECT      FILE                FS  DG  DEVICE      COPY-GROUP
D DB1  DATAFILE    D:\SQL\data1.mdf   D:  -   Harddisk1   VG01,dev01
- -    -            -                  -  -   -           VG01,dev01
T DB1  TRANSACT     D:\SQL\tlog1.ldf  D:  -   Harddisk1   VG01,dev01
- -    -            -                  -  -   -           VG01,dev01
D DB2  DATAFILE    E:\SQL\data2.mdf  E:  -   Harddisk2   VG02,dev02
- -    -            -                  -  -   -           VG02,dev02
T DB2  TRANSACT     E:\SQL\tlog2.ldf  E:  -   Harddisk2   VG02,dev02
- -    -            -                  -  -   -           VG02,dev02
```

- In this example, the command outputs information about the SQL Server database specified by the instance `SQL1` and management information for the dictionary map file (when the dictionary map file does not exist):

```
PROMPT> drmsqldisplay SQL1 -v
VIRTUAL-SERVERNAME: host1
DB-PATH: D:\Program Files\Hitachi\DRM\db2
KAVX0039-E The core map file(s) cannot be found.
```

- In this example, this command displays the information including the cascade:

```
PROMPT> drmsqldisplay -remote -target UserDB1
INSTANCE: default
T DB      OBJECT      FILE                L-COPY-GROUP  R-COPY-GROUP  PORT#
TID#    LUN#    MU#    LDEV#    P/S    SERIAL#
D UserDB1  DATAFILE  Z:\UserDB1_Data.MDF  -              -              CL1-A
1
32      -      32      P      116
- -      -      -
1
60      0      60      S      116
- -      -      -
1
32      0      32      S      600
- -      -      -
-
-      0      60      C      600
T UserDB1  TRANSACT   Z:\UserDB1_Log.LDF  -              -              CL1-A
1
32      -      32      P      116
- -      -      -
1
60      0      60      S      116
- -      -      -
1
32      0      32      S      600
- -      -      -
-
-      0      60      C      600
PROMPT>
```

2.10.4 drmsqlinit

This basic command registers parameters for SQL Server.

Format

- To register parameters for SQL Server:

```
drmsqlinit instance-name
```

- To display the parameters registered for SQL Server:

```
drmsqlinit -v instance-name
```

Description

The `drmsqlinit` command provides an interactive interface that lets you register the SQL Server parameters necessary to back up a SQL Server database. You can register parameters for each instance. This command registers the information in Table 2.25.

Directories in which SQL Server schema definition files (with parameters registered as `instance-name.dat`) are stored cannot be specified as storage directories for VDI metafiles or undo files.

The parameters that this command registers are stored in the following location:

```
Protection-Products-installation-directory\conf\MSSQL\instance-name.dat
```

To delete instances that have registered parameters, delete `name-of-instance-to-be-deleted.dat`.

Table 2.25 SQL Server Parameters

Setting	Description
VDI metafile storage directory (optional)	Use an absolute path to specify the name of the directory for storing a VDI metafile. An existing directory must be specified. Specify an upper case character for the drive letter. If you do not specify any value as the VDI metafile storage directory, the VDI metafiles will be stored in the same location as the data files of the SQL Server database. To facilitate management of VDI metafiles, we recommend leaving the VDI metafile storage directory unspecified.
VDI generation timeout interval (in seconds) (required)	The timeout interval in seconds, used when a VDI metafile is generated. The specifiable range is from 0 to 3600. When you specify 0, the waiting status continues indefinitely until a VDI metafile is generated.
UNDO file storage directory (optional)	Use an absolute path to specify the name of the directory for storing an undo file. An existing directory must be specified. If nothing is specified for the UNDO file storage directory, and the <code>drmsqlrestore</code> command or <code>drmsqlrecover</code> command is executed with the <code>-undo</code> option specified, an error message appears, indicating that no parameters are set for the <code>drmsqlinit</code> command. The same message will be displayed if Standby is specified for Recovery Mode , in the <code>drmsqlrecovertool</code> dialog box. If this error message is displayed, use the <code>drmsqlinit</code> command to set the UNDO file storage directory. Note that you cannot specify the directory containing the SQL Server database configuration definition file (<code>instance-name.dat</code> , in which parameters are registered) for the UNDO file storage directory.
Transaction log backup file storage directory (optional)	Specify the backup destination for the transaction log file backed up with the <code>drmsqllogbackup</code> command. Use an absolute path to specify the directory name. Specify a location other than a primary volume containing databases and a secondary volume containing databases. If nothing is specified for the transaction log backup file storage directory, and the <code>drmsqllogbackup</code> command is executed, an error message appears, indicating that no parameters are set for the <code>drmsqlinit</code> command. If this message is displayed, use the <code>drmsqlinit</code> command to set the transaction log backup file storage directory.

Arguments

-v

Displays the registered parameters.

instance-name

Specify the name of the SQL Server instance to be backed up. If the instance to be backed up is the default, specify `DEFAULT`.

Return Values

0: Normal termination.

Any value other than 0: Termination with an error.

Examples

- In this example, the command sets up the instance SQL1:

```
PROMPT> drmsqlinit SQL1
KAVX1100-I Enter the name of the storage directory for VDI metafiles: D:\MSSQL\Meta
KAVX1101-I Enter the timeout interval for VDI generation (in seconds, between 0 and
3600): 10
KAVX1102-I Enter the name of the storage directory for undo files: D:\MSSQL\Undo
KAVX1107-I Enter the name of the storage directory for the backup-log
files: D:\MSSQL\tlog
KAVX1103-I SQL Server information has been updated.
PROMPT>
```

- In this example, the command displays the SQL1 parameters:

```
PROMPT> drmsqlinit -v SQL1
SQL Server meta directory name:      D:\MSSQL\Meta
SQL VDI timeout sec ( 0 - 3600 ):    10
SQL Server undo-file directory name: D:\MSSQL\Undo
SQL Server backup-log directory name: D:\MSSQL\Log
PROMPT>
```

2.10.5 drmsqllogbackup

This basic command backs up the transaction log of a SQL Server.

Formats

- To specify the instance and back up the transaction log:

```
drmsqllogbackup instance-name [ -no_cat ]
                        [ -no_truncate ]
                        [ -target database-name | -f target-definition-file-name ]
```

- To specify the backup ID and back up the transaction log:

```
drmsqllogbackup backup-ID [ -no_truncate ]
```

- To specify the instance and view a list of transaction log backups when the backup catalog exists:

```
drmsqllogbackup instance-name -v
                        [BACKUP-ID | -target database-name | -f target-definition-file-name ]
```

- To specify the instance and view a list of transaction log backups when the backup catalog does not exist:

```
drmsqllogbackup instance-name -no_cat -v
                        [ -target database-name | -f target-definition-file-name ]
```

- To specify the backup ID and view a list of transaction log backups when the backup catalog exists:

```
drmsqllogbackup backup-ID -v
                        [ -target database-name | -f target-definition-file-name ]
                        [-s log-backup-ID] [-e log-backup-ID]
```

- To delete transaction log backups when the backup catalog exists:

```
drmsqllogbackup backup-ID -d
[ -s log-backup-ID ] [ -e log-backup-ID ]
```

- To delete transaction log backups when the backup catalog does not exist:

```
drmsqllogbackup instance-name -d
[ -s log-backup-ID ] [ -e log-backup-ID ]
```

Description

The `drmsqllogbackup` command backs up the transaction log file of a SQL server database that was backed by using the `drmsqlbackup` command. Use the `drmsqlinit` command to set the directory to which this file is to be backed up. The backup file of the transaction log file will be named as follows:

```
database-name_yyyymmddhhmmss_log-backup-ID.bk
```

This backup ID is used to identify the number of times that the transaction log file has been backed up, for the backup data specified by the backup ID. This value is expressed as a four-digit number in decimal format (for example, 0001 or 1000).

Prerequisites

The following are the prerequisites for executing this command:

- The backup catalog acquired by the `drmsqlbackup` command must exist. (However, this is not required when the `-no_cat` option is specified for performing a transaction log backup.)
- The instance to be backed up must be running.
- The contents of the transaction log must not have been destroyed.
- The recovery model of the database must be Full or Bulk_Logged. (The recovery model Simple of the database is not included.)

Notes

- This command cannot be applied to the system databases (`master`, `msdb`, `model`, `tempdb`, and `distribution`).
- Once a database has been restored, the log backup for different recovery paths are mixed and displayed.

Arguments

instance-name

Specify the name of the SQL Server instance to be backed up. If the SQL Server instance to be backed up is the default, specify `DEFAULT`.

backup-ID

When deleting or displaying a transaction log file or backing up transaction logs, use this option to specify its backup ID.

Specify the latest backup ID when you back up a transaction log.

When the backup catalog that you want to specify is deleted and you cannot specify the backup ID, you can specify an original ID. Add `o:` before the original ID and specify the command arguments as well as the backup ID. The following shows examples:

- In this example, the command views information on the backups of the transaction log backup files with the original ID 0000000001:

```
PROMPT> drmsqllogbackup o:0000000001 -v
```

- In this example, the command deletes information on the backups of the transaction log backup files with the original ID 0000000001:

```
PROMPT> drmsqllogbackup o:0000000001 -d
```

-v

Specify this option to display a list of the transaction log files that were backed up. Information on the backups of the transaction log files acquired after the backup ID specified together will be displayed. You can take the information displayed by this option, and use it as a transaction log target definition file.

BACKUP-ID

Specify `BACKUP-ID` to display the backup IDs of the backups for the specified instance.

-no_truncate

Specify this to perform backup without truncating the transaction log. If the transaction log is not adversely affected even when failure occurs and database files are damaged, you can specify this option to obtain a backup of the transaction log.

-target *database-name(s)*

Specify this to display information about the database of the instance specified by *instance-name*. To display information about multiple databases, separate the name of each database with a comma. If you specify a database name containing a space character, enclose the database name in double quotation marks (").

-f *target-definition-file-name*

Specify this to display information about the database of the instance specified by *instance-name*. Unlike the `-target` option, you can use this option to view information about multiple files with one setting, so long as those files are already contained in a configuration file. Make sure that you specify the path of this configuration file as an absolute path. If you specify a target definition file name containing a space character, enclose the target definition file name in double quotation marks (").

-d

Specify this option to delete the backups of the acquired transaction log files.

-s *log-backup-ID*

Specify this option to set the start of the range of the transaction log backup files to be deleted or displayed. Use this option together with the `-e` option to specify the start and end of this range. Specifying the `-s` option alone sets the range from the backup ID that was specified with the `-s` option to the last log backup ID.

Possible log backup ID values are 0001 through 9999.

-e log-backup-ID

Specify this option to set the end of the range of the transaction log backup files to be deleted or displayed. Use this option with the `-s` option to specify the start and end of this range. Specifying the `-e` option alone sets the range from the first log backup ID to the log backup ID specified with the `-e` option.

Possible log backup ID values are 0001 through 9999.

-no_cat

Specify this option when performing a transaction log backup with a backup for which only remote backup has been performed, without backing up to local. If the `-v` option is used to display a transaction log backup obtained using this option, a hyphen (-) is displayed in `ORIGINAL-ID` and `BACKUP-ID`.

Return Values

0: Normal termination.

Any value other than 0: Termination with an error.

Examples

- In this example, the command backs up the transaction log file of the instance `DEFAULT`:

