

**Hitachi NAS Platform F1000 Series
Backup Restore Features Supplement for IBM®
Tivoli® Storage Manager**

FASTFIND LINKS

Product Version

Getting Help

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Preface

The purpose of this document is to supplement the IBM Tivoli Storage Manager Extended Edition (hereinafter, Tivoli Storage Manager) documentation. This document provides an overview of the environment settings required to use Tivoli Storage Manager with Backup Restore, and describes what to do when errors occur in Tivoli Storage Manager.

For more information about the functions in Tivoli Storage Manager, see the Tivoli Storage Manager documentation.

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Product version

This document revision applies to Hitachi NAS Platform F version 5.1.1 or later.

Release notes

Release notes can be found on the documentation CD. Release notes contain requirements and more recent product information that may not be fully described in this manual. Be sure to review the release notes before installation.

Referenced documents

Hitachi NAS Platform F

- *Hitachi NAS Platform F1000 Series Error Codes*, MK-92NAS065

Abbreviation conventions

This document uses the following abbreviations for product names:

Abbreviation	Full name or meaning
Tivoli Storage Manager	IBM Tivoli Storage Manager Extended Edition
Tivoli Storage Manager Extended Edition	

Document conventions

This document uses the following typographic conventions:

Convention	Description
Bold	Indicates text on a window, other than the window title, including menus, menu options, buttons, fields, and labels. Example: Click OK .
<i>Italic</i>	Indicates a variable, which is a placeholder for actual text provided by the user or system. Example: <i>copy source-file target-file</i> <i>Note:</i> Angled brackets (< >) are also used to indicate variables.
screen/code	Indicates text that is displayed on screen or entered by the user. Example: # <code>pairedisplay -g oradb</code>

Getting help

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Comments

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Thank you! (All comments become the property of Hitachi Data Systems Corporation.)

Setting Up the Operating Environment

This chapter provides an overview of the tasks required on the backup servers so that Tivoli Storage Manager can be used to perform backup and restore operations.

- [Tasks Necessary for Linking with Tivoli Storage Manager](#)
- [Installing Tivoli Storage Manager](#)
- [Setting Up the Tivoli Storage Manager Environment](#)
- [Specifying Definitions in Tivoli Storage Manager](#)
- [Specifying Settings for Backing Up and Restoring](#)
- [Backing Up and Restoring](#)

Tasks Necessary for Linking with Tivoli Storage Manager

To use Tivoli Storage Manager to perform backup and restore operations, you must perform the following tasks on the backup server:

- Install Tivoli Storage Manager
- Set up the Tivoli Storage Manager environment
- Specify definitions in Tivoli Storage Manager
- Specify the settings for backing up and restoring
- Perform the actual backup and restore operations

Installing Tivoli Storage Manager

Install Tivoli Storage Manager Extended Edition on the backup server.

Setting Up the Tivoli Storage Manager Environment

Set up the backup server so that the log files of Tivoli Storage Manager can be acquired. For details, contact IBM Corporation.

Specifying Definitions in Tivoli Storage Manager

Before performing backup or restore operations using Tivoli Storage Manager, you need to specify definitions, such as for tape libraries, in advance. For details on the required definitions, see the IBM documentation.

This section describes the definitions for the data mover and tape drive paths required when using the NDMP server of Backup Restore to perform backup and restore operations.

This document provides examples of how to use the server command interface. The parameters specified for commands differ depending on the actual environment conditions.

Defining the Data Mover

This subsection describes the data mover definition, which is required to use the NDMP server.

Use the `define datamover` command to define data movers. The parameters specified in the `define datamover` command are described below.

Table 1-1 Information to be Specified for the datamover Command Parameters

Parameter name	Description
hladdress	Specify the host name or virtual IP address of the node or virtual server. If a fixed IP address is specified, backup and restore operations will end with an error during degenerate mode.
lladdress	Specify 10000.
userid	Specify the user name for the NDMP server.
password	Specify the password for the NDMP server.
dataformat	Specify ndmpdump.

Note:

Specify other parameters based on the actual operating conditions.

If the password for the NDMP server was changed in Backup Restore, use the `update datamover` command to change the password for the data mover that was previously defined.

Defining the Tape Drive Path

This subsection describes the definition of the tape drives' paths, which are required to use the NDMP server.

Use the `define path` command to define the paths of the tape drives. When using a tape device connected to a node via a SAN, specify the path of the device file for the tape drive in the `device` parameter. You can use the `tapelist` command in Backup Restore to check the path of the device file.

Specifying Settings for Backing Up and Restoring

You can specify settings for backing up and restoring data as necessary.

Settings for Scheduling

You can set scheduling options for backup and restore operations in order to automate backup processing. Scheduling can be defined by using the `define schedule` command. For details on this command, see the IBM documentation.

Defining the Virtual File Space

When performing backup and restore operations for each directory, you need to define the virtual file space. Use the `define virtualfsmapping` command to define virtual file spaces.

Below is an example of executing the command, assuming the following conditions:

- Node name: `nasnode1`
- File system: `/mnt/fs1`
- Directory name to which the virtual file space is assigned: `subdir`
- Virtual file space name: `nassubdir`

```
define virtualfsmapping nasnode1 /nassubdir /mnt/fs1 /subdir
```

A virtual file space can be assigned only to a directory. Specify a directory name that satisfies the following conditions for a virtual file space:

- You cannot use wild cards.
- You cannot use backslashes (`\`), commas (`,`), semicolons (`;`), question marks (`?`), double quotation marks (`"`), vertical bars (`|`), left angle brackets (`<`), and right angle brackets (`>`). In addition, you cannot escape these characters by specifying a backslash (`\`) immediately before them.
- For a directory name that includes spaces, specify a higher-level directory that does not include spaces in the name.

