

**HiCommand® Device Manager Command
Line Interface (CLI)
User's Guide**

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Preface

This document describes and provides instructions for using the Command Line Interface (CLI) software for HiCommand Device Manager. This document assumes that the user:

- Has a background in data processing and understands peripheral storage device subsystems and their basic functions,
- Has read and understands the appropriate user guide for the subsystem: *Hitachi Lightning 9900 V Series User and Reference Guide*, *Hitachi Lightning 9900 User and Reference Guide*, *Hitachi Thunder 9500 V Series User and Reference Guide*, *Hitachi Thunder 9200 User and Reference Guide*, and *Sun StorEdge T3 Disk Tray Configuration Guide*,
- Has read and understands the user guide(s) for the subsystem configuration functions (e.g., *Lightning 9900 V Series LUN Manager User's Guide*, *Thunder 9200 Resource Manager 9200 User's Guide*),
- Has read and understands the user guide(s) for the data management functions (e.g., *Hitachi Lightning 9900 Virtual LVI/LUN User's Guide*, *Hitachi Lightning 9500 V Series ShadowImage User's Guide*), and
- Is familiar with the operating system which hosts the HiCommand Device Manager CLI (e.g., Solaris OS, Windows OS, HP-UX OS, and Linux OS).

Notes:

- The term "TagmaStore" refers to the entire family of TagmaStore USP subsystems, unless otherwise noted. The term "9900V" refers to the entire Lightning 9900 V Series subsystem family (e.g., Lightning 9980V, Lightning 9970V), unless otherwise noted. The term "9900" refers to the entire Lightning 9900 subsystem family (e.g., Lightning 9960, Lightning 9910), unless otherwise noted. The term "9500V" refers to the entire Thunder 9500V subsystem family (e.g., Thunder 9570V, Thunder 9580V), unless otherwise noted.
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Software Version

This document revision applies to HiCommand Device Manager Version 5.7 and higher.

Convention for Storage Capacity Values

This document uses the following convention for storage capacity 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 Device Manager Web Client User's Guide*, MK-91HC001
- *HiCommand Device Manager Server Installation and Configuration Guide*, MK-91HC002
- *HiCommand Device Manager Agent Installation Guide*, MK-92HC019
- *HiCommand Device Manager Error Codes*, MK-92HC016
- *Hitachi Lightning 9900 V Series User and Reference Guide*, MK-92RD100
- *Hitachi Lightning 9900 V Series LUN Manager User's Guide*, MK-92RD105
- *Hitachi Lightning 9900 User and Reference Guide*, MK-90RD008
- *Hitachi Thunder 9500 V Series User and Reference Guide*, MK-92DF601
- *Hitachi Thunder 9200 User and Reference Guide*, MK-90DF504
- *Hitachi Thunder 9200 Resource Manager 9200 User's Guide*, MK-90DF504
- *Hitachi Thunder 9200 Resource Manager 9200 User's Guide Graphical User Interface*, MK-90DF575
- *HiCommand Mainframe Agent User's Guide*, MK-96HC130

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

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Chapter 1 HiCommand Device Manager Overview

This chapter provides an overview of HiCommand Device Manager Command Line Interface (CLI) and Command Line Interface Extended edition (CLIEX). The following topics are covered in this chapter:

- Overview of HiCommand Device Manager (See section 1.1)
- HiCommand Device Manager Software Components (See section 1.2)
- Overview of HiCommand Device Manager CLI and CLIEX (See section 1.3)
- Downloading CLI and CLIEX from HiCommand Device Manager Server (See section 1.4)

1.1 Overview of HiCommand Device Manager

Device Manager provides a consistent, easy to use, and easy to configure interface for managing storage products. Device Manager provides a web-based graphical client interface for real-time interaction with managed storage arrays as well as a command line interface (CLI) for scripting. Device Manager gives storage administrators access to the configuration, monitoring, and management features that are already integrated into existing Hitachi Data Systems software products. Device Manager allows you to view the configuration of the storage arrays added to the Device Manager server, and perform configuration operations such as allocating storage or securing LUNs. Device Manager allows you to quickly discover storage subsystems based on key attributes, and efficiently manage complex and heterogeneous storage environments. Device Manager allows you to back up and restore your configuration database. In addition, Device Manager can securely manage storage management remotely, by means of SSL-based communications.

HiCommand Device Manager provides:

- Storage subsystem discovery and configuration display
- Hierarchical group management for storage
- A browser-based GUI can be used to quickly and efficiently manage complex storage environments.
- Alert presentation
- Important information is compiled into HTML-formatted reports for viewing. Report function is also included to export this information in CSV-formatted files.
- Volume (LUN) configuration
- Management of hosts and WWNs
- Remote access to Disk Array Management Program (DAMP)
- Several levels of access and functionality for end users, including Access Control, Storage Management and System Support:
 - Access Control handles support for the system administrator, storage administrator, maintenance user and guest user.
 - Storage Management functions includes storage configuration and manipulation.
 - System support functions include user administration, host agent activity and security.

Important: HiCommand Device Manager does not support management of mainframe volumes. You may view those volumes only.

Note: The use of the HiCommand Device Manager product and all other Hitachi Data Systems products is governed by the terms of your agreement(s) with Hitachi Data Systems and/or Sun Microsystems.

1.2 HiCommand Device Manager Software Components

The HiCommand Device Manager consists of the following components:

- **HiCommand Suite Common Component**—The HiCommand Suite Common Component is a package of features that are used by all HiCommand Suite products. It is installed as part of the Device Manager installation. Each HiCommand Suite product bundles the Common Component to use the following functions:
 - Single Sign-On
 - Integrated logging and repository
 - Common Web service
- **Server**—The HiCommand Device Manager server is connected to the storage subsystem LAN and controls Device manager operations based on requests from the HiCommand Device Manager clients (e.g., Web Client, CLI, CLIEX, and third-party applications). For more information about the Device Manager Server, please refer to the *HiCommand Device Manager Server Installation and Configuration Guide*.
- **Web Client**—The Device Manager Web Client is a web-based user interface for monitoring and managing Hitachi storage subsystems. Web Client is a stand-alone Java-based application that is deployed using the Java Web Start (JWS) software. Web Client communicates with and runs as a client of the Device Manager server. For more information on Device Manager Web Client, please refer to the *HiCommand Device Manager Web Client User's Guide*.
- **Command Line Interface**—The command line interface version of the Device Manager software is available for expert users who prefer to operate the storage subsystem managed by HiCommand Device Manager using a command line interface. The HiCommand Device Manager provides two types of command line interface: HiCommand Device Manager CLI (`HiCommandCLI`) and HiCommand Device Manager CLIEX (`hdvmdiex`). This manual describes how to use the HiCommand Device Manager CLI and CLIEX.
- **Agent (optional, recommended)** —The Device Manager agent runs on host computers attached to Hitachi Lightning 9900 V Series, Lightning 9900, Thunder 9500V and Thunder 9200 storage subsystems, as well as Sun StorEdge T3 subsystems under management by the Device Manager. The agent collects data on the configuration and utilization of the attached storage and sends this information to the Device Manager Server. The HiCommand Device Manager clients display this information for the user, when it is available on the server. For more information on the Device Manager agent, please refer to the *HiCommand Device Manager Agent Installation Guide*. The Device Manager agent and the Device Manager server can be installed on the same host machine.
- **HiCommand Device Manager VDS Provider (optional)**

The HiCommand Device Manager VDS Provider software product provides storage subsystem information and modifies the storage subsystem configuration in reply to VDS (Virtual Disk Service) requests from Windows server 2003.

1.3 Overview of HiCommand Device Manager CLI and CLIEX

The CLI (Command Line Interface) provides functions for collecting configuration information and modifying settings for a storage subsystem managed by HiCommand Device Manager. The functions are implemented by issuing commands from the system command line prompt. The system administrator may find the CLI to be more efficient than the Device Manager GUI during the initial installation of the storage subsystem when many settings are required. Figure 1.1 shows the communication protocols that are used by the HiCommand Device Manager.

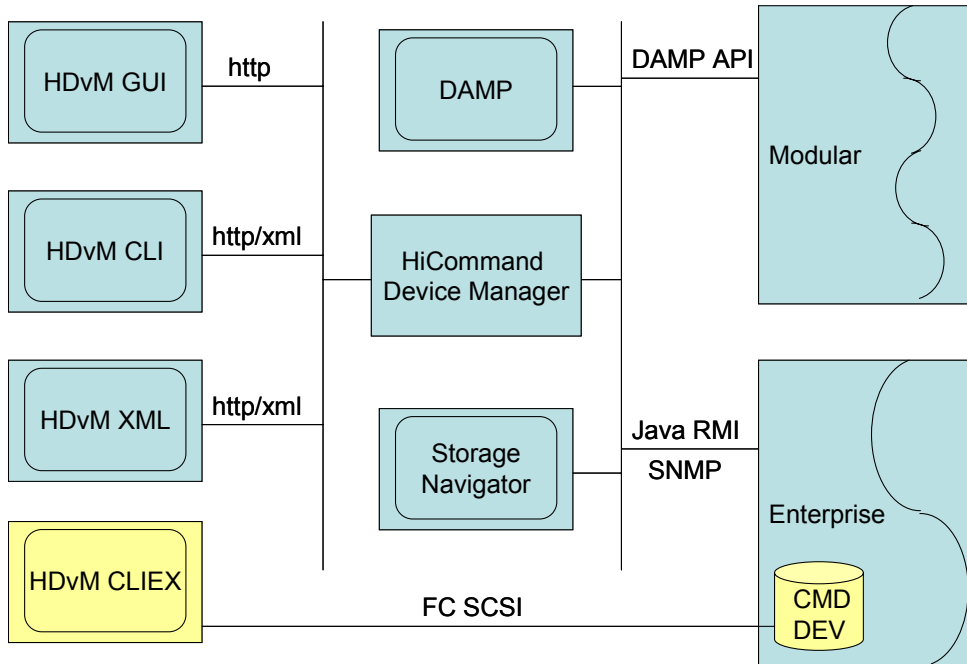


Figure 1.1 HiCommand Device Manager Communication Protocols

Note: HiCommand Device Manager can be used to reference information on mainframe volumes, but cannot be used to configure the volumes.

1.3.1 HiCommand Device Manager CLI

As with Web Client, HiCommand Device Manager CLI communicates with the HiCommand Device Manager server to provide a means to issue requests to the storage subsystem and check replies from the HiCommand Device Manager server. HiCommand Device Manager CLI enables you to create a script that runs several commands in a specific order, and perform batch operations for the HiCommand Device Manager server.

1.3.2 HiCommand Device Manager CLIEX

HiCommand Device Manager Command Line Interface Extended edition (CLIEX) provides commands that are used to acquire system configuration information and for LUN management.

- HiCommand Device Manager CLIEX is intended for administrators who are already familiar with HiCommand Device Manager, because prior storage subsystem settings and host settings are required in order to use HiCommand Device Manager CLIEX.
- HiCommand Device Manager CLIEX communicates directly with the storage subsystem to execute instructions via SAN without the HiCommand Device Manager server. CLIEX can configure various settings for acquisition of storage subsystem configuration information and LUN management at high speed because it communicates directly with the storage subsystem.
- To prevent contention with other management tools and apply settings in HiCommand Device Manager, you must use HiCommand Device Manager CLIEX in combination with HiCommand Device Manager CLI.

Important: In order to prevent contention with other management tools, you must ensure that no other users have access to the target storage subsystem during CLIEX operations. As an added precaution, it is highly recommended that you use the HiCommand Device Manager CLI `AddArrayReservation` and `DeleteArrayReservation` commands to lock and unlock the target storage subsystem before and after CLIEX operations as described in the section 6.4.

1.4 Downloading CLI and CLIEX from HiCommand Device Manager Server

You can download HiCommand Device Manager CLI and CLIEX from the HiCommand Device Manager server using Web Client.

HiCommand Device Manager CLI is bundled with the HiCommand Device Manager server. Installing the HiCommand Device Manager server installs HiCommand Device Manager CLI in the following location on the management server:

- In Windows:
installation-directory-for-Device-Manager\DeviceManager\HiCommandCLI
- In Solaris and Linux:
installation-directory-for-Device-Manager/DeviceManager/HiCommandCLI

To use HiCommand Device Manager CLI on a machine other than the one on which the HiCommand Device Manager server was installed, or to use Device Manager CLIEX, use Web Client to download HiCommand Device Manager CLI and install it in the desired location.

To download HiCommand Device Manager CLI and CLIEX:

1. In the Web Client global tasks bar area, choose **Go** and then **Download**.
2. Select the **Download** link corresponding to the OS of the machine on which CLI and CLIEX is to be installed.

The HiCommand Device Manager agent and HiCommand Device Manager CLI can be downloaded. HiCommand Device Manager CLIEX is included in the archive file for the HiCommand Device Manager CLI.

3. Copy the downloaded file to the machine on which CLI and CLIEX is to be installed.
4. Decompress the copied file.

The HiCommand Device Manager CLI file and files required to install HiCommand Device Manager CLIEX are to be extracted. If you want to use HiCommand Device Manager CLIEX, install it as instructed in section 6.2.

For details about downloading, see the manual *HiCommand Device Manager Web Client User's Guide*.

Note: When you want to use HiCommand Device Manager CLI by downloading it from Web Client, check the version of Java that the Device Manager CLI supports, and then specify an appropriate JRE. For details about how to specify a JRE, see section 2.2.1.

Chapter 2 System Requirements and Set Up (CLI)

This chapter lists the system requirements for operating the HiCommand Device Manager CLI and describes how to launch the CLI. For System Requirements and Set Up for CLIEX, see Chapter 6.

- Requirements for CLI Operations (See section 2.1)
- Java Environment Settings (See section 2.2)
- Executing HiCommand Device Manager CLI Commands over HTTPS (See section 2.3)
- Launching CLI (See section 2.4)

2.1 Requirements for CLI Operations

The following requirements must be satisfied when you operate HiCommand Device Manager CLI:

■ Storage Subsystems

All storage subsystems must be configured for Device Manager operations. Please refer to *HiCommand Device Manager Web Client User's Guide* for detailed information on storage subsystem requirements.

For details about storage subsystem requirements, see the *HiCommand Device Manager Server Installation and Configuration Guide*.

■ HiCommand Device Manager Server

Please refer to the *HiCommand Device Manager Server Installation and Configuration Guide* for more information on installing and configuring the Device Manager server.

■ Supported Platforms for HiCommand Device Manager CLI 5.7

- Windows Vista
- Microsoft Windows XP (Service Pack 1 or 2)
- Microsoft Windows 2000 (Service Pack 3 or 4)
- Windows Server 2003 (no service pack or Service Pack 1 or 2) (x86 versions only)
- Windows Server 2003 R2 Edition (no service pack or Service Pack 2) (x86 versions only)
- Windows Server 2003 x64 Edition (no service pack or Service Pack 2)
- Windows Server 2003 R2 x64 Edition (no service pack or Service Pack 2)
- Sun Solaris 8, 9 or 10 (SPARC platform only)
- HP-UX 11i (v1, v2 or v3)
- Red Hat Enterprise Linux AS 4.0(x86 version only)
- Red Hat Enterprise Linux ES 4.0(x86 version only)

Note: When you use the Red Hat Enterprise Linux AS 4.0, or Red Hat Enterprise Linux ES 4.0 platform, use Device Manager CLI on the same machine as the Device Manager server.

Note: If you run Device Manager CLI using a time zone for the U.S. and Canada, set up the OS so that the OS will support the new Daylight Saving Time (DST) rules introduced in 2007. Set up the OS, according to the information provided by the OS vendor.

■ Java execution environment

In Windows:

In Windows Vista, JRE version 6.0

In other Windows versions, JRE version 1.4.2_xx (xx is 04 or later)^(Note 1) or JRE version 5.0 (Update 7 or later)

In Solaris:

JRE version 1.4.2_xx (xx is 04 or later)^(Note 1) or JRE version 5.0 (Update 7 or later)

In HP-UX:

JRE version 1.4.2_xx (xx is 06 or later)^(Note 1) or JRE version 5.0.xx (xx is 03 or later)^(Note 1)

Note 1: For xx, we recommend that the latest version be used.

Note: For the Windows Server 2003 x64 Edition, Windows Server 2003 R2 x64 Edition, Red Hat Enterprise Linux AS 4.0, or Red Hat Enterprise Linux ES 4.0 platform, use the JRE used on the Device Manager server. For details about how to set up the JRE, see section 2.2.2.

Note: If the system on which HP-UX operates uses a Dual-Core Intel(R) Itanium(R) 2 Processor for the CPU, use JRE version 1.4.2_xx (xx: 10 or later) or JRE version 5.0.03 or later, which comes with HP-UX (released in June 2006 or September 2006) that supports the processor.

Note: If you run Device Manager CLI using a time zone for the U.S. and Canada, use the JRE that supports the new Daylight Saving Time (DST) rules introduced in 2007. The JRE used in the Device Manager server v5.7 or later supports the new DST. If you run Device Manager CLI by using the JRE used in the Device Manager server v5.7 or later, you do not have to prepare another JRE.

■ Device Manager Agent

Installation of the HiCommand Device Manager agent is recommended however, it is not required for HiCommand Device Manager operations. When the HiCommand Device Manager agent has been installed, HiCommand Device Manager displays the storage usage rate and file system information. Please refer to the *HiCommand Device Manager Agent Installation Guide* for more information.

2.1.1 HiCommand Device Manager CLI Memory Requirements

To ensure successful CLI execution, the environment variable `HDVM_CLI_MEM_SIZE` must be set to an appropriate value. The default value is 256 MB. This value is specified in bytes and must be a multiple of 1024, and greater than 2 MB. Since this value is specified in bytes, make sure that you specify `k` or `K` when indicating kilobytes, or `m` or `M` when indicating megabytes.

Get commands such as `GetStorageArray`, `GetLogicalGroup`, and `GetHostInfo` may require more memory due to command parameters assigned.

When you want to use the `GetStorageArray` command to acquire information about a logical unit, its path, and its LDEV at the same time, then depending on the number of resources managed by HiCommand Device Manager, you need to change the memory heap sizes of HiCommand Device Manager CLI and the Device Manager server. To calculate the memory heap size for HiCommand Device Manager CLI, use the formula below, and then set the value to the environment variable `HDVM_CLI_MEM_SIZE`. Since this value is specified in megabytes, make sure you always attach `m` or `M` to the value.

Note: For details about how to change the memory heap size of the Device Manager server, see the *HiCommand Device Manager Server Installation and Configuration Guide*.

Formula:

$$\text{memory-heap-size} = \text{the-number-of-LDEVs} \times 0.03 + \text{the-total-number-of-paths} \times 0.03 + 140$$

To set the memory heap size, use one of the methods below. If both methods are used, and two values are set at the same time, the value set by method 1 takes priority.

- For Windows

Method 1: Use the command prompt to set the calculation result to the environment variable `HDVM_CLI_MEM_SIZE`.

Method 2: Use a text editor to open the `HiCommandCLI.bat` file, and then change the value set for `set HDVM_CLI_MEM_SIZE=`.

- For Solaris, Linux, or HP-UX

Method 1: Use a terminal window to set the calculation result to the environment variable `HDVM_CLI_MEM_SIZE`.

Method 2: Use a text editor to open the `HiCommandCLI.sh` file, and then change the value set for `HDVM_CLI_MEM_SIZE=`.

Note: If the HiCommand Device Manager server is managing multiple subsystems, CLI memory requirements will be increased. Make sure to contact your Hitachi Data Systems representative for further information.

Note: If the value of `HDVM_CLI_MEM_SIZE` is less than what is required by a CLI command, CLI terminates, and the following error message is displayed:

```
KAIC90574-E The memory for the CLI became insufficient while this operation was being performed.
```

2.1.2 Requirements for Connecting to HiCommand Device Manager Server

To operate HiCommand Device Manager CLI, you must check the following items for the HiCommand Device Manager server to be connected in advance:

Table 2.1 Requirements for Connecting to HiCommand Device Manager Server

Item	Description
IP address or host name	IP address or host name of the Device Manager server. This item is used as an argument of Device Manager CLI.
Port number	Port number of the Device Manager server. This item is used as an argument of Device Manager CLI.
User ID#	User ID you can use to log in to the Device Manager server. This item is used as an option of Device Manager CLI.
Password#	Password you can use to log in to the Device Manager server. This item is used as an option of Device Manager CLI.
# You can create a user ID and a password by using Web Client. For details about how to use Web Client, see the manual <i>HiCommand Device Manager Web Client User's Guide</i> .	

2.2 Java Environment Settings

To execute HiCommand Device Manager CLI, the Java environment must be configured as appropriate for the HiCommand Device Manager CLI execution environment.

2.2.1 How To Configure Java Environment

It is assumed that a Java version supported by HiCommand Device Manager CLI is installed on the machine that executes HiCommand Device Manager CLI. In addition, an appropriate JRE must be specified as a Java environment that HiCommand Device Manager CLI will use.

To specify a JRE, you can use either of the following methods. However, in an environment where a JRE is updated automatically, we recommend that you use method 2:

1. Specify a JRE by using the environment variable `PATH`
2. Specify a JRE by using the environment variable `HDVM_CLI_JRE_PATH`

2.2.1.1 Specify a JRE by Using the Environment Variable `PATH`

Specify the path of the JRE that HiCommand Device Manager CLI will use to the environment variable `PATH`. Before specifying the path, check the version of Java that is currently configured to the environment variable `PATH`. To check the version of Java, execute the following command in the directory where HiCommand Device Manager CLI is run. This operation displays the version of Java that is configured to the environment variable `PATH`.

```
java -version
```

As a result of the command execution, if a version of Java that HiCommand Device Manager CLI supports is displayed, you do not have to change the settings of the Java execution environment. If a version of Java that HiCommand Device Manager CLI does not support is displayed, specify the path of the supported JRE to the environment variable `PATH`.

2.2.1.2 Specify a JRE by Using the Environment Variable `HDVM_CLI_JRE_PATH`

Specify the path of the JRE that HiCommand Device Manager CLI will use to the environment variable `HDVM_CLI_JRE_PATH`.

Note: If you use HiCommand Device Manager CLI on the same machine as the Device Manager server, we recommend that you specify the same JRE that the Device Manager server uses. For details about the path of that JRE, see section 2.2.2.

2.2.2 When Using the Same JRE As the Device Manager Server

When HiCommand Device Manager CLI uses the same JRE that the Device Manager server uses, specify the path of that JRE to the environment variable `HDVM_CLI_JRE_PATH`. The path of the JRE is as follows:

- In Windows:

HiCommand-Suite-Common-Component-installation-directory\jdk\jre\bin

- In Solaris and Linux:

/opt/HiCommand/Base/jdk/jre/bin

If you do not know the installation directory for HiCommand Suite Common Component, you can check the directory in the `server.base.home` property of the `server.properties` property file for the Device Manager server. For details about the property file, see the manual *HiCommand Device Manager Server Installation and Configuration Guide*.

Note: A forward slash (/) is used as a delimiter for directories in the `server.base.home` property. Therefore, when you set the JRE path in the `HDVM_CLI_JRE_PATH` environment variable in Windows, change a forward slash (/) to a backslash (\).

2.2.3 When Upgrading HiCommand Device Manager

When upgrading HiCommand Device Manager, the version of Java that HiCommand Device Manager CLI or the Device Manager server supports might be updated.

If the Java version has been updated, check the JRE version that is currently configured, and then, if necessary, change the JRE settings. You have to be especially careful when HiCommand Device Manager CLI is used in the following environment:

- HiCommand Device Manager CLI is downloaded from Web Client and being used
- The path of the JRE that the Device Manager server uses has been configured to the environment variable `HDVM_CLI_JRE_PATH`.

If the above conditions are satisfied, the JRE that the Device Manager server uses is updated when HiCommand Device Manager is upgraded. At the same time, the JRE version configured to the environment variable `HDVM_CLI_JRE_PATH` is also updated. However, if HiCommand Device Manager CLI (that was downloaded from Web Client) is being used, the Device Manager CLI will not be upgraded even if HiCommand Device Manager is upgraded. Therefore, the Device Manager CLI might not support the new JRE version.

If the updated JRE version is not supported by the version of HiCommand Device Manager CLI that you are using, take either of the following actions:

- Download the latest version of HiCommand Device Manager CLI from Web Client (recommended)
- Prepare another JRE that is supported by the version of HiCommand Device Manager CLI being used, and then configure that JRE to the environment variable `HDVM_CLI_JRE_PATH`.

2.3 Executing HiCommand Device Manager CLI Commands over HTTPS

If you want to execute HiCommand Device Manager CLI commands from the Device Manager server over HTTPS, you must set up the environment appropriately.

To set up the environment for executing HiCommand Device Manager CLI commands over HTTPS:

1. Download the `HiCommandCerts` file from the HiCommand Device Manager server using your browser:

```
http://device-manager-server:port-id/service/HiCommandCerts
```

Note: `device-manager-server` is the HiCommand Device Manager server's IP address or host name. `port-id` is the HiCommand Device Manager server's port.

2. Store the downloaded file in the installation directory of the HiCommand Device Manager CLI. The installation directory is the directory where the HiCommand Device Manager CLI has been installed. The installation directory contains the `HiCommandCLI.bat` file in a Windows system, or the `HiCommandCLI.sh` file in a Solaris, Linux, or HP-UX system.

Note: Use the filename `HiCommandCerts`.

3. Set the path name of the `HiCommandCerts` file in the `HDVM_CLI_CERTS_PATH` environment variable.

In Windows:

```
device-manager-cli-installation-folder\HiCommandCerts
```

In Solaris, Linux, or HP-UX:

```
device-manager-cli-installation-directory/HiCommandCerts
```

The following shows examples of executing a HiCommand Device Manager CLI command over HTTPS. Execute the `GetServerInfo` command:

In Windows:

```
HiCommandCLI -s https://device-manager-server:2443/service  
GetServerInfo
```

In Solaris, Linux, or HP-UX:

```
HiCommandCLI.sh -s https://device-manager-server:2443/service  
GetServerInfo
```

Note: Observe the following guidelines:

- Use the `https` protocol for the HiCommand Device Manager server URL.
- Use the `https` port for the HiCommand Device Manager server URL (2443, unless configured differently in the server's configuration file).
- Use the `-s` (or `--secure`) option.

2.4 Launching CLI

To launch the CLI, move to the folder or directory in which the CLI is installed, then execute the following command.

For Windows:

(In the following example, HiCommand Device Manager CLI has been installed in the C:\HiCommand folder.)

```
C:\HiCommand> HiCommandCLI.bat
```

For Solaris, Linux, or HP-UX:

```
# ./HiCommandCLI.sh
```

Note: If you launch the CLI without specifying any command line options, command arguments are displayed.

Chapter 3 Command Syntax (CLI)

This chapter describes the command syntax for CLI commands and provides additional information that you should be aware of before using the CLI. For command syntax information for CLIEX, see Chapter 7.

- CLI Command Syntax (See section 3.1)
- Displaying CLI Help (See section 3.2)
- CLI Return Responses (See section 3.3)
- List of CLI Commands and Supported Storage Subsystems (See section 3.4)
- Controlled Access to CLI Commands and Device Manager Resources (See section 3.5)
- Guidelines for Executing Certain CLI Commands (See section 3.6)

3.1 CLI Command Syntax

The syntax for HiCommand Device Manager CLI commands is as follows:

[server-URL] [command] [options] [parameters]

Table 3.1 describes the CLI command syntax.

Table 3.1 CLI Command Syntax

Command Component	Description
server-URL	<p>The URL that indicates the location of the HiCommand Device Manager server in the network. The URL is specified in a form such as <code>http://localhost:2001/service</code>. The URL must include the following items:</p> <ul style="list-style-type: none"> ▪ Http protocol: <code>http://</code> or <code>https://</code> (see section 2.3 for https requirements) ▪ Host name or IP address of the HiCommand Device Manager server ▪ Port number of the HiCommand Device Manager server (default configuration is <code>2001</code>) ▪ Base address of the HiCommand Device Manager server (default is <code>service</code>, unless the server has been configured with a non-standard servlet alias). <p>Note: The server location can be omitted from the command line if the server location is specified in the properties file. For more information about specifying the server-URL in the CLI properties file, refer to section. 5.4.4</p>
command	<p>The actual command mnemonic that makes a processing requests to the HiCommand Device Manager server. For example, <code>GetStorageArray</code> or <code>AddLogicalGroup</code>. Command names are not case sensitive. As such, <code>getstoragearray</code> is the same as <code>GETSTORAGEARRAY</code>. A complete list of CLI commands is included in Chapter 4.</p>
Options	<p>Options control the behavior of CLI commands. CLI options are specified the same way UNIX options are specified. This is case sensitive. Each CLI option can be specified by a single character preceded by a single dash (for example, <code>-u</code> for the user option) or the option can be preceded by two dash characters and then spelled out (for example, <code>--user</code>). Some options require an argument, which follows the option. For example, the <code>-u</code> option is followed by a user ID. For details about the options that can be used with Device Manager CLI, see Table 3.2.</p> <p>Note: Some options can be specified in the properties file. When such options have been specified in the properties file, you can omit them on the command line.</p> <p>Note: Options specified in the command line take precedence over options specified in the properties file</p> <p>For more information about CLI property files, refer to Chapter 5.</p> <p>Note: When the same parameter is specified multiple times, the value specified last is used.</p>
parameters	<p>CLI command parameters are specified by the parameter name, followed by the equal sign, followed by the parameter value. Multiple parameters within a command are separated by a space. Each parameter is represented as a combination of name and value, such as <code>parameter-name = parameter-value</code>. The parameter name is not case sensitive. If a parameter value includes the space character, the parameter value should be enclosed in double quotes.</p> <p style="text-align: center;"><code>parametername=parametervalue parametername="xxxx xxxx"</code></p> <p>Not all parameters are available for all commands. A command may have required parameters, optional parameters, or both required and optional parameters. If you omit a required parameter the command may not execute, or may not execute properly. Parameters specified in the command line take precedence over parameters specified in the properties file. A complete list of the parameters that are available for each CLI command is included in Chapter 4.</p> <p>Note: When the same parameter is specified multiple times, the value specified last is used.</p>

3.1.1 Command Options

Table 3.2 describes the HiCommand Device Manager CLI command options.

Table 3.2 HiCommand Device Manager CLI Options

Option	Argument	Status	Description
-i or --input	<i>filename</i> (see Note)	Optional	An XML API request file. Takes input from the specified file, which must contain the server request as a complete XML document. When this option is selected, the server's response is output as an XML formatted document. Note: If you specify this option, the specification in the file overrides the equivalent specification on the command line.
-o or --output	<i>filename</i> (see Note)	Optional	The file for storing the execution results. Sends output to the specified file, instead of the console. Note: When this option is specified, the command does not send the execution results to the standard output.
-p or --password	<i>password</i> or <i>@filename</i>	Required	The login password for the HiCommand Device Manager server, or a file that contains the login password. A password can either be specified directly, or a file containing a password can be specified. The application user needs to have access permissions for this file. Do not grant access permissions to common users for this file. When specifying a file path, include an @ sign at the beginning of the file path. The text on the first line of the specified file is read and used as the password.
-s or --secure	no argument	Optional	Uses a secure connection (https) to communicate with the server.
-u or --user	<i>userid</i>	Required	A valid user ID for the HiCommand Device Manager server Note: You must have your user ID registered in Device Manager before using HiCommand Device Manager CLI. Note: You can omit this option on the command line when the option has been specified in the properties file.
-t or --messagetrace	no argument	Optional	The flag for enabling message tracing. When this option is specified, the command outputs the requests and responses sent to or received from the HiCommand Device Manager server in XML to the <code>MessageTrace.log</code> file.
-b or --batch	<i>batch-file-name</i> (see Note)	Optional	The commands specified in the batch file are executed together. For example usages of this option, see 4.8.

Note: Either an absolute path or a relative path can be specified for the file path.

3.1.2 Usable Character Codes

The HiCommand Device Manager CLI only supports ASCII characters. If a request to the HiCommand Device Manager server contains a character other than an ASCII character, an unexpected error might occur because the request cannot be processed correctly.

3.2 Displaying CLI Help

HiCommand Device Manager CLI provides three help modes:

- **Basic Help Information for HiCommand Device Manager CLI**
Displays the Device Manager CLI command format, a list of commands, and a list of options.
- **Command Help Information for HiCommand Device Manager CLI**
- **Batch Help Information for HiCommand Device Manager CLI**
Displays the format for specifying batch files executed on the command line in Device Manager CLI, the commands that can be specified in a batch file, and the format for the batch files.

Displays a description of the function and the parameters that can be specified for a specific Device Manager CLI command.

3.2.1 Basic CLI Help Information

If you want to display basic help information, launch CLI without specifying any parameters. This basic help information will include the current CLI version as shown in Figure 3.1.

- **In Windows (in the following example, HiCommand Device Manager CLI has been installed in the C:\HiCommand folder):**

```
C:\HiCommand> HiCommandCLI.bat
```

- **In Solaris, Linux, or HP-UX:**

```
# ./HiCommandCLI.sh
```

```
Device Manager CLI version "5.7.0-00"

USAGE: HiCommandCLI {server-url} {server-command} [options] [parameters]

AVAILABLE COMMANDS:
  AddStorageArray
  GetStorageArray
  DeleteStorageArray
  AddLunScan
  AddLogicalGroup
  DeleteLogicalGroup
  ModifyLogicalGroup
  GetLogicalGroup
  AddObjectForLogicalGroup
  DeleteObjectForLogicalGroup
  AddLunGroup
  ModifyLunGroup
  AddWWNForLUNGroup
  DeleteWWNForLUNGroup
  AddWWNGroup
  ModifyWWNGroup
  DeleteLunGroup
  AddLun
  DeleteLun
  AddHostStorageDomain
  DeleteHostStorageDomain
  AddWWNForLun
  DeleteWWNForLun
  AddWWNForHostStorageDomain
```

```

DeleteWWNForHostStorageDomain
DeleteWwn
DeleteWwnGroup
AddHost
DeleteHost
ModifyHost
GetHost
AddHostRefresh
AddHostInfo
DeleteHostInfo
ModifyHostInfo
GetHostInfo
GetServerInfo
GetLogFile
ModifyDebugLevel
GetDebugLevel
GetAlerts
DeleteAlerts
AddArrayGroup
DeleteArrayGroup
AddLogicalUnit
DeleteLogicalUnit
ModifyLogicalUnit
FormatLU
AddSpareDrive
DeleteSpareDrive
ModifyPort
ModifyPortController
AddURLLink
DeleteURLLink
GetURLLink
RefreshStorageArrays
AddLUSE
DeleteLUSE
AddReplication
DeleteReplication
ModifyReplication
AddConfigFileForReplication
GetReplicationControllerPair
AddArrayReservation
ModifyArrayReservation
DeleteArrayReservation
GetArrayReservation

```

FOR COMMAND-SPECIFIC HELP, TYPE: "HiCommandCLI help {server-command}"
 FOR BATCH HELP, TYPE: "HiCommandCLI help batch"

AVAILABLE OPTIONS:

-u {userid} or --user {userid}	login user ID for Device Manager Server
-p {password} or --password {password}	login password for Device Manager Server
-s or --secure	presence indicates secure connection (https)
-i {filename} or --input {filename}	take input from the specified file, which must contain the complete xml request
-o {filename} or --output {filename}	send output to the specified file, instead of the console
-b {filename} or --batch {filename}	specify the batch file, and execute the batch.
-t or --messagetrace	record raw XML request and response

```

in ./traffic.log file

SPECIFYING PARAMETERS:
  Specify parameters for a command using name/value pairs,
  like: serialnum=30051. Use the command-specific help to see
  the parameters for a given command.

```

Figure 3.1 Basic CLI Help

3.2.2 Command Specific CLI Help

The CLI includes a help file for each CLI command. The help file for each command includes a brief description of the command followed by a list and a description of the parameters that are available for the command.

To view the help file for a particular command, at the CLI prompt type `HiCommandCLI help` followed by the name of the CLI command.

```
C:\HiCommand> HiCommandCLI help command-name
```

For example, to view the help file for the `AddLun` command you would type the following (in the following example, `HiCommand Device Manager CLI` has been installed in the `C:\HiCommand` folder in Windows):

```
C:\HiCommand> HiCommandCLI help AddLun
```

Example of CLI Help for AddLun Command

```

COMMAND: AddLun
DESCRIPTION: Defines a path from a host to a volume
PARAMETERS:
  serialnum    (required) Serial Number of the Storage Array of
               the new Path
  model        (required) Model of the Storage Array of the
               new Path
  name         (optional) Name of the new Path
  port         (required) Port Number of the new Path (This cannot be
               specified with parameter portname together.)
  portname     (optional) Port name of the new Path (This cannot be
               specified with parameter port together.)
  domain       (required) For USP_V, USP, 9900V, 9500V (with
               LUNManagement), AMS, WMS, XP24K, XP12K/10K/SVS200
               and XP1024/128, required; others, optional.
               Domain Number of the new Path, can not be set
               with parameter wwn together.
  scsi         (optional) SCSI ID of the new Path
  lun          (required) Number of the actual LUN used for path
  devnum       (optional) Device number used to identify this
               logical unit (not provided when a LUSE is defined)
  lusedevnums  (optional) Comma-separated list of LDEV devnums
               (either devnum or lusedevnums must be provided,
               but not both)
  wwn          (optional) Except USP_V, USP, 9900V, 9500V (with
               LUNManagement), AMS, WMS, XP24K, XP12K/10K/SVS200
               and XP1024/128. Comma-separated list of WWN to
               secure the path, can not be set with parameter
               domain together.

```

Figure 3.2 CLI Help for AddLun Command

3.2.3 Batch Help Information for HiCommand Device Manager CLI

Batch functions can be executed using HiCommand Device Manager CLI. The following shows an example in Windows. Specify the following to display batch help information in Device Manager CLI:

```
C:\HiCommand> HiCommandCLI help batch
```

Example of displayed batch help information:

```
USAGE: HiCommandCLI {server-url} -b {batchfile} [options]
```

AVAILABLE COMMANDS:

```
AddLun  
DeleteLun  
AddLUSE  
DeleteLUSE
```

BATCH FILE FORMAT:

```
beginbatch  
HiCommandCLI {server-command} {parameters}  
HiCommandCLI {server-command} {parameters}  
... repeat for other commands  
endbatch
```

3.3 CLI Return Responses

The HiCommand Device Manager CLI returns the execution result value at the end of its process. Table 3.3 lists and describes the CLI return values.

Table 3.3 Return Values

Return Values	Description
0	CLI ends normally.
1	CLI found errors within its process (for example, parameter error).
2	CLI found errors in the HiCommand Device Manager server.

3.4 List of CLI Commands and Supported Storage Subsystems

Table 3.4 - Table 3.10 list the CLI commands and shows which storage subsystems support which CLI commands. Y indicates that the command is supported by the storage subsystem. N indicates that storage subsystem does not support the command. Chapter 4 contains a detailed description of each CLI command.

Table 3.4 Storage Subsystem Commands and Related Storage Subsystems

Command Name	Description	USP V	USP and 9900V	9900	9500V (Note1)	AMS/WMS Series and 9500V (Note 2)	9200
AddArrayGroup	Creates an array group.	N	N	N	Y	Y	Y
AddArrayReservation	Locks a specified storage subsystem.	Y	Y	Y	N	N	N
AddHostStorageDomain	Creates a host storage domain or host group.	Y	Y	Y	Y	Y	Y
AddLogicalUnit	Creates an LDEV and a logical unit in the storage subsystem.	Y	Y	Y	Y	Y	Y
AddLUSE	Creates a LUSE.	Y	Y	N	Y	Y	Y
AddSpareDrive	Creates a spare drive.	N	N	N	Y	Y	Y
AddStorageArray	Detects a specified storage subsystem and sets it as the device to be managed by the Device Manager server. Information about the devices of the detected storage subsystem is registered in the Device Manager server database.	Y	Y	Y	Y	Y	Y
DeleteArrayGroup	Deletes an array group.	N	N	N	Y	Y	Y
DeleteArrayReservation	Unlocks a specified storage subsystem	Y	Y	Y	N	N	N
DeleteHostStorageDomain	Deletes a host storage domain or host group.	Y	Y	Y	Y	Y	Y
DeleteLogicalUnit	Deletes one or more LUs and the corresponding LDEVs.	Y	Y	Y	Y	Y	Y
DeleteLUSE	Deletes a LUSE that does not have a path.	Y	Y	N	Y	Y	Y
DeleteSpareDrive	Deletes or releases a spare drive.	N	N	N	Y	Y	Y
DeleteStorageArray	Excludes a storage subsystem from the group of storage subsystems managed by the Device Manager server.	Y	Y	Y	Y	Y	Y
GetArrayReservation	Obtains information about the locked storage subsystem	Y	Y	Y	N	N	N

Command Name	Description	USP V	USP and 9900V	9900	9500V (Note1)	AMS/WMS Series and 9500V (Note 2)	9200
GetStorageArray (Note 3)	Obtains information about the storage subsystems.	Y	Y	Y	Y	Y	Y

Table 3.5 Storage Subsystem Commands and Related Storage Subsystems

Command Name	Description	USP V	USP and 9900V	9900	9500V (Note1)	AMS/WMS Series and 9500V (Note 2)	9200
ModifyLogicalUnit	Modifies the settings of the logical units and the corresponding LDEVs.	Y	Y	Y	Y	Y	Y
FormatLU	Formats an LU.	Y	Y	Y	Y	Y	Y
ModifyPort	Modifies port attributes.	Y	Y	Y	Y	Y	Y
ModifyPortController	Modifies port controller attributes.	Y	Y	Y	N	N	N
RefreshStorageArrays	Obtains the most recent status of all storage subsystems managed by the Device Manager server.	Y	Y	Y	Y	Y	Y

Note 1: Thunder 9500V (LUN Security mode)

Note 2: Thunder 9500V (LUN Management mode)

Note 3: You can use the `subtarget` parameter to specify the device information you wish to obtain. The values that the `subtarget` parameter accepts are: `ArrayGroup`, `Commparameters`, `Component`, `Filter`, `FreeSpace`, `HostStorageDomain`, `JournalPool`, `LDEV`, `LogicalDKC`, `LogicalUnit`, `Path`, `PDEV`, `Port`, `PortController`, and `ReplicationInfo`.

Table 3.6 Logical Group-related Commands

Command Name	Description
AddLogicalGroup	Creates a logical group.
AddLunScan	Scans a storage subsystem in a LUN that is not allocated to a logical group.
AddObjectForLogicalGroup	Adds one or more existing objects (host storage domain or host) to a specified logical group in the Device Manager server.
DeleteLogicalGroup	Deletes an existing logical group from the Device Manager server.
DeleteObjectForLogicalGroup	Deletes a specified object from the logical group.
GetLogicalGroup	Obtains information about a specified logical group or all logical groups.
ModifyLogicalGroup	Modifies one or more attributes of an existing logical group.

Table 3.7 LUN-related Commands and Related Storage Subsystems

Command Name	Description	USP V	USP and 9900V	9900	9500V (Note1)	AMS/WMS Series and 9500V (Note 2)	9200
AddLun	Defines a path to a volume from the host.	Y	Y	Y	Y	Y	Y
AddLunGroup	Creates a LUN group.	N	N	Y	N	N	N
AddWWNForHostStorageDomain	Sets the security of a LUN in the host storage domain by assigning its WWN in the host storage domain.	Y	Y	Y	Y	Y	Y
AddWWNForLun	Sets the security of a path by assigning its WWN.	N	N	Y	Y	N	Y
AddWWNForLunGroup	Sets the security of a LUN in a LUN group by assigning a WWN in the LUN group.	N	N	Y	N	N	N
AddWWNGroup	Creates a WWN group.	N	N	Y	N	N	N
DeleteLun	Deletes the path to a volume from the host.	Y	Y	Y	Y	Y	Y
DeleteLunGroup	Deletes a LUN group to which a port is assigned.	N	N	Y	N	N	N
DeleteWWN	Deletes a WWN from a port.	Y	Y	Y	Y	Y	Y
DeleteWWNForHostStorageDomain	Releases the security set to a LUN in the specified host storage domain.	Y	Y	Y	Y	Y	Y
DeleteWWNForLun	Deletes a path from the host to a volume.	N	N	Y	Y	N	Y
DeleteWWNForLunGroup	Deletes a WWN assigned to a LUN group.	N	N	Y	N	N	N
DeleteWWNGroup	Deletes a WWN group.	N	N	Y	N	N	N
ModifyWWNGroup	Modifies the information about a WWN group.	N	N	Y	N	N	N

Note 1: Thunder 9500V (LUN Security mode)

Note 2: Thunder 9500V (LUN Management mode)

Table 3.8 Host Management-related Commands

Command Name	Description
AddHost	Registers information about a host into the Device Manager server database.
AddHostInfo	Registers host-based information about a LUN into the Device Manager server database.
AddHostRefresh	Refreshes information about a host from the Device Manager server.
DeleteHost	Deletes information about a host from the Device Manager server database.
DeleteHostInfo	Deletes host-based information about a LUN from the Device Manager server database.
GetHost	Obtains information about a host.
GetHostInfo	Obtains host-based information about a LUN.
ModifyHost	Modifies information about a host.
ModifyHostInfo	Modifies host-based information about a LUN.

Table 3.9 Server Management-related Commands

Command Name	Description
AddURLLink	Adds the URL associated with the application, and links it to the HiCommand object.
DeleteAlerts	Deletes information about one or more alerts that are managed by the Device Manager server.
DeleteURLLink	Deletes the relationship between the application or web page, and the Device Manager server object.
GetAlerts	Obtains information about one or more alerts that are managed by the Device Manager server.
GetDebugLevel	Obtains the current debug level of the Device Manager server.
GetLogFile	Obtains the requested Device Manager server log file.
GetServerInfo	Obtains the version, URL, and other information about the Device Manager server.
GetURLLink	Obtains any or all of the Device Manager server URLLink objects.
ModifyDebugLevel	Sets the amount of debugging information created by the Device Manager server.

Table 3.10 Replication Commands and Related Storage Subsystems

Command Name	Description	USP V	USP and 9900V	9900	AMS/WMS Series and 9500V	9200
AddConfigFileForReplication	Create the configuration definition file for copy pairs.	Y	Y	Y	Y	Y
AddReplication	Creates copy pairs.	Y	Y	Y	Y	Y
DeleteReplication	Deletes copy pairs.	Y	Y	Y	Y	Y
GetReplicationControllerPair	Obtains RCU (remote path) information registered in the MCU (main control unit) in storage subsystems managed by the Device Manager server.	Y	Y	Y	Y	Y
ModifyReplication	Changes copy pair status.	Y	Y	Y	Y	Y

3.5 Controlled Access to CLI Commands and Device Manager Resources

Access to CLI commands for individual users is controlled by the user permissions that have been granted to each user. Access to Device Manager resources is determined by the resource group to which each user is assigned.

- **User Permission Controls**

- A user who has `Modify` permission has access to all CLI commands.
- A user who has `View` permission can only access CLI commands that are used to retrieve information about storage subsystems and hosts. A user with `View` permission does not have access to CLI commands that are used to update storage subsystem and host configurations.

Note: Only users with `Admin` (user management) permission can change user permissions.

- **Resource Group Controls**

- A user assigned to the `All Resources` resource group has access to all resources (all logical groups, hosts, and LDEVs).
- A user to whom a `user-defined` resource group is assigned can only access resources that belong to the assigned resource groups.

Note: Only users with `Admin` permission can change Resource Group assignments.

A matrix showing the various CLI command access and Device Manager resource access scenarios is shown in Table 3.11.

3.5.1 CLI Command Access and Device Manager Resource Access Matrix

Table 3.11 shows the different user-access scenarios based on User Permissions and Resource Group assignment.

- Y: The command can be used for all Device Manager resources.
- N: The command cannot be used.
- R: Restrictions apply. The command can only access the Device Manager resources that have been allocated to the assigned user-defined resource group.

Table 3.11 CLI Command Access and Device Manager Resource Access Matrix

CLI Command	All Resources Resource Group		User-defined Resource Group	
	Modify Permission	View Permission	Modify Permission	View Permission
AddStorageArray	Y	N	R	N
GetStorageArray	Y	Y	R	R
DeleteStorageArray	Y	N	N	N
AddHostStorageDomain	Y	N	Y	N
DeleteHostStorageDomain	Y	N	R	N

CLI Command	All Resources Resource Group		User-defined Resource Group	
	Modify Permission	View Permission	Modify Permission	View Permission
AddArrayGroup	Y	N	N	N
DeleteArrayGroup	Y	N	N	N
AddSpareDrive	Y	N	N	N
DeleteSpareDrive	Y	N	N	N
AddLogicalUnit	Y	N	N	N
DeleteLogicalUnit	Y	N	N	N
ModifyLogicalUnit	Y	N	N	N
FormatLU	Y	N	N	N
AddLUSE	Y	N	R	N
DeleteLUSE	Y	N	R	N
ModifyPort	Y	N	N	N
ModifyPortController	Y	N	N	N
RefreshStorageArrays	Y	N	R	N
AddArrayReservation	Y	N	R	N
ModifyArrayReservation	Y	N	R	N
DeleteArrayReservation	Y	N	Y	N
GetArrayReservation	Y	N	R	N
AddLogicalGroup	Y	N	R	N
DeleteLogicalGroup	Y	N	R	N
ModifyLogicalGroup	Y	N	R	N
DeleteObjectForLogicalGroup	Y	N	R	N
AddLunScan	Y	N	N	N
AddLunGroup	Y	N	Y	N
DeleteLunGroup	Y	N	Y	N
ModifyLunGroup	Y	N	Y	N
AddWWNForLunGroup	Y	N	Y	N
DeleteWWNForLunGroup	Y	N	Y	N
AddLun	Y	N	R	N
DeleteLun	Y	N	R	N
AddWWNForHostStorageDomain	Y	N	Y	N
DeleteWWNForHostStorageDomain	Y	N	Y	N
DeleteWWN	Y	N	Y	N
AddWWNGroup	Y	N	Y	N

CLI Command	All Resources Resource Group		User-defined Resource Group	
	Modify Permission	View Permission	Modify Permission	View Permission
ModifyWWNGroup	Y	N	Y	N
DeleteWWNGroup	Y	N	Y	N
AddWWNForLun	Y	N	Y	N
DeleteWWNForLun	Y	N	Y	N
AddHost	Y	N	Y	N
AddHostRefresh	Y	N	R	N
DeleteHost	Y	N	R	N
ModifyHost	Y	N	R	N
GetHost	Y	Y	R	R
AddHostInfo	Y	N	R	N
DeleteHostInfo	Y	N	R	N
ModifyHostInfo	Y	N	R	N
GetHostInfo	Y	Y	R	R
GetServerInfo	Y	Y	Y	Y
GetLogFile	Y	Y	Y	Y
ModifyDebugLevel	Y	N	N	N
GetDebugLevel	Y	Y	Y	Y
GetAlerts	Y	Y	Y	Y
DeleteAlerts	Y	N	N	N
GetURLLink	Y	Y	R	R
AddReplication	Y	N	R	N
DeleteReplication	Y	N	R	N
GetReplicationControllerPair	Y	Y	Y	Y
ModifyReplication	Y	N	R	N
AddConfigFileForReplication	Y	N	R	N

3.6 Guidelines for Executing Certain CLI Commands

Table 3.12 lists some guidelines to follow when executing certain CLI commands.

Table 3.12 Guidelines for Executing Certain CLI Commands

Item	Description	Related Commands
Adding a LUN or host storage domain (for Lightning 9900V, TagmaStore USP, TagmaStore AMS/WMS series, Thunder 9500V (in LUN Management Mode))	When adding a LUN or host storage domain, make sure that I/O operations from the host to the corresponding port have stopped. If you add a LUN or host storage domain, the LUN security for the corresponding port will take effect automatically. Because of this, if, when the command is executed, I/O operations are taking place from the host to the port being added, then the I/O operations might terminate with an error.	AddLun AddHostStorageDomain
Setting up security for a LUN or host storage domain	When setting up security for a LUN or host storage domain, make sure that I/O operations from the host to the LU of the corresponding port have stopped. If you set up security for a LUN or host storage domain, the LUN security for the corresponding port will take effect automatically. Because of this, if, when the command is executed, I/O operations are taking place from the host to the LU of the corresponding port, then the I/O operations might terminate with an error.	AddWWNForLun AddWWNForHostStorageDomain
Changing the security or deleting storage that belongs to a LUN group.	When changing the security or deleting LUNs that belong to LUN groups, perform operations on each LUN group. If you want to delete or change security for only some of the LUNs that belong to a LUN group, use the <code>ModifyLunGroup</code> command to release the target LUNs from the LUN group, and then perform the operation for each LUN.	ModifyLunGroup DeleteLun AddWWNForLun DeleteWWNForLun
Usable characters for logical group, host, and storage subsystem names.	When the CLI command and Web Client are used at the same time, usable characters for logical group, host, and storage subsystem names are the following: A-Z a-z 0-9 - _ . @ Spaces can also be used, but you cannot use a name that consists of spaces only. If characters other than those shown above are used, operation from the Web Client might not be possible.	AddLogicalGroup ModifyLogicalGroup AddHost ModifyHost AddStorageArray
Using URLLink	When the CLI command and Web Client are used at the same time, other Web programs provided by the Web Client might not be able to start. Only a system administrator who has expert knowledge can use this combination.	AddURLLink DeleteURLLink
Using SLPR functionality (when using TagmaStore USP)	When SLPR functionality is used and a LUSE volume, path, or copy pair (ShadowImage) is created, specify the same SLPR. If you specify a different SLPR, the partitioned storage administrator cannot manage the created resource.	AddLUSE AddLUN AddReplication
Notes on account locking	When the user account-locking feature is enabled in HiCommand Suite Common Component, if you have failed to log in a specific number of times, the user account will be locked. As such, for operation in which multiple CLI commands are executed sequentially in batch, make sure beforehand that the correct password is set for options and properties.	All commands

Chapter 4 Command Descriptions (CLI)

This chapter provides CLI command descriptions, lists the parameters available for each command, and provides examples.

- Storage Array Commands(See section 4.1)
- Logical Group Commands(See section 4.2)
- LUN Commands(See section 4.3)
- Host Management Commands(See section 4.4)
- Server Management Commands(See section 4.5)
- Replication Commands(See section 4.6)
- Items Output as Command Execution Results(See section 4.7)
- Using Batch Files to Execute Commands(See section 4.8)
- Managing Mainframe Hosts(See section 4.9)
- Miscellaneous Tasks(See section 4.10)

4.1 Storage Array Commands

The Storage subsystem commands can be used to register, modify, and delete storage subsystem information. For information on storage array operations, please refer to the *HiCommand Device Manager Web Client User's Guide*.

4.1.1 AddArrayGroup

`AddArrayGroup` adds an array group to a storage device (see Table 4.1). An array group consists of a number of physical disk drives that are managed as logical devices according to the RAID level. Information about the storage subsystem to which a new array group was added is displayed in the execution results.

A user to whom a user-defined resource group is assigned, and who has only the View permission, cannot execute this command.

Note: This command is not available for the Universal Storage Platform V, TagmaStore USP, Lightning 9900V, or Lightning 9900.

Table 4.1 AddArrayGroup Command Parameters

Parameter Name	Status	Description
chassis	Required	Number of chassis for the array group
model	Required	Model of the storage array for the array group
raidtype	Required	RAID type of the array group For Thunder 9500V and Thunder 9200, the syntax is <code>RAIDX (yD [+zP])</code> . For the TagmaStore AMS/WMS series, the syntax is <code>RAIDX (yD [+yD])</code> or <code>RAIDXx (yD [+zP])</code> , where <i>x</i> indicates the RAID level, <i>y</i> indicates the number of data disks, and <i>z</i> (if specified) indicates the number of parity disks. (For example, <code>RAID5 (3D+1P)</code> is a RAID5 configuration consisting of three data disks and one parity disk.) The RAID levels that you can use depend on the storage subsystem: Thunder 9500V and Thunder 9200 support RAID0, RAID1, RAID0+1, and RAID5. TagmaStore AMS/WMS series supports RAID0, RAID1, RAID1+0, RAID5, and RAID6.
pdevnums	Required	Comma-separated list of physical disk (PDEV) IDs (see <code>pdevid</code> in Table 4.29 for more information)
serialnum	Required	Serial number of the storage array for the array group

Parameter Values to be Obtained in Advance:

`serialnum` and `model`: Obtain these values from the execution result of the `GetStorageArray` command. In the execution result of this command, the `arrayType` and `serialNumber` values appear under An instance of `StorageArray`. Use the `arrayType` and `serialNumber` values to specify the `model` and `serialnum` parameters respectively.

pdevnums: Obtain this value from the pdevid value in the execution result of the `GetStorageArray (subtarget=PDEV)` command. If a comma is included in the pdevid value, specify the value, excluding the comma. If there are multiple values to be specified, separate them with commas. Execute the `GetStorageArray` command by specifying only the `model` and `serialnum` parameters, and `PDEV` for the `subtarget` parameter.

Command execution example:

```
HiCommandCLI AddArrayGroup -o "D:\logs\9570V AddArrayGroup.log" "serialnum=650106070"
"model=HDS9570V" "chassis=0" "raidtype=RAID0 (2D)" "pdevnums=0,1"
```

Command execution result:

```
RESPONSE:
An instance of StorageArray
.
. (Attributes of StorageArray are omitted here)
.
List of 1 ArrayGroup elements:
An instance of ArrayGroup
objectID=ARRAYGROUP.HDS9570V.65010670.0.3
chassis=0
number=3
displayName=ulag1
raidType=RAID0 (2D)
diskSize=72
diskSizeInKB=75,497,472
controllerID=-1
totalCapacity=0
allocatedCapacity=0
freeCapacity=0
hiHsmCapacity=0
onDemandCapacity=0
totalFreeSpace=139,279,360
largestFreeSpace=139,279,360
substance=0
slprNumber=-1
clprNumber=-1
openTotalCapacity=0
openAllocatedCapacity=0
openFreeCapacity=0
openHiHsmCapacity=0
openOnDemandCapacity=0
imTotalCapacity=0
imAllocatedCapacity=0
imFreeCapacity=0
imHiHsmCapacity=0
imOnDemandCapacity=0
mfTotalCapacity=0
mfHiHsmCapacity=0
mfOnDemandCapacity=0
mfAllocatedCapacity=0
mfUnallocatedCapacity=0
openAllocatedActualCapacity=0
openUnallocatedCapacity=0
openUnallocatedActualCapacity=0
openReservedCapacity=0
openReservedActualCapacity=0
List of 1 FreeSpace elements:
An instance of FreeSpace
objectID=FREESPACE.HDS9570V.65010670.0.0.0
sizeInKB=139,279,360
cylinders=0
fsControlIndex=0
List of 2 PDEV elements:
An instance of PDEV
objectID=PDEV.HDS9570V.65010670.10
```

```

chassis=0
arrayGroup=3
capacityInKB=75,497,472
row=0
column=10
depth=1
role=data
vendor=SEAGATE
model=DKS2C-K072FC
firmwareVersion=F6FF
serialNumber=
dkuType=HDS9500V
rpm=0
diskType=0
pdevId=10
An instance of PDEV
objectID=PDEV.HDS9570V.65010670.11
chassis=0
arrayGroup=3
capacityInKB=75,497,472
row=0
column=11
depth=1
role=data
vendor=SEAGATE
model=DKS2C-K072FC
firmwareVersion=F6FF
serialNumber=
dkuType=HDS9500V
rpm=0
diskType=0
pdevId=11

```

4.1.2 AddArrayReservation

`AddArrayReservation` locks the target storage subsystem (see Table 4.3).

When a storage subsystem is locked, you can execute storage array commands and LUN commands. You can execute the `GetStorageArray` command even if another user has locked the storage subsystem. If you do not change the storage subsystem configuration or execute the `ModifyArrayReservation` command within five minutes after locking the storage subsystem, the storage subsystem will be unlocked.

Note: You cannot use the GUI to operate a storage subsystem when it is locked. If you want to operate a locked storage subsystem, use the HiCommand Device Manager CLI commands.

Table 4.2 Lists the executable commands.

Table 4.2 Executable Commands

AddHostStorageDomain	DeleteHostStorageDomain	FormatLU
AddLogicalUnit	DeleteLogicalUnit	ModifyLogicalUnit
AddLun	DeleteLun	ModifyLunGroup
AddLunGroup	DeleteLunGroup	ModifyPort
AddLUSE	DeleteLUSE	ModifyPortController
AddStorageArray	DeleteWWN	ModifyWWNGroup
AddWWNForHostStorageDomain	DeleteWWNForHostStorageDomain	
AddWWNForLun	DeleteWWNForLun	
AddWWNForLunGroup	DeleteWWNForLunGroup	
AddWWNGroup	DeleteWWNGroup	

A user who has only the View permission cannot execute this command. A user to whom user-defined resource groups are assigned, and who also has the Modify permission, can specify only storage subsystems that containing accessible LDEVs. If any other storage subsystems are specified, an error occurs.

Note: This command is not available for the TagmaStore AMS/WMS series, Thunder 9500V, and Thunder 9200.

Table 4.3 AddArrayReservation Command Parameters

Parameter Name	Status	Description
model	Required	Model of the storage subsystem
serialnum	Required	Serial number of the storage subsystem

Parameter Values to be Obtained in Advance:

serialnum and model: Obtain these values from the execution result of the GetStorageArray command. In these results, the arrayType and serialNumber values appear under An instance of StorageArray. Use the arrayType and serialNumber values to specify the model and serialnum parameters respectively.

Command example:

```
HiCommandCLI AddArrayReservation -o "D:\logs\AddArrayReservation.log" "model=USP" "serialnum=14009"
```

Command result:

```
An instance of ArrayReservation
  objectID=ARRAYRESERVATION.USP.14009
  target=ARRAY.USP.14009
  loginID=dmuser
  beginTime=1,039,003,476
```

4.1.3 AddHostStorageDomain

AddHostStorageDomain adds a host storage domain. For the Thunder 9500V (in LUN Management mode), Universal Storage Platform V, TagmaStore USP, Lightning 9900V, and TagmaStore AMS/WMS series, this command creates a host group in the storage subsystem (see Table 4.4).

A user who has only the View permission cannot execute this command. A user to whom user-defined resource groups are assigned, and who also has the Modify permission, does not have access range limitations.

Note: For the Thunder 9500V (in LUN Management mode), Universal Storage Platform V, TagmaStore USP, Lightning 9900V, and TagmaStore AMS/WMS series, when AddHostStorageDomain adds a host storage domain, LUN security for the target port is automatically enabled.

Table 4.4 AddHostStorageDomain Command Parameters

Parameter Name	Status	Description
serialnum	Required	Serial number of the storage array for the host storage domain.
model	Required	Model of the storage array for the host storage domain.
port	Optional	Port ID of the host storage domain(a specific array must be specified by serial number and model). Note: Specify either port or portname. Do not specify both parameters at the same time. This might cause an error to occur.
portname	Optional	The port name for the host storage domain (specific arrays need to be specified by serial number and model). Note: Specify either port or portname. Do not specify both parameters at the same time. This might cause an error to occur.
domain	Required	DomainID of the host storage domain. This parameter can be specified in decimal and hexadecimal. If you specify a hexadecimal number, add the 0x prefix. Note: The execution results are output in decimal. Note: The specifiable values vary, depending on the storage subsystem. For the Universal Storage Platform V and TagmaStore USP: 1 to 254 For Lightning 9900V, Thunder 9500V (in LUN Management mode), and TagmaStore AMS/WMS series: 1 to 127 All Others: 1 to 511

Parameter Name	Status	Description
hostmode	Optional (9500V (in LUN Management mode), USP V, USP, 9900V, and AMS/WMS series)	<p>New host connect mode of the host storage domain. The default is Standard.</p> <p>For the Universal Storage Platform V, you can specify the following values:</p> <ul style="list-style-type: none"> Standard VMware HP OpenVMS Tru64 Solaris NetWare Windows AIX VMware Extension Windows Extension UVM <p>For the TagmaStore USP, you can specify the following values:</p> <ul style="list-style-type: none"> Standard Sequent HP Solaris Netware Windows Windows Extension Tru64 HI-UX AIX OPEN-VMS <p>The following value relies on the DKC microcode version. For 50-03-0X-XX/XX or later:</p> <ul style="list-style-type: none"> UVM <p>For the Lightning 9900V, you can specify the following values:</p> <ul style="list-style-type: none"> Standard Sequent HP Solaris Netware Windows Tru64 HI-UX AIX OPEN-VMS

Parameter Name	Status	Description
		<p>The following value relies on the DKC microcode version.</p> <p>For 21-05-00-XX/XX or later:</p> <ul style="list-style-type: none"> Windows Extension Solaris Extension <p>For 21-14-02-XX/XX or later:</p> <ul style="list-style-type: none"> Standard Extension2 HP Extension2 Solaris Extension2 Windows Extension2 AIX Extension2 <p>For Thunder 9500V (in the LUN Management mode) and TagmaStore AMS/WMS series, you can specify the following values:</p> <ul style="list-style-type: none"> Standard Open VMS TRESPASS Wolfpack
hostmode2	Optional (9500V (in the LUN Management mode) and AMS/WMS series)	<p>List of new host connect modes. Each mode is separated using a semicolon (;).</p> <p>In this parameter, you can specify 0 or the following values:</p> <p>For TagmaStore AMS/WMS series, you can specify the following values:</p> <ul style="list-style-type: none"> Same Node Name Mode Tru Cluster Mode ASL Report Mode (Active/Passive Group) ASL Report Mode (Active/Passive) ASL Report Mode (Active/Active) Port-ID No Report Mode Port-ID Conversion Mode PSUE Read Reject Mode UA (06/2A00) suppress Mode CCHS Mode HP-UX Mode NACA Mode Product Serial Response Mode Unique Reserve Mode 1 Reset Propagation Mode HISUP OFF Mode

Parameter Name	Status	Description
		<p>The following value relies on the microcode version.</p> <p>For x712/A-x or later:</p> <p style="padding-left: 40px;">SPC-2 Mode</p> <p>For Thunder 9500V (in the LUN Management mode), you can specify the following values:</p> <p style="padding-left: 40px;">ftServer Connection Mode 2</p> <p style="padding-left: 40px;">SRC Read Command Reject Mode</p> <p style="padding-left: 40px;">UA (06/2A00) suppress Mode</p> <p style="padding-left: 40px;">HISUP Mode</p> <p style="padding-left: 40px;">CCHS Mode</p> <p style="padding-left: 40px;">HP Connection Mode 2</p> <p style="padding-left: 40px;">Product ID DF400 Mode</p> <p style="padding-left: 40px;">NACA Mode</p> <p style="padding-left: 40px;">SUN Cluster Connection Mode</p> <p style="padding-left: 40px;">Persistent RSV Cluster Mode</p> <p style="padding-left: 40px;">Reset Target (Reset Bus Device) Mode</p> <p style="padding-left: 40px;">Reserve Mode</p> <p style="padding-left: 40px;">Reset Logical Unit Mode</p> <p style="padding-left: 40px;">Reset Logout of Third Party Process Mode</p> <p>The following value relies on the microcode version.</p> <p>For x712/A-x or later:</p> <p style="padding-left: 40px;">SPC-2 Mode</p> <p>For x6x5 or later:</p> <p style="padding-left: 40px;">Tru Cluster Connection Mode</p> <p style="padding-left: 40px;">Path Switch Mode (Active/Passive Group)</p> <p style="padding-left: 40px;">Path Switch Mode (Active/Passive)</p> <p style="padding-left: 40px;">Path Switch Mode (Active/Active)</p> <p style="padding-left: 40px;">Port-ID No Report Mode</p> <p style="padding-left: 40px;">Port-ID Conversion Mode</p> <p>For x6x7 or later:</p> <p style="padding-left: 40px;">Same Node Name Mode</p> <p>For x6xA/R or later:</p> <p style="padding-left: 40px;">SPC-2 Mode</p>

Parameter Name	Status	Description
		<p>The following values rely on the DKC microcode version.</p> <p>For x6x3/C or later:</p> <p style="padding-left: 40px;">No_RSV_Conf Mode</p> <p>For x6x5 or later:</p> <p style="padding-left: 40px;">Tru Cluster Connection Mode</p> <p style="padding-left: 40px;">Path Switch Mode (Active/Passive Group)</p> <p style="padding-left: 40px;">Path Switch Mode (Active/Passive)</p> <p style="padding-left: 40px;">Path Switch Mode (Active/Active)</p> <p style="padding-left: 40px;">Port-ID No Report Mode</p> <p style="padding-left: 40px;">Port-ID Conversion Mode</p> <p>For x6x7 or later:</p> <p style="padding-left: 40px;">Same Node Name Mode</p> <p>For x6xA/R or later:</p> <p style="padding-left: 40px;">SPC-2 Mode</p>
hostModeOption	Optional (USP V and USP only)	<p>An option for the host connection mode. To specify two or more options, separate them with semicolons (;).</p> <p>For details about the values that you can specify, see Table 4.41.</p>
name	Optional	<p>Name of the host storage domain.</p> <p>The number of characters that can be used for a name is 1-64 bytes.</p> <p>Note: Spaces at the beginning or end of a name are not registered.</p>

Parameter Name	Status	Description
nickname	Optional (9500V (in LUN Management mode), USP V, USP, 9900V, and AMS/WMS series)	<p>Nickname of the host storage domain.</p> <p>You can use the following characters: A-Z a-z 0-9 ! # \$ % & ' () + - . = @ [] ^ _ ` { } ~ (space)</p> <p>Note: A nickname cannot begin or end with spaces.</p> <p>Note: For the TagmaStore AMS/WMS series, and the Thunder 9500V series in the LUN Management mode, an apostrophe (') cannot be used.</p> <p>The number of characters that can be used for a nickname is as follows:</p> <p>Universal Storage Platform V: 1-32 bytes</p> <p>TagmaStore USP: 1-16 bytes</p> <p>DKC microcode version 50-04-01 or later: 1-32 bytes</p> <p>Lightning 9900V: 1-8 bytes</p> <p>TagmaStore AMS/WMS series: 1-16 bytes</p> <p>Thunder 9500V (LUN management mode): 1-8 bytes</p> <p>Microcode version x6x9/M or later: 1-16 bytes</p>

Parameter Values to be Obtained in Advance:

`serialnum` and `model`: Obtain these values from the execution result of the `GetStorageArray` command. In the execution result of this command, the `arrayType` and `serialNumber` values appear in a `StorageArray`. Use the `arrayType` and `serialNumber` values to specify the `model` and `serialnum` parameters respectively.

`port` and `domain`: Obtain these values from the execution result of the `GetStorageArray` (`subtarget=Port`, `portSubinfo=HostStorageDomain`) command. Execute this command by specifying only the `model` and `serialnum` parameters, `Port` for the `subtarget` parameter, and `HostStorageDomain` for the `portSubinfo` parameters. In the execution result of this command, the `portID` value appears in a `Port`. Use this `portID` value to specify the `port` parameter. For the `domain` parameter, use a `domainID` that is not used as one of the host storage domains of the port you intend to specify.

portname: Obtain this value from the execution result of the `GetStorageArray` (subtarget=Port) command. In the execution result of this command, the `displayName` value appears under An instance of Port. Use this value to specify the `portname` parameter.

nickname: Obtain this value from the execution result of the `GetStorageArray` (subtarget=Port) command. Execute this command by specifying only the `model` and `serialnum` parameters, `Port` for the `subtarget` parameter, and `HostStorageDomain` for the `portsubinfo` parameter. In the execution result of this command, the value of `nickname` appears as An instance of `HostStorageDomain`.

Command example:

```
HiCommandCLI AddHostStorageDomain -o "D:\logs\USPAddHostStorageDomain.log"
"serialnum=11111" "model=USP" "port=16" "domain=1" "hostmodeoption=2"
```

Command result:

```
RESPONSE:
An instance of StorageArray
.
. (Attributes of StorageArray are omitted here)
.
List of 1 HostStorageDomain elements:
An instance of HostStorageDomain
objectID=HSDOMAIN.USP.11111.16.1
portID=16
domainID=1
hostMode=Standard
hostModeOption=2
displayName=CL1-E-1
nickname=HCMD1001
```

4.1.4 AddLogicalUnit

`AddLogicalUnit` creates an LDEV and LU (see Table 4.5).

A user to whom a user-defined resource group is assigned, and who has only the View permission, cannot execute this command.

If the `format` parameter is not specified, the LDEVs created by this command are formatted when they are created. With the Thunder 9500V series, `QuickFormat` can be used to format LDEVs if the microcode is one of the following versions:

Thunder 9530V or Thunder 9570V: 0655/C or later

Thunder 9580V: 1655/D or later

Notes:

- For Lightning 9900, Lightning 9900V, TagmaStore USP, and Universal Storage Platform V, the capacity of LDEV to be created will be larger than the specified capacity.
- For Lightning 9900, Lightning 9900V, TagmaStore USP, and Universal Storage Platform V, you cannot create an LDEV that is the same size as the free space of the array group, because the control area is created on the storage subsystem side.

- Do not use an application such as DAMP to access the Thunder 9200 storage subsystem while an LDEV is being created on the Thunder 9200. If you do, a connection error might occur.

Note: For TagmaStore USP, logical units cannot be created in array groups with chassis numbers from 65 to 96. Array groups with chassis numbers from 65 to 96 are indicated as V-VOLs.

Note: For Universal Storage Platform V, logical units cannot be created in array groups with chassis numbers from 65 to 96, or from 16485 to 16516. Array groups with chassis numbers from 65 to 96, or from 16485 to 16516 are indicated as V-VOLs.

Note: For Universal Storage Platform V, TagmaStore USP, Lightning 9900V, and Lightning 9900, the SSID must be set before an LDEV and LU are created. For details about the SSID, see the manual for each storage subsystem.