```
PROMPT> drmsqllogbackup DEFAULT
```

- In this example, the command displays information on the backups of the transaction log backup files with backup ID 0000000020 and with a log backup ID from 0001 to 0003:

```
PROMPT> drmsqllogbackup 0000000020 -v -s 0001 -e 0003
[userDB1]
C:\LogBackup\userDB1_20021106010101_0001.bk
C:\LogBackup\userDB1_20021106050101_0002.bk
C:\LogBackup\userDB1_20021106090101_0003.bk
[userDB2]
C:\LogBackup\userDB2_20021106010101_0001.bk
C:\LogBackup\userDB2_20021106050101_0002.bk
C:\LogBackup\userDB2_20021106090101_0003.bk
```

- In this example, the command deletes the backups of the transaction log backup files with backup ID 0000000020 and with a log backup ID from 0001 to 0003:

```
PROMPT> drmsqllogbackup 0000000021 -d -s 0001 -e 0003
```

- In this example, the command displays information on the backups of the transaction log backup files when two databases in the instance `default` have been backed up at different times with different backup IDs.

- Creating a transaction log target definition file:

Backup ID for the database `userDB1`: 0000000002

Backup ID for the database `userDB2`: 0000000003

```
PROMPT> drmsqllogbackup DEFAULT -v
# ORIGINAL-ID:0000000002 BACKUP-ID:0000000002 --> This line is handled as a comment
line.
[userDB1]
C:\LogBackup\userDB1_20021106010101_0001.bk
C:\LogBackup\userDB1_20021106050101_0002.bk
C:\LogBackup\userDB1_20021106090101_0003.bk
# ORIGINAL-ID:0000000003 BACKUP-ID:0000000003 -> This line is handled as a comment
line.
[userDB2]
C:\LogBackup\userDB2_20021106010101_0001.bk
C:\LogBackup\userDB2_20021106050101_0002.bk
C:\LogBackup\userDB2_20021106090101_0003.bk
PROMPT>
```

- In this example, the command lists information for the backup IDs for the instance:

```
PROMPT> drmsqllogbackup DEFAULT -v BACKUP-ID
ORIGINAL-ID BACKUP-ID DB
0000000002 0000000002 userDB1
0000000003 0000000003 userDB2
PROMPT>
```

- In this example, the command lists information for the backup IDs when multiple databases have been backed up at one time for the instance `default`:

```
PROMPT> drmsqllogbackup DEFAULT -v BACKUP-ID
ORIGINAL-ID BACKUP-ID DB
0000000002 0000000002 userDB1,userDB2 --> Displays comma-separated information.
0000000003 0000000003 userDB2
PROMPT>
```

- In this example, the command display the backup information of the transaction log obtained with the `-no_cat` option:

```
PROMPT>drmsqllogbackup -no_cat -v
# ORIGINAL-ID:- BACKUP-ID:-
[UserDB3]
C:\MSSQL\FLORA4\default\tlog\UserDB3_20040116163638_0001.bk
C:\MSSQL\FLORA4\default\tlog\UserDB3_20040116163640_0002.bk
# ORIGINAL-ID:- BACKUP-ID:-
[UserDB2]
C:\MSSQL\FLORA4\default\tlog\UserDB2_20040116163637_0001.bk
C:\MSSQL\FLORA4\default\tlog\UserDB2_20040116163640_0002.bk
# ORIGINAL-ID:- BACKUP-ID:-
[UserDB1]
C:\MSSQL\FLORA4\default\tlog\UserDB1_20040116163637_0001.bk
C:\MSSQL\FLORA4\default\tlog\UserDB1_20040116163640_0002.bk
```

- In this example, the command creates a transaction log target definition file (SQLTXLOG.txt) from the backup information of the transaction log:

```
PROMPT> drmsqllogbackup SQL1 -target DB1 -v > C:\temp\SQLTXLOG.txt
PROMPT>
```

- In this example, the command obtains a backup of the transaction log when the data files of the database are damaged:

```
PROMPT> drmsqllogbackup default -no_truncate
KAVX0001-I The drmsqllogbackup command will now start.
KAVX0002-I The drmsqllogbackup command will now end.
```

2.10.6 drmsqlrecover

This basic command recovers restored SQL Server databases.

Format

```
drmsqlrecover instance-name
    [ -target database-name | -f target-definition-file-name ]
    [ -transact_log_list name-of-target-definition-file-for-transaction-logs ]
    [ -undo ]
    [ -undo | -loading ]
```

Description

The `drmsqlrecover` command recovers a database restored by the `drmsqlrestore` command. This command applies transaction logs that are specified in a target definition file for transaction logs or acquired during backup, and performs roll-forward recovery processing.

During command execution, from another computer such as an application server, you should not connect to the database that was restored. If another server connects to the database during command execution, the command might fail.

Arguments

instance-name

Specify the database instance to be recovered. If the instance to be recovered is the default, specify `DEFAULT`.

-target *database-name(s)*

Specify this option to recover specific databases. When specifying multiple databases to be recovered, use a comma to separate each database name. If you specify a database name containing a space character, enclose the database name in double quotation marks ("").

When both this option and the `-f` option are omitted, the entire instance will be recovered.

-f *target-definition-file-name*

Like the `-target` option, this option restores specific databases during recovery. Unlike the `-target` option, this option lets you specify a target definition file that collectively specifies all the databases to be restored. The target definition file containing the list of databases must be created before you attempt to use this option. Use an absolute path name to specify the target definition file. If you specify a target definition file name containing a space character, enclose the target definition file name in double quotation marks (").

Make sure that you specify databases that exist in the instance specified by this option. If you specify databases in separate instances, those databases will not be recovered.

-transact_log_list *name-of-target-definition-file-for-transaction-logs*

Specify the order of the transaction log files to be applied during recovery. The order of these transaction log files is listed in the *name-of-target-definition-file-for-transaction-logs*. Make sure that you use an absolute path when specifying the file name. If you specify a *name-of-target-definition-file-for-transaction-logs* name containing a space character, enclose the *name-of-target-definition-file-for-transaction-logs* name in double quotation marks (").

The log to be applied differs, depending on the user operation. Confirm the backup log by using the `drmsqllogbackup` command, and then select the log to be applied.

If this option is omitted, recovery processing by roll-forward is not performed, since the transaction log is not applied. Therefore, the database will return to the latest backup status.

-undo

Specifies that the database should be put in standby mode, accessed as read-only, after recovery. Temporary files will be created for each database in the undo file storage directory specified by the `drmsqlinit` command. If the UNDO file storage directory has not been set using the `drmsqlinit` command, an error message appears, indicating that no parameters are set for the `drmsqlinit` command. Specify the UNDO file storage directory using the `drmsqlinit` command.

If both the `-undo` option and `-loading` option are omitted, the database can be fully accessed after recovery, but any subsequent transaction logs are not applied.

-loading

Specify this to place the database in the loading status after recovery. In this status, transaction logs can continue to be applied.

When the `-loading` option is specified, since no temporary files are created as with the `-undo` option, you do not need to create the temporary file storage directory beforehand.

If both the `-undo` option and `-loading` option are omitted, the database can be fully accessed after recovery, but any subsequent transaction logs are not applied.

Return Values

0: Normal termination.

Any value other than 0: Termination with an error.

Examples

- In this example, the command recovers the entire database identified by `SQLIns`:

```
PROMPT> drmsqlrecover SQLIns
```

- In this example, the command recovers only the database `DB01` from within the instance identified by `SQLIns`:

```
PROMPT> drmsqlrecover SQLIns -target DB01
```

2.10.7 drmsqlrevertool

This basic command recovers restored SQL Server databases via a GUI.

Format

```
drmsqlrevertool instance-name
```

Description

The `drmsqlrevertool` command uses a GUI to recover a SQL Server database that has been restored by the `drmsqlrestore` command.

Arguments

instance-name

Specify the name of the database instance to be recovered. If the SQL Server instance to be recovered is the default, specify `DEFAULT`.

GUI description

Figure 2.1 shows the `drmsqlrevertool` dialog box that is activated when the `drmsqlrevertool` command is executed. The items on the `drmsqlrevertool` dialog box are described below.

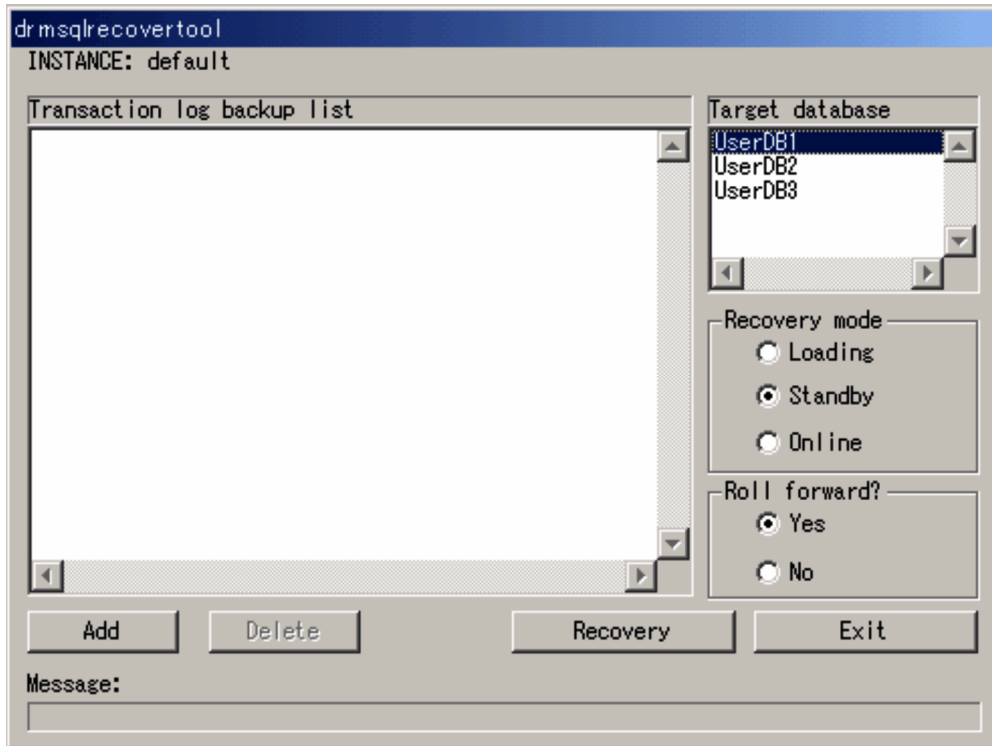


Figure 2.1 drmsqlrecovertool Dialog Box

INSTANCE

Displays the instance name specified for the `drmsqlrecovertool` command. The command will recover this instance. To change the instance, close the `drmsqlrecovertool` dialog box, and then re-execute the `drmsqlrecovertool` command.

Transaction log backup list

Displays a list of transaction log backup files that apply to the database selected in **Target database**. Use the **Add** button to add a file to this list. Use the **Delete** button to delete a file. The files shown in **Transaction log backup list** are sorted each time a new file is added.

A transaction log backup file is displayed in the following format:

```
[*] file-name creation-date-and-time (yyyy/mm/dd hh:mm:ss format) size (Unit: KB)
```

where *creation-date-and-time* is in the *yyyy/mm/dd hh:mm:ss* format, and *size* is in bytes.

An asterisk (*) is added at the beginning of the recovered file.

Target database

Displays the database for the instance specified for the `drmsqlrecovertool` command. Select the database to which the transaction log backup files apply. You cannot select more than one database.

The maximum number of databases that can be displayed is 128. If more than 128 databases exist, use the `drmsqlrecover` command to recover those databases that are not displayed.

Recovery mode

Loading: Changes the status of the database to loading.

Standby: Uses the database in the standby (read-only) mode.

Online: Uses the database in the read and write mode.

Database recovery is complete when the database status becomes **Online**. After recovery with **Online** checked, no transaction logs can be applied. Before bringing the database **Online**, make sure that you apply all necessary transaction logs.

Roll forward?

Select whether or not to perform a roll-forward during recovery. If **no** is selected, the **Transaction log backup list** becomes inactive. Recovery occurs without a roll forward, even when transaction log backup files are displayed.

Add button

Choose this button to add a transaction log file to be applied. This button adds the selected file to the files selected in **Transaction log backup list**. The files are sorted by name (not including file extensions and path names) and added.

You cannot add the following files:

- Network files (files whose path begins with `\\`).
- Files that already exist in **Transaction log backup list** (files do not include extensions and paths).

Delete button

Choose this button to delete a transaction log backup file selected in **Transaction log backup list**. You can select multiple backup files. All the selected files are deleted.

Recovery button

Choose this button to perform the roll-forward recovery on the database. Of the transaction log backup files shown in **Transaction log backup list**, roll-forward recovery will be performed on files without an asterisk (*) for the database selected in **Target database**, beginning from the top file. Roll-forward recovery is not performed on the files when **No** is selected for **Roll forward?**.

When the recovery finishes, an asterisk (*) is added to the beginning of all the file names in **Transaction log backup list**. If a recovery error occurs, the result is output to the message dialog box or `drm_output.log`.

EXIT button

Closes the `drmsqlrevertool` dialog box.

Message

Displays the progress of the command execution.

Return Values

None

Example

In this example, the command recovers the transaction log to the database for the instance SQLIns:

```
PROMPT> drmsqlrevertool SQLIns
```

2.10.8 drmsqlrestore

This basic command restores SQL Server databases from backups to a primary volume.

Format

- To restore data by disk resynchronization:

```
drmsqlrestore backup-ID -resync [ -force ][ -undo ][ -nochk_host ]  
[ -instance name-of-the-SQL-Server-instance ]  
[ -target database-name | -f target-definition-file-name ]  
[ -pf copy-parameter-definition-file]
```

- To apply only the metafile to the primary volume:

```
drmsqlrestore backup-ID -no_resync [ -undo ][ -nochk_host ]  
[ -instance name-of-the-SQL-Server-instance ]  
[ -target database-name | -f target-definition-file-name ]  
[ -pf copy-parameter-definition-file]
```

- To restore backup data on the remote site by resynchronization:

```
drmsqlrestore backup-ID -resync [ -force ][ -undo ][ -nochk_host ]  
[ -instance name-of-the-SQL-Server-instance ]  
[ -target database-name | -f target-definition-file-name ] [ -template ]  
[ -pf copy-parameter-definition-file]
```

- To apply only the metafiles to the primary volume of the remote site:

```
drmsqlrestore backup-ID -no_resync [ -undo ][ -nochk_host ]  
[ -instance name-of-the-SQL-Server-instance ]  
[ -target database-name | -f target-definition-file-name ] [ -template ]  
[ -pf copy-parameter-definition-file]
```

Description

The `drmsqlrestore` command lets you use the backup data specified by the backup ID to restore data from the secondary volume to the primary volume by disk resynchronization. The snapshot metafile created by the `drmsqlbackup` command is used for restoration processing.

The following explains the operation of this command for restoration by disk resynchronization:

1. If the restored database was attached, the database will be detached.
If the detachment of the database fails, an error message will be displayed, and restoration processing error occurs.
2. The backup data will be restored from the secondary volume to the primary volume by disk resynchronization.
3. The database will be attached.
4. The instance will be started.

The following explains the command processing for restoration in a cluster configuration. The database to be restored cannot be used temporarily since the cluster resource containing the database is placed offline:

1. The command places the cluster resource containing the database and the disk resource offline when the cluster resource containing the database to be restored is placed online.
If operations to place the cluster resource containing databases and disk resources offline fail, the command displays an error message and the restoration processing fails.
2. The command performs disk resynchronization to restore the backup data from a secondary volume to the primary volume.
3. The command places the disk resource online and then the cluster resource online.

If `ONLINE` is set in `CLU_MSCS_RESTORE` in the Protection Products configuration definition file (`init.conf`), you can perform restoration of a user database while the cluster resources are online by specifying the `-resync` option. In this case, the cluster resource that manages the instance to be restored cannot be placed offline. However, if the restoration target is a system database (`master`, `model`, `msdb`, or `distribution`) or a database that contains a system database, restoration will be performed offline.

In restoration, data on the primary volume is overwritten by the disk image of the secondary volume at the time backup is performed. Therefore, data on the primary volume that was created or updated after the backup is invalid.

When you attempt to restore a system database (`master`, `model`, `msdb`, or `distribution`) for SQL server, the SQL server service to be restored needs to be stopped to recover the system database. The database to be restored cannot be accessed temporarily.

During command execution, from another computer such as an application server, you should not connect to the database that was restored. If another server connects to the database during command execution, the command might fail.

When you restore a SQL Server system database, to recover the system database, temporarily stop the SQL Server service on which restore operations are to be performed. For this reason, temporarily, you cannot access the database on which restore operations are to be performed. Do not connect to the SQL Server during restoration. If you connect to a database that is being restored during command execution, the system repeats checking the processing status for the number of times specified in the Protection Production configuration definition file `init.conf` (in the retry count and retry interval used when checking the status of a processing parameter). In this case, if the user is disconnected during repeated checks of the processing status, the command resumes.

When you execute this command to perform restoration, if the name of the drive making up the SQL Server database has changed since backup was performed, the command will fail. Before performing restoration, with the `drmsqlcat` command or SQL Server Enterprise Manager, check the corresponding drive name of the restoration destination.

Arguments

backup-ID

Specify the backup ID of the backup data to be restored. A backup ID, which is used to uniquely identify backup data, is registered in the backup catalog during backup. To check a backup ID, execute the `drmsqlcat` command.

-resync

Specify this option to resynchronize the primary and secondary volumes for restoration. Backup data on the secondary volume is synchronized to the primary volume.

When you execute the command with this option, stop the service of any program viewing the Microsoft Windows performance registry.

-force

Specify this option to perform restoration by forced resynchronization of the primary and secondary volumes.

With this option, forced resynchronization is performed if the copy group name of the primary volume obtained when the backup processing was performed on the database server matches the information on the database server, even though the LDEV and SERIAL numbers do not match the LDEV and SERIAL numbers when the backup processing was performed.

Specify the `-force` option only if restoration by resynchronization could not be performed with the `-resync` option, such as when the LDEV number changes when the volume is replaced. If this option is specified under a normal restoration, data might be corrupted.

-undo

Specifies that the database should be restored in standby mode. When this option is specified, the database can be used as read-only once the restoration has finished. Temporary files will be created for each database in the undo file storage directory registered by the `drmsqlinit` command. If the UNDO file storage directory has not been set using the `drmsqlinit` command, an error message appears, indicating that no parameters are set for the `drmsqlinit` command. Specify the UNDO file storage directory using the `drmsqlinit` command.

When this option is omitted, a regular restoration is performed. In this case, the database will be placed in loading status once the restoration has finished, and will not be usable.

-nochk_host

Specify this option to restore the data to a host that differs from the one specified for the `drmsqlbackup` command. This option is useful when the host name has been changed, or the log-shipping functionality in Microsoft SQL Server 2000 Enterprise Edition or SQL Server 2005 is used.

Note: This option is not available when you restore a system database (master, model, msdb, or distribution).

Note: When you specify the `-nochk_host` option, confirm that backup data is restored on the appropriate host, because the validity of the host name in the backup catalog is not checked when restoring backup data.

-instance *name-of-the-SQL-Server-instance*

Specify this option to restore the data to a SQL Server instance that is different from the SQL Server instance on which you executed the `drmsqlbackup` command. If you specify `DEFAULT` as the SQL Server instance name, you will be connected to the preset instance of the SQL Server. If the restoration targets include a system database (master, model, msdb, or distribution), you cannot specify this option.

-target *database-name(s)*

Specify this to restore a particular database in the specified instance. The specified database needs to exist in the backup catalog specified by the backup ID. When databases that do not exist in the backup catalog are specified, those databases will not be restored. When specifying multiple databases to be restored at a time, use a comma to separate each database name. If you specify a database name containing a space character, enclose the database name in double quotation marks (").

When both this option and the `-f` option are omitted, the entire instance specified by the backup ID will be restored.

-f *target-definition-file-name*

Like the `-target` option, this option restores an instance containing specific databases. Unlike the `-target` option, this option lets you specify a target definition file that collectively specifies all the databases to be restored. The target definition file containing the list of databases must be created before you attempt to use this option. Use an absolute path name to specify the target definition file. If you specify a target definition file name containing a space character, enclose the target definition file name in double quotation marks (").

When both this option and the `-target` option are omitted, all the objects included in the instance specified by the backup ID will be restored.

-no_resync

Specify this option if you want to apply only the metafiles for the data on the primary volume, without performing restoration processing or backing up data from the secondary volume to the primary volume. Use this option when the restore operation cannot be performed with the `drmsqlrestore` command (for example, when restoring backup data directly from the tape to the primary volume because of a disk failure).

-template

Specify this option to perform restore operations by using a backup catalog that was created by executing the `drmsqlbackup` command with the `-template` option specified. The `START-TIME` and `END-TIME` of a template catalog specified with the `-template` option are the times at which creation of the template catalog started and finished.

-pf *copy-parameter-definition-file*

Specify this option when using the number of retries and the retry interval defined in the copy parameter definition file. Specify only the file name, without specifying the path.

When you omit this option, the value of the RAID Manager-linkage definition file (`DEFAULT.dat`) is used. The value of the RAID Manager-linkage definition file (`DEFAULT.dat`) is used for parameters that are not coded in the copy parameter definition file.

Create the copy parameter definition file with an arbitrary name in the following location. Specify the file name using alphanumeric characters totaling up to 64 bytes.

<code>Protection-Products-installation-directory\conf\raid</code>

Notes

- Specify all the databases that are contained in the logical volume to be restored. If this option is not specified, a command error occurs.
- When you specify this command on the SQL Server database whose name has been changed, make sure that the SQL Server database to be restored is detached. If the SQL Server database is restored without detach processing, the command fails and the SQL Server database might not be able to be used after restoration. If a SQL Server database becomes unusable, detach the database, and then restore it again.
- The backup information in the backup catalog is managed based on using the copy group as a key. Depending on the backup method, you might not be able to perform restoration, even though the backup data exists on the secondary volume.

For further information, see the notes on running Protection Manager programs in the *HiCommand Protection Manager User's Guide (MK-94HC070)*.

- After a database is restored, the owner of the database is changed to the user who performed the restoration. To change the owner, use SQL Server Enterprise Manager to attach the database again, or use the `sp_changedbowner` system stored procedure.
- When the `drmsqlrestore` command executes, it uses SQL Server with minimum startup. If the Windows firewall functionality has been set up in the database server, then when the `drmsqlrestore` command executes to restore databases that include the system databases (master, model, and msdb), a dialog box might be displayed asking if the OS firewall is to block SQL Server communication. If this dialog box is displayed, select **Do not block**. The `drmsqlrestore` command will continue processing without problems even if you do not respond to this dialog box.

Return Values

0: Normal termination.

Any value other than 0: Termination with an error.

Examples

- In this example, the command restores, by disk resynchronization, the backup data identified by the backup ID 0000000001:

```
PROMPT> drmsqlrestore 0000000001 -resync
```

- In this example, the command, using the template catalog, restores the backup data identified with backup ID 0000000002.