Backing Up and Restoring

Tivoli Storage Manager provides several interfaces for performing backup and restore operations. This document provides examples that use the server command interface.

Executing a Backup

To perform a backup operation, specify the file system or virtual file space for the backup source in the `backup node` command. If you execute the `backup node` command without specifying a file system or virtual file space, all file systems will be backed up.

In addition, in the `backup node` command options you can also specify whether to save the table of contents (file history) and whether to perform a differential-data backup. You can use the `query toc` command to display the table of contents (file history) that have been saved. For details, see the IBM documentation.

Specify a path for the backup target in one of the following formats:

```
/mnt/file-system-name-of-the-backup-target  
virtual-file-space-name
```

Note the following when specifying a path for the backup target:

- You can specify multiple paths for the backup target. When specifying multiple paths, separate the paths by using commas (`,`) and do not include spaces. If there is an error in a specified path, the data in the

incorrectly specified directory will not be backed up. Only the data in correctly specified directories is backed up.

- When saving the table of contents (file history), the length of the path for the backup target must be no greater than 1,024 bytes.
- Do not add a forward slash (/) at the end of the file system for the backup target.
(Example of incorrect format: /mnt/fs1/)
- Note that `.history` and `.snaps` cannot be specified for a directory name. Also, `.arc`, `.system_gi`, and `.system_reorganize` cannot be specified for the name of a directory immediately under the file system.

For example, to back up the file system `/mnt/fs1` on the node `nasnode1`, execute the following command:

```
backup node nasnode1 /mnt/fs1
```

Executing a Restore

To perform a restore operation, specify the file systems for the backup source and restoration destination in the `restore node` command. You cannot specify multiple file systems for either the backup source or the restoration destination. If you omit the restoration destination, restoration is performed in the file system that is the backup source. You can specify a virtual file space instead of a file system.

In addition, by specifying the `FILELIST` parameter, you can specify files and directories to be restored. For files and directories, specify a relative path from the directory specified as the base point of the backup target.

Note the following when specifying the `FILELIST` parameter:

- You cannot use wild cards.
- Specify a path that begins with a forward slash (/).
- When specifying multiple paths and directories, separate the paths by using commas (,).
- If you specify a path that includes spaces, enclose the path in double quotation marks (") as follows:
`FILELIST="/path/to/filename1 with blanks",/path/to/filename2_no_blanks`
- When performing a restore operation on a file system that uses incremental backups, do not specify the `FILELIST` parameter, or else the restore operation might not be performed correctly.

For this case, use the web interface to perform a restore operation.

When specifying multiple files, you can also specify a single file that contains a saved list of restoration-target files. When using such a file in which a list has been saved, specify `FILE:file-name` in the `FILELIST` parameter.

Below is an example of executing this command, assuming the following conditions:

- Node name: `nasnode1`
- File system at the backup source: `/mnt/fs1`
- File system at the restoration destination: `/mnt/fs2`

```
restore node nasnode1 /mnt/fs1 /mnt/fs2
```

Backing Up Quota Information

To back up quota information when using Tivoli Storage Manager, the file system must be mounted with quota settings enabled. If the file system is mounted with quota settings disabled, the quota information cannot be backed up.

Backing Up from a Differential-Data Snapshot

When using Tivoli Storage Manager, if a differential-data storage device is set up as the target file system for backup, the NDMP server automatically creates a differential-data snapshot and performs an online backup.

When back up a file system that is operating differential-data snapshots (which was set up using a differential-data storage device), check the number of differential-data snapshot reserved generations to make sure that at least one more snapshot can be temporarily made for the online backup.

Managing the History Information of Differential-Data Backups

The history information of differential-data backups is managed in Tivoli Storage Manager.

Troubleshooting

This chapter describes how to troubleshoot problems that might occur when using Tivoli Storage Manager to back up or restore data in the system.

- [When a Backup or Restore Operation Has Terminated with an Error](#)
- [When a Tape Drive Is in the Offline Status](#)

When a Backup or Restore Operation Has Terminated with an Error

You can check the results of backup and restore operations by using the GUI or activity logs.

In the GUI, expand the Tivoli Storage Manager server tree and select **Monitor** to view the execution results.

To acquire the activity log, use the `query actlog` command. In the activity log, you can check the error and warning messages output by the NDMP server during the execution of a backup and restore operation. However, the messages are not displayed in their entirety. You will need to determine the cause of the error and do what is necessary to resolve the problem, based on the IDs of the messages output by the NDMP server. For details on the causes of errors and what to do for the corresponding message IDs, see the *Error Codes*.

If no message IDs are displayed, check the NDMP server log, and see if the NDMP server returned an error at the time when the ANR9999D message was output to the activity log.

Activity logs are saved in the Tivoli Storage Manager database.

When a Tape Drive Is in the Offline Status

You can use the `query drive` command or the `query path` command to acquire the status of a tape drive. If a tape drive is not in an online status, use the `update drive` command or the `update path` command to place the tape drive online.

If the execution of a backup or restore operation still ends with an error, even after you have performed the above operation, use the `query volume` command to check the status of the media. If the media is inaccessible, make it accessible. For details, see the necessary IBM documentation.

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MK-92NAS070-06