Format for TagmaStore AMS/WMS series:

```
HiCommandCLI [URL] AddLogicalUnit [options] serialnum=serial-number model=model
{chassis=chassis-number groupnum=array-group-number|arraygroupname=array-group-name}
chassis=chassis-number groupnum=array-group-number capacity=capacity-of-the-logical-unit
[defportctl=logical-unit-port-controller-number|defaultportcontrollername=logical-unit-
port-controller-name] [devnum=logical-unit-device-number] [lusubinfo=LDEV]
[clprNumber=CLPR-number-for-the-LDEV] [stripeSizeInKB=stripe-size-for-the-LDEV]
[format={none|normal}]
```

Format for Lightning 9900, Lightning 9900V, TagmaStore USP, and Universal Storage Platform V:

```
HiCommandCLI [URL] AddLogicalUnit [options] serialnum=serial-number model=model
{chassis=chassis-number groupnum=array-group-number|arraygroupname=array-group-name}
chassis=chassis-number groupnum=array-group-number capacity=capacity-of-the-logical-unit
[emulation=emulation-type] [devnum=logical-unit-device-number] [lusubinfo=LDEV]
[format={none|normal}]
```

Format for Thunder 9200 and Thunder 9500V:

```
HiCommandCLI [URL] AddLogicalUnit [options] serialnum=serial-number model=model
{chassis=chassis-number groupnum=array-group-number|arraygroupname=array-group-name}
chassis=chassis-number groupnum=array-group-number capacity=capacity-of-the-logical-unit
[defportctl=logical-unit-port-controller-number|defaultportcontrollername=logical-unit-
port-controller-name] [devnum=logical-unit-device-number] [lusubinfo=LDEV]
[format={none|normal}]
```

Table 4.5 AddLogicalUnit Command Parameters

Parameter Name	Status	Description
serialnum	Required	Serial number of the storage array where LU is added.
model	Required	Model of the storage array where the LU is added.
chassis	Optional	Number of chassis for the array group where LU is added. If you specify this parameter, make sure that groupnum is also specified. Note: Either specify chassis and groupnum at the same time, or specify arraygroupname. Also, make sure that the combination of chassis and groupnum is not specified at the same time as arraygroupname. This might cause an error to occur.
groupnum	Optional	Group number of the array group where LU is added. If you specify this parameter, make sure that groupnum is also specified. Note: Either specify chassis and groupnum at the same time, or specify arraygroupname. Also, make sure that the combination of chassis and groupnum is not specified at the same time as arraygroupname. This might cause an error to occur.
arraygroupname	Optional	Display name for the array group where the LU is added. When this parameter is specified, do not specify chassis or groupnum. Note: Either specify chassis and groupnum at the same time, or specify arraygroupname. Also, make sure that the combination of chassis and groupnum is not specified at the same time as arraygroupname. This might cause an error to occur.
capacity	Required	Desired capacity (in KB) for the new LU. The specified value is adjusted, depending on the minimum unit that is set to the volume size of each storage subsystem. Therefore, the size of the logical unit that was actually created might exceed the specified value.
defportcntl	Optional (AMS/WMS series, 9500V, and 9200)	Number of the port controller for the LU. Note: Specify either defportcntl or defaultportcontrollername. Do not specify both parameters at the same time. This might cause an error to occur.
defaultportcontrollername	Optional (AMS/WMS series, 9500V, and 9200)	LU port controller name. Note: Specify either defportcntl or defaultportcontrollername. Do not specify both parameters at the same time. This might cause an error to occur.

Parameter Name	Status	Description
emulation	Optional (USP V, USP, 9900V, and 9900)	<p>Emulation type of the logical unit in the TagmaStore USP, Lightning 9900, or 9900V.</p> <p>The following are the specifiable emulation types:</p> <ul style="list-style-type: none"> ▪ OPEN-3 ▪ OPEN-8 ▪ OPEN-9 ▪ OPEN-E ▪ OPEN-K ▪ OPEN-V (available only for the TagmaStore USP and Lightning 9900V) <p>Specify the same emulation type as the array group in which a logical unit is created.</p> <p>If no such emulation is present, array group emulation is used.</p>
Devnum	Optional	<p>LU device number.</p> <p>If omitted, the number is automatically generated.</p> <p>This parameter can be specified in decimal, and in colon-separated hexadecimal. If you specify a hexadecimal number, for TagmaStore USP, Lightning 9900V, and Lightning 9900, use the <i>xx:yy</i> format, where <i>xx</i> is the CU number, and <i>yy</i> is the LDEV number. For Universal Storage Platform V, use the <i>ww:xx:yy</i> format, where <i>ww</i> is the LDKC number, <i>xx</i> is the CU number, and <i>yy</i> is the LDEV number. <i>ww</i> is optional. If you omit <i>ww</i>, the LDKC number is regarded as 0.</p> <p>Note: The execution results are output in decimal.</p>
Lusubinfo	Optional	<p>If set to LDEV, return the information on LDEV(s) related to the LU. The value you can specify is <code>LDEV</code> only which is not case-sensitive.</p>
clprNumber	Optional (AMS/WMS series)	<p>CLPR number for the LDEV.</p> <p>If omitted, the LDEV is created using the CLPR default number.</p>
stripeSizeInKB	Optional (AMS/WMS series)	<p>Stripe size for the LDEV (in KB).</p> <p>The following are the specifiable values:</p> <p>64</p> <p>256</p> <p>512</p> <p>The default setting is 64 KB.</p>
format	Optional (Universal Storage Platform V and TagmaStore USP only)	<p>Specifies the format status of LDEVs that constitute an LU.</p> <p>You can specify the following values:</p> <p><code>none</code>: Creates an unformatted LDEV.</p> <p><code>normal</code>: Creates a formatted LDEV.</p> <p>Note: If omitted,, a formatted LDEV will be created.</p> <p>Note: If you specify this value, make sure that the value of the <code>autoFormatLU</code> attribute of the <code>StorageArray</code> instance is 0.</p>

Parameter Values to be Obtained in Advance:

`serialnum` and `model`: Obtain these values from the execution result of the `GetStorageArray` command. In the execution result of this command, the `arrayType` and `serialNumber` values appear in a `StorageArray`. Use the `arrayType` and `serialNumber` values to specify the `model` and `serialnum` parameters respectively.

`chassis` and `groupnum`: Obtain these values from the execution result of the `GetStorageArray (subtarget=ArrayGroup)` command. Execute this command by specifying only the `model` and `serialnum` parameters, and `ArrayGroup` for the `subtarget` parameter. In the execution result of this command, the `chassis` value and the `number` value appear in an `ArrayGroup`. Use these `chassis` and `number` values to specify the `chassis` and `groupnum` parameters respectively.

`arraygroupname`: Obtain this value from the execution result of the `GetStorageArray (subtarget=ArrayGroup)` command. In the execution result of this command, `displayName` appears under an instance of `ArrayGroup`. Use this value to specify the `arraygroupname` parameter.

Command Execution Example 1:

In this example, the `AddLogicalUnit` command creates a logical unit (capacity: 1,000,080 KB, emulation type: `OPEN-3`) for an array group (chassis number: 4, array group number: 32) in a storage subsystem (serial number: 10001, model: `HDS9980V`). The LDEVs composing the created logical unit are obtained from the execution result.

```
HiCommandCLI AddLogicalUnit -o "D:\logs\9980V AddLogicalUnit.log" serialnum=10001
model=HDS9980V chassis=4 groupnum=32 capacity=1000080 emulation=OPEN-3 lusubinfo=LDEV
devnum=176
```

Command 1 result:

```
RESPONSE:
An instance of StorageArray
.
. (Attributes of StorageArray are omitted here)
.
List of 1 Lu elements:
  An instance of LogicalUnit
    objectID=LU.HDS9980V.10001.176
    devNum=176
    displayName=00:B0
    emulation=OPEN-3
    devCount=1
    devType=
    capacityInKB=1,000,080
    path=false
    commandDevice=false
    commandDeviceEx=0
    commandDeviceSecurity=false
    chassis=4
    arrayGroup=32
    raidType=RAID5 (3D+1P)
    currentPortController=-1
    defaultPortController=-1
    isComposite=0
    trueCopyVolumeType=Simplex
    shadowImageVolumeType=Simplex
    quickShadowVolumeType=Simplex
    universalReplicatorVolumeType=Simplex
    sysVolFlag=0
```

```
externalVolume=0
differentialManagement=false
quickShadowPoolID=-1
universalReplicatorPoolID=-1
```

Command Execution Example 2:

In this example, the `AddLogicalUnit` command creates a logical unit (capacity: 1,000,080 KB, default port controller ID: 0) for an array group (chassis number: 0, array group number: 2) in a storage subsystem (serial number: 10001, model: HDS9200). The LDEVs composing the created logical unit are obtained from the execution result.

```
HiCommandCLI AddLogicalUnit -o "D:\logs\9200 AddLogicalUnit.log" serialnum=10001
model=HDS9200 chassis=0 groupnum=2 capacity=1000080 defportctl=0 lusubinfo=LDEV
```

Command 2 result:

```
RESPONSE:
An instance of StorageArray
.
. (Attributes of StorageArray are omitted here)
.
List of 1 Lu elements:
  An instance of LogicalUnit
    objectID=LU.HDS9200.10001.58
    devNum=58
    displayName=58
    devCount=1
    devType=
    capacityInKB=1,000,080
    path=false
    commandDevice=false
    commandDeviceEx=0
    commandDeviceSecurity=false
    chassis=0
    arrayGroup=2
    raidType=RAID1 (1D+1P)
    currentPortController=0
    defaultPortController=0
    isComposite=0
    trueCopyVolumeType=Unknown
    shadowImageVolumeType=Simplex
    quickShadowVolumeType=Simplex
    universalReplicatorVolumeType=Simplex
    sysVolFlag=0
    externalVolume=0
    differentialManagement=false
    quickShadowPoolID=-1
    universalReplicatorPoolID=-1
```

4.1.5 AddLUSE

AddLUSE adds a LUSE volume to a storage subsystem (see Table 4.6).

A user who has only the View permission cannot execute this command. A user to whom a user-defined resource group is assigned, and who also has the Modify permission, can create a LUSE volume by using logical devices that the user is permitted to access. If LDEVs that are not allowed are specified, an error occurs.

Make sure that you back up the data before creating a LUSE volume, because the data stored in the LDEV/LU to be connected might be lost during creation of the LUSE volume.

When you create a LUSE volume, specify a formatted LDEV. If you include an unformatted LDEV during creation of the LUSE volume, the LUSE volume will not be recognized from the hosts.

Note: This function is not available for Lightning 9900.

Note: When you add a LUSE volume with the `luseoption` parameter set, specify a LDEV in which a path is set as the first LDEV. If a LDEV without a path set is specified as the first LDEV, an error will occur.

Note: When a LUSE volume is added with the `luseoption` parameter set, the extended LUSE volume might not be able to be recognized, based on the host. In this case, restart the host.

Table 4.6 AddLUSE Command Parameters

Parameter Name	Status	Description
<code>serialnum</code>	Required	Serial number of the storage array from which LUSE is added.
<code>model</code>	Required	Model of the storage array from which the LUSE is added.
<code>devnums</code>	Required	Comma-separated list of LDEV device numbers to create the LUSE. This parameter can be specified in decimal, and in colon-separated hexadecimal. If you specify a hexadecimal number, for TagmaStore USP, Lightning 9900V, and Lightning 9900, use the <code>xx:yy</code> format, where <code>xx</code> is the CU number, and <code>yy</code> is the LDEV number. For Universal Storage Platform V, use the <code>ww:xx:yy</code> format, where <code>ww</code> is the LDKC number, <code>xx</code> is the CU number, and <code>yy</code> is the LDEV number. <code>ww</code> is optional. If you omit <code>ww</code> , the LDKC number is regarded as 0. Note: The execution results are output in decimal.
<code>luseoption</code>	Optional	An option for adding a LUSE volume to a volume for which a path is set. The value you can specify is <code>force</code> only. Note: For Lightning 9900V, the version of the DKC microcode must be 21-05-00/00 or later when this option is specified.

Parameter Values to be Obtained in Advance:

`serialnum` and `model`: Obtain these values from the execution result of the `GetStorageArray` command. In the execution result of this command, the `arrayType` and `serialNumber` values appear under An instance of `StorageArray`. Use the `arrayType` and `serialNumber` values to specify the `model` and `serialnum` parameters respectively.

`devnums`: Obtain this value from the execution result of the `GetStorageArray` (`subtarget=LDEV`) command. Execute this command by specifying only the `model` and `serialnum` parameters, and `LDEV` for the `subtarget` parameter. In the execution result of this command, the `devNum` value of an LDEV appears under An instance of `LDEV`. Use this `devNum` value to specify the `devnums` parameter.

Command execution example:

```
HiCommandCLI AddLUSE -o "D:\logs\9980V AddLUSE.log" "serialnum=15001" "model=HDS9980V" "devnums=1001,1002"
```

Command execution result:

```

RESPONSE:
An instance of StorageArray
    .
    . (Attributes of StorageArray are omitted here)
    .
List of 1 Lu elements:
  An instance of LogicalUnit
    objectID=LU.HDS9980V.15001.1001
    devNum=1,001
    displayName=3:E9
    emulation=OPEN-3
    devCount=2
    devType=
    capacityInKB=4,806,720
    path=false
    commandDevice=false
    commandDeviceEx=0
    commandDeviceSecurity=false
    chassis=3
    arrayGroup=16
    raidType=RAID5 (3D+1P)
    currentPortController=-1
    defaultPortController=-1
    isComposite=1
    trueCopyVolumeType=Simplex
    shadowImageVolumeType=Simplex
    quickShadowVolumeType=Simplex
    universalReplicatorVolumeType=Simplex
    sysVolFlag=0
    externalVolume=0
    differentialManagement=false
    quickShadowPoolID=-1
    universalReplicatorPoolID=-1
  List of 2 Ldev elements:
    An instance of LDEV
      objectID=LDEV.HDS9980V.15001.1001
      devNum=1,001
      displayName=3:E9
      emulation=OPEN-3
      cylinders=0
      isComposite=1
      sizeInKB=2,403,360
      lba=1,201,680
      raidType=RAID5 (3D+1P)
      substance=0
      volumeType=3
      slotSizeInKB=48
      chassis=3
      arrayGroup=16
      path=false
      onDemandDevice=false
      devType=
      isStandardLDEV=true
      guardMode=
      diskType=-1
      slprNumber=-1
      clprNumber=-1
      cacheResidencyMode=-1
      stripeSizeInKB=-1
      volumeKind=3
      status=Blocked
      dpType=-1
      consumedSizeInKB=-1
    An instance of LDEV
      objectID=LDEV.HDS9980V.15001.1002
      devNum=1,002
      displayName=3:EA
      emulation=OPEN-3

```

```

cylinders=0
isComposite=1
sizeInKB=2,403,360
lba=1,201,680
raidType=RAID5 (3D+1P)
substance=0
volumeType=3
slotSizeInKB=48
chassis=3
arrayGroup=16
path=false
onDemandDevice=false
devType=
isStandardLDEV=true
guardMode=
diskType=-1
slprNumber=-1
clprNumber=-1
cacheResidencyMode=-1
stripeSizeInKB=-1
volumeKind=3
status=Blocked
dpType=-1
consumedSizeInKB=-1

```

4.1.6 AddSpareDrive

`AddSpareDrive` adds a spare drive to a storage device (see Table 4.7). The spare drive is a physical disk drive that is used by the storage device as a backup or standby. Information about the added spare drive is displayed in the execution results.

A user to whom a user-defined resource group is assigned, and who has only the View permission, cannot execute this command.

Note: This command is not available for the Universal Storage Platform V, TagmaStore USP, Lightning 9900V, or Lightning 9900.

Table 4.7 AddSpareDrive Command Parameters

Parameter Name	Status	Description
serialnum	Required	Serial number of the storage array where the spare drive is added
model	Required	Model of the storage array where the spare drive is added
pdevid	Required	Physical device ID for the new spare drive ((for more information, see <code>pdevid</code> in Table 4.29)

Parameter Values to be Obtained in Advance:

`serialnum` and `model`: Obtain these values from the execution result of the `GetStorageArray` command. In the execution result of this command, the `arrayType` and `serialNumber` values appear under `An instance of StorageArray`. Use the `arrayType` and `serialNumber` values to specify the `model` and `serialnum` parameters respectively.

`pdevid`: Obtain this value from the `pdevid` value in the execution result of the `GetStorageArray (subtarget=PDEV)` command. If a comma is included in the `pdevid` value, specify the value, excluding the comma. Execute this command by specifying only the `model` and `serialnum` parameters, and `LDEV` for the `subtarget` parameter.

Command execution example:

```
HiCommandCLI AddSpareDrive -o "D:\logs\9200 AddSpareDrive.log" "serialnum=10001"
"model=HDS9200" "pdevid=5"
```

Command execution result:

```
RESPONSE:
An instance of StorageArray
.
. (Attributes of StorageArray are omitted here)
.
List of 1 PDEV elements:
An instance of PDEV
objectID=PDEV.HDS9200.10001.5
chassis=0
arrayGroup=-1
capacityInKB=108,003,328
row=0
column=5
depth=1
role=spareuninitialized
vendor=SEAGATE
model=ST39103FC
firmwareVersion=FF78
serialNumber=
dkuType=HDS9200
rpm=0
diskType=-1
pdevid=1
```

4.1.7 AddStorageArray

`AddStorageArray` performs a search for a storage subsystem, and registers the storage subsystem information (such as IP address, user ID, and password) in the HiCommand Device Manager server database (see Table 4.8). For the registered storage subsystems, `AddStorageArray` modifies the registered information, and refreshes the storage subsystem configuration information (that is, updates the configuration information). When you modify the registered information, you can modify the values other than the storage system type (whose parameter is `family`).

A user who has only the View permission cannot execute this command. A user to whom a user-defined resource group is assigned, and who also has the Modify permission, can use this command only to update information about storage subsystems that the user is permitted to access.

Note: When you are performing this command, do not shut down the hosts that are using storage subsystem volumes, and do not stop the Device Manager agent. If you shut down such a host or stop the agent, it might take longer to perform the `AddStorageArray` command.

Note: When using the `AddStorageArray` command to register storage subsystem information, we recommend that, for the parameter `userid`, you specify a different user ID from user IDs that other subsystem management tools use.

Note: If execution of the `AddStorageArray` command results in an error, take appropriate action according to the error message, and then re-execute the `AddStorageArray` command. When the `AddStorageArray` command is executed, information obtained from the storage subsystem is divided into transactions and stored in the Device Manager database. Therefore, if an error occurs during processing, the configuration information in the Device Manager database becomes inconsistent with the configuration information of the actual storage subsystem. If the database is inconsistent, there might be limitations on the operations below for the target storage subsystem. To check whether the database is inconsistent, execute the `GetStorageArray` command. If a value other than 0 is written for `statusOfDBInconsistency` (which is displayed under an instance of `StorageArray` as the result of the `GetStorageArray` command), the status of the database is inconsistent.

Format for Lightning 9900:

```
HiCommandCLI [URL] AddStorageArray [options] ipaddress=IP-address family=array-family
[displayfamily=array-family-to-be-displayed] [searchcommunity=searchcommunity]
```

Format for Thunder 9200, Thunder 9500V, and TagmaStore AMS/WMS series:

```
HiCommandCLI [URL] AddStorageArray [options] ipaddress=IP-address family=array-family
[displayfamily=array-family-to-be-displayed] [ipaddress2=second-IP-address] [userid=user-ID
arraypasswd=user-password]
```

Format for Universal Storage Platform V, TagmaStore USP, and Lightning 9900V:

```
HiCommandCLI [URL] AddStorageArray [options] ipaddress=IP-address family=array-family
[displayfamily=array-family-to-be-displayed] [userid=user-ID arraypasswd=user-password]
```

Table 4.8 AddStorageArray Command Parameters

Parameter Name	Status	Description
arraypasswd	Optional (9200, 9500V, AMS/WMS series, 9900V, USP, and USP V only)	User password for accessing the storage subsystem. For Thunder 9200, Thunder 9500V, and TagmaStore AMS/WMS series, required only at initial identification of those arrays with the password protection feature enabled; optional for other cases. For Universal Storage Platform V, TagmaStore USP, and Lightning 9900V, specification of this parameter is required at initial identification. When refreshing information, you can omit this parameter if the user password was not changed. Note: For the TagmaStore AMS/WMS series, if Account Authentication is enabled, specify the user password of a user who has storage administrator permissions (view and modify) and account administrator permissions (view and modify).
displayfamily	Optional	Display name of array family for the storage subsystem. This parameter is required at initial identification.
family	Required	Array family of the storage subsystem.
ipaddress	Required	IP address of the storage subsystem.

Parameter Name	Status	Description
ipaddress2	Optional (9200, 9500V, and AMS/WMS only)	Second IP address for the storage subsystem. When a dual configuration is composed by Thunder 9200, Thunder 9500V, and TagmaStore AMS/WMS series, if the storage subsystem is initially identified and is refreshed, this parameter's specification is required. When refreshing the information, you can omit this parameter if the second IP address was not changed.
searchcommunity	Optional (9900 only)	SNMP Community string, used for identifying device elements via SNMP (9900 array). Default is public.
Userid	Optional (9200, 9500V, AMS/WMS series, 9900V, USP, and USP V only)	User ID for accessing the storage subsystem. For Thunder 9200, Thunder 9500V, and TagmaStore AMS/WMS series, when the password protection feature is enabled, if the storage subsystem is initially identified, this parameter's specification is required. For other cases, you can omit this parameter. For Universal Storage Platform V, TagmaStore USP, and Lightning 9900V, specification of this parameter is required at initial identification. When refreshing information, you can omit this parameter if the user ID was not changed. Note: For the TagmaStore AMS/WMS series, if Account Authentication is enabled, specify the user ID of a user who has storage administrator permissions (view and modify) and account administrator permissions (view and modify).

Parameter Values to be Obtained in Advance:

`family` and `displayfamily`: Obtain the values of these parameters from the execution results of the `GetServerInfo` command. This command displays a combination of `arrayFamily` and `displayArrayFamily` values. Use these values to specify the `family` and `displayfamily` parameters respectively.

Command Example:

In this example, the `AddStorageArray` command accesses and detects the storage subsystems in an array family (family: HDS9900V, IP address: 172.16.45.1). The command specifies the user ID (`root`) and the user password (`hicommand`). Information about the detected storage subsystems is registered in the Device Manager Server database.

```
HiCommandCLI AddStorageArray -o "D:\logs\9980V AddStorageArray.log" ipaddress=172.16.45.1 family=HDS9900V userid=root arraypasswd=hicommand displayfamily=HDS9900V
```

Command result:

```
RESPONSE:
An instance of StorageArray
  objectID=ARRAY.HDS9980V.10001
  name=HDS9980V@172.16.45.1
  description=HDS9980V (10001) at 172.16.45.1
  serialNumber=10001
  arrayFamily=HDS9900V
  arrayType=HDS9980V
  microcodeVersion=21-03-00/00
  agentVersion=02-05-14
  productName=RAID450
  controllerVersion=21-04-00-00/00
  numberOfControllers=4
  capacityInGB=3,839
  cacheInMB=10,240
```

```

sharedMemoryInMB=-1
numberOfSpareDrives=-1
freeCapacityInGB=2,329
allocatedCapacityInGB=1,505
hihsmCapacityInGB=4
onDemandCapacityInGB=0
totalFreeSpaceInGB=19
largestFreeSpaceInGB=3
capacityInKB=4,025,592,720
freeCapacityInKB=2,442,665,520
allocatedCapacityInKB=1,578,120,480
hihsmCapacityInKB=4,806,720
onDemandCapacityInKB=0
totalFreeSpaceInKB=20,192,256
largestFreeSpaceInKB=3,796,992
multipathSupport=1
securityStatus=2
sequenceNumber=10001
displayArrayFamily=HDS9900V
displayArrayType=HDS9980V
numberOfLUs=1,555
numberOfAllocatedLUs=565
numberOfUnallocatedLUs=990
slprStatus=-1
openTotalCapacity=4,025,592,720
openAllocatedCapacity=1,578,120,480
openFreeCapacity=2,442,665,520
openHiHsmCapacity=4,806,720
openOnDemandCapacity=0
imTotalCapacity=0
imAllocatedCapacity=0
imFreeCapacity=0
imHiHsmCapacity=0
imOnDemandCapacity=0
mfTotalCapacity=0
mfHiHsmCapacity=0
mfOnDemandCapacity=0
mfAllocatedCapacity=0
mfUnallocatedCapacity=0
numberOfOpenAllocatedLUs=563
numberOfOpenUnallocatedLUs=990
numberOfImAllocatedLUs=0
numberOfImUnallocatedLUs=0
numberOfMfLDEVs=0
numberOfAllocatedMfLDEVs=0
numberOfUnallocatedMfLDEVs=0
productCode=1
lastRefreshed=1,039,003,476
autoFormatLU=-1
statusOfDBInconsistency=0
openAllocatedActualCapacity=1,578,120,480
openUnallocatedCapacity=2,442,665,520
openUnallocatedActualCapacity=2,442,665,520
openReservedCapacity=4,806,720
openReservedActualCapacity=4,806,720
numberOfReservedLUs=2
numberOfOpenReservedLUs=2
numberOfImReservedLUs=0
List of 1 CommParameters elements:
  An instance of CommParameters
    userID=root
    ipAddress=172.16.45.1

```

4.1.8 DeleteArrayGroup

DeleteArrayGroup deletes an array group from a storage device (see Table 4.9). When an array group is deleted, all Logical Units on that array group are deleted.

A user to whom a user-defined resource group is assigned, and who has only the View permission, cannot execute this command.

Note: This command is not available for the Universal Storage Platform V, TagmaStore USP, Lightning 9900V, or Lightning 9900.

Table 4.9 DeleteArrayGroup Command Parameters

Parameter Name	Status	Description
Chassis	Optional	Number of chassis for the array group If you specify this parameter, make sure that <code>groupnum</code> is also specified. Note: Either specify <code>chassis</code> and <code>groupnum</code> at the same time, or specify <code>arraygroupname</code> . This might cause an error to occur.
Groupnum	Optional	Group number of the group array to delete If you specify this parameter, make sure that <code>chassis</code> is also specified. Note: Either specify <code>chassis</code> and <code>groupnum</code> at the same time, or specify <code>arraygroupname</code> . This might cause an error to occur.
Model	Required	Model of the storage array for the array group
Serialnum	Required	Serial number of the storage array for the array group
arraygroupname	Optional	The display name for the array group to be deleted. When this parameter is specified, do not specify <code>chassis</code> or <code>groupnum</code> . Note: Either specify <code>chassis</code> and <code>groupnum</code> at the same time, or specify <code>arraygroupname</code> . This might cause an error to occur.

Parameter values to be Obtained in Advance:

`serialnum` and `model`: Obtain these values from the execution result of the `GetStorageArray` command. In the execution result of this command, the `arrayType` and `serialNumber` values appear in a `StorageArray`. Use the `arrayType` and `serialNumber` values to specify the `model` and `serialnum` parameters respectively.

`chassis` and `groupnum`: Obtain these values from the execution result of the `GetStorageArray (subtarget=ArrayGroup)` command. Execute this command by specifying only the `model` and `serialnum` parameters, and `ArrayGroup` for the `subtarget` parameter. In the execution result of this command, the `chassis` and `number` values appear in a `StorageArray`. Use these `chassis` and `number` values to specify the `chassis` and `groupnum` parameters respectively.

`arraygroupname`: Obtain this value from the execution result of the `GetStorageArray (subtarget=ArrayGroup)` command. In the execution result of this command, `displayName` appears under an instance of `ArrayGroup`. Use this value to specify the `arraygroupname` parameter.

Command execution example:

```
HiCommandCLI DeleteArrayGroup -o "D:\logs\9200 DeleteArrayGroup.log" "serialnum=10001" "model=HDS9200" "chassis=0" "groupnum=2"
```

Command execution result:

```
RESPONSE:  
(Command completed; empty list returned)
```

4.1.9 DeleteArrayReservation

DeleteArrayReservation unlocks the target storage subsystem (see Table 4.10).

A user who has only the View permission cannot execute this command. A user to whom user-defined resource groups are assigned, and who also has the Modify permission, does not have access range limitations.

Note: This command is not available for TagmaStore AMS/WMS series, Thunder 9500V, or Thunder 9200.

Table 4.10 DeleteArrayReservation Command Parameters

Parameter Name	Status	Description
Model	Required	Model of the storage subsystem
Serialnum	Required	Serial number of the storage subsystem

Parameter Values to be Obtained in Advance:

serialnum and model: Obtain these values from the execution result of the GetStorageArray command. In these results, the arrayType and serialNumber values appear under An instance of StorageArray. Use the arrayType and serialNumber values to specify the model and serialnum parameters respectively.

Command execution example:

```
HiCommandCLI DeleteArrayReservation -o "D:\logs>DeleteArrayReservation.log" "model=USP" "serialnum=14009"
```

Command execution result:

```
RESPONSE:  
(Command completed; no data returned)
```

4.1.10 DeleteHostStorageDomain

DeleteHostStorageDomain deletes a host storage domain. For the Thunder 9500V (in LUN Management mode), Universal Storage Platform V, TagmaStore USP, Lightning 9900V, and TagmaStore AMS/WMS series, this command deletes host groups from the storage subsystem (see Table 4.11).

A user who has only the View permission cannot execute this command. A user to whom user-defined resource groups are assigned, and who also has the Modify permission, does not have access range limitations. When a host group or host storage domain to which paths are assigned is specified, access permissions to all the LDEVs to which paths are assigned are required. If any inaccessible LDEVs are included, an error occurs.

Table 4.11 DeleteHostStorageDomain Command Parameters

Parameter Name	Status	Description
deletionoption	Optional	Only possible value is: <code>lusekeep</code> Omit this parameter to delete LUSE.
Domain	Optional	The domain ID of the Host Storage Domain to delete. This parameter can be specified in decimal and hexadecimal. If you specify a hexadecimal number, add the <code>0x</code> prefix. Note: The execution results are output in decimal. Note: Do not specify <code>0</code> . You cannot delete host domain <code>0</code> . Note: You must specify either <code>domain</code> or <code>domainnickname</code> . Do not specify both parameters at the same time, as this might cause an error to occur.
domainnickname	Optional (9500V (in LUN Management mode), USP V, USP, 9900V, and AMS/WMS series only)	Nickname of the host storage domain to delete. Note: You must specify either <code>domain</code> or <code>domainnickname</code> . Do not specify both parameters at the same time, as this might cause an error to occur.
model	Required	Model of the storage array for the Host Storage Domain.
port	Optional	The port ID of the Host Storage Domain to delete. Note: Specify either <code>port</code> or <code>portname</code> . Do not specify both parameters at the same time. This might cause an error to occur.
portname	Optional	Port name for the host storage domain to delete. Note: Specify either <code>port</code> or <code>portname</code> . Do not specify both parameters at the same time. This might cause an error to occur.
serialnum	Required	Serial number of the storage array for the Host Storage Domain.

Parameter Values to be Obtained in Advance:

`serialnum` and `model`: Obtain these values from the execution result of the `GetStorageArray` command. In the execution result of this command, the `arrayType` and `serialNumber` values appear under `An instance of StorageArray`. Use the `arrayType` and `serialNumber` values to specify the `model` and `serialnum` parameters respectively.

`domain` and `port`: Obtain these values from the execution result of the `GetStorageArray (subtarget=HostStorageDomain)` command. Execute this command by specifying only the `model` and `serialnum` parameters, and `HostStorageDomain` for the `subtarget` parameter. In the execution result of this command, the `domainID` and `portID` values appear under `An instance of HostStorageDomain`. Use these `domainID` and `portID` values to specify the `domain` and `port` parameters respectively.

portname: Obtain this value from the execution result of the `GetStorageArray` (subtarget=Port) command. In the execution result of this command, the `displayName` value appears under An instance of Port. Use this value to specify the `portname` parameter.

domainnickname: Obtain this value from the execution result of the `GetStorageArray` (subtarget=HostStorageDomain) command. Execute this command by specifying only the `model` and `serialnum` parameters, and `HostStorageDomain` for the `subtarget` parameter. In the execution result of this command, the `nickname` value appears under An instance of HostStorageDomain. Use this value to specify the `domainnickname` parameter.

Command execution example:

```
HiCommandCLI DeleteHostStorageDomain -o "D:\logs\9980V DeleteHostStorageDomain.log"
"serialnum=10001" "model=HDS9980V" "port=16" "domain=1" "deletionoption=lusekeep"
```

Command result:

```
RESPONSE:
(Command completed; no data returned)
```

4.1.11 DeleteLogicalUnit

`DeleteLogicalUnit` deletes the LogicalUnit and corresponding LDEV from the storage device (see Table 4.12)

A user to whom a user-defined resource group is assigned, and who has only the View permission, cannot execute this command.

Note: For TagmaStore USP, logical units cannot be deleted for array groups with chassis numbers from 65 to 96. Array groups with chassis numbers from 65 to 96 are indicated as V-VOLs.

Note: For Universal Storage Platform V, logical units cannot be deleted for array groups with chassis numbers from 65 to 96, or from 16485 to 16516. Array groups with chassis numbers from 65 to 96, or from 16485 to 16516 are indicated as V-VOLs.

Table 4.12 DeleteLogicalUnit Command Parameters

Parameter Name	Status	Description
devnum	Required	Device number of the LU. This parameter can be specified in decimal, and in colon-separated hexadecimal. If you specify a hexadecimal number, for TagmaStore USP, Lightning 9900V, and Lightning 9900, use the <code>xx:yy</code> format, where <code>xx</code> is the CU number, and <code>yy</code> is the LDEV number. For Universal Storage Platform V, use the <code>ww:xx:yy</code> format, where <code>ww</code> is the LDKC number, <code>xx</code> is the CU number, and <code>yy</code> is the LDEV number. <code>ww</code> is optional. If you omit <code>ww</code> , the LDKC number is regarded as 0. Note: The execution results are output in decimal.
model	Required	Model of the storage array of the LU.
serialnum	Required	Serial number of the storage array of the LU.

Parameter Values to be Obtained in Advance:

`serialnum` and `model`: Obtain these values from the execution result of the `GetStorageArray` command. In the execution result of this command, the `arrayType` and `serialNumber` values appear under An instance of `StorageArray`. Use the `arrayType` and `serialNumber` values to specify the `model` and `serialnum` parameters respectively.

`devnum`: Obtain this value from the execution result of the `GetStorageArray` (`subtarget=LogicalUnit`) command. Execute this command by specifying only the `model` and `serialnum` parameters, and `LogicalUnit` for the `subtarget` parameter. In the execution result of this command, the `devNum` value appears in An instance of `LogicalUnit`. Use this `devNum` value to specify the `devnum` parameter.

Command execution example:

```
HiCommandCLI DeleteLogicalUnit -o "D:\logs\9200 DeleteLogicalUnit.log" "serialnum=10001" "model=HDS9200" "devnum=1"
```

Command execution result:

```
RESPONSE:  
(Command completed; empty list returned)
```

4.1.12 DeleteLUSE

`DeleteLUSE` deletes a LUSE volume on a storage subsystem (see Table 4.13).

A user who has only the View permission cannot execute this command. A user to whom a user-defined resource group is assigned, and who also has the Modify permission, can delete LUSE volumes that are made up of the logical devices that the user is permitted to access. If an LDEV that is not allowed is specified, an error occurs.

Note: This function is not available for Lightning 9900.

Table 4.13 DeleteLUSE Command Parameters

Parameter Name	Status	Description
<code>serialnum</code>	Required	Serial number of the storage array from which the LUSE is to be deleted.
<code>model</code>	Required	Model of the storage array from which the LUSE is to be deleted.
<code>devnums</code>	Required	Device number used to identify the LUSE to be deleted. LUSE device number must be valid in the storage array. This parameter can be specified in decimal, and in colon-separated hexadecimal. If you specify a hexadecimal number, for TagmaStore USP, Lightning 9900V, and Lightning 9900, use the <code>xx:yy</code> format, where <code>xx</code> is the CU number, and <code>yy</code> is the LDEV number. For Universal Storage Platform V, use the <code>ww:xx:yy</code> format, where <code>ww</code> is the LDKC number, <code>xx</code> is the CU number, and <code>yy</code> is the LDEV number. <code>ww</code> is optional. If you omit <code>ww</code> , the LDKC number is regarded as 0. Note: The execution results are output in decimal.

Parameter Values to be Obtained in Advance:

`serialnum` and `model`: Obtain these values from the execution result of the `GetStorageArray` command. In the execution result of this command, the `arrayType` and `serialNumber` values appear under An instance of `StorageArray`. Use the `arrayType` and `serialNumber` values to specify the `model` and `serialnum` parameters respectively.

`devnum`: Obtain this value from the execution result of the `GetStorageArray` (`subtarget=LogicalUnit`) command. Execute this command by specifying only the `model` and `serialnum` parameters, and `LogicalUnit` for the `subtarget` parameter. The logical unit identified by `isComposite=1` and `path=false` indicates that it is a LUSE volume that does not have a path. In the execution result of this command, the `devNum` value of the relevant logical unit appears under An instance of `LogicalUnit`. Use this `devNum` value to specify the `devnum` parameter.

Command execution example:

```
HiCommandCLI DeleteLUSE -o "D:\logs\9980V DeleteLUSE.log" "serialnum=10001"
"model=HDS9980V" "devnum=209"
```

Command execution result:

```
RESPONSE:
(Command completed; empty list returned)
```

4.1.13 DeleteSpareDrive

`DeleteSpareDrive` deletes or releases a spare drive from a storage device (see Table 4.14). The physical device currently used as a spare is added to the pool of unused devices.

Note: This command is not available for TagmaStore USP, Lightning 9900V, or Lightning 9900.

A user to whom a user-defined resource group is assigned, and who has only the View permission, cannot execute this command.

Note: This command is not available for the Universal Storage Platform V, TagmaStore USP, Lightning 9900V, or Lightning 9900.

Table 4.14 DeleteSpareDrive Command Parameters

Parameter Name	Status	Description
<code>serialnum</code>	Required	serial number of the storage array of the spare drive
<code>model</code>	Required	model of the storage array of the spare drive
<code>pdevid</code>	Required	Physical device ID of the spare drive (for more information, see <code>pdevid</code> in Table 4.29)

Parameter Values to be Obtained in Advance:

`serialnum` and `model`: Obtain these values from the execution result of the `GetStorageArray` command. In the execution result of this command, the `arrayType` and `serialNumber` values appear under An instance of `StorageArray`. Use these `arrayType` and `serialNumber` values to specify the `model` and `serialnum` parameters respectively.

`pdevid`: Obtain this value from the `pdevid` value in the execution result of the `GetStorageArray (subtarget=PDEV)` command. If a comma is included in the `pdevid` value, specify the value, excluding the comma. Execute this command by specifying only the `model` and `serialnum` parameters, and `PDEV` for the `subtarget` parameter. Confirm that the value for the role that appears under An instance of `PDEV` in the execution result of this command is defined by either `sparedrive` or `spareuninitialized`. If so, the drive identified in this execution result is a spare drive.

Command execution example :

```
HiCommandCLI DeleteSpareDrive -o "D:\logs\9200 DeleteSpareDrive.log" serialnum=10001  
model=HDS9200 pdevid=9
```

Command execution result :

```
RESPONSE:  
(Command completed; empty list returned)
```

4.1.14 DeleteStorageArray

`DeleteStorageArray` removes a Hitachi storage array from the HiCommand Device Manager management-target, but does not attempt to change the configuration of any storage device (see Table 4.15).

A user to whom a user-defined resource group is assigned, and who has only the View permission, cannot execute this command.

Note: If execution of the `DeleteStorageArray` command results in an error, take appropriate action according to the error message, and then re-execute the `DeleteStorageArray` command. When the `DeleteStorageArray` command is executed, the configuration information of the target storage subsystem is divided into transactions, and then deleted from the Device Manager database. Therefore, if an error occurs during processing, the Device Manager database becomes inconsistent and the storage subsystem information you deleted might remain in the Device Manager database. Resolve the cause of the error, and then delete the storage subsystem information again.

Table 4.15 DeleteStorageArray Command Parameters

Parameter Name	Status	Description
<code>serialnum</code>	Required	Serial number of the storage array to delete
<code>model</code>	Required	Model of the storage array to delete

Parameter Values to be Obtained in Advance:

`serialnum` and `model`: Obtain these values from the execution result of the `GetStorageArray` command. In the execution result of this command, the `arrayType` and `serialNumber` values appear under An instance of `StorageArray`. Use the `arrayType` and `serialNumber` values to specify the `model` and `serialnum` parameters respectively.

Command execution example:

```
HiCommandCLI DeleteStorageArray -o "D:\logs\9980V DeleteStorageArray.log" "serialnum=10001" "model=HDS9980V"
```

Command execution result:

```
RESPONSE:  
(Command completed; no data returned)
```

4.1.15 FormatLU

`FormatLU` formats an LU (see Table 4.16).

A user to whom a user-defined resource group is assigned, and who has only the `View` permission, cannot execute this command.

To confirm that the LDEV has been formatted correctly, execute the `AddStorageArray` command to refresh the storage subsystem, execute the `GetStorageArray` (`subtarget=LDEV`) command, and then check the `status` value from the command results.

Note: This command is available only for Universal Storage Platform V and TagmaStore USP. The microcode version required for TagmaStore USP is 50-09-00-XX/XX or later.

Note: When formatting the LDEV, make sure that the value of the `status` attribute of the LDEV is `Blocked`.

Note: If the LUSE volume you want to specify includes an LDEV whose status is not `Blocked`, delete that LUSE volume, and then execute the command.

Note: If you execute this command while LDEVs are being formatted in the target storage subsystem, an error occurs.

Table 4.16 FormatLU Command Parameters

Parameter Name	Status	Description
<code>serialnum</code>	Required	Serial number of the storage subsystem of the LU to be formatted.
<code>model</code>	Required	Model of the storage subsystem of the LU to be formatted.

Parameter Name	Status	Description
devnums	Required	<p>List of the device numbers of the LUs to be formatted. When you specify multiple device numbers, separate the numbers by using a comma as a delimiter.</p> <p>This parameter can be specified in decimal, and in colon-separated hexadecimal. If you specify a hexadecimal number, for TagmaStore USP, Lightning 9900V, and Lightning 9900, use the <code>xx:yy</code> format, where <code>xx</code> is the CU number, and <code>yy</code> is the LDEV number. For Universal Storage Platform V, use the <code>ww:xx:yy</code> format, where <code>ww</code> is the LDKC number, <code>xx</code> is the CU number, and <code>yy</code> is the LDEV number. <code>ww</code> is optional. If you omit <code>ww</code>, the LDKC number is regarded as 0.</p> <p>Note: The execution results are output in decimal.</p>

Parameter values to be obtained in advance:

`serialnum` and `model`: Obtain these values from the execution result of the `GetStorageArray` command. In the execution result of this command, the `arrayType` and `serialNumber` values appear under An instance of `StorageArray`. Use the `arrayType` and `serialNumber` values to specify the `model` and `serialnum` parameters respectively.

`devnums`: Obtain this value from the execution result of the `GetStorageArray` (`subtarget=LogicalUnit`, `lusubinfo=LDEV`) command. Execute this command by specifying only the `model` and `serialnum` parameters, `LogicalUnit` for the `subtarget` parameter, and `LDEV` for the `lusubinfo` parameter. In the execution result of this command, the `devNum` value of `LogicalUnit` appears under An instance of `LogicalUnit`. Use this `devNum` value to specify the `devnums` parameter.

Command execution example:

```
HiCommandCLI -t formatlu model=NSC55 serialnum=82893 devnums=3:E8,3:E9
```

Command execution result:

```
RESPONSE:
An instance of StorageArray
.
. (Attributes of StorageArray are omitted here)
.
List of 2 Lu elements:
  An instance of LogicalUnit
    objectID=LU.NSC55.82893.1000
    devNum=1,000
    displayName=03:E8
    emulation=OPEN-V
    devCount=1
    devType=
    capacityInKB=48,000
    path=false
    commandDevice=false
    commandDeviceEx=0
    commandDeviceSecurity=false
    chassis=1
    arrayGroup=144
    raidType=RAID5 (3D+1P)
    currentPortController=-1
    defaultPortController=-1
    isComposite=0
    trueCopyVolumeType=Simplex
```

```
shadowImageVolumeType=Simplex
quickShadowVolumeType=Simplex
universalReplicatorVolumeType=Simplex
sysVolFlag=0
externalVolume=0
differentialManagement=false
quickShadowPoolID=-1
universalReplicatorPoolID=-1
```

List of 1 Ldev elements:

```
  An instance of LDEV
    objectID=LDEV.NSC55.82893.1000
    devNum=1,000
    displayName=03:E8
    emulation=OPEN-V
    cylinders=0
    isComposite=0
    sizeInKB=48,000
    lba=24,000
    raidType=RAID5 (3D+1P)
    substance=0
    volumeType=-1
    slotSizeInKB=64
    chassis=1
    arrayGroup=144
    path=false
    onDemandDevice=false
    devType=
    isStandardLDEV=false
    guardMode=
    diskType=-1
    slprNumber=0
    clprNumber=0
    cacheResidencyMode=0
    stripeSizeInKB=-1
    volumeKind=3
    status=Format
    dpType=-1
    consumedSizeInKB=-1
```

An instance of LogicalUnit

```
  objectID=LU.NSC55.82893.1001
  devNum=1,001
  displayName=03:E9
  emulation=OPEN-V
  devCount=1
  devType=
  capacityInKB=48,000
  path=false
  commandDevice=false
  commandDeviceEx=0
  commandDeviceSecurity=false
  chassis=1
  arrayGroup=144
  raidType=RAID5 (3D+1P)
  currentPortController=-1
  defaultPortController=-1
  isComposite=0
  trueCopyVolumeType=Simplex
  shadowImageVolumeType=Simplex
  quickShadowVolumeType=Simplex
  universalReplicatorVolumeType=Simplex
  sysVolFlag=0
  externalVolume=0
  differentialManagement=false
  quickShadowPoolID=-1
  universalReplicatorPoolID=-1
```

List of 1 Ldev elements:

```
  An instance of LDEV
    objectID=LDEV.NSC55.82893.1001
```

```
devNum=1,001
displayName=03:E9
emulation=OPEN-V
cylinders=0
isComposite=0
sizeInKB=48,000
lba=24,000
raidType=RAID5 (3D+1P)
substance=0
volumeType=-1
slotSizeInKB=64
chassis=1
arrayGroup=144
path=false
onDemandDevice=false
devType=
isStandardLDEV=false
guardMode=
diskType=-1
slprNumber=0
clprNumber=0
cacheResidencyMode=0
stripeSizeInKB=-1
volumeKind=3
status=Format
dpType=-1
consumedSizeInKB=-1
```

4.1.16 GetArrayReservation

`GetArrayReservation` obtains information about all locked storage subsystems. This command does not have parameters.

A user who has only the View permission cannot execute this command. A user to whom user-defined resource groups are assigned, and who also has the Modify permission, can obtain information about locked storage subsystems containing accessible LDEVs.

Note: This command is not available for TagmaStore AMS/WMS series, Thunder 9500V, or Thunder 9200.

Command example:

```
HiCommandCLI GetArrayReservation -o "D:\logs\GetArrayReservation.log"
```

Command result:

```
An instance of ArrayReservation
objectID=ARRAYRESERVATION.USP.14009
target=ARRAY.USP.14009
loginID=dmuser
beginTime=1,039,003,476
```

4.1.17 GetStorageArray

`GetStorageArray` obtains information about storage subsystems already registered with the HiCommand Device Manager server.

- To acquire information about a particular storage subsystem, specify the model in the model parameter, and the serial number in the serialnum parameter.

- To acquire the information about a specific element, or narrow down the range of information acquired by specifying conditions, use the **subtarget** parameter. For details about values that can be specified, see Table 4.17. You can add parameters according to the value specified in subtarget. However, you cannot add any parameters when `Component` or `Commparameters` is specified.
- For details about the `GetStorageArray` command with the `subtarget` parameter specified, see section 4.1.17.1 - 4.1.17.15.

Note: When you execute the `GetStorageArray` command with the `subtarget` parameter specified and without the `model` and `serialnum` parameters specified, if a value other than 0 is specified for `statusOfDBInconsistency` (which is displayed under `An instance of StorageArray` as the result of the `GetStorageArray` command), information of the component specified for the `subtarget` parameter might not be output to the command output. If a value other than 0 is written for `statusOfDBInconsistency`, this indicates that the status of the database is inconsistent. To resolve the inconsistency of the database, execute the `AddStorageArray` command to update the configuration information of the storage subsystem to the latest state.

A user to whom a user-defined resource group is assigned can obtain information about storage subsystems that the user is permitted to access.

Table 4.17 GetStorageArray Command Parameters

Parameter Name	Status	Description
<code>model</code>	Optional	Model of the storage subsystem If you omit this parameter, all the storage subsystems become the target.
<code>serialnum</code>	Optional	Serial number of the storage subsystem If you omit this parameter, all the storage subsystems become the target.
<code>subtarget</code>	Optional	Element of the storage subsystem. The command acquires the information about the specified element. You can specify the following values: <code>ArrayGroup</code> , <code>Commparameters</code> , <code>Component</code> , <code>Filter</code> , <code>FreeSpace</code> , <code>HostStorageDomain</code> , <code>JournalPool</code> , <code>LDEV</code> , <code>LogicalDKC</code> , <code>LogicalUnit</code> , <code>Path</code> , <code>PDEV</code> , <code>Port</code> , <code>PortController</code> , and <code>ReplicationInfo</code> You can add parameters according to the specified element value.

Parameter Values to be Obtained in Advance:

`serialnum` and `model`: Obtain these values from the execution result of the `GetStorageArray` command. In the execution result of this command, the `arrayType` and `serialNumber` values appear under `An instance of StorageArray`. Use these `arrayType` and `serialNumber` values to specify the `model` and `serialnum` parameters respectively.

Command Example:

In this example, the `GetStorageArray` command obtains information about the configuration of all the storage subsystems managed by the Device Manager server.

```
HiCommandCLI GetStorageArray
```

Command result:

```
RESPONSE:
An instance of StorageArray
  objectID=ARRAY.HDS9960.10011
  name=HDS2800@10.208.114.140
  description=HDS2800 (10011) at 10.208.114.140
  serialNumber=10011
  arrayFamily=HDS9900
  arrayType=HDS9960
  microcodeVersion=01-13-56/00
  agentVersion=02-01-06/00
  productName=RAID400
  controllerVersion=01-18-01-00/00
  numberOfControllers=1
  capacityInGB=1,329
  cacheInMB=7,168
  sharedMemoryInMB=-1
  numberOfSpareDrives=-1
  freeCapacityInGB=338
  allocatedCapacityInGB=990
  hiismCapacityInGB=0
  onDemandCapacityInGB=0
  totalFreeSpaceInGB=110
  largestFreeSpaceInGB=63
  capacityInKB=1,393,925,040
  freeCapacityInKB=355,420,800
  allocatedCapacityInKB=1,038,504,240
  hiismCapacityInKB=0
  onDemandCapacityInKB=0
  totalFreeSpaceInKB=115,723,440
  largestFreeSpaceInKB=67,096,800
  multipathSupport=1
  securityStatus=1
  sequenceNumber=10011
  displayArrayFamily=HDS2000
  displayArrayType=HDS2800
  numberOfLUs=643
  numberOfAllocatedLUs=453
  numberOfUnallocatedLUs=190
  slprStatus=-1
  openTotalCapacity=1,393,925,040
  openAllocatedCapacity=1,038,504,240
  openFreeCapacity=355,420,800
  openHiHsmCapacity=0
  openOnDemandCapacity=0
  imTotalCapacity=0
  imAllocatedCapacity=0
  imFreeCapacity=0
  imHiHsmCapacity=0
  imOnDemandCapacity=0
  mfTotalCapacity=0
  mfHiHsmCapacity=0
  mfOnDemandCapacity=0
  mfAllocatedCapacity=0
  mfUnallocatedCapacity=0
  numberOfOpenAllocatedLUs=453
  numberOfOpenUnallocatedLUs=190
  numberOfImAllocatedLUs=0
  numberOfImUnallocatedLUs=0
  numberOfMfLDEVs=0
  numberOfAllocatedMfLDEVs=0
  numberOfUnallocatedMfLDEVs=0
  productCode=1
  lastRefreshed=1,039,003,476
  autoFormatLU=-1
  statusOfDBInconsistency=0
  openAllocatedActualCapacity=1,038,504,240
  openUnallocatedCapacity=355,420,800
```

```

openUnallocatedActualCapacity=355,420,800
openReservedCapacity=0
openReservedActualCapacity=0
numberOfReservedLUs=0
numberOfOpenReservedLUs=0
numberOfImReservedLUs=0

```

4.1.17.1 GetStorageArray (subtarget=ArrayGroup)

GetStorageArray (subtarget=ArrayGroup) obtains information about one or all array groups in one or all storage subsystems. See Table 4.18

A user to whom a user-defined resource group is assigned can obtain information about array groups in the storage subsystems that the user is permitted to access.

Table 4.18 GetStorageArray (subtarget=ArrayGroup) Command Parameters

Parameter Name	Status	Description
Model	Optional	Model of the storage subsystem. If you omit this parameter, you will obtain information about the models of all storage subsystems.
Serialnum	Optional	Serial number of the storage subsystem. If you omit this parameter, all the storage subsystems become the target.
Subtarget	Required	Specify ArrayGroup
Objected	Optional	Object ID of the array group in a storage subsystem. Specify this parameter when you want to obtain the information about a specific array group. If you specify this parameter, you must also specify the <code>model</code> and <code>serialnum</code> parameters. If you specify the <code>model</code> and <code>serialnum</code> parameters without specifying this parameter, the information about all array groups in the specified storage subsystem is acquired.
arraygroupsubinfo	Optional	Information obtained about an array group or groups. The only available value is LogicalUnit.
Lusubinfo	Optional	Information about a logical unit. You can specify <code>Path</code> or <code>LDEV</code> as the value of this parameter. If you specify this parameter, you must also specify the <code>arraygroupsubinfo</code> parameter.
startElementNumFilter	Optional	Starting sequence number of array groups for which information is to be obtained. Specify this parameter when you want to obtain information for a part of array groups in a specific storage subsystem. When array group information is ordered as shown below and numbered from 0 upward, specify the first number in the sequence of array groups that you want to obtain. Order of array groups: Chassis numbers in ascending order Array group numbers in ascending order This parameter must be specified together with the <code>numOfElementsFilter</code> , <code>model</code> , and <code>serialnum</code> parameters.

Parameter Name	Status	Description
numOfElementsFilter	Optional	Number of array groups for which information is to be obtained. Specify this parameter when you want to obtain information for a part of array groups in a specific storage subsystem. Specify the number of array groups for which information is to be obtained. This parameter must be specified together with the <code>startElementNumFilter</code> , <code>model</code> , and <code>serialnum</code> parameters. The maximum recommended value is 16384.

Parameter Values to be Obtained in Advance:

`serialnum` and `model`: Obtain these values from the execution result of the `GetStorageArray` command. In the execution result of this command, the `arrayType` and `serialNumber` values appear under An instance of `StorageArray`. Use the `arrayType` and `serialNumber` values to specify the `model` and `serialnum` parameters respectively.

Command Example 1:

In this example, the `GetStorageArray (subtarget=ArrayGroup)` command obtains information about all the array groups in a storage subsystem (serial number: 14010, model: USP).

```
HiCommandCLI GetStorageArray -o "D:\logs\USP GetStorageArray_ArrayGroup.log"
subtarget=ArrayGroup model=USP serialnum=14010
```

Command result 1:

```
RESPONSE:
An instance of StorageArray
.
. (Attributes of StorageArray are omitted here)
.
List of 20 ArrayGroup elements:
  An instance of ArrayGroup
    objectID=ARRAYGROUP.USP.14010.1.0
    chassis=1
    number=0
    displayName=1-1-1
    raidType=RAID5 (3D+1P)
    emulation=OPEN-3
    diskType=DKR2E-J146FC
    diskSize=146
    diskSizeInKB=153,092,096
    controllerID=1
    totalCapacity=418,184,640
    allocatedCapacity=266,772,960
    freeCapacity=149,008,320
    hiHsmCapacity=2,403,360
    onDemandCapacity=0
    totalFreeSpace=1,847,952
    largestFreeSpace=1,847,952
    substance=0
    slprNumber=-1
    clprNumber=-1
    cuInfo=
    openTotalCapacity=418,184,640
    openAllocatedCapacity=266,772,960
    openFreeCapacity=149,008,320
    openHiHsmCapacity=2,403,360
    openOnDemandCapacity=0
    imTotalCapacity=0
```

```

imAllocatedCapacity=0
imFreeCapacity=0
imHiHsmCapacity=0
imOnDemandCapacity=0
mfTotalCapacity=0
mfHiHsmCapacity=0
mfOnDemandCapacity=0
mfAllocatedCapacity=0
mfUnallocatedCapacity=0
openAllocatedActualCapacity=266,772,960
openUnallocatedCapacity=149,008,320
openUnallocatedActualCapacity=149,008,320
openReservedCapacity=2,403,360
openReservedActualCapacity=2,403,360
.
. (repeated for other ArrayGroup instances)
.

```

Command Execution Example 2:

In this example, the `GetStorageArray (subtarget=ArrayGroup)` command obtains information only about one array group (object ID: `ARRAYGROUP.HDS9980V.10001.1.0`) in a storage subsystem (serial number: `10001`, model: `HDS9980V`).

```

HiCommandCLI GetStorageArray -o "D:\logs\9980V GetStorageArray_ArrayGroup.log"
subtarget=ArrayGroup model=HDS9980V serialnum=10001 objectid=ARRAYGROUP.HDS9980V.10001.1.0

```

Command result 2:

```

RESPONSE:
An instance of StorageArray
.
. (Attributes of StorageArray are omitted here)
.
List of 1 ArrayGroup elements:
An instance of ArrayGroup
objectID=ARRAYGROUP.HDS9980V.10001.1.0
chassis=1
number=0
displayName=1-1-1
raidType=RAID5 (3D+1P)
emulation=OPEN-3
diskType=DKR2D-J072FC
diskSize=72
diskSizeInKB=75,497,472
controllerID=1
totalCapacity=209,638,800
allocatedCapacity=192,256,560
freeCapacity=17,382,240
hiHsmCapacity=0
onDemandCapacity=0
totalFreeSpace=3,223,296
largestFreeSpace=1,545,984
substance=0
slprNumber=-1
clprNumber=-1
openTotalCapacity=209,638,800
openAllocatedCapacity=192,256,560
openFreeCapacity=17,382,240
openHiHsmCapacity=0
openOnDemandCapacity=0
imTotalCapacity=0
imAllocatedCapacity=0
imFreeCapacity=0
imHiHsmCapacity=0
imOnDemandCapacity=0
mfTotalCapacity=0

```

```
mfHiHsmCapacity=0
mfOnDemandCapacity=0
mfAllocatedCapacity=0
mfUnallocatedCapacity=0
openAllocatedActualCapacity=192,256,560
openUnallocatedCapacity=17,382,240
openUnallocatedActualCapacity=17,382,240
openReservedCapacity=0
openReservedActualCapacity=0
```

4.1.17.2 GetStorageArray (subtarget=Commparameters)

GetStorageArray (subtarget=Commparameters) obtains information about how to access one or all storage subsystems.

A user to whom a user-defined resource group is assigned can obtain information about how to access storage subsystems that the user is permitted to access.

Table 4.19 GetStorageArray (subtarget=Commparameters) Command Parameters

Parameter Name	Status	Description
Model	Optional	Model of the storage subsystem. If you omit this parameter, you will obtain information about the models of all storage subsystems.
Serialnum	Optional	Serial number of the storage subsystem. If you omit this parameter, all the storage subsystems become the target.
Subtarget	Required	Specify Commparameters.

Parameter Values to be Obtained in Advance:

`serialnum` and `model`: Obtain these values from the execution result of the GetStorageArray command. In the execution result of this command, the `arrayType` and `serialNumber` values appear under An instance of StorageArray. Use the `arrayType` and `serialNumber` values to specify the `model` and `serialnum` parameters respectively.

Command Execution Example:

In this example, the GetStorageArray (subtarget=Commparameters) command obtains information about how to access a storage subsystem (serial number: 10001, model: HDS9980V).

```
HiCommandCLI GetStorageArray -o "D:\logs\9980V GetStorageArray_CommParameters.log"
subtarget=CommParameters model=HDS9980V serialnum=10001
```

Command execution result:

```
RESPONSE:
An instance of StorageArray
.
. (Attributes of StorageArray are omitted here)
.
List of 1 CommParameters elements:
An instance of CommParameters
userID=root
```

```
ipAddress=172.16.45.1
```

4.1.17.3 GetStorageArray (subtarget=Component)

`GetStorageArray (subtarget=Component)` obtains information about the configuration of one or all storage subsystems.

A user to whom a user-defined resource group is assigned can obtain information about the configuration storage subsystems that the user is permitted to access.

Table 4.20 GetStorageArray (subtarget=Component) Command Parameters

Parameter Name	Status	Description
model	Optional	Model of the storage subsystem. If you omit this parameter, all the storage subsystems become the target.
serialnum	Optional	Serial number of the storage subsystem. If you omit this parameter, all the storage subsystems become the target.
subtarget	Required	Specify Component.

Parameter Values to be Obtained in Advance:

`serialnum` and `model`: Obtain these values from the execution result of the `GetStorageArray` command. In the execution result of this command, the `arrayType` and `serialNumber` values appear under An instance of `StorageArray`. Use the `arrayType` and `serialNumber` values to specify the `model` and `serialnum` parameters respectively.

Command Execution Example:

In this example, the `GetStorageArray (subtarget=Component)` command obtains information about the configuration of a storage subsystem (serial number: 10011, model: HDS9960).

```
HiCommandCLI GetStorageArray -o "D:\logs\9960 GetStorageArray_Component.log"  
subtarget=Component model=HDS9960 serialnum=10011
```

Command result:

```
RESPONSE:  
An instance of StorageArray  
  objectID=ARRAY.HDS9960.10011  
  name=HDS2800@10.208.114.140  
  description=HDS2800 (10011) at 10.208.114.140  
  serialNumber=10011  
  arrayFamily=HDS9900  
  arrayType=HDS9960  
  microcodeVersion=01-13-56/00  
  agentVersion=02-01-06/00  
  productName=RAID400  
  controllerVersion=01-18-01-00/00  
  numberOfControllers=1  
  capacityInGB=1,329  
  cacheInMB=7,168  
  sharedMemoryInMB=-1
```

```

numberOfSpareDrives=-1
freeCapacityInGB=338
allocatedCapacityInGB=990
hihsmCapacityInGB=0
onDemandCapacityInGB=0
totalFreeSpaceInGB=110
largestFreeSpaceInGB=63
capacityInKB=1,393,925,040
freeCapacityInKB=355,420,800
allocatedCapacityInKB=1,038,504,240
hihsmCapacityInKB=0
onDemandCapacityInKB=0
totalFreeSpaceInKB=115,723,440
largestFreeSpaceInKB=67,096,800
multipathSupport=1
securityStatus=1
sequenceNumber=10011
displayArrayFamily=HDS9900
displayArrayType=HDS2800
numberOfLUs=643
numberOfAllocatedLUs=453
numberOfUnallocatedLUs=190
slprStatus=-1
openTotalCapacity=1,393,925,040
openAllocatedCapacity=1,038,504,240
openFreeCapacity=355,420,800
openHiHsmCapacity=0
openOnDemandCapacity=0
imTotalCapacity=0
imAllocatedCapacity=0
imFreeCapacity=0
imHiHsmCapacity=0
imOnDemandCapacity=0
mfTotalCapacity=0
mfHiHsmCapacity=0
mfOnDemandCapacity=0
mfAllocatedCapacity=0
mfUnallocatedCapacity=0
numberOfOpenAllocatedLUs=453
numberOfOpenUnallocatedLUs=190
numberOfImAllocatedLUs=0
numberOfImUnallocatedLUs=0
numberOfMfLDEVs=0
numberOfAllocatedMfLDEVs=0
numberOfUnallocatedMfLDEVs=0
productCode=1
lastRefreshed=1,039,003,476
autoFormatLU=-1
statusOfDBInconsistency=0
openAllocatedActualCapacity=1,038,504,240
openUnallocatedCapacity=355,420,800
openUnallocatedActualCapacity=355,420,800
openReservedCapacity=0
openReservedActualCapacity=0
numberOfReservedLUs=0
numberOfOpenReservedLUs=0
numberOfImReservedLUs=0
List of 12 Component elements:
  An instance of Component
    name=DKC Battery
    value=1
    description=Normal
  An instance of Component
    name=DKC Cache
    value=1
    description=Normal
  An instance of Component
    name=DKC Cache Switch

```

```

value=1
description=Normal
An instance of Component
name=DKC Environment
value=1
description=Normal
An instance of Component
name=DKC Fan
value=1
description=Normal
An instance of Component
name=DKC Power Supply
value=1
description=Normal
An instance of Component
name=DKC Processor
value=1
description=Normal
An instance of Component
name=DKC Shared Memory
value=1
description=Normal
An instance of Component
name=DKU Drive
value=1
description=Normal
An instance of Component
name=DKU Environment
value=1
description=Normal
An instance of Component
name=DKU Fan
value=1
description=Normal
An instance of Component
name=DKU Power Supply
value=1
description=Normal

```

4.1.17.4 GetStorageArray (subtarget=Filter)

The `GetStorageArray (subtarget=Filter)` command obtains information about the storage subsystem for a specific component.

A user to whom a user-defined resource group is assigned can obtain information about a specific component in the storage subsystem that the user is permitted to access.

Table 4.21 GetStorageArray (subtarget=Filter) Command Parameters

Parameter Name	Status	Description
Subtarget	Required	Specify <code>Filter</code> .
Objected	Required	Object ID for a component (such as a path, port, or logical unit) of the storage subsystem. Information is displayed about the storage subsystem for the component identified by the object ID you specify with this parameter.

Command Execution Example:

In this example, the `GetStorageArray (subtarget=Filter)` command obtains information about the storage subsystem for the logical unit (object ID:

`LU.HDS9980V.10001.100`).

```
HiCommandCLI GetStorageArray -o "D:\logs\9980V GetStorageArray_Filter.log" subtarget=Filter  
objectID=LU.HDS9980V.10001.100
```

Command execution result:

```
RESPONSE:  
An instance of StorageArray  
  objectID=ARRAY.HDS9980V.10001  
  name=HDS9980V@172.16.45.1  
  description=HDS9980V (10001) at 172.16.45.1  
  serialNumber=10001  
  arrayFamily=HDS9900V  
  arrayType=HDS9980V  
  microcodeVersion=21-03-00/00  
  agentVersion=02-05-14  
  productName=RAID450  
  controllerVersion=21-04-00-00/00  
  numberOfControllers=4  
  capacityInGB=3,839  
  cacheInMB=10,240  
  sharedMemoryInMB=-1  
  numberOfSpareDrives=-1  
  freeCapacityInGB=2,329  
  allocatedCapacityInGB=1,505  
  hiHsmCapacityInGB=4  
  onDemandCapacityInGB=0  
  totalFreeSpaceInGB=19  
  largestFreeSpaceInGB=3  
  capacityInKB=4,025,592,720  
  freeCapacityInKB=2,442,665,520  
  allocatedCapacityInKB=1,578,120,480  
  hiHsmCapacityInKB=4,806,720  
  onDemandCapacityInKB=0  
  totalFreeSpaceInKB=20,192,256  
  largestFreeSpaceInKB=3,796,992  
  multipathSupport=1  
  securityStatus=2  
  sequenceNumber=10001  
  displayArrayFamily=HDS9900V  
  displayArrayType=HDS9980V  
  numberofLUs=1,555  
  numberofAllocatedLUs=565  
  numberofUnallocatedLUs=990  
  slprStatus=-1  
  openTotalCapacity=4,025,592,720  
  openAllocatedCapacity=1,578,120,480  
  openFreeCapacity=2,442,665,520  
  openHiHsmCapacity=4,806,720  
  openOnDemandCapacity=0  
  imTotalCapacity=0  
  imAllocatedCapacity=0  
  imFreeCapacity=0  
  imHiHsmCapacity=0  
  imOnDemandCapacity=0  
  mfTotalCapacity=0  
  mfHiHsmCapacity=0  
  mfOnDemandCapacity=0  
  mfAllocatedCapacity=0  
  mfUnallocatedCapacity=0  
  numberOfOpenAllocatedLUs=563
```

```

numberOfOpenUnallocatedLUs=990
numberOfImAllocatedLUs=0
numberOfImUnallocatedLUs=0
numberOfMfLDEVs=0
numberOfAllocatedMfLDEVs=0
numberOfUnallocatedMfLDEVs=0
productCode=1
lastRefreshed=1,039,003,476
autoFormatLU=-1
statusOfDBInconsistency=0
openAllocatedActualCapacity=1,578,120,480
openUnallocatedCapacity=2,442,665,520
openUnallocatedActualCapacity=2,442,665,520
openReservedCapacity=4,806,720
openReservedActualCapacity=4,806,720
numberOfReservedLUs=2
numberOfOpenReservedLUs=2
numberOfImReservedLUs=0

```

4.1.17.5 GetStorageArray (subtarget=FreeSpace)

GetStorageArray (subtarget=FreeSpace) obtains the information about the free space in one or all array groups in one or all storage subsystems.

A user to whom a user-defined resource group is assigned can obtain information about the free space in one or all array groups in one or all storage subsystems that the user is permitted to access.

Table 4.22 GetStorageArray (subtarget=FreeSpace) Command Parameters

Parameter Name	Status	Description
model	Optional	Model of the storage subsystem. If you omit this parameter, all the storage subsystems become the target.
serialnum	Optional	Serial number of the storage subsystem. If you omit this parameter, all the storage subsystems become the target.
subtarget	Required	Specify FreeSpace.
arraygroupobjid	Optional	Object ID of an array group that has free space. Specify this parameter when you want to obtain information about free space of a specific array group. If you specify this parameter, you must also specify the model and serialnum parameters. If you specify the model and serialnum parameters, and omit the arraygroupobjid parameter, information about free space of all the array groups in the specified storage subsystem is obtained.

Parameter Values to be Obtained in Advance:

serialnum and model: Obtain these values from the execution result of the GetStorageArray command. In the execution result of this command, the arrayType and serialNumber values appear under An instance of StorageArray. Use the arrayType and serialNumber values to specify the model and serialnum parameters respectively.

arraygroupobjid: Obtain this value from the execution result of the `GetStorageArray` (subtarget=ArrayGroup) command. Execute this command by specifying only the `model` and `serialnum` parameters, and `ArrayGroup` for subtarget=ArrayGroup. In the execution result of this command, the `objectID` value appears under An instance of `ArrayGroup`. Use this `objectID` value to specify the `arraygroupobjid` parameter.

Command Example 1:

In this example, the `GetStorageArray` (subtarget=FreeSpace) command obtains information about all the free space in a storage subsystem (serial number: 14010, model: USP).

```
HiCommandCLI GetStorageArray -o "D:\logs\USP_GetStorageArray_FreeSpace.log"
subtarget=FreeSpace model=USP serialnum=14010
```

Command result 1:

```
RESPONSE:
An instance of StorageArray
.
. (Attributes of StorageArray are omitted here)
.
List of 20 ArrayGroup elements:
  An instance of ArrayGroup
    objectID=ARRAYGROUP.USP.14010.1.0
    chassis=1
    number=0
    displayName=1-1-1
    raidType=RAID5 (3D+1P)
    emulation=OPEN-3
    diskType=DKR2E-J146FC
    diskSize=146
    diskSizeInKB=153,092,096
    controllerID=1
    totalCapacity=418,184,640
    allocatedCapacity=266,772,960
    freeCapacity=149,008,320
    hiHsmCapacity=2,403,360
    onDemandCapacity=0
    totalFreeSpace=1,847,952
    largestFreeSpace=1,847,952
    substance=0
    slprNumber=-1
    clprNumber=-1
    cuInfo=
    openTotalCapacity=418,184,640
    openAllocatedCapacity=266,772,960
    openFreeCapacity=149,008,320
    openHiHsmCapacity=2,403,360
    openOnDemandCapacity=0
    imTotalCapacity=0
    imAllocatedCapacity=0
    imFreeCapacity=0
    imHiHsmCapacity=0
    imOnDemandCapacity=0
    mfTotalCapacity=0
    mfHiHsmCapacity=0
    mfOnDemandCapacity=0
    mfAllocatedCapacity=0
    mfUnallocatedCapacity=0
    openAllocatedActualCapacity=266,772,960
    openUnallocatedCapacity=149,008,320
    openUnallocatedActualCapacity=149,008,320
    openReservedCapacity=2,403,360
    openReservedActualCapacity=2,403,360
```

```

List of 1 FreeSpace elements:
  An instance of FreeSpace
    objectID=FREESPACE.USP.14010.1.0.85
    sizeInKB=1,847,952
    cylinders=0
    fsControlIndex=85
  .
  . (repeated for other ArrayGroup instances)
  .