```
PROMPT> drmsqlrestore 0000000002 -resync -nochk_host -template
KAVX0001-I drmsqlrestore command will now start.
KAVX1316-I Performing restore pre-processing...
KAVX1000-I Logged on to the SQL Server system.
KAVX1300-I Restore processing will now start.
KAVX1000-I Logged on to the SQL Server system.
KAVX1301-I Restore processing has finished.
KAVX1318-I Performing restore post-processing...
KAVX1001-I Logged off from the SQL Server system.
KAVX0002-I drmsqlrestore command will now end.
```

- In this example, the command assumes the SQL Server instance at backup is `instA` and the SQL Server instance at the restoration destination is `instB`, and it restores the backup data of the secondary volume identified with backup ID 0000000003:

```
PROMPT> drmsqlrestore 0000000003 -no_resync -nochk_host -instance instB
```

2.11 Basic Commands for Backing Up an Exchange Database

2.11.1 drmexgbackup

This basic command backs up a storage group to a secondary volume.

Format

- To perform cold backup (Exchange 2000 Server or Exchange Server 2003):

```
drmexgbackup [-mode cold]
  [-target storage-group-name | -f target-definition-file-name ]
  [-rc [ name-identifying-the-generation]] [-pf copy-parameter-definition-file]
  [-transact_log_del ] [-c { offline | online }]
  [-event_check ] [-comment backup-comment ]
  [-script user-script-file-name ]
  [-s backup-server-name
  [-auto_import
    [-auto_mount [ mount-point-directory-name ]]
  ]
  [-svol_check ]
]
```

- To perform online backup (Exchange 2000 Server or Exchange Server 2003):

```
drmexgbackup -mode online
  [-target storage-group-name | -f target-definition-file-name ]
  [-rc [ name-identifying-the-generation]] [-pf copy-parameter-definition-file]
  [-event_check ] [-comment backup-comment ]
  [-script user-script-file-name ]
  [-s backup-server-name
  [-auto_import
    [-auto_mount [ mount-point-directory-name ]]
  ]
  [-svol_check ]
]
```

- To perform backup using VSS (Exchange Server 2003):

```
drmexgbackup -mode vss
  [-target storage-group-name | -f target-definition-file-name ]
  [-rc [ name-identifying-the-generation]] [-pf copy-parameter-definition-file]
  [-transact_log_del | -noverify | -noverify_log_del ]
  [-event_check ] [-comment backup-comment ]
  [-vf VSS-definition-file-name]
  [-script user-script-file-name ]
  [-s backup-server-name
  [-auto_import
    [-auto_mount [ mount-point-directory-name ]]
  ]
  [-svol_check ]
]
```

- To perform backup using VSS (Exchange Server 2007):

```
drmexgbackup -mode vss
  [-target storage-group-name | -f target-definition-file-name ]
  [-rc [ name-identifying-the-generation ]] [-pf copy-parameter-
definition-file ]
  [-transact_log_del | -noverify | -noverify_log_del ]
  [-comment backup-comment ]
  [-vf VSS-definition-file-name ]
```

```

[ -script user-script-file-name ]
[ -s backup-server-name
  [ -auto_import
    [ -auto_mount [ mount-point-directory-name ] ]
  ]
[ -svol_check ]
]

```

Description

The `drmexgbackup` command backs up the storage group of a primary volume to a secondary volume. If Exchange 2000 Server or Exchange Server 2003 Standard Edition is used, the command backs up the entire database. If Exchange 2000 Enterprise Server, Exchange Server 2003 Enterprise Edition, or Exchange Server 2007 is used, the command backs up the entire database or in units of storage groups.

Before you execute the `drmexgbackup` command, make sure that the database files and log files are stored in separate copy groups.

Before this command is executed, the system cache of the secondary volume must be cleared. Mount or unmount the secondary volume on the backup server to clear the system cache.

When the `drmexgbackup` command is executed in a local site, and the pair status is SMPL, the command does not automatically create a pair. In such a case, if the `PAIR_CREATE` parameter in the RAID Manager-linkage definition file (`DEFAULT.dat`) is set to `ENABLE`, the command automatically creates a pair.

After installation, if the `drmexgbackup` command is executed without executing the `drmexgdisplay` command with the `-refresh` option specified, and no dictionary map file is created, a dictionary map file is created using the `drmexgbackup` command. In this case, the processing time required to create the dictionary map file is added to the time required to execute the backup command.

Backup can only be performed for files described in Table 2.26.

Table 2.26 File for Which Exchange Server Storage Group Backup Can Be Performed

Option	Database to be Backed Up	File to be Backed Up	
The target file type is fixed	Exchange Server storage groups	Data files	*.edb *.stm#
		Transaction log file	*.log
		Checkpoint files	*.chk

#

Files with this extension do not exist on Exchange Server 2007.

Arguments

-mode cold

Specify this option to perform a cold backup by using Protection Manager for Exchange (2000/2003 version). Since the cold backup dismounts the Information Store to be backed up, this Information Store cannot be accessed until the backup finishes.

-mode online

Specify this option to perform an online backup by using Protection Manager for Exchange (2000/2003 version). Unlike a cold backup, this option performs a backup without performing the following:

- Mounting and unmounting the Information Store.
- Switching the cluster resource (online and offline) in a cluster environment.
- Mounting and unmounting the disk drive.

After performing a backup with this option, use the `drmexgverify` command to verify the integrity of the backup data.

-mode vss

Specify this option to perform backup by using VSS. The Exchange database to be backed up is either Exchange Server 2003 or Exchange Server 2007.

To use this option, the Protection Manager service must be running on the backup server.

Note: The online backup, when used together with the `-mode online` option, forcibly copies the target data from the primary volume to the secondary volume without unmounting the Information Store. The restore operation might fail if an online backup is performed during a database update, since backup data might have been obtained with inconsistent database files. Thus, if you want to perform an online backup, first perform a cold backup to confirm that the necessary backup data is saved.

-target storage-group-name(s)

Specify this option to back up the database resource containing the specific storage group. However, the minimum unit for backup is a physical volume. If a single physical volume contains multiple storage groups, specify all the storage groups. If you specify only some of the storage groups, a command error occurs.

When specifying multiple storage groups to be backed up, use a comma to separate each storage group name. Use double quotation marks to enclose all storage group names that contain at least one space character.

If this option is omitted, all storage groups on the server will be backed up.

-f target-definition-file-name

Like the `-target` option, this option performs a backup related to specific storage groups. Make sure that you specify this option or the `-target` option when multiple storage group information data files exist on one physical volume.

Unlike the `-target` option, however, the `-f` option lets you specify a target definition file that collectively specifies all the storage groups for which backup is to be performed. The target definition file containing the list of storage groups must be created before you use this option. Use an absolute path name to specify the target definition file.

-rc name-identifying-the-generation

Use this option to specify the name identifying the generation of the copy group to be backed up. Execute the `drmexgdisplay` command with the `-cf` option, and specify the displayed `GEN-NAME` value. In a single volume, a hyphen (-) appears. In this case, you cannot specify the `-rc` option.

Always specify this option when backing up from a primary volume to a secondary volume on the remote side. If this option is omitted, the secondary volume on the local side is backed up.

When you omit *name-identifying-the-generation*, the secondary volume that has the smallest value among the generation numbers on the remote-side becomes the backup destination. In this case, the generation number is `remote_n`, where *n* is the smallest generation number.

-pf copy-parameter-definition-file

Specify this option when using the number of retries and the retry interval defined in the copy parameter definition file. Specify only the file name, without specifying the path.

When you omit this option, the value of the RAID Manager-linkage definition file (`DEFAULT.dat`) is used. The value of the RAID Manager-linkage definition file (`DEFAULT.dat`) is used for parameters that are not coded in the copy parameter definition file.

Create the copy parameter definition file with an arbitrary name in the following location. Specify the file name using alphanumeric characters totaling up to 64 bytes.