```

Command Execution Example 2:

In this example, the `GetStorageArray (subtarget=FreeSpace)` command obtains information about the free space in an array group (objectID: ARRAYGROUP.HDS9980V.10001.1.16) that belongs to a storage subsystem (serial number: 10001, model: HDS9980V).

```

HiCommandCLI GetStorageArray -o "D:\logs\9980V GetStorageArray_FreeSpace.log"
subtarget=FreeSpace model=HDS9980V serialnum=10001
arraygroupobjid=ARRAYGROUP.HDS9980V.10001.1.16

```

Command execution result 2:

```

RESPONSE:
An instance of StorageArray
  .
  . (Attributes of StorageArray are omitted here)
  .
List of 1 ArrayGroup elements:
  An instance of ArrayGroup
    objectID=ARRAYGROUP.HDS9980V.10001.1.16
    chassis=1
    number=16
    displayName=1-2-1
    raidType=RAID5 (3D+1P)
    emulation=OPEN-3
    diskType=DKR2D-J072FC
    diskSize=72
    diskSizeInKB=75,497,472
    controllerID=1
    totalCapacity=211,531,680
    allocatedCapacity=134,588,160
    freeCapacity=76,943,520
    hiHsmCapacity=0
    onDemandCapacity=0
    totalFreeSpace=1,492,992
    largestFreeSpace=1,492,992
    substance=0
    slprNumber=-1
    clprNumber=-1
    openTotalCapacity=211,531,680
    openAllocatedCapacity=134,588,160
    openFreeCapacity=76,943,520
    openHiHsmCapacity=0
    openOnDemandCapacity=0
    imTotalCapacity=0
    imAllocatedCapacity=0
    imFreeCapacity=0
    imHiHsmCapacity=0
    imOnDemandCapacity=0
    mfTotalCapacity=0
    mfHiHsmCapacity=0
    mfOnDemandCapacity=0
    mfAllocatedCapacity=0
    mfUnallocatedCapacity=0
    openAllocatedActualCapacity=134,588,160

```

```

openUnallocatedCapacity=76,943,520
openUnallocatedActualCapacity=76,943,520
openReservedCapacity=0
openReservedActualCapacity=0
List of 1 FreeSpace elements:
  An instance of FreeSpace
    objectID=FREE SPACE.HDS9980V.10001.1.0.85
    sizeInKB=1,492,992
    cylinders=0
    fsControlIndex=85

```

4.1.17.6 GetStorageArray (subtarget=HostStorageDomain)

GetStorageArray (subtarget=HostStorageDomain) obtains the information about a host storage domain of one or all storage subsystems.

A user to whom a user-defined resource group is assigned can obtain information about one or all host storage domains in one or all storage subsystems that the user is permitted to access.

Table 4.23 GetStorageArray (subtarget=HostStorageDomain) Command Parameters

Parameter Name	Status	Description
Model	Optional	Model of the storage subsystem. If you omit this parameter, all the storage subsystems become the target.
serialnum	Optional	Serial number of the storage subsystem. If you omit this parameter, all the storage subsystems become the target.
subtarget	Required	Specify HostStorageDomain
Domain	Optional	Domain ID of the host storage domain. If you omit this parameter, all the host storage domains become the target. If you specify this parameter, you must also specify the <code>model</code> and <code>serialnum</code> parameters. This parameter can be specified in decimal and hexadecimal. If you specify a hexadecimal number, add the <code>0x</code> prefix. Note: The execution results are output in decimal. Note: If you specify this parameter, you must also specify the <code>port</code> or <code>portname</code> parameter. If neither is specified, this parameter will be ignored. Note: Do not specify <code>domain</code> and <code>domainnickname</code> at the same time, as this might cause an error to occur.
domainnickname	Optional (9500V (in LUN Management mode), USP V, USP, 9900V, and AMS/WMS series only)	Nickname of the host storage domain. If you omit this parameter, all the host storage domains become the target. Note: If you specify this parameter, you must specify the <code>port</code> or <code>portname</code> parameter. If neither is specified, this parameter will be ignored. Note: Do not specify <code>domain</code> and <code>domainnickname</code> at the same time, as this might cause an error to occur.
hdsuserinfo	Optional	Specific information about the host storage domain. The values you can specify are <code>WWN</code> , <code>Path</code> , and <code>FreeLUN</code> . If you specify multiple values at the same time, separate the values by commas.

Parameter Name	Status	Description
Port	Optional	<p>Number of the port containing the host storage domain. If <code>port</code> and <code>portname</code> are omitted, information about all ports is displayed. If you specify this parameter, you must also specify the <code>model</code> and <code>serialnum</code> parameters.</p> <p>Note: If you specify this parameter, you must specify the <code>domain</code> or <code>domainnickname</code> parameter. If neither is specified, this parameter will be ignored.</p> <p>Note: Do not specify <code>port</code> and <code>portname</code> at the same time, as this might cause an error to occur.</p>
portname	Optional	<p>Port name of the host storage domain.</p> <p>If <code>port</code> and <code>portname</code> are omitted, information about all ports is displayed. If you specify this parameter, you must also specify the <code>model</code> and <code>serialnum</code> parameters.</p> <p>Note: If you specify this parameter, you must specify the <code>domain</code> or <code>domainnickname</code> parameter. If neither is specified, this parameter will be ignored.</p> <p>Note: Do not specify <code>port</code> and <code>portname</code> at the same time, as this might cause an error to occur.</p>
startElementNumFilter	Optional	<p>Starting sequence number of host storage domains for which information is to be obtained.</p> <p>Specify this parameter when you want to obtain information for a part of host storage domains for a specific storage subsystem.</p> <p>When host storage domain information is ordered as shown below and numbered from 0 upward, specify the first number in the sequence of host storage domains that you want to obtain.</p> <p>Order of host storage domains:</p> <ol style="list-style-type: none"> 1. Port IDs in ascending order <p>Domain IDs in ascending order</p> <p>This parameter must be specified together with the <code>numOfElementsFilter</code>, <code>model</code>, and <code>serialnum</code> parameters.</p>
numOfElementsFilter	Optional	<p>Number of host storage domains for which information is to be obtained.</p> <p>Specify this parameter when you want to obtain information for a part of host storage domains for a specific storage subsystem. Specify the number of host storage domains for which information is to be obtained. This parameter must be specified together with the <code>startElementNumFilter</code>, <code>model</code>, and <code>serialnum</code> parameters.</p> <p>The maximum recommended value is 16384.</p>

Parameter Values to be Obtained in Advance:

`serialnum` and `model`: Obtain these values from the execution result of the `GetStorageArray` command. In the execution result of this command, the `arrayType` and `serialNumber` values appear under An instance of `StorageArray`. Use the `arrayType` and `serialNumber` values to specify the `model` and `serialnum` parameters respectively.

domain and port: Obtain these values from the execution result of the `GetStorageArray` (subtarget=HostStorageDomain) command. Execute this command by specifying only the **model** and **serialnum** parameters, and `HostStorageDomain` for the **subtarget** parameter. Information about all the host storage domains of the specified storage subsystem will be returned. In the execution result of this command, the **domainID** and **portID** values appear under An instance of `HostStorageDomain`. Use these **domainID** and **portID** values to specify the **domain** and **port** parameters respectively.

portname: Obtain this value from the execution result of the `GetStorageArray` (subtarget=Port) command. In the execution result of this command, the **displayName** value appears under An instance of `Port`. Use this value to specify the **portname** parameter

domainnickname: Obtain this value from the execution result of the `GetStorageArray` (subtarget=HostStorageDomain) command. In the execution result of this command, the **nickname** value appears under An instance of `HostStorageDomain`. Use this value to specify the **domainnickname** parameter.

Command Execution Example:

In this example, the `GetStorageArray` (subtarget=HostStorageDomain) command obtains information about a host storage domain (port number: 3, domain ID: 1) in a storage subsystem (serial number: 10001, model: HDS9980V). The information includes information about the paths, WWNs, and unused LUNs in the host storage domain.

```
HiCommandCLI GetStorageArray -o "D:\logs\9980V GetStorageArray_HostStorageDomain.log"
subtarget=HostStorageDomain model=HDS9980V serialnum=10001 port=23 domain=1
hsdsubinfo=path,wwn,freelun
```

Command execution result:

```
RESPONSE:
An instance of StorageArray
.
. (Attributes of StorageArray are omitted here)
.
List of 1 HostStorageDomain elements:
An instance of HostStorageDomain
objectID=HSDOMAIN.HDS9980V.10001.23.1
portID=23
domainID=1
hostMode=Standard
displayName=CL1-A-0
nickname=1A-G00
List of 1 WWN elements:
An instance of WWN
WWN=88.77.77.77.77.00.01
nickname=Jane
List of 7 FreeLUN elements:
An instance of FreeLUN
lun=9
An instance of FreeLUN
lun=10
.
. (repeated for other FreeLUN instances)
.
List of 1 Path elements:
An instance of Path
objectID=PATH.HDS9980V.10001.23.1.10
devNum=10
portID=23
```

```
domainID=1
scsiID=15
LUN=10
wwnSecurityValidity=true
```

4.1.17.7 GetStorageArray (subtarget=JournalPool)

`GetStorageArray (subtarget=JournalPool)` obtains the information about the journal pools for QuickShadow, COW Snapshot, or UniversalReplicator (see Table 4.24).

QuickShadow is usable for the Thunder 9500V series.

COW Snapshot is usable for the TagmaStore AMS/WMS series.

UniversalReplicator can be used on the Universal Storage Platform V and TagmaStore USP.

When SLPR functionality is used in Universal Storage Platform V and TagmaStore USP, the partitioned storage administrator cannot obtain information about the journal pool even if he or she discovers the storage subsystem (SLPR)

For UniversalReplicator, a user assigned to a user-defined resource group can obtain information about journal pools only when the user has access permissions for all the journal volumes and data volumes (P-VOL or S-VOL) that make up a journal group. For QuickShadow, a user can obtain all information about journal pools.

Information about a journal volume to be stored in the journal pool appears as the `LogicalUnit` instance. This information can be obtained only when a journal volume is an open volume. A user assigned to a user-defined resource group cannot obtain information about a journal volume for which the user does not have access permissions.

Information about the paired journal pool appears as the `PairedJournalPool` instance. This information does not appear if information about journal pools used by UniversalReplicator for mainframe volumes is obtained.

Information about replication appears as the `ReplicationInfo` instance. This information does not appear if information about journal pools used by UniversalReplicator for mainframe volumes is obtained. For details about access permissions used when a user assigned to a user-defined resource group obtains information about replication, see section 4.1.17.15 *GetStorageArray (subtarget=ReplicationInfo)*.

To obtain information about a journal pool that is composed of journal volumes included in a specific CLPR, specify the `clprfilter` parameter. If information about journal pools used by UniversalReplicator for mainframe volumes is obtained, the only information that can be obtained is information about journal pools composed of journal volumes of open volumes that satisfy the condition (that the journal pool is composed of journal volumes included in a specific CLPR).

Table 4.24 GetStorageArray (subtarget=JournalPool) Command Parameters

Parameter Name	Status	Description
subtarget	Required	Specify <code>JournalPool</code> .
model	Optional	Model of the storage subsystem. If you omit this parameter, all the storage subsystems become the target.
serialnum	Optional	Serial number of the storage subsystem. If you omit this parameter, all the storage subsystems become the target.
poolfunction	Optional	Specify the type of function that operates <code>JournalPool</code> . For Thunder 9500V and TagmaStore AMS/WMS series, specify the following value: 3: QuickShadow For Universal Storage Platform V and TagmaStore USP, specify the following value: 4: UniversalReplicator If <code>model</code> and <code>serialnum</code> are omitted, the specification for this parameter becomes invalid.
poolid	Optional	Pool ID of <code>JournalPool</code> . If <code>model</code> and <code>serialnum</code> are omitted, the specification for this parameter becomes invalid.
poolsubinfo	Optional	Information about <code>JournalPool</code> . You can specify <code>LogicalUnit</code> , <code>PairedJournalPool</code> , or <code>ReplicationInfo</code> . When you specify multiple values, use a comma to delimit the values.
clprfilter	Optional (Universal Storage Platform V and TagmaStore USP only)	Specify the CLPR number of <code>JournalPool</code> . The information about the journal pool that is composed of journal volumes included in the specific CLPR.

Parameter values to be obtained in advance:

`serialnum` and `model`: Obtain these values from the execution result of the `GetStorageArray` command. In the execution result of this command, the `arrayType` and `serialNumber` values appear under An instance of `StorageArray`. Use the `arrayType` and `serialNumber` values to specify the `model` and `serialnum` parameters respectively.

`poolfunction`: Obtain this value from the execution result of the `GetStorageArray (subtarget=JournalPool)` command. In the execution result of this command, the `poolFunction` value appears under An instance of `JournalPool`. Use this value to specify the `poolfunction` parameter.

`poolid`: Obtain this value from the execution result of the `GetStorageArray (subtarget=JournalPool)` command. In the execution result of this command, the `poolID` value appears under An instance of `JournalPool`. Use this value to specify the `poolid` parameter.

clprfilter: Obtain this value from the execution result of the `GetStorageArray` (`subtarget=LDEV`) command. In the execution result of this command, the `clprNumber` value appears under *An instance of LDEV*. Use this value to specify the `clprfilter` parameter.

Command execution example:

In this example, the `GetStorageArray` (`subtarget=JournalPool`) command obtains information about the journal pool in a storage subsystem (serial number: 14050, model: USP). The information includes information about the logical unit, paired journal pool and replication in the journal pool.

```
hdvmmcli GetStorageArray -o "D:\logs\XP12000\GetStorageArray_JournalPool.log"
subtarget=JournalPool model= XP12000 serialnum=14050
poolsubinfo=LogicalUnit,PairedJournalPool,ReplicationInfo
```

Command execution result:

```
RESPONSE:
An instance of StorageArray
.
. (Attributes of StorageArray are omitted here)
.
List of 256 JournalPool elements:
  An instance of JournalPool
    objectID=JOURNALPOOL.USP.14050.4.0
    poolFunction=4
    poolID=0
    controllerID=-1
    poolType=2
  List of 2 Lu elements:
    An instance of LogicalUnit
      objectID=LU.USP.14050.3024
      devNum=3,024
      displayName=B:D0
      emulation=OPEN-V
      devCount=1
      devType=
      capacityInKB=1,638,720
      path=false
      commandDevice=false
      commandDeviceEx=0
      commandDeviceSecurity=false
      chassis=2
      arrayGroup=54
      raidType=RAID5 (3D+1P)
      currentPortController=-1
      defaultPortController=-1
      isComposite=0
      trueCopyVolumeType=Simplex
      shadowImageVolumeType=Simplex
      quickShadowVolumeType=Simplex
      universalReplicatorVolumeType=JNL-VOL
      sysVolFlag=0
      externalVolume=0
      differentialManagement=false
      quickShadowPoolID=-1
      universalReplicatorPoolID=0
    An instance of LogicalUnit
      objectID=LU.USP.14050.3028
      devNum=3,028
      displayName=B:D4
      emulation=OPEN-V
      devCount=1
      devType=
```

```
capacityInKB=1,638,720
path=false
commandDevice=false
commandDeviceEx=0
commandDeviceSecurity=false
chassis=2
arrayGroup=54
raidType=RAID5 (3D+1P)
currentPortController=-1
defaultPortController=-1
isComposite=0
trueCopyVolumeType=Simplex
shadowImageVolumeType=Simplex
quickShadowVolumeType=Simplex
universalReplicatorVolumeType=JNL-VOL
sysVolFlag=0
externalVolume=0
differentialManagement=false
quickShadowPoolID=-1
universalReplicatorPoolID=0
```

An instance of JournalPool

```
objectID=JOURNALPOOL.USP.14050.4.1
poolFunction=4
poolID=1
controllerID=-1
poolType=0
```

List of 2 ReplicationInfo elements:

An instance of ReplicationInfo

```
objectID=REPINFO.14050.3033.14053.3033
pvolSerialNumber=14050
pvolArrayType=USP
pvolDevNum=3,033
pvolObjectID=LU.USP.14050.3033
pvolPoolID=1
svolSerialNumber=14053
svolArrayType=Unknown
svolDevNum=3,033
svolPoolID=1
replicationFunction=UniversalReplicator
status=17
muNumber=0
copyTrackSize=-1
splitTime=-1
```

An instance of ReplicationInfo

```
objectID=REPINFO.14050.3034.14053.3034
pvolSerialNumber=14050
pvolArrayType=USP
pvolDevNum=3,034
pvolObjectID=LU.USP.14050.3034
pvolPoolID=1
svolSerialNumber=14053
svolArrayType=Unknown
svolDevNum=3,034
svolPoolID=1
replicationFunction=UniversalReplicator
status=17
muNumber=0
copyTrackSize=-1
splitTime=-1
```

List of 1 Lu elements:

An instance of LogicalUnit

```
objectID=LU.USP.14050.3025
devNum=3,025
displayName=B:D1
emulation=OPEN-V
devCount=1
devType=
capacityInKB=1,638,720
```

```

path=false
commandDevice=false
commandDeviceEx=0
commandDeviceSecurity=false
chassis=2
arrayGroup=54
raidType=RAID5 (3D+1P)
currentPortController=-1
defaultPortController=-1
isComposite=0
trueCopyVolumeType=Simplex
shadowImageVolumeType=Simplex
quickShadowVolumeType=Simplex
universalReplicatorVolumeType=JNL-VOL
sysVolFlag=0
externalVolume=0
differentialManagement=false
quickShadowPoolID=-1
universalReplicatorPoolID=1
List of 1 PairedJournalPool elements:
  An instance of PairedJournalPool
    muNumber=0
    pairedArrayType=Unknown
    pairedSerialNumber=14053
    pairedPoolID=1
.
. (repeated for other JournalPool instances)
.

```

4.1.17.8 GetStorageArray (subtarget=LDEV)

GetStorageArray (subtarget=LDEV) obtains the information about an LDEV or LDEVs in one or all storage subsystems.

A user to whom a user-defined resource group is assigned can obtain information about one or all LDEVs in one or all storage subsystems that the user is permitted to access.

Table 4.25 GetStorageArray (subtarget=LDEV) Command Parameters

Parameter Name	Status	Description
model	Optional	Model of the storage subsystem. If you omit this parameter, all the storage subsystems become the target.
serialnum	Optional	Serial number of the storage subsystem. If you omit this parameter, all the storage subsystems become the target.
subtarget	Required	Specify LDEV.

Parameter Name	Status	Description
devnum	Optional	<p>Device number of the LDEV that you intend to obtain.</p> <p>Specify this parameter when you want to obtain information about a specific LDEV. If you specify this parameter, you must also specify the <code>model</code> and <code>serialnum</code> parameters. If you specify the <code>model</code> and <code>serialnum</code> parameters, and omit the <code>devnum</code> parameter, information about all the LDEVs in the specified storage subsystem is obtained.</p> <p>This parameter can be specified in decimal, and in colon-separated hexadecimal. If you specify a hexadecimal number, for TagmaStore USP, Lightning 9900V, and Lightning 9900, use the <code>xx:yy</code> format, where <code>xx</code> is the CU number, and <code>yy</code> is the LDEV number. For Universal Storage Platform V, use the <code>ww:xx:yy</code> format, where <code>ww</code> is the LDKC number, <code>xx</code> is the CU number, and <code>yy</code> is the LDEV number. <code>ww</code> is optional. If you omit <code>ww</code>, the LDKC number is regarded as 0.</p> <p>Note: The execution results are output in decimal.</p>
ldevfilter	Optional	<p>Filter used for selecting the LDEV. Available values are <code>OPEN</code>, <code>INTERMEDIATE</code>, and <code>MAINFRAME</code>, which are not case-sensitive. To specify two or more values, separate them with semicolons (;). If you omit this parameter, all LDEVs are displayed. If you specify <code>OPEN</code>, the LDEVs for an open volume will be displayed. If you specify <code>INTERMEDIATE</code>, the LDEVs for an intermediate volume will be displayed. If you specify <code>MAINFRAME</code>, the LDEVs for a mainframe volume will be displayed. If you specify <code>OPEN;MAINFRAME</code>, the LDEVs for both the open volume and mainframe volume will be displayed.</p>
ldevsubinfo	Optional	<p>Information about the LDEV.</p> <p>The value you can specify is <code>VolumeConnection</code>.</p>
startElementNumFilter	Optional	<p>Starting sequence number of logical devices for which information is to be obtained.</p> <p>Specify this parameter when you want to obtain information for a part of logical devices in a specific storage subsystem.</p> <p>When logical device information is ordered by device number (in ascending order) from 0, specify the first number in the sequence of logical devices that you want to obtain.</p> <p>This parameter must be specified together with the <code>numOfElementsFilter</code>, <code>model</code>, and <code>serialnum</code> parameters.</p>
numOfElementsFilter	Optional	<p>Number of logical devices for which information is to be obtained.</p> <p>Specify this parameter when you want to obtain information for a part of logical devices in a specific storage subsystem. Specify the number of logical devices for which information is to be obtained. This parameter must be specified together with the <code>startElementNumFilter</code>, <code>model</code>, and <code>serialnum</code> parameters.</p> <p>The maximum recommended value is 16384.</p>

Parameter Values to be Obtained in Advance:

`serialnum` and `model`: Obtain these values from the execution result of the `GetStorageArray` command. In the execution result of this command, the `arrayType` and `serialNumber` values appear under `An instance of StorageArray`. Use the `arrayType` and `serialNumber` values to specify the `model` and `serialnum` parameters respectively.

devnum: Obtain this value from the execution result of the `GetStorageArray` (subtarget=LDEV) command. Execute this command by specifying only the `model` and `serialnum` parameters, and LDEV for the `subtarget` parameter. Information about all the LDEVs in the specified storage subsystem can be obtained. In the execution result of this command, the required `devNum` value appears under An instance of LDEV. Use this `devNum` value to specify the `devnum` parameter.

Command Execution Example:

In this example, the `GetStorageArray` (subtarget=LDEV) command obtains information about a specific LDEV (device number: 0) in a storage subsystem (serial number: 10001, model: USP).

```
HiCommandCLI GetStorageArray -o "D:\logs\USP GetStorageArray_LDEV.log" "subtarget=LDEV"
"model=USP" "serialnum=10001" "devnum=0" "ldevsubinfo=VolumeConnection" "ldevfilter=open"
```

Command execution result:

```
RESPONSE:
An instance of StorageArray
.
. (Attributes of StorageArray are omitted here)
.
List of 1756 Ldev elements:
  An instance of LDEV
    objectID=LDEV.USP.10001.0
    devNum=0
    displayName=00:00
    emulation=OPEN-3
    cylinders=0
    isComposite=0
    sizeInKB=2,403,360
    lba=1,201,680
    raidType=RAID5 (3D+1P)
    substance=1
    volumeType=3
    slotSizeInKB=48
    chassis=1
    arrayGroup=0
    path=true
    onDemandDevice=false
    devType=
    isStandardLDEV=true
    guardMode=
    diskType=-1
    slprNumber=-1
    clprNumber=-1
    cacheResidencyMode=-1
    stripeSizeInKB=-1
    volumeKind=3
    status=Normal
    dpType=-1
    consumedSizeInKB=-1
  List of 1 VolumeConnection elements:
    An instance of VolumeConnection
      objectid=VOLCONN.USP.10001.0
      mappedArrayType=USP
      mappedSerialNumber=10001
      mappedDevNum=0
      externalArrayType=HDS9960
      externalSerialNumber=10002
      externalDevNum=150
      externalVolumeName=0096
      productName=0400
      vendor=Hitachi
```

```

.
. (repeated for other LDEV instances)
.

```

4.1.17.9 GetStorageArray (subtarget=LogicalDKC)

GetStorageArray (subtarget=LogicalDKC) obtains the information about the logical DKC in one or all storage subsystems (see Table 4.26).

Table 4.26 GetStorageArray (subtarget=LogicalDKC) Command Parameters

Parameter Name	Status	Description
subtarget	Required	Specify LogicalDKC.
model	Optional	Model of the storage subsystem. If you omit this parameter, all the storage subsystems become the target.
serialnum	Optional	Serial number of the storage subsystem. If you omit this parameter, all the storage subsystems become the target.

Command execution example:

In this example, the GetStorageArray (subtarget=LogicalDKC) command obtains information about the logical DKC in a storage subsystem (serial number: 12345, model: R600).

```

HiCommandCLI GetStorageArray -o "D:\logs\GetStorageArray_LogicalDKC.log"
subtarget=LogicalDKC model=R600 serialnum=12345

```

Command execution result:

```

RESPONSE:
An instance of StorageArray
  objectID=ARRAY.R600.12345
  name=USP_V@10.208.115.221
  description=R600 (12345) at 10.208.115.221
  serialNumber=12345
  arrayFamily=R600
  arrayType=R600
  microcodeVersion=60-00-32/00
  agentVersion=05_00_00
  productName=RAID600
  controllerVersion=60-00-32-00/00
  numberOfControllers=2
  capacityInGB=8,852
  cacheInMB=65,536
  sharedMemoryInMB=-1
  numberOfSpareDrives=-1
  freeCapacityInGB=8,009
  allocatedCapacityInGB=812
  hihsmCapacityInGB=30
  onDemandCapacityInGB=0
  totalFreeSpaceInGB=3,089
  largestFreeSpaceInGB=492
  capacityInKB=9,282,994,926
  freeCapacityInKB=8,399,083,870
  allocatedCapacityInKB=851,452,736
  hihsmCapacityInKB=32,458,320
  onDemandCapacityInKB=0
  totalFreeSpaceInKB=3,239,433,148

```

```

largestFreeSpaceInKB=516,113,664
multipathSupport=1
securityStatus=2
sequenceNumber=10037
displayArrayFamily=USP_V
displayArrayType=USP_V
numberOfLUs=4,443
numberOfAllocatedLUs=630
numberOfUnallocatedLUs=3,813
slprStatus=0
openTotalCapacity=7,934,066,016
openAllocatedCapacity=851,452,736
openFreeCapacity=7,073,394,400
openHiHsmCapacity=9,218,880
openOnDemandCapacity=0
imTotalCapacity=399,016,800
imAllocatedCapacity=0
imFreeCapacity=399,016,800
imHiHsmCapacity=0
imOnDemandCapacity=0
mfTotalCapacity=949,912,110
mfHiHsmCapacity=23,239,440
mfOnDemandCapacity=0
mfAllocatedCapacity=0
mfUnallocatedCapacity=0
numberOfOpenAllocatedLUs=589
numberOfOpenUnallocatedLUs=3,799
numberOfImAllocatedLUs=0
numberOfImUnallocatedLUs=14
numberOfMfLDEVs=327
numberOfAllocatedMfLDEVs=0
numberOfUnallocatedMfLDEVs=0
productCode=1
lastRefreshed=1,176,711,367
autoFormatLU=1
statusOfDBInconsistency=0
openAllocatedActualCapacity=663,807,296
openUnallocatedCapacity=7,227,624,640
openUnallocatedActualCapacity=6,090,395,200
openReservedCapacity=254,005,440
openReservedActualCapacity=254,005,440
numberOfReservedLUs=41
numberOfOpenReservedLUs=41
numberOfImReservedLUs=0
List of 1 LogicalDKC elements:
  An instance of LogicalDKC
    logicalDKCNumber=00
    mfLogicalSerialNumber=12345

```

4.1.17.10 GetStorageArray (subtarget=LogicalUnit)

GetStorageArray (subtarget=LogicalUnit) obtains the information about one or all logical units (LUs) in one or all storage subsystems (see Table 4.27).

A user to whom a user-defined resource group is assigned can obtain information about one or all logical units in one or all storage subsystems that the user is permitted to access.

Table 4.27 GetStorageArray (subtarget=LogicalUnit) Command Parameters

Parameter Name	Status	Description
Model	Optional	Model of the storage subsystem. If you omit this parameter, all the storage subsystems become the target.
Serialnum	Optional	Serial number of the storage subsystem. If you omit this parameter, all the storage subsystems become the target.
Subtarget	Required	Specify LogicalUnit.
Lufilter	Optional	Filter for selecting a logical unit. Available values are ALL, ASSIGNED, FREE, UNASSIGNED, and RESERVED. If you omit this parameter or specify ALL, you will obtain information about all the logical units. If you specify FREE, you will obtain the information about the logical units that do not have a LUN assigned. If you specify ASSIGNED, you will obtain the information about the logical units that have a LUN assigned. If you specify FREE, you will obtain the information about all the logical units that do not have a LUN assigned. If you specify UNASSIGNED, among the information about the logical units that do not have a LUN assigned, you will obtain the information about the logical units to which a LUN can be assigned by using Device Manager. If you specify RESERVED, among the information about the logical units that do not have a LUN assigned, you will obtain the information about the logical units to which a LUN cannot be assigned by using Device Manager.
Lufilterchildid	Optional	Filter for selecting a logical unit. Specify the objectID of the LDEV. Only the logical units corresponding to the LDEV of the specified objectID are returned.
Lusubinfo	Optional	Specific information about the logical unit. The values you can specify are Path, LDEV, and VolumeConnection. If you specify multiple values at the same time, separate values by commas.
Objected	Optional	Object ID of the logical unit. Specify this parameter when you want to obtain information about a specific logical unit. If you specify this parameter, you must also specify the model and serialnum parameters. If you specify the model and serialnum parameters, and omit the objectid parameter, information about all the logical units in the specified storage subsystem is obtained.
Pathsubinfo	Optional	Specific information about the logical unit path. The value you can specify is WWN, WWNGroup, or HostInfo. If you specify this parameter, you must also specify lusubinfo=Path.
Ldevsubinfo	Optional	Information about the LDEV. The value you can specify is VolumeConnection. If you specify this parameter, you must also specify the lusubinfo=LDEV.

Parameter Name	Status	Description
startElementNumFilter	Optional	Starting sequence number of logical units for which information is to be obtained. Specify this parameter when you want to obtain information for a part of logical units in a specific storage subsystem. When the logical unit information is ordered by device number (in ascending order) from 0, specify the first number in the sequence of logical units that you want to obtain. This parameter must be specified together with the numOfElementsFilter, model, and serialnum parameters.
numOfElementsFilter	Optional	Number of logical units for which information is to be obtained. Specify this parameter when you want to obtain information for a part of logical units in a specific storage subsystem. Specify the number of logical units for which information is to be obtained. This parameter must be specified together with the startElementNumFilter, model, and serialnum parameters. The maximum recommended value is 16384.

Parameter Values to be Obtained in Advance:

serialnum and **model**: Obtain these values from the execution result of the `GetStorageArray` command. In the execution result of this command, the `arrayType` and `serialNumber` values appear under An instance of `StorageArray`. Use the `arrayType` and `serialNumber` values to specify the `model` and `serialnum` parameters respectively.

objectId: Obtain this value from the execution result of the `GetStorageArray (subtarget=LogicalUnit)` command. Execute this command by specifying only the `model` and `serialnum` parameters, and `LogicalUnit` for the `subtarget` parameter. Information about all the logical units in the specified storage subsystem will be returned. In the execution result of this command, the required `objectID` value appears under An instance of `LogicalUnit`. Use this `objectID` value to specify the `objectId` parameter.

Command Execution Example:

In this example, the `GetStorageArray (subtarget=LogicalUnit)` command obtains information about the logical units in a storage subsystem (serial number: 10001, model: USP). The information includes information about the paths to the logical units, the LDEVs used in the logical units, the WWNs of the path, the WWN groups, and the host.

```
HiCommandCLI GetStorageArray -o "D:\logs\USP GetStorageArray_LogicalUnit.log"
"subtarget=LogicalUnit" "model=USP" "serialnum=10001" "lufilter=all"
"lusubinfo=Path,LDEV,VolumeConnection" "pathsubinfo=wwn,wwngroup,hostinfo"
"ldevsubinfo=VolumeConnection"
```

Command execution result:

```
RESPONSE:
An instance of StorageArray
.
. (Attributes of StorageArray are omitted here)
.
List of 1752 Lu elements:
An instance of LogicalUnit
```

```

objectID=LU.USP.10001.100
devNum=100
displayName=00:64
emulation=OPEN-3
devCount=1
devType=
capacityInKB=2,403,360
path=true
commandDevice=false
commandDeviceEx=0
commandDeviceSecurity=false
chassis=1
arrayGroup=16
raidType=RAID5 (3D+1P)
currentPortController=-1
defaultPortController=-1
isComposite=0
trueCopyVolumeType=Simplex
shadowImageVolumeType=Simplex
quickShadowVolumeType=Simplex
universalReplicatorVolumeType=Simplex
sysVolFlag=0
externalVolume=1
differentialManagement=false
quickShadowPoolID=-1
universalReplicatorPoolID=-1
List of 3 Path elements:
  An instance of Path
  .
  . (Attributes of Path are omitted here)
  .
  An instance of Path
  .
  . (Attributes of Path are omitted here)
  .
  List of 2 WWN elements:
    An instance of WWN
    WWN=88.77.77.77.77.00.01
    nickname=Jane
    An instance of WWN
    WWN=88.77.77.77.77.3F.04
    nickname=Jone
.
. (repeated for other Path instances)
.
List of 1 Ldev elements:
  An instance of LDEV
  objectID=LDEV.USP.10001.100
  devNum=100
  displayName=00:64
  emulation=OPEN-3
  cylinders=0
  isComposite=0
  sizeInKB=2,403,360
  lba=1,201,680
  raidType=RAID5 (3D+1P)
  substance=1
  volumeType=3
  slotSizeInKB=48
  chassis=1
  arrayGroup=16
  path=true
  onDemandDevice=false
  devType=
  isStandardLDEV=true
  guardMode=
  diskType=-1
  slprNumber=-1

```

```

clprNumber=-1
cacheResidencyMode=-1
stripeSizeInKB=-1
volumeKind=3
status=Normal
dpType=-1
consumedSizeInKB=-1
List of 1 VolumeConnection elements:
  An instance of VolumeConnection
    objectID=VOLCONN.USP.10001.0
    mappedArrayType=USP
    mappedSerialNumber=10001
    mappedDevNum=100
    externalArrayType=HDS9960
    externalSerialNumber=10002
    externalDevNum=150
    externalVolumeName=0096
    productName=0400
    vendor=Hitachi
.
. (repeated for other VolumeConnection instances)
.

```

4.1.17.11 GetStorageArray (subtarget=Path)

GetStorageArray (subtarget=Path) obtains the information about a path in one or all storage subsystems (see Table 4.28).

A user to whom a user-defined resource group is assigned can obtain information about one or all paths in one or all storage subsystems that the user is permitted to access.

Table 4.28 GetStorageArray (subtarget=Path) Command Parameters

Parameter Name	Status	Description
model	Optional	Model of the storage subsystem. If you omit this parameter, all the storage subsystems become the target.
serialnum	Optional	Serial number of the storage subsystem. If you omit this parameter, all the storage subsystems become the target.
subtarget	Required	Specify Path
objectid	Optional	Object ID of the path. Specify this parameter when you want to obtain information about a specific path. If you specify this parameter, you must also specify the model and serialnum parameters. If you specify the model and serialnum parameters and omit the objectid parameter, information about all the paths for the specified storage subsystem is obtained.
Pathsubinfo	Optional	Specific information about the path. The values you can specify are LogicalGroup, WWN, WWNGroup, or HostInfo.

Parameter Name	Status	Description
<code>startElementNumFilter</code>	Optional	<p>Starting sequence number of paths for which information is to be obtained. Specify this parameter when you want to obtain information for a part of paths for a specific storage subsystem.</p> <p>When path information is ordered as shown below and numbered from 0 upward, specify the first number in the sequence of paths that you want to obtain.</p> <p>Order of paths:</p> <ol style="list-style-type: none"> 1. Port IDs in ascending order <p>Domain IDs in ascending order</p> <p>Device numbers in ascending order</p> <p>This parameter must be specified together with the <code>numOfElementsFilter</code>, <code>model</code>, and <code>serialnum</code> parameters.</p>
<code>numOfElementsFilter</code>	Optional	<p>Number of paths for which information is to be obtained. Specify this parameter when you want to obtain information for a part of paths for a specific storage subsystem. Specify the number of paths for which information is to be obtained. This parameter must be specified together with the <code>startElementNumFilter</code>, <code>model</code>, and <code>serialnum</code> parameters.</p> <p>The maximum recommended value is 16384.</p>

Parameter Values to be Obtained in Advance:

`serialnum` and `model`: Obtain these values from the execution result of the `GetStorageArray` command. In the execution result of this command, the `arrayType` and `serialNumber` values appear under An instance of `StorageArray`. Use the `arrayType` and `serialNumber` values to specify the `model` and `serialnum` parameters respectively.

`objectid`: Obtain this value from the execution result of the `GetStorageArray (subtarget=Path)` command. Execute this command by specifying only the `model` and `serialnum` parameters, and `Path` for the `subtarget` parameter. Information about all the paths to the specified storage subsystem can be obtained. In the execution result of this command, the required `objectID` value appears under An instance of `Path`. Use this `objectID` value to specify the `objectid` parameter.

Command Execution Example 1 (when `objectid` parameter not specified):

In this example, the `GetStorageArray (subtarget=Path)` command obtains information about all the paths to a storage subsystem (serial number: 10001, model: HDS9980V). The information includes information about the WWNs of all these paths, the WWN groups, and the host.

```
HiCommandCLI GetStorageArray -o "D:\logs\9980V GetStorageArray_Path.log" subtarget=Path
model=HDS9980V serialnum=10001 pathsubinfo=WWN,WWNGroup,HostInfo
```

Command execution result 1:

```
RESPONSE:
An instance of StorageArray
.
. (Attributes of StorageArray are omitted here)
.
List of 554 Path elements:
```

```

An instance of Path
  objectID=PATH.HDS9980V.10001.0.0.0
  devNum=0
  portID=0
  domainID=0
  scsiID=15
  LUN=0
  wwnSecurityValidity=true
  .
  . (repeated for other Path instances)
  .
An instance of Path
  objectID=PATH.HDS9980V.10001.7.0.99
  devNum=99
  portID=7
  domainID=0
  scsiID=15
  LUN=99
  wwnSecurityValidity=true
  List of 256 WWN elements:
    An instance of WWN
      WWN=88.77.77.77.77.77.00.01
      nickname=Jane
    An instance of WWN
      WWN=88.77.77.77.77.77.00.02
      nickname=Jone
  .
  . (repeated for other WWN instances)
  .

```

Command Execution Example 2 (when `objectid` parameter specified):

In this example, the `GetStorageArray (subtarget=Path)` command obtains information about a path (object ID: `PATH.HDS9980V.10001.7.0.99`) that is set for a storage subsystem (serial number: 10001, model: HDS9980V). The information includes information about the WWNs of this path, the WWN groups, and the host.

```

HiCommandCLI GetStorageArray -o "D:\logs\9980V GetStorageArray_Path.log" subtarget=Path
model=HDS9980V serialnum=10001 objectid=PATH.HDS9980V.10001.7.0.99
pathsubinfo=WWN,WWNGroup,HostInfo

```

Command execution result 2:

```

RESPONSE:
An instance of StorageArray
  .
  . (Attributes of StorageArray are omitted here)
  .
List of 1 Path elements:
  An instance of Path
    objectID=PATH.HDS9980V.10001.7.0.99
    devNum=99
    portID=7
    domainID=0
    scsiID=15
    LUN=99
    wwnSecurityValidity=true
  List of 2 WWN elements:
    An instance of WWN
      WWN=88.77.77.77.77.77.00.01
      nickname=Jane
    An instance of WWN
      WWN=88.77.77.77.77.77.00.02
      nickname=Jone

```

4.1.17.12 GetStorageArray (subtarget=PDEV)

`GetStorageArray (subtarget=PDEV)` obtains the information about a PDEV in one or all storage subsystems (see Table 4.29).

A user to whom a user-defined resource group is assigned can obtain information about one or all PDEVs in one or all storage subsystems that the user is permitted to access.

Table 4.29 GetStorageArray (subtarget=PDEV) Command Parameters

Parameter Name	Status	Description
Model	Optional	Model of the storage subsystem. If you omit this parameter, all the storage subsystems become the target.
Serialnum	Optional	Serial number of the storage subsystem. If you omit this parameter, all the storage subsystems become the target.
Subtarget	Required	Specify PDEV.
arraygroupobjid	Optional	Object ID of the array group containing the PDEVs to be returned. Specify this parameter when you want to obtain information about the PDEVs in a specific array group. If you specify this parameter, you must also specify the <code>model</code> and <code>serialnum</code> parameters. If you specify the <code>model</code> and <code>serialnum</code> parameters and omit the <code>arraygroupobjid</code> parameter, information about the PDEVs in all the array groups of the specified storage subsystem is obtained. When obtaining information about all the array groups and PDEVs, specify <code>ALL</code> .
Pdevid	Optional	Specify this parameter when you want to obtain information about a specific PDEV. If you specify this parameter, you must also specify the <code>model</code> and <code>serialnum</code> parameters. If you specify the <code>model</code> and <code>serialnum</code> parameters and omit the <code>pdevid</code> parameter, information about all the PDEVs in the specified storage subsystem is obtained.

Parameter Values to be Obtained in Advance:

`serialnum` and `model`: Obtain these values from the execution result of the `GetStorageArray` command. In the execution result of this command, the `arrayType` and `serialNumber` values appear under `An instance of StorageArray`. Use the `arrayType` and `serialNumber` values to specify the `model` and `serialnum` parameters respectively.

`arraygroupobjid`: Obtain this value from the execution result of the `GetStorageArray (subtarget=ArrayGroup)` command. Execute this command by specifying only the `model` and `serialnum` parameters, and `ArrayGroup` for the `subtarget` parameter. In the execution result of this command, the `objectID` value appears under `An instance of ArrayGroup`. Use this `objectID` value to specify the `arraygroupobjid` parameter.

pdevid: Obtain this value from the execution result of the `GetStorageArray` (subtarget=PDEV) command. Execute this command by specifying only the `model` and `serialnum` parameters, and `PDEV` for the `subtarget` parameter. The information about all the `PDEVs` in the specified storage subsystem will be returned. In the execution result of this command, use the `pdevid` value that appears under An instance of `PDEV` to specify the `pdevid` parameter. If a comma is included in the `pdevid` value, specify the value, excluding the comma.

Command Execution Example:

In this example, the `GetStorageArray` (subtarget=PDEV) command obtains information about a `PDEV` (`PDEV` number: 1) belonging to an array group (object ID: `ARRAYGROUP.HDS9980V.10001.0.0`) that is in a storage subsystem (serial number: 10001, model: `HDS9980V`).

```
HiCommandCLI GetStorageArray -o "D:\logs\9980V GetStorageArray_PDEV.log" subtarget=PDEV
model=HDS9980V serialnum=10001 pdevid=1 arraygroupobjid=ARRAYGROUP.HDS9980V.10001.0.0
```

Command execution result:

```
RESPONSE:
An instance of StorageArray
.
. (Attributes of StorageArray are omitted here)
.
List of 1 ArrayGroup elements:
.
. (Attributes of ArrayGroup are omitted here)
.
List of 4 PDEV elements:
  An instance of PDEV
    objectID=PDEV.HDS9980V.10001.0
    chassis=1
    arrayGroup=0
    capacityInKB=75,497,472
    row=-1
    column=-1
    depth=-1
    role=
    vendor=
    model=DKR2D-J072FC
    firmwareVersion=
    serialNumber=
    dkuType=HDS9900V
    rpm=-1
    diskType=-1
    pdevid=1
.
. (repeated for other PDEV instances)
.
```

4.1.17.13 GetStorageArray (subtarget=Port)

`GetStorageArray` (subtarget=Port) obtains the information about a port in one or all storage subsystems (see Table 4.30).

A user to whom a user-defined resource group is assigned can obtain information about one or all ports in one or all storage subsystems that the user is permitted to access.

Table 4.30 GetStorageArray (subtarget=Port) Command Parameters

Parameter Name	Status	Description
model	Optional	Model of the storage subsystem. If you omit this parameter, all the storage subsystems become the target.
serialnum	Optional	Serial number of the storage subsystem. If you omit this parameter, all the storage subsystems become the target.
subtarget	Required	Specify Port.
port	Optional	Number of the port of the storage subsystem. Specify this parameter when you want to obtain information about a specific port. If <code>port</code> and <code>portname</code> are omitted, information about all ports is displayed. If you specify this parameter, you must also specify the <code>model</code> and <code>serialnum</code> parameters. If you specify the <code>model</code> and <code>serialnum</code> parameters and omit the <code>port</code> parameter, information about all the ports of the specified storage subsystem is obtained. Note: Do not specify <code>port</code> and <code>portname</code> at the same time, as this might cause an error to occur.
portname	Optional	Port name for the storage subsystem. Specify this parameter when you want to obtain information about a specific port. If <code>port</code> and <code>portname</code> are omitted, information about all ports is displayed. If you specify this parameter, you must also specify the <code>model</code> and <code>serialnum</code> parameters. Note: Do not specify <code>port</code> and <code>portname</code> at the same time, as this might cause an error to occur.
portsubinfo	Optional	Specific information about the ports. The value you can specify is WWN, WWNGroup, LUNGroup, or HostStorageDomain.
wwngroupsubinfo#	Optional	Information obtained from a WWN group. Specify WWNGroup in the parameter portsubinfo when using this parameter. The value you can specify is WWN only.
lungroupsubinfo#	Optional	Information obtained from a LUN group. Specify LUNGroup in the parameter portsubinfo when using this parameter. The value you can specify is Path only.
pathsubinfo#	Optional	Information obtained from paths of a LUN group. Specify Path in the parameter lungroupsubinfo when using this parameter. The value you can specify is WWN or WWNGroup.

This can only be specified for Lightning 9900.

Parameter Values to be Obtained in Advance:

`serialnum` and `model`: Obtain these values from the execution result of the `GetStorageArray` command. In the execution result of this command, the `arrayType` and `serialNumber` values appear under An instance of `StorageArray`. Use the `arrayType` and `serialNumber` values to specify the `model` and `serialnum` parameters respectively.

port: Obtain this value from the execution result of the `GetStorageArray` (subtarget=Port) command. Execute this command by specifying only the `model` and `serialnum` parameters, and the value for `subtarget=Port`. Information about all the ports used by the specified storage subsystem can be obtained. In the execution result of this command, the required `portID` value appears under An instance of Port. Use this `portID` value to specify the `port` parameter.

portname: Obtain this value from the execution result of the `GetStorageArray` (subtarget=Port) command. In the execution result of this command, the `displayName` value appears under An instance of Port. Use this value to specify the `portname` parameter.

Command Execution Example:

In this example, the `GetStorageArray` (subtarget=Port) command obtains information about a port (port number: 0) in a storage subsystem (serial number: 10001, model: HDS9960). The information includes information about the port's WWNs, WWN groups, LUN groups, and the host storage domain.

```
HiCommandCLI GetStorageArray -o "D:\logs\9960 GetStorageArray_Port.log" subtarget=Port
model=HDS9960 serialnum=10001 port=0 portsubinfo=WWN,WWNGroup,LUNGroup,HostStorageDomain
wnngroupsubinfo=WWN
```

Command execution result:

```
RESPONSE:
An instance of StorageArray
.
. (Attributes of StorageArray are omitted here)
.
List of 1 Port elements:
  An instance of Port
    objectID=PORT.HDS9960.10001.0
    serialNumber=10040
    arrayType=HDS9960
    portID=0
    portType=Fibre
    fibreAddress=EF
    topology=Fabric(off), FC-AL
    displayName=CL1-A
    lunSecurityEnabled=true
    controllerID=1
    worldWidePortName=50.06.0E.80.03.3A.99.00
    channelSpeed=1
    portRole=Target
    slprNumber=-1
  List of 2 WWN elements:
    An instance of WWN
      WWN=00.00.00.00.00.00.01
      nickname=Jane
    An instance of WWN
      WWN=00.00.00.00.00.00.50
      nickname=Jone
  List of 2 HostStorageDomain elements:
    An instance of HostStorageDomain
      objectID=HSDOMAIN.HDS9960.10001.0.0
      portID=0
      domainID=0
      hostMode=Standard
      displayName=CL1-A-0
      nickname=1A-G00
    An instance of HostStorageDomain
      objectID=HSDOMAIN.HDS9960.10001.0.1
```

```

portID=0
domainID=1
hostMode=Standard
displayName=CL1-A-1
nickname=HCMD0000
List of 1 WWNGroup elements:
  An instance of WWNGroup
    objectID=WWNGroup.HDS9960.10001.0.0.nickname
    name=wwn group
    nickname=nickname
List of 1 LUNGroup elements
  An instance of LUNGroup
    objectID=LUNGroup.HDS9960.10001.0.0.hitachi
    name=hitachi
    nickname=hitachi

```

4.1.17.14 GetStorageArray (subtarget=PortController)

GetStorageArray (subtarget=PortController) obtains the information about a port controller in one or all storage subsystems (see Table 4.31).

A user to whom a user-defined resource group is assigned can obtain information about one or all port controllers in one or all storage subsystems that the user is permitted to access.

Table 4.31 GetStorageArray (subtarget=PortController) Command Parameters

Parameter Name	Status	Description
Model	Optional	Model of the storage subsystem. If you omit this parameter, all the storage subsystems become the target.
Serialnum	Optional	Serial number of the storage subsystem. If you omit this parameter, all the storage subsystems become the target.
Subtarget	Required	Specify PortController
controllernum	Optional	Controller ID of the port controller in the storage subsystem Specify this parameter when you want to obtain information about a specific port controller. If you specify this parameter, you must also specify the <code>model</code> and <code>serialnum</code> parameters. If <code>controllernum</code> and <code>controllernum</code> are omitted, all port controller information is obtained for the specified storage subsystem. Note: Do not specify <code>controllernum</code> and <code>controllernum</code> at the same time, as this might cause an error to occur.
controllername	Optional	Controller name for port controller of storage subsystem. Specify this parameter when you want to obtain information about a specific port controller. If you specify this parameter, you must also specify the <code>model</code> and <code>serialnum</code> parameters. If <code>controllernum</code> and <code>controllernum</code> are omitted, all port controller information is obtained for the specified storage subsystem. Note: Do not specify <code>controllernum</code> and <code>controllernum</code> at the same time, as this might cause an error to occur.
Controllersubinfo	Optional	Specific information about the port controller you intend to obtain. Available values are <code>IPAddress</code> and <code>PairedPortController</code> . You can specify either one or both of these values. Note: The information about <code>IPAddress</code> and <code>PairedPortController</code> is valid for the NAS configuration.

Parameter Values to be Obtained in Advance:

`serialnum` and `model`: Obtain these values from the execution result of the `GetStorageArray` command. In the execution result of this command, the `arrayType` and `serialNumber` values appear under An instance of `StorageArray`. Use the `arrayType` and `serialNumber` values to specify the `model` and `serialnum` parameters respectively.

`controllernum`: Obtain this value from the execution result of the `GetStorageArray (subtarget=PortController)` command. Execute this command by specifying only the `model` and `serialnum` parameters, and the value for `subtarget=PortController`. The information about all the port controllers used for the specified storage subsystem can be obtained. In the execution result of this command, the `controllerID` value appears under An instance of `PortController`. Use this `controllerID` value to specify the `controllernum` parameter.

In this example, the `GetStorageArray (subtarget=PortController)` command obtains information about all the port controllers used for a storage subsystem (serial number: 10001, model: HDS9980V).

```
HiCommandCLI GetStorageArray -o "D:\logs\9980V GetStorageArray_PortController.log"
subtarget=PortController model=HDS9980V serialnum=10001
```

`controllername`: Obtain this value from the execution results of the `GetStorageArray (subtarget=PortController)` command. In the execution results, `displayName` is displayed below An instance of `PortController`. Specify this value as `controllername`.

Command execution result 1:

```
RESPONSE:
An instance of StorageArray
.
. (Attributes of StorageArray are omitted here)
.
List of 4 PortController elements:
  An instance of PortController
    objectID=CONTROLLER.HDS9980V.10001.1
    cluster=1
    card=1
    controllerID=1
    displayName=CHA-1P
    mode=1
    type=12
.
. (repeated for other PortController instances)
.
```

Command Execution Example 2:

In this example, the `GetStorageArray (subtarget=PortController)` command obtains information about a port controller (controller ID: 1) used for a storage subsystem (serial number: 10001, model: HDS9980V).

```
HiCommandCLI GetStorageArray -o "D:\logs\9980V GetStorageArray_PortController.log"
subtarget=PortController model=HDS9980V serialnum=10001 controllernum=1
```

Command execution result 2:

```
RESPONSE:
An instance of StorageArray
.
. (Attributes of StorageArray are omitted here)
.
List of 1 PortController elements:
  An instance of PortController
    objectID=CONTROLLER.HDS9980V.10001.1
    cluster=1
    card=1
    controllerID=1
    displayName=CHA-1P
    mode=1
    type=12
```

4.1.17.15 GetStorageArray (subtarget=ReplicationInfo)

GetStorageArray (subtarget=ReplicationInfo) obtains the information about replication performed by one or all storage subsystems (see Table 4.32).

A user to whom a user-defined resource group is assigned can obtain replication information about logical units for which the user has permission. If both a logical unit that is allowed and a logical unit that is not allowed exist, the object ID for the volume of the logical unit that is not allowed is displayed as n/a.

Note: For Universal Storage Platform V and TagmaStore USP, the partitioned storage administrator cannot obtain all the information about paired volumes and external volumes.

Table 4.32 GetStorageArray (subtarget=ReplicationInfo) Command Parameters

Parameter Name	Status	Description
model	Optional	Model of the storage subsystem. If you omit this parameter, all the storage subsystems become the target.
serialnum	Optional	Serial number of the storage subsystem. If you omit this parameter, all the storage subsystems become the target.
subtarget	Required	Specify ReplicationInfo.
objectid	Optional	Object ID of the replication information. Specify this parameter when you want to obtain specific replication information. If you specify this parameter, you must also specify the model and serialnum parameters. If you specify the model and serialnum parameters and omit the objectid parameter, information about all the replications performed by the specified storage subsystem is obtained.
replicationsubinfo	Optional	Specific replication information to be returned. LogicalUnit is the only value that you can specify.

Parameter Name	Status	Description
<code>startElementNumFilter</code>	Optional	<p>Starting sequence number of performed replications for which information is to be obtained.</p> <p>Specify this parameter when you want to obtain information for a part of replications in a specific storage subsystem.</p> <p>When replication information is ordered as shown below and numbered from 0 upward, specify the first number in the sequence of replications that you want to obtain.</p> <p>Order of replications:</p> <ol style="list-style-type: none"> 1. Serial numbers of P-VOLs in ascending order <p>Device numbers of P-VOLs in ascending order</p> <p>Serial numbers of S-VOLs in ascending order</p> <p>Device numbers of S-VOLs in ascending order</p> <p>This parameter must be specified together with the <code>numOfElementsFilter</code>, <code>model</code>, and <code>serialnum</code> parameters.</p>
<code>numOfElementsFilter</code>	Optional	<p>Number of performed replications for which information is to be obtained.</p> <p>Specify this parameter when you want to obtain information for a part of replications in a specific storage subsystem. Specify the number of replications for which information is to be obtained. This parameter must be specified together with the <code>startElementNumFilter</code>, <code>model</code>, and <code>serialnum</code> parameters.</p> <p>The maximum recommended value is 16384.</p>

Parameter Values to be Obtained in Advance:

`serialnum` and `model`: Obtain these values from the execution result of the `GetStorageArray` command. In the execution result of this command, the `arrayType` and `serialNumber` values appear under An instance of `StorageArray`. Use the `arrayType` and `serialNumber` values to specify the `model` and `serialnum` parameters respectively.

`objectId`: Obtain this value from the execution result of the `GetStorageArray (subtarget=ReplicationInfo)` command. Execute this command by specifying only the `model` and `serialnum` parameters, and `ReplicationInfo` for the `subtarget` parameter. The information about replication performed by the specified storage subsystem can be obtained. In the execution result of this command, an `objectID` value appears under An instance of `ReplicationInfo`. Use this `objectID` value to specify the `objectId` parameter.

Command Execution Example:

In this example, the `GetStorageArray (subtarget=ReplicationInfo)` command obtains information about the replication performed by a storage subsystem (serial number: 10001, model: HDS9980V).

```
HiCommandCLI GetStorageArray -o "D:\logs\9980V GetStorageArray ReplicationInfo.log"
subtarget=ReplicationInfo model=HDS9980V serialnum=10001 replicationsubinfo=LogicalUnit
```

Command execution result:

```
RESPONSE:
An instance of StorageArray
.
```

```

. (Attributes of StorageArray are omitted here)
.
List of 2 ReplicationInfo elements:
  An instance of ReplicationInfo
    objectID=REPINFO.10001.100.10001.101
    pvolSerialNumber=10001
    pvolArrayType=HDS9980V
    pvolDevNum=100
    pvolObjectID=LU.HDS9980V.10001.100
    pvolPoolID=-1
    svolSerialNumber=10001
    svolArrayType=HDS9980V
    svolDevNum=101
    svolObjectID=LU.HDS9980V.10001.101
    svolPoolID=-1
    replicationFunction=ShadowImage
    status=1
    muNumber=0
    copyTrackSize=15
    splitTime=-1
List of 2 Lu elements:
  An instance of LogicalUnit
    objectID=LU.HDS9980V.10001.100
    devNum=100
    displayName=00:64
    emulation=OPEN-3
    devCount=1
    devType=
    capacityInKB=2,403,360
    path=true
    commandDevice=false
    commandDeviceEx=0
    commandDeviceSecurity=false
    chassis=1
    arrayGroup=16
    raidType=RAID5 (3D+1P)
    currentPortController=-1
    defaultPortController=-1
    isComposite=0
    trueCopyVolumeType=Simplex
    shadowImageVolumeType=P-VOL
    quickShadowVolumeType=Simplex
    universalReplicatorVolumeType=Simplex
    sysVolFlag=0
    externalVolume=0
    differentialManagement=false
    quickShadowPoolID=-1
    universalReplicatorPoolID=-1
  An instance of LogicalUnit
    objectID=LU.HDS9980V.10001.101
    devNum=101
    displayName=00:65
    emulation=OPEN-3
    devCount=1
    devType=
    capacityInKB=2,403,360
    path=true
    commandDevice=false
    commandDeviceEx=0
    commandDeviceSecurity=false
    chassis=1
    arrayGroup=16
    raidType=RAID5 (3D+1P)
    currentPortController=-1
    defaultPortController=-1
    isComposite=0
    trueCopyVolumeType=Simplex
    shadowImageVolumeType=S-VOL

```

```

quickShadowVolumeType=Simplex
universalReplicatorVolumeType=Simplex
sysVolFlag=0
externalVolume=0
differentialManagement=false
quickShadowPoolID=-1
universalReplicatorPoolID=-1
.
. (repeated for other ReplicationInfo instances)

```

4.1.18 ModifyArrayReservation

ModifyArrayReservation extends the interval before the target storage subsystem is unlocked. (See Table 4.33).

A user who has only the View permission cannot execute this command. A user to whom user-defined resource groups are assigned, and who also has the Modify permission, can specify only storage subsystems containing accessible LDEVs. If any other storage subsystems are specified, an error occurs.

Note: This command is not available for TagmaStore AMS/WMS series, Thunder 9500V, or Thunder 9200.

Table 4.33 ModifyArrayReservation Command Parameters

Parameter Name	Status	Description
model	Required	Model of the storage subsystem
serialnum	Required	Serial number of the storage subsystem

Parameter Values to be Obtained in Advance:

serialnum and model: Obtain these values from the execution result of the GetStorageArray command. In these results, the arrayType and serialNumber values appear under An instance of StorageArray. Use the arrayType and serialNumber values to specify the model and serialnum parameters respectively.

Command example:

```

HiCommandCLI ModifyArrayReservation -o "D:\logs\ModifyArrayReservation.log" "model=USP"
"serialnum=14009"

```

Command result:

```

An instance of ArrayReservation
objectID=ARRAYRESERVATION.USP.14009
target=ARRAY.USP.14009
loginID=dmuser
beginTime=1,039,003,476

```

4.1.19 ModifyLogicalUnit

ModifyLogicalUnit modifies the LU and its corresponding LDEV in a storage device (see Table 4.34).

A user to whom a user-defined resource group is assigned, and who has only the View permission, cannot execute this command.

Format for Thunder 9500V, TagmaStore AMS/WMS series, Lightning 9900V, TagmaStore USP, and Universal Storage Platform V:

```
HiCommandCLI [URL] ModifyLogicalUnit [option] serialnum=serial-number model=model
devnum=device-number {commanddevice={true|false}|commanddevicesecurity={true|false}}
```

Format for Lightning 9900 series:

```
HiCommandCLI [URL] ModifyLogicalUnit [option] serialnum=serial-number model=model
devnum=device-number commanddevice={true|false} [commanddevicesecurity={true|false}]
```

Note: If you are using a Lightning 9900, check that at least one path is set for the logical unit that is subject to this command's processing.

Format for Thunder 9200 series:

```
HiCommandCLI [URL] ModifyLogicalUnit [option] serialnum=serial-number model=model
devnum=device-number commanddevice={true|false}
```

Notes:

- For Lightning 9900 series, make sure that one or more paths have been set to the logical unit to which the command executes. If specifying the `commanddevicesecurity` parameter, use it with the `commanddevice` parameter.
- For Lightning 9900, Lightning 9900V, TagmaStore USP, and Universal Storage Platform V, if you change an LU for which security is enabled to a command device, specify both the `commanddevice` and `commanddevicesecurity` parameters.
- For Thunder 9200 series, do not specify the parameter `commanddevicesecurity`.

Table 4.34 ModifyLogicalUnit Command Parameters

Parameter Name	Status	Description
serialnum	Required	Serial number of the storage array of the LU.
model	Required	Model of the storage array of the LU.
devnum	Required	Device number of the LU. This parameter can be specified in decimal, and in colon-separated hexadecimal. If you specify a hexadecimal number, for TagmaStore USP, Lightning 9900V, and Lightning 9900, use the <code>xx:yy</code> format, where <code>xx</code> is the CU number, and <code>yy</code> is the LDEV number. For Universal Storage Platform V, use the <code>ww:xx:yy</code> format, where <code>ww</code> is the LDKC number, <code>xx</code> is the CU number, and <code>yy</code> is the LDEV number. <code>ww</code> is optional. If you omit <code>ww</code> , the LDKC number is regarded as 0. Note: The execution results are output in decimal.

Parameter Name	Status	Description
commanddevice	Optional	New setting for command device. Specify true to set the specified LU as a command device, and false to release the setting.
commanddevicesecurity	Optional	Security mode setting for the command device Specify true to enable security, and false to disable it. If you are using a Lightning 9900 and you specify this parameter, you must also specify the commanddevice parameter.

Parameter Values to be Obtained in Advance:

serialnum and model: Obtain these values from the execution result of the `GetStorageArray` command. In the execution result of this command, the `arrayType` and `serialNumber` values appear under An instance of `StorageArray`. Use the `arrayType` and `serialNumber` values to specify the `model` and `serialnum` parameters respectively.

devnum: Obtain this value from the execution result of the `GetStorageArray` (`subtarget=LogicalUnit`) command. Execute this command by specifying only the `model` and `serialnum` parameters, and `LogicalUnit` for the `subtarget` parameter. In the execution result of this command, the `devNum` value appears under An instance of `LogicalUnit`. Use this `devNum` value to specify the `devnum` parameter.

Command execution example:

```
HiCommandCLI ModifyLogicalUnit -o "D:\logs\9980V ModifyLogicalUnit.log" "serialnum=10001"
"model=HDS9980V" "devnum=1" "commanddevice=true"
```

Command execution result:

```
RESPONSE:
An instance of StorageArray
.
. (Attributes of StorageArray are omitted here)
.
List of 1 Lu elements:
An instance of LogicalUnit
objectID=LU.HDS9980V.10001.1
devNum=1
displayName=00:01
emulation=OPEN-3
devCount=1
devType=CommandDevice
capacityInKB=2,403,360
path=true
commandDevice=true
commandDeviceEx=1
commandDeviceSecurity=true
chassis=1
arrayGroup=0
raidType=RAID5 (3D+1P)
currentPortController=-1
defaultPortController=-1
isComposite=0
trueCopyVolumeType=Simplex
shadowImageVolumeType=Simplex
quickShadowVolumeType=Simplex
universalReplicatorVolumeType=Simplex
```

```

sysVolFlag=0
externalVolume=0
differentialManagement=false
quickShadowPoolID=-1
universalReplicatorPoolID=-1

```

4.1.20 ModifyPort

ModifyPort will change port and host storage domain attributes.

A user to whom a user-defined resource group is assigned, and who has only the View permission, cannot execute this command.

Note: For TagmaStore AMS/WMS series, Thunder 9500V series, and Thunder 9200 series, even if the value for fibre channel is changed, the change might not be immediately applied. In such cases, after confirming that the target port has been connected to the fibre network, refresh of the storage subsystem by using the `AddStorageArray` command.

Format for TagmaStore AMS/WMS series:

```

HiCommandCLI [URL] ModifyPort [option] serialnum=serial-number model=model {port= port-
number|portname= port-name} [topology=new-port-topology] [fibreadr=new-fibre-channel-
address-for-the-port] [channelspeed={0|1|2|4}] [lunsec={true|false}] [portoption=new-
option-list for-the-port] [domain=domain-ID] [nickname={new-host-storage-domain-
name|existing-host-storage-domain-name}] [newdomainnickname=new-host-storage-domain-name]
[hostmode=new-host-mode-for-the-port] [hostmode2=new-host-mode-list-for-the-port] [wwn=WWN
wwnnickname=WWN nickname] [wwn=WWN newwwnnickname=new-WWN-nickname] [wwnnickname=WWN-
nickname newwwnnickname=new-WWN-nickname]

```

Note: Values that you can specify in the `channelspeed` parameter vary depending on the microcode version. For details, see Table 4.35.

Format for Universal Storage Platform V and TagmaStore USP:

```

HiCommandCLI [URL] ModifyPort [option] serialnum=serial-number model=model {port= port-
number|portname= port-name} [topology=new-port-topology] [fibreadr=new-fibre-channel-
address-for-the-port] [channelspeed={0|1|2|4}] [lunsec={true|false}] [domain=domain-ID]
[nickname={new-host-storage-domain-name|existing-host-storage-domain-name}]
[newdomainnickname=new-host-storage-domain-name] [hostmode=new-host-mode-for-the-port]
[hostModeOption=new-host-mode-option-list] [wwn=WWN wwnnickname=WWN nickname] [wwn=WWN
newwwnnickname=new-WWN-nickname] [wwnnickname=WWN-nickname newwwnnickname=new-WWN-nickname]

```

Format for Lightning 9900V:

```

HiCommandCLI [URL] ModifyPort [option] serialnum=new-serial-number model=new-model {port=
port-number|portname= port-name} [topology=new-port-topology] [fibreadr=new-fibre-channel-
address-for-the-port] [channelspeed={0|1|2}] [lunsec={true|false}] [domain=domain-ID]
[nickname={new-host-storage-domain-name|existing-host-storage-domain-name}]
[newdomainnickname=new-host-storage-domain-name] [hostmode=new-host-mode-for-the-port]
[wwn=WWN wwnnickname=WWN nickname] [wwn=WWN
newwwnnickname=new-WWN-nickname] [wwnnickname=WWN-nickname newwwnnickname=new-WWN-nickname]

```

Format for Thunder 9500V (in the LUN Management mode):

```
HiCommandCLI [URL] ModifyPort [option] serialnum=new-serial-number model=new-model {port=port-number|portname= port-name} [topology=new-port-topology] [fibreaddr=new-fibre-channel-address-for-the-port] [lunsec={true|false}] [portoption=new-list-of-options-for-the-port] [domain=domain-ID] [nickname={new-host-storage-domain-name|existing-host-storage-domain-name}] [newdomainnickname=new-host-storage-domain-name] [hostmode=new-host-mode-for-the-port] [hostmode2=new-host-mode-list-for-the-port] [wwn=WWN wwnnickname=WWN nickname] [wwn=WWN newwwnnickname=new-WWN-nickname] [wwnnickname=WWN-nickname newwwnnickname=new-WWN-nickname]
```

Format for Thunder 9200 and Thunder 9500V in LUN Security mode:

```
HiCommandCLI [URL] ModifyPort [options] serialnum=new-serial-number model=new-model {port=port-number|portname= port-name} [topology=new-port-topology] [fibreaddr=new-fibre-channel-address-for-the-port] [lunsec={true|false}] [portoption=new-list-of-options-for-the-port] [domain=domain-ID] [hostmode=new-host-mode-for-the-port] [hostmode2=new-host-mode-list-for-the-port]
```

Format for other storage subsystems:

```
HiCommandCLI [URL] ModifyPort [options] serialnum=new-serial-number model=new-model {port=port-number|portname= port-name} [topology=new-port-topology] [fibreaddr=new-fibre-channel-address-for-the-port] [lunsec={true|false}] [portoption=new-list-of-options-for-the-port] [domain=domain-ID] [hostmode=new-host-mode-for-the-port]
```

Table 4.35 ModifyPort Command Parameters

Parameter Name	Status	Description
Serialnum	Required	Serial number of the port's storage array.
Model	Required	Model of the port's storage array.
Port	Optional	Number of the port. Note: Specify either <code>port</code> or <code>portname</code> . Do not specify both parameters at the same time. This might cause an error to occur.
portname	Optional	Port name. Note: Specify either <code>port</code> or <code>portname</code> . Do not specify both parameters at the same time. This might cause an error to occur.
Topology	Optional	New topology value for the port. Possible values are as follows. For Universal Storage Platform V, TagmaStore USP, Lightning 9900V, and Lightning 9900: Fabric (on), FC-AL Fabric (off), FC-AL Fabric (on), Point-to-Point Fabric (off), Point-to-Point For TagmaStore AMS/WMS series, Thunder 9500V, and Thunder 9200: Loop Point-to-Point
Fibreaddr	Optional	New fibre channel address for the port (the hex string representation).

Parameter Name	Status	Description
channelspeed	Optional (USP V, USP, 9900V, and AMS/WMS series only)	<p>New transmission speed of a fibre channel for a port.</p> <p>You can specify the following values:</p> <p>For Universal Storage Platform V and TagmaStore USP:</p> <ul style="list-style-type: none"> 0: Automatic 1: 1 Gbps 2: 2 Gbps 4: 4 Gbps <p>For Lightning 9900V, TagmaStore WMS:</p> <ul style="list-style-type: none"> 0: Automatic 1: 1 Gbps 2: 2 Gbps <p>For TagmaStore AMS (microcode version 0720/x-S or before, 0720/x-X):</p> <ul style="list-style-type: none"> 0: Automatic 1: 1 Gbps 2: 2 Gbps <p>For TagmaStore AMS (microcode version 0710/x-M or later, 0723/x-S or later, 0723/x-X or later, 0730/x-H or later):</p> <ul style="list-style-type: none"> 0: Automatic 1: 1 Gbps 2: 2 Gbps 4: 4 Gbps
Lunsec	Optional	New setting for LUN security enabled (either "true" or "false").
Portoption	Optional (AMS/WMS series, 9500V, and 9200 only)	<p>Semicolon-separated new option list of the port.</p> <p>Possible values are as follows.</p> <ul style="list-style-type: none"> Read Frame Min 128 Byte Mode <p>For Thunder 9500V only:</p> <ul style="list-style-type: none"> Reset ALL LIP Port Mode Reset/LIP Mode (Process) Reset/LIP Mode (Signal)
Domain	Optional	<p>DomainID of the Host Storage Domain (please refer to notes).</p> <p>If you specify the <code>nickname</code>, <code>newdomainnickname</code>, <code>hostmode</code>, <code>hostmode2</code>, <code>hostmodeoption</code>, <code>wnn</code>, <code>wnnnickname</code> or <code>newwnnnickname</code> storage domain attribute, you must also specify either the <code>domain</code> or <code>nickname</code> parameter. Note that when this parameter is specified, at least one host storage domain attribute must also be specified. This parameter can be specified in decimal and hexadecimal. If you specify a hexadecimal number, add the <code>0x</code> prefix.</p> <p>Note: The execution results are output in decimal.</p>

Parameter Name	Status	Description
nickname	Optional (9500V (in LUN Management mode), USP V, USP, 9900V, and AMS/WMS series only)	<p>Specify the nickname of the host storage domain.</p> <p>The value specified for this parameter differs depending on whether <code>domain</code> is specified.</p> <p>If <code>domain</code> is specified: Specify the new nickname of the host storage domain.</p> <p>If <code>domain</code> is not specified: Specify the nickname of the host storage domain.</p> <p>You can use the following characters: A-Z a-z 0-9 ! # \$ % & ' () + - . = @ [] ^ _ ` { } ~ (space)</p> <p>Note: A nickname cannot begin or end with spaces.</p> <p>Note: For the TagmaStore AMS/WMS series, and the Thunder 9500V series in the LUN Management mode, an apostrophe (') cannot be used.</p> <p>The number of characters that can be used for a nickname is as follows:</p> <p>Universal Storage Platform V: 1-32 bytes</p> <p>TagmaStore USP: 1-16 bytes</p> <p>DKC microcode version 50-04-01 or later: 32 bytes 1-32 bytes</p> <p>Lightning 9900V: 1-8 bytes</p> <p>TagmaStore AMS/WMS series: 1-16 bytes</p> <p>Thunder 9500V (LUN management mode): 1-8 bytes</p> <p>Microcode version x6x9/M or later: 1-16 bytes</p>
Newdomainnickname	Optional (9500V (in LUN Management mode), USP V, USP, 9900V, and AMS/WMS series only)	<p>New nickname of the host storage domain.</p> <p>Note: If you specify this parameter, you must also specify the <code>domain</code> or <code>nickname</code> parameter.</p>
Hostmode	Optional	<p>New host domain. The default is <code>Standard</code>.</p> <p>For the values available for the Universal Storage Platform V, TagmaStore USP, Lightning 9900V, and Lightning 9900, see Table 4.38.</p> <p>Note: If you specify this parameter, you must also specify the <code>domain</code> or <code>nickname</code> parameter.</p>

Parameter Name	Status	Description
Hostmode2	Optional AMS/WMS series, 9500v, and 9200 only	Semicolon-separated list of new host connect mode values for the port. For details on the values that you can specify, see Table 4.39. Note: If you specify this parameter, you must also specify the <code>domain</code> or <code>nickname</code> parameter.
hostModeOption	Optional (USP V and USP only)	An option for the host connection mode. To specify two or more options, separate them with semicolons (;). For details on the values that you can specify, see Table 4.40. Note: If you specify this parameter, you must also specify the <code>domain</code> or <code>nickname</code> parameter.
Wwn	Optional	The WWN that is used to provide security for the host storage domain To specify two or more WWNs, separate them with commas. Note: If you specify this parameter, you must also specify the <code>domain</code> or <code>nickname</code> parameter. Note: If you specify this parameter, you must also specify the <code>wwnnickname</code> or <code>newwwnnickname</code> parameter. You must specify the same number of values for each parameter.

Parameter Name	Status	Description
wwnnickname	Optional (9500V (in LUN Management mode), USP V, USP, 9900V, and AMS/WMS series only)	<p>The nickname for the WWN. To specify two or more WWN nicknames, separate them with commas.</p> <p>The value specified for this parameter differs depending on whether <code>wwn</code> is specified.</p> <p>If <code>wwn</code> is specified: Specify the new nickname for WWN.</p> <p>If <code>wwn</code> is not specified: Specify the nickname for the WWN that is used to provide security for the host storage domain.</p> <p>If you specify the <code>wwn</code> parameter and do not specify the <code>wwnnickname</code> parameter, the WWN nickname will not be changed.</p> <p>Paired <code>wwn</code> parameters and <code>wwnnickname</code> parameters must be specified in the same sequence.</p> <p>You can use the following characters. A-Z a-z 0-9 ! # \$ % & ' () + - . = @ [] ^ _ ` { } ~ (space)</p> <p>Note: A WWN nickname cannot begin or end with spaces.</p> <p>Note: For the TagmaStore AMS/WMS series, and the Thunder 9500V series in the LUN Management mode, an apostrophe (') cannot be used.</p> <p>The number of characters that can be used for a WWN nickname is as follows:</p> <p>Universal Storage Platform V: 0-32 bytes</p> <p>TagmaStore USP: 0-16 bytes</p> <p>DKC microcode version 50-04-01 or later: 0-32 bytes</p> <p>Lightning 9900V: 0-8 bytes</p> <p>TagmaStore AMS/WMS series: 0-16 bytes</p> <p>Thunder 9500V (LUN management mode): 0-8 bytes</p> <p>Microcode version x6x9/M or later: 0-16 bytes</p> <p>Note: If you specify this parameter, you must also specify the <code>domain</code> or <code>nickname</code> parameter.</p> <p>Note: If you specify this parameter, you must also specify the <code>wwn</code> or <code>newwwnnickname</code> parameter. You must specify the same number of values for each parameter.</p>

Parameter Name	Status	Description
wwwnickname	Optional (9500V (in LUN Management mode), USP V, USP, 9900V, and AMS/WMS series only)	New nickname of the WWN. Note: If you specify this parameter, you must also specify the <code>domain</code> or <code>nickname</code> parameter. Note: If you specify this parameter, you must also specify the <code>wwn</code> or <code>newwwnickname</code> parameter. You must specify the same number of values for each parameter.

Table 4.36 PortOption Parameter Values (TagmaStore AMS/WMS, 9500V, 9200)

Value of PortOption	Description
Read Frame Min 128 Byte Mode (see Note)	Read frame min. 128 bytes mode
Reset ALL LIP Port Mode	Reset all LIP ports
Reset/LIP Mode (Process)	Reset/Lip mode (process)
Reset/LIP Mode (Signal)	Reset/Lip mode (signal)

Note: This setting can be specified for Thunder 9500V only.

Table 4.37 HostMode Parameter Values (TagmaStore AMS/WMS, 9500V, 9200)

Value of HostMode	Description
Standard	Open systems emulation mode
OpenVMS	Open VMS mode
TRESPASS	TRESPASS mode
Wolfpack	Wolfpack mode

Table 4.38 Available Values for Setting the hostmode Parameter for Universal Storage Platform V, TagmaStore USP, Lightning 9900V, and Lightning 9900

Storage Subsystem	Available Values for Setting HostMode Parameter
Universal Storage Platform V	<p>Possible values are:</p> <ul style="list-style-type: none"> Standard VMware HP OpenVMS Tru64 Solaris NetWare Windows AIX VMware Extension Windows Extension UVM
TagmaStore USP	<p>Possible values are:</p> <ul style="list-style-type: none"> Standard Sequent HP Solaris Netware Windows Windows Extension Tru64 HI-UX AIX OPEN-VMS <p>The following value relies on the DKC microcode version. For 50-03-0X-XX/XX or later:</p> <ul style="list-style-type: none"> UVM

Storage Subsystem	Available Values for Setting HostMode Parameter
Lightning 9900V	<p>Possible values are:</p> <ul style="list-style-type: none"> Standard Sequent HP Solaris Netware Windows Tru64 HI-UX AIX OPEN-VMS <p>The following value relies on the DKC microcode version.</p> <p>For 21-05-00-XX/XX or later:</p> <ul style="list-style-type: none"> Windows Extension Solaris Extension <p>For 21-14-02-XX/XX or later:</p> <ul style="list-style-type: none"> Standard Extension2 HP Extension2 Solaris Extension2 Windows Extension2 AIX Extension2
Lightning 9900 series	<p>Possible values are:</p> <ul style="list-style-type: none"> Standard Sequent HP HP Extension Solaris Netware Windows Tru64 HI-UX AIX OPEN-VMS

Notes:

- The `hostmode2` parameter can be either set to 0 or any one of the strings listed in Table 4.39. Separate the strings with semicolons, as shown in the example for the `channelspeed` parameter.
- For the TagmaStore AMS/WMS series, Thunder 9500V, and Thunder 9200 series, the values available for the `hostmode` parameter are sometimes dependent on the values set for the `hostmode2` parameter (or the microcode version for Thunder 9500V and Thunder 9200).

Table 4.39 lists and describes `hostmode2` settings.

Table 4.39 Hostmode2 Parameter Values (TagmaStore AMS/WMS, 9500V, 9200)

Storage Subsystem	Value of Hostmode2
TagmaStore AMS/WMS series	<p>Same Node Name Mode</p> <p>Tru Cluster Mode</p> <p>ASL Report Mode (Active/Passive Group)</p> <p>ASL Report Mode (Active/Passive)</p> <p>ASL Report Mode (Active/Active)</p> <p>Port-ID No Report Mode</p> <p>Port-ID Conversion Mode</p> <p>PSUE Read Reject Mode</p> <p>UA (06/2A00) suppress Mode</p> <p>CCHS Mode</p> <p>HP-UX Mode</p> <p>NACA Mode</p> <p>Product Serial Response Mode</p> <p>Unique Reserve Mode 1</p> <p>Reset Propagation Mode</p> <p>HISUP OFF Mode</p> <p>The following value relies on the microcode version. For x712/A-x or later:</p> <p>SPC-2 Mode</p>

Storage Subsystem	Value of Hostmode2
Thunder 9500V	<p>ftServer Connection Mode 2</p> <p>SRC Read Command Reject Mode</p> <p>UA (06/2A00) suppress Mode</p> <p>HISUP Mode</p> <p>CCHS Mode</p> <p>HP Connection Mode 2</p> <p>Product ID DF400 Mode</p> <p>NACA Mode</p> <p>SUN Cluster Connection Mode</p> <p>Persistent RSV Cluster Mode</p> <p>Reset Target (Reset Bus Device) Mode</p> <p>Reserve Mode</p> <p>Reset Logical Unit Mode</p> <p>Reset Logout of Third Party Process Mode</p> <p>The microcode version:</p> <p>x6x3/C or later</p> <p>No_RSV_Conf Mode</p> <p>x6x5 or later</p> <p>Tru Cluster Connection Mode</p> <p>Path Switch Mode (Active/Passive)</p> <p>Path Switch Mode (Active/Active)</p> <p>Port-ID No Report Mode</p> <p>Port-ID Conversion Mode</p> <p>x6x7 or later</p> <p>Same Node Name Mode</p> <p>x6xA/R or later:</p> <p>SPC-2 Mode</p>

Storage Subsystem	Value of Hostmode2
Thunder 9200	<p>Note: Some of these values depend on other <code>hostmode2</code> values or the microcode version.</p> <p>UA (06/2A00) suppress Mode</p> <p>VxVM DMP Mode</p> <p>HP Connection Mode</p> <p>Report inquiry page 83H</p> <p>HP Connection Mode 2</p> <p>The microcode version:</p> <p>x5x3 or later</p> <p>HISUP Mode</p> <p>CCHS Mode</p> <p>x5x7 or later</p> <p>Standard INQUIRY data expand Mode</p> <p>Product ID DF400 Mode</p> <p>x5x9 or later</p> <p>HBA WWN Report Mode</p> <p>x5xA or later</p> <p>NACA Mode</p> <p>x5xB or later</p> <p>SUN Cluster Connection Mode</p> <p>x5xE or later</p> <p>Persistent RSV Cluster Mode</p> <p>x5xE/N or later</p> <p>ftServer Connection Mode 1</p> <p>ftServer Connection Mode 2</p> <p>x5xF or later</p> <p>SRC Read Command Reject Mode</p>

Table 4.40 lists the HostMode2 names and descriptions:

Table 4.40 HostMode2 Names and Descriptions

Hostmode2 Names	Description
Same Node Name Mode	Shows that the Same Node Name Mode is set.
Tru Cluster Mode	Shows that the Tru Cluster Mode is set.
ASL Report Mode(Active/Passive Group)	Shows that the ASL Report Mode(Active/Passive Group) is set.
ASL Report Mode(Active/Passive)	Shows that the ASL Report Mode(Active/Passive) is set.
ASL Report Mode(Active/Active)	Shows that the ASL Report Mode(Active/Active) is set.
PSUE Read Reject Mode	Shows that the PSUE Read Reject Mode is set.
HP-UX Mode	Shows that the HP-UX Mode is set.
Product Serial Response Mode	Shows that the Product Serial Response Mode is set.
Unique Reserve Mode 1	Shows that the Unique Reserve Mode 1 is set.

Hostmode2 Names	Description
Reset Propagation Mode	Shows that the Reset Propagation Mode is set.
HISUP OFF Mode	Shows that the HISUP OFF Mode is set.
VxVM DMP Mode	Shows that the VxVM DMP Mode is set.
HP Connection Mode	Shows that the HP Connection Mode is set.
Report inquiry page 83H	Shows that the Inquiry: 83H Page Report Mode is set.
UA(06/2A00) suppress Mode	Shows that the UA(06/2A00) suppress Mode is set.
HISUP Mode	Shows that the HISUP Mode is set.
CCHS Mode	Shows that the CCHS Mode is set.
Standard INQUIRY data expand Mode	Shows that the Standard INQUIRY data expand Mode is set.
HP Connection Mode 2	Shows that the HP Connection Mode 2 is set.
Product ID DF400 Mode	Shows that the Product ID DF400 Mode is set.
HBA WWN Report Mode	Shows that the Expanded INQUIRY WWN Mode is set.
NACA Mode	Shows that the NACA Mode is set.
SUN Cluster Connection Mode	Shows that the SUN Cluster Connection Mode is set.
Persistent RSV Cluster Mode	Shows that the Persistent RSV Cluster Mode is set.
ftServer Connection Mode 1	Shows that the ftServer Connection Mode 1 is set.
ftServer Connection Mode 2	Shows that the ftServer Connection Mode 2 is set.
SRC Read Command Reject Mode	Shows that the SRC Read Command Reject Mode is set.
No_RSV_Conf Mode	Shows that the No Reservation Conflict Mode is set.
Tru Cluster Connection Mode	Shows that the Thunder 9500V series can be used as a boot device on a Tru64 cluster system.
Path Switch Mode(Active/Passive Group)	Shows that the VxVM DMP switch mode is set to Active/Passive Group mode.
Path Switch Mode(Active/Passive)	Shows that the VxVM DMP switch mode is set to Active/Passive mode.
Path Switch Mode(Active/Active)	Shows that the VxVM DMP switch mode is set to Active/Active mode.
Port-ID No Report Mode	Shows that the VxVM ASL does not report a port ID with the DMP.
Port-ID Conversion Mode	Shows that the VxVM ASL sets the conversion of the port ID to be reported with the DMP.
Reset Target (Reset Bus Device) Mode	Shows that the Reset Target (Reset Bus Device) Mode is set.
Reserve Mode	Shows that the Reserve Mode is set.
Reset Logical Unit Mode	Shows that the Reset Logical Unit Mode is set.
Reset Logout of Third Party Process Mode	Shows that the Reset Logout of Third Party Process Mode is set.
SPC-2 Mode	Shows that the SPC-2 Mode is set.

For information about hostmode2, see the *Hitachi Freedom Storage Thunder 9200 Resource Manager 9200 User's Guide Graphical User Interface*.

Table 4.41 shows the `hostModeOption` settings.

Table 4.41 Available Values for `hostModeOption`

hostModeOption Values	Description
2	Specify this value when using VERITAS Database Edition/Advanced Cluster for Real Application Clusters or VERITAS Cluster Server 4.0 (I/O fencing feature).
6	Specify this value when all of the following conditions are satisfied: <ul style="list-style-type: none"> ▪ The host connection mode is set to <code>Windows</code> (mode 0C) or <code>Windows Extension</code> (mode 2C). ▪ An Emulex host bus adapter is in use. ▪ A mini-port driver is in use. ▪ The <code>TPRLO</code> parameter for the mini-port driver of the host bus adapter is set to 2.
7	Specify this value when all of the following conditions are satisfied: <ul style="list-style-type: none"> ▪ The host connection mode is set to <code>Standard</code> (mode 00) or <code>Solaris</code> (mode 09). ▪ SUN StorEdge SAN Foundation Software Version 4.2 or later is in use. ▪ You want to let the system automatically recognize the reduction and increase in the number of devices when a SUN host bus adapter is in use.
12	Specify this value when all of the following conditions are satisfied: <ul style="list-style-type: none"> ▪ The host connection mode is set to <code>HP</code> (mode 03). You want to prevent devices to which no paths have been defined from creating a device file when the HP-UX host is connected.
13	Specify this value when you want to get a SIM notification when the number of unsuccessful connections between ports exceeds a threshold.
14	Specify this value when both of the following conditions are satisfied: <ul style="list-style-type: none"> ▪ The host connection mode is set to <code>Tru64</code> (mode 07). ▪ You want to use TruCluster to set up a cluster on both a TrueCopy primary and a secondary volume. Note: This value is valid for the TagmaStore USP only.
24	Specify this value when both of the following conditions are satisfied: <ul style="list-style-type: none"> ▪ The host accesses a volume that exceeds 2 TB. ▪ The host OS is one of the following: <ul style="list-style-type: none"> AIX 5.2 TL08 or later, or AIX 5.3 TL04 or later Windows Server 2003 SP1 Red Hat Enterprise Linux AS 4 Update 1 or later Note: OSs other than above cannot access volumes that exceed 2 TB. Note: The maximum size of the volume varies, depending on the file system of the OS. Note: This value is valid when the DKC microcode version of the TagmaStore USP is 50-08-0X-XX/XX or later.

Note: If you specify the `hostModeOption` parameter, an existing value is deleted and the new value is set.

Parameter Values to be Obtained in Advance:

`serialnum` and `model`: Obtain these values from the execution result of the `GetStorageArray` command. In the execution result of this command, the `arrayType` and `serialNumber` values appear under An instance of `StorageArray`. Use the `arrayType` and `serialNumber` values to specify the `model` and `serialnum` parameters respectively.

`port`: Obtain this value from the execution result of the `GetStorageArray` (`subtarget=Port`) command. Execute this command by specifying only the `model` and `serialnum` parameters, and `Port` for the `subtarget` parameter. In the execution result of this command, the `portID` value appears under An instance of `Port`. Use this `portID` value to specify the `port` parameter.

`portname`: Obtain this value from the execution result of the `GetStorageArray` (`subtarget=Port`) command. In the execution result of this command, the `displayName` value appears under An instance of `Port`. Use this value to specify the `portname` parameter.

`domain`: Obtain this value from the execution result of the `GetStorageArray` (`subtarget=HostStorageDomain`) command. Execute this command by specifying only the `model` and `serialnum` parameters, and `HostStorageDomain` for the `subtarget` parameter. In the execution result of this command, the `domainID` value appears under An instance of `HostStorageDomain`. Use this `domainID` value to specify the `domain` parameter.

`nickname`: Obtain this value from the execution result of the `GetStorageArray` (`subtarget=Port`) command. Execute the `GetStorageArray` command with the `model` and `serialnum` parameters specified and "`subtarget=Port`" and "`portsubinfo=HostStorageDomain`" specified, and then specify the value of `nickname` that is displayed in the execution result as An instance of `HostStorageDomain`.

`wwnnickname`: Obtain this value from the execution result of the `GetStorageArray` (`subtarget=HostStorageDomain`, `hsdsubinfo=WWN`) command. Execute this command by specifying only the `model` and `serialnum` parameters, and `HostStorageDomain` for the `subtarget` parameter and `WWN` for the `hsdsubinfo` parameter. In the execution result of this command, the `nickname` value appears under An instance of `WWN`. Use this value to specify the `wwnnickname` parameter. The WWNs for this host storage domain are displayed in the List of (*nn*) WWN elements, where *nn* indicates the number of WWNs. Select the target WWN from this list, and use it to specify the `wwnnickname` parameter.

Command Execution Example:

In this example, the `ModifyPort` command modifies the settings for a port (port number: 16) of a storage subsystem (serial number: 10001, model: HDS9980V) as follows. The command:

- Changes the value for the `hostmode` parameter to `Standard`, for the port's host storage domain (domain ID: 0).

- Changes the topology to Fabric(off), FC-AL.
- Sets the Fibre Channel address to 73.
- Disables LUN security by specifying false.
- Sets the transmission speed of the Fibre Channel to 1.

```
HiCommandCLI ModifyPort -o "D:\logs\9980V ModifyPort.log" serialnum=10001 model=HDS9980V
port=16 domain=0 hostmode=Standard "topology=Fabric(off), FC-AL" fibreaddr=73 lunsec=false
channelspeed=1 "wwn=22.33.44.55.44.55.44.33, 11.33.22.33.44.33.22.22,
55.66.77.88.44.33.22.22" "wwnnickname=Jane,Jone,"
```

Command execution result:

```
RESPONSE:
An instance of StorageArray
.
. (Attributes of StorageArray are omitted here)
.
List of 1 Port elements:
An instance of Port
  objectID=PORT.HDS9980V.10001.16
  serialNumber=10001
  arrayType=HDS9980V
  portID=16
  portType=Fibre
  fibreAddress=73
  topology=Fabric(off), FC-AL
  displayName=CL2-A
  lunSecurityEnabled=false
  controllerID=5
  worldWidePortName=50.06.0E.80.03.3A.99.10
  channelSpeed=1
  portRole=Target
  slprNumber=-1
List of 1 HostStorageDomain elements:
  An instance of HostStorageDomain
    objectID=HSDOMAIN.HDS9980V.10001.16.0
    portID=16
    domainID=0
    hostMode=Standard
    displayName=CL2-A-0
    nickname=HDvM1000
  List of 3 WWN elements:
    An instance of WWN
      WWN=22.33.44.55.44.55.44.33
      nickname=Jane
    An instance of WWN
      WWN=11.33.22.33.44.33.22.22
      nickname=Jone
    An instance of WWN
      WWN=55.66.77.88.44.33.22.22
      nickname=
```

4.1.21 ModifyPortController

ModifyPortController supports changing characteristics of a PortController (see Table 4.42).

A user to whom a user-defined resource group is assigned, and who has only the View permission, cannot execute this command.

Note: This command is not available for TagmaStore AMS/WMS series, Thunder 9200 or Thunder 9500V subsystem.

Table 4.42 ModifyPortController Command Parameters

Parameter Name	Status	Description
Serialnum	Required	Serial number of the port controller's storage array.
Model	Required	Model of the port controller's storage array.
Ctrlid	Required	Number of the port controller. Note: Specify either <code>ctrlid</code> or <code>controllername</code> . Do not specify both parameters at the same time. This might cause an error to occur.
controllername	Optional	Port controller name. Note: Specify either <code>ctrlid</code> or <code>controllername</code> . Do not specify both parameters at the same time. This might cause an error to occur.
adaptermode	Required	Mode value of the port controller. Specify either of the following values: 1: Normal 2: High Speed

Parameter Values to be Obtained in Advance:

`serialnum` and `model`: Obtain these values from the execution result of the `GetStorageArray` command. In the execution result of this command, the `arrayType` and `serialNumber` values appear under An instance of `StorageArray`. Use the `arrayType` and `serialNumber` values to specify the `model` and `serialnum` parameters respectively.

`ctrlid`: Obtain this value from the execution result of the `GetStorageArray` (`subtarget=PortController`) command. Execute this command by specifying only the `model` and `serialnum` parameters, and `PortController` for the `subtarget` parameter. In the execution result of this command, the `controllerID` value appears under An instance of `PortController`. Use this `controllerID` value to specify the `ctrlid` parameter.

`controllername`: Obtain this value from the execution results of the `GetStorageArray` (`subtarget=PortController`) command. In the execution results, `displayName` is displayed below An instance of `PortController`. Specify this value as `controllername`.

Command execution example:

```
HiCommandCLI ModifyPortController -o "D:\logs\9980V ModifyPortController.log"
"serialnum=10001" "model=HDS9980V" "ctrlid=1" "adaptermode=1"
```

Command execution result:

```
RESPONSE:
An instance of StorageArray
.
. (Attributes of StorageArray are omitted here)
.
List of 1 PortController elements:
An instance of PortController
```

```

objectID=CONTROLLER.HDS9980V.10001.1
cluster=1
card=1
controllerID=1
displayName=CHA-1P
mode=1
type=12

```

4.1.22 RefreshStorageArrays

`RefreshStorageArrays` refreshes the configuration information of all storage subsystems that are managed by the Device Manager by performing a re-discovery operation on each storage subsystem that is managed by the Device Manager.

For storage subsystems that are managed by Device Manager, configuration information that was created or modified from the Remote Console, Storage Navigator, or CCI is added to or updated in the Device Manager server database each time the `RefreshStorageArrays` command is executed. To keep the Device Manager server database current, you should run the `RefreshStorageArrays` command and include the desired interval parameter (see Table 4.43).

Note: To refresh the configuration information of only one storage subsystem, use the `AddStorageArray` command. When you execute the `AddStorageArray` command and the storage array already exists, the `AddStorageArray` command performs a re-discovery operation on the storage subsystem. Configuration information that was created or modified from the Remote Console, Storage Navigator, or CCI is added to or updated in the Device Manager server database each time the `AddStorageArray` command is executed.

A user to whom a user-defined resource group is assigned, and who has only the View permission, cannot execute this command.

Table 4.43 RefreshStorageArrays Command Parameters

Parameter Name	Status	Description
Interval	Optional	Interval time in minutes from storage subsystem re-discovery completion to start of next storage subsystem re-discovery. You can specify a value from 0 to 2147483647. If it is not set, the default interval time is 0. Note: An error is generated if you specify a negative number or if you include the plus (+) sign.

This command is designed to refresh configuration data for all discovered storage arrays managed by HiCommand Device Manager. Any storage array reconfigurations made by tools other than HiCommand Device Manager (e.g., 9900V Remote Console-Storage Navigator) will be reflected in the HiCommand Device Manager Configuration database.

If storage arrays are managed by HiCommand Device Manager and other tools, you should run the `RefreshStorageArrays` command and include the desired interval parameter in order to keep the HiCommand Device Manager server database current.

Parameter Values to be Obtained in Advance:

None.

Command execution example:

```
HiCommandCLI RefreshStorageArrays -o "D:\logs\RefreshStorageArrays.log" "interval=1440"
```

Command execution result:

```
RESPONSE:
[An instance of StorageArray
.
. (Attributes of StorageArray are omitted here)
.
List of 1 CommParameters elements:
An instance of CommParameters
userID=root
ipAddress2=172.16.50.2
ipAddress=172.16.50.1
]
[An instance of StorageArray
.
. (Attributes of StorageArray are omitted here)
.
List of 1 CommParameters elements:
An instance of CommParameters
snmpWrCommunity=public
ipAddress=172.16.40.1
snmpRdCommunity=public
snmpPort=161
]
.
. (repeated for other StorageArray instances)
.
```

4.2 Logical Group Commands

The Logical group commands can be used to create, delete, modify, and obtain information for logical groups.

When a logical group is created, the Device Manager server generates an object ID. In order to use a command that requires an object ID, the ID must be known. When all logical groups are retrieved with the `GetLogicalGroup` command, the ID of all logical groups is provided.

For further information on logical group operations, please refer to the *HiCommand Device Manager Web Client User's Guide*.

4.2.1 AddLogicalGroup

`AddLogicalGroup` creates a new logical group, which supports the organization and naming of related devices on the Device Manager server (see Table 4.44). The new logical group information is displayed with the object ID, in the execution results.

A user who has only the View permission cannot execute this command. A user to whom a user-defined resource group is assigned, and who also has the Modify permission, can create new logical groups in logical groups that the user is permitted to access.

Table 4.44 AddLogicalGroup Command Parameters

Parameter Name	Status	Description
Groupname	Required	Name for the new logical group. This must be unique among groups within its parent (if the <code>parent</code> parameter is supplied) or unique among top-level groups (if no <code>parent</code> is specified). The number of characters that can be used for a group name is 1-64 bytes. Note: Spaces at the beginning or end of a group name are not registered. Note: When Web Client is also used, follow the Web Client's specification rule.
Iconfile	Optional	Name of the icon file that visually represents the new logical group. The specified icons are displayed in the Web Client window. The specifiable icon files are as follows: group_0.gif, group_1.gif, group_2.gif, group_3.gif, group_4.gif, group_5.gif, group_6.gif, group_7.gif, group_8.gif, group_9.gif, group10.gif, group11.gif, group12.gif, group13.gif, group14.gif, group15.gif, group16.gif, group17.gif, group18.gif, group19.gif, group20.gif, group21.gif, group22.gif, group23.gif, group24.gif, group25.gif, group26.gif, group27.gif, group28.gif, group29.gif, group30.gif, group31.gif, group32.gif, group_logical.gif, group_plain.gif, group_storage.gif, group_storage_1.gif, group_storage_2.gif, group_storage_3.gif, group_storage_4.gif, world_logical.gif, world_storage.gif Note: If this parameter is omitted, the <code>group_plain.gif</code> file is set. If the specified icon file does not exist, the specified file is set. In Web Client, however, the <code>group_plain.gif</code> file is displayed as the specified icon file.
Parent	Optional	Object ID of another logical group that contains this new group. This must be the valid ID of a group, and the parent must either contain other groups only or be empty. Note: Do not specify the <code>parent</code> and <code>parentpath</code> parameter at the same time, as this might cause an error to occur.

Parameter Name	Status	Description
parentpath	Optional	Path of the parent group to add a logical group. Note: Do not specify the parent and parentpath parameter at the same time, as this might cause an error to occur.

Parameter values to be obtained in advance:

parentpath: Obtain this value from the execution result of the GetLogicalGroup command. In the execution result of this command, the logicalPath value appears under An instance of LogicalGroup. Use this value to specify the parentpath parameter.

Command example 1:

```
HiCommandCLI AddLogicalGroup -o "D:\logs\AddLogicalGroup.log" "groupname=toro"
"iconfile=group12.gif"
```

Command result 1:

```
RESPONSE:
An instance of LogicalGroup
  objectID=GROUP.2
  name=toro
  logicalPath=toro
  icon=group12.gif
  capacity=0
  capacityInKB=0
  realCapacityInKB=0
  percentUsed=0
  numberOfLUNs=0
```

Command example 2:

```
HiCommandCLI AddLogicalGroup -o "D:\logs\AddLogicalGroup.log" "groupname=toro"
"iconfile=group12.gif" "parent=GROUP.0"
```

Command result 2:

```
RESPONSE:
An instance of LogicalGroup
  objectID=GROUP.1
  name=toro
  logicalPath=root/toro
  parentID=GROUP.0
  icon=group12.gif
  capacity=0
  capacityInKB=0
  realCapacityInKB=0
  percentUsed=0
  numberOfLUNs=0
```

4.2.2 AddLunScan

AddLunScan detects LUNs not allocated to logical groups on a storage subsystem, and allocates them to a logical group (see Table 4.45). It assigns those LUNs to subgroups of the "LUN Scan" group according to port and security. AddLunScan creates those subgroups, as necessary, returning the specified storage array, and each of the previously unassigned LUNs.

A user to whom a user-defined resource group is assigned, and who has only the View permission, cannot execute this command.

Note: We recommend that you execute this command in a configuration where the number of paths is less than 65536.

Table 4.45 AddLunScan Command Parameters

Parameter Name	Status	Description
serialnum	Required	Serial number of the storage array to scan.
model	Required	Model of the storage array to scan.

Command execution example:

```
HiCommandCLI AddLunScan -o "D:\logs\9980V AddLunScan.log" "serialnum=10001"
"model=HDS9980V"
```

Command execution result:

```
RESPONSE:
An instance of StorageArray
.
. (Attributes of StorageArray are omitted here)
.
List of 94 HostStorageDomain elements:
An instance of HostStorageDomain
objectID=HSDOMAIN.HDS9980V.10001.0.0
portID=0
domainID=0
hostMode=HP
displayName=CL1-A-0
nickname=1A-G00
.
. (repeated for other HostStorageDomain instances)
.
List of 283 Path elements:
An instance of Path
objectID=PATH.HDS9980V.10001.0.0.101
devNum=101
portID=0
domainID=0
scsiID=15
LUN=8
wwnSecurityValidity=true
.
. (repeated for other Path instances)
.
```

4.2.3 AddObjectForLogicalGroup

AddObjectForLogicalGroup adds one or more existing objects (HostStorageDomain or host) to a specified logical group on the Device Manager server (see Table 4.46).

A user who has only the View permission cannot execute this command. A user to whom a user-defined resource group is assigned, and who also has the Modify permission, can add one or more objects to logical groups that the user is permitted to access.

Note: If `AddObjectForLogicalGroup` is used with Web Client, Web Client might not display logical groups and hosts.

Table 4.46 AddObjectForLogicalGroup Command Parameters

Parameter Name	Status	Description
Objected	Optional	Object ID of the logical group. Note: Do not specify the <code>objectid</code> and <code>logicalpath</code> parameter at the same time, as this might cause an error to occur
logicalpath	Optional	Path of the logical group to add objects to. Note: Do not specify the <code>objectid</code> and <code>logicalpath</code> parameter at the same time, as this might cause an error to occur.
groupelements	Required	Comma-separated list of one or more Object IDs of the <code>HostStorageDomains</code> and/or hosts to add to the logical group.

Parameter Values to be Obtained in Advance:

`objectid`: Obtain this value from the execution result of the `GetLogicalGroup` command. In the execution result of this command, the `objectID` value appears under An instance of `LogicalGroup`. Use the `objectid` value to specify the `objectid` parameter.

`groupelements`: Obtain this value from the execution result of the `GetStorageArray (subtarget=Path)`, `GetStorageArray (subtarget=HostStorageDomain)`, or `GetHost` command. The `objectID` values appear under An instance of `Path`, An instance of `HostStorageDomain`, or An instance of `Host` respectively. Use these `objectID` values to specify the `groupelements` parameter.

`logicalpath`: Obtain this value from the execution result of the `GetLogicalGroup` command. In the execution result of this command, the `logicalPath` value appears under An instance of `LogicalGroup`. Use this value to specify the `logicalpath` parameter.

Command execution example:

```
HiCommandCLI AddObjectForLogicalGroup -o "D:\logs\9980V AddObjectForLogicalGroup.log"
"objectID=GROUP.0" "groupelements=PATH.HDS9980V.10001.0.0.1"
```

Command execution result:

```
RESPONSE:
An instance of LogicalGroup
  objectID=GROUP.1
  name=toro
  parentID=GROUP.0
  logicalPath=root/toro
  icon=group12.gif
  capacity=0
  capacityInKB=0
  realCapacityInKB=0
  percentUsed=0
  numberOfLUNs=0
List of 1 GroupElement elements:
  An instance of Path
    objectID=PATH.HDS9980V.10001.0.0.0
    devNum=0
    portID=0
    domainID=0
```

```
scsiID=15
LUN=0
wwnSecurityValidity=true
```

4.2.4 DeleteLogicalGroup

DeleteLogicalGroup deletes an existing logical group from the Device Manager server (see Table 4.47).

A user who has only the View permission cannot execute this command. A user to whom a user-defined resource group is assigned, and who also has the Modify permission, can delete logical groups that the user is permitted to access.

Note: The child groups of the specified logical group are not deleted. If you want to delete the child groups, you must delete each child group by executing the DeleteLogicalGroup command. If you do not delete the child groups, you can use the child groups by setting a new parent group for the child groups by executing the ModifyLogicalGroup command.

Table 4.47 DeleteLogicalGroup Command Parameters

Parameter Name	Status	Description
Objectid	Optional	Object ID of the logical group to delete. Note: You must specify either <code>objectid</code> or <code>logicalpath</code> . Do not specify both parameters at the same time, as this might cause an error to occur.
logicalpath	Optional	Path of logical group to delete. Note: You must specify either <code>objectid</code> or <code>logicalpath</code> . Do not specify both parameters at the same time, as this might cause an error to occur.

Parameter values to be obtained in advance:

`objectid`: Obtain this value from the execution result of the GetLogicalGroup command. In the execution result of this command, the `objectID` value appears under An instance of LogicalGroup. Use this `objectID` value to specify the `objectid` parameter.

`logicalpath`: Obtain this value from the execution result of the GetLogicalGroup command. In the execution result of this command, the `logicalPath` value appears under An instance of LogicalGroup. Use this value to specify the `logicalpath` parameter.

Command example:

```
HiCommandCLI DeleteLogicalGroup -o "D:\logs\DeleteLogicalGroup.log" "objectid=GROUP.0"
```

Command result:

```
RESPONSE:
(Command completed; no data returned)
```

4.2.5 DeleteObjectForLogicalGroup

DeleteObjectForLogicalGroup deletes the specified object from a logical group (see Table 4.48).

A user who has only the View permission cannot execute this command. A user to whom a user-defined resource group is assigned, and who also has the Modify permission, can remove a single object or objects from logical groups that the user is permitted to access.

Table 4.48 DeleteObjectForLogicalGroup Command Parameters

Parameter Name	Status	Description
Objected	Optional	Object ID of the logical group. Note: You must specify either <code>objectid</code> or <code>logicalpath</code> . Do not specify both parameters at the same time, as this might cause an error to occur.
logicalpath	Optional	Path of the logical group to delete object from. Note: You must specify either <code>objectid</code> or <code>logicalpath</code> . Do not specify both parameters at the same time, as this might cause an error to occur.
groupelements	Required	Comma-separated list of one or more object IDs of the <code>HostStorageDomains</code> and/or hosts to remove from the logical group. These must be valid IDs of objects currently in the group.

Parameter Values to be Obtained in Advance:

`objectid` and `groupelements`: Obtain these values from the execution result of the `GetLogicalGroup (subtarget=Path, HostStorageDomain, Host)` command. In the execution result of this command, the `objectID` value under An instance of `LogicalGroup` appears and the `objectID` values related with its `objectID` value that are under An instance of `Path`, An instance of `HostStorageDomain`, and An instance of `Host` also appear. Use these `objectID` values to specify the `objectid` and `groupelements` parameters.

`logicalpath`: Obtain this value from the execution result of the `GetLogicalGroup` command. In the execution result of this command, the `logicalPath` value appears under An instance of `LogicalGroup`. Use this value to specify the `logicalpath` parameter.

Command execution example:

```
HiCommandCLI DeleteObjectForLogicalGroup -o "D:\logs\9980V DeleteObjectForLogicalGroup.log" "objectID=GROUP.0" "groupelements=PATH.HDS9980V.10001.0.0.1"
```

Command execution result:

```
RESPONSE:  
(Command completed; no data returned)
```

4.2.6 GetLogicalGroup

`GetLogicalGroup` obtains a list for the specified logical group or all logical groups (see Table 4.49). By default, the characteristics of the group are provided, but not the group's contents. If you specify `subtarget`, the group's contents of the specified types can be obtained. If a logical group contains other groups, the contained groups cannot be obtained with the group. Instead, the relationship between containing and contained groups is determined by the parent attribute of contained groups.

A user to whom a user-defined resource group is assigned can obtain information about logical groups that the user is permitted to access.

Table 4.49 GetLogicalGroup Command Parameters

Parameter Name	Status	Description
<code>objectid</code>	Optional	Object ID of the desired logical group. Omit this parameter to include all logical groups. Note: Do not specify the <code>objectid</code> and <code>logicalpath</code> parameter at the same time, as this might cause an error to occur.
<code>logicalpath</code>	Optional	Path of the logical group to be obtained. Note: Do not specify the <code>objectid</code> and <code>logicalpath</code> parameter at the same time, as this might cause an error to occur.
<code>subtarget</code>	Optional	Comma-delimited list of elements you want to obtain. Possible values are <code>HostStorageDomain</code> , <code>Path</code> and/or <code>Host</code> (not case-sensitive). Omit this parameter to obtain only logical groups that have no elements.

Parameter values to be obtained in advance:

`objectid`: Obtain this value from the execution result of the `GetLogicalGroup` command. In the execution result of this command, the `objectID` value appears under An instance of `LogicalGroup`. Use this `objectID` value to specify the `objectid` parameter.

`logicalpath`: Obtain this value from the execution result of the `GetLogicalGroup` command. In the execution result of this command, the `logicalPath` value appears under An instance of `LogicalGroup`. Use this value to specify the `logicalpath` parameter.

Command execution example 1:

```
HiCommandCLI GetLogicalGroup -o "D:\logs\GetLogicalGroup.log"  
"subtarget=Host,HostStorageDomain,path"
```

Command execution result 1:

```
RESPONSE:  
An instance of LogicalGroup  
  objectID=GROUP.1  
  name=toro  
  parentID=GROUP.0  
  logicalPath=root/toro  
  icon=group12.gif  
  capacity=0  
  capacityInKB=0  
  realCapacityInKB=0  
  percentUsed=0
```

```

numberOfLUNs=0
List of 3 GroupElement elements:
  An instance of Host
    objectID=HOST.1
    name=hit
    ipAddress=192.168.32.63
    capacityInKB=0
    hostType=-1
  An instance of HostStorageDomain
    objectID=HSDOMAIN.HDS9980V.10001.0.0
    portID=0
    domainID=0
    hostMode=HP
    displayName=CL1-A-0
    nickname=1A-G00
  An instance of Path
    objectID=PATH.HDS9980V.10001.0.0.101
    devNum=101
    portID=0
    domainID=0
    scsiID=15
    LUN=8
    wwnSecurityValidity=true
.
. (repeated for other LogicalGroup instances)
.

```

Command execution example 2:

```

HiCommandCLI GetLogicalGroup -o "D:\logs\GetLogicalGroup.log" "objectID=GROUP.1"
"subtarget=Host,HostStorageDomain,path"

```

Command execution result 2:

```

RESPONSE:
An instance of LogicalGroup
  objectID=GROUP.1
  name=toro
  parentID=GROUP.0
  logicalPath=root/toro
  icon=group12.gif
  capacity=0
  capacityInKB=0
  realCapacityInKB=0
  percentUsed=0
  numberOfLUNs=0
List of 3 GroupElement elements:
  An instance of Host
    objectID=HOST.1
    name=hit
    ipAddress=192.168.32.63
    capacityInKB=0
    hostType=-1
  An instance of HostStorageDomain
    objectID=HSDOMAIN.HDS9980V.10001.0.0
    portID=0
    domainID=0
    hostMode=HP
    displayName=CL1-A-0
    nickname=1A-G00
  An instance of Path
    objectID=PATH.HDS9980V.10001.0.0.101
    devNum=101
    portID=0
    domainID=0
    scsiID=15
    LUN=8
    wwnSecurityValidity=true

```

Command execution example 3:

```
HiCommandCLI GetLogicalGroup -o "D:\logs\GetLogicalGroup.log"
```

Command execution result 3:

```
RESPONSE:
An instance of LogicalGroup
  objectID=GROUP.1
  name=toro
  parentID=GROUP.0
  logicalPath=root/toro
  icon=group12.gif
  capacity=0
  capacityInKB=0
  realCapacityInKB=0
  percentUsed=0
  numberOfLUNs=0
.
. (repeated for other LogicalGroup instances)
.
```

4.2.7 ModifyLogicalGroup

ModifyLogicalGroup changes one or more characteristics of an existing logical group (see Table 4.50).

A user who has only the View permission cannot execute this command. A user to whom a user-defined resource group is assigned, and who also has the Modify permission, can change the characteristics of logical groups that the user is permitted to access.

Table 4.50 ModifyLogicalGroup Command Parameters

Parameter Name	Status	Description
objectid	Optional	Object ID of the logical group to modify. Note: You must specify either <code>objectid</code> or <code>logicalpath</code> . Do not specify both parameters at the same time, as this might cause an error to occur.
logicalpath	Optional	Path of the logical group to modify. Note: You must specify either <code>objectid</code> or <code>logicalpath</code> . Do not specify both parameters at the same time, as this might cause an error to occur.
groupname	Optional	New name for the specified logical group. This must be either unique among groups within its parent, or if not contained in another group, unique among top-level groups. If you omit this parameter, the group name is not modified. The number of characters that can be used for a group name is 1-64 bytes. Note: Spaces at the beginning or end of a group name are not registered. Note: When Web Client is also used, follow the Web Client's specification rule.
iconfile	Optional	Name of the icon file that visually represents the new logical group. If you omit this parameter, the group icon file is not modified. For details about specifiable icon files, see Table 4.44.
Parent	Optional	Object ID of the logical group under which the logical group is moved. This must be the valid ID of a group and the parent must either contain only other groups or be empty. If you omit this parameter, the group's parent is not modified. Note: Do not specify the <code>parent</code> and <code>parentpath</code> parameter at the same time, as this might cause an error to occur.

Parameter Name	Status	Description
parentpath	Optional	Path of the logical group under which the logical group is moved. Note: Do not specify the parent and parentpath parameter at the same time, as this might cause an error to occur.

Parameter values to be obtained in advance:

objectid: Obtain this value from the execution result of the `GetLogicalGroup` command. In the execution result of this command, the `objectID` value appears under An instance of `LogicalGroup`. Use this `objectID` value to specify the `objectid` parameter.

logicalpath: Obtain this value from the execution result of the `GetLogicalGroup` command. In the execution result of this command, the `logicalPath` value appears under An instance of `LogicalGroup`. Use this value to specify the `logicalpath` parameter.

parent: Obtain this value from the execution result of the `GetLogicalGroup` command. In the execution result of this command, the `parentID` value appears under An instance of `LogicalGroup`. Use this value to specify the `parent` parameter.

parentpath: Obtain this value from the execution result of the `GetLogicalGroup` command. In the execution result of this command, the `logicalPath` value appears under An instance of `LogicalGroup`. Use this value to specify the `parentpath` parameter.

Command example:

```
HiCommandCLI ModifyLogicalGroup -o "D:\logs\ModifyLogicalGroup.log" "objectid=GROUP.0"
"groupname=snow" "iconfile=group13.gif"
```

Command result:

```
RESPONSE:
An instance of LogicalGroup
  objectID=GROUP.0
  name=snow
  parentID=GROUP.0
  logicalPath=root/snow
  icon=group13.gif
  capacity=0
  capacityInKB=0
  realCapacityInKB=0
  percentUsed=0
  numberOfLUNs=0
```

4.3 LUN Commands

The LUN commands can be used to manage LUN groups, set up WWNs, and set paths from a host to a volume.

For further information on LUN operations, please refer to the *HiCommand Device Manager Web Client User's Guide*.

4.3.1 AddLun

AddLun sets paths from a host to a volume (see Table 4.51). A LUN expanded (LUSE) logical unit can be specified when the path is set.

A user who has only the View permission cannot execute this command. A user to whom a user-defined resource group is assigned, and who also has the Modify permission, can specify the allowed LDEVs only. If LDEVs that are not allowed are specified, an error occurs.

Note: For Universal Storage Platform V, TagmaStore USP, Lightning 9900V, TagmaStore AMS/WMS series, and the Thunder 9500V series (in the LUN Management mode), when AddLun adds a LUN whose domain ID is not 0 to the host storage domain, the LUN security of the target port is automatically enabled.

Format for Universal Storage Platform V, TagmaStore USP, the Lightning 9900V, the TagmaStore AMS/WMS series, and the Thunder 9500V (in the LUN Management mode):

```
HiCommandCLI [URL] AddLun [options] serialnum=serial-number model=model-name [name=name]
[port=port-number|portname=port-name] domain=domain-ID [scsi=SCSI-ID] lun=valid-LUN
[{{devnum=device-number|lusedevnums=list-of-LDEV-numbers}}
```

Format for Other Storage Subsystems:

```
HiCommandCLI [URL] AddLun [options] serialnum=serial-number model=model-name [name=name]
[port=port-number|portname=port-name] [scsi=SCSI-ID] lun=valid-LUN {devnum=device-number
[{{domain=domain-ID|wwn=list-of-WWNs}}]|lusedevnums=list-of-LDEV-numbers [{{domain=domain-
ID|wwn=list-of-WWNs}}}}
```

Note: Since LUSE has already been created by the first AddLUN, the error "LDEV with ID LDEV.HDS9970V.30117.263 is already in another LUSE." has occurred in the second AddLUN with the same lusedevnums. When setting up a LUN (path) to LU to which LUSE is already set, like the following command, devnum of the representative LDEV which constitutes LUSE must be specified, and AddLUN must be run.

```
>HiCommandCLI AddLUN serialnum=30117 model=HDS9970V name=vai111 port=3
domain=0 scsi=15 lun=10 devnum=263
```

Table 4.51 AddLun Command Parameters

Parameter Name	Status	Description
serialnum	Required	Serial number of the new path's storage array.
model	Required	Model of the new path's storage array.
name	Optional	Name of the new path. The number of characters that can be used for a name is 1-64 bytes. Note: Spaces at the beginning or end of a name are not registered.
Port	Optional	Port number of the new path. Note: Specify either <code>port</code> or <code>portname</code> . Do not specify both parameters at the same time. This might cause an error to occur.
portname	Optional	Port name of the new path. Note: Specify either <code>port</code> or <code>portname</code> . Do not specify both parameters at the same time. This might cause an error to occur.
domain	Required (9500V (in LUN Management mode), Universal Storage Platform V, USP, 9900V, AMS/WMS series) Optional (all other subsystems)	Domain ID of the new path. Cannot be set when using the <code>wwn</code> parameter. This parameter can be specified in decimal and hexadecimal. If you specify a hexadecimal number, add the <code>0x</code> prefix. Note: The execution results are output in decimal.
Scsi	Optional	SCSI ID of the new path. For Fibre Channel, specify 15.
Lun	Required	Actual LUN used for new path.
devnum	Optional	Device number used to identify the new path (not provided when a LUSE is defined). This parameter can be specified in decimal, and in colon-separated hexadecimal. If you specify a hexadecimal number, for TagmaStore USP, Lightning 9900V, and Lightning 9900, use the <code>xx:yy</code> format, where <code>xx</code> is the CU number, and <code>yy</code> is the LDEV number. For Universal Storage Platform V, use the <code>ww:xx:yy</code> format, where <code>ww</code> is the LDKC number, <code>xx</code> is the CU number, and <code>yy</code> is the LDEV number. <code>ww</code> is optional. If you omit <code>ww</code> , the LDKC number is regarded as 0. Note: The execution results are output in decimal. Note: Specify either <code>devnum</code> or <code>lusedevnums</code> . Do not specify both parameters at the same time. This might cause an error to occur.
lusedevnums (see Note)	Optional	Comma-separated list of LDEV numbers to create a LUSE for the path. The format you can use when specifying and the format of the execution results are the same as <code>devnum</code> . Note: Specify either <code>devnum</code> or <code>lusedevnums</code> . Do not specify both parameters at the same time. This might cause an error to occur.
Wwn	Optional except for 9900V, 9500V (using LUN Management)	Comma-separated list of WWN to secure the path. Cannot be set when using <code>domain</code> parameter. This parameter is not valid for the Thunder 9500V in the LUN Management mode, Universal Storage Platform V, TagmaStore USP, Lightning 9900V, and TagmaStore AMS/WMS series.

Note: The LUSE is created using the LDEVs of the specified device numbers. The new LUSE is created using only those LDEVs that have the same `emulation`, `sizeInKB`, and `raidType` attributes.

Parameter Values to be Obtained in Advance:

`serialnum` and `model`: Obtain these values from the execution result of the `GetStorageArray` command. In the execution result of this command, the `arrayType` and `serialNumber` values appear in a `StorageArray`. Use the `arrayType` and `serialNumber` values to specify the `model` and `serialnum` parameters respectively.

`port`, `domain`, and `lun`: Obtain these values from the execution result of the `GetStorageArray (subtarget=HostStorageDomain, hsdsubinfo=freelun)` command. Execute this command by specifying only the `model` and `serialnum` parameters, `HostStorageDomain` for the `subtarget` parameter, and `freelun` for the `hsdsubinfo` parameter. In the execution result of this command, the `portID` and `domainID` values appear under An instance of `HostStorageDomain`. Use these `portID` and `domainID` values to specify the `port` parameter and the `domain` parameter respectively.

`portname`: Obtain this value from the execution result of the `GetStorageArray (subtarget=Port)` command. In the execution result of this command, the `displayName` value appears under An instance of `Port`. Use this value to specify the `portname` parameter.

For the `lun` parameter, specify one of the `lun` values that appear under An instance of `FreeLUN`.

`devnum`: Obtain this value from the execution result of the `GetStorageArray (subtarget=LDEV)` command. Execute this command by specifying only the `model` and `serialnum` parameters, and `LDEV` for the `subtarget` parameter. In the execution result of this command, the `devNum` values of the LDEVs appear in an LDEV. Use the `devNum` value of the LDEV for which `path=false` and `onDemandDevice=false` to specify the `devnum` parameter.

`lusedevnums`: Obtain this value from the execution result of the `GetStorageArray (subtarget=LDEV)` command. In the execution result of this command, the `devNum` values of the LDEVs appear in an LDEV. Use the `devNum` value of the LDEV for which `path=false` and `onDemandDevice=false` to specify the `lusedevnums` parameter. Choose only the LDEVs that share the same `emulation`, `sizeInKB`, and `raidType` attributes, and specify them in the form of a comma-separated list.

`wwn`: Obtain this value from the execution result of the `GetStorageArray (subtarget=Port, portsubinfo=WWN)` command. Execute this command by specifying only the `model` and `serialnum` parameters, `Port` for the `subtarget` parameter, and `WWN` for the `portsubinfo` parameter. In the execution result of this command, the `WWN` value appears in a `WWN`. Use this `WWN` value to specify the `wwn` parameter.

Command execution example 1:

```
HiCommandCLI AddLun -o "D:\logs\9960\AddLun.log" "serialnum=10001" "model=HDS9960"
"name=liu" "port=3" "scsi=15" "lun=127" "lusedevnums=127,128"
"wwn=AA.AA.AA.AA.AA.AA.AA.AA"
```

Command execution result 1 :

```
RESPONSE:
An instance of StorageArray
    .
    . (Attributes of StorageArray are omitted here)
    .
List of 1 Path elements:
  An instance of Path
  objectID=PATH.HDS9960.10001.3.16.127
  name=liu
  devNum=127
  portID=3
  domainID=16
  scsiID=15
  LUN=127
  wwnSecurityValidity=true
List of 2 Ldev elements:
  An instance of LDEV
  objectID=LDEV.HDS9960.10001.127
  devNum=127
  displayName=00:7F
  emulation=OPEN-8
  cylinders=50
  isComposite=1
  sizeInKB=36,000
  lba=72,000
  raidType=RAID5 (3D+1P)
  substance=0
  volumeType=-1
  slotSizeInKB=48
  chassis=1
  arrayGroup=7
  path=true
  onDemandDevice=false
  devType=
  isStandardLDEV=false
  diskType=-1
  slprNumber=-1
  clprNumber=-1
  cacheResidencyMode=-1
  stripeSizeInKB=-1
  volumeKind=3
  status=Blocked
  dpType=-1
  consumedSizeInKB=-1
  An instance of LDEV
  objectID=LDEV.HDS9960.10001.128
  devNum=128
  displayName=00:80
  emulation=OPEN-8
  cylinders=50
  isComposite=1
  sizeInKB=36,000
  lba=72,000
  raidType=RAID5 (3D+1P)
  substance=0
  volumeType=-1
  slotSizeInKB=48
  chassis=1
  arrayGroup=7
  path=false
  onDemandDevice=false
  devType=
  isStandardLDEV=false
  diskType=-1
  slprNumber=-1
  clprNumber=-1
  cacheResidencyMode=-1
```

```
stripeSizeInKB=-1
volumeKind=3
status=Blocked
dpType=-1
consumedSizeInKB=-1
List of 1 WWN elements:
An instance of WWN
WWN=AA.AA.AA.AA.AA.AA.AA
```

Command execution example 2:

```
HiCommandCLI AddLun -o "D:\logs\9980V\AddLun.log" "serialnum=10001" "model=HDS9980V"
"name=hitachi" "port=1" "domain=4" "scsi=15" "lun=114" "lusedevnums=1001,1002"
```

Command execution result 2:

```
RESPONSE:
An instance of StorageArray
.
. (Attributes of StorageArray are omitted here)
.
List of 1 Path elements:
An instance of Path
objectID=PATH.HDS9980V.10001.1.4.1001
name=hitachi
devNum=1,001
portID=1
domainID=4
scsiID=15
LUN=114
wwnSecurityValidity=true
List of 2 Ldev elements:
An instance of LDEV
objectID=LDEV.HDS9980V.10001.1001
devNum=1,001
displayName=3:E9
emulation=OPEN-3
cylinders=0
isComposite=1
sizeInKB=2,403,360
lba=1,201,680
raidType=RAID5 (3D+1P)
substance=0
volumeType=3
slotSizeInKB=48
chassis=3
arrayGroup=16
path=false
onDemandDevice=false
devType=
isStandardLDEV=true
guardMode=
diskType=-1
slprNumber=-1
clprNumber=-1
cacheResidencyMode=-1
stripeSizeInKB=-1
volumeKind=3
status=Blocked
dpType=-1
consumedSizeInKB=-1
An instance of LDEV
objectID=LDEV.HDS9980V.10001.1002
devNum=1,002
displayName=3:EA
emulation=OPEN-3
cylinders=0
isComposite=1
```

```
sizeInKB=2,403,360
lba=1,201,680
raidType=RAID5 (3D+1P)
substance=0
volumeType=3
slotSizeInKB=48
chassis=3
arrayGroup=16
path=false
onDemandDevice=false
devType=
isStandardLDEV=true
guardMode=
diskType=-1
slprNumber=-1
clprNumber=-1
cacheResidencyMode=-1
stripeSizeInKB=-1
volumeKind=3
status=Blocked
dpType=-1
consumedSizeInKB=-1
```

Command execution example 3:

```
HiCommandCLI AddLun -o "D:\logs\9980V AddLun.log" "serialnum=10001" "model=HDS9980V"
"name=hitachi" "port=1" "domain=4" "scsi=15" "lun=120" "devnum=1006"
```

Command execution result 3:

```
RESPONSE:
An instance of StorageArray
.
. (Attributes of StorageArray are omitted here)
.
List of 1 Path elements:
An instance of Path
objectID=PATH.HDS9980V.10001.1.4.1006
name=hitachi
devNum=1,006
portID=1
domainID=4
scsiID=15
LUN=120
wwnSecurityValidity=true
```

4.3.2 AddLunGroup

AddLunGroup adds a LUN group to a port on the target storage subsystem. The path from the host is set for the LUN group added to the port (see Table 4.52).

AddLunGroup is supported by Lightning 9900 storage subsystems only.

A user who has only the View permission cannot execute this command. A user to whom a user-defined resource group is assigned, and who also has the Modify permission, does not have access range limitations.

Note: AddLunGroup is supported by Lightning 9900 storage subsystems only.

Table 4.52 AddLunGroup Command Parameters

Parameter Name	Status	Description
Serialnum	Required	Serial number of the target storage array to which the LUN Group is added.
Model	Required	Model of the target storage array to which the LUN Group is added.
Port	Optional	Port number of the LUN Group. Note: Specify either <code>port</code> or <code>portname</code> . Do not specify both parameters at the same time. This might cause an error to occur.
portname	Optional	Port name of the LUN group. Note: Specify either <code>port</code> or <code>portname</code> . Do not specify both parameters at the same time. This might cause an error to occur.
groupelements	Required	Comma-separated list of one or more Object IDs of the paths to be added to the LUN group.
nickname	Required	Unique nickname of the LUN group. You can use the following characters: A-Z a-z 0-9 ! # \$ % & ' () + - . = @ [] ^ _ ` { } ~ The number of characters that can be used for a nickname is 1-8 bytes.
Name	Optional	The name given to the LUN group. The number of characters that can be used for a name is 1-64 bytes. Note: Spaces at the beginning or end of a name are not registered.

Parameter Values to be Obtained in Advance:

`serialnum` and `model`: Obtain these values from the execution result of the `GetStorageArray` command. In the execution result of this command, the `arrayType` and `serialNumber` values appear in a `StorageArray`. Use the `arrayType` and `serialNumber` values to specify the `model` and `serialnum` parameters respectively.

`port` and `groupelements`: Obtain these values from the execution result of the `GetStorageArray (subtarget=Path)` command. Execute this command by specifying only the `model` and `serialnum` parameters, and `Port` for the `subtarget` parameter. In the execution result of this command, the `portID` and `objectID` values appear in a `Path`. Use these `portID` and `objectID` values to specify the `port` parameter and `groupelements` parameter respectively.

`portname`: Obtain this value from the execution result of the `GetStorageArray (subtarget=Port)` command. In the execution result of this command, the `displayName` value appears under An instance of `Port`. Use this value to specify the `portname` parameter.

Command execution example:

```
HiCommandCLI AddLunGroup -o "D:\ logs\9960 AddLunGroup.log" "serialnum=10001"
"model=HDS9960" "port=19"
"groupelements=PATH.HDS9960.10001.16.2.0,PATH.HDS9960.10001.16.2.1" "nickname=hitachi"
"name=hitachi"
```

Command execution result:

```
RESPONSE:
An instance of StorageArray
.
. (Attributes of StorageArray are omitted here)
.
List of 1 Port elements:
An instance of Port
.
. (Attributes of Port are omitted here)
.
List of 1 LUNGroup elements:
An instance of LUNGroup
objectID=LUNGROUP.HDS9960.10001.0.19.hitachi
name=hitachi
nickname=hitachi
List of 2 Path elements:
An instance of Path
objectID=PATH.HDS9960.10001.16.2.0
devNum=0
portID=19
domainID=16
scsiID=15
LUN=8
wwnSecurityValidity=true
.
. (repeated for other Path instances)
.
```

4.3.3 AddWWNForHostStorageDomain

AddWWNForHostStorageDomain allocates one or more WWNs to a host storage domain LUN, and performs security settings (see Table 4.53).

A user who has only the View permission cannot execute this command. A user to whom a user-defined resource group is assigned, and who also has the Modify permission, does not have access range limitations.

Note: When AddWWNForHostStorageDomain secures LUNs in a host storage domain, LUN security is automatically enabled.

Format for Universal Storage Platform V, TagmaStore USP, Lightning 9900V, TagmaStore AMS/WMS series, and Thunder 9500V (in the LUN Management mode):

```
HiCommandCLI [URL] AddWWNForHostStorageDomain [option] serialnum=serial-number model=model
{port=port-number|portname=port-name} {domain=domain-ID|domainnickname=domain-nickname}
wwn=WWN [wvnnickname=WWN-nickname]
```

Format for Other Storage Subsystems:

```
HiCommandCLI [URL] AddWWNForHostStorageDomain [option] serialnum=serial-number model=model
{port=port-number|portname=port-name} domain=domain-ID wwn=WWN
```

Table 4.53 AddWWNForHostStorageDomain Command Parameters

Parameter Name	Status	Description
Serialnum	Required	Serial number of the storage array for the Host Storage Domain.
Model	Required	Model of the storage array for the Host Storage Domain.
Port	Optional	Port ID of the Host Storage Domain. Note: Specify either <code>port</code> or <code>portname</code> . Do not specify both parameters at the same time. This might cause an error to occur.
Portname	Optional	Port name of the host storage domain. Note: Specify either <code>port</code> or <code>portname</code> . Do not specify both parameters at the same time. This might cause an error to occur.
Domain	Optional	Domain ID of the Host Storage Domain. This parameter can be specified in decimal and hexadecimal. If you specify a hexadecimal number, add the <code>0x</code> prefix. Note: The execution results are output in decimal. Note: You must specify either <code>domain</code> or <code>domainnickname</code> . Do not specify both parameters at the same time, as this might cause an error to occur.
domainnickname	Optional (9500V (in LUN Management mode), Universal Storage Platform V, USP, 9900V, AMS/WMS series only)	Nickname of the host storage domain. Note: You must specify either <code>domain</code> or <code>domainnickname</code> . Do not specify both parameters at the same time, as this might cause an error to occur.
Wwn	Required	Comma-separated list of WWN to secure the Host Storage Domain.

Parameter Name	Status	Description
wwnnickname	Optional (9500V (in LUN Management mode), Universal Storage Platform V, USP, 9900V, AMS/WMS series only)	<p>The nickname of the WWN. Specify this parameter to register the WWN nickname. To specify two or more WWN nicknames, separate them with commas.</p> <p>The number of <code>wwn</code> parameters must match the number of <code>wwnnickname</code> parameters.</p> <p>Paired <code>wwn</code> parameters and <code>wwnnickname</code> parameters must be specified in the same sequence.</p> <p>You can use the following characters: A-Z a-z 0-9 ! # \$ % & ' () + - . = @ [] ^ _ ` { } ~ (space)</p> <p>Note: A WWN nickname cannot begin or end with spaces.</p> <p>Note: For the TagmaStore AMS/WMS series, and the Thunder 9500V series in the LUN Management mode, an apostrophe (') cannot be used.</p> <p>The number of characters that can be used for a WWN nickname is as follows:</p> <p>TagmaStore USP: 0-16 bytes DKC microcode version 50-04-01 or later: 0-32 bytes</p> <p>Lightning 9900V: 0-8 bytes</p> <p>TagmaStore AMS/WMS series: 0-16 bytes</p> <p>Thunder 9500V (LUN management mode): 0-8 bytes Microcode version x6x9/M or later: 0-16 bytes</p>

Parameter Values to be Obtained in Advance:

`serialnum` and `model`: Obtain these values from the execution result of the `GetStorageArray` command. In the execution result of this command, the `arrayType` and `serialNumber` values appear under An instance of `StorageArray`. Use the `arrayType` and `serialNumber` values to specify the `model` and `serialnum` parameters respectively.

port and domain: Obtain these values from the execution result of the `GetStorageArray` (`subtarget=HostStorageDomain`) command. Execute this command by specifying only the `model` and `serialnum` parameters, and `HostStorageDomain` for the `subtarget` parameter. In the execution result of this command, the `portID` and `domainID` values appear under An instance of `HostStorageDomain`. Use these `portID` and `domainID` values to specify the `port` and `domain` parameters respectively.

portname: Obtain this value from the execution result of the `GetStorageArray` (`subtarget=Port`) command. In the execution result of this command, the `displayName` value appears under An instance of `Port`. Use this value to specify the `portname` parameter.

wwn: Obtain this value from the execution result of the `GetStorageArray` (`subtarget=Port`, `portsubinfo=WWN`, `WWNGroup`, `wwngroupsubinfo=WWN`) command. Execute this command by specifying only the `model` and `serialnum` parameters, `Port` for the `subtarget` parameter, and `WWN` for the `portsubinfo` parameter. In the execution result of this command, the `wwn` value appears under An instance of `WWN`. Use this `wwn` value to specify the `wwn` parameter.

domainnickname: Obtain this value from the execution result of the `GetStorageArray` (`subtarget=HostStorageDomain`) command. Execute this command by specifying only the `model` and `serialnum` parameters, and `HostStorageDomain` for the `subtarget` parameter. In the execution result of this command, the `nickname` value appears under An instance of `HostStorageDomain`. Use this value to specify the `domainnickname` parameter.

Command execution example:

```
HiCommandCLI AddWWNForHostStorageDomain -o "D:\logs\9980V AddWWNForHostStorageDomain.log"
"serialnum=10001" "model=HDS9980V" "port=1" "domain=1"
"wwn=22.33.44.55.44.55.44.33,11.33.22.33.44.33.22.22"
```

Command execution result:

```
RESPONSE:
An instance of StorageArray
.
. (Attributes of StorageArray are omitted here)
.
List of 1 HostStorageDomain elements:
An instance of HostStorageDomain
  objectID=HSDOMAIN.HDS9980V.10001.1.1
  portID=1
  domainID=1
  hostMode=Standard
  displayName=CL1-B-1
  nickname=HCMD0103
List of 2 WWN elements:
  An instance of WWN
    WWN=22.33.44.55.44.55.44.33
    nickname=Jane
  An instance of WWN
    WWN=11.33.22.33.44.33.22.22
    nickname=June
```

4.3.4 AddWWNForLun

AddWWNForLun secures a path by assigning a WWN to it (see Table 4.54).

A user who has only the View permission cannot execute this command. A user to whom a user-defined resource group is assigned, and who also has the Modify permission, does not have access range limitations.

Notes:

- When AddWWNForLun secures a path, LUN security is automatically enabled.
- This command supports only Lightning 9900, Thunder 9500V (LUN Security mode), and Thunder 9200 subsystems.

Table 4.54 AddWWNForLUN Command Parameters

Parameter Name	Status	Description
serialnum	Required	Serial number of the port's storage array.
Model	Required	Model of the port's storage array.
Port	Optional	Port number. Note: Specify either <code>port</code> or <code>portname</code> . Do not specify both parameters at the same time. This might cause an error to occur.
Portname	Optional	Port name. Note: Specify either <code>port</code> or <code>portname</code> . Do not specify both parameters at the same time. This might cause an error to occur.
Domain	Required	Domain ID of the path. This parameter can be specified in decimal and hexadecimal. If you specify a hexadecimal number, add the <code>0x</code> prefix. Note: The execution results are output in decimal.
Devnum	Required	Device number used to identify the path. This parameter can be specified in decimal, and in colon-separated hexadecimal. If you specify a hexadecimal number, use the <code>xx:yy</code> format, where <code>xx</code> is the CU number, and <code>yy</code> is the LDEV number. Note: The execution results are output in decimal.
Wwn	Required	Comma-separated list of WWNs to secure the path.

Parameter Values to be Obtained in Advance:

`serialnum` and `model`: Obtain these values from the execution result of the `GetStorageArray` command. In the execution result of this command, the `arrayType` and `serialNumber` values appear under An instance of `StorageArray`. Use the `arrayType` and `serialNumber` values to specify the `model` and `serialnum` parameters respectively.

port, devnum, and domain: Obtain these values from the execution result of the GetStorageArray (subtarget=Path) command. Execute this command by specifying only the model and serialnum parameters, and Path for the subtarget parameter. In the execution result of this command, the domainID, devNum, and portID values appear in An instance of Path. Use these domainID, devNum, and portID values to specify the domain, devnum, and port parameters respectively.

portname: Obtain this value from the execution result of the GetStorageArray (subtarget=Port) command. In the execution result of this command, the displayName value appears under An instance of Port. Use this value to specify the portname parameter.

Command execution example:

```
HiCommandCLI AddWwnForLun -o "D:\logs\9200 AddWwnForLun.log" "serialnum=10001"
"model=HDS9200" "port=16" "devnum=16" "domain=0" "wwn=AA.AA.AA.AA.AA.AA.AA.AA"
```

Command execution result:

```
RESPONSE:
An instance of StorageArray
.
. (Attributes of StorageArray are omitted here)
.
List of 1 Path elements:
An instance of Path
objectID=PATH.HDS9200.10001.16.0.16
devNum=16
portID=16
domainID=0
scsiID=15
LUN=16
wwnSecurityValidity=true
List of 1 WWN elements:
An instance of WWN
WWN=AA.AA.AA.AA.AA.AA.AA.AA
nickname=Jane
```

4.3.5 AddWWNForLunGroup

AddWWNForLunGroup secures a LUN group by assigning one or more WWN(s) to it (9900 subsystem only) (see Table 4.55). If all of the WWNs in a WWN group are assigned, the WWN group is used to secure the LUN group. If any of WWNs in a WWN group are not assigned, this command will fail. Only new WWNs (none that pre-exist on the port) can be added.

A user who has only the View permission cannot execute this command. A user to whom a user-defined resource group is assigned, and who also has the Modify permission, does not have access range limitations.

Note: AddWWNForLunGroup is supported by Lightning 9900 storage subsystems only.

Table 4.55 AddWWNForLunGroup Command Parameters

Parameter Name	Status	Description
serialnum	Required	Serial number of the storage array in which the LUN Group exists
model	Required	Model of the storage array in which the LUN Group exists.

Parameter Name	Status	Description
port	Optional	Port number of the LUN Group. Note: Specify either <code>port</code> or <code>portname</code> . Do not specify both parameters at the same time. This might cause an error to occur.
portname	Optional	Port name of the LUN group. Note: Specify either <code>port</code> or <code>portname</code> . Do not specify both parameters at the same time. This might cause an error to occur.
objectid	Required	Object ID of the LUN Group.
wwn	Required	Comma-separated list of WWNs to secure the LUN group

Parameter Values to be Obtained in Advance:

`serialnum` and `model`: Obtain these values from the execution result of the `GetStorageArray` command. In the execution result of this command, the `arrayType` and `serialNumber` values appear under An instance of `StorageArray`. Use the `arrayType` and `serialNumber` values to specify the `model` and `serialnum` parameters respectively.

`port`: Obtain this value from the execution result of the `GetStorageArray` (`subtarget=Port`) command. In the execution result of this command, the `portID` value appears under An instance of `Port`. Use this `portID` value to specify the `port` parameter.

`portname`: Obtain this value from the execution result of the `GetStorageArray` (`subtarget=Port`) command. In the execution result of this command, the `displayName` value appears under An instance of `Port`. Use this value to specify the `portname` parameter.

`objectid`: Obtain this value from the execution result of the `GetStorageArray` (`subtarget=Port`, `portsubinfo=LUNGroup`) command. In the execution result of this command, the `objectID` value appears under An instance of `LUNGroup`. Use this `objectID` value to specify the `objectID` parameter.

`wwn`: Obtain this value from the execution result of the `GetStorageArray` (`subtarget=Port`, `portsubinfo=WWN`, `WWNGroup`, `wwngroupsubinfo=WWN`) command. Execute this command by specifying only the `model` and `serialnum` parameters, `Port` for the `subtarget` parameter, and `WWN` for the `portsubinfo` parameter. In the execution result of this command, the `wwn` value appears under An instance of `WWN`. Use this `wwn` value to specify the `wwn` parameter.

Note: As an alternative method, you can specify the `wwn` parameter by creating a new WWN. You can use a WWN group to set the security if you specify all the WWNs existing in the WWN group.

Command execution example:

```
HiCommandCLI AddWWNForLunGroup -o "D:\logs\9960 AddWWNForLUNGroup.log" "serialnum=10001"
"model=HDS9960" "port=19" "objectid=LUNGROUP.HDS9960.10001.19.hitachi"
"wwn=11.55.77.99.33.00.22.66,AA.AA.AA.AA.AA.AA.AA.AA"
```

Command execution result:

```
RESPONSE:
An instance of StorageArray
.
. (Attributes of StorageArray are omitted here)
.
List of 1 Port elements:
An instance of Port
.
. (Attributes of Port are omitted here)
.
List of 1 LUNGroup elements:
An instance of LUNGroup
  objectID= LUNGROUP.HDS9960.10001.0.19.hitachi
  name=hitachi
  nickname=hitachi
  List of 2 WWN elements:
  An instance of WWN
    WWN=11.55.77.99.33.00.22.66
.
. (repeated for other WWN instances)
.
```

4.3.6 AddWWNGroup

AddWWNGroup adds a WWN group to the target storage subsystem port, and adds two or more WWNs to the WWN group (see Table 4.56). The maximum number of WWNs in a port WWN group is 127. Only WWNs not used for a port can be added. WWNs already existing in a port cannot be added.

A maximum of 127 WWN groups can be set to a port. As the WWNs to be grouped into a WWN group, you can specify only the WWNs already set for a port or newly created WWNs. The WWNs that you have newly specified will be added to the port. You cannot add a WWN that belongs to a different WWN group, or to a different LUN or LUN group.

A user who has only the View permission cannot execute this command. A user to whom a user-defined resource group is assigned, and who also has the Modify permission, does not have access range limitations.

Note: AddWWNGroup is supported by Lightning 9900 storage subsystems only.

Table 4.56 AddWWNGroup Command Parameters

Parameter Name	Status	Description
serialnum	Required	Serial number of the target storage array to which the WWN Group is added.
model	Required	Model of the target storage array to which the WWN Group is added.
port	Optional	Port number of the WWN Group. Note: Specify either port or portname. Do not specify both parameters at the same time. This might cause an error to occur.
portname	Optional	Port name of the WWN group. Note: Specify either port or portname. Do not specify both parameters at the same time. This might cause an error to occur.
wwn	Required	Comma-separated list of WWNs to be added to the WWN group.

Parameter Name	Status	Description
nickname	Required	A unique nickname of the WWN group. You can use the following characters: A-Z a-z 0-9 ! # \$ % & ' () + - . = @ [] ^ _ ` { } ~ The number of characters that can be used for a nickname is 1-8 bytes.
Name	Optional	The name given to the WWN group. The number of characters that can be used for a name is 1-64 bytes. Note: Spaces at the beginning or end of a name are not registered.