```
Protection-Products-installation-directory\conf\raid
```

-transact_log_del

Specify this option to delete the committed transaction log files.

When this command is executed, the transaction log file is deleted. This means that you will no longer be able to use the `-recovery` option to perform restoration from backups already performed.

This option is not valid when wrap-around logs are being used. For more information about wrap-around logs, see the Exchange 2000 Server manual.

When this option is specified for cold backups with cluster configurations, make sure that you also specify the `-c online` option.

-noverify

Specify this option if you do not verify the integrity of a database that is backed up by using VSS.

-noverify_log_del

Specify this option if you delete a transaction log file after backing up a database that is backed up by using VSS without verifying its integrity.

-c { offline | online }

In a cluster environment, specify `-c offline` to perform offline backup of the cluster resources of a physical disk. To perform backup while online, specify `-c online`. The default for this option is `-c offline`.

Specify `-c online` together with the `-target` or `-f` option when you want to execute this command. A storage group that is not to be backed up might be unmounted when you specify `-c offline`.

This option is not valid for environments other than cluster environments.

-event_check

Specify this option to check if an event log, which indicates that a database is corrupt, has been recorded or not by using Protection Manager for Exchange (2000/2003 version) to retrieve the event log of Exchange 2000 Server, Exchange 2000 Enterprise Server, or Exchange Server 2003. You cannot specify this option when using Protection Manager for Exchange 2007.

The target event log files to be retrieved are ones that were recorded after the last backup for the Exchange database. If the result of the previous backup does not exist, all the event logs recorded are retrieved. Retrieval of an event log is performed before resynchronizing a pair. If an event is detected indicating that a database is corrupt, an error message is displayed, and then the command terminates in error.

Protection Products determine that the database is corrupt when the following event is detected:

- Event category: Application
- Type: Error
- Source: ESE
- Event ID: No limitation
- Character string being included: "-1018", "-1019", or "-1022"

-comment *backup-comment*

Specify this argument to register a backup comment in the backup catalog.

The *backup-comment* value can be a string of up to 64 bytes, consisting of alphanumeric, special, one-byte space, and multi-byte characters. The backup comment is case-sensitive. When a special character, or a one-byte space character is used, the entire backup-comment string must be enclosed in double quotation marks (""). If the backup-comment string contains a special character but is not enclosed in double quotation marks, the special character is not properly handled as a part of the backup-comment string and is parsed as a special character.

The following special characters cannot be used for backup comments:

\ / ` | < > " * ? & ; ()

Note: The first character must not be a hyphen (-). If you specify two double quotation marks after the `-comment` option, as in `-comment ""`, no backup comment will be registered in the backup catalog.

-vf *VSS-definition-file-name*

Specify this option to switch the settings to be used for each VSS backup. You can use this option only when using VSS for backup. For *VSS-definition-file-name*, specify a file name only. Do not specify the folder name. The VSS definition file specified in this option must be stored in the following folder:

`Protection-Products-installation-directory\conf\vss`

If you omit this option, the command uses the following file as the VSS definition file:

`Protection-Products-installation-directory\conf\vsscom.conf`

For details about the VSS definition file, see the manual *HiCommand Protection Manager User's Guide*.

-script *user-script-file-name*

Specify this option to execute a user script. Use an absolute path name to specify *user-script-file-name*. Conditions for specifying *user-script-file-name* are as follows:

- Maximum number of bytes: 255
- Available characters: Characters that can be used in a file name in Windows. If the name contains one or more space characters, the entire name string must be enclosed in double quotation marks ("").

For details on coding used for a user script file, see the explanation on how to create a user script in the *HiCommand Protection Manager User's Guide*.

If you specified `LOCATION=REMOTE` in the user script file, you must also specify the `-s` option.

-s *backup-server-name*

Specify this option to connect to a remote backup server to perform a backup. Specify the host name or the IP address of the backup server by using a character string that is no more than 255 bytes.

If you specify the backup server name in the `-s` option, the backup server names specified in the VSS definition file (`vsscom.conf`) and the VSS definition file specified in the `-vf` option will become invalid, and the backup server name specified in the `-s` option will be used.

-auto_import

Specify this option to automatically transfer a backup catalog to a backup server after completing a volume backup. This option must be specified concurrently with the `-s` option.

-auto_mount *mount-point-directory-name*

Specify this option to automatically mount a secondary volume on a backup server after completing a volume backup. This option must be specified concurrently with the `-s` and `-auto_import` options.

Specify *mount-point-directory-name* by using no more than 64 bytes of characters.

If you omit *mount-point-directory-name*, a mount destination for a secondary volume is automatically specified. Apply the same rule as when a mount point is not explicitly specified in the `drmmount` command.

To unmount the mounted secondary volume, use the `drmumount` command.

-svol_check

Specify this option to check the status of a secondary volume on a backup server. This option must be specified concurrently with the `-s` option. Checking the status of a secondary volume prevents backup or restoration failures. Items, targets, and conditions to be checked are as follows:

Table 2.27 Status Check of a Secondary Volume

Check items	Volume to be checked	Check conditions
A secondary volume is hidden from a backup server	All secondary volumes defined for a backup-target primary volume	Checked when a primary volume is defined in pairs with multiple generations of secondary volumes and if either of the following items is applicable: <ul style="list-style-type: none"> - A primary volume is a cluster resource. - A primary volume is a dynamic disk. - A backup using VSS is performed.
A secondary volume is not mounted on a backup server	A secondary volume to be the next backup destination	Always checked.

Notes

- Make sure no other volume is mounted on the directory of the volume to be backed up in an online backup.
- The backup information in the backup catalog is managed based on using the copy group as a key. Depending on the backup method, you might not be able to perform restoration, even though the backup data exists on the secondary volume. For further information, see the notes on running Protection Manager programs in the *HiCommand Protection Manager User's Guide (MK-94HC070)*.
- When specifying on the command line a file name or directory name containing space characters for the `-target` or `-f` option, you must enclose the file name in double quotation marks ("").
- Enclosing with double quotation marks is not necessary for target path names specified in batch definition files.

Return Values

0: Normal termination.

Any value other than 0: Termination with an error.

Examples

- In this example, the command performs an online backup for the entire database on the specific Exchange Server:

```
PROMPT> drmexgbackup
KAVX0001-I The drmexgbackup command will now start.
KAVX1600-I Backup processing will now start.
KAVX0040-I The backup ID has been assigned as follows:
backup-ID = 0000000001
KAVX1601-I Backup processing has finished.
KAVX0002-I The drmexgbackup command will now end.
```

- In this example, the command performs a cold backup for the storage group STR1:

```
PROMPT> drmexgbackup -target STR1 -mode cold
KAVX0001-I The drmexgbackup command will now start.
KAVX1805-I The information store will now be dismounted.
Storage group name = STR1
KAVX1600-I Backup processing will now start.
KAVX0040-I The backup ID has been assigned as follows:
Backup ID = 0000000001
KAVX1601-I Backup processing has finished.
KAVX1806-I The information store will now be mounted.
Storage group name = STR1
KAVX0002-I The drmexgbackup command will now end.
```

- In this example, the command performs a cold backup for the storage groups specified in the target definition file `C:\temp\BACKUP_DB.txt`:

```
PROMPT> drmexgbackup -mode cold -f C:\temp\BACKUP_DB.txt
KAVX0001-I The drmexgbackup command will now start.
KAVX1805-I The information store will now be dismounted.
           Storage group name = STR1
KAVX1805-I The information store will now be dismounted.
           Storage group name = STR2
KAVX1805-I The information store will now be dismounted.
           Storage group name = STR3
KAVX1600-I Backup processing will now start.
KAVX0040-I The backup ID has been assigned as follows:
           Backup ID = 0000000001
KAVX1601-I Backup processing has finished.
KAVX1806-I The information store will now be mounted.
           Storage group name = STR1
KAVX1806-I The information store will now be mounted.
           Storage group name = STR2
KAVX1806-I The information store will now be mounted.
           Storage-group-name = STR3
KAVX0002-I The drmexgbackup command will now end.
```

- In this example, the command uses VSS for backup:

```
PROMPT> drmexgbackup -mode vss
KAVX0001-I Starting the drmexgbackup command.
KAVX0256-I Connecting to the Protection Manager Service is performed.
           Host name = BackupServer
KAVX1600-I Backup processing will now start.
KAVX1610-I Verification of the database on the backup server will now be performed.
           Storage group name = STR1
           File size = 6532 [MB]
KAVX1611-I Verification has finished successfully.
KAVX0040-I The backup ID has been assigned as follows.
           Backup ID = 0000000001
KAVX1601-I Backup processing has finished.
KAVX0002-I The drmexgbackup command will now end.
```

2.11.2 drmexgcat

This basic command displays backup information for a storage group.

Format

```
drmexgcat [ -target storage-group-name | -f target-definition-file-name ]
          [ -transact_log ][ -datafile ]
          [ -device device-file-name ][ -l ][ -v ]
          [ -backup_id backup-ID ][ -hostname host-name ]
          [ -comment backup-comment ]
```

Description

The `drmexgcat` command displays the backup information of the storage group on the server where the command is executed. The displayed items are shown in Table 2.28. Each item is separated by a space. A hyphen (-) is displayed for any item that cannot be displayed. If none of the items can be displayed, an error message is displayed.

Table 2.28 Items Displayed by drmexgcat Command

Displayed Item	Meaning
STORAGEGROUP	Storage group name.
BACKUP-COMMENT	Backup comment.
BACKUP-ID	Backup ID.
BACKUP-MODE	Backup mode.
ORIGINAL-ID	Original backup ID obtained by the <code>drmexgbackup</code> command.
START-TIME	Start time of backup.
END-TIME	End time of backup.
HOSTNAME	Name of the server where the snapshot backup was performed.
T	Object type: M: Mailbox store P: Public folder store T: Transaction log file C: Checkpoint file
OBJECT	A type of Exchange Server object and its name: MAILBOXSTORE: Mailbox store name PUBLICSTORE: Public folder store name TRANSACT: Transaction log file name CHECKPOINT: Checkpoint file name
INFORMATIONSTORE	Information store name .
FILE#1	File name. When using Exchange Server 2007, the following points differ between Exchange 2000 Server and Exchange Server 2003. <ul style="list-style-type: none"> ▪ Data files (*.stm) do not exist and, therefore, are not displayed. ▪ Information related to transaction log files (*.log) is not displayed for each file. Instead, the information for all files is displayed together in the following format: <i>mount-point-directory-name\storage-group-name\E00*.log</i>.
FS	Mount point directory name.
FSTYPE	File system type (NTFS) .
DG	The name of the disk group (for an environment with a logical volume manager), or a hyphen (-) (for a basic disk configuration).
LVM-DEVICE	The name of the logical device file (for an environment with a logical volume manager) or GUID (for an environment without a logical volume manager).
DEVICE#2	<code>Harddiskn</code> (where <i>n</i> is an integer). When this command is executed with the <code>-device</code> option specified, this information will be displayed after <code>OBJECT</code> .
COPY-GROUP	Copy group name, displayed as follows: RAID Manager volume group name, paired volume name .
PORT#	Port name on the host server.
TID#	Target-ID on the host server.
LUN#	Logical unit number on host server.

Displayed Item	Meaning
MU#	Pair ID.
LDEV#	Logical device number inside the RAID device.
P/S	A letter identifying the primary or secondary volume: P: Primary volume S: Secondary volume
SERIAL#	Serial number inside the RAID device
VIRTUAL-SERVERNAME# ³	Virtual server name (value of the <code>DRM_HOSTNAME</code> environment variable). The command executed with the <code>-v</code> option displays this information.
DB-PATH# ³	Name of the directory storing the backup catalog. The command executed with the <code>-v</code> option displays this information.
CATALOG-UPDATE-TIME# ³	Time when the backup catalog was created. The command executed with the <code>-v</code> option displays this information.

Arguments

-target *storage-group-name(s)*

Specifies that information relating to certain storage groups is to be displayed. When specifying multiple storage groups to be displayed, use a comma to separate each group name. Use double quotation marks to enclose all storage group names that contain at least one space character.

-f *target-definition-file-name*

Specify this option to display information about specific storage groups. Unlike the `-target` option, this option lets you specify a target definition file that collectively specifies all the storage groups for which information is to be displayed. The target definition file containing the list of storage groups must be created before you attempt to use this option. Use an absolute path name to specify the target definition file.

-transact_log

Specifies that only information relating to the transaction log file is to be displayed. This option will display the following information:

- The name of the transaction log file.
- File system information.
- Logical volume structure information.
- Physical disk information.

When you specify this option with the `-target` option or `-f` option, only information pertaining to the transaction log of the specified storage group will be displayed when this option is specified. If either the `-target` or the `-f` option is omitted, information pertaining to all transaction logs of all storage groups will be displayed.

-datafile

Specifies that only information relating to the data file is to be displayed. This option will display the following information:

- The name of the data file.
- File system information.
- Logical volume structure information.
- Physical disk information.

When you specify this option with the `-target` option or `-f` option, only information pertaining to the data file of the specified storage group will be displayed when this option is specified. If either the `-target` or the `-f` option is omitted, information pertaining to all data files of all storage groups will be displayed.

-device *device-file-name*

Specifies that only information relating to the device file is to be displayed. This option will display the following information:

- The name of the storage group.
- File system information.
- Physical disk information.
- Logical volume information.

-l

Specifies that storage group information is to be displayed in the long format.

-v

Specify this option to display management information for the backup catalog. The following information is displayed:

- Name of the directory storing the backup catalog.

Displays the path that is set in `DRM_DB_PATH` in the Protection Manager configuration definition file (`init.conf`).

If `DRM_DB_PATH` has not been set, the default storage directory for a dictionary map file, which is created automatically during installation, is displayed.

- Virtual server name (value of the `DRM_HOSTNAME` environment variable).

If the `DRM_HOSTNAME` environment variable has not been set, a hyphen (-) appears.

- Time when the backup catalog was created.

For each backup ID, displays the time when the backup catalog was created.

-backup_id *backup-ID*

Specify this argument when you want to display only the backup information of a specific backup ID. A backup ID uniquely identifies backup data and is registered in the backup catalog during the backup processing. To check a backup ID, execute the `drmexgcat` command.

-hostname *host-name*

Specify this argument to display only information pertaining a specific host.

-comment *backup-comment*

Specify this argument to display only information on a specific backup comment.

The *backup-comment* value is case insensitive.

You can specify a wildcard (*) as the value of *backup-comment*. You can specify a string by using only the first few characters (specifying a few specific characters at the beginning of the string, and not designating any particular characters for the rest of the string—such as in the specification `XYZ*`). When a wildcard, special character, or one-byte space character is used, the entire backup-comment string must be enclosed in double quotation marks ("). If the backup-comment string contains a special character but is not enclosed in double quotation marks, the special character is not properly handled as a part of the backup-comment string and is parsed as a special character. If you specify `-comment "*"` , the command will display all backup catalogs.

If two double quotation marks are specified after the `-comment` option (as in: `-comment ""`), a message is displayed indicating that no backup data exists.

Notes

- When specifying on the command line a file name or directory name containing space characters for the `-target` or `-f` option, you must enclose the file name in double quotation marks (").
- Enclosing with double quotation marks is not necessary for target path names specified in batch definition files.

Return Values

0: Normal termination.

Any value other than 0: Termination with an error.

Examples

- In this example, the command outputs information about the Information Store specified in the storage group STR1 that was backed up in the online backup mode:

```
PROMPT> drmexgcat -target STR1
STORAGEGROUP: STR1
BACKUP-ID: 000000001 BACKUP-MODE: ONLINE STORAGEGROUP: STR1 ORIGINAL-ID: 000000001
START-TIME: 2002/06/01 10:00:00 END-TIME: 2002/06/01 10:01:00 HOSTNAME: EXG_SRV1
T OBJECT          INFORMATIONSTORE  FILE                FS      DG      DEVICE            COPY-GROUP
M MAILBOXSTORE    MAILBOX1 (STR1)  D:\STR1\priv1.edb  D:      -      Harddisk1         VG01,dev01
- -              -                -                  -      -      -                 VG01,dev01
M MAILBOXSTORE    MAILBOX1 (STR1)  D:\STR1\priv1.stm  D:      -      Harddisk1         VG01,dev01
- -              -                -                  -      -      -                 VG01,dev01
P PUBLICSTORE     PUBLIC1 (STR1)   D:\STR1\pub1.edb   D:      -      Harddisk1         VG01,dev01
- -              -                -                  -      -      -                 VG01,dev01
P PUBLICSTORE     PUBLIC1 (STR1)   D:\STR1\pub1.stm   D:      -      Harddisk1         VG01,dev01
- -              -                -                  -      -      -                 VG01,dev01
T TRANSACT        -                E:\STR1\E00.log    E:      -      Harddisk2         VG01,dev02
- -              -                -                  -      -      -                 VG01,dev02
T TRANSACT        -                E:\STR1\E000001.log E:      -      Harddisk2         VG01,dev02
- -              -                -                  -      -      -                 VG01,dev02
T TRANSACT        -                E:\STR1\E000002.log E:      -      Harddisk2         VG01,dev02
- -              -                -                  -      -      -                 VG01,dev02
T TRANSACT        -                E:\STR1\E000003.log E:      -      Harddisk2         VG01,dev02
- -              -                -                  -      -      -                 VG01,dev02
C CHECKPOINT      -                E:\STR1\E00.chk    E:      -      Harddisk2         VG01,dev02
- -              -                -                  -      -      -                 VG01,dev02
```

- In this example, the command outputs information, in the long format, about the Information Store specified in storage group STR1:

```
PROMPT> drmexgcat -target STR1 -l
STORAGEGROUP: STR1
BACKUP-ID:0000000001 BACKUP-MODE: COLD STORAGEGROUP: STR1 ORIGINAL-ID: 0000000001
START-TIME: 2002/06/01 10:00:00 END-TIME: 2002/06/01 10:01:00 HOSTNAME: EXG_SRV1
T OBJECT          INFORMATIONSTORE  FILE          FS          FSTYPE      DG
LVM-DEVICE
LUN# MU# LDEV# P/S SERIAL#
M MAILBOXSTORE MAILBOX1 (STR1)      D:\STR1\priv1.edb      D:          NTFS        -
\\?\Volume{2ef9993f-803e-11d7-96ae-0000e26ac10d}\ Harddisk1  VG01,dev01  CLI-A  0    0
0    10000 P    15044
- - -
-          VG01,dev01  CLI-B  1    10    0    10010 S    15044
M MAILBOXSTORE MAILBOX1 (STR1)      D:\STR1\priv1.stm      D:          NTFS        -
\\?\Volume{2ef9993f-803e-11d7-96ae-0000e26ac10d}\ Harddisk1  VG01,dev01  CLI-A  0    0
0    10000 P    15044
- - -
-          VG01,dev01  CLI-B  1    10    0    10010 S    15044
P PUBLICSTORE  PUBLIC1 (STR1)      D:\STR1\pub1.edb      D:          NTFS        -
\\?\Volume{2ef9993f-803e-11d7-96ae-0000e26ac10d}\ Harddisk1  VG01,dev01  CLI-A  0    0
0    10000 P    15044
- - -
-          VG01,dev01  CLI-B  1    10    0    10010 S    15044
P PUBLICSTORE  PUBLIC1 (STR1)      D:\STR1\pub1.stm      D:          NTFS        -
\\?\Volume{2ef9993f-803e-11d7-96ae-0000e26ac10d}\ Harddisk1  VG01,dev01  CLI-A  0    0
0    10000 P    15044
- - -
-          VG01,dev01  CLI-B  1    10    0    10010 S    15044
T TRANSACT    -                  E:\STR1\E00.log      E:          NTFS        -
\\?\Volume{2ef9993d-803e-11d7-96ae-0000e26ac10d}\ Harddisk1  VG01,dev02  CLI-A  0    1
0    10001 P    15044
- - -
-          VG01,dev02  CLI-B  1    11    0    10011 S    15044
T TRANSACT    -                  E:\STR1\E000001.log  E:          NTFS        -
\\?\Volume{2ef9993d-803e-11d7-96ae-0000e26ac10d}\ Harddisk1  VG01,dev02  CLI-A  0    1
0    10001 P    15044
- - -
-          VG01,dev02  CLI-B  1    11    0    10011 S    15044
T TRANSACT    -                  E:\STR1\E000002.log  E:          NTFS        -
\\?\Volume{2ef9993d-803e-11d7-96ae-0000e26ac10d}\ Harddisk1  VG01,dev02  CLI-A  0    1
0    10001 P    15044
- - -
-          VG01,dev02  CLI-B  1    11    0    10011 S    15044
T TRANSACT    -                  E:\STR1\E000003.log  E:          NTFS        -
\\?\Volume{2ef9993d-803e-11d7-96ae-0000e26ac10d}\ Harddisk1  VG01,dev02  CLI-A  0    1
0    10001 P    15044
- - -
-          VG01,dev02  CLI-B  1    11    0    10011 S    15044
C CHECKPOINT  -                  E:\STR1\E00.chk      E:          NTFS        -
\\?\Volume{2ef9993d-803e-11d7-96ae-0000e26ac10d}\ Harddisk1  VG01,dev02  CLI-A  0    1
0    10001 P    15044
```

2.11.3 drmexgdisplay

This basic command displays or updates information for storage groups.

Format

- To display the information for a storage group:

```
drmexgdisplay [ -target storage-group-name | -f target-definition-file-name ]
               [ -transact_log ][ -datafile ][ -v ]
               [ -device device-file-name ][ -l ][ -cf ]
```

- To update the dictionary map file to the latest status:

```
drmexgdisplay [ storage-group-name ] -refresh [ -coremap ]
```

Description

The `drmexgdisplay` command does the following:

1. Displays resource information for the storage groups on the server on which the command was executed.
2. Displays resource information for all of the optional storage groups on the server on which the command was executed.
3. Updates the storage group information in the dictionary map file. Execute this command before performing a backup.

The items displayed in 1 and 2 appear in Table 2.29. Each item is separated by a space. A hyphen (-) is displayed for any item that cannot be displayed. If none of the items can be displayed, an error message is displayed.

Table 2.29 Items Displayed by `drmexgdisplay` Command

Displayed Item	Meaning
STORAGEGROUP	Storage group name.
T	Object type: M: Mailbox store P: Public folder store T: Transaction log file C: Checkpoint file
OBJECT	A type of Exchange Server object and its name: MAILBOXSTORE: <i>mailbox-store-name</i> PUBLICSTORE: <i>public-folder-store-name</i> TRANSACTION: <i>transaction-log-file-name</i> CHECKPOINT: <i>checkpoint-file-name</i>
INFORMATIONSTORE	Information store name.
FILE# ¹	File name. When using Exchange Server 2007, the following points differ between Exchange 2000 Server and Exchange Server 2003. <ul style="list-style-type: none"> ▪ Data files (*.stm) do not exist and, therefore, are not displayed. ▪ Information related to transaction log files (*.log) is not displayed for each file. Instead, the information for all files is displayed together in the following format: <i>mount-point-directory-name\storage-group-name\E00*.log</i>.

Displayed Item	Meaning
FS	Mount point directory name.
FSTYPE	File system type (NTFS).
DG	A disk group name (when using a logical volume manager) or a hyphen (-) (when using a basic disk configuration).
LVM-DEVICE	A logical device file name (when using a logical volume manager) or a GUID (when logical volume manager has not been implemented).
DEVICE# ²	<code>Harddiskn</code> (where <i>n</i> is an integer). When this command is executed with the <code>-device</code> option specified, this information will be displayed after <code>OBJECT</code> .
COPY-GROUP	Copy group name, displayed as follows: RAID Manager volume group name, paired volume name.
PORT#	Port name on the host server.
TID#	Target-ID on the host server.
LUN#	Logical unit number on host server.
MU#	Pair ID.
LDEV#	Logical device number inside the RAID device.
P/S	A letter identifying the primary or secondary volume: P: Primary volume S: Secondary volume -: A volume that is not part of a pair
SERIAL#	Serial number inside the RAID device.
COPY-FUNC	Copy type: Copy type: The name of the copy type varies depending on the DKC software product (storage subsystem unit) and microcode version. -: Indicates the volume where a pair volume has not been configured. (Do not create a program that operates using this display.)
GEN-NAME	Generation identifier: <code>local_n</code> : for a local pair volume (where <i>n</i> is a generation number from 0 to 999). <code>remote_n</code> : for a remote pair volume (where <i>n</i> is a generation number from 0 to 999). -: Indicates a volume where a pair volume has not been configured.
VIRTUAL-SERVERNAME# ³	Virtual server name (value of the <code>DRM_HOSTNAME</code> environment variable). The command executed with the <code>-v</code> option displays this information.
DB-PATH# ³	Name of the directory storing the dictionary map file. The command executed with the <code>-v</code> option displays this information.
CORE-MAPFILE-UPDATE-TIME# ³	Update time for the core map file. The command executed with the <code>-v</code> option displays this information.
APP.-MAPFILE-UPDATE-TIME# ³	Update time for the application map file. The command executed with the <code>-v</code> option displays this information.

Arguments

-target *storage-group-name(s)*

Specifies that information relating to a certain storage group is to be displayed. When specifying multiple storage groups to be displayed, use a comma to separate each group name. Use double quotation marks to enclose all storage group names that contain at least one space character.

If this option is omitted, information pertaining to all storage groups on the server on which the command was executed will be displayed.

-f *target-definition-file-name*

Specify this option to display information related to specific storage groups. Unlike the `-target` option, this option lets you specify a target definition file that collectively specifies all the storage groups for which information is to be displayed. The target definition file containing the list of storage groups must be created before you attempt to use this option. Use an absolute path to specify the target definition file.

-transact_log

Specifies that you want to display only information relating to the transaction logs. This option will display the following information:

- The name of the transaction log file.
- File system information.
- Logical volume structure information.
- Physical disk information.

When you specify this option with the `-target` option or `-f` option, only information pertaining to the transaction log of the specified storage group will be displayed when this option is specified. If either the `-target` or the `-f` option is omitted, information pertaining to all transaction logs of all storage groups will be displayed.

-datafile

Specifies that only information relating to the data file is to be displayed. This option will display the following information:

- The name of the data file.
- File system information.
- Logical volume structure information.
- Physical disk information.

When you specify this option with the `-target` option or `-f` option, only information pertaining to the data file of the specified storage group will be displayed when this option is specified. If either the `-target` or the `-f` option is omitted, information pertaining to all data files of all storage groups will be displayed.

-v

Specify this option to display management information for the dictionary map file. The following information is displayed:

- Name of the directory storing the dictionary map file.
Displays the path that is set in `DRM_DB_PATH` in the Protection Manager configuration definition file (`init.conf`).
If `DRM_DB_PATH` has not been set, the default storage directory for a dictionary map file, which is created automatically during installation, is displayed.
- Virtual server name (value of the `DRM_HOSTNAME` environment variable).
If the `DRM_HOSTNAME` environment variable has not been set, a hyphen (-) appears.
- Update time for the dictionary map file.
Displays the update time separately for the core map file and the application map file.

-device *device-file-name*

Specifies that only information relating to the device file is to be displayed. This option will display the following information:

- The name of the storage group.
- File system information.
- Physical disk information.
- Logical volume information.

-l

Specifies that storage group information is to be displayed in the long format.

-cf

Specify this to display local or remote copy types, or the name identifying the generation corresponding to the copy group name. The remote information is also displayed.

storage-group-name

Use this option with the `-refresh` option to specify the storage group for which the dictionary map file is to be updated.

-refresh

Specify this option to update the dictionary map file.

When you specify this option with the *storage-group-name* option, only the information about the specified storage group in the application map file will be updated. The processing of the core map file differs depending on the following:

- When the core map file already exists, the file is not updated.
- When the core map file does not exist, a new core map file is created.

When the *storage-group-name* option is omitted, the core map file and the information about all the storage groups in the application map file will be updated. At this time, if the update of the dictionary map file fails, the contents of the core map file are deleted.

Specify this option when disk information for *snapshot* is set up in the dictionary map file.

-coremap

Specify this option to update the core map file. This option is available only when it is specified together with the *storage-group-name* option. If the core map file does not exist, a new core map file is created.

At this time, if the update of the dictionary map file fails, the contents of the core map file are deleted.

Notes

- When specifying on the command line a file name or directory name containing space characters for the *-target* or *-f* option, you must enclose the file name in double quotation marks (").
- Enclosing with double quotation marks is not necessary for target path names specified in batch definition files.

Return Values

0: Normal termination.

Any value other than 0: Termination with an error.

Examples

- In this example, the command outputs information about the Information Store specified by the storage group *STR1* and management information for the dictionary map file:

```
PROMPT> drmexgdisplay -target STR1 -v
STORAGEGROUP: STR1
T OBJECT          INFORMATIONSTORE  FILE           FS    DG    DEVICE        COPY-GROUP
M MAILBOXSTORE    MAILBOX1 (STR1)  D:\STR1\priv1.edb  D:    -    Harddisk1     VG01,dev01
- -              -                -              -    -    -             VG01,dev01
M MAILBOXSTORE    MAILBOX1 (STR1)  D:\STR1\priv1.stm  D:    -    Harddisk1     VG01,dev01
- -              -                -              -    -    -             VG01,dev01
P PUBLICSTORE     PUBLIC1 (STR1)   D:\STR1\pub1.edb  D:    -    Harddisk1     VG01,dev01
- -              -                -              -    -    -             VG01,dev01
P PUBLICSTORE     PUBLIC1 (STR1)   D:\STR1\pub1.stm  D:    -    Harddisk1     VG01,dev01
- -              -                -              -    -    -             VG01,dev01
T TRANSACT        -                E:\STR1\E00.log   E:    -    Harddisk2     VG01,dev02
- -              -                -              -    -    -             VG01,dev02
T TRANSACT        -                E:\STR1\E000001.log E:    -    Harddisk2     VG01,dev02
- -              -                -              -    -    -             VG01,dev02
T TRANSACT        -                E:\STR1\E000002.log E:    -    Harddisk2     VG01,dev02
- -              -                -              -    -    -             VG01,dev02
T TRANSACT        -                E:\STR1\E000003.log E:    -    Harddisk2     VG01,dev02
- -              -                -              -    -    -             VG01,dev02
C CHECKPOINT      -                E:\STR1\E00.chk   E:    -    Harddisk2     VG01,dev02
- -              -                -              -    -    -             VG01,dev02
```

- In this example, the command outputs information, in the long format, about the Information Store specified in the storage group STR1:

```
PROMPT> drmexgdisplay -target STR1 -l
STORAGEGROUP: STR1
T OBJECT          INFORMATIONSTORE    FILE                FS          FSTYPE    DG
LVM-DEVICE                DEVICE          COPY-GROUP    PORT#    TID#
LUN# MU# LDEV# P/S SERIAL#
M MAILBOXSTORE MAILBOX1 (STR1)      D:\STR1\priv1.edb   D:         NTFS      -
\\?\Volume{2ef9993f-803e-11d7-96ae-0000e26ac10d}\ Harddisk1  VG01,dev01  CLI-A  0    0
0  10000 P  15044
- - -
-          VG01,dev01  CLI-B  1    10    0    10010 S  15044
M MAILBOXSTORE MAILBOX1 (STR1)      D:\STR1\priv1.stm   D:         NTFS      -
\\?\Volume{2ef9993f-803e-11d7-96ae-0000e26ac10d}\ Harddisk1  VG01,dev01  CLI-A  0    0
0  10000 P  15044
- - -
-          VG01,dev01  CLI-B  1    10    0    10010 S  15044
P PUBLICSTORE  PUBLIC1 (STR1)      D:\STR1\pub1.edb   D:         NTFS      -
\\?\Volume{2ef9993f-803e-11d7-96ae-0000e26ac10d}\ Harddisk1  VG01,dev01  CLI-A  0    0
0  10000 P  15044
- - -
-          VG01,dev01  CLI-B  1    10    0    10010 S  15044
P PUBLICSTORE  PUBLIC1 (STR1)      D:\STR1\pub1.stm   D:         NTFS      -
\\?\Volume{2ef9993f-803e-11d7-96ae-0000e26ac10d}\ Harddisk1  VG01,dev01  CLI-A  0    0
0  10000 P  15044
- - -
-          VG01,dev01  CLI-B  1    10    0    10010 S  15044
T TRANSACT     -                  E:\STR1\E00.log    E:         NTFS      -
\\?\Volume{2ef9993d-803e-11d7-96ae-0000e26ac10d}\ Harddisk1  VG01,dev02  CLI-A  0    1
0  10001 P  15044
- - -
-          VG01,dev02  CLI-B  1    11    0    10011 S  15044
T TRANSACT     -                  E:\STR1\E000001.log E:         NTFS      -
\\?\Volume{2ef9993d-803e-11d7-96ae-0000e26ac10d}\ Harddisk1  VG01,dev02  CLI-A  0    1
0  10001 P  15044
- - -
-          VG01,dev02  CLI-B  1    11    0    10011 S  15044
T TRANSACT     -                  E:\STR1\E000002.log E:         NTFS      -
\\?\Volume{2ef9993d-803e-11d7-96ae-0000e26ac10d}\ Harddisk1  VG01,dev02  CLI-A  0    1
0  10001 P  15044
- - -
-          VG01,dev02  CLI-B  1    11    0    10011 S  15044
T TRANSACT     -                  E:\STR1\E000003.log E:         NTFS      -
\\?\Volume{2ef9993d-803e-11d7-96ae-0000e26ac10d}\ Harddisk1  VG01,dev02  CLI-A  0    1
0  10001 P  15044
- - -
-          VG01,dev02  CLI-B  1    11    0    10011 S  15044
C CHECKPOINT   -                  E:\STR1\E00.chk    E:         NTFS      -
\\?\Volume{2ef9993d-803e-11d7-96ae-0000e26ac10d} \ Harddisk1  VG01,dev02  CLI-A  0
1
0  10001 P  15044
- - -
-          VG01,dev02  CLI-B  1    11    0    10011 S  15044
```

2.11.4 drmexgrestore

This basic command restores storage groups from a secondary volume to a primary volume.

Formats

- To restore backup data in units of storage groups, use:

```
drmexgrestore backup-ID -resync  
[ -target storage-group-name | -f target-definition-file-name ]  
[ -force ] [ -recovery ]  
[ -pf copy-parameter-definition-file]  
[ -vf VSS-definition-file-name]
```

- To restore backup data obtained using VSS in units of Information Stores, use:

```
drmexgrestore backup-ID -resync -recovery  
{ -target storage-group-name\Information-Store-name | -f target-  
definition-file}  
[ -force ] [ -pf copy-parameter-definition-file]  
[ -vf VSS-definition-file-name]
```

Description

The `drmexgrestore` command performs from the secondary volume, use disk resynchronization to restore the backup data specified by the backup ID to the primary volume.

When restoring the results of the VSS backup, the Protection Manager service must be running on the backup server.

If a database is comprised of several volumes, all volumes will be restored in order.

The following explains the command processing for restoration in a non-cluster configuration:

1. If the restored database was mounted, the database will be unmounted automatically.
If the unmount of the file system fails, an error message will be displayed, and restoration processing error occurs.
2. Once the database is stopped properly, and the file system confirms that unmount was successful, the backup data will be restored from the secondary volume to the primary volume by disk resynchronization.
3. If the file system was unmounted in step 1, the file system will be mounted.
If the file system was already unmounted in step 1, the file system will not be mounted.
4. The database unmounted in step 1 will be mounted.

The following explains the command processing for restoration in a cluster configuration. For this type of restoration, the cluster group containing the storage groups to be restored must be online. If restoration is performed while the cluster group is not online, a restoration error occurs. Because the cluster resources containing the storage groups are offline after restoration, the restored storage groups are temporarily unusable.

1. The disk resources for the storage groups to be restored are automatically set offline.

If one or more cluster resources depend on a disk resource that is set offline here, these cluster resources are also set offline automatically. If the command is unable to set the disk resources offline, it outputs an error message and a restoration processing error occurs.

2. The command verifies that the disk resources have been normally set offline, and then restores backup data from the secondary volume to the primary volume by resynchronizing the disk.
3. The disk resources are set online.

If one or more cluster resources have been set offline together with the disk resources, these cluster resources are also set online here.

If `ONLINE` is set in `CLU_MSCS_RESTORE` in the Protection Products configuration definition file (`init.conf`), restoration can be performed while the cluster resources are online.

In restoration, data on the primary volume is overwritten by the disk image of the secondary volume at the time backup is performed. Therefore, data on the primary volume that was created or updated after the backup is invalid.

Arguments

backup-ID

Specify the backup ID of the backup data to be restored. The backup ID is used to uniquely identify backup data, and is registered in the backup catalog during backup. To check a backup ID, execute the `drmexgcat` command.

-resync

Specify this option to resynchronize the primary and secondary volumes for restoration. Backup data on the secondary volume is synchronized to the primary volume.

-target storage-group-name

Specifies that databases related to a particular storage group or storage groups be restored. When multiple storage group names are specified, be sure to separate each one with a comma. Put any storage group names that contain space characters in double quotation marks (`"`). If this option is omitted, all storage groups on the server on which this command was executed will be restored.

-target *storage-group-name\Information-Store-name*

Specify this option to restore backup data that was obtained using VSS by specifying the Information Store name. Specify the Information Store name after the storage group name and separate them with a backslash (\). If you specify this Information Store name for backup data other than backup data that was obtained using VSS, an error occurs.

When you want to specify multiple Information Store names, use a comma to separate them. If an Information Store name contains a blank, enclose the entire name in quotation marks. The Information Store name is not case sensitive.

If this option is omitted, all storage groups on the server on which this command was executed will be restored.

-f *target-definition-file-name*

Like the `-target` option, this option specifies that databases related to particular storage groups be restored. Unlike the `-target` option, however, option allows you to view information about multiple storage groups with one setting, so long as those storage groups are already contained in a definition file. Make sure that you specify the path of this definition file as an absolute path.

If you want to restore backup data that was obtained using VSS in units of Information Stores, then, like the `-target` option, create a target definition file that states `\Information-Store-name` after the storage group name. Then specify the name of the target definition file.

-force

Specify this option to perform restoration by forced resynchronization of the primary and secondary volumes.

With this option, forced resynchronization is performed if the copy group name of the primary volume obtained when the backup processing was performed on the database server matches the information on the database server, even though the LDEV and SERIAL numbers do not match the LDEV and SERIAL numbers when the backup processing was performed.

Specify this option only if restoration by resynchronization could not be performed with the `-resync` option, such as when the LDEV number changes when the volume is replaced. If this option is specified under a normal restoration, data might be corrupted.

-recovery

Specifies that recovery is to be executed by roll-forward. When the command is executed, post-backup transactions are recovered, and the database is returned to the latest status. However, this is only true if from the time that the backup was acquired until the time that the command was executed, everything was stored properly in Exchange Server.

If this option is omitted, the database will return to the status it was in when the backup was acquired.

This option is essential if you want to restore backup data that was obtained using VSS in units of Information Stores. If you have specified an Information Store name in the `-target` option or `-f` option and you have not specified the `-recovery` option, this command terminates with an error. However, if all Information Store names within the storage group that is the restoration target have been specified, you can restore backup data even without specifying the `-recovery` option.

If the `-recovery` option is not used to restore a backup obtained by cold backup, the `-recovery` option cannot be used for backups obtained after the restored cold backup.

-pf *copy-parameter-definition-file*

Specify this option when using the number of retries and the retry interval defined in the copy parameter definition file. Specify only the file name, without specifying the path.

When you omit this option, the value of the RAID Manager-linkage definition file (`DEFAULT.dat`) is used. The value of the RAID Manager-linkage definition file (`DEFAULT.dat`) is used for parameters that are not coded in the copy parameter definition file.

Create the copy parameter definition file with an arbitrary name in the following location. Specify the file name using alphanumeric characters totaling up to 64 bytes.

```
Protection-Products-installation-directory\conf\raid
```

-vf *VSS-definition-file-name*

This option specifies the VSS definition file used at VSS backup. You can use this option only when restoring backup data that was obtained using VSS. If you specify this option when restoring data other than backup data obtained using VSS, it will be ignored.

For *VSS-definition-file-name*, specify a file name only. Do not specify the folder name. The VSS definition file specified in this option must be stored in the following folder:

```
Protection-Products-installation-directory\conf\vss
```

If you omit this option, the command uses the following file as the VSS definition file:

```
Protection-Products-installation-directory\conf\vsscom.conf
```

For details about the VSS definition file, see the manual *HiCommand Protection Manager User's Guide*.

Notes

- The backup information in the backup catalog is managed based on using the copy group as a key. Depending on the backup method, you might not be able to perform restoration, even though the backup data exists on the secondary volume. For further information, see the notes on running Protection Manager programs in the *HiCommand Protection Manager User's Guide* (MK-94HC070).

Note the following when restoring backup data obtained using VSS in units of Information Stores:

- When restoring backup data in units of Information Stores, if you specify both an Information Store name and a storage group name, operation will be as described below.
 - If you specify a storage group name and an Information Store name of the same storage group, an error will occur.
 - If you specify a storage group name and an Information Store name of different storage groups, the backup data is restored in units of storage groups and Information Stores respectively.
- If you specify an Information Store name of data other than backup data obtained using VSS, an error will occur.
- If you omit an Information Store name and specify *storage-group-name*, an error will occur.
- When you want to specify an Information Store name, check the value displayed in `INFORMATIONSTORE` of the `drmexgcat` command and specify exactly the same Information Store name.
- At restoration, this command dismounts all Information Stores within the storage group to which the specified Information Store belongs.
- If the restoration target disk contains Information Store files that are not restoration targets, an error will occur.
- If the restoration target disk contains data from different storage groups, an error will occur.

Return Values

0: Normal termination.

Any value other than 0: Termination with an error.

Examples

- In this example, the command restores, by disk resynchronization, the backup data identified by the backup ID 0000000001:

```
PROMPT> drmexgrestore 0000000001 -resync
KAVX0001-I The drmexgrestore command will now start.
KAVX1805-I The information store will now be dismounted.
        Storage group name = STR1
KAVX1700-I Restore processing will now start.
KAVX1701-I Restore processing has finished.
KAVX1806-I The information store will now be mounted.
        Storage group name = STR1
KAVX0002-I The drmexgrestore command will now end.
```

- In this example, the command restores, by disk resynchronization, the backup data identified by the backup ID 0000000003, and then performs roll-forward recovery:

```
PROMPT> drmexgrestore 0000000003 -resync -recovery
KAVX0001-I The drmexgrestore command will now start.
KAVX1805-I The information store will now be dismounted.
           Storage group name = STR1
KAVX1700-I Restore processing will now start.
KAVX1701-I Restore processing has finished.
KAVX1806-I The information store will now be mounted.
           Storage group name = STR1
KAVX0002-I The drmexgrestore command will now end.
```

- In this example, the command restores Information Store IS12 of storage group SG1 among the backup data identified by the backup ID 0000000004:

```
PROMPT> drmexgrestore -resync -recovery -target SG1\IS12
```

2.11.5 drmexgverify

This basic command verifies the integrity of backup data.

Format

```
drmexgverify backup-ID
```

Description

The `drmexgverify` command verifies the integrity of the backup data on a secondary volume. When using Protection Manager Copy Controller (x64), the target database is restricted to Exchange Server 2007.

The target databases to be verified are as follows:

- Exchange database backed up online
- Exchange database backed up by using VSS

Execute this command on the backup server.

You must complete the following operations before executing this command:

- Install the Exchange Management Console on the backup server. The Exchange Server version to be installed must be the same as the Exchange Server version installed on the database server. If a service pack has been applied for Exchange Server on the database server, then, on the backup server, you must apply the same Exchange Server Service Pack as the one applied on the database server.

For details on how to install the Exchange Management Console, see the manual for Exchange Server.

- When using Exchange Server 2003, in order to execute the `ESEUTIL` utility, copy the following files from `Exchange-Server-installation-destination\bin\` on the database server to `Protection-Manager-installation-destination\bin\util` on the backup server.

- `ESEUTIL.exe`

- ESE.dll
- EXOSAL.dll
- EXCHMEM.dll

If the version of the `ESEUTIL` utility on the server where backup was performed (database server) differs from the version of the `ESEUTIL` utility on the server where the `drmexgverify` command is executed (backup server), the verification results are not guaranteed. When you copy the `ESEUTIL` utility, make sure that you copy data in the server on which the backup was performed and use the same version of the `ESEUTIL` utility.

- Export and import the backup catalog to transfer it from the database server to the backup server.
- Use the `drmmount` command to mount the secondary volume containing the Exchange database (*.edb files) to the backup server. After the `drmexgverify` command terminates, use the `drmmount` command to unmount the secondary volume.

Argument

backup-ID

Specify the backup ID of the secondary volume for which you want to verify the integrity. A backup ID has been assigned when a backup catalog was created in the backup server by exporting and importing information.

Note: For an online backup, this command only verifies the integrity of an Exchange database (*.edb files), and not of an Exchange streaming database (*.stm files). This means that even if this command successfully terminates the verification, the Exchange streaming database may have been corrupted. In this case, the backup data cannot be restored.

Return Values

0: Normal termination.

Any value other than 0: Termination with an error.

Example

- In this example, the command verifies the backup data whose backup ID is 0000000001:

```
PROMPT> drmexgverify 0000000001
KAVX0001-I The drmexgverify command will now start.
KAVX0076-I The checksum of the Exchange database file was confirmed.
           Storage group name = STR1
KAVX0002-I The drmexgverify command will now end.
```


Acronyms and Abbreviations

AMS	Adaptable Modular Storage
API	application programming interface
CLI	command line interface
DKC	Disk Controller
GUI	graphical user interface
GUID	global unique identifier
LAN	local area network
LDM	Logical Disk Manager
LDEV	logical device
LU	logical unit
LVM	logical volume manager
NTFS	NT file system
OS	operating system
SAN	storage area network
TID	target ID
VCS	VERITAS Cluster Server
VDI	virtual device interface
VSS	Volume Shadow Copy Service

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