Parameter Values to be Obtained in Advance:

serialnum and model: Obtain these values from the execution result of the `GetStorageArray` command. In the execution result of this command, the `arrayType` and `serialNumber` values appear under An instance of `StorageArray`. Use the `arrayType` and `serialNumber` values to specify the `model` and `serialnum` parameters respectively.

port: Obtain this value from the execution result of the `GetStorageArray` (`subtarget=Port`) command. In the execution result of this command, the `portID` value appears under An instance of `Port`. Use this `portID` value to specify the `port` parameter.

portname: Obtain this value from the execution result of the `GetStorageArray` (`subtarget=Port`) command. In the execution result of this command, the `displayName` value appears under An instance of `Port`. Use this value to specify the `portname` parameter.

wwn: Obtain this value from the execution result of the `GetStorageArray` (`subtarget=Port`, `portsubinfo=WWN`, `WWNGroup`, `wwngroupsubinfo=WWN`) command. Execute this command by specifying only the `model` and `serialnum` parameters, `Port` for the `subtarget` parameter, and `WWN` for the `portsubinfo` parameter. In the execution result of this command, the `wwn` value appears under An instance of `WWN`. Use this `wwn` value to specify the `wwn` parameter. As an alternative method, you can specify the `wwn` parameter by creating a new `WWN`.

Command execution example:

```
HiCommandCLI AddWWNGroup -o "D:\logs\9960 AddWWNGroup.log" serialnum=10001 model=HDS9960
port=19 wwn=11.55.77.99.33.00.22.66,AA.AA.AA.AA.AA.AA.AA.AA.AA nickname=hitachi name=hitachi
```

Command execution result:

```
RESPONSE:
An instance of StorageArray
.
. (Attributes of StorageArray are omitted here)
.
List of 1 Port elements:
  An instance of Port
.
. (Attributes of Port are omitted here)
.
List of 1 WWNGroup elements:
```

```

An instance of WWNGroup
objectID=WWNGROUP.HDS9960.10001.0.19.hitachi
name=hitachi
nickname=hitachi
List of 2 WWN elements:
An instance of WWN
  WWN= AA.AA.AA.AA.AA.AA.AA.AA
  nickname=Jane
An instance of WWN
  WWN= BB.BB.BB.BB.BB.BB.BB.BB
  nickname=Jane

```

4.3.7 DeleteLun

`DeleteLun` deletes paths set from a host to a volume (see Table 4.57). If the LUN is secured, the corresponding WWN is required.

A user who has only the View permission cannot execute this command. A user to whom a user-defined resource group is assigned, and who also has the Modify permission, can specify the allowed LDEVs only. If an LDEV that is not allowed is specified, an error occurs.

Table 4.57 DeleteLUN Command Parameters

Parameter Name	Status	Description
serialnum	Required	Serial number of the path's storage array.
model	Required	Model of the path's storage array.
port	Optional	Port number of the path. Note: Specify either <code>port</code> or <code>portname</code> . Do not specify both parameters at the same time. This might cause an error to occur.
portname	Optional	Port name of the path. Note: Specify either <code>port</code> or <code>portname</code> . Do not specify both parameters at the same time. This might cause an error to occur.
domain	Required	Domain ID of the path. This parameter can be specified in decimal and hexadecimal. If you specify a hexadecimal number, add the <code>0x</code> prefix. Note: The execution results are output in decimal.
devnum	Required	Device number used to identify the path. This parameter can be specified in decimal, and in colon-separated hexadecimal. If you specify a hexadecimal number, for TagmaStore USP, Lightning 9900V, and Lightning 9900, use the <code>xx:yy</code> format, where <code>xx</code> is the CU number, and <code>yy</code> is the LDEV number. For Universal Storage Platform V, use the <code>ww:xx:yy</code> format, where <code>ww</code> is the LDKC number, <code>xx</code> is the CU number, and <code>yy</code> is the LDEV number. <code>ww</code> is optional. If you omit <code>ww</code> , the LDKC number is regarded as 0. Note: The execution results are output in decimal.
deletionoption	Optional	Only value possible: "lusekeep", which is not case-sensitive. Omit this parameter to delete LUSE.

Parameter Values to be Obtained in Advance:

`serialnum` and `model`: Obtain these values from the execution result of the `GetStorageArray` command. In the execution result of this command, the `arrayType` and `serialNumber` values appear under An instance of `StorageArray`. Use the `arrayType` and `serialNumber` values to specify the `model` and `serialnum` parameters respectively.

`port`, `domain`, and `devnum`: Obtain these values from the execution result of the `GetStorageArray (subtarget=Path)` command. Execute this command by specifying only the `model` and `serialnum` parameters, and `Path` for the `subtarget` parameter. In the execution result of this command, the `devNum`, `domainID`, and `portID` values appear under An instance of `Path`. Use these `devNum`, `domainID`, and `portID` values to specify the `devnum`, `domain`, and `port` parameters respectively.

`portname`: Obtain this value from the execution result of the `GetStorageArray (subtarget=Port)` command. In the execution result of this command, the `displayName` value appears under An instance of `Port`. Use this value to specify the `portname` parameter.

Command execution example:

```
HiCommandCLI DeleteLun -o "D:\logs\9980V DeleteLun.log" "serialnum=10001" "model=HDS9980V" "port=1" "domain=1" "devnum=1" "deletionoption=lusekeep"
```

Command execution result:

```
RESPONSE:  
(Command completed; no data returned)
```

4.3.8 DeleteLunGroup

`DeleteLunGroup` deletes LUN groups allocated to ports on the target storage subsystem; any LUNs (paths) in the group are not deleted (see Table 4.58). A WWN can be specified, and access is removed for just that WWN.

A user who has only the View permission cannot execute this command. A user to whom a user-defined resource group is assigned, and who also has the Modify permission, does not have access range limitations.

Note: `DeleteLunGroup` is supported by Lightning 9900 storage subsystems only.

Table 4.58 DeleteLunGroup Command Parameters

Parameter Name	Status	Description
<code>serialnum</code>	Required	Serial number of the LUN Group's storage array.
<code>model</code>	Required	Model of the LUN Group's storage array.
<code>port</code>	Optional	ID for the port of LUN Group to delete. Note: Specify either <code>port</code> or <code>portname</code> . Do not specify both parameters at the same time. This might cause an error to occur.

Parameter Name	Status	Description
portname	Optional	Port name for the LUN group to delete. Note: Specify either <code>port</code> or <code>portname</code> . Do not specify both parameters at the same time. This might cause an error to occur.
lungroupid	Required	Object ID of the LUN Group to delete.

Parameter values to be obtained in advance:

`serialnum` and `model`: Obtain these values from the execution result of the `GetStorageArray` command. In the execution result of this command, the `arrayType` and `serialNumber` values appear under An instance of `StorageArray`. Use the `arrayType` and `serialNumber` values to specify the `model` and `serialnum` parameters respectively.

`port` and `lungroupid`: Obtain these values from the execution result of the `GetStorageArray (subtarget=Port, portsubinfo=LUNGroup)` command. Execute this command by specifying only the `model` and `serialnum` parameters, `Port` for the `subtarget` parameter, and `LUNGroup` for the `portsubinfo` parameter. In the execution result of this command, the `portID` value appears under An instance of `Port`. Use this `portID` value to specify the `port` parameter. The `objectID` value appears under An instance of `LUNGroup`. Use this `objectID` value to specify the `lungroupid` parameter.

`portname`: Obtain this value from the execution result of the `GetStorageArray (subtarget=Port)` command. In the execution result of this command, the `displayName` value appears under An instance of `Port`. Use this value to specify the `portname` parameter.

Command example:

```
HiCommandCLI DeleteLunGroup -o "D:\logs\9960 DeleteLunGroup.log" "serialnum=10011"
"model=HDS9960" "port=19" "Lungroupid=LUNGROUP.HDS9960.10011.19.LG00"
```

Command result:

```
RESPONSE:
(Command completed; no data returned)
```

4.3.9 DeleteWWN

`DeleteWWN` removes a WWN from a port (see Table 4.59).

A user who has only the View permission cannot execute this command. A user to whom a user-defined resource group is assigned, and who also has the Modify permission, does not have access range limitations.

Table 4.59 DeleteWWN Command Parameters

Parameter Name	Status	Description
serialnum	Required	Serial number of the port's storage array.
model	Required	Model of the port's storage array.

Parameter Name	Status	Description
port	Optional	Port number. Note: Specify either <code>port</code> or <code>portname</code> . Do not specify both parameters at the same time. This might cause an error to occur.
portname	Optional	Port name. Note: Specify either <code>port</code> or <code>portname</code> . Do not specify both parameters at the same time. This might cause an error to occur.
wwn	Required	WWN to delete from the port.

Parameter Values to be Obtained in Advance:

`serialnum` and `model`: Obtain these values from the execution result of the `GetStorageArray` command. In the execution result of this command, the `arrayType` and `serialNumber` values appear under An instance of `StorageArray`. Use the `arrayType` and `serialNumber` values to specify the `model` and `serialnum` parameters respectively.

`port` and `wwn`: Obtain these values from the execution result of the `GetStorageArray (subtarget=Port, portsubinfo=WWN)` command. Execute this command by specifying only the `model` and `serialnum` parameters, `Port` for the `subtarget` parameter, and `WWN` for the `portsubinfo` parameter. In the execution result of this command, the `portID` value appears under An instance of `Port`. Use this `portID` value to specify the `port` parameter. The WWNs for this port are displayed in the List of `(nn)` `WWN` elements, where `nn` indicates the number of WWNs. Select the target WWN from this list, and use it to specify the `wwn` parameter.

`portname`: Obtain this value from the execution result of the `GetStorageArray (subtarget=Port)` command. In the execution result of this command, the `displayName` value appears under An instance of `Port`. Use this value to specify the `portname` parameter.

Command execution example:

```
HiCommandCLI DeleteWWN -o "D:\logs\9980V DeleteWWN.log" "serialnum=10001" "model=HDS9980V"
"port=0" "wwn=11.22.33.22.44.55.33.11"
```

Command execution result:

```
RESPONSE:
(Command completed; no data returned)
```

4.3.10 DeleteWWNForHostStorageDomain

`DeleteWWNForHostStorageDomain` removes security for LUNs that are under a specified `HostStorageDomain`. The `HostStorageDomain` must already exist and be secured (see Table 4.60).

A user who has only the View permission cannot execute this command. A user to whom a user-defined resource group is assigned, and who also has the Modify permission, does not have access range limitations.

Table 4.60 DeleteWWNForHostStorageDomain Command Parameters

Parameter Name	Status	Description
<code>serialnum</code>	Required	Serial number of the storage array for the Host Storage Domain.
<code>model</code>	Required	Model of the storage array for the Host Storage Domain.
<code>port</code>	Optional	Port ID of the Host Storage Domain. Note: Specify either <code>port</code> or <code>portname</code> . Do not specify both parameters at the same time. This might cause an error to occur.
<code>portname</code>	Optional	Port name of the host storage domain. Note: Specify either <code>port</code> or <code>portname</code> . Do not specify both parameters at the same time. This might cause an error to occur.
<code>domain</code>	Required	Domain ID of the Host Storage Domain. This parameter can be specified in decimal and hexadecimal. If you specify a hexadecimal number, add the <code>0x</code> prefix. Note: The execution results are output in decimal. Note: You must specify either <code>domain</code> or <code>domainnickname</code> . Do not specify both parameters at the same time, as this might cause an error to occur.
<code>domainnickname</code>	Optional (9500V (in LUN Management mode), Universal Storage Platform V, USP, 9900V, AMS/WMS series only)	The nickname of the host storage domain. Note: You must specify either <code>domain</code> or <code>domainnickname</code> . Do not specify both parameters at the same time, as this might cause an error to occur.
<code>wwn</code>	Optional	Comma-separated list of WWN to unsecure the Host Storage Domain. To specify two or more options, separate them with commas. Note: You must specify either <code>wwn</code> or <code>wwnnickname</code> . Do not specify both parameters at the same time, as this might cause an error to occur.
<code>wwnnickname</code>	Optional (9500V (in LUN Management mode), Universal Storage Platform V, USP, 9900V, AMS/WMS)	The WWN nickname that is used to cancel security for the host storage domain. To specify two or more WWN nicknames, separate them with commas. Note: You must specify either <code>wwn</code> or <code>wwnnickname</code> . Do not specify both parameters at the same time, as this might cause an error to occur.

Parameter Name	Status	Description
	series only)	

Parameter Values to be Obtained in Advance:

`serialnum` and `model`: Obtain these values from the execution result of the `GetStorageArray` command. In the execution result of this command, the `arrayType` and `serialNumber` values appear under An instance of `StorageArray`. Use the `arrayType` and `serialNumber` values to specify the `model` and `serialnum` parameters respectively.

`domain`, `port`, and `wwn`: Obtain these values from the execution result of the `GetStorageArray (subtarget=HostStorageDomain, hsdsbinfo=WWN)` command. Execute this command by specifying only the `model` and `serialnum` parameters, `HostStorageDomain` for the `subtarget` parameter, and `WWN` for the `hsdsbinfo` parameter. In the execution result of this command, the `domainID` and `portID` values appear under An instance of `HostStorageDomain`. Use these `domainID` and `portID` values to specify the `domain` and `port` parameters respectively. The WWNs for this host storage domain are displayed in the List of (`nn`) `WWN` elements, where `nn` indicates the number of WWNs. Select the target `WWN` from this list, and use it to specify the `wwn` parameter.

`portname`: Obtain this value from the execution result of the `GetStorageArray (subtarget=Port)` command. In the execution result of this command, the `displayName` value appears under An instance of `Port`. Use this value to specify the `portname` parameter.

`domainnickname`: Obtain this value from the execution result of the `GetStorageArray (subtarget=HostStorageDomain)` command. Execute this command by specifying only the `model` and `serialnum` parameters, and `HostStorageDomain` for the `subtarget` parameter. In the execution result of this command, the `nickname` value appears under An instance of `HostStorageDomain`. Use this value to specify the `domainnickname` parameter.

`wwnnickname`: Obtain this value from the execution result of the `GetStorageArray (subtarget=HostStorageDomain, hsdsbinfo=WWN)` command. Execute this command by specifying only the `model` and `serialnum` parameters, and `HostStorageDomain` for the `subtarget` parameter and `WWN` for the `hsdsbinfo` parameter. In the execution result of this command, the `nickname` value appears under An instance of `WWN`. Use this value to specify the `wwnnickname` parameter. The WWNs for this host storage domain are displayed in the List of (`nn`) `WWN` elements, where `nn` indicates the number of WWNs. Select the target `WWN` from this list, and use it to specify the `wwnnickname` parameter.

Command execution example:

```
HiCommandCLI DeleteWWNForHostStorageDomain -o "D:\logs\9980V
DeleteWWNForHostStorageDomain.log" "serialnum=10001" "model=HDS9980V" "port=1" "domain=1"
"wwn=A.AA.AA.AA.AA.AA.AA.AA"
```

Command execution result:

```
RESPONSE:
```

```
(Command completed; no data returned)
```

4.3.11 DeleteWWNForLun

DeleteWWNForLun removes access to a WWN path (see Table 4.61).

A user who has only the View permission cannot execute this command. A user to whom a user-defined resource group is assigned, and who also has the Modify permission, does not have access range limitations.

Note: This command is available only to users of Thunder 9200 and Lightning 9900 series, and Thunder 9500V series operating in a LUN Security mode.

Table 4.61 DeleteWWNForLUN Command Parameters

Parameter Name	Status	Description
serialnum	Required	Serial number of the port's storage array.
model	Required	Model of the port's storage array.
port	Optional	Port number. Note: Specify either <code>port</code> or <code>portname</code> . Do not specify both parameters at the same time. This might cause an error to occur.
portname	Optional	Port name. Note: Specify either <code>port</code> or <code>portname</code> . Do not specify both parameters at the same time. This might cause an error to occur.
domain	Required	Domain ID of the path. This parameter can be specified in decimal and hexadecimal. If you specify a hexadecimal number, add the <code>0x</code> prefix. Note: The execution results are output in decimal.
devnum	Required	Device number used to identify the path. This parameter can be specified in decimal, and in colon-separated hexadecimal. If you specify a hexadecimal number, use the <code>xx:yy</code> format, where <code>xx</code> is the CU number, and <code>yy</code> is the LDEV number. Note: The execution results are output in decimal.
wwn	Required	Comma-separated list of WWNs to remove the path security.

Parameter Values to be Obtained in Advance:

`serialnum` and `model`: Obtain these values from the execution result of the `GetStorageArray` command. In the execution result of this command, the `arrayType` and `serialNumber` values appear under An instance of `StorageArray`. Use the `arrayType` and `serialNumber` values to specify the `model` and `serialnum` parameters respectively.

`devnum`, `port`, `domain`, and `wwn`: Obtain these values from the execution result of the `GetStorageArray (subtarget=Path, pathsubinfo=WWN)` command. Execute this command by specifying only the `model` and `serialnum` parameters, `Path` for the `subtarget` parameter, and `WWN` for the `pathsubinfo` parameter. In the execution result of this command, the `devNum`, `portID`, and `domainID` values appear under An instance of `Path`. Use these `devNum`, `portID`, and `domainID` values to specify the `devnum`, `port`, and `domain` parameters. The WWNs for this LUN are displayed in the List of (nn) `WWN` elements, where *nn* indicates the number of WWNs. Select the target `WWN` from this list, and use it to specify the `wwn` parameter.

`portname`: Obtain this value from the execution result of the `GetStorageArray (subtarget=Port)` command. In the execution result of this command, the `displayName` value appears under An instance of `Port`. Use this value to specify the `portname` parameter.

Command execution example:

```
HiCommandCLI DeleteWwnForLun -o "D:\logs\9200 AddWwnForLun.log" "serialnum=10001"
"model=HDS9200" "port=16" "devnum=16" "domain=0" "wwn=11.55.77.99.33.00.22.66"
```

Command execution result:

```
RESPONSE:
(Command completed; no data returned)
```

4.3.12 DeleteWWNForLunGroup

`DeleteWWNForLunGroup` removes one or more `WWN(s)` from a LUN group (9900 subsystem only) (see Table 4.62).

A user who has only the `View` permission cannot execute this command. A user to whom a user-defined resource group is assigned, and who also has the `Modify` permission, does not have access range limitations.

Note: `DeleteWWNForLunGroup` is supported by Lightning 9900 storage subsystems only.

Table 4.62 DeleteWWNForLunGroup Command Parameters

Parameter Name	Status	Description
serialnum	Required	Serial number of the storage array in which the LUN Group exists
model	Required	Model of the storage array in which the LUN Group exists.
port	Optional	Port number of the LUN Group. Note: Specify either <code>port</code> or <code>portname</code> . Do not specify both parameters at the same time. This might cause an error to occur.
portname	Optional	Port name of the LUN group. Note: Specify either <code>port</code> or <code>portname</code> . Do not specify both parameters at the same time. This might cause an error to occur.
objectid	Required	Object ID of the LUN Group.
wwn	Required	Comma-separated list of WWNs that exist in the LUN group.

Parameter Values to be Obtained in Advance:

`serialnum` and `model`: Obtain these values from the execution result of the `GetStorageArray` command. In the execution result of this command, the `arrayType` and `serialNumber` values appear under An instance of `StorageArray`. Use the `arrayType` and `serialNumber` values to specify the `model` and `serialnum` parameters respectively.

`port` and `objectid`: Obtain these values from the execution result of the `GetStorageArray (subtarget=Port, portsubinfo=WWN, LUNGroup)` command. Execute this command by specifying only the `model` and `serialnum` parameters, `Port` for the `subtarget` parameter, and `WWN, LUNGroup` for the `portsubinfo` parameter. In the execution result of this command, the `portID` value appears under An instance of `Port`. Use this `portID` to specify the `port` parameter. The `objectID` value appears under An instance of `LUNGroup`. Use this `objectID` value to specify the `objectid` parameter.

`portname`: Obtain this value from the execution result of the `GetStorageArray (subtarget=Port)` command. In the execution result of this command, the `displayName` value appears under An instance of `Port`. Use this value to specify the `portname` parameter.

`wwn`: The WWNs for this LUN group are displayed in the List of (nn) WWN elements, where `nn` indicates the number of WWNs. Select the target WWN from this list and use it to specify the `wwn` parameter.

Command execution example:

```
HiCommandCLI DeleteWWNForLunGroup -o "D:\logs\9960 DeleteWWNForLUNGroup.log"
"serialnum=10001" "model=HDS9960" "port=19" "objectid=LUNGROUP.HDS9960.10001.19.hitachi"
"wwn=11.55.77.99.33.00.22.66,AA.AA.AA.AA.AA.AA.AA.AA"
```

Command execution result:

```
RESPONSE:
(Command completed; no data returned)
```

4.3.13 DeleteWWNGroup

DeleteWWNGroup removes a WWN Group from a port (9900 subsystem only) (see Table 4.63). The corresponding WWNs are not removed from the port.

A user who has only the View permission cannot execute this command. A user to whom a user-defined resource group is assigned, and who also has the Modify permission, does not have access range limitations.

Note: DeleteWWNGroup is supported by Lightning 9900 storage subsystems only.

Table 4.63 DeleteWWNGroup Command Parameters

Parameter Name	Status	Description
serialnum	Required	Serial number of the port's storage array.
model	Required	Model of the port's storage array.
port	Optional	Port number. Note: Specify either <code>port</code> or <code>portname</code> . Do not specify both parameters at the same time. This might cause an error to occur.
portname	Optional	Port name. Note: Specify either <code>port</code> or <code>portname</code> . Do not specify both parameters at the same time. This might cause an error to occur.
wwngroup	Required	Nickname of the WWN group to delete from the port.

Parameter Values to be Obtained in Advance:

`serialnum` and `model`: Obtain these values from the execution result of the `GetStorageArray` command. In the execution result of this command, the `arrayType` and `serialNumber` values appear under An instance of `StorageArray`. Use the `arrayType` and `serialNumber` values to specify the `model` and `serialnum` parameters respectively.

`port` and `wwngroup`: Obtain these values from the execution result of the `GetStorageArray (subtarget=Port, portsubinfo=WWNGroup)` command. Execute this command by specifying only the `model` and `serialnum` parameters, `Port` for the `subtarget` parameter, and `WWNGroup` for the `portsubinfo` parameter. In the execution result of this command:

- The `portID` value appears in `Port`. Use this `portID` value to specify the `port` parameter.
- The `nickname` value appears under in `WWNGroup`. Use this `nickname` value to specify the `wwngroup` parameter.

`portname`: Obtain this value from the execution result of the `GetStorageArray (subtarget=Port)` command. In the execution result of this command, the `displayName` value appears under An instance of `Port`. Use this value to specify the `portname` parameter.

Command example:

```
HiCommandCLI DeleteWwnGroup -o "D:\logs\9960 DeleteWwnGroup.log" "serialnum=10011"
"model=HDS9960" "port=19" "wwngroup=WG"
```

Command result:

```
RESPONSE:
(Command completed; no data returned)
```

4.3.14 ModifyLunGroup

`ModifyLunGroup` modifies a LUN Group assigned to a port of the target storage array (9900 subsystem only) and adds Paths in the LUN Group (see Table 4.64).

A user who has only the View permission cannot execute this command. A user to whom a user-defined resource group is assigned, and who also has the Modify permission, does not have access range limitations.

Note: `ModifyLunGroup` is supported by Lightning 9900 storage subsystems only.

Table 4.64 `ModifyLunGroup` Command Parameters

Parameter Name	Status	Description
serialnum	Required	Serial number of the storage array in which the LUN Group exists
model	Required	Model of the storage array in which the LUN Group exists.
port	Optional	Port number of the LUN Group. Note: Specify either <code>port</code> or <code>portname</code> . Do not specify both parameters at the same time. This might cause an error to occur.
portname	Optional	Port name of the LUN group. Note: Specify either <code>port</code> or <code>portname</code> . Do not specify both parameters at the same time. This might cause an error to occur.
objectid	Required	Object ID of the LUN Group.
groupelements	Required	Comma-separated list of one or more Object IDs of the paths to be added to the LUN group.
nickname	Optional	Unique nickname of the LUN group You can use the following characters: A-Z a-z 0-9 ! # \$ % & ' () + - . = @ [] ^ _ ` { } ~ The number of characters that can be used for a nickname is 1-8 bytes.
Name	Optional	The name given to the LUN Group

Parameter Values to be Obtained in Advance:

`serialnum` and `model`: Obtain these values from the execution result of the `GetStorageArray` command. In the execution result of this command, the `arrayType` and `serialNumber` values appear under An instance of `StorageArray`. Use the `arrayType` and `serialNumber` values to specify the `model` and `serialnum` parameters respectively.

port: Obtain this value from the execution result of the `GetStorageArray` (subtarget=Port) command. Execute this command by specifying only the `model` and `serialnum` parameters, and `Port` for the `subtarget` parameter. In the execution result of this command, the `portID` value appears under An instance of `Port`. Use this `portID` value to specify the `port` parameter.

portname: Obtain this value from the execution result of the `GetStorageArray` (subtarget=Port) command. In the execution result of this command, the `displayName` value appears under An instance of `Port`. Use this value to specify the `portname` parameter.

objectid: Obtain this value from the execution result of the `GetStorageArray` (subtarget=Port, portsubinfo=LUNGroup) command. Execute this command by specifying only the `model` and `serialnum` parameters, `Port` for the `subtarget` parameter, and `LUNGroup` for the `portsubinfo` parameter. In the execution result of this command, the `objectID` value appears under An instance of `LUNGroup`. Use this `objectID` value to specify the `objectid` parameter.

groupelements: Obtain this value from the execution result of the `GetStorageArray` (subtarget=Port, portsubinfo=Path) command. Execute this command by specifying only the `model` and `serialnum` parameters, `Port` for the `subtarget` parameter, and `Path` for the `portsubinfo` parameter. In the execution result of this command, the `objectID` values appear under An instance of `Path` as a comma-separated list. Use these `objectID` values to specify the `objectID` parameter.

Command execution example:

```
HiCommandCLI ModifyLunGroup -o "D:\logs\9960 ModifyLunGroup.log" "serialnum=10001"
"model=HDS9960" "port=19"
"groupelements=PATH.HDS9960.10001.16.2.0,PATH.HDS9960.10001.16.2.1"
"objectid=LUNGROUP.HDS9960.10001.19.hitachi" "nickname=hitachi"
```

Command execution result:

```
RESPONSE:
An instance of StorageArray
.
. (Attributes of StorageArray are omitted here)
.
List of 1 Port elements:
An instance of Port
.
. (Attributes of Port are omitted here)
.
List of 1 LUNGroup elements:
An instance of LUNGroup
objectID= LUNGROUP.HDS9960.10001.0.19.hitachi
nickname=hitachi
List of 2 Path elements:
An instance of Path
objectID=PATH.HDS9960.10001.16.2.0
devNum=0
portID=19
domainID=16
scsiID=15
LUN=8
wwnSecurityValidity=true
.
. (repeated for other Path instances)
.
```

4.3.15 ModifyWWNGroup

`ModifyWWNGroup` modifies a WWN Group assigned to a target storage array Port (9900 subsystem only) and adds two or more WWN(s) to the WWN Group (see Table 4.65).

A maximum of 127 WWN groups can be set for a port. Only the existing WWNs already used for the port can be changed. You cannot change a WWN that belongs to a different WWN group, or to a different LUN or LUN group.

A user who has only the View permission cannot execute this command. A user to whom a user-defined resource group is assigned, and who also has the Modify permission, does not have access range limitations.

Note: `ModifyWWNGroup` is supported by Lightning 9900 storage subsystems only.

Table 4.65 `ModifyWWNGroup` Command Parameters

Parameter Name	Status	Description
<code>serialnum</code>	Required	Serial number of the storage array in which the WWN Group exists.
<code>model</code>	Required	Model of the storage array in which the WWN Group exists.
<code>port</code>	Optional	Port number of the WWN Group. Note: Specify either <code>port</code> or <code>portname</code> . Do not specify both parameters at the same time. This might cause an error to occur.
<code>portname</code>	Optional	Port name of the WWN group. Note: Specify either <code>port</code> or <code>portname</code> . Do not specify both parameters at the same time. This might cause an error to occur.
<code>objectid</code>	Required	Object ID of the WWN group
<code>Wwn</code>	Required	Comma-separated list of WWNs to be added to the WWN group.
<code>Nickname</code>	Optional	Unique nickname of the WWN group. You can use the following characters: <code>A-Z a-z 0-9 ! # \$ % & ' () + - . = @ [] ^ _ ` { } ~</code> The number of characters that can be used for a nickname is 1-8 bytes.

Parameter Values to be Obtained in Advance:

`serialnum` and `model`: Obtain these values from the execution result of the `GetStorageArray` command. In the execution result of this command, the `arrayType` and `serialNumber` values appear under An instance of `StorageArray`. Use the `arrayType` and `serialNumber` values to specify the `model` and `serialnum` parameters respectively.

`port`: Obtain this value from the execution result of the `GetStorageArray (subtarget=Port)` command. Execute this command by specifying only the `model` and `serialnum` parameters, and `Port` for the `subtarget` parameter. In the execution result of this command, the `portID` value appears under An instance of `Port`. Use this `portID` value to specify the `port` parameter.

portname: Obtain this value from the execution result of the `GetStorageArray` (`subtarget=Port`) command. In the execution result of this command, the `displayName` value appears under An instance of `Port`. Use this value to specify the `portname` parameter.

objectid: Obtain this value from the execution result of the `GetStorageArray` (`subtarget=Port`, `portsubinfo=WWNGroup`) command. Execute this command by specifying only the `model` and `serialnum` parameters, `Port` for the `subtarget` parameter, and `WWNGroup` for the `portsubinfo` parameter. In the execution result of this command, the `objectID` value appears under An instance of `WWNGroup`. Use this `objectID` value to specify the `objectid` parameter.

wwn: Obtain this value from the execution result of the `GetStorageArray` (`subtarget=Port`, `portsubinfo=WWN`) command. Execute this command by specifying only the `model` and `serialnum` parameters, `Port` for the `subtarget` parameter, and `WWN` for the `portsubinfo` parameter. In the execution result of this command, the `wwn` value appears under An instance of `WWN`. Use this `wwn` value to specify the `wwn` parameter. An alternative method would be to create a new `WWN`.

Command execution example:

```
HiCommandCLI ModifyWWNGroup -o "D:\logs\9960 ModifyWWNGroup.log" "serialnum=10001"
"model=HDS9960" "port=19" "objectid=WWNGROUP.HDS9960.10001.19.hitachi"
"wwn=AA.AA.AA.AA.AA.AA.AA.AA, BB.BB.BB.BB.BB.BB.BB.BB" "nickname=hitachi"
```

Command execution result:

```
RESPONSE:
An instance of StorageArray
.
. (Attributes of StorageArray are omitted here)
.
List of 1 Port elements:
An instance of Port
.
. (Attributes of Port are omitted here)
.
List of 1 WWNGroup elements:
An instance of WWNGroup
objectID=WWNGROUP.HDS9960.10001.0.19.hitachi
nickname=hitachi
List of 2 WWN elements:
An instance of WWN
WWN=AA.AA.AA.AA.AA.AA.AA.AA
nickname=Jane
An instance of WWN
WWN=BB.BB.BB.BB.BB.BB.BB.BB
nickname=Jone
```

4.4 Host Management Commands

The host management commands manage host information and usage statuses for host storage subsystems. `HostInfo` is the information about the storage that is used by hosts. Although typically HiCommand Device Manager agents produce `HostInfo` records, they can be manually created by these commands. Some commands require a host's server-generated object ID.

For further information on host operations, please refer to the *HiCommand Device Manager Web Client User's Guide*.

4.4.1 AddHost

`AddHost` adds information about a host server to the Device Manager server (see Table 4.66).

A user who has only the View permission cannot execute this command. A user to whom user-defined resource groups are assigned, and who also has the Modify permission, does not have access range limitations.

Table 4.66 AddHost Command Parameters

Parameter Name	Status	Description
hostname	Required	Name of the new host. The number of characters that can be used for a name is 1-64 bytes. Note: Spaces at the beginning or end of a name are not registered. Note: When Web Client is also used, follow the Web Client's specification rule.
Wwnlist	Optional	Comma-separated list of WWNs.
ipaddress	Optional	IP address of the new host.
hosttype	Optional	Value indicating the host type. When you register a mainframe host, always specify 2. For details about registering a mainframe host, see section 4.9

Parameter Values to be Obtained in Advance:

None

Command example:

```
HiCommandCLI AddHost -o "D:\logs\AddHost.log" "hostname=toro2" " "
wnnlist=AA.CC.CC.CC.CC.CC.CC.CC,00.CC.CC.CC.CC.CC.CC.CC "ipaddress=192.168.32.63"
```

Command result:

```
RESPONSE:
An instance of Host
  objectID=HOST.279
  name=hit
  ipAddress=192.168.32.63
  capacityInKB=0
  hostType=-1
```

4.4.2 AddHostInfo

`AddHostInfo` adds host-based information on a LUN (information on storage used by hosts (see Table 4.67).

A user who has only the View permission cannot execute this command. A user to whom a user-defined resource group is assigned, and who also has the Modify permission, can specify `HostInfo` for an operational host.

Table 4.67 AddHostInfo Command Parameters

Parameter Name	Status	Description
Serialnum	Required	Serial number of the path's storage array.
Model	Required	Model of the path's storage array.
Hostname	Required	Name of the <code>HostInfo</code> . The number of characters that can be used for a name is 1-50 bytes.
Ipaddress	Optional	IP address of the host.
mountpoint	Optional	Mount point on the host file system corresponding to the path.
Port	Optional	Port that the path is on. Note: Specify either <code>port</code> or <code>portname</code> . Do not specify both parameters at the same time. This might cause an error to occur.
portname	Optional	Port name that the path is on. Note: Specify either <code>port</code> or <code>portname</code> . Do not specify both parameters at the same time. This might cause an error to occur.
Domain	Required	Domain ID of the path. This parameter can be specified in decimal and hexadecimal. If you specify a hexadecimal number, add the <code>0x</code> prefix. Note: The execution results are output in decimal.
Devnum	Required	Device number of the path. This parameter can be specified in decimal, and in colon-separated hexadecimal. If you specify a hexadecimal number, for TagmaStore USP, Lightning 9900V, and Lightning 9900, use the <code>xx:yy</code> format, where <code>xx</code> is the CU number, and <code>yy</code> is the LDEV number. For Universal Storage Platform V, use the <code>ww:xx:yy</code> format, where <code>ww</code> is the LDKC number, <code>xx</code> is the CU number, and <code>yy</code> is the LDEV number. <code>ww</code> is optional. If you omit <code>ww</code> , the LDKC number is regarded as 0. Note: The execution results are output in decimal.
Osscibus	Required	Host SCSI bus number.
Osscsiid	Required	Virtualized host SCSI ID.
Oslun	Required	Virtualized host LUN.
Portwwn	Optional	Port WWN on the host bus adapter.
Filetype	Optional	Type of the File System.
Filename	Optional	Name of the file system.
Size	Optional	LUN size in MB.
percentused	Optional	Percent of the LUN in use.

Parameter Values to be Obtained in Advance:

`serialnum` and `model`: Obtain these values from the execution result of the `GetStorageArray` command. In the execution result of this command, the `arrayType` and `serialNumber` values appear in a `StorageArray`. Use the `arrayType` and `serialNumber` values to specify the `model` and `serialnum` parameters respectively.

`port`, `domain`, and `devnum`: Obtain these values from the execution result of the `GetStorageArray (subtarget=Path)` command. Execute the `GetStorageArray` command by specifying only the `model` and `serialnum` parameters, and `Path` for the `subtarget` parameter. In the execution result of this command, the `port`, `domainID` and `devNum` values appear in a `Path`. Use these `port`, `domainID` and `devNum` values to specify the `port`, `domain` and `devnum` parameters respectively.

`portname`: Obtain this value from the execution result of the `GetStorageArray (subtarget=Port)` command. In the execution result of this command, the `displayName` value appears under an instance of `Port`. Use this value to specify the `portname` parameter.

Command Execution Example:

In this example, the `AddHostInfo` command specifies the following information for the host that connects to a LUN (device number: 2, port number: 7, domain ID: 0) in a storage subsystem (serial number: 10001, model: HDS9980V):

- `HostInfo` record name: `MY_HOSTINFO_HDS9980V`
- Host IP address: `172.16.64.159`
- Mount point: `C:`
- File system type: `NTFS`
- File name: `C:`
- SCSI bus number: `0`
- Host LUN: `1`
- HBA WWN: `11.22.33.44.55.66.77.88`
- LUN size: `10MB`
- LUN in use: `10%`

```
HiCommandCLI AddHostInfo -o "D:\logs\9980V AddHostInfo.log" serialnum=10001 model=HDS9980V
hostname=MY_HOSTINFO_HDS9980V ipaddress=172.16.64.159 mountpoint=C: port=7 domain=0
devnum=2 osscsibus=0 osscsiid=15 oslun=1 portwwn=11.22.33.44.55.66.77.88 filetype=NTFS
filename=C: size=10 percentused=10
```

Command execution result:

```
RESPONSE:
An instance of HostInfo
  objectID=HOSTINFO.MY_HOSTINFO_HDS9980V.0.15.1
  name=MY_HOSTINFO_HDS9980V
  serialNumber=10001
  arrayType=HDS9980V
  ipAddress=172.16.64.159
  mountPoint=C:
  portID=7
  domainID=0
  scsiID=15
  lun=2 devNum=2
  osScsiBus=0
  osScsiID=15
  osLun=1
  portWWN=11.22.33.44.55.66.77.88
  fileSystemType=NTFS
  fileName=C:
  sizeInMB=10
  percentUsed=10
  lastUpdated=1039003476
```

4.4.3 AddHostRefresh

AddHostRefresh refreshes the information about the hosts that Device Manager manages, which is obtained from the HiCommand Device Manager agent (see Table 4.68).

A user who has only the View permission cannot execute this command. A user to whom user-defined resource groups are assigned, and who also has the Modify permission, can specify the allowed hosts only. If a host that is not allowed is specified, an error occurs.

Note: If the copy pair management host is unable to recognize a copy pair that was created on a host that is not the copy pair management host, the copy status of that copy pair cannot be refreshed even if the AddHostRefresh command is executed. In such a case, use the AddStorageArray command to refresh the storage subsystem containing the copy pair whose status you want to update.

Table 4.68 AddHostRefresh Command Parameter

Parameter Name	Status	Description
objectid	Optional	Specify the object ID of the target host. If HiCommand Device Manager Agent 2.3 version 2.3 or earlier version is installed, an error occurs. Note: You must specify either objectid or hostname. Do not specify both parameters at the same time, as this might cause an error to occur.
hostname	Optional	Name of the target host. Note: You must specify either objectid or hostname. Do not specify both parameters at the same time, as this might cause an error to occur.

Parameter Values to be Obtained in Advance:

`objectid`: Obtain this value from the execution result of the `GetHost` command. In the execution result of this command, the `objectID` value appears under `An instance of Host`. Use this `objectID` value to specify the `objectid` parameter.

`hostname`: Obtain this value from the execution result of the `GetHost` command. In the execution result of this command, the `name` value appears under `An instance of Host`. Use this `name` value to specify the `hostname` parameter.

Command Example:

In this example, the `AddHostRefresh` command obtains the latest information about the host where the object ID is `HOST.5`.

```
HiCommandCLI AddHostRefresh -o "D:\logs\AddHostRefresh.log" "objectid=HOST.5"
```

Command result:

```
RESPONSE:
An instance of Host
  objectID=Host.5
  name=rise
  ipAddress=192.168.32.164
  capacityInKB=0
  hostType=-1
```

4.4.4 DeleteHost

`DeleteHost` deletes information about a host server from the Device Manager server (see Table 4.69).

Note: `DeleteHost` does not delete the host information from the external port.

A user who has only the View permission cannot execute this command. A user to whom user-defined resource groups are assigned, and who also has the Modify permission, can specify the allowed hosts only. If a host that is not allowed is specified, an error occurs.

Table 4.69 DeleteHost Command Parameters

Parameter Name	Status	Description
<code>objectid</code>	Optional	Object ID of the host to remove. Note: You must specify either <code>objectid</code> or <code>hostname</code> . Do not specify both parameters at the same time, as this might cause an error to occur.
<code>hostname</code>	Optional	Name of the host to remove. Note: You must specify either <code>objectid</code> or <code>hostname</code> . Do not specify both parameters at the same time, as this might cause an error to occur.

Parameter Values to be Obtained in Advance:

objectid: Obtain this value from the execution result of the `GetHost` command. In the execution result of this command, the `objectID` value appears under `An instance of Host`. Use this `objectID` value to specify the `objectid` parameter.

hostname: Obtain this value from the execution result of the `GetHost` command. In the execution result of this command, the `name` value appears under `An instance of Host`. Use this `name` value to specify the `hostname` parameter.

Command example:

```
HiCommandCLI DeleteHost -o "D:\logs\ DeleteHost.log" "objectID=HOST.1"
```

Command result:

```
RESPONSE:  
(Command completed; no data returned)
```

4.4.5 DeleteHostInfo

`DeleteHostInfo` deletes a `HostInfo` instance from the Device Manager server (see Table 4.70).

A user who has only the View permission cannot execute this command. A user to whom a user-defined resource group is assigned, and who also has the Modify permission, can specify `HostInfo` for an allowed host.

Table 4.70 DeleteHostInfo Command Parameters

Parameter Name	Status	Description
<code>objectid</code>	Required	Object ID of the <code>HostInfo</code> record to remove.

Parameter Values to be Obtained in Advance:

objectid: Obtain this value from the execution result of the `GetHostInfo` command. In the execution result of this command, the `objectID` value appears under `An instance of HostInfo`. Use this `objectID` value to specify the `objectid` parameter.

Command example:

```
HiCommandCLI DeleteHostInfo -o "D:\logs\9980V DeleteHostInfo.log"  
"objectid=HOSTINFO.MY_HOSTINFO_HDS9980V.0.15.1"
```

Command result:

```
RESPONSE:  
(Command completed; no data returned)
```

4.4.6 GetHost

`GetHost` returns the information about one or all host servers (see Table 4.71).

A user to whom a user-defined resource group is assigned can specify the allowed hosts only. If a host that is not allowed is specified, an error occurs.

Table 4.71 GetHost Command Parameters

Parameter Name	Status	Description
<code>objectid</code>	Optional	Object ID of the host to return. Omit this parameter to include all hosts. Note: Do not specify the <code>hostname</code> and <code>hostfilter</code> parameter at the same time, as this might cause an error to occur.
<code>hostname</code>	Optional	Name of the host to obtain information about. Omit this parameter to include all hosts. Note: Do not specify the <code>objectid</code> and <code>hostfilter</code> parameter at the same time, as this might cause an error to occur.
<code>configfileid</code>	Optional	Object ID of the TrueCopy configuration definition file in the host. If you omit this parameter, the command acquires information about all TrueCopy configuration definition files contained in the host. If you specify this parameter, you must also specify the <code>objectid</code> parameter.
<code>replicationgroupid</code>	Optional	ID of the copy group associated with the host (<code>ReplicationGroup</code>). If you specify this parameter, you must specify the <code>objectid</code> and <code>configfileid</code> parameters.
<code>hostfilter</code>	Optional	Type of the host that acquires information. Omit this parameter when all hosts are the target. To specify two or more values, separate them with semicolons (;). You can specify the following values: NORMAL, EXT_PORT, and MAINFRAME Note: Do not specify the <code>objectid</code> and <code>hostname</code> parameters at the same time, as this might cause an error to occur.

Parameter Values to be Obtained in Advance:

`objectid`, `hostname`, `configfileid`, and `replicationgroupid`: Obtain these values from the execution result of the `GetHost` command without specifying any parameters. Specify the value of `objectID` that is displayed as An instance of Host in the `objectid` parameter, the value of `name` that is displayed as An instance of Host in the `hostname` parameter, the value of `objectID` that is displayed as An instance of ConfigFile in the `configfileid` parameter, and the value of `replicationGroupID` that is displayed as An instance of ReplicationGroup in the `replicationgroupid` parameter.

Note: If you do not know the object ID of the required host, you can obtain information about all the hosts by executing the `GetHost` command without specifying this parameter.

Command Execution Example 1:

This example obtains the pair information defined in the CCI configuration definition file whose `configFileID` is `CONFIGFILE.1.11` in the host whose `objectID` is `HOST.1`.

```
HiCommandCLI GetHost -o "D:\logs\GetHost.log" "objectid=HOST.1"  
configFileID=CONFIGFILE.1.11
```

Command execution result 1:

```
RESPONSE:  
An instance of Host  
  objectID=HOST.1  
  name=toro2  
  ipAddress=192.168.32.63  
  capacityInKB=0  
  hostType=-1  
List of 2 WWN elements:  
  An instance of WWN  
    WWN=00.99.66.33.88.55.22.77  
    nickname=Jane  
  An instance of WWN  
    WWN=11.44.77.22.55.88.33.66  
    nickname=Jone  
List of 1 ConfigFile elements:  
  An instance of ConfigFile  
    objectID=CONFIGFILE.1.11  
    instanceNumber=11  
    controlledBy=Device Manager  
    portNumber=50000  
    valid=1  
List of 1 ReplicationGroup elements:  
  An instance of ReplicationGroup  
    objectID=REPGROUP.3  
    replicationGroupID=3  
    groupName=HCMD_CG0003  
    pvolHostID=1  
    pvolInstanceNumber=11  
    pvolPortNumber=50,000  
    svolHostID=2  
    svolInstanceNumber=12  
    svolPortNumber=50,001  
    replicationFunction=ShadowImage  
    copyTrackSize=15  
List of 2 ReplicationInfo elements:  
  An instance of ReplicationInfo  
    objectID=REPINFO.65010001.11.65010001.12  
    pairName=HCMD_CP0001  
    pvolSerialNumber=65010001  
    pvolArrayType=HDS9570V  
    pvolDevNum=11  
    pvolObjectID=LU.HDS9570V.65010001.11  
    pvolPoolID=-1  
    svolSerialNumber=65010001  
    svolArrayType=HDS9570V  
    svolDevNum=12  
    svolObjectID=LU.HDS9570V.65010001.12  
    svolPoolID=-1  
    replicationFunction=ShadowImage  
    status=8  
    muNumber=0  
    copyTrackSize=15  
    splitTime=-1  
  An instance of ReplicationInfo  
    objectID=REPINFO.65010001.1012.65010001.102  
    pairName=HCMD_CP0002  
    pvolSerialNumber=65010001  
    pvolArrayType=HDS9570V
```

```

pvolDevNum=101
pvolObjectID=LU.HDS9570V.65010001.101
pvolPoolID=-1
svolArrayType=HDS9570V
svolSerialNumber=65010001
svolDevNum=102
svolObjectID=LU.HDS9570V.65010001.102
svolPoolID=-1
replicationFunction=ShadowImage
status=1
muNumber=0
copyTrackSize=15
splitTime=-1

```

Command execution example 2:

In this example, specify `MAINFRAME` in the `hostfilter` parameter to obtain only the mainframe host information.

```
HiCommandCLI GetHost hostfilter=MAINFRAME -o "D:\logs\GetHost.log"
```

Command execution result 2:

```

RESPONSE:
An instance of Host
  objectID=HOST.11
  name=testmf
  capacityInKB=0
  hostType=2

```

```

An instance of Host
  objectID=HOST.12
  name=testmf2
  capacityInKB=0
  hostType=2

```

4.4.7 GetHostInfo

`GetHostInfo` returns either a selected `HostInfo` record or all the `HostInfo` on the Device Manager server (see Table 4.72).

A user to whom a user-defined resource group is assigned can obtain information about hosts that the user is permitted to access. The names of hosts that the user is not permitted to access are displayed as `n/a`.

Table 4.72 GetHostInfo Command Parameters

Parameter Name	Status	Description
objectid	Optional	Object ID of the <code>HostInfo</code> record to retrieve. Omit this parameter to obtain all <code>HostInfo</code> records.

Parameter Values to be Obtained in Advance:

None

Note: If you do not know the object ID of the required `HostInfo` record, you can obtain information about all the `HostInfo` records by executing the `GetHostInfo` command without specifying this parameter.

Command execution example 1:

```
HiCommandCLI GetHostInfo -o "D:\logs\9980V GetHostInfo.log"  
"objectid=HOSTINFO.HIS_HOSTINFO_HDS9980V.0.15.1"
```

Command execution result 1:

```
RESPONSE:  
An instance of HostInfo  
  objectID=HOSTINFO.HIS_HOSTINFO_HDS9980V.0.15.1  
  name=HIS_HOSTINFO_HDS9980V  
  serialNumber=10001  
  arrayType=HDS9980V  
  ipAddress=172.16.64.159  
  mountPoint=C:  
  portID=7  
  domainID=0  
  scsiID=15  
  lun=3  
  devNum=3  
  osScsiBus=0  
  osScsiID=15  
  osLun=1  
  portWWN=11.22.33.44.55.66.77.88  
  fileType=NTFS  
  fileName=C:  
  sizeInMB=10  
  percentUsed=10  
  lastUpdated=1039003852
```

Command execution example 2:

```
HiCommandCLI GetHostInfo -o "D:\ logs\9980V GetHostInfo.log"
```

Command execution result 2:

```
RESPONSE:  
An instance of HostInfo  
  objectID=HOSTINFO.HIS_HOSTINFO_HDS9980V.0.15.1  
  name=HIS_HOSTINFO_HDS9980V  
  serialNumber=10001  
  arrayType=HDS9980V  
  ipAddress=172.16.64.159  
  mountPoint=C:  
  portID=7  
  domainID=0  
  scsiID=15  
  lun=3 devNum=3  
  osScsiBus=0  
  osScsiID=15  
  osLun=1  
  portWWN=11.22.33.44.55.66.77.88  
  fileType=NTFS  
  fileName=C:  
  sizeInMB=10  
  percentUsed=10  
  lastUpdated=1039003852  
.  
.  
(repeated for other HostInfo instances)
```

.

4.4.8 ModifyHost

`ModifyHost` modifies information about a host server (see Table 4.73).

Note: `ModifyHost` cannot change WWN information for the external port of a host.

A user who has only the View permission cannot execute this command. A user to whom user-defined resource groups are assigned, and who also has the Modify permission, can specify the allowed hosts only. If a host that is not allowed is specified, an error occurs.

Table 4.73 `ModifyHost` Command Parameters

Parameter Name	Status	Description
<code>objectid</code>	Optional	Object ID of the host to modify. Note: You must specify <code>objectid</code> or <code>hostname</code> .
<code>hostname</code>	Optional	Name of the host to modify. Omit this parameter if you do not want to change the name. The number of characters that can be used for a name is 1-64 bytes. The value specified for this parameter differs depending on whether <code>objectid</code> is specified. When <code>objectid</code> is specified: Specify the new name of the host. When <code>objectid</code> is not specified: Specify the host name to manipulate Note: Spaces at the beginning or end of a name are not registered. Note: When Web Client is also used, follow the Web Client's specification rule. Note: You must specify <code>objectid</code> or <code>hostname</code> .
<code>newhostname</code>	Optional	New name of the host. Note: If you specify this parameter, you must also specify <code>objectid</code> or <code>hostname</code> .
<code>Wwnlist</code>	Optional	Comma-separated list of WWNs to replace existing WWNs. If you omit this parameter, all WWNs in the host will be deleted.
<code>lppaddress</code>	Optional	New IP address for the existing host. Omit this parameter if you do not want to change the host IP address.

Parameter Values to be Obtained in Advance:

`objectid`: Obtain this value from the execution result of the `GetHost` command. In the execution result of this command, the `objectID` value appears under An instance of Host. Use this `objectID` value to specify the `objectid` parameter.

`hostname`: Obtain this value from the execution result of the `GetHost` command. In the execution result of this command, the `name` value appears under An instance of Host. Use this `name` value to specify the `hostname` parameter.

Command execution example:

```
HiCommandCLI ModifyHost -o "D:\logs\ModifyHost.log" "objectid=HOST.3" "hostname=snow"
"wwnlist=12.34.56.78.90.AB.CD.EF,01.23.45.67.89.AB.CD.EF" "ipaddress=172.18.32.9"
```

Command execution result:

```
RESPONSE:
An instance of Host
  objectID=HOST.3
  name=snow
  ipAddress=172.18.32.9
  capacityInKB=0
  hostType=-1
List of 2 WWN elements:
  An instance of WWN
    WWN=12.34.56.78.90.AB.CD.EF
  An instance of WWN
    WWN=01.23.45.67.89.AB.CD.EF
```

4.4.9 ModifyHostInfo

ModifyHostInfo modifies a HostInfo record in the Device Manager server (see Table 4.74).

A user who has only the View permission cannot execute this command. A user to whom a user-defined resource group is assigned, and who also has the Modify permission, can specify HostInfo for an allowed host.

Table 4.74 ModifyHostInfo Command Parameters

Parameter Name	Status	Description
objectid	Required	Object ID of the HostInfo record to modify.
serialnum	Optional	New serial number of the path's storage array. Omit this when no change is required.
model	Optional	New model of the path's storage array. Omit this when no change is required.
hostname	Optional	New name of the HostInfo. Omit this when no change is required. The number of characters that can be used for a name is 1-50 bytes.
ipaddress	Optional	New IP address of the host. Omit this when no change is required.
mountpoint	Optional	New mount point on the host file system corresponding to the path. Omit this when no change is required.
port	Optional	New port on the path. Omit this when no change is required. Note: When this is changed, port or portname must be specified. Do not specify both parameters at the same time. This might cause an error to occur.
portname	Optional	New port name of the path. Note: When this is changed, port or portname must be specified. Do not specify both parameters at the same time. This might cause an error to occur.

Parameter Name	Status	Description
domain	Optional	New domain ID of the path. Omit this when no change is required. This parameter can be specified in decimal and hexadecimal. If you specify a hexadecimal number, add the 0x prefix. Note: The execution results are output in decimal.
devnum	Optional	New device number of the path. Omit this when no change is required. This parameter can be specified in decimal, and in colon-separated hexadecimal. If you specify a hexadecimal number, for TagmaStore USP, Lightning 9900V, and Lightning 9900, use the xx:yy format, where xx is the CU number, and yy is the LDEV number. For Universal Storage Platform V, use the ww:xx:yy format, where ww is the LDKC number, xx is the CU number, and yy is the LDEV number. ww is optional. If you omit ww, the LDKC number is regarded as 0. Note: The execution results are output in decimal.
portwwn	Optional	New Port WWN on the host bus adapter. Omit this when no change is required.
filetype	Optional	New type of the File System. Omit this when no change is required.
filename	Optional	New name of the File System. Omit this when no change is required.
size	Optional	New LUN size in MB. Omit this when no change is required.
percentused	Optional	New percentage of the LUN in use. Omit this when no change is required.

Parameter Values to be Obtained in Advance:

`serialnum` and `model`: Obtain these values from the execution result of the `GetStorageArray` command. In the execution result of this command, the `arrayType` and `serialNumber` values appear under An instance of `StorageArray`. Use the `arrayType` and `serialNumber` values to specify the `model` and `serialnum` parameters respectively.

`objectid`: Obtain this value from the execution result of the `GetHostInfo` command. In the execution result of this command, the `objectID` value appears under An instance of `HostInfo`. Use this `objectID` value to specify the `objectid` parameter.

`devnum`, `domain`, and `port`: Obtain these values from the execution result of the `GetStorageArray (subtarget=Path)` command. Execute this command by specifying only the `model` and `serialnum` parameters, and `Path` for the `subtarget` parameter. In the execution result of this command, the `devNum`, `domainID`, and `portID` values appear under An instance of `Path`. Use these `devNum`, `domainID`, and `portID` values to specify the `devnum`, `domain`, and `port` parameters respectively.

`portname`: Obtain this value from the execution result of the `GetStorageArray (subtarget=Port)` command. In the execution result of this command, the `displayName` value appears under An instance of `Port`. Use this value to specify the `portname` parameter.

Command Execution Example:

In this example, the `ModifyHostInfo` command makes the following modifications to the host-based information (object ID: `HOSTINFO.MY_HOSTINFO_HDS9980V.0.15.1`).

- The newly connected storage subsystem is a storage subsystem (serial number: 10001, model: HDS9980V).
- The HostInfo record name is changed to MY_HOSTINFO_Lightning 9900V.
- The new IP address is 111.111.111.111.
- E: is the new mount point of the host file system.
- The LUN that is used is identified as follows: port number: 7, domain ID: 0, device number: 2.
- The new WWN for the HBA is 11.33.55.77.99.BB.DD.FF.
- The new file system name is oo, and the new file system type is NTFS1.
- 156 MB is secured for the new LUN, and the new percentage of use is set to 50% of the LUN size.

```
HiCommandCLI ModifyHostInfo -o "D:\logs\9980V ModifyHostInfo.log"
"objectId=HOSTINFO.MY_HOSTINFO_HDS9980V.0.15.1" "model=HDS9980V" "serialnum=10001"
"hostname=MY_HOSTINFO_HDS9980V" "ipAddress=111.111.111.111" "mountPoint=E:" "port=7"
"domain=0" "devnum=2" "portwwn=11.33.55.77.99.BB.DD.FF" "filetype=NTFS1" "filename=oo"
"size=156" "percentused=50"
```

Command execution result:

```
RESPONSE:
An instance of HostInfo
  objectId=HOSTINFO.MY_HOSTINFO_HDS9980V.0.15.1
  name=MY_HOSTINFO_HDS9980V
  serialNumber=10001
  arrayType=HDS9980V
  ipAddress=111.111.111.111
  mountPoint=E:
  portID=7
  domainID=0
  scsiID=15
  lun=2
  devNum=2
  osScsiBus=0
  osScsiID=15
  osLun=1
  portWWN=11.33.55.77.99.BB.DD.FF
  fileType=NTFS1
  fileName=E:
  sizeInMB=156
  percentUsed=50
  lastUpdated=1039003476
```

4.5 Server Management Commands

The Server Management commands provide some management support for the Device Manager server.

4.5.1 AddURLLink

`AddURLLink` registers a URL linked to an application as `URLLink` information, in a `HiCommand` Device Manager server (see Table 4.75). If `URLLink` is already linked to the `HiCommand` object, the existing URL is overwritten.

A user who has only the `View` permission cannot execute this command. A user to whom user-defined resource groups are assigned, and who also has the `Modify` permission, can specify the allowed `HiCommand` object only.

Table 4.75 AddURLLink Command Parameters

Parameter Name	Status	Description
url	Required	The complete URL is required to launch the application or web page.
name	Required	Name of the application.
linkedid	Required	The object ID to link to. Must be a valid, existing <code>HiCommand</code> objectID.
description	Optional	Description of <code>URLLink</code> .

Command execution example:

```
HiCommandCLI AddURLLink -o "D:\logs\9980V AddURLLink.log" "url=192.168.99.AA" "name=AUTO" "linkedid=HSDOMAIN.HDS9980V.10001.0.3" "description=ARRAY.HDS9980V.10001"
```

Command execution result:

```
RESPONSE:  
An instance of URLLink  
  objectID=URLLINK.HSDOMAIN.HDS9980V.10001.0.3 .1  
  name=AUTO  
  url=192.168.99.AA  
  linkedID=HSDOMAIN.HDS9980V.10001.0.3  
  description=ARRAY.HDS9980V.10001
```

4.5.2 DeleteAlerts

`DeleteAlerts` deletes one or more alerts from the Device Manager server (see Table 4.76). You can specify alerts to be deleted using either the alert number or the source.

A user to whom a user-defined resource group is assigned, and who has only the `View` permission, cannot execute this command.

Table 4.76 DeleteAlerts Command Parameters

Parameter Name	Status	Description
alertnum	Optional	The number identifying the alert to delete. You must specify either this parameter or the <code>source</code> parameter, but not both.
source	Optional	Identifies a source of alerts; all alerts from this source are deleted. You must specify either this parameter or the <code>alertnum</code> parameter, but not both.

Parameter Values to be Obtained in Advance:

`alertnum` and `source`: Obtain these values from the execution result of the `GetAlerts` command. In the execution result of this command, the `number` and `source` values appear under an instance of `Alerts`. Use these `number` and `source` values to specify the `alertnum` and `source` parameters respectively.

Command example 1:

```
HiCommandCLI DeleteAlerts -o "D:\logs\ALL DeleteAlerts.log" "alertnum=6"
```

Command result 1:

```
RESPONSE:
(Command completed; no data returned)
```

Command example 2:

```
HiCommandCLI DeleteAlerts -o "D:\logs\ALL DeleteAlerts.log" "source=ARRAY.HDS9200.0207"
```

Command result 2:

```
RESPONSE:
(Command completed; no data returned)
```

4.5.3 DeleteURLLink

`DeleteURLLink` removes the association of an application or web page with an object in the HiCommand Device Manager server (see Table 4.77).

A user who has only the View permission cannot execute this command. A user to whom user-defined resource groups are assigned, and who also has the Modify permission, can specify the allowed HiCommand object only.

Table 4.77 DeleteURLLink Command Parameters

Parameter Name	Status	Description
objectid	Optional	The objectID of the URLLink to remove. You must specify either <code>objectid</code> or <code>linkedid</code> .
linkedid	Optional	The object ID of the linked object. All links to this object are removed. You must specify either <code>objectid</code> or <code>linkedid</code> .

Command execution example 1:

```
HiCommandCLI DeleteURLLink -o "D:\logs\9980V DeleteURLLink.log" "linkedid=HSDOMAIN.HDS9980V.10001.0.3"
```

Command execution result 1:

```
RESPONSE:  
(Command completed; empty list returned)
```

Command execution example 2:

```
HiCommandCLI DeleteURLLink -o "D:\logs\9980V DeleteURLLink.log" "objectid=URLLINK.HSDOMAIN.HDS9980V.10001.0.3.1"
```

Command execution result 2:

```
RESPONSE:  
(Command completed; empty list returned)
```

4.5.4 GetAlerts

`GetAlerts` returns the alert messages previously generated by the Device Manager server (see Table 4.78). The returned alerts can be limited by specifying a time and/or a number of messages.

When no condition to limit the number of alert messages obtained is specified, information about all alerts is displayed in the execution results.

For this command, there are no access restrictions regarding the resource groups or permissions assigned to a user.

Note: For the TagmaStore AMS/WMS series and Thunder 9500V, when an alert for a hard disk error is detected, the number of the disk drive where the error occurred is displayed in the alert explanation. This disk drive number does not indicate the physical location of the hard disk. You need to calculate the physical location of the hard disk by using the displayed disk drive number

The variable and functions used for the calculation are as follows:

- *n*: Indicates the disk drive number displayed in the alert description.
- `INT`: Truncates (the digits after the decimal point) the fractional portion of the calculation result to obtain an integer.
- `MOD`: Obtains the remainder after division.

The following shows how to calculate the locations of the hard disk unit and HDU:

- For the TagmaStore AMS/WMS series
 $location-of-unit = INT (n / 15)$
 $location-of-HDU = n MOD 15$

Example:

When *n* is 17:

$location-of-unit = INT (17 / 15) = 1$

$$\text{location-of-HDU} = 17 \text{ MOD } 15 = 2$$

- For Thunder 9500V

When n is less than or equal to 13:

$$\text{location-of-unit} = 0$$

$$\text{location-of-HDU} = n$$

When n is greater than 13:

$$\text{location-of-unit} = \text{INT}((n + 1) / 15)$$

$$\text{location-of-HDU} = (n + 1) \text{ MOD } 15$$

Example:

When n is 12:

$$\text{location-of-unit} = 0$$

$$\text{location-of-HDU} = 12$$

When n is 17:

$$\text{location-of-unit} = \text{INT}((17 + 1) / 15) = 1$$

$$\text{location-of-HDU} = (17 + 1) \text{ MOD } 15 = 3$$

Table 4.78 GetAlerts Command Parameters

Parameter Name	Status	Description
countfilter	Optional (returned alerts not limited by total count, if omitted)	Maximum number of messages to return. If you omit this parameter, the number of obtainable alerts is unlimited.
timefilter	Optional	Request only messages newer than the date and time. Required format is YYYY/MM/DD HH:MM:SS. If you omit this parameter, the number of obtainable alerts is unlimited.

Parameter Values to be Obtained in Advance:

None.

Command example:

```
HiCommandCLI GetAlerts -o D:\logs\GetAlerts.log "countfilter=2" "timefilter=2002/04/01 00:00:00"
```

Command result:

```

RESPONSE:
An instance of Alerts

Contains 2Alert instances:
  An instance of Alert
    number=2
    type=Server
    source=ARRAY.HDS9970V.35001
    severity=3
    component=DKU drive
    description=Serious error detected on DKU drive.
    actionToTake=Contact Customer Support.
    data=Component has stopped.
    timeOfAlert=2003/01/06 20:13:56
  An instance of Alert
    number=1
    type=Server
    source=ARRAY.HDS9970V.35001
    severity=4
    component=DKC processor
    description=Moderate error detected on DKC processor.
    actionToTake=Contact Customer Support.
    data=Component does not function fully.
    timeOfAlert=2003/01/06 20:13:51

```

4.5.5 GetDebugLevel

GetDebugLevel returns the current debug level setting of the Device Manager server. The debug level affects the amount of information written to the trace.log file. There are no parameters.

For this command, there are no access restrictions regarding the resource groups or permissions assigned to a user.

Command example:

```
HiCommandCLI GetDebugLevel -o "D:\logs\GetDebugLevel.log"
```

Command result:

```

RESPONSE:
An instance of DebugLevel
  value=0 [Full Debugging trace]
  description=Debugging Trace

```

4.5.6 GetLogFile

GetLogFile returns the requested Device Manager server log file (see Table 4.79).

For this command, there are no access restrictions regarding the resource groups or permissions assigned to a user.

Table 4.79 GetLogFile Command Parameters

Parameter Name	Status	Description
filename	Required	Name of the requested log file (access.log, service.log, error.log, or trace.log).

Parameter Values to be Obtained in Advance:

None.

Command example:

```
HiCommandCLI GetLogFile -o "D:\logs\GetLogFile.log" "filename=error.log"
```

Command result:

```
RESPONSE:
An instance of File
  name=error.log
  ----- Contents of File Follow -----
  .
  . (Contents of File "error.log" is omitted here)
  .
  ----- End of File Contents - -----
```

4.5.7 GetServerInfo

`GetServerInfo` returns information about the Device Manager server including server version, server URI, the list of supported array families etc. There are no parameters.

For this command, there are no access restrictions regarding the resource groups or permissions assigned to a user.

Command execution example:

```
HiCommandCLI GetServerInfo -o "D:\logs\GetServerInfo.log"
```

Command execution result:

```
RESPONSE:
An instance of ServerInfo
  serverVersion=HiCommand Device Manager Server v5.7 Build 0570-00 (Apr 19, 2007)
  serverURL=http://localhost:2001
  upTime=7 minutes 55 seconds
  upSince=Wed, 30 May 2007 06:07:01 GMT
  currentApiVersion=5.7
  List of 5 StorageArray elements:
    An instance of StorageArray
      arrayFamily=HDS9200
      displayArrayFamily=HDS9200
    An instance of StorageArray
      arrayFamily=HDS9900
      displayArrayFamily=HDS9900
    An instance of StorageArray
      arrayFamily=HDS9500V
      displayArrayFamily=HDS9500V
    An instance of StorageArray
      arrayFamily=HDS9900V
      displayArrayFamily=HDS9900V
    An instance of StorageArray
      arrayFamily=AMS
      displayArrayFamily=AMS
    An instance of StorageArray
      arrayFamily=USP
      displayArrayFamily=USP
```

4.5.8 GetURLLink

GetURLLink gets any or all URLLink objects in the Device Manager server (see Table 4.80).

A user to whom a user-defined resource group is assigned can specify the allowed HiCommand object only.

Table 4.80 GetURLLink Command Parameters

Parameter Name	Status	Description
objectid	Optional	The objectID of the URLLink object to return. You can omit this parameter when using the linkedid parameter to return all URLLink objects; do not use the linkedid parameter with the objectid parameter.
linkedid	Optional	The object ID of the linked object. All links to this object are returned. You can omit this parameter when using the objectid parameter to return all URLLink objects; do not use the linkedid parameter with the objectid parameter.

Command execution example 1:

```
HiCommandCLI GetURLLink -o "D:\logs\9980V GetURLLink.log" "objectid=
URLLINK.HSDOMAIN.HDS9980V.10001.0.3 .1"
```

Command execution result 1:

```
RESPONSE:
An instance of URLLink
  objectID=URLLINK.HSDOMAIN.HDS9980V.10001.0.3.1
  name=AUTO
  url=192.168.99.AA
  description=ARRAY.HDS9980V.10001
  linkedID=HSDOMAIN.HDS9980V.10001.0.3
```

Command execution example 2:

```
HiCommandCLI GetURLLink -o "D:\logs\9980V GetURLLink.log" "linkedid=
HSDOMAIN.HDS9980V.10001.0.3"
```

Command execution result 2:

```
RESPONSE:
An instance of URLLink
  objectID=URLLINK.HSDOMAIN.HDS9980V.10001.0.3.1
  name=AUTO
  url=192.168.99.AA
  description=ARRAY.HDS9980V.10001
  linkedID=HSDOMAIN.HDS9980V.10001.0.3
```

4.5.9 ModifyDebugLevel

`ModifyDebugLevel` sets the amount of debugging information generated by the Device Manager server (see Table 4.81). The debug level can range from 0 to 4 (0=Full Debugging trace, 1=Basic Information, 2=Warning, 3=Error, 4=Fatal).

Modifying the debug level affects the amount of information written to the `trace.log` file, subsequent to the change. The command does not affect Server configuration files, so any debug level modifications via this command does not affect the debug level when the Server is restarted.

A user to whom a user-defined resource group is assigned, and who has only the View permission, cannot execute this command.

Table 4.81 `ModifyDebugLevel` Command Parameters

Parameter Name	Status	Description
level	Required	New debug level (number between 0 and 4: 0=Full Debugging trace, 1=Basic Information, 2=Warning, 3=Error, 4=Fatal).

Parameter Values to be Obtained in Advance:

None.

Command example:

```
HiCommandCLI ModifyDebugLevel -o "D:\logs\ModifyDebugLevel.log" "level=0"
```

Command result:

```
RESPONSE:  
An instance of DebugLevel  
value=0 [Full Debugging trace]  
description=Debugging Trace
```

4.6 Replication Commands

The Replication commands can be used to manage copy pairs.

4.6.1 AddConfigFileForReplication

`AddConfigFileForReplication` creates the HORCM configuration file for CCI that is required to create copy pairs for ShadowImage, TrueCopy Sync, TrueCopy Async, QuickShadow, COW Snapshot, and UniversalReplicator.

TrueCopy Async can be used for TagmaStore USP, Lightning 9900V, Lightning 9900, and the TagmaStore AMS/WMS series. COW Snapshot can be used for TagmaStore AMS/WMS series, and QuickShadow can be used for Thunder 9500V.

UniversalReplicator can be used for Universal Storage Platform V and TagmaStore USP.

A user who has only the View permission cannot execute this command. A user to whom user-defined resource groups are assigned, and who also has the Modify permission, can specify only the allowed resources. If they specify resources that are not allowed, an error occurs.

There are three ways to create the HORCM configuration file.

- **Method 1:** Adds a copy pair definition to an existing copy group that is specified in the HORCM configuration file. To use this method, execute the command in the following format:

```
HiCommandCLI [URL] AddConfigFileForReplication [option] groupname=copy-group-name
pvolhostid=host-ID pvolinstancenum=instance-number svolhostid=host-ID
svolinstancenum=instance-number pvolarraytype=model pvolserialnum=serial-number
pvoldevnum=device-number [pvolportid=port-number|pvolportname=port-name]
svolarraytype=model svolserialnum=serial-number svoldevnum=device-number
[svolportid=port-number|svolportname=port-name]
[replicationfunction={ShadowImage|TrueCopySync|TrueCopyAsync|QuickShadow|UniversalRepli
cator}] [munum=MU-number]
```

- **Method 2:** Adds a copy group to the HORCM configuration file, and adds a copy pair definition to the copy group. To use this method, execute the command in the following format:

```
HiCommandCLI [URL] AddConfigFileForReplication [option] [groupname=copy-group-name]
pvolhostid=host-ID pvolinstancenum=instance-number [pvolportnum=port-number]
svolhostid=host-ID svolinstancenum=instance-number [svolportnum=port-number]
pvolarraytype=model pvolserialnum=serial-number pvoldevnum=device-number
[pvolportid=port-number|pvolportname=port-name] pvolpoolid=pool-ID svolarraytype=model
svolserialnum=serial-number svoldevnum=device-number [svolportid=port-
number|svolportname=port-name] svolpoolid=pool-ID
[replicationfunction={ShadowImage|TrueCopySync|TrueCopyAsync|QuickShadow|UniversalRepli
cator } ] [munum=MU-number]
```

- **Method 3:** Creates a new HORCM configuration file. To use this method, execute the command in the following format:

```

HiCommandCLI [URL] AddConfigFileForReplication [option] [groupname=copy-group-name]
pvolhostid=host-ID [pvolinstancenum=instance-number] pvolportnum=port-number
svolhostid=host-ID [svolinstancenum=instance-number] svolportnum=port-number
pvolarraytype=model pvolserialnum=serial-number pvoldevnum=device-number
[svolportid=port-number|pvolportname=port-name] pvolpoolid=pool-ID svolarraytype=model
svolserialnum=serial-number svoldevnum=device-number [svolportid=port-
number|svolportname=port-name] svolpoolid=pool-ID
[replicationfunction={ShadowImage|TrueCopySync|TrueCopyAsync|QuickShadow|UniversalRepli
cator }] [munum=Mu-number]

```

Table 4.82 AddConfigFileForReplication Command Parameters

Parameter Name	Status	Description
groupname	Optional	Group name used in CCI. You can use a maximum of 31 bytes. You cannot specify a name that begins with a hash mark (#) or hyphen (-). When using Method 1, specify a group name that is specified in the HORCM configuration file. Note: You must specify this parameter when you are using method 1.
pvolhostid	Required	Host ID for identifying the P-VOL. When using Method 1, specify the host ID of the P-VOL in a group specified in the HORCM configuration file.
pvolinstancenum	Optional	Instance number of the HORCM instance for managing the P-VOL. When using Method 1, specify the instance number of the P-VOL of a group specified in the HORCM configuration file. Note: You must specify this parameter when you are using method 1 or 2.
pvolportnum	Optional	Port number of the HORCM instance for managing the P-VOL. Depending on the host OS, specify the appropriate value: In Solaris, specify an integer from 0 to 65535. In AIX, Windows, HP-UX, and Linux, specify an integer from 1 to 65535. This parameter is invalid when the pvolinstancenum is specified. Note: You must specify this parameter when you are using method 3.
svolhostid	Required	Host ID for identifying the S-VOL. When using Method 1, specify the host ID of the S-VOL of a group specified in the definition file.
svolinstancenum	Optional	Instance number of the HORCM instance for managing the S-VOL. When using Method 1, specify the instance number of the S-VOL of a group specified in the HORCM configuration file. Note: You must specify this parameter when you are using method 1 or 2.

Parameter Name	Status	Description
svolportnum	Optional	Port number of the HORCM instance for managing the S-VOL. Depending on the host OS, specify the appropriate value: In Solaris, specify an integer from 0 to 65535. In AIX, Windows, HP-UX, and Linux, specify an integer from 1 to 65535. This parameter is invalid when the <code>svolinstancenum</code> is specified. Note: You must specify this parameter when you are using method 3.
pvolarraytype	Required	Model of the storage subsystem that includes the P-VOL.
pvolserialnum	Required	Serial number of the storage subsystem that includes the P-VOL.
pvoldevnum	Required	Device number of the P-VOL. This parameter can be specified in decimal, and in colon-separated hexadecimal. If you specify a hexadecimal number, for TagmaStore USP, Lightning 9900V, and Lightning 9900, use the <code>xx:yy</code> format, where <code>xx</code> is the CU number, and <code>yy</code> is the LDEV number. For Universal Storage Platform V, use the <code>ww:xx:yy</code> format, where <code>ww</code> is the LDKC number, <code>xx</code> is the CU number, and <code>yy</code> is the LDEV number. <code>ww</code> is optional. If you omit <code>ww</code> , the LDKC number is regarded as 0. Note: The execution results are output in decimal.
pvolportid	Optional	Port number in the HORCM configuration file that manages the P-VOL path. Note: If you specify this parameter, specify either <code>pvolportid</code> or <code>pvolportname</code> . Do not specify both parameters at the same time. This might cause an error to occur.
pvolportname	Optional	Port name in the HORCM configuration file that manages the P-VOL path. Note: If you specify this parameter, specify either <code>pvolportid</code> or <code>pvolportname</code> . Do not specify both parameters at the same time. This might cause an error to occur.
pvolpoolid	Optional	Specify the pool ID of the journal data to which the P-VOL belongs. Note: You must specify this parameter when you are using method 2 or 3 with UniversalReplicator. Note: When you are using method 1, this parameter value is invalid even if you specify a value.
svolarraytype	Required	Model of the storage subsystem that includes the S-VOL.
svolserialnum	Required	Serial number of the storage subsystem that includes the S-VOL.
svoldevnum	Required	Device number of the S-VOL. This parameter can be specified in decimal, and in colon-separated hexadecimal. If you specify a hexadecimal number, for TagmaStore USP, Lightning 9900V, and Lightning 9900, use the <code>xx:yy</code> format, where <code>xx</code> is the CU number, and <code>yy</code> is the LDEV number. For Universal Storage Platform V, use the <code>ww:xx:yy</code> format, where <code>ww</code> is the LDKC number, <code>xx</code> is the CU number, and <code>yy</code> is the LDEV number. <code>ww</code> is optional. If you omit <code>ww</code> , the LDKC number is regarded as 0. Note: The execution results are output in decimal.

Parameter Name	Status	Description
svolportid	Optional	Port number in the HORCM configuration file that manages the S-VOL path. Note: If you specify this parameter, specify either <code>svolportid</code> or <code>svolportname</code> . Do not specify both parameters at the same time. This might cause an error to occur.
svolportname	Optional	Port name in the HORCM configuration file that manages the S-VOL path. Note: If you specify this parameter, specify either <code>svolportid</code> or <code>svolportname</code> . Do not specify both parameters at the same time. This might cause an error to occur.
svolpoolid	Optional	Specify the pool ID of the journal data to which the S-VOL belongs. Note: You must specify this parameter when you are using method 2 or 3 with UniversalReplicator. Note: When you are using method 1, this parameter value is invalid even if you specify a value.
replicationfunction	Optional	Type of copy used for the copy pair. ShadowImage: ShadowImage including MRCF-Lite TrueCopySync: TrueCopy including Synchronous Remote Copy TrueCopyAsync: TrueCopy Async QuickShadow: QuickShadow or COW Snapshot UniversalReplicator: UniversalReplicator The following value is set if this parameter is omitted: <ul style="list-style-type: none"> When the P-VOL and S-VOL exist in the same storage subsystem: ShadowImage When the P-VOL and S-VOL exist in different storage subsystems: TrueCopySync (for TagmaStore AMS, Thunder 9500V, and Thunder 9200) TrueCopyAsync (for Universal Storage Platform V, TagmaStore USP, Lightning 9900V, Lightning 9900) When the P-VOL and S-VOL (or V-VOL) exist in the same storage subsystem, and are recorded in the replication information: QuickShadow (for TagmaStore AMS/WMS series and Thunder 9500V) The HORCM configuration file for TrueCopySync is the same as for TrueCopyAsync.
munum	Optional	Specify the MU number of the P-VOL. This parameter can be specified only for UniversalReplicator. Note: For UniversalReplicator, if this parameter is not specified, the MU number of the created HORCM configuration file for CCI is set to 1. Note: For ShadowImage, QuickShadow, or COW Snapshot, the MU number of the created HORCM configuration file for CCI is set to 0. For TrueCopy, the MU number of the HORCM configuration file for CCI is not set because the MU number is not necessary for TrueCopy.

Parameter Name	Status	Description
paioption	Optional	Specify this parameter to create the configuration of the 3DC delta resync. You can specify <code>suspend</code> only. Note: This parameter can be specified only when UniversalReplicator is being used.

Note: To operate a specific copy pair in a copy group, you must specify all of the `pvolserialnum`, `pvoldevnum`, `svolserialnum` (or `svolsequencenum`), and `svoldevnum` parameters. If you omit all of these parameters, all the copy pairs in the copy group will be changed.

Parameter Values to be Obtained in Advance:

`replicationgroupid`, `pvolserialnum`, `pvoldevnum`, `svolserialnum`, and `svoldevnum`: Obtain the values of these parameters from the execution result of the `GetHost` command. Specify the value of `replicationGroupID` that is displayed as An instance of `ReplicationGroup` in the `replicationgroupid` parameter, and specify the value of `pvolSerialNum` that is displayed as An instance of `ReplicationInfo` in the `pvolserialnum` parameter. In the same way, specify the value of `pvolDevNum` in the `devnum P-VOL` parameter, the value of `svolSerialNum` in the `svolserialnum` parameter, and the value of `svolDevNum` in the `devnum S-VOL` parameter.

`svolsequencenum`: Obtain the value of this parameter from the execution result of the `GetStorageArray` command for the storage subsystem that contains the S-VOL. Specify the value of `sequenceNumber` that is displayed as An instance of `StorageArray` in the `svolsequencenum` parameter.

`pvolpoolid`, `svolpoolid`, and `munum`: Obtain the value of these parameters from the execution result of the `GetHost` command. Specify the value of `pvolPoolID` that is displayed as An instance of `ReplicationInfo` in the `pvolpoolid` parameter. Also, specify the value of `svolPoolID` in the `svolpoolid` parameter, and specify the value of `muNumber` in the `munum` parameter.

Command Example 1:

This example adds pairs to the existing group in the configuration files:

```
HiCommandCLI AddConfigFileForReplication -o "D:\logs\9570V AddConfigFileForReplication.log"
"groupname=group1" "pvolhostid=1" "pvolinstancenum=11" "svolhostid=1" "svolinstancenum=12"
"pvolarraytype=HDS9570V" "pvolserialnum=65010001" "pvoldevnum=5" "svolarraytype=HDS9570V"
"svolserialnum=65010012" "svoldevnum=10" "replicationfunction=TrueCopySync"
```

Command result 1:

```
RESPONSE:
(Command completed; no data returned)
```

Command Example 2:

This example creates a group in the configuration files, and then adds pairs to the group:

```
HiCommandCLI AddConfigFileForReplication -o "D:\logs\9980V AddConfigFileForReplication.log"
"pvolhostid=1" "pvolinstancenum=11" "svolhostid=1" "svolinstancenum=12"
"pvolarraytype=HDS9980V" "pvolserialnum=15001" "pvoldevnum=11" "svolarraytype=HDS9980V"
"svolserialnum=15001" "svoldevnum=12"
```

Command result 2:

```
RESPONSE:  
(Command completed; no data returned)
```

Command Example 3:

This example creates configuration files and a group, and then adds pairs to the group:

```
HiCommandCLI AddConfigFileForReplication -o "D:\logs\9980V AddConfigFileForReplication.log"  
"pvolhostid=5" "pvolinstancenum=15" "pvolportnum=50001" "svolhostid=4" "svolinstancenum=15"  
"svolportnum=50002" "pvolarraytype=HDS9980V" "pvolserialnum=15001" "pvoldevnum=11"  
"svolarraytype=HDS9970V" "svolserialnum=35001" "svoldevnum=128"  
"replicationfunction=TrueCopySync"
```

Command result 3:

```
RESPONSE:  
(Command completed; no data returned)
```

4.6.2 AddReplication

The `AddReplication` command creates copy pairs for ShadowImage, TrueCopy Sync, TrueCopy Async, QuickShadow, COW Snapshot, and UniversalReplicator. When you create a copy pair, the HORCM configuration file for CCI, contained in the host, is rewritten.

TrueCopy Async can be used for TagmaStore USP, Lightning 9900, Lightning 9900V and the TagmaStore AMS/WMS series.

COW Snapshot can be used for TagmaStore AMS/WMS series, and QuickShadow can be used for Thunder 9500V. Before using COW Snapshot or QuickShadow, use `DAMP` to create a V-VOL, and then use the refresh functionality to refresh the storage subsystem information. When creating a copy pair, specify `AddReplication`.

UniversalReplicator is valid for Universal Storage Platform V and TagmaStore USP.

A user who has only the View permission cannot execute this command. A user to whom user-defined resource groups are assigned, and who also has the Modify permission, can specify the allowed resources only. If resources that are not allowed are specified, an error occurs.

Note: You must specify a formatted LDEV. If you specify an unformatted LDEV, a copy pair is not created. To check whether an LDEV is formatted, for Thunder 9500V and Thunder 9200, use `DAMP` or Storage Navigator Modular. For the TagmaStore AMS/WMS series, use Storage Navigator Modular. For Universal Storage Platform V and TagmaStore USP, use the `GetStorageArray` command. For Lightning 9900V, and Lightning 9900, you do not need to check whether an LDEV is formatted because LDEVs are always formatted by default.

Note: When you create a copy pair by using the TagmaStore AMS/WMS series in which Power Saving is enabled, specify an LU that belongs to an array group in the SpinUp status. If the array group to which the operation-target LU belongs is in the SpinDown status, place the array group in the SpinUp status before creating the copy pair. To check the array group status or to change the array group to the SpinUp status, use Storage Navigator Modular.

Note: Configuring a ShadowImage copy pair in which the P-VOL is a normal volume and the S-VOL is an HDP volume is not recommended.

There are three ways to create a copy pair.

- **Method 1:** Add a copy pair to an existing copy group that is specified in the HORCM configuration file. To use this method, execute the command in the following format:

```
HiCommandCLI [URL] AddReplication [option] replicationgroupid=copy-group-number
pvolarraytype=model pvolserialnum=serial-number pvoldevnum=device-number
[svolportid=port-number|svolportname=port-name] svolarraytype=model
svolserialnum=serial-number svoldevnum=device-number [svolportid=port-
number|svolportname=port-name]
[replicationfunction={ShadowImage|TrueCopy|TrueCopyAsync|QuickShadow|UniversalReplicato
r }] [munum=Mu-number] [fencelevel=fence-level] [copytracksize=copy-pace]
```

- **Method 2:** Create a copy group in the HORCM configuration file, and adds a copy pair to the copy group. To use this method, execute the command in the following format:

```
HiCommandCLI [URL] AddReplication [option] [groupname=group-name] pvolhostid=host-ID
pvolinstancenum=instance-number [pvolportnum=port-number] svolhostid=host-ID
svolinstancenum=instance-number [svolportnum=port-number]
pvolarraytype=model pvolserialnum=serial-number pvoldevnum=device-number
[svolportid=port-number|svolportname=port-name] pvolpoolid=pool-ID svolarraytype=model
svolserialnum=serial-number svoldevnum=device-number [svolportid=port-
number|svolportname=port-name] svolpoolid=pool-ID
[replicationfunction={ShadowImage|TrueCopy|TrueCopyAsync|QuickShadow|UniversalReplicato
r }] [munum=Mu-number] [fencelevel=fence-level] [copytracksize=copy-pace]
[pairoption=suspend]
```

- **Method 3:** Create a new HORCM configuration file, creates a copy group, then adds a copy pair to the copy group. To use this method, execute the command in the following format:

```
HiCommandCLI [URL] AddReplication [option] [groupname=group-name] pvolhostid=host-ID
[svolinstancenum=instance-number] pvolportnum=port-number svolhostid=host-ID
[svolinstancenum=instance-number] svolportnum=port-number pvolarraytype=model
pvolserialnum=serial-number pvoldevnum=device-number [svolportid=port-
number|svolportname=port-name] pvolpoolid=pool-ID svolarraytype=model
svolserialnum=serial-number svoldevnum=device-number [svolportid=port-
number|svolportname=port-name] svolpoolid=pool-ID
[replicationfunction={ShadowImage|TrueCopy|TrueCopyAsync|QuickShadow|UniversalReplicato
r }] [munum=Mu-number] [fencelevel=fence-level] [copytracksize=copy-pace]
[pairoption=suspend]
```

Table 4.83 AddReplication Command Parameters

Parameter Name	Status	Description
Replicationgroupid	Optional	Specify the copy group number. Note: If you are using method 1, you must specify this parameter. Note: If you are using method 2 or 3, do not specify this parameter. If you specify this parameter, method 1 is applied.
Groupname	Optional	Specify the group name used in the CCI. Use a maximum of 31 bytes for a group name. The group name cannot begin with a hash mark (#) or a hyphen (-). Note: If the replicationgroupid parameter is specified, this parameter is ignored.

Parameter Name	Status	Description
pvolhostid	Optional	Specify the ID of the host that recognizes the primary volume (P-VOL). Note: If you are using method 2 or 3, you must specify this parameter. Note: If the <code>replicationgroupid</code> parameter is specified, this parameter is ignored.
pvolinstancenum	Optional	Specify the number of the HORCM instance that manages the P-VOL. Note: If you are using method 2, you must specify this parameter. Note: If the <code>replicationgroupid</code> parameter is specified, this parameter is ignored.
pvolportnum	Optional	Specify the port number of the HORCM instance that manages the P-VOL. Depending on the host OS, specify the appropriate value: For Solaris systems: Specify an integer in the range 0-65535. For AIX, Windows, HP-UX, or Linux systems: Specify an integer in the range 1-65535. Note: If you are using method 3, you must specify this parameter. Note: If the <code>replicationgroupid</code> or <code>pvolinstancenum</code> parameter is specified, this parameter is ignored.
svolhostid	Optional	Specify the ID of the host that recognizes the secondary volume (S-VOL). Note: If you are using method 2 or 3, you must specify this parameter. Note: If the <code>replicationgroupid</code> parameter is specified, this parameter is ignored.
svolinstancenum	Optional	Specify the number of the HORCM instance that manages the S-VOL. Note: If you are using method 2, you must specify this parameter. Note: If the <code>replicationgroupid</code> parameter is specified, this parameter is ignored.
svolportnum	Optional	Specify the port number of the HORCM instance that manages the S-VOL. Depending on the host OS, specify the appropriate value: Solaris systems: Specify an integer in the range 0-65535. For AIX, Windows, HP-UX, or Linux systems: Specify an integer in the range from 1-65535. Note: If you are using method 3, you must specify this parameter. Note: If the <code>replicationgroupid</code> or <code>svolinstancenum</code> parameter is specified, this parameter is ignored.

Parameter Name	Status	Description
pvolarraytype	Required	Specify the <code>model</code> of the storage subsystem that contains the P-VOL.
pvolserialnum	Required	Specify the serial number of the storage subsystem that contains the P-VOL.
pvoldevnum	Required	Specify the device number of the P-VOL. This parameter can be specified in decimal, and in colon-separated hexadecimal. If you specify a hexadecimal number, for TagmaStore USP, Lightning 9900V, and Lightning 9900, use the <code>xx:yy</code> format, where <code>xx</code> is the CU number, and <code>yy</code> is the LDEV number. For Universal Storage Platform V, use the <code>ww:xx:yy</code> format, where <code>ww</code> is the LDKC number, <code>xx</code> is the CU number, and <code>yy</code> is the LDEV number. <code>ww</code> is optional. If you omit <code>ww</code> , the LDKC number is regarded as 0. Note: The execution results are output in decimal.
pvolportid	Optional	Specify the port ID in the HORCM configuration file that manages the P-VOL paths. When a HiCommand Device Manager agent version 3.0 or earlier is installed, the HiCommand Device Manager agent is automatically set if this parameter is omitted. Note: If you specify this parameter, specify either <code>pvolportid</code> or <code>pvolportname</code> . Do not specify both parameters at the same time. This might cause an error to occur.
pvolportname	Optional	Specify the port name in the HORCM configuration file managing the P-VOL path. Note: If you specify this parameter, specify either <code>pvolportid</code> or <code>pvolportname</code> . Do not specify both parameters at the same time. This might cause an error to occur.
pvolpoolid	Optional	Specify the pool ID of the journal data to which P-VOL belongs. Note: You must specify this parameter when you are using method 2 or 3 with UniversalReplicator. Note: When you are using method 1, this parameter value is invalid even if you specify value.
svolarraytype	Required	Specify the model of the storage subsystem that contains the S-VOL.
svolserialnum	Required	Specify the serial number of the storage subsystem that contains the S-VOL.

Parameter Name	Status	Description
svoldevnum	Required	<p>Specify the device number of the S-VOL.</p> <p>This parameter can be specified in decimal, and in colon-separated hexadecimal. If you specify a hexadecimal number, for TagmaStore USP, Lightning 9900V, and Lightning 9900, use the <i>xx:yy</i> format, where <i>xx</i> is the CU number, and <i>yy</i> is the LDEV number. For Universal Storage Platform V, use the <i>ww:xx:yy</i> format, where <i>ww</i> is the LDKC number, <i>xx</i> is the CU number, and <i>yy</i> is the LDEV number. <i>ww</i> is optional. If you omit <i>ww</i>, the LDKC number is regarded as 0.</p> <p>Note: The execution results are output in decimal.</p>
svolportid	Optional	<p>Specify the port ID in the HORCM configuration file that manages the S-VOL paths.</p> <p>When a HiCommand Device Manager agent version 3.0 or earlier is installed, the HiCommand Device Manager server creates this parameter automatically.</p> <p>Note: If you specify this parameter, specify either <i>svolportid</i> or <i>svolportname</i>. Do not specify both parameters at the same time. This might cause an error to occur.</p>
svolportname	Optional	<p>Specify the port name in the HORCM configuration file that manages the S-VOL paths.</p> <p>Note: If you specify this parameter, specify either <i>svolportid</i> or <i>svolportname</i>. Do not specify both parameters at the same time. This might cause an error to occur.</p>
svolpoolid	Optional	<p>Specify the pool ID of the journal data to which S-VOL belongs.</p> <p>Note: You must specify this parameter when you are using method 2 or 3 with UniversalReplicator.</p> <p>Note: When you are using method 1, this parameter value is invalid even if you specify a value.</p>

Parameter Name	Status	Description
replicationfunction	Optional	<p>Specify the type of operation that is to be executed with the copy pair:</p> <p>ShadowImage: Execute ShadowImage (including MRCF-Lite).</p> <p>TrueCopySync: Execute TrueCopy (including Synchronous Remote Copy).</p> <p>TrueCopyAsync: Execute TrueCopy Async.</p> <p>QuickShadow: Execute QuickShadow or COW Snapshot.</p> <p>UniversalReplicator: Execute UniversalReplicator.</p> <p>The following value is set if this parameter is omitted:</p> <p>When the P-VOL and S-VOL are located in the same storage subsystem: ShadowImage</p> <p>When the P-VOL and S-VOL are located in different storage subsystems:</p> <p>For TagmaStore AMS, Thunder 9500V, and Thunder 9200: TrueCopySync</p> <p>For the Universal Storage Platform V, TagmaStore USP, Lightning 9900V, Lightning 9900: TrueCopyAsync</p> <p>When the P-VOL and S-VOL (or V-VOL) exist in the same storage subsystem, and are recorded in the replication information: QuickShadow (for TagmaStore AMS/WMS series and Thunder 9500V)</p>
munum	Optional	<p>Specify the MU number of the P-VOL.</p> <p>This parameter can be specified only for UniversalReplicator.</p> <p>Note: If this parameter is not specified, Device Manager automatically specifies the value.</p>
fencelevel	Optional	<p>Specify the P-VOL fence level as follows (default = Never). The fence level is ignored for ShadowImage, TrueCopyAsync, QuickShadow, COW Snapshot, and UniversalReplicator.</p> <p>Never: If you specify <i>Never</i>, a host write request to the P-VOL will not be rejected even though the MCU was able to change the status of a S-VOL pair into the suspend status.</p> <p>Data: If you specify <i>Data</i>, a host write request to the P-VOL will be rejected when an update copy fails.</p> <p>Status: If you specify <i>Status</i> (Universal Storage Platform V, TagmaStore USP, Lightning 9900V, and Lightning 9900 only), a host write request to the P-VOL will be rejected only when the MCU cannot change the status of a S-VOL pair to the suspend status.</p>

Parameter Name	Status	Description
copytracksize	Optional	Specify a copy pace (number of tracks copied at one time during initial copy), as an integer between 1 and 15. The default value is 3 for the Universal Storage Platform V, TagmaStore USP, Lightning 9900V, and Lightning 9900, and 15 for TagmaStore AMS/WMS series, Thunder 9500V, and Thunder 9200. This parameter cannot be specified when QuickShadow or COW Snapshot is being used.
paioption	Optional	The following value can be specified only when TagmaStore USP is being used: suspend: Creates a delta resync pair.

Parameter Values to be Obtained in Advance:

All parameters except `replicationfunction` and `fencelevel`: Obtain the parameter values from the execution result of the `GetHost` command. Specify the values provided as the execution result in the appropriate parameters. Table 4.84 lists the items that are displayed by the `GetHost` command and their correspondence to the parameters of the `AddReplication` command.

Table 4.84 GetHost Command Display and AddReplication Command Parameters

Location of Value Displayed by GetHost Command	Item Name	Corresponding Parameter
ReplicationGroup	replicationGroupID	replicationgroupid
	pvolHostID	pvolhostid
	pvolInstanceNumber	pvolinstancenum
	pvolPortNumber	pvolportnum
	svolHostID	svolhostid
	svolInstanceNumber	svolinstancenum
	svolPortNumber	svolportnum
	ReplicationInfo	pvolSerialNumber
pvolArrayType		pvolarraytype
pvolDevNum		pvoldevnum
pvolPoolID		pvolpoolid
svolArrayType		svolarraytype
svolSerialNumber		svolserialnum
svolDevNum		svoldevnum
svolPoolID		svolpoolid
	muNumber	munum

Location of Value Displayed by GetHost Command	Item Name	Corresponding Parameter
	copyTrackSize	copytracksize

Command Example 1:

This example creates a copy pair for TrueCopy in an existing copy group. Create a copy pair in the copy group with copy group number 0. As the primary volume (P-VOL), specify the logical device with LDEV number 5 in the storage subsystem with model number HDS9570V and serial number 65010001. As the secondary volume (S-VOL), specify the logical device with LDEV number 10 in the storage subsystem with model number HDS9570V and serial number 65010012.

```
HiCommandCLI AddReplication -o "D:\logs\9570V AddReplication.log" "replicationgroupid=0"
"pvolarraytype=HDS9570V" "pvolserialnum=65010001" "pvoldevnum=5" "svolarraytype=HDS9570V"
"svolserialnum=65010012" "svoldevnum=10" "replicationfunction=TrueCopySync"
"fencelevel=Data"
```

Command result 1:

```
RESPONSE:
An instance of ReplicationGroup
  objectID=REPGROUP.0
  replicationGroupID=0
  groupName=HCMD_CG0003
  pvolHostID=1
  pvolInstanceNumber=11
  pvolPortNumber=50,001
  svolHostID=1
  svolInstanceNumber=12
  svolPortNumber=50,002
  replicationFunction=TrueCopySync
  fenceLevel=Data
  copyTrackSize=15
List of 1 ReplicationInfo elements:
An instance of ReplicationInfo
  objectID=REPINFO.65010001.5.0012.10
  pairName=HCMD_CP0004
  pvolSerialNumber=6501001
  pvolArrayType=HDS9570V
  pvolDevNum=5
  pvolObjectID=LU.HDS9570V.65010001.5
  pvolPoolID=-1
  svolSerialNumber=65010012
  svolArrayType=HDS9570V
  svolDevNum=10
  svolObjectID=LU.HDS9570V.65010012.10
  svolPoolID=-1
  fenceLevel=Data
  replicationFunction=TrueCopySync
  status=1
  muNumber=-1
  copyTrackSize=15
  splitTime=-1
```

Command Example 2:

This example creates a copy group in the existing CCI configuration definition file and creates a copy pair for ShadowImage. As the primary volume (P-VOL), specify the logical device with LDEV number 11 in the storage subsystem with model number HDS9980V and serial number 15001. The ID of the host that recognizes the primary volume is 1 and the instance number of the HORCM that manages the primary volume is 11. Similarly, as the secondary volume (S-VOL), specify the logical device with LDEV number 12 in the storage subsystem with model number HDS9980V and serial number 15001. The ID of the host that recognizes the secondary volume is 1, which is the same ID as that of the primary volume, and the instance number of the HORCM that manages the secondary volume is 12.

```
HiCommandCLI AddReplication -o "D:\logs\9980V AddReplication.log" "pvolhostid=1"
"pvolinstancenum=11" "svolhostid=1" "svolinstancenum=12" pvolarraytype=HDS9980V"
"pvolserialnum=15001" "pvoldevnum=11" "svolarraytype=HDS9980V" "svolserialnum=15001"
"svoldevnum=12"
```

Command result 2:

```
RESPONSE:
An instance of ReplicationGroup
  objectID=REPGROUP.1
  replicationGroupID=1
  groupName=HCMD_CG0001
  pvolHostID=1
  pvolInstanceNumber=11
  pvolPortNumber=50,001
  svolHostID=1  svolInstanceNumber=12
  svolPortNumber=50,002
  replicationFunction=ShadowImage
  copyTrackSize=15
List of 1 ReplicationInfo elements:
An instance of ReplicationInfo
  objectID=REPINFO.15001.11.15001.12
  pairName=HCMD_CP0000
  pvolSerialNumber=15001
  pvolArrayType=HDS9980V
  pvolDevNum=11
  pvolObjectID=LU.HDS9980V.15001.11
  pvolPoolID=-1
  svolSerialNumber=15001
  svolArrayType=HDS9980V
  svolDevNum=12
  svolObjectID=LU.HDS9980V.15001.12
  svolPoolID=-1
  replicationFunction=ShadowImage
  status=1
  muNumber=2
  copyTrackSize=15
  splitTime=-1
```

Command Example 3:

This example creates a CCI configuration definition file and a copy group and then creates a copy pair for TrueCopy in the copy group. As the primary volume (P-VOL), specify the logical device with LDEV number 11 in the storage subsystem with model number HDS9980V and serial number 15001. The ID of the host that recognizes the primary volume is 5; the instance number of the HORCM that manages the primary volume is 15; and the port number is 50001. As the secondary volume (S-VOL), specify the logical device with LDEV number 128 in the storage subsystem with model number HDS9970V and serial number 35001. The ID of the host that recognizes the secondary volume is 4; the instance number of the HORCM that manages the secondary volume is 15; and the port number is 50002. Specify 14 as the copy pace.

```
HiCommandCLI AddReplication -o "D:\logs\9980V AddReplication.log" "pvolhostid=5"
"pvolinstancenum=15" "pvolportnum=50001" "svolhostid=4" "svolinstancenum=15"
"svolportnum=50002" "pvolarraytype=HDS9980V" "pvolserialnum=15001" "pvoldevnum=11"
"svolarraytype=HDS9970V" "svolserialnum=35001" "svoldevnum=128"
"replicationfunction=TrueCopySync" "copytracksize=14"
```

Command result 3:

```
RESPONSE:
An instance of ReplicationGroup
  objectID=REPGROUP.2
  replicationGroupID=2
  groupName=HCMD_CG0002
  pvolHostID=5
  pvolInstanceNumber=15
  pvolPortNumber=50,001
  svolHostID=4
  svolInstanceNumber=15
  svolPortNumber=50.002
  replicationFunction=TrueCopySync
  fenceLevel=Never copyTrackSize=14
List of 1 ReplicationInfo elements:
An instance of ReplicationInfo
  objectID=REPINFO.15001.11.35001.128
  pairName=HCMD_CP0000
  pvolSerialNumber=15001
  pvolArrayType=HDS9980V
  pvolDevNum=11
  pvolObjectID=LU.HDS9980V.15001.11
  pvolPoolID=-1
  svolSerialNumber=35001
  svolArrayType=HDS9970V
  svolDevNum=128
  svolObjectID=LU.HDS9970V.35001.128
  svolPoolID=-1
  fenceLevel=Never
  replicationFunction=TrueCopySync
  status=1
  muNumber=-1
  copyTrackSize=14
  splitTime=-1
```

4.6.3 DeleteReplication

DeleteReplication deletes copy pair information from a CCI configuration definition file and releases the copy pair from the storage subsystem.

A user who has only the View permission cannot execute this command. A user to whom user-defined resource groups are assigned, and who also has the Modify permission, can specify the allowed resources only. If resources that are not allowed are specified, an error occurs.

Note: To delete a specific copy pair from a copy group, you must specify `pvolserialnum`, `pvoldevnum`, `svolserialnum` (or `svolsequencenum`), and `svoldevnum`. If you omit all of these parameters, the system deletes all copy pairs in the specified copy group.

Table 4.85 DeleteReplication Command Parameters

Parameter Name	Status	Description
<code>replicationgroupid</code>	Required	Specify the copy group number.
<code>pvolserialnum</code>	Optional	Specify the serial number of the storage subsystem that contains the primary volume (P-VOL).
<code>pvoldevnum</code>	Optional	Specify the device number of P-VOL. This parameter can be specified in decimal, and in colon-separated hexadecimal. If you specify a hexadecimal number, for TagmaStore USP, Lightning 9900V, and Lightning 9900, use the <code>xx:yy</code> format, where <code>xx</code> is the CU number, and <code>yy</code> is the LDEV number. For Universal Storage Platform V, use the <code>ww:xx:yy</code> format, where <code>ww</code> is the LDKC number, <code>xx</code> is the CU number, and <code>yy</code> is the LDEV number. <code>ww</code> is optional. If you omit <code>ww</code> , the LDKC number is regarded as 0. Note: The execution results are output in decimal.
<code>svolserialnum</code>	Optional	Specify the serial number of the storage subsystem that contains the S-VOL. You do not need to specify this parameter for TrueCopy in Thunder 9500V. Note: If you specify this parameter, specify either <code>svolserialnum</code> or <code>svolsequencenum</code> . Do not specify both parameters at the same time. This might cause an error to occur.
<code>svolsequencenum</code>	Optional	Specify the sequence number of the storage subsystem that contains the S-VOL. Make sure that you specify this parameter for TrueCopy in Thunder 9500V. Note: If you specify this parameter, specify either <code>svolserialnum</code> or <code>svolsequencenum</code> . Do not specify both parameters at the same time. This might cause an error to occur.
<code>svoldevnum</code>	Optional	Specify the device number of S-VOL. This parameter can be specified in decimal, and in colon-separated hexadecimal. If you specify a hexadecimal number, for TagmaStore USP, Lightning 9900V, and Lightning 9900, use the <code>xx:yy</code> format, where <code>xx</code> is the CU number, and <code>yy</code> is the LDEV number. For Universal Storage Platform V, use the <code>ww:xx:yy</code> format, where <code>ww</code> is the LDKC number, <code>xx</code> is the CU number, and <code>yy</code> is the LDEV number. <code>ww</code> is optional. If you omit <code>ww</code> , the LDKC number is regarded as 0. Note: The execution results are output in decimal.

Parameter Values to be Obtained in Advance:

replicationgroupid, pvolserialnum, pvoldevnum, svolserialnum, and svoldevnum: Obtain the parameter values from the execution result of the GetHost command. Specify the value of replicationGroupID that is displayed as An instance of ReplicationGroup in the replicationgroupid parameter, the value of pvolSerialNum that is displayed as An instance of ReplicationInfo in the pvolserialnum parameter, the value of pvolDevNum in the pvoldevnum parameter, the value of svolSerialNum in the svolserialnum parameter, and the value of svolDevNum in the svoldevnum parameter.

svolsequencenum: Obtain the parameter value from the execution result of the GetStorageArray command for the storage subsystem that contains the S-VOL. Specify the value of sequenceNumber that is displayed as An instance of StorageArray in the svolsequencenum parameter.

Command Example 1:

This example deletes a copy pair for TrueCopy that has been defined in copy group 8. The primary volume (P-VOL) of the copy pair is the logical device with LDEV number 10 in the storage subsystem with serial number 65010001. The secondary volume (S-VOL) is the logical device with LDEV number 11 in the storage subsystem with sequence number 0012.

```
HiCommandCLI DeleteReplication -o "D:\logs\9570V DeleteReplication.log"  
"replicationgroupid=8" "pvolserialnum=65010001" "pvoldevnum=10" "svolsequencenum=0012"  
"svoldevnum=11"
```

Command result 1:

Note: The execution result displays the remaining copy pairs after deleting the specified copy pair.

```
RESPONSE:  
An instance of ReplicationGroup  
  objectID=REPGROUP.7  
  replicationGroupID=7  
  groupName=HCMD_CG0007  
  pvolHostID=1  
  pvolInstanceNumber=11  
  pvolPortNumber=50,001  
  svolHostID=2  
  svolInstanceNumber=12  
  svolPortNumber=50,002  
  replicationFunction=TrueCopySync  
  fenceLevel=Never  
  copyTrackSize=15  
List of 1 ReplicationInfo elements:  
An instance of ReplicationInfo  
  objectID=REPINFO.65010001.12.0012.25  
  pairName=HCMD_CP0004  
  pvolSerialNumber=65010001  
  pvolArrayType=HDS9570V  
  pvolDevNum=12  
  pvolObjectID=LU.HDS9570V.65010001.12  
  pvolPoolID=-1  
  svolSerialNumber=65010012  
  svolArrayType=HDS9570V  
  svolDevNum=25  
  svolObjectID=LU.HDS9570V.65010012.25  
  svolPoolID=-1
```

```
fenceLevel=Never
replicationFunction=TrueCopySync
status=8
muNumber=-1
copyTrackSize=15
splitTime=-1
```

Command Example 2:

This example deletes copy group 7 and all copy pairs defined in this copy group.

```
HiCommandCLI DeleteReplication -o "D:\logs\9570V DeleteReplication.log"
"replicationgroupid=7"
```

Command result 2:

```
RESPONSE:
(Command completed; no data returned)
```

4.6.4 GetReplicationControllerPair

`GetReplicationControllerPair` obtains information about a replication controller pair.

In the TagmaStore AMS, Thunder 9500V and Thunder 9200 series, replication controller pairs indicate remote paths. In Universal Storage Platform V, TagmaStore USP, Lightning 9900V, and Lightning 9900, the pairs indicate paths between MCUs and RCUs.

For this command, there are no access restrictions regarding the resource groups or permissions assigned to a user.

Table 4.86 GetReplicationControllerPair Command Parameters

Parameter Name	Status	Description
masterserialnum	Optional	Specify the serial number of the storage subsystem that contains the main control unit (MCU).
mastercontrollerid	Optional	Specify the CU number of the MCU.
remoteserialnum	Optional	Specify the serial number of the storage subsystem that contains the remote control unit (RCU).
remotessid	Optional	Specify the SSID of the RCU.

Parameter Values to be Obtained in Advance:

Execute the `GetReplicationControllerPair` command without specifying any parameters, and then obtain the values from the execution result. Specify the value of `masterSerialNum` that is displayed as An instance of `ReplicationControllerPair` in the `masterserialnum` parameter, the value of `masterControllerID` in the `mastercontrollerid` parameter, the value of `remoteSerialNum` in the `remoteserialnum` parameter, and the value of `remoteSSID` in the `remotessid` parameter.

Command Example 1:

This example obtains controller pair information for the MCU with CU number 10 in the storage subsystem with serial number 35001 and for the RCU with SSID 65534 in the storage subsystem with serial number 15001.

```
HiCommandCLI GetReplicationControllerPair -o "D:\logs\9970V
GetReplicationControllerPair.log" "masterserialnum=35001" "mastercontrollerid=10"
"remoteserialnum=15001" "remotessid=65534"
```

Command result 1:

```
RESPONSE:
An instance of ReplicationControllerPair
  objectID=REPCPLPAIR.35001.10.15001.65534
  masterArrayType=HDS9970V
  masterSerialNumber=35001
  masterControllerID=10
  masterStartDevNum=0
  masterEndDevNum=255
  remoteArrayType=HDS9980V
  remoteSerialNumber=15001
  remoteSSID=65534
  remoteControllerID=15
  remoteStartDevNum=0
  remoteEndDevNum=255
```

Command Example 2:

This example obtains the controller pair information in all storage subsystems that have been registered in the Device Manager database.

```
HiCommandCLI GetReplicationControllerPair -o "D:\logs\9970V
GetReplicationControllerPair.log"
```

Command result 2:

```
RESPONSE:
An instance of ReplicationControllerPair
  objectID=REPCPLPAIR.35001.10.15001.65534
  masterArrayType=HDS9970V
  masterSerialNumber=35001
  masterControllerID=10
  masterStartDevNum=0
  masterEndDevNum=255
  remoteArrayType=HDS9980V
  remoteSerialNumber=15001
  remoteSSID=65534
  remoteControllerID=15
  remoteStartDevNum=0
  remoteEndDevNum=255
```

4.6.5 ModifyReplication

ModifyReplication changes a copy pair status to split, resync, or restore:

- **split:** Copying between copy pair has stopped.
- **resync:** Synchronization is achieved from P-VOL to S-VOL so that their contents match.
- **restore:** Synchronization is achieved from S-VOL to P-VOL so that their contents match.

A user who has only the View permission cannot execute this command. A user to whom user-defined resource groups are assigned, and who also has the Modify permission, can specify the allowed resources only. If resources that are not allowed are specified, an error occurs.

Note: When you change a copy pair by using the TagmaStore AMS/WMS series in which Power Saving is enabled, if you select an LU that belongs to an array group in the SpinDown status, the copy pair change might fail. Before changing a copy pair, make sure that the array group to which the target LU belongs is in the SpinUp status, and then execute the operation. To check the array group status or to change the array group to the SpinUp status, use Storage Navigator Modular.

Table 4.87 ModifyReplication Command Parameters

Parameter Name	Status	Description
replicationgroupid	Required	Specify the copy group number.
operation	Required	Specify one of the following values: <i>split</i> : Split the copy pair. <i>resync</i> : Re-synchronize the copy pair from the primary volume (P-VOL) to the secondary volume (S-VOL). <i>restore</i> : Re-synchronize the copy pair from S-VOL to P-VOL.
pvolserialnum	Optional	Specify the serial number of the storage subsystem that contains the P-VOL.
pvoldevnum	Optional	Specify the device number of P-VOL. This parameter can be specified in decimal, and in colon-separated hexadecimal. If you specify a hexadecimal number, for TagmaStore USP, Lightning 9900V, and Lightning 9900, use the <i>xx:yy</i> format, where <i>xx</i> is the CU number, and <i>yy</i> is the LDEV number. For Universal Storage Platform V, use the <i>ww:xx:yy</i> format, where <i>ww</i> is the LDKC number, <i>xx</i> is the CU number, and <i>yy</i> is the LDEV number. <i>ww</i> is optional. If you omit <i>ww</i> , the LDKC number is regarded as 0. Note: The execution results are output in decimal.
svolserialnum	Optional	Specify the serial number of the storage subsystem that contains the S-VOL. You do not need to specify this parameter for TrueCopy in Thunder 9500V. Note: If you specify this parameter, specify either <i>svolserialnum</i> or <i>svolsequencenum</i> . Do not specify both parameters at the same time. This might cause an error to occur.
svolsequencenum	Optional	Specify the sequence number of the storage subsystem that contains the S-VOL. Make sure that you specify this parameter for TrueCopy in Thunder 9500V. Note: If you specify this parameter, specify either <i>svolserialnum</i> or <i>svolsequencenum</i> . Do not specify both parameters at the same time. This might cause an error to occur.
svoldevnum	Optional	Specify the device number of S-VOL. This parameter can be specified in decimal, and in colon-separated hexadecimal. If you specify a hexadecimal number, for TagmaStore USP, Lightning 9900V, and Lightning 9900, use the <i>xx:yy</i> format, where <i>xx</i> is the CU number, and <i>yy</i> is the LDEV number. For Universal Storage Platform V, use the <i>ww:xx:yy</i> format, where <i>ww</i> is the LDKC number, <i>xx</i> is the CU number, and <i>yy</i> is the LDEV number. <i>ww</i> is optional. If you omit <i>ww</i> , the LDKC number is regarded as 0. Note: The execution results are output in decimal.

Parameter Name	Status	Description
copytracksize	Optional	Specify the copy pace (from 1 to 15). When the status of the QuickShadow pair or COW Snapshot pair is <code>split</code> or <code>resync</code> , the specification for this parameter is ignored. When changing the copy pace for an identified copy, specify the parameters <code>pvolserialnum</code> , <code>pvoldevnum</code> , <code>svolserialnum</code> , and <code>svoldevnum</code> . When using one operation to change the copy paces of all copy pairs, omit these parameters.

Note: To manipulate a specific copy pair in a copy group, the `pvolserialnum`, `pvoldevnum`, `svolserialnum` (or `svolsequencenum`), and `svoldevnum` parameters must all be specified. If you omit all of these parameters, the system deletes all copy pairs in the specified copy group.

Parameter Values to be Obtained in Advance:

`replicationgroupid`, `pvolserialnum`, `pvoldevnum`, `svolserialnum`, and `svoldevnum`: Obtain the values of these parameters from the execution result of the `GetHost` command. Specify the value of `replicationGroupID` that is displayed as An instance of `ReplicationGroup` in the `replicationgroupid` parameter, the value of `pvolSerialNum` that is displayed as An instance of `ReplicationInfo` in the `pvolserialnum` parameter, the value of `pvolDevNum` in the `pvoldevnum` parameter, the value of `svolSerialNum` in the `svolserialnum` parameter, and the value of `svolDevNum` in the `svoldevnum` parameter.

`svolsequencenum`: Obtain the parameter value from the execution result of the `GetStorageArray` command for the storage subsystem that contains the S-VOL. Specify the value of `sequenceNumber` that is displayed as An instance of `StorageArray` in the `svolsequencenum` parameter.

Command Example:

This example changes to the suspend status (`split`) the status of the copy pair for `ShadowImage` that is defined in the copy group with copy group number 12. The primary volume (P-VOL) of the copy pair is the logical device with LDEV number 20 in the storage subsystem with serial number 65010001. The secondary volume is the logical device with LDEV number 21 in the storage subsystem with serial number 65010001.

```
HiCommandCLI ModifyReplication -o "D:\logs\9570V ModifyReplication.log"
"replicationgroupid=12" "operation=split" "pvolserialnum=65010001" "pvoldevnum=20"
"svolserialnum=65010001" "svoldevnum=21"
```

Command result:

```
RESPONSE:
An instance of ReplicationGroup
  objectID=REPGROUP.12
  replicationGroupID=12
  groupName=HCMD_CG000d
  pvolHostID=1
  pvolInstanceNumber=11
  pvolPortNumber=50,000
  svolHostID=3
  svolInstanceNumber=12
  svolPortNumber=50,001
  replicationFunction=ShadowImage
  copyTrackSize=15
List of 1 ReplicationInfo elements:
```

```
An instance of ReplicationInfo
objectID=REPINFO.65010001.20.65010001.21
pvolSerialNumber=65010001
pairName=HCMD_CP0001
pvolArrayType=HDS9570V
pvolDevNum=20
pvolObjectID=LU.HDS9570V.65010001.20
pvolPoolID=-1
svolSerialNumber=65010001
svolArrayType=HDS9570V
svolDevNum=21
svolObjectID=LU.HDS9570V.65010001.21
svolPoolID=-1
replicationFunction=ShadowImage
status=16
muNumber=0
copyTrackSize=15
splitTime=-1
```

4.7 Items Output as Command Execution Results

Table 4.88 lists the items output when Device Manager CLI commands are executed. The following items are output for each instance as attributes of Device Manager instances. The meaning of items that have the same name might differ for different instances. When you reference an output item, check the instance of the item.

Table 4.88 Items Output when Device Manager CLI Commands are Executed

Instance	Attribute	Description	Commands that Output this Item
Alert	Number	Alert number.	4.5.4 <i>GetAlerts</i>
	Type	Alert type. One of the following types is output: Server: Device Manager server Trap: SNMP trap from the storage subsystem	
	Source	Alert source. The object ID of the storage subsystem is output.	
	severity	Alert severity. One of the following values is output: 0: Unknown 1: No Error 2: Acute 3: Serious 4: Moderate 5: Service	
	component	Component where the alert occurred. For details about the component, see the attribute <i>name</i> of the instance <i>Component</i> .	
	description	Alert description (example: Serious error detected on DKU drive.).	
	actionToTake	Action to be taken for the alert (example: Contact Customer Support.).	
	Data	Data required to analyze the alert. When the value of <i>type</i> is <i>Trap</i> , the SIM data required by the customer service is output.	
	timeOfAlert	Time the alert occurred (example: 2006/01/06 20:13:56).	

Instance	Attribute	Description	Commands that Output this Item
ArrayGroup	objectID	Object ID of the array group.	4.1.1 AddArrayGroup 4.1.17.1 GetStorageArray (subtarget=ArrayGroup) 4.1.17.5 GetStorageArray (subtarget=FreeSpace)
	Name	Array group name. This item is output if it has been registered.	
	chassis	Number of the chassis containing the array group. One of the following values is output: 0: Thunder 9200, Thunder 9500V, TagmaStore AMS/WMS series 1 - 12: Lightning 9900 1 - 12, 101 - 256: Lightning 9900V 1 - 18, 65 - 96, 101 - 16484: TagmaStore USP 1 - 32, 68 - 96, 101 - 16484, 16485 - 16516: Universal Storage Platform V	
	Number	Array group number.	
	displayName	Display name of the array group (example: 1, 1-1, 2-1-1, S3-1). S in the above format indicates the type of the array group. E: Array group of an External volume. V: Array group of V-VOL X: Array group of an HDP volume	
	raidType	RAID level of the array group. RAID levels are output in the format RAIDX (yD+zP). RAIDX: RAID level yD: Number of data disks zP: Number of parity disks For example, when RAID5 (2D+1P) is output for raidType, it means the array group consists of two data disks and one parity disk.	
	emulation	Emulation mode. This item is output for the Lightning 9900, Lightning 9900V, TagmaStore USP, and Universal Storage Platform V (example: OPEN-8).	

Instance	Attribute	Description	Commands that Output this Item
	diskType	Type of the physical disks making up the array group. This item is output for the Lightning 9900, Lightning 9900V, TagmaStore USP, and Universal Storage Platform V (example: DKR2E-J146FC).	
	diskSize	Size (in GB units for type tag) of the physical disks making up the array group (example: 72). 0 is output for an external volume.	
	diskSizeInKB	Actual size (in KB) of the physical disks making up the array group (example: 75,497,472). 0 is output for an external volume.	
	controllerID	Disk controller of the array group (example: ACP of Lightning 9900). One of the following values is output: -1: Thunder 9200, Thunder 9500V, TagmaStore AMS/WMS series 1 - 4: Lightning 9900 -1, 1 - 4: Lightning 9900V, TagmaStore USP, and Universal Storage Platform V	
	totalCapacity	Total size of all LDEVs in the array group (in KB).	
	allocatedCapacity	Total size of all LDEVs assigned paths in the array group (in KB).	
	freeCapacity	Total size of all LDEVs that are not assigned paths in the array group (in KB).	
	hiHsmCapacity	Total size of all LDEVs reserved for Volume Migration in the array group (in KB).	
	onDemandCapacity	Total size of all LDEVs expanded on demand in the array group (in KB).	
	totalFreeSpace	Total size of free areas that are not LDEVs in the array group (in KB).	
	largestFreeSpace	Maximum size of the continuous free area that is not an LDEV in the array group (in KB).	
	substance	Indicates whether the array group is an internal volume or an external volume. 0: Array group of Internal volume 1: Array group of External volume	

Instance	Attribute	Description	Commands that Output this Item
	slprNumber	SLPR number. Valid for TagmaStore USP and Universal Storage Platform V. -1 is output when the SLPR is invalid or for other storage subsystems.	
	clprNumber	CLPR number. Valid for TagmaStore USP and Universal Storage Platform V. -1 is output when the CLPR is invalid or for other storage subsystems.	
	cuInfo	List of CU numbers related to the array group. A list of numbers separated by spaces or semicolons (;) is output when the storage subsystem is TagmaStore USP or Universal Storage Platform V and the operator is the partitioned storage administrator. This item is not output when the storage subsystem is TagmaStore USP or Universal Storage Platform V and the operator is the storage administrator, or when other storage subsystems are being used, as it is not relevant.	
	openTotalCapacity	Total size of all open LDEVs in the array group (in KB).	
	openAllocatedCapacity	Total size of all open LDEVs assigned paths in the array group (in KB).	
	openFreeCapacity	Total size of all open LDEVs that are not assigned paths in the array group (in KB).	
	openHiHsmCapacity	Total size of all open LDEVs reserved for Volume Migration in the array group (in KB).	
	openOnDemandCapacity	Total size of all open LDEVs expanded on demand in the array group (in KB).	
	imTotalCapacity	Total size of all intermediate LDEVs in the array group (in KB).	
	imAllocatedCapacity	Total size of all intermediate LDEVs assigned paths in the array group (in KB).	
	imFreeCapacity	Total size of all intermediate LDEVs that are not assigned paths in the array group (in KB).	

Instance	Attribute	Description	Commands that Output this Item
	imHiHsmCapacity	Total size of all intermediate LDEVs reserved for Volume Migration in the array group (in KB).	
	imOnDemandCapacity	Total size of all intermediate LDEVs expanded on demand in the array group (in KB).	
	mfTotalCapacity	Total size of all mainframe LDEVs in the array group (in KB).	
	mfHiHsmCapacity	Total size of all mainframe LDEVs reserved for Volume Migration in the array group (in KB).	
	mfOnDemandCapacity	Total size of all mainframe LDEVs expanded on demand in the array group (in KB).	
	mfAllocatedCapacity	Total size of all mainframe LDEVs assigned paths in the array group (in KB).	
	mfUnallocatedCapacity	Total size of all mainframe LDEVs that are not assigned paths in the array group (in KB).	
	openAllocatedActualCapacity	<p>Total size of the open logical units and the intermediate logical units that satisfy both the following conditions (in KB):</p> <ul style="list-style-type: none"> ▪ Paths are assigned. ▪ The logical unit is a real volume that has physical capacity. 	
	openUnallocatedCapacity	<p>Total size of the open logical units and the intermediate logical units that satisfy both the following conditions (in KB):</p> <ul style="list-style-type: none"> ▪ Paths are not assigned. ▪ Paths can be assigned by using Device Manager. 	
	openUnallocatedActualCapacity	<p>Total size of the open logical units and the intermediate logical units that satisfy all the following conditions (in KB):</p> <ul style="list-style-type: none"> ▪ Paths are not assigned. ▪ Paths can be assigned by using Device Manager. ▪ The logical unit is a real volume that has physical capacity. 	

Instance	Attribute	Description	Commands that Output this Item
	openReservedCapacity	Total size of the open logical units and the intermediate logical units that satisfy both the following conditions (in KB): <ul style="list-style-type: none"> Paths are not assigned. Paths cannot be assigned by using Device Manager. 	
	openReservedActualCapacity	Total size of the open logical units and the intermediate logical units that satisfy all the following conditions (in KB): <ul style="list-style-type: none"> Paths are not assigned. Paths cannot be assigned by using Device Manager. The logical unit is a real volume that has physical capacity. 	
ArrayReservation	objectID	Object ID of the locked object.	4.1.2 AddArrayReservation
	target	Object ID of the locked storage subsystem.	4.1.16 GetArrayReservation
	loginID	Login ID of the user who locked the storage subsystem.	4.1.18 ModifyArrayReservation
	beginTime	Time the storage subsystem is locked. The number of seconds elapsed from 00:00:00 on January 1, 1970 (world standard time) is output.	
CommParameters	userID	User ID for accessing the storage subsystem. This item is not output for Lightning 9900.	4.1.7 AddStorageArray
	ipAddress	IP address of the storage subsystem.	4.1.17.2 GetStorageArray (subtarget=Commparameters)
	ipAddress2	Second IP address of the storage subsystem. This item is output for the TagmaStore AMS/WMS series, Thunder 9500V, and Thunder 9200.	4.1.22 RefreshStorageArrays
	snmpWrCommunity	SNMP community name. This item is output for Lightning 9900.	
	snmpRdCommunity	SNMP community name. This item is output for Lightning 9900.	
	snmpPort	SNMP port number. This item is output for Lightning 9900.	

Instance	Attribute	Description	Commands that Output this Item
Component	name	<p>Component name.</p> <p>One of the following values is output:</p> <p>For the Universal Storage Platform V, TagmaStore USP, Lightning 9900V, and Lightning 9900:</p> <p>DKC Battery: Status of all batteries</p> <p>DKC Cache: Status of the controller cache</p> <p>DKC Cache Switch: Status of the internal bus</p> <p>DKC Environment: Status of the controller environment</p> <p>DKC Fan: Status of controller fans</p> <p>DKC Power Supply: Status of the controller power supply</p> <p>DKC Processor: Status of the processor</p> <p>DKC Shared Memory: Status of the shared memory</p> <p>DKU Drive: Status of all drives</p> <p>DKU Environment: Status of the disk enclosure environment</p> <p>DKU Fan: Status of the disk enclosure fan</p> <p>DKU Power Supply: Status of the disk enclosure power supply</p> <p>For the TagmaStore AMS/WMS series, Thunder 9500V, and Thunder 9200:</p> <p>AC #0</p> <p>Backup Battery #[0-1]</p> <p>Battery #0</p> <p>Cache #[0-3]</p> <p>Controller #[0-1]</p> <p>Disk Drive #[0-224]</p> <p>Enclosure #[0-59]</p> <p>Fan #[0-59]</p> <p>Loop #[0-7]#1</p> <p>Power Supply #[0-59]</p> <p>#1 Backbone Fibre Channel loop between the controller and physical disks</p>	4.1.17.3 <i>GetStorageArray</i> (<i>subtarget=Component</i>)

Instance	Attribute	Description	Commands that Output this Item
		<p>The CTU component is output only for Thunder 9580V:</p> <p>CTU Enclosure #[0-1] CTU Fan #[0-1] CTU Power Supply #[0-1]</p> <p>The host connector component is output only for the TagmaStore AMS/WMS series:</p> <p>Connector #CTL[0-1]-[A-B]-[0-1] (example: Connector #CTL1-A-0 indicates the first host-connector information of controller 1 and port A.)</p> <p>The NNC component is output only for the TagmaStore AMS/WMS series:</p> <p>NNC #[0-3] NNC Base NNC Connector #CTL[0-1]-[A,C]-0 NNC DIMM #[0-15] NNC Ext Card #[0-3] NNC Ext Connector #[0-3]-[0-7] NNC Fan #[0-3] NNC Power Supply #[0-3] NNC (type [-1,0-2])</p>	
	value	<p>Current status of the component.</p> <p>One of the following values is output:</p> <p>1: Normal 2: Acute 3: Serious 4: Moderate 5: Service</p>	
	description	<p>Current status of the component.</p> <p>One of the following values is output depending on the value of value:</p> <p>Normal Acute Serious Moderate Service</p>	
ConfigFile	objectID	Object ID of the configuration definition file for CCI.	4.4.6 <i>GetHost</i>

Instance	Attribute	Description	Commands that Output this Item
	instanceNumber	Instance number of the HORCM instance.	
	controlledBy	Name of the program that defines the configuration of the copy pair. One of the following program names is output: Device Manager Protection Manager	
	portNumber	Port number of the HORCM instance.	
	valid	Indicates whether HORCM instance can operate. One of the following values is output: 0: The HORCM instance can operate. 1: The HORCM instance cannot operate.	
DebugLevel	value	Debug level. One of the following values is output: 0: All information 1: Basic information level 2: Warning level 3: Failure level 4: Fatal level	4.5.5 <i>GetDebugLevel</i> 4.5.9 <i>ModifyDebugLevel</i>
	description	Description of the debug level indicated by <i>value</i> .	
File	name	Log file name. The log recorded in the log file is output after the file name.	4.5.6 <i>GetLogFile</i>
FreeLUN	lun	LUN that can be assigned to the host storage domain.	4.1.17.6 <i>GetStorageArray (subtarget=HostStorageDomain)</i>
FreeSpace	objectID	Object ID of the free area in the array group.	4.1.1 <i>AddArrayGroup</i> 4.1.17.5 <i>GetStorageArray (subtarget=FreeSpace)</i>
	sizeInKB	Size of the free area in the array group (in KB).	
	cylinders	Number of cylinders in the free area in the array group. 0 is output for open volumes.	

Instance	Attribute	Description	Commands that Output this Item
	fsControlIndex	Index number of the free area in the array group. Note: This value is automatically created when the free area increases or decreases when LDEVs are created or deleted.	
Host	objectID	Object ID of the host.	4.2.6 <i>GetLogicalGroup</i> 4.4.1 <i>AddHost</i> 4.4.3 <i>AddHostRefresh</i> 4.4.6 <i>GetHost</i> 4.4.8 <i>ModifyHost</i>
	name	Host name. If EXSP_RAID500_xxxx_xxxx is output as this value, the host is a virtual host and the value indicates a TagmaStore USP port connected to an external subsystem.	
	ipAddress	Host IP address.	
	capacityInKB	Size of the LDEV allocated to the host (in KB). Note: For mainframe hosts, the value output for this attribute is 0.	
	hostType	Host type. One of the following values is output: 1: External port -1: Not applicable 2: Mainframe host	
	sysplexID	Mainframe host sysplexID.	
	HostInfo	objectID	
arrayType	Type (model) of the storage subsystem connected to the host.		
serialNumber	Serial number of the storage subsystem connected to the host.		
name	Display name of the HostInfo object. This item is output if it has been registered.		
ipAddress	Host IP address.		
mountPoint	LUN mount point.		
portID	Port ID.		
domainID	Domain ID of the host storage domain.		
scsiID	SCSI ID assigned to a channel in the storage subsystem. 15 is displayed for Fibre Channel.		

Instance	Attribute	Description	Commands that Output this Item
	lun	LUN of a logical unit in the storage subsystem.	
	devNum	Device number of the logical unit.	
	osScsiBus	Number of the SCSI bus on the host.	
	osScsiID	SCSI ID assigned to a channel on the host.	
	osLun	LUN of a logical unit on the host.	
	portWWN	WWN of the port in the host bus adapter.	
	fileSystemType	Type of the file system to be mounted.	
	fileSystemName	File system name.	
	sizeInMB	LUN size (in MB).	
	percentUsed	Rate of LUN usage (%).	
	lastUpdated	Latest update time of data. The number of seconds elapsed from 00:00:00 on January 1, 1970 (world standard time) is displayed.	
HostStorageDomain	objectID	Object ID of the host storage domain.	4.1.3 <i>AddHostStorageDomain</i> 4.1.17.6 <i>GetStorageArray</i> (subtarget=HostStorageDomain) 4.1.17.13 <i>GetStorageArray</i> (subtarget=Port) 4.1.20 <i>ModifyPort</i> 4.2.2 <i>AddLunScan</i> 4.2.6 <i>GetLogicalGroup</i> 4.3.3 <i>AddWWNForHostStorageDomain</i>
	name	Name of the host storage domain. This item is output if it has been registered.	
	portID	Port ID of the host storage domain.	
	domainID	Domain ID of the host storage domain.	

Instance	Attribute	Description	Commands that Output this Item
	hostMode	<p>Host connect mode.</p> <p>One of the following values is output:</p> <p>For the Universal Storage Platform V:</p> <ul style="list-style-type: none"> Standard VMware HP OpenVMS Tru64 Solaris NetWare Windows AIX VMware Extension Windows Extension UVM <p>For the TagmaStore USP:</p> <ul style="list-style-type: none"> Standard Sequent HP Solaris Netware Windows Windows Extension Tru64 HI-UX AIX OPEN-VMS UVM 	

Instance	Attribute	Description	Commands that Output this Item
		For the Lightning 9900V: Standard Sequent HP Solaris Netware Windows Tru64 HI-UX AIX OPEN-VMS Windows Extension Solaris Extension Standard Extension2 HP Extension2 Solaris Extension2 Windows Extension2 AIX Extension2	
		For the Lightning 9900: Standard Sequent HP HP Extension Solaris Netware Windows Tru64 HI-UX AIX OPEN-VMS	
		For TagmaStore AMS/WMS series, Thunder 9500V and Thunder 9200: Standard Open VMS TRESPASS Wolfpack	
	hostMode2	Host connect mode. The following values is output for the TagmaStore AMS/WMS series, Thunder 9500V, and Thunder 9200:	

Instance	Attribute	Description	Commands that Output this Item
		For TagmaStore AMS/WMS series: Same Node Name Mode Tru Cluster Mode ASL Report Mode (Active/Passive Group) ASL Report Mode (Active/Passive) ASL Report Mode (Active/Active) Port-ID No Report Mode Port-ID Conversion Mode PSUE Read Reject Mode UA (06/2A00) suppress Mode CCHS Mode HP-UX Mode NACA Mode Product Serial Response Mode Unique Reserve Mode 1 Reset Propagation Mode HISUP OFF Mode SPC-2 Mode	

Instance	Attribute	Description	Commands that Output this Item
		<p>For Thunder 9500V:</p> <ul style="list-style-type: none"> ftServer Connection Mode 2 SRC Read Command Reject Mode UA (06/2A00) suppress Mode HISUP Mode CCHS Mode HP Connection Mode 2 Product ID DF400 Mode NACA Mode SUN Cluster Connection Mode Persistent RSV Cluster Mode Reset Target (Reset Bus Device) Mode Reserve Mode Reset Logical Unit Mode Reset Logout of Third Party Process Mode No_RSV_Conf Mode Tru Cluster Connection Mode Path Switch Mode(Active/Passive Group) Path Switch Mode(Active/Passive) Path Switch Mode(Active/Active) Port-ID No Report Mode Port-ID Conversion Mode Same Node Name Mode SPC-2 Mode 	

Instance	Attribute	Description	Commands that Output this Item
		For Thunder 9200: UA (06/2A00) suppress Mode VxVM DMP Mode HP Connection Mode Report inquiry page 83H HP Connection Mode 2 HISUP Mode CCHS Mode Standard INQUIRY data expand Mode Product ID DF400 Mode HBA WWN Report Mode NACA Mode SUN Cluster Connection Mode Persistent RSV Cluster Mode ftServer Connection Mode 1 ftServer Connection Mode 2 SRC Read Command Reject Mode	

Instance	Attribute	Description	Commands that Output this Item
	hostModeOption	<p>Host mode option.</p> <p>One of the following values is output for the Universal Storage Platform V:</p> <ul style="list-style-type: none"> 2: VERITAS Database Edition/Advanced Cluster or VERITAS Cluster Server 4.0 is used. 6: The value of the <code>TPRLO</code> parameter of the HBA mini-port driver is 2. 7: Automatic recognition of LUNs 12: LUNs without defined paths are hidden. 13: Service information messages indicating the number of connection failures between ports are reported. <p>One of the following values is output for the TagmaStore USP:</p> <ul style="list-style-type: none"> 2: VERITAS Database Edition/Advanced Cluster or VERITAS Cluster Server 4.0 is used. 6: The value of the <code>TPRLO</code> parameter of the HBA mini-port driver is 2. 7: Automatic recognition of LUNs 12: LUNs without defined paths are hidden. 13: Service information messages indicating the number of connection failures between ports are reported. 14: The P-VOL and the S-VOL of TrueCopy are clustered by using HP TruCluster. 24: The volume size is 2 TB or more. 	
	displayName	Display name of the host storage domain.	
	nickname	Nickname of the host storage domain.	
IPAddress	ipAddress	IP address of the port controller. This item is output when NAS is created.	4.1.17.14 <i>GetStorageArray (subtarget=PortController)</i>
JournalPool	objectID	Object ID of the journal pool.	4.1.17.7 <i>GetStorageArray (subtarget=JournalPool)</i>

Instance	Attribute	Description	Commands that Output this Item
	name	Name of the journal pool. This is output if the name has been registered.	
	poolFunction	Outputs the type of function that operates the journal pool. For Thunder 9500V and TagmaStore AMS/WMS series: 3: QuickShadow For TagmaStore USP and Universal Storage Platform V: 4: UniversalReplicator	
	poolID	Pool ID to which the journal pool belongs. Note: This value is output in the following format for Universal Storage Platform V: <i>controllerID x 256 + journal-group-number</i>	
	controllerID	Disk controller ID of the journal pool. For Thunder 9500V and TagmaStore AMS/WMS series, the ID of the controller containing the pool is displayed. For Universal Storage Platform V, the logical DKC number is displayed. -1 is output for other storage subsystems.	

Instance	Attribute	Description	Commands that Output this Item
	poolType	<p>Type of pool.</p> <p>The output value differs depending on the poolFunction value.</p> <p>When poolFunction is 3:</p> <ul style="list-style-type: none"> -1: None 16: QuickShadow pool <p>When poolFunction is 4:</p> <ul style="list-style-type: none"> -1: None 0: UniversalReplicator M-JNL 1: UniversalReplicator R-JNL 2: Initialized UniversalReplicator journal group 3: UniversalReplicator journal group that does not have a journal volume or a UniversalReplicator journal group for mainframe volumes 8: UniversalReplicator M-JNL for mainframe volumes 9: UniversalReplicator R-JNL for mainframe volumes 10: Initialized UniversalReplicator journal group for mainframe volumes 	

Instance	Attribute	Description	Commands that Output this Item
LDEV	objectID	Object ID of the LDEV.	4.1.15 <i>FormatLU</i> 4.1.17.8 <i>GetStorageArray</i> (subtarget=LDEV) 4.1.17.10 <i>GetStorageArray</i> (subtarget=LogicalUnit) 4.1.4 <i>AddLogicalUnit</i> 4.1.5 <i>AddLUSE</i> 4.3.1 <i>AddLun</i>
	name	LDEV name. This item is output if it has been registered.	
	devNum	Device number of the LDEV. For Universal Storage Platform V, a combination of a logical DKC number, a CU number, and an LDEV number (=logical-DKC-number*65536+CU*256+LDEV) is output. For Lightning 9900, Lightning 9900V, and TagmaStore USP, a combination of a CU number and an LDEV number (=CU*256+LDEV) is output. For Thunder 9200, Thunder 9500V, and the TagmaStore AMS/WMS series, an LU number is output.	
	displayName	Display name of the LDEV.	
	emulation	Emulation mode. This item is output for Lightning 9900, Lightning 9900V, TagmaStore USP, and Universal Storage Platform V (example: OPEN-8).	
	cylinders	Number of cylinders in the LDEV. This item is output only for Lightning 9900, Lightning 9900V, TagmaStore USP, and Universal Storage Platform V. -1 is output for other storage subsystems.	
	isComposite	Indicates whether the LDEV is used on a LUSE volume. 1: LUSE volume 0: Not a LUSE volume	
	sizeInKB	LDEV size (in KB).	
	lba	Number of LBAs. This item is output for Lightning 9900, Lightning 9900V, TagmaStore USP, and Universal Storage Platform V. -1 is output for other storage subsystems.	

Instance	Attribute	Description	Commands that Output this Item
	raidType	RAID level of the LDEV. RAID levels are output in the format RAIDX (yD+zP). RAIDX: RAID level yD: Number of data disks zP: Number of parity disks For example, when RAID5 (2D+1P) is output for raidType, it means the array group consists of two data disks and one parity disk.	
	substance	Indicates whether the LDEV is internal or in an external subsystem. 0: Internal LDEV 1: LDEV in an external subsystem	
	volumeType	Information about LDEV options. One of the following values is output: 0: I/O suppression mode is invalid and cache mode is invalid. 1: I/O suppression mode is invalid and cache mode is valid. 2: I/O suppression mode is valid and cache mode is invalid. 3: I/O suppression mode is valid and cache mode is valid. -1: Unknown	
	slotSizeInKB	Size of one slot. This item is used by FlashAccess (DCR). This item is output for Lightning 9900, Lightning 9900V, and TagmaStore USP. -1 is output for other storage subsystems.	
	chassis	Number of the chassis containing the LDEV.	
	arrayGroup	Number of the array group containing the LDEV.	
	path	Indicates whether a path is assigned to the LDEV. true: A path is assigned. false: No path is assigned.	
	onDemandDevice	Indicates whether the LDEV is used as a device that is expanded on demand. true: The LDEV is expanded on demand. false: The LDEV is not expanded on demand.	

Instance	Attribute	Description	Commands that Output this Item
	devType	<p>Indicates the purpose of the LDEV.</p> <p>HiHSMReserved: The LDEV is reserved for Volume Migration.</p> <p>OnDemandDevice: The LDEV is expanded on demand.</p>	
	isStandardLDEV	<p>Indicates whether the size of the LDEV is the standard size or a custom size.</p> <p>true: Standard size</p> <p>false: Custom size (CVS)</p>	
	guardMode	<p>Guard mode.</p> <p>A space is output when the guard mode is invalid. When multiple modes are set, the modes are separated by semicolons (;) when they are output.</p> <p>The following values are output:</p> <p>Protect</p> <p>Read only</p> <p>Invisible</p> <p>Zero Read Capacity</p> <p>S-VOL disable</p> <p>This item is output only for Lightning 9900V, Thunder 9500V, the TagmaStore AMS/WMS series, TagmaStore USP, and Universal Storage Platform V. This item is not output for other storage subsystems.</p>	
	diskType	<p>Type of the disk drive.</p> <p>One of the following values is output:</p> <p>0: FC</p> <p>1: SATA</p> <p>2: BD</p> <p>-1: Unknown</p> <p>For Thunder 9500V, 0, 1, 2, or -1 is output.</p> <p>For TagmaStore AMS/WMS series, 0, 1, or -1 is output.</p> <p>For TagmaStore USP, -1 is output.</p> <p>For TagmaStore USP and Universal Storage Platform V, -1 is output.</p> <p>For an external volume on TagmaStore USP or Universal Storage Platform V, 1, 2, or -1 is output.</p> <p>-1 is output in other cases.</p>	

Instance	Attribute	Description	Commands that Output this Item
	slprNumber	<p>SLPR number.</p> <p>This item is output only for TagmaStore USP and Universal Storage Platform V. -1 is output for other storage subsystems.</p>	
	clprNumber	<p>CLPR number (for Universal Storage Platform V, TagmaStore USP, and the TagmaStore AMS/WMS series).</p> <p>-1 is output for other storage subsystems.</p> <p>Note: For the TagmaStore AMS/WMS series, the default port controller number of the LDEV is output.</p>	
	cacheResidencyMode	<p>Cache residency mode.</p> <p>One of the following values is output for TagmaStore USP and Universal Storage Platform V:</p> <p>0: None 1: Bind mode 2: Priority mode -1: Unknown</p> <p>-1 is output for other storage subsystems.</p>	
	stripeSizeInKB	<p>Stripe size (in KB).</p> <p>This item is output for the TagmaStore AMS/WMS series. -1 is output for other storage subsystems.</p>	
	volumeKind	<p>LDEV type.</p> <p>One of the following values is output for Lightning 9900, Lightning 9900V, TagmaStore USP, and Universal Storage Platform V:</p> <p>1: Mainframe volume 2: Intermediate volume 3: Open volume -1: Unknown</p> <p>3 is output for other storage subsystems.</p>	

Instance	Attribute	Description	Commands that Output this Item
	status	<p>LDEV status.</p> <p>One of the following values is output for TagmaStore USP and Universal Storage Platform V:</p> <p>Unknown: Unknown</p> <p>Normal: Normal status</p> <p>Blocked: The LDEV is blocked.</p> <p>Format: The LDEV is being formatted.</p> <p>Correction Access: The access attribute is being modified.</p> <p>Copying: Data is being copied.</p> <p>ReadOnly: Read-only</p> <p>Shredding: The LDEV is being shredded.</p> <p>For other storage subsystems, Unknown is output.</p> <p>Note: For all unformatted LDEVs, Blocked is output. Try formatting an LDEV to determine whether it can be formatted.</p>	
	dpType	<p>Volume type of Hitachi Dynamic Provisioning</p> <p>One of the following values is output for Universal Storage Platform V:</p> <p>0: HDP volume</p> <p>1: HDP pool volume</p> <p>-1: Non-HDP volume</p> <p>-1 is output for other storage subsystems.</p>	

Instance	Attribute	Description	Commands that Output this Item
	consumedSizeInKB	<p>Usage of the HDP volume (KB). One of the following values is output for Universal Storage Platform V:</p> <p>When the LDEV is an HDP volume: Usage of the HDP volume</p> <p>Note: When the HDP volume has not been associated with an HDP pool, 0 is displayed. When the operator is the partitioned storage administrator, -1 is displayed.</p> <p>Note: The capacity of the HDP volume is allocated from an HDP pool in tens of MB, so when the usage of the HDP volume reaches 100%, the value of <code>consumedSizeInKB</code> might not be equal to the value of <code>sizeInKB</code>.</p> <p>Note: This value might greatly increase depending on the combination of the file system and the OS of a host that uses the HDP volume. For details, see the HDP manual.</p> <p>When the LDEV is not an HDP volume: The same value as <code>sizeInKB</code></p> <p>-1 is output for other storage subsystems.</p>	
LogicalDKC	logicalDKCNumber	Logical DKC number.	4.1.17.9 <i>GetStorageArray (subtarget=LogicalDKC)</i>
	mfLogicalSerialNumber	Serial number of the logical DKC recognized by a mainframe host.	
LogicalGroup	objectID	Object ID of the logical group.	4.2.1 <i>AddLogicalGroup</i> 4.2.3 <i>AddObjectForLogicalGroup</i> 4.2.6 <i>GetLogicalGroup</i> 4.2.7 <i>ModifyLogicalGroup</i>
	name	Name of the logical group.	
	parentID	Object ID of the parent group. This item is not output when the logical group is the highest level.	
	logicalPath	Full path name of the logical group.	
	description	Description of the logical group. This item is output if it has been registered.	
	icon	Icon file name. This item corresponds to the icon file displayed by Web Client.	

Instance	Attribute	Description	Commands that Output this Item
	capacity	Total size of the paths assigned to the logical groups (in GB). The total size of all the paths assigned to the lower-level logical groups is output.	
	capacityInKB	Total size of the paths assigned to the logical groups (in KB). The total size of all the paths assigned to the lower-level logical groups is output.	
	realCapacityInKB	Total size of the logical units allocated to the logical groups (in KB). The total size of all the logical units allocated to the lower-level logical groups is output.	
	percentUsed	Percentage of the size used by the host in regards to the total size of logical units allocated to the logical group.	
	numberOfLUNs	Number of LUNs allocated to the logical group. This item indicates the total number of LUNs allocated to the lower-level logical groups.	
LogicalUnit	objected	Object ID of the logical unit.	4.1.4 <i>AddLogicalUnit</i> 4.1.5 <i>AddLUSE</i> 4.1.15 <i>FormatLU</i> 4.1.17.4 <i>GetStorageArray</i> (subtarget=Filter) 4.1.17.7 <i>GetStorageArray</i> (subtarget=JournalPool) 4.1.17.10 <i>GetStorageArray</i> (subtarget=LogicalUnit) 4.1.17.15 <i>GetStorageArray</i> (subtarget=ReplicationInfo) 4.1.19 <i>ModifyLogicalUnit</i>
	name	Name of the logical unit. This item is output if it has been registered.	
	devNum	Number of the LDEV contained in the logical unit. For Universal Storage Platform V, a combination of a logical DKC number, a CU number, and an LDEV number (=logical-DKC-number*65536+CU*256+LDEV) is output. For TagmaStore USP, Lightning 9900V, and Lightning 9900, a combination of a CU number and an LDEV number (=CU*256+LDEV) is output. For the TagmaStore AMS/WMS series, Thunder 9500V, and Thunder 9200, an LU number is displayed.	
	displayName	Display name of the logical unit.	

Instance	Attribute	Description	Commands that Output this Item
	emulation	Emulation mode. This item is output for Lightning 9900, Lightning 9900V, TagmaStore USP, and Universal Storage Platform V (example: OPEN-8).	
	devCount	Count of LDEV contained in the logical unit. For example, for the LUSE volume in Lightning 9900, devCount is 2 to 36. For regular volumes, devCount is 1.	
	devType	Type of the LDEV contained in the logical unit. This item indicates the purpose of the LDEV. CommandDevice: The LDEV is a command device.	
	capacityInKB	Volume size of the logical unit (in KB).	
	path	Indicates whether a path is assigned to the logical unit. true: A path is assigned. false: No path is assigned.	
	commandDevice	Indicates whether the logical unit is used a command device. true: Used as a command device. false: Not used as a command device	
	commandDeviceEx	Indicates the usage status of the logical unit. 0: Not a command device. 1: Command device. 2: Remote command device.	
	commandDeviceSecurity	Indicates whether command device security is set when the logical unit is used as a command device. true: Set. false: Not set.	
	chassis	Number of the chassis where the logical unit is located.	
	arrayGroup	Number of the array group containing the logical unit.	

Instance	Attribute	Description	Commands that Output this Item
	raidType	RAID level of the logical unit. RAID levels are output in the format RAIDX (yD+zP). RAIDX: RAID level yD: Number of data disks zP: Number of parity disks For example, when RAID5 (2D+1P) is output for raidType, it means the array group consists of two data disks and one parity disk.	
	currentPortController	Current number of port controllers for the logical unit. This item is output only for Thunder 9200, Thunder 9500V, and the TagmaStore AMS/WMS series. -1 is output for other storage subsystems.	
	defaultPortController	Default number of port controllers for the logical unit. This item is output only for Thunder 9200, Thunder 9500V, and the TagmaStore AMS/WMS series. -1 is output for other storage subsystems.	
	isComposite	Indicates whether the logical unit is a LUSE volume. 1: LUSE volume 0: Not a LUSE volume	
	trueCopyVolumeType	Volume type of TrueCopy. One of the following types is output: Unknown: Unknown Simplex: Not a TrueCopy volume P-VOL: TrueCopy P-VOL S-VOL: TrueCopy S-VOL	
	shadowImageVolumeType	Volume type of ShadowImage. One of the following types is output: Unknown: Unknown Simplex: Not a ShadowImage volume P-VOL: ShadowImage P-VOL S-VOL: ShadowImage S-VOL SP-VOL: ShadowImage SP-VOL	

Instance	Attribute	Description	Commands that Output this Item
	quickShadowVolumeType	<p>Volume type of QuickShadow or COW Snapshot.</p> <p>One of the following types is output:</p> <p>Unknown: Unknown</p> <p>Simplex: Not a QuickShadow or COW Snapshot volume</p> <p>P-VOL: QuickShadow or COW Snapshot P-VOL</p> <p>S-VOL: QuickShadow or COW Snapshot S-VOL</p> <p>POOL: QuickShadow or COW Snapshot pool</p>	
	universalReplicatorVolumeType	<p>Volume type of Universal Replicator.</p> <p>One of the following types is output:</p> <p>Unknown: Unknown</p> <p>Simplex: Not a Universal Replicator volume</p> <p>P-VOL: Universal Replicator P-VOL</p> <p>S-VOL: Universal Replicator S-VOL</p> <p>JNL-VOL: Universal Replicator JNL-VOL and Universal Replicator JNL-VOL for the mainframe host.</p>	
	sysVolFlag	<p>Indicates whether the logical unit is a system volume.</p> <p>1: System volume</p> <p>0: Not system volume</p>	
	externalVolume	<p>Indicates whether the logical unit is used as an external volume.</p> <p>1: Used as an external volume.</p> <p>0: Not used as an external volume.</p>	
	differentialManagement	<p>Indicates whether the logical unit is used for difference management.</p> <p>true: Used for difference management.</p> <p>false: Not used for difference management.</p>	
	quickShadowPoolID	<p>Pool ID of QuickShadow or COW Snapshot.</p> <p>When the logical unit is a pool of QuickShadow or COW Snapshot is a V-VOL mapped with the pool, the appropriate value is output as this attribute. In other cases, -1 is output.</p>	
	universalReplicatorPoolID	<p>Pool ID of UniversalReplicator.</p> <p>This item is output for TagmaStore USP and Universal Storage Platform V.</p>	

Instance	Attribute	Description	Commands that Output this Item
LUNGroup	objectID	Object ID of the LUN group.	4.1.17.13 <i>GetStorageArray</i> (subtarget=Port) 4.3.2 <i>AddLunGroup</i> 4.3.5 <i>AddWWNForLunGroup</i> 4.3.14 <i>ModifyLunGroup</i>
	name	Name of the LUN group. This item is output if it has been registered.	
	nickname	Nickname of the LUN group.	
PairedJournalPool	muNumber	The MU number of the paired journal pool.	4.1.17.7 <i>GetStorageArray</i> (subtarget=JournalPool)
	pairedSerialNumber	The serial number of the paired journal pool.	
	pairedArrayType	The type of paired journal pool storage subsystem. Note: A valid value is output for this item only when the paired journal pool storage subsystem has been discovered.	
	pairedPoolID	Pool ID of the paired journal pool.	
PairedPortController	pairedObjectID	Object ID of the paired port controller.	4.1.17.14 <i>GetStorageArray</i> (subtarget=Port Controller)
	name	Name of the paired port controller. This item is output if it has been registered.	
Path	objectID	Object ID of the path.	4.1.17.6 <i>GetStorageArray</i> (subtarget=HostStorageDomain) 4.1.17.10 <i>GetStorageArray</i> (subtarget=LogicalUnit) 4.1.17.11 <i>GetStorageArray</i> (subtarget=Path) 4.2.2 <i>AddLunScan</i> 4.2.3 <i>AddObjectForLogicalGroup</i> 4.2.6 <i>GetLogicalGroup</i> 4.3.1 <i>AddLun</i> 4.3.2 <i>AddLunGroup</i> 4.3.4 <i>AddWWNForLun</i> 4.3.14 <i>ModifyLunGroup</i>
	name	Path name. This item is output if it has been registered.	
	devNum	Device number for identifying the logical unit. For Universal Storage Platform V, a combination of a logical DKC number, a CU number, and an LDEV number (=logical-DKC-number*65536+CU*256+LDEV) is output. For TagmaStore USP, Lightning 9900V, and Lightning 9900, a combination of a CU number and an LDEV number (=CU*256+LDEV) is output. For the TagmaStore AMS/WMS series, Thunder 9500V, and Thunder 9200, an LU number is displayed.	
	portID	Port ID.	
	domainID	Domain ID of the host storage domain.	

Instance	Attribute	Description	Commands that Output this Item
	scsiID	SCSI ID. For Fibre Channel, 15 is output.	
	LUN	LUN that is assigned to the path.	
	wwnSecurityValidity	Indicates whether the WWN of the path and the WWN of the host storage domain assigned to the path are the same. true: Same false: Not the same	
PDEV	objectID	Object ID of the physical device.	4.1.1 AddArrayGroup 4.1.6 AddSpareDrive 4.1.17.12 GetStorageArray (subtarget=PDEV)
	name	Drive name. This item is output if it has been registered.	
	chassis	Number of the chassis where the physical device exists.	
	arrayGroup	Array group containing the physical device. Note: -1 is output if the physical device does not belong to the array group.	
	capacityInKB	Disk size of the physical device (in KB).	
	row	Physical horizontal position of the physical device. -1 is output for Lightning 9900V, TagmaStore USP, and Universal Storage Platform V.	
	column	Physical vertical position of the physical device. -1 is output for Lightning 9900V, TagmaStore USP, and Universal Storage Platform V.	
	depth	Physical side of the storage subsystem containing the physical device. Note: Currently, this information does not apply to storage subsystems.	

Instance	Attribute	Description	Commands that Output this Item
	role	<p>Current status of the drive.</p> <p>One of the following values is output for the TagmaStore AMS/WMS series, Thunder 9500V, and Thunder 9200:</p> <p>unknown: Unknown data: Data unallocated: Unallocated offline: Offline outofservice: Inactive spare: Spare drive spareuninitialized: Uninitialized spare</p> <p>This attribute is not displayed for other storage subsystems.</p>	
	vendor	Name of the drive vendor.	
	model	Drive model.	
	firmwareVersion	<p>Microcode version of the physical device firmware.</p> <p>Note: Some firmware might not have version information.</p>	
	serialNumber	<p>Serial number of the drive.</p> <p>Note: Some drives might not have serial numbers.</p>	
	dkuType	<p>Type of the disk unit containing the physical device.</p> <p>One of the following values is output:</p> <p>R600: Universal Storage Platform V USP: TagmaStore USP HDS9900V: Lightning 9900V HDS9900: Lightning 9900 AMS: TagmaStore AMS WMS: TagmaStore WMS HDS9500V: Thunder 9500V HDS9200: Thunder 9200</p>	
	rpm	<p>Drive speed (example: 10K).</p> <p>Note: Currently, this information does not apply to storage subsystems.</p>	

Instance	Attribute	Description	Commands that Output this Item
	diskType	Disk type of the physical device. For the TagmaStore AMS/WMS series and Thunder 9500V, one of the following values is output: 0: FC 1: SATA 2: BD -1: Unknown -1 is output for other storage subsystems.	
	pdevId	ID of the PDEV	

Instance	Attribute	Description	Commands that Output this Item
Port	objectID	Object ID of the port.	4.1.17.13 <i>GetStorageArray</i> (subtarget=Port) 4.1.20 <i>ModifyPort</i> 4.3.2 <i>AddLunGroup</i> 4.3.5 <i>AddWWNForLunGroup</i> 4.3.6 <i>AddWWNGroup</i> 4.3.14 <i>ModifyLunGroup</i> 4.3.15 <i>ModifyWWNGroup</i>
	name	Port name. This item is output if it has been registered.	
	serialNumber	Serial number of the storage subsystem containing the port.	
	arrayType	Type of the storage subsystem containing the port.	
	portID	Port ID.	
	portType	Port type. One of the following values is output: LCP Fibre SCSI NAS iSCSI	
	fibreAddress	Address of the Fibre port (AL_PA). For Lightning 9900, Lightning 9900V, TagmaStore USP, and Universal Storage Platform V, either of the following values is output: 0 (NULL): Not a Fibre port 01 - EF: Valid address (two-digit hexadecimal number)	
	topology	Fibre topology.	
	displayName	Display name of the port.	
	lunSecurityEnabled	Indicates whether LUN security is valid for the port. true: Valid false: Not valid	
	controllerID	Port controller ID.	
	portOption	Port option. This item is output for the TagmaStore AMS/WMS series, Thunder 9500V, and Thunder 9200. A blank space is output if the option is invalid.	

Instance	Attribute	Description	Commands that Output this Item
	worldWidePortName	WWN of the port. This item is valid when the port is a Fibre port.	

Instance	Attribute	Description	Commands that Output this Item
	channelSpeed	Channel speed. One of the following values is output: -1: None 0: Automatic 1: 1 Gbps 2: 2 Gbps 4: 4 Gbps	
	portRole	Port attribute. One of the following values is output: Target RCU Target Initiator LCP RCP External: External port (Blank): Unknown	
	slprNumber	SLPR number. This item is output for TagmaStore USP. -1 is output for other storage subsystems.	
PortController	objected	Object ID of the port controller.	4.1.17.14 <i>GetStorageArray</i> (subtarget=PortController) 4.1.21 <i>ModifyPortController</i>
	name	Name of the port controller. This item is output if it has been registered.	
	cluster	Cluster number.	
	card	Card number.	
	controllerID	Port controller ID.	
	displayName	Display name of the port controller.	
	mode	Mode of the port controller. One of the following values is output: For Lightning 9900 and Lightning 9900V: 1: Normal mode 2: High-speed mode (1 port) 3: Unknown 4: High-speed mode (2 ports)	

Instance	Attribute	Description	Commands that Output this Item
		<p>For TagmaStore USP and Universal Storage Platform V:</p> <ul style="list-style-type: none"> 1: Normal mode 2: High-speed mode (all ports) 3: Unknown 4: Reserve mode 5: High-speed mode (upper 4 ports) 6: High-speed mode (lower 4 ports) 7: High-speed mode is set by the 32HS package. <p>For Thunder 9200, Thunder 9500V, and the TagmaStore AMS/WMS series:</p> <ul style="list-style-type: none"> 3: Unknown 	
	type	<p>Port type.</p> <p>One of the following values is output:</p> <p>For Lightning 9900:</p> <ul style="list-style-type: none"> 1: Metal 2: ESCON 3: SCSI 4: Fibre Tachyon (2 ports) 5: Fibre Tachyon (4 ports) 6: Fibre Tachyon Long Wave (2 ports) 7: Fibre Tachyon Long Wave (4 ports) 8: Fibre Tachyon (2 ports) 9: Fibre Tachyon (4 ports) 10: Fibre Tachyon Long Wave (2 ports) 11: Fibre Tachyon Long Wave (4 ports) 	

Instance	Attribute	Description	Commands that Output this Item
		<p>For Lightning 9900V:</p> <ul style="list-style-type: none"> 2: ESCON 8: Fibre-Tachyon Shortwave (2 ports) 12: Fibre-Tachyon Shortwave (4 ports) 13: Fibre-Tachyon Shortwave (4 ports) 14: Fibre-Tachyon Shortwave (8 ports) 15: Fibre-Tachyon Longwave (4 ports) 21: E-NAS 25: iSCSI 32: FICON Shortwave (4 ports) 33: FICON Longwave (4 ports) <p>For TagmaStore USP:</p> <ul style="list-style-type: none"> 40: ESCON 42: Fibre-Tachyon (8 ports) 43: Fibre-Tachyon (4 ports) 44: Fibre-Tachyon (8 ports) 45: Fibre-Tachyon (16 ports) 46: NAS (2 ports) 48: NAS (4 ports) 49: FICON (4 ports) 50: FICON (8 ports) 51: iSCSI (4 ports) 52: iSCSI (4 ports) 55: Fibre-Tachyon (8 ports) 56: Fibre-Tachyon (16 ports) 57: Fibre-Tachyon (4 ports) 58: Fibre-Tachyon (8 ports) 59: Fibre-Tachyon (16 ports) 60: Fibre-Tachyon (4 ports) <p>For Universal Storage Platform V:</p> <ul style="list-style-type: none"> 80: ESCON (4 ports) 81: FICON (4 ports) 82: CHT (8 ports) 84: iSCSI (4 ports) 85: CHT (4 ports) <p>For Thunder 9200, Thunder 9500V, and the TagmaStore AMS/WMS series, -1 is output.</p>	
ReplicationControllerPair	objectID	Object ID of ReplicationControllerPair.	4.6.4 <i>GetReplicationControllerPair</i>

Instance	Attribute	Description	Commands that Output this Item
	masterArrayType	MCU model.	
	masterControllerID	CU number of the MCU.	
	masterEndDevNum	Maximum device number among the applicable LUs in the MCU.	
	masterSerialNumber	Serial number of the MCU.	
	masterStartDevNum	Minimum device number among the applicable LUs in the MCU.	
	remoteArrayType	RCU model.	
	remoteControllerID	CU number of the RCU.	
	remoteEndDevNum	Maximum device number among the applicable LUs in the RCU.	
	remoteSerialNumber	Serial number of the RCU.	
	remoteSSID	SSID of the RCU. 0 is displayed if there is no RCU.	
	remoteStartDevNum	Minimum device number among the applicable LUs in the RCU.	
	pairType	Type of ReplicationControllerPair. One of the following values is output: 0: Free of the CU (independent) 1: Dependent on the CU -1: Unknown	
ReplicationGroup	objectID	Object ID of the copy group.	4.4.6 <i>GetHost</i>
	replicationGroupID	Group ID of the copy group.	4.6.2 <i>AddReplication</i>
	groupName	Name of the copy group used by the CCI.	4.6.3 <i>DeleteReplication</i>
	pvolHostID	Host ID of the host that recognizes the P-VOL.	4.6.5 <i>ModifyReplication</i>
	pvolInstanceNumber	Instance number of the HORCM instance that manages the P-VOL.	
	pvolPortNumber	Port number of the HORCM instance that manages the P-VOL.	
	svolHostID	Host ID of the host that recognizes the S-VOL.	

Instance	Attribute	Description	Commands that Output this Item
	svolInstanceNumber	Instance number of the HORCM instance that manages the S-VOL.	
	svolPortNumber	Port number of the HORCM instance that manages the S-VOL.	
	replicationFunction	Copy type. One of the following values is output: ShadowImage: ShadowImage TrueCopySync: TrueCopy TrueCopyAsync: TrueCopy Async QuickShadow: QuickShadow or COW Snapshot UniversalReplicator: Universal Replicator	
	fenceLevel	Fence level of the P-VOL. One of the following values is output when the value of replicationFunction is TrueCopy Sync: For Lightning 9900, Lightning 9900V, TagmaStore USP, and Universal Storage Platform V: Never Data Status	
		For Thunder 9200, Thunder 9500V, and the TagmaStore AMS/WMS series: Never Data	
	copyTrackSize	Copy pace. -1 is output for unknown or Universal Replicator.	
ReplicationInfo	objectID	Object ID of ReplicationInfo.	4.1.17.7 <i>GetStorageArray</i> (subtarget=JournalPool) 4.1.17.15 <i>GetStorageArray</i> (subtarget=ReplicationInfo) 4.4.6 <i>GetHost</i> 4.6.2 <i>AddReplication</i> 4.6.3 <i>DeleteReplication</i> 4.6.5 <i>ModifyReplication</i>
	pairName	Name of the copy pair used by the CCI. This item is output if it has been registered.	
	pvolSerialNumber	Serial number of the storage subsystem containing the P-VOL.	
	pvolArrayType	Type of the storage subsystem containing the P-VOL.	
	pvolDevNum	Device number of the P-VOL.	
	pvolObjectID	P-VOL object ID.	

Instance	Attribute	Description	Commands that Output this Item
	pvolPoolID	ID of the pool containing the P-VOL. For Universal Replicator, a journal group ID is output. For QuickShadow or COW Snapshot, a data pool ID is output. -1 is output when the copy type is TrueCopy or ShadowImage.	
	svolSerialNumber	Serial number of the storage system containing the S-VOL.	
	svolArrayType	Type of the storage subsystem containing the S-VOL.	
	svolDevNum	Device number of the S-VOL.	
	svolObjectID	S-VOL object ID.	
	svolPoolID	ID of the pool containing the S-VOL. For Universal Replicator, a journal group ID is output. For QuickShadow or COW Snapshot, a data pool ID is output. -1 is output when the copy type is TrueCopy or ShadowImage.	
	replicationFunction	Copy type. One of the following values is output: ShadowImage: ShadowImage TrueCopySync: TrueCopy TrueCopyAsync: TrueCopy Async QuickShadow: QuickShadow or COW Snapshot UniversalReplicator: Universal Replicator	
	fenceLevel	Fence level of the P-VOL. One of the following values is output when the value of replicationFunction is TrueCopy Sync: For Lightning 9900, Lightning 9900V, TagmaStore USP, and Universal Storage Platform V: Never Data Status	

Instance	Attribute	Description	Commands that Output this Item
		For Thunder 9200, Thunder 9500V, and the TagmaStore AMS/WMS series: Never Data Status	
	status	Replication status. One of the following values is output: -1: Unknown 0: Simplex 1: Pair 8: Copying 9: Reverse-Copying 16: Split 17: Suspended 18: Error in LUSE 24: Suspending 25: Deleting	
	muNumber	MU number of the P-VOL. One of the following values is output: For ShadowImage: 0: Thunder 9200, Thunder 9500V 0 to 2: TagmaStore AMS/WMS series, Lightning 9900, Lightning 9900V, TagmaStore USP and Universal Storage Platform V For QuickShadow and COW Snapshot: 0 to 13: Thunder 9500V 0 to 14: TagmaStore AMS/WMS series 0 to 63: TagmaStore USP and Universal Storage Platform V For Universal Replicator: 0 to 3: TagmaStore USP and Universal Storage Platform V -1 is output if the MU number is unknown.	
	copyTrackSize	Copy pace. -1 is output for unknown or Universal Replicator.	

Instance	Attribute	Description	Commands that Output this Item
	splitTime	<p>Time when the S-VOL image is created by using the replication function.</p> <p>The number of seconds elapsed from 00:00:00 on January 1, 1970, is output (the time setting is the storage system setting, not GMT).</p> <p>This item is valid when the copy type is QuickShadow or COW Snapshot. When the copy type differs from these two, -1 is output.</p>	
ServerInfo	serverVersion	Version and build date of Device Manager Server (example: HiCommand Device Manager Server v5.7 Build 0570-00 (Apr 19, 2007)).	4.5.7 <i>GetServerInfo</i>
	serverURL	URL of Device Manager Server (example: http://localhost:2001).	
	upTime	Length of time that Device Manager Server is active (example: 1 days 2 hours 3 minutes 4 seconds).	
	upSince	Time and date when the server was started (example: Wed, 20 Dec 2006 06:07:01 GMT).	
	currentApiVersion	API version of Device Manager Server (example: 5.7).	

Instance	Attribute	Description	Commands that Output this Item
StorageArray	objectID	Object ID of the storage subsystem.	4.1.1 AddArrayGroup
	name	Name of the storage subsystem. This item is output if it has been registered.	4.1.3 AddHostStorageDomain 4.1.4 AddLogicalUnit 4.1.5 AddLUSE
	description	Description of the storage subsystem.	4.1.6 AddSpareDrive 4.1.7 AddStorageArray
	serialNumber	Serial number of the storage subsystem.	4.1.15 FormatLU 4.1.17 GetStorageArray
	arrayFamily	Family of the storage subsystem.	4.1.17.1 GetStorageArray (subtarget=ArrayGroup)
	arrayType	Type of the storage subsystem.	4.1.17.2 GetStorageArray (subtarget=Commparameters)
	microcodeVersion	Version of the SVP microcode. This item is output for Lightning 9900, Lightning 9900V, TagmaStore USP, and Universal Storage Platform V.	4.1.17.3 GetStorageArray (subtarget=Component) 4.1.17.4 GetStorageArray (subtarget=Filter)
	agentVersion	Version of the SNMP agent. This item is output for Lightning 9900, Lightning 9900V, TagmaStore USP, and Universal Storage Platform V.	4.1.17.5 GetStorageArray (subtarget=FreeSpace) 4.1.17.6 GetStorageArray (subtarget=HostStorageDomain) 4.1.17.7 GetStorageArray (subtarget=JournalPool)
	productName	Product name.	4.1.17.8 GetStorageArray (subtarget=LDEV)
	controllerVersion	Microcode level of the DKC controller.	4.1.17.9 GetStorageArray (subtarget=LogicalDKC)
	numberOfControllers	Number of array controllers.	4.1.17.10 GetStorageArray (subtarget=LogicalUnit)
	capacityInGB	Total size of storage subsystems (in GB).	4.1.17.11 GetStorageArray (subtarget=Path)
	cacheInMB	Cache size (in MB).	4.1.17.12 GetStorageArray (subtarget=PDEV)
	sharedMemoryInMB	Size of shared memory (in MB).	4.1.17.13 GetStorageArray (subtarget=Port)
	numberOfSpareDrives	Number of spare drives. -1 is output for Lightning 9900, Lightning 9900V, TagmaStore USP, and Universal Storage Platform V.	4.1.17.14 GetStorageArray (subtarget=PortController) 4.1.17.15 GetStorageArray (subtarget=ReplicationInfo)
	freeCapacityInGB	Total size of the logical units to which paths are not assigned (in GB).	4.1.19 ModifyLogicalUnit 4.1.20 ModifyPort 4.1.21 ModifyPortController
	allocatedCapacityInGB	Total size of the logical units to which paths are assigned (in GB).	4.1.22 RefreshStorageArrays 4.2.2 AddLunScan
hihsmCapacityInGB	Total size of the logical units reserved for Volume Migration (in GB).	4.3.1 AddLun 4.3.2 AddLunGroup 4.3.3 AddWWNForHostStorageDomain	
onDemandCapacityInGB	Total size of the LDEVs expanded on demand (in GB).	4.3.4 AddWWNForLun	

Instance	Attribute	Description	Commands that Output this Item
	totalFreeSpaceInGB	Total size of the areas (free areas) that are not logical units (in GB).	4.3.5 <i>AddWWNForLunGroup</i> 4.3.6 <i>AddWWNGroup</i> 4.3.14 <i>ModifyLunGroup</i> 4.3.15 <i>ModifyWWNGroup</i> 4.5.7 <i>GetServerInfo</i>
	largestFreeSpaceInGB	Maximum size of the area (free area) that is not a logical unit (in GB).	
	capacityInKB	Total size of storage subsystems (in KB).	
	freeCapacityInKB	Total size of the logical units to which paths are not assigned (in KB).	
	allocatedCapacityInKB	Total size of the logical units to which paths are assigned (in KB).	
	hihsmCapacityInKB	Total size of the logical units reserved for Volume Migration (in KB).	
	onDemandCapacityInKB	Total size of the LDEVs expanded on demand (in KB).	
	totalFreeSpaceInKB	Total size of the areas that are not logical units (in KB).	
	largestFreeSpaceInKB	Maximum size of the area that is not a logical unit (in KB).	
	multipathSupport	Path support option Currently, 1 is displayed for all the subsystems.	
	securityStatus	Security status of the storage subsystem. One of the following values is output: -1: Unknown 0: No security 1: LUN Security 2: LUN Management	
	sequenceNumber	Serial number or part of the serial number of the storage subsystem.	
	displayArrayFamily	Display name of the array family.	
	displayArrayType	Display name of the array type.	
	numberOfLUs	Number of logical units.	
	numberOfAllocatedLUs	Number of logical units to which paths are assigned.	

Instance	Attribute	Description	Commands that Output this Item
	numberOfUnallocatedLUs	Number of logical units to which paths can be assigned by using Device Manager, but to which no paths are assigned.	
	slprStatus	<p>SLPR status of the storage subsystem.</p> <p>One of the following values is output:</p> <p>-1: None</p> <p>0: The storage subsystem has all the resources.</p> <p>1: The storage subsystem has some of the resources divided by using the SLPR.</p> <p>-1 is output for storage subsystems other than TagmaStore USP and Universal Storage Platform V.</p>	

Instance	Attribute	Description	Commands that Output this Item
	openTotalCapacity	Total size of the open logical units (in KB).	
	openAllocatedCapacity	Total size of the open logical units to which paths are assigned (in KB).	
	openFreeCapacity	Total size of the open logical units to which paths are not assigned (in KB).	
	openHiHsmCapacity	Total size of the open logical units reserved for Volume Migration (in KB).	
	openOnDemandCapacity	Total size of the open logical units expanded on demand (in KB).	
	imTotalCapacity	Total size of the intermediate logical units (in KB).	
	imAllocatedCapacity	Total size of the intermediate logical units to which paths are assigned (in KB).	
	imFreeCapacity	Total size of the intermediate logical units to which paths are not assigned (in KB).	
	imHiHsmCapacity	Total size of the intermediate logical units reserved for Volume Migration (in KB).	
	imOnDemandCapacity	Total size of the intermediate logical units expanded on demand (in KB).	
	mfTotalCapacity	Total size of the mainframe logical devices (in KB).	
	mfHiHsmCapacity	Total size of the mainframe logical devices reserved for Volume Migration (in KB).	
	mfOnDemandCapacity	Total size of the mainframe logical devices expanded on demand (in KB).	
	mfAllocatedCapacity	Total size of the mainframe logical devices to which paths are assigned (in KB).	
	mfUnallocatedCapacity	Total size of the mainframe logical devices to which paths are not assigned (in KB).	
	numberOfOpenAllocatedLUs	Number of open logical units to which paths are assigned.	
	numberOfOpenUnallocatedLUs	Number of open logical units that satisfy the following conditions: <ul style="list-style-type: none"> ▪ Paths are not assigned. ▪ Paths can be assigned by using Device Manager. 	

Instance	Attribute	Description	Commands that Output this Item
	numberOfImAllocatedLUs	Number of intermediate logical units to which paths are assigned.	
	numberOfImUnallocatedLUs	Number of intermediate logical units that satisfy the following conditions: <ul style="list-style-type: none"> ▪ Paths are not assigned. ▪ Paths can be assigned by using Device Manager. 	
	numberOfMfLDEVs	Number of mainframe logical devices.	
	numberOfAllocatedMfLDEVs	Number of mainframe logical devices to which paths are assigned.	
	numberOfUnallocatedMfLDEVs	Number of mainframe logical devices to which paths are not assigned.	
	productCode	Product code of the storage subsystem.	
	lastRefreshed	Time when the storage subsystem was last refreshed. The number of seconds elapsed from 00:00:00 on January 1, 1970 (world standard time) is displayed.	
	autoFormatLU	This item indicates whether an unformatted logical unit can be created. One of the following values is output for TagmaStore USP and Universal Storage Platform V: <ul style="list-style-type: none"> -1: Unknown 0: Able to select whether to format a logical unit when it is created 1: A logical unit is automatically formatted when it is created For other storage subsystems, -1 is output.	
	statusOfDBInconsistency	Indicates whether the target storage subsystem is consistent with the Device Manager database. One of the following values is output: <ul style="list-style-type: none"> 0: The Device Manager database is consistent. 1: The database is being updated. 2: The Device Manager database is inconsistent. 	

Instance	Attribute	Description	Commands that Output this Item
	openAllocatedActualCapacity	<p>Total size of the open logical units and the intermediate logical units that satisfy both the following conditions (in KB):</p> <ul style="list-style-type: none"> ▪ Paths are assigned. ▪ The logical unit is a real volume that has physical capacity. 	
	openUnallocatedCapacity	<p>Total size of the open logical units and the intermediate logical units that satisfy both the following conditions (in KB):</p> <ul style="list-style-type: none"> ▪ Paths are not assigned. ▪ Paths can be assigned by using Device Manager. 	
	openUnallocatedActualCapacity	<p>Total size of the open logical units and the intermediate logical units that satisfy all the following conditions (in KB):</p> <ul style="list-style-type: none"> ▪ Paths are not assigned. ▪ Paths can be assigned by using Device Manager. ▪ The logical unit is a real volume that has physical capacity. 	
	openReservedCapacity	<p>Total size of the open logical units and the intermediate logical units that satisfy both the following conditions (in KB):</p> <ul style="list-style-type: none"> ▪ Paths are not assigned. ▪ Paths cannot be assigned by using Device Manager. 	
	openReservedActualCapacity	<p>Total size of the open logical units and the intermediate logical units that satisfy all the following conditions (in KB):</p> <ul style="list-style-type: none"> ▪ Paths are not assigned. ▪ Paths cannot be assigned by using Device Manager. ▪ The logical unit is a real volume that has physical capacity. 	
	numberOfReservedLUs	<p>Number of open logical units and intermediate logical units that satisfy both the following conditions:</p> <ul style="list-style-type: none"> ▪ Paths are not assigned. ▪ Paths cannot be assigned by using Device Manager. 	
	numberOfOpenReservedLUs	<p>Number of open logical units that satisfy both the following conditions:</p> <ul style="list-style-type: none"> ▪ Paths are not assigned. ▪ Paths cannot be assigned by using Device Manager. 	

Instance	Attribute	Description	Commands that Output this Item
	numberOfIntermediateLogicalUnits	Number of intermediate logical units that satisfy both the following conditions: <ul style="list-style-type: none"> Paths are not assigned. Paths cannot be assigned by using Device Manager. 	
URLLink	objectID	Object ID of URLLink.	4.5.1 AddURLLink 4.5.8 GetURLLink
	name	Application name.	
	description	Additional description of the link.	
	url	URL required for starting an application or a Web page.	
	linkedID	Object ID of the linked object.	
VolumeConnection	objectID	Object ID of VolumeConnection.	4.1.17.8 GetStorageArray (subtarget=LDEV) 4.1.17.10 GetStorageArray (subtarget=LogicalUnit)
	name	Name of VolumeConnection. This item is output if it has been registered.	
	mappedArrayType	Storage subsystem type to which an external volume is mapped. Either of the following values is output: R600: Universal Storage Platform V USP: TagmaStore USP	
	mappedSerialNumber	Serial number of the storage subsystem to which an external volume is mapped.	
	mappedDevNum	Device number of the internal volume to which an external volume is mapped.	
	externalArrayType	Storage subsystem type consisting of external volumes.	
	externalSerialNumber	Serial number of the storage subsystem consisting of external volumes. Unknown is output if the serial number is unknown.	
	externalDevNum	Device number of the external volume.	
	externalVolumeName	Volume name of the external volume.	
	productName	Product name of the external volume. The product name might not be the same as the product name of the storage subsystem.	

Instance	Attribute	Description	Commands that Output this Item
	vendor	Vendor name of the external volume.	
WWN	wwn	World Wide Name. A World Wide Name is usually assigned to the HBA in the server.	4.1.17.6 <i>GetStorageArray</i> (subtarget=HostStorageDomain) 4.1.17.10 <i>GetStorageArray</i> (subtarget=LogicalUnit)
	nickname	WWN nickname. This item is output if it has been registered.	4.1.17.11 <i>GetStorageArray</i> (subtarget=Path) 4.1.17.13 <i>GetStorageArray</i> (subtarget=Port) 4.1.20 <i>ModifyPort</i> 4.3.1 <i>AddLun</i> 4.3.3 <i>AddWWNForHostStorageDomain</i> 4.3.4 <i>AddWWNForLun</i> 4.3.5 <i>AddWWNForLunGroup</i> 4.3.6 <i>AddWWNGroup</i> 4.3.15 <i>ModifyWWNGroup</i> 4.4.6 <i>GetHost</i> 4.4.8 <i>ModifyHost</i>
WWNGroup	objectID	Object ID of the WWN group.	4.1.17.13 <i>GetStorageArray</i> (subtarget=Port)
	name	Name of the WWN group. This item is output when registered.	4.3.6 <i>AddWWNGroup</i> 4.3.15 <i>ModifyWWNGroup</i>
	nickname	Nickname of the WWN group.	

4.8 Using Batch Files to Execute Commands

The following commands can be used with the batch option (`-b` or `--batch`) specified to execute commands (set in a batch file) together.

- `AddLun`
- `DeleteLun`
- `AddLUSE`
- `DeleteLUSE`

The above commands can be executed with the batch option specified to set and clear settings for paths of several LDEVs. This is convenient in cases such as when installing a new storage subsystem.

Up to 1,500 commands can be set in a single batch file. When the batch functionality is used, up to 100 commands are processed together according to the execution conditions. The command execution results are also output each time they are processed together, in groups of up to 100. If an error occurs during command execution, processing terminates at that point. If an error occurs while the batch functionality is executing, commands subsequent to the error are not processed. In this case, create the batch file again, and then execute the batch functionality. For details about what to do when errors occur, see section 4.8.3.

Note: When the batch functionality is executed, we recommend using the `AddArrayReservation` command to lock the target storage subsystem in advance, and prevent other users from performing a storage subsystem allocation. For details about the `AddArrayReservation` command, see section 4.1.2.

- **Note:** If an error has occurred and the processing has stopped, you should check which parts of the batch file have been executed. The checking process is easier if you create the batch file as follows:
- Write commands that have the same `port` or `portname` on consecutive lines.
- Write commands so that the `devnum` follows the order of the serial number.

4.8.1 Creating Batch Files

A batch file needs to be created to execute the batch functionality. This subsection explains the following items:

- Batch file format and input rules
- Input rules for each command line
- Conditions for parameters to process commands together
- Examples of batch file creation

4.8.1.1 Batch File Format and Input Rules

The batch file format is as follows:

```
beginbatch
HiCommandCLI command parameter
HiCommandCLI command parameter
.
.
.
endbatch
```

The input rules for batch files are as follows:

- Only ASCII encoded characters can be used in batch files.
- A batch file must have `beginbatch` on the first line and `endbatch` on the last line.
- Begin a new line after the character string `endbatch`.
If you do not do this, an error occurs.
- Only one type of command can be set in a single batch file.
- Only one type of storage subsystem can be set in a single batch file.
- Up to 1,500 commands can be specified in a single batch file.
- Some parameter values are case sensitive.

4.8.1.2 Input Rules for Each Command Line

The commands to be executed together are specified between `beginbatch` and `endbatch`. The input rules for each command line are as follows:

- Only the command to be executed and the command parameters can be specified on each command line. HiCommand Device Manager server URLs, options, or `help` cannot be specified.
- Parameters common to each command line cannot be specified in a properties file.
- The same parameter cannot be specified multiple times on the same command line.
- Parameters that cannot be used on the same command line cannot be specified.
For example, when executing the `DeleteLun` command, the `port` parameter and the `portname` parameter cannot be specified at the same time on the same command line.
- Command parameters and specified values cannot be enclosed in " and '.
- Aside from parameter specifications, a \ must be specified to escape the following characters:

```
space ! " # $ % & ' ( ) * + < > ? @ [ \ ] ^ `
{ | } ~
```

The following shows an example specification where Lun10 HOST2, a string containing a space, is specified for the `name` parameter.

```
HiCommandCLI AddLUN name=Lun10\ HOST2 model=USP serialnum=14053
```

4.8.1.3 Conditions for Parameters to Process Commands Together

When commands are executed together, there are conditions for the parameter values and combinations on consecutive command lines. For example, for the `AddLun` command, commands for which the `port` parameter is specified cannot be executed with commands for which the `portname` parameter is specified. For this reason, to execute such commands together, the parameters need to be unified on either the `port` or `portname` parameter.

Table 4.89, Table 4.90, Table 4.91 and Table 4.92 show the specification conditions for each command parameter.

Table 4.89 Specification Conditions for AddLun Command Parameters

Condition for combined execution	Parameter
Parameters for which the same value needs to be specified as the previous line	serialnum model
Parameters that need to be specified in combination with the previous line	port portname domain devnum lusedevnums wwn
No conditions	name scsiid lun

Table 4.90 Specification Conditions for DeleteLun Command Parameters

Condition for combined execution	Parameter
Parameters for which the same value needs to be specified as the previous line	serialnum model
Parameters that need to be specified in combination with the previous line	port portname deletetionoption
No conditions	domain devnum

Table 4.91 Specification Conditions for AddLUSE Command Parameters

Condition for combined execution	Parameter
Parameters for which the same value as the previous line needs to be specified	serialnum model
Parameters that need to be specified in combination with the previous line	luseoption
No conditions	Devnums

Table 4.92 Specification Conditions for DeleteLUSE Command Parameters

Condition for combined execution	Parameter
Parameters for which the same value as the previous line needs to be specified	serialnum model
No conditions	Devnum

4.8.1.4 Examples of Batch File Creation

The following shows an example of a batch file created according to the input rules from 4.8.1.1 to 4.8.1.3

```
beginbatch
HiCommandCLI ADDLUN model=USP serialnum=14053 portname=CL1-A domain=0 devnum=816 lun=100
HiCommandCLI ADDLUN model=USP serialnum=14053 portname=CL1-A domain=0 devnum=817 lun=101
HiCommandCLI ADDLUN model=USP serialnum=14053 portname=CL1-B domain=0 devnum=816 lun=102
HiCommandCLI ADDLUN model=USP serialnum=14053 portname=CL1-B domain=0 devnum=817 lun=103
endbatch
```

4.8.2 Executing Batch Function of Commands

This subsection explains how to execute the batch function of commands by using a created batch file:

When specifying the batch option (`-b` or `--batch`), specify the following items on the command line or in the properties file:

- The URL of the HiCommand Device Manager server
- Options other than `-i` or `--input`

The following items cannot be specified with the batch option, as this will cause an error:

- The `-i` or `--input` option
- Commands
- Command parameters
- `help`

Note: For details about displaying help information when specifying the batch option, see section 3.2.3.

The following shows an example of an execution with the batch option specified, and an example of the command execution results.

In this example, a batch file created in 4.8.1.4 is specified as the file name batch.txt and is executed.

Command execution example:

In the execution results, the start line number and the end line number, which are the numbers counted from the top of the batch file and indicate the start and end line number of the batch processing, are displayed following the executed command name. In the following output example, `AddLUN(2-5)` indicates that the `AddLun` commands on lines 2 to 5 of the batch file have processed together.

Note: A blank line is also counted as a line.

```
C:\HiCommand> HiCommandCLI http://servername:2001/service -b batch.txt
```

Command execution results example:

```
RESPONSE OF ADDLUN(2-5): An instance of StorageArray
  objectID=ARRAY.USP.14053
  name=TagmaStore_USP@10.208.116.108
  description=TagmaStore_USP (14053) at 10.208.116.108
  serialNumber=14053
  arrayFamily=USP
  arrayType=USP
  microcodeVersion=50-07-63/00
  agentVersion=04_08_00
  productName=RAID500
  controllerVersion=50-07-63-00/00
  numberOfControllers=1
  capacityInGB=6,560
  cacheInMB=65,536
  sharedMemoryInMB=-1
  numberOfSpareDrives=-1
  freeCapacityInGB=4,877
  allocatedCapacityInGB=1,605
  hiismCapacityInGB=77
  onDemandCapacityInGB=0
  totalFreeSpaceInGB=2,383
  largestFreeSpaceInGB=778
  capacityInKB=6,878,866,064
  freeCapacityInKB=5,114,357,504
  allocatedCapacityInKB=1,683,100,560
  hiismCapacityInKB=81,408,000
  onDemandCapacityInKB=0
  totalFreeSpaceInKB=2,499,089,616
  largestFreeSpaceInKB=816,324,096
  multipathSupport=1
  securityStatus=2
  sequenceNumber=14053
  displayArrayFamily=TagmaStore_USP
  displayArrayType=TagmaStore_USP
  numberOfLUs=2,504
```

```

numberOfAllocatedLUs=672
numberOfUnallocatedLUs=1,832
slprStatus=0
openTotalCapacity=5,340,254,864
openAllocatedCapacity=1,683,100,560
openFreeCapacity=3,575,746,304
openHiHsmCapacity=81,408,000
openOnDemandCapacity=0
imTotalCapacity=769,305,600
imAllocatedCapacity=0
imFreeCapacity=769,305,600
imHiHsmCapacity=0
imOnDemandCapacity=0
mfTotalCapacity=769,305,600
mfHiHsmCapacity=0
mfOnDemandCapacity=0
mfAllocatedCapacity=0
mfUnallocatedCapacity=0
numberOfOpenAllocatedLUs=672
numberOfOpenUnallocatedLUs=1,752
numberOfImAllocatedLUs=0
numberOfImUnallocatedLUs=80
numberOfMfLDEVs=80
numberOfAllocatedMfLDEVs=0
numberOfUnallocatedMfLDEVs=0
productCode=2
lastRefreshed=1,153,456,561
autoFormatLU=1
statusOfDBInconsistency=0
openAllocatedActualCapacity=1,683,100,560
openUnallocatedCapacity=5,803,543,936
openUnallocatedActualCapacity=5,803,543,936
openReservedCapacity=62,545,600
openReservedActualCapacity=62,545,600
numberOfReservedLUs=32
numberOfOpenReservedLUs=32
numberOfImReservedLUs=0
List of 4 Path elements:
  An instance of Path
    objectID=PATH.USP.14053.0.0.816
    devNum=816
    portID=0
    domainID=0
    scsiID=15
    LUN=100
    wwnSecurityValidity=true
  An instance of Path
    objectID=PATH.USP.14053.0.0.817
    devNum=817
    portID=0
    domainID=0
    scsiID=15
    LUN=101
    wwnSecurityValidity=true
  An instance of Path
    objectID=PATH.USP.14053.4.0.816
    devNum=816
    portID=4
    domainID=0
    scsiID=15
    LUN=102
    wwnSecurityValidity=true
  An instance of Path
    objectID=PATH.USP.14053.4.0.817
    devNum=817
    portID=4
    domainID=0
    scsiID=15

```

```
LUN=103  
wwnSecurityValidity=true
```

4.8.3 When an Error Occurs During Batch Functionality Execution

If an error occurs during the batch functionality execution, perform the following procedure to check up to what point the batch file contents were processed. For the unprocessed commands, re-create the batch file, and re-execute the batch functionality.

To check the batch file contents:

1. Execute the `AddStorageArray` command or `RefreshStorageArrays` command.

The path information from the host to the volume is updated.

2. Execute the `GetStorageArray` command to check which command lines in the batch file were reflected to the storage subsystem.

Note: *The processing of commands together* is not performed in the order in which the commands are specified. All lines need to be checked to determine which command lines were reflected.

3. Delete from the batch file the command lined reflected to the storage subsystem.
4. Execute the batch functionality again.

4.9 Managing Mainframe Hosts

HiCommand Device Manager linked with Mainframe Agent can use Web Client to display the following information recognized by a mainframe host:

- Mainframe volume information (VOLSER and DEVN)
- Logical DKC serial number of a storage subsystem

To use Web Client to display information recognized by a mainframe host, you must set up the mainframe host and HiCommand Device Manager environments.

Note: In Web Client, you cannot view mainframe hosts. The mainframe volume information obtained from Mainframe Agent is displayed in the Mainframe-Unspecified group in Web Client. For details about the Mainframe-Unspecified group, see the manual *HiCommand Device Manager Web Client User's Guide*.

4.9.1 Setting Up the Mainframe Host Environment

The following procedure shows how to set up the mainframe host environment. For details about how to install and operate Mainframe Agent, see the manual *HiCommand Mainframe Agent*.

To set up the mainframe host environment:

1. Install Mainframe Agent on the mainframe host.
2. On the mainframe host, set up the Mainframe Agent environment.

For details about how to do this, see the manual *HiCommand Mainframe Agent*.

Important: When you specify the host name that Mainframe Agent will use for reporting to Device Manager, do not specify the name of a host that is already being managed by Device Manager (including external connection ports that are being managed by Device Manager as hosts). To ensure that you do not specify such a host name, use one of the following methods:

- In the initialization parameter for setting up the Mainframe Agent, specify the host name to be used to report to Device Manager. Note that DNS must be able to resolve the host name you specify.
- If a host name that DNS can resolve is identical to a host name already managed by Device Manager, specify the host identification name of the mainframe host in the initialization parameter for setting up the Mainframe Agent environment.
- If neither of the above two methods avoids host name duplication, change the host name of the relevant host managed by Device Manager.
- If none of the above three methods allows you to set a unique host name, specify any host name in the initialization parameter for setting up the MainFrameAgent environment.

3. Start Mainframe Agent.

4.9.2 Setting Up the Device Manager Environment

The following procedure shows how to set up a Device Manager environment that enables Web Client to display mainframe volume information and logical DKC serial numbers of storage subsystems.

4.9.2.1 Registering the Mainframe Host in Device Manager

To use the `AddHost` command to register the mainframe host in Device Manager:

1. Execute the `AddHost` command to register the mainframe host in Device Manager.

When you execute the command, specify the following parameters:

- `hostname`: In this parameter, specify the host name that you specified when setting up the mainframe host environment.
 - `hosttype`: In this parameter, specify 2.
2. From the execution result of the `AddHost` command, make sure that specified information is correctly output to the `name` and `hosttype` parameters.

Notes on executing the `AddHost` command:

- If the host name specified during mainframe host environment setup and the host name specified during Device Manager environment setup do not match, information registered in Mainframe Agent cannot be acquired.
- Do not specify the `wnnlist` parameter when registering the mainframe host in Device Manager. If you do, an error occurs.
- Record the `objectID` value output when the `AddHost` command is executed. You will need this value for the subsequent procedures and operations.
- Although the IP address specified in the `ipaddress` parameter of a command is registered as an attribute of the mainframe host, the IP address registered using the `AddHost` command is not used for communication with Mainframe Agent. The information necessary for communication with Mainframe Agent will be specified in section 4.9.2.2.

Action to be taken if an error occurs during the execution of the `AddHost` command:

Use the `GetHost` command to check whether the mainframe host has been registered. If the mainframe host has not been registered, register it by using the `AddHost` command. If the mainframe host has been registered incorrectly, use the `ModifyHost` command to correct the registered information. For details on how to correct the registered mainframe host information, see section 4.9.8.

Command format:

```
HiCommandCLI AddHost "hostname=mainframe-host-name" "hosttype=2"
```

Example of executing the command:

```
HiCommandCLI AddHost -o "D:\logs\AddHost.log" "hostname=toro2" "hosttype=2"
```

Example of output from executing the command:

```
RESPONSE:  
An instance of Host  
objectID=HOST.1
```

```
name=toro2
capacityInKB=0
hostType=2
```

4.9.2.2 Registering the Mainframe Agent Running on the Mainframe Host in Device Manager

To use the `AddURLLink` command to register the mainframe host in Device Manager:

1. Execute the `AddURLLink` command to register the Mainframe Agent running on the mainframe host in Device Manager.

When you execute the command, specify the following parameters:

- `url`: In this parameter, specify the IP address of the mainframe host on which Mainframe Agent is installed, and the port number used by Mainframe Agent.
 - `name`: In this parameter, specify the character string `MainframeAgent`, which indicates Mainframe Agent. Note that this parameter is case-sensitive.
 - `linkedid`: In this parameter, specify the object ID of the mainframe host output when the mainframe host was registered using the `AddHost` command.
2. From the execution result of the `AddURLLink` command, make sure that specified information is correctly output to the `url`, `name`, and `linkedid` parameters.

Notes on executing the `AddURLLink` command:

If the `name` parameter is specified incorrectly, the mainframe host is not registered as the Mainframe Agent information, and mainframe volume information and the logical DKC serial number of the storage subsystem cannot be acquired. If you specified the `name` parameter incorrectly, use the `DeleteURLLink` command to delete the Mainframe Agent information, and then use the `AddURLLink` command to register the information again. For details on how to delete the Mainframe Agent information, see 4.9.6.

Action to be taken if an error occurs during the execution of the `AddURLLink` command:

Use the `GetURLLink` command to check whether Mainframe Agent has been registered. If Mainframe Agent has not been registered, register it by using the `AddURLLink` command. If Mainframe Agent has been registered incorrectly, use the `AddURLLink` command to correct the registered information. For details on how to correct the registered Mainframe Agent information, see 4.9.5.

Command format:

```
HiCommandCLI AddURLLink "url=http://mainframe-host-IP-address:port-number"
"name=MainframeAgent" "linkedid=mainframe-host-object-ID"
```

Example of executing the command:

```
HiCommandCLI AddURLLink -o "D:\logs\AddURLLink.log" "url=http://192.168.99.114:24042"
"name=MainframeAgent" "linkedid=HOST.1"
```

Example of output from executing the command:

```
RESPONSE:
An instance of URLLink
objectID=URLLINK.HOST.1.1
name=MainframeAgent
url=http://192.168.99.114:24042
linkedID=HOST.1
```

4.9.2.3 Acquiring Information Recognized by the Mainframe Host

Use the `AddHostRefresh` command to acquire mainframe volume information and the logical DKC serial number of the storage subsystem. The acquired information is not included in the command execution results. Use Web Client to check this information.

When you execute the command, specify the following parameters:

`objectid`: In this parameter, specify the object ID of the mainframe host output when the mainframe host was registered using the `AddHost` command.

Action to be taken if an error occurs during the execution of the `AddHostRefresh` command:

If an error occurs during the execution of the `AddHostRefresh` command, perform the following procedure:

1. Check whether Mainframe Agent is operating normally.

If it is not operating normally, check the Mainframe Agent settings, and restart Mainframe Agent.

2. Check whether the mainframe host and Mainframe Agent have been registered correctly.

If they have been registered correctly, use the `AddHostRefresh` command to acquire the information again. If they have not been registered correctly, register them correctly by using the procedures described in 4.9.2.1 and 4.9.2.2.

Command format:

```
HiCommandCLI AddHostRefresh "objectid=mainframe-host-object-ID"
```

Example of executing the command:

```
HiCommandCLI AddHostRefresh -o "D:\logs\AddHostRefresh.log" "objectid=HOST.1"
```

Example of output from executing the command:

```
RESPONSE:  
An instance of Host  
  objectID=HOST.1  
  name=toro2  
  capacityInKB=0  
  hostType=2  
  sysplexID=RSDPLEX
```

4.9.3 Refreshing Information Recognized by the Mainframe Host

Use the `AddHostRefresh` command to refresh the mainframe volume information and the logical DKC serial number of the storage subsystem displayed in Web Client. This command is the only means of refreshing the information.

When you execute the command, specify the following parameter:

`objectid`: In the parameter, specify the object ID of the mainframe host output when the mainframe host was registered using the `AddHost` command.

Action to be taken if an error occurs during the execution of the `AddHostRefresh` command:

If an error occurs during the execution of the `AddHostRefresh` command, perform the following procedure:

1. Check whether Mainframe Agent is operating normally.

If it is not operating normally, check the Mainframe Agent settings, and restart Mainframe Agent.

2. Check whether the mainframe host and Mainframe Agent have been registered correctly.

If they have been registered correctly, use the `AddHostRefresh` command to acquire the information again. If they have not been registered correctly, register them correctly by using the procedures described in 4.9.2.1 and 4.9.2.2.

Command format:

```
HiCommandCLI AddHostRefresh "objectid=mainframe-host-object-ID"
```

Example of executing the command:

```
HiCommandCLI AddHostRefresh -o "D:\logs\AddHostRefresh.log" "objectid=HOST.1"
```

Example of output from executing the command:

```
RESPONSE:
An instance of Host
  objectID=HOST.1
  name=toro2
  capacityInKB=0
  hostType=2
  sysplexID=RSDPLEX
```

4.9.4 Acquiring Mainframe Agent Information Registered in the Device Manager

To acquire Mainframe Agent information registered in the Device Manager server, use the `GetURLLink` command. By executing this command, you can acquire the IP address and port number of the mainframe host from the `url` information included in the execution results.

Example of executing the command:

```
HiCommandCLI GetURLLink -o "D:\logs\GetURLLink.log" "objectid=URLLINK.HOST.1.1"
```

Example of output from executing the command:

RESPONSE:

```
An instance of URLLink
  objectID=URLLINK.HOST.1.1
  name=MainframeAgent
  url=http://192.168.99.114:24042
  linkedID=HOST.1
```

4.9.5 Changing Mainframe Agent Information Registered in the Device Manager

To change Mainframe Agent information registered in the Device Manager server, use the `AddURLLink` command. You can change the IP address or port number of the mainframe host by specifying a new IP address or port number in the `url` parameter in URL format.

Note: In the `name` parameter, specify `MainframeAgent`. If the `name` parameter is specified incorrectly, the mainframe host is not registered as the Mainframe Agent information, and mainframe volume information and the logical DKC serial number of the storage subsystem cannot be acquired. If you specified the `name` parameter incorrectly, use the `DeleteURLLink` command to delete the Mainframe Agent information, and then use the `AddURLLink` command to correct the registered Mainframe Agent information.

Example of executing the command:

```
HiCommandCLI AddURLLink -o "D:\logs\AddURLLink.log"  
"url=http://192.168.99.100:24042" "name=MainframeAgent" "linkedid=HOST.1"
```

Example of output from executing the command:

RESPONSE:

```
An instance of URLLink  
objectID=URLLINK.HOST.1.1  
name=MainframeAgent  
url=http://192.168.99.100:24042  
linkedID=HOST.1
```

4.9.6 Deleting Mainframe Agent Information Registered in the Device Manager

To delete Mainframe Agent information registered in the Device Manager server, use the `DeleteURLLink` command.

Note: Use this command when you want to delete only Mainframe Agent registration information. For example, you might want to execute the command if you specified the `name` parameter incorrectly.

Example of executing the command:

```
HiCommandCLI DeleteURLLink -o "D:\logs\DeleteURLLink.log" "objectid=URLLINK.HOST.1.1"
```

Example of output from executing the command:

RESPONSE:

```
(Command completed; empty list returned)
```

4.9.7 Acquiring Mainframe Host Information

To acquire information about a mainframe host registered in the Device Manager server (such as the host name), use the `GetHost` command.

Note: If you do not know the object ID of a mainframe host, use the following procedure to acquire the object ID.

1. Execute the `GetHost` command with no object ID specified to acquire a list of all hosts registered in Device Manager.
2. In the displayed host information, find the name of the mainframe host you are looking for.
3. Acquire the object ID based on the information related to the mainframe host you found in step 2.

Example of executing the command:

```
HiCommandCLI GetHost -o "D:\logs\GetHost.log" "objectid=HOST.1"
```

Example of output from executing the command:

RESPONSE:

```
An instance of Host
objectID=HOST.1
name=toro2
capacityInKB=0
hostType=2
sysplexID=RSDPLEX
```

4.9.8 Changing Mainframe Host Information

To change the information of a mainframe host registered in the Device Manager server, use the `ModifyHost` command. You can change the name of a mainframe host by specifying the new host name in the `hostname` parameter.

Note: When you change the host name, specify the host name that was set in the initialization parameter for Mainframe Agent. If you specify a host name that differs from the host name set during Mainframe Agent environment setup, you cannot acquire information from Mainframe Agent.

Note: The `ModifyHost` command cannot be used to modify the `hosttype` parameter information. To modify the `hosttype` parameter information, use the `DeleteHost` command to delete the target mainframe host, and then re-register the mainframe host.

Example of executing the command:

```
HiCommandCLI ModifyHost -o "D:\logs\ModifyHost.log" "objectid=HOST.1" "hostname=snow"
```

Example of output from executing the command:

RESPONSE:

```
An instance of Host
objectID=HOST.1
name=snow
capacityInKB=0
hostType=2
sysplexID=RSDPLEX
```

4.9.9 Deleting a Mainframe Host

To delete a mainframe host registered in the Device Manager server, use the `DeleteHost` command.

Note: If you delete a mainframe host, the Mainframe Agent information registered in Device Manager is also deleted, and the mainframe volume information and the logical DKC serial number of the storage subsystem displayed in Web Client are no longer displayed.

Example of executing the command:

```
HiCommandCLI DeleteHost -o "D:\logs\ DeleteHost.log" "objectid=HOST.1"
```

Example of output from executing the command:

RESPONSE:

```
(Command completed; no data returned)
```

4.10 Miscellaneous Tasks

This sections contains examples of tasks that can be performed using the HiCommand Device Manager CLI.

4.10.1 Merging and Registering Existing WWN Information for a New Host

This section gives an example of how to merge the WWN information of multiple existing hosts and register the information in the Device Manager server for a new host.

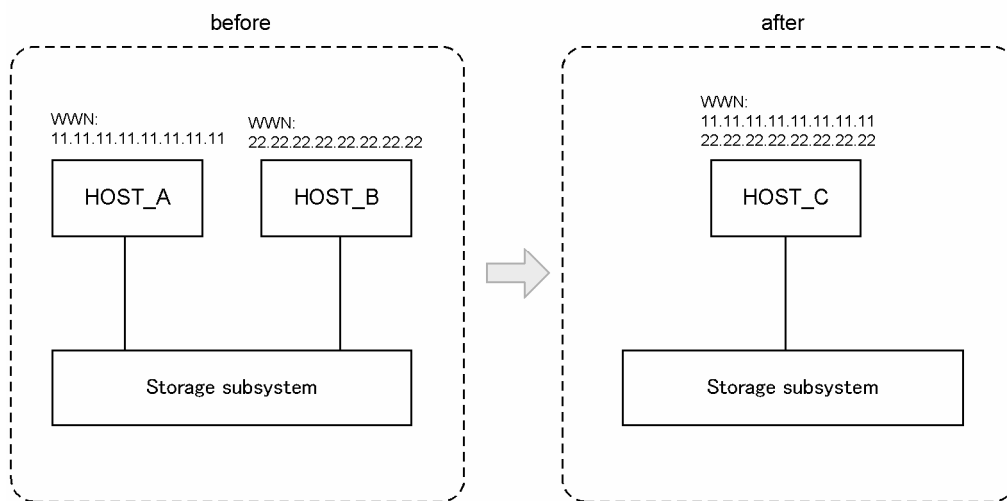


Figure 4.1 Merging WWN information

Note: When Web Client is also used, do not refresh the information of the target host on the Web Client before the operating procedure finishes. If you do this, an unexpected error might occur due to a conflict among processing requests.

In this example, the WWNs that have been assigned to the following two hosts are assigned to a new host, and then registered in the Device Manager server. The procedure for this example is described below.

Information of the hosts to be merged:

- Host name: HOST_A, WWN: 11.11.11.11.11.11.11
- Host name: HOST_B, WWN: 22.22.22.22.22.22.22

Information of the new host:

- Host name: HOST_C, WWN: 11.11.11.11.11.11.11, 22.22.22.22.22.22.22

Note: The following command format and command execution example assume that you have specified the necessary URL and options for executing Device Manager CLI commands in the Device Manager CLI property file (`HiCommandCLI.properties`).

To perform this example:

1. Obtain the object IDs for the hosts to be merged.

Executing the `GetHost` command displays the host information. From these execution results, obtain the object IDs (`objectID`) based on the host names (`name`).

Example of executing the command:

```
HiCommandCLI GetHost
```

Example of output from executing the command:

```
RESPONSE:
An instance of Host
  objectID=HOST.1
  name=HOST_A
  capacityInKB=2,403,360
  hostType=-1
  List of 1 WWN elements:
    An instance of WWN
      WWN=11.11.11.11.11.11.11.11

An instance of Host
  objectID=HOST.2
  name=HOST_B
  capacityInKB=1,000,080
  hostType=-1
  List of 1 WWN elements:
    An instance of WWN
      WWN=22.22.22.22.22.22.22.22
```

2. Delete the WWN information from the hosts to be merged.

As a parameter, specify the object ID that was obtained in step 1, and then execute the `ModifyHost` command. Do not specify the parameter `wwnlist` to delete WWN information.

Command format:

```
HiCommandCLI ModifyHost "objectid=object-ID-of-the-host-to-be-merged"
```

Example of executing the command:

```
HiCommandCLI ModifyHost "objectid=HOST.1"
HiCommandCLI ModifyHost "objectid=HOST.2"
```

Note: WWN information will be deleted from the registration information of each host, but the LUN security that has already been set up will not be removed.

3. Delete the hosts to be merged.

As a parameter, specify the object ID that was obtained in step 1, and then execute the `DeleteHost` command.

Command format:

```
HiCommandCLI DeleteHost "objectid=object-ID-of-the-host-to-be-merged"
```

Example of executing the command:

```
HiCommandCLI DeleteHost "objectid=HOST.1"
HiCommandCLI DeleteHost "objectid=HOST.2"
```

4. Register a new host, assigning to it the WWNs that were deleted in step 2.

Command format:

```
HiCommandCLI AddHost "hostname=new-host-name" "wwnlist=WWN1,WWN2 ... "
```

Example of executing the command:

```
HiCommandCLI AddHost "hostname=HOST_C"
"wwnlist=11.11.11.11.11.11.11.11,22.22.22.22.22.22.22.22"
```

5. Check the WWNs for the new host that was registered in step 4.

Execute the `GetHost` command to confirm that the new host and its WWNs are registered correctly.

Example of executing the command:

```
HiCommandCLI GetHost
```

Example of output from executing the command:

```
RESPONSE:
An instance of Host
  objectID=HOST.3
  name=HOST_C
  capacityInKB=3,403,440
  hostType=-1
List of 2 WWN elements:
  An instance of WWN
    WWN=11.11.11.11.11.11.11.11
  An instance of WWN
    WWN=22.22.22.22.22.22.22.22
```

The following is an example of a script file that performs the same operations as steps 2, 3, 4, and 5.

Example of a script file (in Windows):

```
call HiCommandCLI ModifyHost "objectid=HOST.1"
call HiCommandCLI ModifyHost "objectid=HOST.2"

call HiCommandCLI DeleteHost "objectid=HOST.1"
call HiCommandCLI DeleteHost "objectid=HOST.2"

call HiCommandCLI AddHost "hostname=HOST_C"
"wwnlist=11.11.11.11.11.11.11.11,22.22.22.22.22.22.22.22"
```

Chapter 5 Device Manager Properties File (CLI)

This chapter describes how to specify options and parameters by using the HiCommand Device Manager CLI properties file. This chapter also describes how to change certain properties by entering commands on the command line. For information regarding the HiCommand Device Manager CLIEX properties file, see Chapter 9. This chapter includes the following:

- CLI Properties File Overview(See section 5.1)
- Using the Properties File to Specify Options(See section 5.2)
- Using the Properties File to Specify Parameters(See section 5.3)
- Setting Up the HiCommand Device Manager CLI Execution Environment(See section 5.4)
- Inputting Requests from XML Documents(See section 5.5)

5.1 CLI Properties File Overview

You can use the HiCommand Device Manager CLI properties file to specify command options and parameters. The properties file specifies the defaults for the Device Manager server URL, command options, and command parameters. The properties file can also contain the log file output and debugging level settings.

If command options and parameters have been specified in the properties file, the options and parameters can be omitted from the command line.

The HiCommand Device Manager CLI properties file is named `HiCommandCLI.properties` and resides in the directory or folder where HiCommand Device Manager CLI is installed.

- You can "comment-out" lines in the properties file by preceding the line with the `#` character.

Figure 5.1 shows a sample properties file in the Windows environment.

```
#####
#
#       Device Manager Command Line Interface (CLI) Properties File
#
# Can be used to provide options and default parameters for the
# Device Manager CLI program.
#
# The Device Manager CLI program does not require any of the properties to be set.

# Location for the diagnostics file (default, when not specified, is
# HiCommandCLI.log in the executing directory)
HiCommandCLI logfile=C:/Temp/diag.log

# Diagnostic level of the diagnostic file (currently, default is
# (INFO). Allowable values are DEBUG, INFO, and WARN, each of which
# will output that level and higher.
HiCommandCLI diaglevel=INFO

# Location for the message trace file (default, when not specified, is
# MessageTrace.log in the executing directory)
HiCommandCLI tracefile=C:/DeviceManager/traffic.log

# set the server url
HiCommandCLI serverurl=http://localhost:2001/service

#####  OPTIONS  #####

user=khalsa

# password can be provided directly, or from a password file
password=khalsa
#password=@D:\\DeviceManager\\.passwd

# provide a copy of the raw xml request & response in MessageTrace.log file
messagetrace=true

#####  COMMAND PARAMETERS  #####

# set the Array model, for commands that use this parameter
Model=HDS9960
```

Figure 5.1 Sample CLI Properties File (Windows Environment)

5.2 Using the Properties File to Specify Options

Options can be specified on the command line or in the properties file. If an option is specified in the properties file, the option can be omitted from the command line.

- If an option is specified in both the properties file and on the command line, the option argument specified in the command line takes precedence.
- To specify an option in the properties file, use the long option name followed by the equal sign, followed by the option argument. For example:

```
output=redirect.out
messagetrace=true
```

Note: To set an option that does not have an option argument, set the option=true. You do not have to include the -- before the option name in the properties file.

Note: When `true` is set in a property file for an option without an argument, it cannot be overwritten to `false` from the command line.

The following table lists options and their corresponding properties.

Table 5.1 Options and Their Corresponding Properties

Option	Property	Argument
-u or --user	user	<i>user ID</i>
-p or --password	password	<i>password</i>
-s or --secure	secure	no argument
-i or --input	input	<i>filename</i>
-o or --output	output	<i>filename</i>
-t or --messagetrace	messegetrace	no argument

5.3 Using the Properties File to Specify Parameters

Parameters can be specified in the command line or in the properties file. If the parameter is specified in the properties file, the parameter can be omitted from the command line.

- If a parameter is specified in both the properties file and on the command line, the parameter value specified in the command line takes precedence.
- Be sure to specify only valid command parameters. If the parameters specified in the command line or in the properties file are invalid, unexpected results may occur.
- To specify an parameter in the properties file, specify the parameter name followed by the = sign, followed by the parameter value. For example:

```
serialnum=30057  
model=HDS9960
```

5.4 Setting Up the HiCommand Device Manager CLI Execution Environment

This section describes how to set up the HiCommand Device Manager CLI execution environment as shown in the sample properties file in Figure 5.1.

5.4.1 Specifying the Log File

The default file name of the log file used by HiCommand Device Manager CLI is `HiCommandCLI.log`. This file is created in the HiCommand Device Manager CLI execution directory or folder. You can specify a default file name, log output destination, and log level.

To specify the log output destination in the properties file, specify the `HiCommandCLI logfile` property followed by the = sign, followed by the output destination. For example:

```
HiCommandCLI logfile=C:/Temp/diag.log
```

Note: In a Windows environment, when setting the path to a property, use / or \\ instead of \ as a delimiter.

5.4.2 Specifying the Log Level

You can use `HiCommandCLI.diaglevel` property to specify the level of log information to be output to the log file. To specify the log level in the properties file, specify the `HiCommandCLI.diaglevel` property followed by the = sign followed by the log level. For example:

```
HiCommandCLI.diaglevel=DEBUG
HiCommandCLI.diaglevel=INFO
HiCommandCLI.diaglevel=WARN
HiCommandCLI.diaglevel=ERROR
```

Note: The default logging level is `INFO`.

5.4.3 Message Trace Output

The recording of the request messages sent to the HiCommand Device Manager server and the received responses can be controlled using the `-t` or `--messagetrace` option. Like all options, the value can also be set in the properties file.

The file in which the messages are recorded can be specified in the properties file using the `HiCommandCLI.tracefile` property. The default file `MessageTrace.log` is in the execution directory. To specify a different file in the properties file, specify the `HiCommandCLI.tracefile` property followed by the = sign, followed by the file path. For example:

```
HiCommandCLI.tracefile=C:/DeviceManager/traffic.log
```

5.4.4 Specifying the URL

The Device Manager server URL can be specified on the command line or the URL can be defined in the properties file using the `HiCommandCLI.serverurl` property. If the Device Manager server URL is defined in the properties file, the Device Manager sever URL can be omitted from the command line. To define the Device Manager sever URL in the properties file, specify the `HiCommandCLI.serverurl` property followed by the = sign, followed by the Device Manager server URL. For example:

```
HiCommandCLI.serverurl=http://localhost:2001/service
```

Note: If the Device Manager server URL is specified on the command line and in the properties file, the URL specified on the command line takes precedence.

5.5 Inputting Requests from XML Documents

WARNING: To use the XML-API CLI feature, you should have thorough knowledge of XML-API, and should take great care in formulating commands.

Instead of specifying the command and parameters from the command line, you can make the request from a file. The file must contain a valid XML document in the correct form for a HiCommand Device Manager request. The command line option `-i` or `--input` specifies the input file. The other options are still valid. However, any command or parameter specified from the command line or in the properties file is ignored, because that information is already in the XML document.

The `-i <filename>` option allows you to specify an xml message file. You can use this feature to request multiple operations in on CLI command, which can save considerable time.

For example, usually the **AddLUN** command specifies creating a single LUN. The **AddLUN XML-API** allows you to create multiple LUNs with a single request.

Syntax:

```
HiCommandCLI [-t] addLUN
serialnum=<Serial Number> model=<Model Name of Array>
port=<Port #> domain=<HostStorageDomain#>
scsi=<Scsi Target #> lun=<SCSI LU #> devnum=<LDEV #>
```

To add a LUN to LDEV 0:01 on 9980V(Serial:15045), where Port 1-A, HostStorageDomain 0, LU 100 is assigned to that LUN, do the following:

```
HiCommandCLI -t addLUN
serialnum=15045 model=HDS9980V
port=0 domain=0 scsi=15 lun=100 devnum=1
Following XML-API request will be generated according to specified parameters to HiCommand
CLI;
<?xml version="1.0" encoding="UTF-8"?>
<HiCommandServerMessage>
  <APIInfo version="3.1" />
  <Request>
    <StorageManager>
      <Add target="LUN">
        <StorageArray objectID="ARRAY.HDS9980V.15045">
          <Path portID="0" domainID="0" scsiID="15" lun="100" devNum="1" />
        </StorageArray>
      </Add>
    </StorageManager>
  </Request>
</HiCommandServerMessage>
```

Save the following to a file:

```
<?xml version="1.0" encoding="UTF-8"?>
<HiCommandServerMessage>
  <APIInfo version="5.7" />
  <Request>
    <StorageManager>
      <Add target="LUN">
        <StorageArray objectID="ARRAY.HDS9980V.15045">
          <Path portID="0" domainID="0" scsiID="15" lun="102" devNum="102" />
          <Path portID="0" domainID="0" scsiID="15" lun="104" devNum="104" />
        </StorageArray>
      </Add>
    </StorageManager>
  </Request>
</HiCommandServerMessage>
```

On a storage subsystem, when you specify the saved file that contains the preceding message, you can create multiple LUNs using one command, as follows:

```
HicommandCLI -t -i xmlcommand.txt
```

5.5.1 Using the Message Trace Log File to Create XML Files

When message tracing is turned on, each execution of the application writes over the message tracing file with the request and response of that execution, so that file never has more than one request and one response.

The request and the response are identified by labels. Each label includes a timestamp. The request also includes the HTTP header values set by the application. The request is the same string that is streamed over HTTP to the Server. The response is the string read from the Device Manager server via HTTP, before any parsing. Therefore, even if the application cannot make sense of the response (or does not handle the response correctly) the message trace contains a record of the response.

The following example shows how to download the CLI from the Device Manager server to a personal computer and then use the message trace log file to create XML files.

1. Follow the instructions in section 1.4 to download a copy of the CLI from the Device Manager server to a PC.
2. On the PC, extract the downloaded files to C:\HiCmdCLI.
3. Change directory to HiCmdCLI
cd HiCmdCLI
4. Edit the **HiCommandCLI.properties** file to turn on message trace. For example:

```
C:\HiCmdCLI>type HiCommandCLI.properties
HiCommandCLI.serverurl=http://193.36.40.55:2001/service
user=system
password=manager
messagetrace=true
```

Note: You need "messagetrace=true" in order to view the XML in the message trace log file.

5. Copy **HiCommandCLI.bat do.bat**. This is so that rather than having to type **HiCommandCLI** followed by the command each time, you can just type "do" followed by the command.
6. At the CLI prompt, type the following command: **do getserverinfo**

You will see output similar to the following:

```
An instance of ServerInfo
serverVersion=HiCommand Device Manager Server v5.7 Build 0560-00 (Dec 19, 2006)
serverURL=http://193.36.40.55:2001
upTime=1 day 23 hours 35 minutes 27 seconds
upSince=Wed, 20 Wed 2006 11:07:51 GMT
List of 5 StorageArray elements:
  An instance of StorageArray
    arrayFamily=HDS9200
    displayArrayFamily=HDS9200
  An instance of StorageArray
    arrayFamily=HDS9500V
    displayArrayFamily=HDS9500V
  An instance of StorageArray
    arrayFamily=HDS9900
    displayArrayFamily=HDS9900
  An instance of StorageArray
    arrayFamily=HDS9900V
    displayArrayFamily=HDS9900V
  An instance of StorageArray
    arrayFamily=SUNT3
    displayArrayFamily=SUNT3
C:\HiCmdCLI>
```

Note: The XML for this command is now in the `MessageTrace.log` file.

7. View the contents of the `MessageTrace.log` file. The output will look similar to the following:

```
C:\HiCmdCLI>more MessageTrace.log
>>> Request Submitted at: 12:46:07 CEST to: http://193.36.40.55:2001/service/ServerAdmin
----- HTTP Header -----
User-Agent = HiCommandClient
Accept = */*
Host = 193.36.40.55
Content-Type = text/xml
Connection = Keep-Alive
Authorization = null
Content-Length = 225
-----
<?xml version="1.0" encoding="UTF-8"?>
<HiCommandServerMessage>
  <APIInfo version="5.7" />
  <Request>
    <ServerAdmin>
      <Get target="ServerInfo" />
    </ServerAdmin>
  </Request>
</HiCommandServerMessage>
```

- Copy and save the XML information (excluding the HTTP Header information) from the MessageTrace.log file and use a text editor to create a file called getserv.inp. For example:

```
C:\HiCmdCLI>type getserv.inp
<?xml version="1.0" encoding="UTF-8"?>
<HiCommandServerMessage>
  <APIInfo version="5.7" />
  <Request>
    <ServerAdmin>
      <Get target="ServerInfo" />
    </ServerAdmin>
  </Request>
</HiCommandServerMessage>
C:\HiCmdCLI>
```

- To execute the getserv.inp XML file on a storage subsystem, type the following command at the CLI prompt:

do -i getserv.inp

You will see results similar to the following example:

```
C:\HiCmdCLI>do -i getserv.inp
RESPONSE:
<?xml version="1.0" encoding="UTF-8"?>
<HiCommandServerMessage>
  <APIInfo version="5.7" />
  <Response>
    <EchoCommand name="GetServerInfo" status="COMPLETED" result="0" resultSource
    ="ServerAdmin.GetServerInfo" messageID="253437470" />
    <ResultList>
      <ServerInfo serverVersion="HiCommand Device Manager Server v5.7 Build 0560-00
      (Dec 19, 2006)" serverURL="http://193.36.40.55:2001" upTime="1 day 23 hours
      52 minutes 4 seconds" upSince="Wed, 20 Dec 2006 11:07:51 GMT">
        <StorageArray arrayFamily="HDS9200" displayArrayFamily="HDS9200" />
        <StorageArray arrayFamily="HDS9500V" displayArrayFamily="HDS9500V" />
        <StorageArray arrayFamily="HDS9900" displayArrayFamily="HDS9900" />
        <StorageArray arrayFamily="HDS9900V" displayArrayFamily="HDS9900V" />
        <StorageArray arrayFamily="SUNT3" displayArrayFamily="SUNT3" />
      </ServerInfo>
    </ResultList>
  </Response>
</HiCommandServerMessage>

C:\HiCmdCLI>
```

- Use this procedure to create XML .inp files for other CLI commands.

Chapter 6 System Requirements and Set Up (CLIEX)

This chapter describes system requirements and specifications for operating HiCommand Device Manager CLIEX.

- System Requirements(See section 6.1)
- HiCommand Device Manager CLIEX Installation and Uninstallation(See section 6.2)
- HiCommand Device Manager CLIEX Environment Settings(See section 6.3)
- HiCommand Device Manager CLIEX Operation(See section 6.4)

6.1 System Requirements

The following requirements must be satisfied when using HiCommand Device Manager CLIEX:

■ Storage Subsystem

Device Manager CLIEX supports the following storage subsystems:

- Lightning 9900
- Lightning 9900V
- TagmaStore USP

For details about requirements for storage subsystems, see the manual *HiCommand Device Manager Server Installation and Configuration Guide*.

Note: Before adding a storage subsystem to HiCommand Device Manager using HiCommand Device Manager CLI (or other clients), check that the storage subsystem has been configured to be operated by HiCommand Device Manager.

■ HiCommand Device Manager version 5.7

- HiCommand Device Manager Server

The HiCommand Device Manager server must have been installed and configured to be ready for full operation in advance. For details about the HiCommand Device Manager server, see the manual *HiCommand Device Manager Server Installation and Configuration Guide*.

- Web Client

Check that Web Client recognizes the target storage subsystem that you request for processing in HiCommand Device Manager CLIEX. Web Client is used for downloading CLI and creating command devices for a storage subsystem. For details about Web Client, see the manual *HiCommand Device Manager Web Client User's Guide*.

- HiCommand Device Manager CLI

Check that HiCommand Device Manager CLI has been installed on a client that uses HiCommand Device Manager CLIEX. For details about requirements for HiCommand Device Manager CLI, see section 2.1.

Important: In order to prevent contention with other management tools, you must ensure that no other users have access to the target storage subsystem during CLIEX operations. As an added precaution, it is highly recommended that you use the `AddArrayReservation` and `DeleteArrayReservation` commands to lock and unlock the target storage subsystem as described in the section 6.4.

■ Platforms for HiCommand Device Manager CLIEX

- Windows Server 2003 (Service Pack 1 or 2) (for x86 only)
- Windows Server 2003 R2 Edition (no service pack or Service Pack 2) (x86 versions only)
- Sun Solaris 8, 9 or 10 (SPARC platform only)

Note: The HiCommand Device Manager CLIEX runs in the usual global environment (global zone) only. If a non-global zone has been created, install the HiCommand Device Manager CLIEX in the global zone.

- **Related programs**

- RaidManager/Lib (01-10-03/05)
- Xerces version 2.6.0

Note: RaidManager/Lib and Xerces are automatically installed during installation of HiCommand Device Manager CLIEX.

6.2 HiCommand Device Manager CLIEX Installation and Uninstallation

This section describes installation and uninstallation of HiCommand Device Manager CLIEX. When you install HiCommand Device Manager CLIEX, download the HiCommand Device Manager CLIEX installer from the HiCommand Device Manager server. For details about how to download the installer, see section 1.4.

If the HiCommand Device Manager CLIEX has already been installed, you can find the software version of the installed CLIEX by executing one of the following commands:

- In Windows:

The following shows a sample command execution when HiCommand Device Manager CLIEX has been installed in C:\HiCommand.

```
C:\HiCommand\bin> hdmcliex version
```

results:

```
Device Manager CLIEX version "5.7.0-00"
```

- In Solaris:

```
# /opt/HDVMCLIEX/bin_/hdmcliex version
```

Example of execution results:

```
Device Manager CLIEX version "5.7.0-00"
```

6.2.1 Installing HiCommand Device Manager CLIEX in Windows

There are three types of HiCommand Device Manager CLIEX installation in Windows:

- **New installation**

HiCommand Device Manager CLIEX is being installed for the first time.

- **Update installation** (updating an earlier version)

The installed version of HiCommand Device Manager CLIEX is earlier than 5.7 and is being updated by being overwritten with version 5.7.

- **Re-installation** (installation for restoration)

The installed version of HiCommand Device Manager CLIEX is 5.7 and is being restored by being overwritten with the same version (5.7).

Notes:

- During an overwrite installation, the existing property file `hdmcliex.properties` and the related DTD file `HDVMCLIEXProp.dtd` are automatically renamed to `hdmcliex.properties.old` and `HDVMCLIEXProp.dtd.old` and kept as backup files. To use the previous property and DTD files again after an overwrite installation, rename `hdmcliex.properties.old` to `hdmcliex.properties` and rename `HDVMCLIEXProp.dtd.old` to `HDVMCLIEXProp.dtd`.
- To perform installation and uninstallation, the user must log in as a member of the Administrators group.

- To install HiCommand Device Manager CLIEX on the system drive, 13 MB or more of free disk space is required on the system drive. To install HiCommand Device Manager CLIEX on a drive other than the system drive, 7 MB or more of free disk space is required on the target drive, and 6 MB or more of free disk space is required on the system drive.

6.2.1.1 Preparing for Installation in Windows

Before you install Device Manager CLIEX in Windows, perform the following procedure to disable the data execution prevention function of Windows.

To disable the data execution prevention function:

1. Choose **Start, Settings, Control Panel**, and then **System**.
A dialog box displays.
2. Choose the **Advanced** tab, **Performance**, and then the **Settings** button.
The Performance Options dialog box displays.
3. Choose the **Data Execution Prevention** tab, and then the **Turn on DEP for all programs and services except those I select** radio button.
4. Click the **Add** button.
A dialog box allowing you to select a file displays.
5. Select the Device Manager CLIEX installer, and then click **OK**.
6. From the list of applications displayed in the Performance Options dialog box, select the **InstallAnywhere Self Extractor** check box.
7. Click the **OK** button.

6.2.1.2 New Installation

To install HiCommand Device Manager CLIEX for the first time:

1. Uncompress the downloaded file and then start the HiCommand Device Manager CLIEX installer (one of the uncompressed files). To start the installer, execute the following command:
folder-in-which-the-downloaded-file-is-uncompressed\CLIEXINST\setup.exe
2. The Welcome to the InstallShield Wizard for Device Manager CLIEX dialog box displays. Choose the **Next** button to proceed.
3. The License Agreement dialog box displays. Agree to the license, and then choose the **Next** button to proceed.
4. The Choose Destination Location dialog box displays. Specify the installation folder, and then choose the **Next** button to proceed.

Note: Specify an absolute path within 64 bytes.

Note: Do not specify a path separator (\) at the end of a folder path.

Note: The following characters can be specified for paths:

A to Z, a to z, 0 to 9, ., _, (,), and space characters

Note: Do not specify two or more consecutive space characters.

Note: Do not specify folder names that end in a period or space.

Note: Do not use parentheses for folders other than Program Files (x86).

5. Start Copying Files dialog box displays; choose the **Next** button to start installation.
6. When the InstallShield Wizard Completed dialog box displays, choose the **Finish** button to complete the installation.

6.2.1.3 Update Installation (Updating an Earlier Version)

To perform an overwrite installation that updates HiCommand Device Manager CLIEX:

1. After uncompressing the downloaded file, execute the installer for HiCommand Device Manager CLIEX located among the extracted files. Execute the following command:

```
folder-in-which-the-downloaded-file-is-uncompressed\CLIEXINST\setup.exe
```

2. When the Welcome to the InstallShield Wizard for Device Manager CLIEX dialog box appears, click the **Next** button to go to the next step.
3. When installation is finished, the Update Complete dialog box appears. Click the **Finish** button to finish installation.

6.2.1.4 Re-installation (installation for restoration)

To perform an overwrite installation that restores HiCommand Device Manager CLIEX:

1. After uncompressing the downloaded file, execute the installer for HiCommand Device Manager CLIEX in the extracted file. Execute the following command:

```
folder-in-which-the-downloaded-file-is-uncompressed\CLIEXINST\setup.exe
```

2. A dialog box in which you can select whether to repair or delete appears. Click the **Repair** button, and then click the **Next** button to go to the next step.
3. A dialog box that asks you whether you want to execute installation for restoring is displayed. Click the **Yes** button to start installation for restoring.
4. When installation is finished, the Maintenance Complete dialog box appears. Click the **Finish** button to finish installation.

6.2.2 Installing HiCommand Device Manager CLIEX in Solaris

Notes:

- To install HiCommand Device Manager CLIEX, at least 30 MB of free disk space is required in both the installation directory `/opt/HDVMCLIEX` and the `/var` directory (60 MB total).
- To perform installation or uninstallation, the user must log in as root.

There are three types of HiCommand Device Manager CLIEX installation in Solaris:

Note: Do not specify the system's zone settings during installation in Solaris 10 system. If you do specify the settings, installation might finish abnormally.

- **New installation**

HiCommand Device Manager CLIEX is being installed for the first time.

- **Update installation** (updating an earlier version)

The installed version of HiCommand Device Manager CLIEX is earlier than 5.7 and is being updated by being overwritten with version 5.7.

- **Re-installation** (installation for restoration)

The installed version of HiCommand Device Manager CLIEX is 5.7 and is being restored by being overwritten with the same version (5.7).

Note: During an overwrite installation, the existing property file `hvmcliex.properties` and its DTD file `HDVMCLIEXProp.dtd` are automatically renamed to `hvmcliex.properties.old` and `HDVMCLIEXProp.dtd.old` and kept as backup files.

To use the previous property and DTD files again after overwrite installation, rename `hvmcliex.properties.old` to `hvmcliex.properties` and rename `HDVMCLIEXProp.dtd.old` to `HDVMCLIEXProp.dtd`.

To install HiCommand Device Manager CLIEX (this procedure is for a new installation but also applies to overwrite installations):

1. After decompressing the downloaded file, execute the installer for HiCommand Device Manager CLIEX in the extracted file. Execute the following command:

```
# cd directory-for-decompressing-downloaded-file/CLIEXINST
# ./install.sh
```

2. When `RaidManager/Lib` is not installed, a message that prompts installation displays. To start installation, enter the desired directory to which `RaidManager/Lib` will be installed.

When you install `RaidManager/Lib` in a directory other than `/usr/lib/RMLIB`, a symbolic link to the installation directory is created in `/usr/lib/RMLIB`.

When `RaidManager/Lib` has already been installed, skip this step and proceed to step 3.

Note: At least 5 MB of free disk space is necessary for the directory in which `RaidManager/Lib` is installed.

3. The Licensing Agreement displays. Check the contents and agree to the license. If you do not agree to the license, installation is canceled.

HiCommand Device Manager CLIEX is installed in `/opt/HDVMCLIEX`.

6.2.3 Uninstalling HiCommand Device Manager CLIEX

The following describes how to uninstall HiCommand Device Manager CLIEX.

6.2.3.1 Uninstalling HiCommand Device Manager CLIEX in Windows

1. Choose **Start**, **Settings**, **Control Panel**, and then **Add/Remove Programs**. From the **Add/Remove Programs** utility, choose **Device Manager CLIEX**.
2. A dialog box asking whether you want to execute uninstallation displays. Click **Yes** to start uninstallation.
3. When uninstallation completes, the **Uninstall Complete** dialog box displays. Click **Finish** to finish the uninstallation.

6.2.3.2 Uninstalling HiCommand Device Manager CLIEX in Solaris

1. Log in to the Solaris system as root.
2. Execute the following command:

```
# /opt/HDVMCLIEX/.uninstall.sh
```

Note: Do not specify the system's zone settings during uninstallation in Solaris 10 system. If you do specify the settings, uninstallation might finish abnormally.

6.3 HiCommand Device Manager CLIEX Environment Settings

Before you start operating HiCommand Device Manager CLIEX, you need to set the following environments:

- **Command device creation**

HiCommand Device Manager CLIEX uses the command device on the storage subsystem to execute processing requested by the client. You must create the command device on the storage subsystem in advance so that the command device can be recognized from the client that uses HiCommand Device Manager CLIEX. Use Web Client or management tools of the storage subsystem to create the command device. For details about Web Client operation, see the manual *HiCommand Device Manager Web Client User's Guide*. For details about management tools, see the manual for management tools of each storage subsystem.

- **Partition creation (in Windows only)**

After the command device is created, you must create a primary partition for it. For details about the procedure, see section 6.3.1.

Note: Use the basic disk as the command device disk.

- **Property file creation**

Information about the storage subsystem that executes processing for requests from the client, and information about the command device is defined in the CLIEX property file. When HiCommand Device Manager CLIEX requests processing for a storage subsystem, information about the storage subsystem for processing, and the log outputs, is obtained from the property file. For details about the CLIEX property file, see Chapter 9.

- **Setting of environment variable `MANPATH` (in Solaris)**

To use the `man` command to view information about HiCommand Device Manager CLIEX commands, set `MANPATH` as follows:

```
MANPATH=/opt/HDVMCLIEX/man:$MANPATH
```

Note: For details on HiCommand Device Manager CLIEX commands in Windows, see Help (*Device-Manager-CLIEX-installation-folder\help\HDVMCLIEX.HLP*).

6.3.1 Creating a Partition (for Windows)

This section describes how to create a partition for the command device.

1. On the desktop, right-click **My Computer** and choose **Manage**.
The Computer Management window displays.
2. Choose **Storage**, and then **Disk Management**.
3. If the command device disk is not initialized, right-click the command device disk, and then choose **Initialize Disk**.
4. Right-click the command device disk, and then choose **New Partition**.
The Welcome to the New Partition Wizard dialog box displays.

5. In the Welcome to the New Partition Wizard dialog box, choose the **Next** button.
The Select Partition Type dialog box displays.
6. In the Select Partition Type dialog box, choose **Primary Partition**, and then select the **Next** button.
The Specify Partition Size dialog box displays.
7. In the Specify Partition Size dialog box, leave the default settings, and then choose the **Next** button.
The Assign Drive Letter or Path dialog box displays.
8. In the Assign Drive Letter or Path dialog box, select **Do not assign a drive letter or drive path**, and then choose the **Next** button.
The Format Partition dialog box displays.
9. In the Format Partition dialog box, choose **Do not format this partition**, and then choose the **Next** button.
Note: If you format the partition by mistake, delete the partition and re-create the partition.
10. When creation of the partition has been completed, the Completing the New Partition Wizard dialog box displays. Choose the **Finish** button.

6.4 HiCommand Device Manager CLIEX Operation

This section describes how to operate HiCommand Device Manager CLIEX. In an environment using HiCommand Device Manager, processing requests are made by multiple clients and the host to the storage subsystem simultaneously. The heavy load on the storage subsystem might result in reduced processing speed. In order to prevent contention with other management tools during CLIEX operations, you must ensure that no other users have access to the target storage subsystem. As an added precaution, it is highly recommended that you use the `AddArrayReservation` and `DeleteArrayReservation` commands to lock and unlock the target storage subsystem as described in the following procedures. The dedicated lock uses a function provided by HiCommand Device Manager CLI.

For CLIEX operation, be sure to use the following procedure, as it is the official operating procedure for HiCommand Device Manager CLIEX:

Note: For an example of executing commands, see section 7.1.5.

Important: Before performing CLIEX operations, make sure that no other users have access to the target storage subsystem.

1. Check that the target storage subsystem is under the management of HiCommand Device Manager.

The dedicated lock function of HiCommand Device Manager CLI is only valid for a storage subsystem that is under the management of HiCommand Device Manager. Check that the storage subsystem that you request for processing in HiCommand Device Manager CLIEX is under the management of HiCommand Device Manager. If it is not, add it to HiCommand Device Manager.

2. Obtain the dedicated lock for the target storage subsystem through HiCommand Device Manager CLI. For details about how to obtain the dedicated lock, refer to section 4.1.2.

Note: If you operate HiCommand Device Manager CLIEX without obtaining the dedicated lock, an unexpected error might occur due to contention among processing requests.

3. Request processing for the storage subsystem that has acquired the dedicated lock.

A dedicated lock can be applied for 5 minutes. The dedicated lock is automatically canceled 5 minutes after it is acquired, even if the storage subsystem is in the middle of processing some requested processing. Extend the time of dedicated locks as needed. For details about how to extend the time of the dedicated lock, refer to section 4.1.18.

You can check if a dedicated lock has been canceled by obtaining information on the currently locked storage subsystem. For details on how to do this, refer to section 4.1.16.

4. If multiple processing requests are made to the storage subsystem, repeat step 3.
5. After completion of request processing, apply the results of executing HiCommand Device Manager CLIEX to the HiCommand Device Manager server as follows:

For TagmaStore USP and Lightning 9900V:

1. Refresh the storage subsystem to update configuration information. For details about how to refresh the storage subsystem, refer to section 4.1.7.
2. Use HiCommand Device Manager CLI to cancel the dedicated lock for the storage subsystem. For details on how to cancel the dedicated lock, refer to section 4.1.9.

For Lightning 9900:

The configuration information of the storage subsystem that has been modified through HiCommand Device Manager CLIEX is applied on the HiCommand Device Manager server by restarting SVP. To apply the modification, perform the following operations:

1. Use HiCommand Device Manager CLI to cancel the dedicated lock for the storage subsystem. For details about how to cancel a dedicated lock, refer to section 4.1.9.
2. Open the Maintenance window of the SVP. On the menu bar, choose **Renew**, and then **Renew Status**.
3. Restart SVP.
4. Refresh the storage subsystem. For details about how to refresh the storage subsystem, refer to section 4.1.7.

Chapter 7 Command Syntax (CLIEX)

This chapter describes the command syntax for CLIEX commands and provides additional information that you should be aware of before using the CLIEX.

This chapter contains the following sections:

- CLIEX Command Syntax (See section 7.1)
- CLIEX Return Responses (See section 7.2)
- Displaying CLIEX Help (See section 7.3)
- List of CLIEX Commands and Supported Storage Subsystems (See section 7.4)
- Guidelines for Executing Certain CLIEX Commands (See section 7.5)

7.1 CLIEX Command Syntax

HiCommand Device Manager CLIEX sends requests to and receives responses from the command device of the storage subsystem. Execute HiCommand Device Manager CLIEX from the command line. When you execute commands, specify the command device of the target storage subsystem.

7.1.1 HiCommand Device Manager CLIEX Execution

When you want to execute HiCommand Device Manager CLIEX, make sure that you move to the `bin` directory under the directory where HiCommand Device Manager CLIEX is installed, and then execute the following command:

- In Windows:

The following shows a sample command execution when HiCommand Device Manager CLIEX has been installed in `C:\HiCommand`.

```
C:\HiCommand\bin> hdmcliex.bat
```

- In Solaris:

```
# ./hdmcliex
```

Note: If you execute `hdmcliex.bat` or `hdmcliex` without specifying any command line options, the usage for all of the commands is displayed.

7.1.2 Command Line Format

The general format for the command line is as follows:

```
hdmcliex storage-array [option] command [parameter]

storage-array: { -c command-device-file-name | --cmddev command-device-file-name | -a
alias-name | -- array alias-name }
```

Table 7.1 describes the CLIEX command syntax.

Table 7.1 CLIEX Command Syntax

Command Component	Description
<i>storage-array</i>	Specifies the target storage subsystem processed by the command. Enter the specification by using the general UNIX method. That is, each option has a one-character expression and a word expression; for a one-character expression, a dash forms the prefix and for a word expression, two dashes form the prefix. For example, a one-character expression is <code>-c</code> and a word expression is <code>--cmddev</code> . For details about storage-array options, refer to Table 7.2.
<i>option</i>	Options control the behavior of HiCommand Device Manager CLIEX. Enter options using the general UNIX method. That is, each option has a one-character expression and a word expression; for a one-character expression, a dash forms the prefix and for a word expression, two dashes form the prefix. For example, a one-character expression is <code>-x</code> and a word expression is <code>--xmlout</code> . For details about options, see Table 7.2 and Table 7.3.
<i>command</i>	The actual command mnemonic used to obtain information on the storage subsystem and request LUN management. For example, <code>GetStorageArray</code> or <code>AddLun</code> . For a complete list of CLIEX commands, see Chapter 8.
<i>parameter</i>	Zero or more parameters for the requested command. Parameters differ according to commands. Specify the parameter name followed by the = sign, followed by the parameter value. For example, <code>port=10</code> . If the parameter value includes spaces or delimiters, be sure to enclose the parameter value in double quotes. For example, <code>nickname="Our Newest Array"</code> .

7.1.3 CLIEX Storage-Array Options

Table 7.2 lists and describes the CLIEX storage-array options.

Table 7.2 CLIEX Storage-Array Options

Storage-Array Option	Option Argument	Description
<code>-c</code> or <code>--cmddev</code>	Command device	File name for the command device of the storage subsystem or GUID. Makes a request for processing to the command device of the specified storage subsystem. You can specify the set value for the property file attribute <code>devFile</code> . In Windows, the value is not case sensitive. In Solaris, the value is case sensitive.
<code>-a</code> or <code>--array</code>	Alternative name of the storage subsystem	The alternative name of the storage subsystem. The specified alias is searched from the property file, and then a request for processing is made to the command device of the corresponding storage subsystem. You can specify the set value for the property file attribute <code>aliasName</code> . This is case sensitive.

7.1.4 CLIEX Command Options

Table 7.3 describes the available CLIEX command options.

Table 7.3 CLIEX Command Options

Command Option	Option Argument	Description
-x or --xmlout	No argument	Outputs the results of the command execution in XML format.
--devnumfmt	dec or colon	Output format for the LDEV numbers. Specifies the format for outputting the results of a command execution to devNum. You can specify the values as follows: <ul style="list-style-type: none">dec: Decimal notationcolon: Colon-separated hexadecimal form. Displayed as xx:yy, where xx is the CU number and yy is the LDEV number. Note: The default output format is decimal.
--prop	Property file name	Property file name used. If it is omitted, the default property file is used. You can specify only the name of a property file. Note that the following characters cannot be used for a property file name. \ / : ; , * ? " < > For details about the CLIEX property file, see Chapter 9.

Sample output resulting from command execution is shown below.

Output Example of AddLunCommand (standard output):

```
RESPONSE:
An Instance of StorageArray
  productName=RAID400
  serialNumber=10011
  vendorName=HITACHI
  controllerVersion=01-19-59/12
  agentVersion=02-00-00
  cacheInMB=7,168
List of 1 Path elements:
  An Instance of Path
    portID=19
    domainID=65535
    lun=100
    devNum=417
    scsiID=15
```

Use the `-x` or `-xmlout` option to specify XML output.

Output Example of AddLun Command (XML format):

```
<?xml version="1.0" ?>
<HDVMCLIEXMessage version="5.5">
  <Response>
    <StorageArray
      productName="RAID400"
      serialNumber="10011"
      vendorName="HITACHI"
      controllerVersion="01-19-59/12"
      cacheInMB="7168">
      <Path
        portID="19"
        domainID="-1"
        lun="100"
        devNum="417"
        scsiID="15">
      </Path>
    </StorageArray>
  </Response>
</HDVMCLIEXMessage>
```

7.1.5 Example of Executing HiCommand Device Manager CLIEX Commands

In the following example, the `AddLun` command is used to illustrate the execution of HiCommand Device Manager CLIEX commands. In this example, the `AddLun` command adds a LUN (port number: 19, LUN: 100, device number: 417) to a TagmaStore USP storage subsystem (alias name: ARRAY1).

To add a LUN to a storage subsystem:

1. Use the `GetStorageArray` command to make sure that HiCommand Device Manager manages the target storage subsystem.
2. Execute the `AddArrayReservation` command to lock the target storage subsystem.

Example of executing the command:

```
HiCommandCLI AddArrayReservation -o "D:\logs\AddArrayReservation.log" "model=USP"
"serialnum=14009"
```

Result of executing the command:

```
An instance of ArrayReservation
objectID=ARRAYRESERVATION.USP.14009
target=ARRAY.USP.14009
loginID=dmuser
beginTime=1,039,003,476
```

3. Execute the `AddLun` command to add a LUN to the target storage subsystem.

Example of executing the command:

```
hdvmdiex -a ARRAY1 AddLun port=19 lun=100 devnum=417
```

Result of executing the command

```
RESPONSE:
An Instance of StorageArray
  productName=RAID500
  serialNumber=14009
  vendorName=HITACHI
  controllerVersion=01-19-59/12
  cacheInMB=7168
List of 1 Path elements:
  An Instance of Path
    portID=19
    domainID=-1
    lun=100
    devNum=417
    scsiID=15
```

4. Execute the `DeleteArrayReservation` command to unlock the target storage subsystem.

Example of executing the command:

```
HiCommandCLI DeleteArrayReservation -o "D:\logs>DeleteArrayReservation.log" "model=USP"
"serialnum=14009"
```

Result of executing the command:

```
RESPONSE:
(Command completed; no data returned)
```

7.2 CLIEX Return Responses

HiCommand Device Manager CLIEX returns the return values for the execution results at the end of the process. Table 7.4 shows return values and their descriptions.

Table 7.4 CLIEX Return Responses

Return Value	Description
0	hdvnclex ends normally.
1	hdvnclex found errors within its process (for example, parameter error).
2	hdvnclex found errors in calling CCI Manager Lib.

7.3 Displaying CLIEX Help

HiCommand Device Manager CLIEX provides two help modes:

- **Basic Help Information for HiCommand Device Manager CLIEX**
Displays the Device Manager CLIEX command format, a list of commands, and a list of options.
- **Command Help Information for HiCommand Device Manager CLIEX**
Displays a description of the function and the parameters that can be specified for a specific Device Manager CLIEX command.

7.3.1 Basic CLIEX Help Information

If you want to display basic help information, launch CLIEX with no related parameters.

The following shows an example of displaying basic help information.

Example of Basic Help Information for CLIEX

```
USAGE: hdmcliex { storage-array } [options] { command } [ parameters ]
       storage-array : { -c command-device | --cmddev command-device |
                       -a alias-name | --array alias-name }
```

AVAILABLE COMMANDS:

```
Note: Command names are case-insensitive.
MakeProp
VerifyProp
GetStorageArray
AddHostStorageDomain (9900V, USP)
DeleteHostStorageDomain (9900V, USP)
ModifyPort
AddLun
DeleteLun
AddLunGroup (9900 only)
DeleteLunGroup (9900 only)
ModifyLunGroup (9900 only)
AddWWNForLunGroup (9900 only)
DeleteWWNForLunGroup (9900 only)
AddWWNForHostStorageDomain (9900V, USP)
DeleteWWNForHostStorageDomain (9900V, USP)
Help
Version
FOR COMMAND-SPECIFIC HELP, TYPE: "hdmcliex [ help | -? | -h |
                                -help | --help [ command ] ]"
OPTIONS:
[ -x | --xmlout ] [ --devnumfmt { dec | colon } ]
[ --prop property-file]
-x, --xmlout : Print information in XML format.
--devnumfmt  : Print devnum value in specified format.
               dec : Print in decimal format.
               colon : Print in CU:LDEV format.
--prop       : Use the specified property file. If
               this option is
               not specified,
               "hdmcliex.properties" is used.
OPTIONAL COMMAND PARAMETERS:
See command-specific help for a description of optional parameters.
Return code:
0 success
```

```
1 error (in HDvM CLIEX process)
2 error (in Command Device)
```

Figure 7.1 Basic CLIEX Help

7.3.2 Command Specific CLIEX Help

HiCommand Device Manager CLIEX contains a help file for each CLIEX command. To display the parameters of a certain command, execute the `help` command with the name of the command as a parameter.

```
# hdvmdiex help command-name
```

Enter as follows to display help for the `AddLun` command:

```
# hdvmdiex help AddLun
```

Example of CLIEX help for the AddLun command:

```
COMMAND: AddLun
DESCRIPTION: Defines a path from a host to a volume.
PARAMETERS:
  port          (required) Port Number or display name of the
                new path.
  domain        (required in 9900V, USP) The ID identifying
                the HostStorageDomain of the new path.
  lun           (required) Number of the actual LUN used for
                the path.
  devnum        (required when lusedevnums is not used)
                Device number used to identify this logical
                unit. Valid formats are Decimal and CU:LDEV.
                For example, 18, 00:12.
  lusedevnums   (required when devnum is not used)
                Comma-separated list of LDEV devnums required
                for LUSE LUN definition. Valid formats are
                Decimal and CU:LDEV. For example, 18, 00:12.
```

Figure 7.2 CLIEX Help for AddLun Command

7.4 List of CLIEX Commands and Supported Storage Subsystems

Table 7.5 shows commands of HiCommand Device Manager CLIEX and the storage subsystems that support the commands. For the storage subsystems, the meanings of Y and -- are as following:

- Y: You can use the command for the storage subsystem.
- N: You cannot use the command for the storage subsystem.

Table 7.5 CLIEX Commands and Supported Storage Subsystems

Category	Command Name	Description	USP	9900V	9900
Storage subsystem commands for obtaining information	GetStorageArray	Obtains information about the storage subsystem.	Y	Y	Y
	GetStorageArray (subtarget=HostStorageDomain)	Obtains information about the host storage domain.	Y	Y	N
	GetStorageArray (subtarget=LDEV)	Obtains information about LDEVs.	Y	Y	Y
	GetStorageArray (subtarget=LogicalUnit)	Obtains information about LUs.	Y	Y	Y
	GetStorageArray (subtarget=Path)	Obtains information about paths.	Y	Y	Y
	GetStorageArray (subtarget=Port)	Obtains information about ports.	Y	Y	Y
Storage subsystem management commands	AddHostStorageDomain	Adds the host storage domain.	Y	Y	N
	DeleteHostStorageDomain	Deletes the host storage domain.	Y	Y	N
	ModifyPort	Modifies the port settings.	Y	Y	Y
	AddLun	Adds a path from the host to the volume.	Y	Y	Y
	DeleteLun	Deletes a path from the host to the volume.	Y	Y	Y
	AddLunGroup	Adds a LUN to the LUN group.	N	N	Y
	DeleteLunGroup	Deletes a LUN from the LUN group.	N	N	Y
	ModifyLunGroup	Modifies the LUN group definition.	N	N	Y
	AddWWNForLunGroup	Allocates a WWN for the LUN group.	N	N	Y
	DeleteWWNForLunGroup	Deletes the WWN allocation from the LUN group.	N	N	Y
	AddWWNForHostStorageDomain	Allocates a WWN to the host storage domain.	Y	Y	N
	DeleteWWNForHostStorageDomain	Deletes the WWN allocation from the host storage domain.	Y	Y	N

7.5 Guidelines for Executing Certain CLIEX Commands

Note the following when you execute HiCommand Device Manager CLIEX commands:

Table 7.6 Guidelines for Executing Certain CLIEX Commands

Item	Description
Creating command devices	Make sure that the command device has been created on the storage subsystem that requests processing from the client that executes commands. Also, make sure that the command device can be recognized on the client. If the command device has not been created or cannot be recognized, you cannot execute HiCommand Device Manager CLIEX commands.
Creating property files	Check that the storage subsystem and the command device are correctly defined in the property file. When checking, you can use the <code>VerifyProp</code> command to verify the contents of the property file.
Obtaining the dedicated lock	In order to prevent contention with other management tools, you must ensure that no other users have access to the target storage subsystem during CLIEX operations. As an added precaution, it is highly recommended that you use the <code>AddArrayReservation</code> and <code>DeleteArrayReservation</code> commands to lock and unlock the target storage subsystem as described in the section 6.4. If you execute the HiCommand Device Manager CLIEX commands without applying the dedicated lock, contention for access from other clients or the host may occur.
Refreshing the storage subsystem (TagmaStore USP and Lightning 9900V)	When using the HiCommand Device Manager CLIEX commands, if you complete processing requests to the storage subsystem, make sure that you perform a refresh of the storage subsystem so that the results of command executions are reflected on the HiCommand Device Manager server. Then, cancel the dedicated lock. If you cancel the dedicated lock without refreshing the storage subsystem, differences might exist between the information about the configuration of the storage subsystem on the HiCommand Device Manager server, and the actual configuration of the storage subsystem.
Rebooting SVP and refreshing the storage subsystem (Lightning 9900)	When you use HiCommand Device Manager CLIEX commands to complete request processing to the storage subsystem, make sure that you cancel the dedicated lock and reboot SVP before refreshing the storage subsystem. If you refresh the storage subsystem without rebooting SVP, the command execution results are not applied to the Device Manager server.
User privileges	To execute HiCommand Device Manager CLIEX commands on Solaris, the user of the client that executes the commands needs to have superuser privileges. In addition, HiCommand Device Manager CLIEX does not link to the user management of HiCommand Device Manager. You can request any storage subsystem for processing if the storage subsystem is defined in the property file. Therefore, users of HiCommand Device Manager CLIEX need to be controlled by the user management of the client.
Usable character code	To enter items such as directory names, file names, and command parameters, HiCommand Device Manager CLIEX supports ASCII code characters only. If non-ASCII code characters are used, processing may not be performed correctly, resulting in an unexpected error.
Concurrent operation of multiple storage subsystems	The dedicated lock function of Device Manager CLI prevents a single user from simultaneously operating multiple storage subsystems. A single user cannot simultaneously execute Device Manager CLIEX operations for multiple storage subsystems because operational procedures must be followed for these operations.
Port numbers for HiCommand Device Manager CLIEX	The port numbers for the storage subsystem used by HiCommand Device Manager CLIEX and those managed by the HiCommand Device Manager server are not the same. If you need to manage LUNs through HiCommand Device Manager CLIEX, use HiCommand Device Manager CLIEX to obtain information on the storage subsystem in advance to check the port numbers for which operations are performed.
Operations for a storage subsystem that uses SLPR functionality	For a storage subsystem that uses the SLPR functionality, you can only obtain information on the storage subsystem and manage LUNs for the resources allocated to SLPR. When you want to use HiCommand Device Manager CLIEX, you can request the resource allocated to each SLPR for processing, by creating a command device for each of them.

Chapter 8 Command Descriptions (CLIEX)

This chapter provides CLIEX command descriptions, lists the parameters available for each CLIEX command, and describes the output of each command.

- Commands for Acquiring Storage Subsystem Information (See section 8.1)
- Commands for Managing Storage Subsystems (See section 8.2)

8.1 Commands for Acquiring Storage Subsystem Information

This section explains the commands for acquiring storage subsystem configuration information.

8.1.1 GetStorageArray

The `GetStorageArray` command obtains information about storage subsystem disk controllers. This command does not use any parameters.

Format:

```
hdvmmcliex storage-array [option] GetStorageArray

storage-array : { -c command-device-file-name | --cmddev command-device-file-name | -a
alias-name | --array alias-name }
```

If command execution terminates normally, information for the specified storage subsystem is output. For details about the output items, see Table 8.1.

Table 8.1 Output Items for the `GetStorageArray` Command

Output item	Description
productName	Product name for the storage subsystem.
serialNumber	Serial number of the disk controller.
vendorName	Vendor name.
controllerVersion	Microcode version for the disk controller.
cacheInMB	Cache size in MB.
numberOfLUs ^{#1}	Number of LUs. ReservedLU is not included. ^{#2}
numberOfAllocatedLUs ^{#1}	Number of LUs to which a path is allocated. ^{#2}
numberOfUnallocatedLUs ^{#1}	Number of LUs to which a path is not allocated. ReservedLU is not included. ^{#2}
^{#1} This item is not output when the <code>subtarget</code> parameter has been specified.	
^{#2} If the storage subsystem contains a LUSE consisting of external volumes, the result output by the <code>GetStorageArray</code> command does not match the result output by the command of Device Manager CLI. This is because Device Manager CLI does not count the number of LUs in the LUSE consisting of external volumes while Device Manager CLIEX counts the number of LUs in each volume that makes up the LUSE. For details, see section 8.1.4.	

8.1.2 GetStorageArray (subtarget=HostStorageDomain)

The `GetStorageArray (subtarget=HostStorageDomain)` command obtains information about the host storage domain of the specified storage subsystem. For details about the parameters, see Table 8.2. If `port` is omitted from the parameters, information on all the host storage domains in the specified storage subsystem is obtained.

Note: This command can be used with Lightning 9900V and TagmaStore USP.

Format:

```

hdevmcliex storage-array [option] GetStorageArray subtarget=HostStorageDomain [port=port-
number [domain=domain-name]] [hsdsubinfo={WWN|Path}]

storage-array : { -c command-device-file-name | --cmddev command-device-file-name | -a
alias-name | --array alias-name }

```

Table 8.2 GetStorageArray Parameters (subtarget=HostStorageDomain)

Parameter Name	Specification Level	Description
Subtarget	Required	Specify HostStorageDomain.
Port	Optional	Port number. If this is omitted, information is obtained for all ports.
Domain	Optional	Domain ID for the host storage domain. If this parameter is specified, the port parameter also needs to be specified. If port is not specified, then information specified for domain is ignored, and information is obtained for the host storage domains of all the ports. If port is specified and domain is omitted, information is obtained for all host storage domains for the specified port.
Hsdsubinfo	Optional	Specific information about the host storage domain. The values that can be specified are WWN and Path. If you specify multiple values at the same time, separate values by commas. <ul style="list-style-type: none"> • WWN: Obtains information about the WWN allocated to the host storage domain. • Path: Obtains information about the path allocated to the host storage domain.

If the command is executed normally, information about the specified host storage domain is output. For details about the output items, see Table 8.3.

Table 8.3 Output Items for GetStorageArray (subtarget=HostStorageDomain)

Output item	Description
portID#1	Port number of the storage subsystem.
domainID	Domain ID for the host storage domain.
hostMode	Host mode.
Nickname	Name of the host storage domain.
WWN	Value of the WWN allocated to the host storage domain. This is displayed when a WWN is specified for the hsdsubinfo parameter.
Path information	Information about the path defined in the host storage domain. This is displayed when a Path is specified for the hsdsubinfo parameter. For details about the output items, see Table 8.4.

#1 When the LUN security for the port is invalid, you can obtain one host storage domain (domain ID: 0, nickname: default). However, you cannot obtain information about the WWN belonging to that host storage domain or information about other host storage domains belonging to the port.

Table 8.4 Output Items for Path Information

Output Item	Description
portID	Port number.
domainID	Host storage domain ID or LUN group ID.
Lun	LUN.
devNum	LDEV number.
scsiID	15 (fixed value).

8.1.3 GetStorageArray (subtarget=LDEV)

The `GetStorageArray (subtarget=LDEV)` command obtains information about the logical devices (LDEVs) of the specified storage subsystem. For details about the parameters, see Table 8.5. Specify either the `devnum` or the `ldevfilter` parameter. If neither is specified, information is obtained for all LDEVs.

Note: For an LDEV reserved for Volume Migration, the information can be obtained only when the number of the LDEV has been directly specified for the `devnum` parameter.

Format:

```
hvmcliex storage-array [option] GetStorageArray subtarget=LDEV [devnum=LDEV-
number|ldevfilter={ALL|ASSIGNED|FREE}]

storage-array : { -c command-device-file-name | --cmddev command-device-file-name | -a
alias-name | --array alias-name }
```

Table 8.5 GetStorageArray Parameters (subtarget=LDEV) Command

Parameter Name	Specification Level	Description
Subtarget	Required	Specify LDEV.
Devnum	Optional	LDEV number. If this is omitted, information is obtained for all LDEVs. There are two ways to specify an LDEV number; in decimal, and in hexadecimal separated by colons. For details about the format, see the description of the <code>--devnumfmt</code> in Table 8.3. If this parameter is specified, the <code>devNum</code> output item is also displayed in the format specified. Note that if a different format is specified by the <code>--devnumfmt</code> option, that format takes precedence. When specifying this parameter, do not specify the <code>ldevfilter</code> parameter.
Ldevfilter	Optional	A filter for selecting specific LDEVs. The values that can be specified are <code>ALL</code> , <code>ASSIGNED</code> , and <code>FREE</code> . If it is omitted, information for all LDEVs is obtained. <ul style="list-style-type: none"> ▪ <code>ALL</code>: Obtains information about all LDEVs. ▪ <code>ASSIGNED</code>: Obtains information about LDEVs to which a path is allocated. ▪ <code>FREE</code>: Obtains information about LDEVs to which no path is allocated. When specifying this parameter, do not specify the <code>devnum</code> parameter.

When this command is executed, information about the specified LDEV is output. For details about the output items, see Table 8.6.

Table 8.6 Output Items for GetStorageArray (subtarget=LDEV) Command

Output Item	Description
devNum	LDEV number.
emulation	Emulation type.
sizeInKB	LDEV size in KB.
raidType	RAID type.(Note 1)
slotSizeInKB	Slot size in KB.(Note 2)
isComposite	LUSE judgment. 1 is displayed for a LUSE, and 0 is displayed otherwise.
path	Path judgment. 1 is displayed if a path is allocated, and 0 is displayed otherwise.
chassis	Chassis number.(Note 2)
raidGroupSubNumber	Secondary information of a RAID group. This number combines with the chassis number to form the parity group number for Storage Navigator.(Note 3)
indexOfLUSE	LUSE index. 0 is displayed for a non-LUSE.
isCacheVolume	Determines whether the target is a cache volume. 1 is displayed if it is, and 0 is displayed otherwise.
isCVSVolume	Determines whether the target is CVS. 1 is displayed if it is, and 0 is displayed otherwise.

Note 1: For a LUSE volume made up of external volumes, the LDEV size indicates the capacity of the entire LUSE volume.

Note 2: "-" is displayed if the target is an external volume, a COW Snapshot V-VOL on TagmaStore USP, or an external volume on Lightning 9900V.

Note 3: "-1" is displayed if the target is an external volume, a COW Snapshot V-VOL on TagmaStore USP, or an external volume on Lightning 9900V.

8.1.4 GetStorageArray (subtarget=LogicalUnit)

The `GetStorageArray (subtarget=LogicalUnit)` command obtains information about logical units (LUs) for the specified storage subsystem. For details about the parameters, see Table 8.7 Specify either the `devnum` or the `lufilter` parameter. If neither is specified, information is obtained for all LUs. If `lusubinfo` is specified, specific information about the LU is obtained.

Notes:

- For an LDEV reserved for Volume Migration, information can be obtained only when the number of the LDEV is directly specified for the `devnum` parameter.
- For a LUSE made up of external volumes, LU information is obtained for each such volume individually.

Format:

```
hdvmmcliex storage-array [option] GetStorageArray subtarget=LogicalUnit [devnum=LDEV-
number|lufilter={ALL|ASSIGNED|FREE}] [lusubinfo={LDEV|Path}]
```

```
storage-array : { -c command-device-file-name | --cmddev command-device-file-name | -a
alias-name | --array alias-name }
```

Table 8.7 Parameters for GetStorageArray (subtarget=LogicalUnit) Command

Parameter Name	Specification Level	Description
Subtarget	Required	Specify LogicalUnit.
Devnum	Optional	LDEV number of the LU (if the LU is a LUSE, the minimum LDEV number is indicated). If it is omitted, information is obtained for all LDEVs. <ul style="list-style-type: none"> There are two ways to specify an LDEV number; in decimal, and in hexadecimal separated by colons. For details about the format, see the description of <code>-devnumfmt</code> in Table 7.3. If this parameter is specified, the <code>devNum</code> output item is also displayed in the format specified for the <code>devnum</code> parameter. Note that if a different format is specified for the <code>--devnumfmt</code> option, that format takes precedence. When specifying this parameter, do not specify the <code>lufilter</code> parameter.
Lufilter	Optional	A filter for selecting specific LUs. The values that can be specified are <code>ALL</code> , <code>ASSIGNED</code> and <code>FREE</code> . If it is omitted, information for all LUs is obtained. <ul style="list-style-type: none"> <code>ALL</code>: Obtains information about all LUs. <code>ASSIGNED</code>: Obtains information about LUs to which a path is allocated. <code>FREE</code>: Obtains information about LUs to which no path is allocated. When specifying this parameter, do not specify the <code>devnum</code> parameter.
Lusubinfo	Optional	Specific information about the LU. The values that can be specified are <code>LDEV</code> and <code>Path</code> . If you specify multiple values at the same time, separate values by commas. <ul style="list-style-type: none"> <code>LDEV</code>: Obtains information about the LDEV of the LU. <code>Path</code>: Obtains information about the path of the LU.

Note: For a LUSE made up of external volumes, LDEV information is not obtained.

When this command is executed, information about the specified LU is output. For details about the output items, see Table 8.8.

Table 8.8 Output Items for GetStorageArray (subtarget=LogicalUnit) Command

Output Item	Description
devNum	LDEV number.
emulation	Emulation type.
devCount	Number of LDEVs.
capacityInKB	LU size in KB.
raidType	RAID type.(Note 1)
isComposite	LUSE judgment. 1 is displayed for a LUSE, and 0 is displayed otherwise.
path	Path judgment. 1 is displayed if a path is allocated, and 0 is displayed otherwise.
commandDevice	Determines whether the target is a command device. 1 is displayed if it is, and 0 is displayed otherwise.
chassis	Chassis number.(Note 2)
raidGroupSubNumber	Secondary information of a RAID group. This number combines with the chassis number to form the parity group number for Storage Navigator.(Note 2)
isMigrationTarget	Determines whether the target is being used by Volume Migration. 1 is displayed if it is, and 0 is displayed otherwise.
isExternalVolume	Determines whether the target is an external volume. 1 is displayed if it is, and 0 is displayed otherwise.
isGuardVolume	Determines whether the target is used for OpenLDEVGuard. 1 is displayed if it is, and 0 is displayed otherwise.
isLocalReplicationVolume	Determines whether the target is a ShadowImage volume or a COW Snapshot volume. 1 is displayed if it is either of them, and 0 is displayed otherwise.(Note 3)
isRemoteReplicationVolume	Determines whether the target is a TrueCopy volume or a UniversalReplicator volume. 1 is displayed if it is either of them, and 0 is displayed otherwise.
LDEV information	LDEV information. This is displayed when an LDEV is specified for the <code>lusubinfo</code> parameter. For details about the output items, refer to Table 8.6.
Path information	Path information. This is displayed when a Path is specified for the <code>hdsdsubinfo</code> parameter. For details about the output items, refer to Table 8.4.

Note 1: "-" is displayed if the target is an external volume, a COW Snapshot V-VOL on TagmaStore USP, or an external volume on Lightning 9900V.

Note 2: "-1" is displayed if the target is an external volume, a COW Snapshot V-VOL on TagmaStore USP, or an external volume on Lightning 9900V.

Note 3: "0" is displayed if the target is a COW Snapshot POOL volume.

8.1.5 GetStorageArray (subtarget=Path)

The `GetStorageArray (subtarget=Path)` command obtains information about the paths of the specified storage subsystem. For details about the parameters, see Table 8.9. If `port` is omitted from the parameters, information about all paths is obtained. If `pathsubinfo` is specified, specific information about the path is obtained.

Format:

```
hdvmmcliex storage-array [option] GetStorageArray subtarget=Path [port=port-number  
[domainid=LUN-group-ID [lun=logical-unit-number]]] [pathsubinfo=WWN]  
  
storage-array : { -c command-device-file-name | --cmddev command-device-file-name | -a  
alias-name | --array alias-name }
```

Table 8.9 Parameters for GetStorageArray (subtarget=Path) Command

Parameter Name	Specification Level	Description
subtarget	Required	Specify Path.
port	Optional	Port number of the path. If it is omitted, information is obtained for all ports.
domainid	Optional	For Lightning 9900V and TagmaStore USP, specify the domain ID of the host storage domain. For Lightning 9900, specify the ID of the LUN group. In either case, when specifying this parameter make sure that you also specify the <code>port</code> parameter. If <code>port</code> is not specified, then information specified for <code>domain</code> is ignored, and information is obtained for the host storage domains of all the ports. If <code>port</code> is specified and <code>domainid</code> is omitted, the path information of the specified port is obtained.
lun	Optional	LUN of the path. If this parameter is specified, make sure that you specify the <code>port</code> and <code>domainid</code> parameter. If <code>port</code> and <code>domainid</code> are not specified, information specified for <code>lun</code> is ignored, resulting in obtaining path information of all the ports. If <code>port</code> and <code>domainid</code> are specified and <code>lun</code> is omitted, the specified host storage domains of the specified port or path information of the LUN group is obtained.
pathsubinfo#1	Optional	Specific information about the port. The value that can be specified is <code>wwn</code> . If <code>wwn</code> is specified, information about the <code>wwn</code> of the specified path is obtained.
#1 For Lightning 9900, you cannot obtain information about the WWN of a LUN that does not belong to the LUN group.		

If the command is executed, information about the specified path is output. For details about the output items, see Table 8.10.

Table 8.10 Output Items for GetStorageArray (subtarget=Path) Command

Output Item	Description
portID	Port number.
domainID	Host storage domain ID or LUN group ID.
lun	LUN.
devNum	LDEV number.
scsiID	15 (fixed value).
wwn	Value of the <code>wwn</code> allocated to the path. This is displayed when a <code>wwn</code> is specified for the <code>pathsubinfo</code> parameter.

8.1.6 GetStorageArray (subtarget=Port)

The `GetStorageArray (subtarget=Port)` command obtains information about the ports of the specified storage subsystem. For details about the parameters, see Table 8.11. If `port` is omitted from the parameters, information about all paths is obtained. If `portsubinfo` is specified, specific information about the port is obtained.

Format:

```

hdevcliex storage-array [option] GetStorageArray subtarget=Port [port=port-number]
[portsubinfo={HostStorageDomain|LUNGroup} [lungroupsubinfo=Path [pathsubinfo=WWN]]]

storage-array : { -c command-device-file-name | --cmddev command-device-file-name | -a
alias-name | --array alias-name }

```

Table 8.11 Parameters for GetStorageArray (subtarget=Port) Command

Parameter Name	Specification Level	Description
subtarget	Required	Specify Port.
port	Optional	Port number of the path. If it is omitted, information is obtained for all ports.
portsubinfo	Optional	Specific information about the port. The values that can be specified are <code>HostStorageDomain</code> and <code>LUNGroup</code> . <ul style="list-style-type: none"> ▪ <code>HostStorageDomain</code>: Obtains information about the host storage domain of the specified port. Specify it for Lightning 9900V and TagmaStore USP. ▪ <code>LUNGroup</code>: Obtains information about the LUN group of the specified port. Specify it for Lightning 9900.
lungroupsubinfo	Optional (9900 only)	Specific information about the host storage domain or LUN group. The value that can be specified is <code>Path</code> . If <code>Path</code> is specified, information about the path of the specified port is obtained. If this parameter is specified, make sure that you specify <code>LUNGroup</code> for the <code>portsubinfo</code> parameter.
pathsubinfo	Optional (9900 only)	Specific information about the path. The value that can be specified is <code>WWN</code> . If <code>WWN</code> is specified, information about the <code>WWN</code> of the specified path is obtained. If this parameter is specified, make sure that you specify <code>Path</code> for the <code>lungroupsubinfo</code> parameter.

When this command is executed, information about the specified port is output. For details about the output items, see Table 8.12.

Table 8.12 Output Items for GetStorageArray (subtarget=Port) Command

Output Item	Description
portID	Port number.
portType	Port type.
displayName	Displayed port name (such as CL1-A).
fibreAddress	Fibre address.
topology	Topology.
lunSecurityEnabled	LUN security mode. <code>true</code> is displayed if LUN security is enabled, and <code>false</code> is displayed otherwise.
channelSpeed	Channel speed.
portRole	Attribute of the port (such as <code>Target</code>).
worldWidePortname	WWN of the port .
LUN group information	LUN group information. This is displayed when a <code>LUNGroup</code> is specified for the <code>portsubinfo</code> parameter. or details about the output items, see Table 8.13.
Host storage domain information	Information about the host storage domain. This information is displayed when <code>HostStorageDomain</code> is specified for the <code>portsubinfo</code> parameter. See Table 8.3 for details.

Table 8.13 Output Items for LUN Information

Output Item	Description
groupID	LUN group ID.
nickname	LUN group name.
Path information	Information about the path allocated to the LUN group. This is displayed when a <code>Path</code> is specified for the <code>lungroupsubinfo</code> parameter. For details about the output items, refer to Table 8.4.

8.2 Commands for Managing Storage Subsystems

This section explains the commands for adding and deleting host storage domains, and the commands for changing port numbers and managing LUNs.

8.2.1 AddHostStorageDomain

The `AddHostStorageDomain` command adds a host storage domain to the specified port. For details about the parameters, see Table 8.14.

Note: This command can be used with Lightning 9900V and TagmaStore USP.

Format:

```
hdvmdiex storage-array [option] AddHostStorageDomain port=port-number domain=host-storage-domain-ID name=host-storage-domain-name

storage-array : { -c command-device-file-name | --cmddev command-device-file-name | -a alias-name | --array alias-name }
```

Table 8.14 AddHostStorageDomain Command Parameters

Parameter Name	Specification Level	Description
Port	Optional	Port number of the host storage domain to be added. Note: Specify either <code>port</code> or <code>portname</code> . Do not specify both parameters at the same time. This might cause an error to occur.
portname	Optional	The port name for the host storage domain (specific arrays need to be specified by serial number and model). Note: Specify either <code>port</code> or <code>portname</code> . Do not specify both parameters at the same time. This might cause an error to occur.
Domain	Required	Domain ID of the host storage domain to be added. This parameter can be specified in decimal and hexadecimal. If you specify a hexadecimal number, add the <code>0x</code> prefix. Note: The execution results are output in decimal.
Name	Required	Domain name of the host storage domain to be added. Note that the maximum number of characters for a domain name is 8 bytes for Lightning 9900V and 32 bytes for TagmaStore USP.

When this command is executed, information about the added host storage domain is output. For details about the output items, refer to Table 8.3.

8.2.2 DeleteHostStorageDomain

The `DeleteHostStorageDomain` command deletes the specified host storage domain. For details about the parameters, see Table 8.15.

Notes:

- This command can be used with Lightning 9900V and TagmaStore USP.

- This command cannot delete the host storage domain containing the path for the command device being used.

Format:

```
hdvmdiex storage-array [option] DeleteHostStorageDomain port=port-number domain=host-storage-domain-ID

storage-array : { -c command-device-file-name | --cmddev command-device-file-name | -a alias-name | --array alias-name }
```

Table 8.15 DeleteHostStorageDomain Command Parameters

Parameter name	Specification level	Description
Port	Required	Port number of the host storage domain to be deleted.
Domain	Required	Domain ID of the host storage domain to be deleted.

Nothing is output as the execution results for this command.

8.2.3 ModifyPort

The `ModifyPort` command changes the port settings for the specified storage subsystem. For details about the parameters, see Table 8.16.

Note: This command cannot change the topology, the LUN security, or the host mode of the port containing a path for the command device being used.

Format:

```
hdvmdiex storage-array [option] ModifyPort port=port-number [topology=topology-value] [lunsec={true|false}] [domain=host-storage-domain-ID] [hostmode=host-mode]

storage-array : { -c command-device-file-name | --cmddev command-device-file-name | -a alias-name | --array alias-name }
```

Table 8.16 ModifyPort Command Parameters

Parameter Name	Specification Level	Description
Port	Required	Port number.
Topology	Optional	<p>New topology value for the port. The values that can be specified are as follows:</p> <ul style="list-style-type: none"> ▪ Fabric (on) , FC-AL ▪ Fabric (off) , FC-AL ▪ Fabric (on) , Point-to-Point ▪ Fabric (off) , Point-to-Point <p>The specified value is not case-sensitive, and needs to be enclosed in double quotation marks.</p>
Lunsec	Optional	<p>LUN security settings. The values that can be specified are <code>true</code> and <code>false</code>.</p> <ul style="list-style-type: none"> ▪ <code>true</code>: Enables LUN security (ON). ▪ <code>false</code>: Disables LUN security (OFF).
Domain	Optional (for Lightning 9900V and TagmaStore USP only)	Domain ID for the host storage domain. When specifying the <code>hostmode</code> parameter for Lightning 9900V and TagmaStore USP, make sure that you specify this parameter as well.
Hostmode	Optional	<p>New host mode. When changing the host mode for Lightning 9900V and TagmaStore USP, make sure that you specify the <code>domain</code> parameter as well.^{#1}</p> <p>The values that can be specified are as follows. (Note 2)</p> <ul style="list-style-type: none"> ▪ Standard ▪ Sequent ▪ OPEN-VMS ▪ HP ▪ Solaris ▪ Netware ▪ Windows ▪ Tru64 ▪ HI-UX ▪ AIX

Note 1: LUN security needs to be enabled prior to when the host mode is changed. As such, to change the host mode while LUN security is disabled, the `ModifyPort` command needs to be executed twice, as follows:

- In the first operation: Specify `true` for the `lunsec` parameter to enable LUN security.
- In the second operation: Specify the `domain` and `hostmode` parameters to change the host mode

Note 2: If the host mode you want to specify is not in the list of available host modes, use the `ModifyPort` command of Device Manager CLI.

When this command is executed, information about the port for which settings were changed is output. For details about the output items, refer to Table 8.12.

8.2.4 AddLun

The `AddLun` command adds a LUN to the specified storage subsystem. For details about the parameters, see Table 8.17. Specify either the `devnum` or the `lusedevnums` parameter. If the `lusedevnums` parameter is specified, a LUSE is created by the specified LDEV, and a path to the LUSE volume is added.

Notes:

- You cannot use an external volume to create a LUSE volume.
- Do not add a LUN to a COW Snapshot POOL volume. Make sure in advance that you check whether the volume to which the LUN is assigned is a COW Snapshot POOL volume, by using a tool such as Web Client and management tool for the storage subsystem.
- For Lightning 9900V and TagmaStore USP, you cannot add a LUN to the command device being used. For Lightning 9900, you can add a LUN to the command device being used.

Format for Lightning 9900:

```
hdvmdiex storage-array [option] AddLun port=port-number lun=LUN {devnum=LDEV-  
number|lusedevnums=LDEV-number...}
```

Format for Lightning 9900V and TagmaStore USP:

```
hdvmdiex storage-array [option] AddLun port=port-number domain=host-storage-domain-ID  
lun=LUN {devnum=LDEV-number|lusedevnums=LDEV-number...}
```

```
storage-array : { -c command-device-file-name | --cmddev command-device-file-name | -a  
alias-name | --array alias-name }
```

Table 8.17 AddLun Command Parameters

Parameter Name	Specification Level	Description
Port	Required	Port number for the path to be added.
Domain	Required (for Lightning 9900V and TagmaStore USP only)	Domain ID for the host storage domain of the path to be added.
Lun	Required	LUN allocated to the path to be added.
Devnum	Required	LDEV number of the LU allocated to the path to be added. There are two ways to specify an LDEV number; in decimal, and in hexadecimal separated by colons. For details about the format, see the description of --devnumfmt in Table 7.3. If this parameter is specified, the devNum output item is also displayed in the format specified. Note that if a different format is specified for the --devnumfmt option, that format takes precedence. When specifying this parameter, do not specify the lusedevnums parameter.
lusedevnums	Required	Comma-delimited list of LDEV numbers for the LUSE volumes allocated to the path to be added. There are two ways to specify an LDEV number; in decimal, and in hexadecimal separated by colons. For details about the format, see the description of --devnumfmt in Table 7.3. If this parameter is specified, the devNum output item is also displayed in the format specified. When multiple formats are mixed in this parameter, the comma-delimited format is prioritized when devNum is displayed for the output items. Note that if a different format is specified for the --devnumfmt option, that format takes precedence. When specifying this parameter, do not specify the devnum parameter.

When this command is executed, information about the disk controller to which the LUN is added (refer to Table 8.1) and information about the added LUN (refer to Table 8.4) is output.

8.2.5 DeleteLun

The `DeleteLun` command deletes a LUN of the specified storage subsystem. For details about the parameters, see Table 8.18. If the last-deleted LUN has been assigned to a LUSE volume, that LUSE volume will also be deleted together with the LUN.

Notes:

- You cannot delete a LUN assigned to a LUSE volume made up of external volumes.
- You cannot delete a LUN set for the command device being used. However, you can delete a LUN set for other clients.

Format for Lightning 9900:

```
hdevmcliex storage-array [option] DeleteLun port=port-number devnum=LDEV-number
```

Format for Lightning 9900V and TagmaStore USP:

```
hdvnmcliex storage-array [option] DeleteLun port=port-number devnum=LDEV-number domain=host-storage-domain-ID
```

```
storage-array : { -c command-device-file-name | --cmddev command-device-file-name | -a alias-name | --array alias-name }
```

Table 8.18 DeleteLun Command Parameters

Parameter Name	Specification Level	Description
Port	Required	Port number of the path to be deleted.
Devnum	Required	LDEV number allocated to the path to be deleted (for a LUSE volume, the first LDEV number). There are two ways to specify an LDEV number; in decimal, and in hexadecimal separated by colons. For details about the format, see the description of <code>--devnumfmt</code> in Table 7.3. If this parameter is specified, the <code>devNum</code> output item is also displayed in the format specified. Note that if a different format is specified for the <code>--devnumfmt</code> option, that format takes precedence.
Domain	Required (only Lightning 9900V and TagmaStore USP)	Domain ID of the host storage domain of the path to be deleted.

Nothing is output as the execution results for this command.

8.2.6 AddLunGroup

The `AddLunGroup` command adds the specified LUN to an existing LUN group. Note that a new LUN group can also be created for the specified LUN. For details about the parameters, see Table 8.19.

Note: This command can be used with Lightning 9900 only.

Format:

```
hdvnmcliex storage-array [option] AddLunGroup port=port-number nickname=LUN-group-name groupelements=LUN...
```

```
storage-array : { -c command-device-file-name | --cmddev command-device-file-name | -a alias-name | --array alias-name }
```

Table 8.19 AddLunGroup Command Parameters

Parameter Name	Specification Level	Description
Port	Required	Port number of the LUN group to be added.
Nickname	Required	Name of the LUN group to be added. Note that the maximum number of characters for the LUN group is 8 bytes.
groupelements	Required	List of LUNs to be added to the LUN group. Specify it with the comma-delimited format.

When this command is executed, information about the disk controller to which the LUN group is to be added (refer to Table 8.1), port information (refer to Table 8.12), LUN group information (refer to Table 8.13), and information about the path allocated to the LUN group (refer to Table 8.4) is output.

8.2.7 DeleteLunGroup

The `DeleteLunGroup` command deletes the specified LUN group. For details about the parameters, see Table 8.20.

Notes:

- This command can be used with Lightning 9900 only.
- If you want to delete a LUN group containing the LUN of the command device being used, make sure that the LUN is not set for the client that executes the command.
- When you use this command to delete a LUN group, WWNs are not assigned to individual LUNs in the LUN group because the WWN settings are not inherited. Therefore, if you want WWNs to be assigned to the individual LUNs in the LUN group by inheriting the WWN settings, use the `DeleteLUNGroup` command of Device Manager CLI to delete the LUN group.

Format:

```
hdvmlcliex storage-array [option] DeleteLunGroup port=port-number lungroupid=LUN-group-ID
    storage-array : { -c command-device-file-name | --cmddev command-device-file-name | -a
alias-name | --array alias-name }
```

Table 8.20 DeleteLunGroup Command Parameters

Parameter Name	Specification Level	Description
Port	Required	Port number of the LUN group to be deleted.
Lungroupid	Required	ID of the LUN group to be deleted.

Nothing is output as the execution results for this command.

8.2.8 ModifyLunGroup

The `ModifyLunGroup` command adds or deletes a LUN for the specified LUN group. For details about the parameters, see Table 8.21. When a LUN is deleted, if all LUNs in the LUN group have been deleted, the LUN group itself is also deleted.

Notes:

- This command can be used with Lightning 9900 only.
- If you want to delete the LUN of the command device being used from the LUN group, make sure that the LUN is not set for the client that executes the command.

- When you use this command to delete a LUN from a LUN group, a WWN is not assigned to that LUN because the WWN setting is not inherited. Therefore, if you want WWN to be assigned to the LUN (to be deleted from the LUN group) by inheriting the WWN setting, use the `ModifyLUNGroup` command of Device Manager CLI to delete the LUN from the LUN group.

Format:

```
hdvmdiex storage-array [option] ModifyLUNGroup port=port-number lungroupid=LUN-group-ID
groupelements=LUN... [ope={ADD|DEL}]

storage-array : { -c command-device-file-name | --cmddev command-device-file-name | -a
alias-name | --array alias-name }
```

Table 8.21 ModifyLUNGroup Command Parameters

Parameter Name	Specification Level	Description
Port	Required	Port number of the LUN group subject to processing.
Lungroupid	Required	ID of the LUN group to which a LUN is to be added or deleted.
Groupelements	Required	A list of LUNs to be added or deleted from the LUN group. Specify it with the comma-delimited format.
Ope	Optional	Command operation settings. The values that can be specified are ADD or DEL. The default value is ADD. <ul style="list-style-type: none"> ▪ ADD: Adds a LUN to the LUN group. ▪ DEL: Deletes a LUN from the LUN group.

When this command is executed, information about the disk controller to the LUN group whose settings were changed (refer to Table 8.1), port information (refer to Table 8.12), LUN group information (refer to Table 8.13), and information about the path allocated to the LUN group (refer to Table 8.4) is output.

8.2.9 AddWWNForLunGroup

The `AddWWNForLunGroup` command allocates a WWN to the specified LUN group. A WWN is allocated one at a time. To allocate multiple WWNs, execute the `AddWWNForLunGroup` command for each WWN to be allocated. For details about the parameters, see Table 8.22. Specify either the `nickname` or the `lungroupid` parameter.

Note: This command can be used with Lightning 9900 only.

Format:

```
hdvmdiex storage-array [option] AddWWNForLunGroup port=port-number {nickname=LUN-group-
name|lungroupid=LUN-group-ID} wwn=WWN

storage-array : { -c command-device-file-name | --cmddev command-device-file-name | -a
alias-name | --array alias-name }
```

Table 8.22 AddWWNForLunGroup Command Parameters

Parameter Name	Status	Description
Port	Required	Port number of the LUN group to which the WWN is to be allocated.
Nickname	Required	Name of the LUN group to which the WWN is to be allocated. The maximum number of characters for the LUN group is 8 bytes. When specifying this parameter, do not specify the <code>lungroupid</code> parameter.
Lungroupid	Required	Number of the LUN group to which the WWN is to be allocated. When specifying this parameter, do not specify the <code>nickname</code> parameter.
Wwn	Required	The WWN to be allocated to the LUN group.

When this command is executed, information about the disk controller to which the WWN was added (refer to Table 8.1), port information (refer to Table 8.12), LUN group information (refer to Table 8.13), and information about the WWN allocated to the LUN group is output.

8.2.10 DeleteWWNForLunGroup

`DeleteWWNForLunGroup` removes one or more WWN(s) from a LUN group (see Table 8.23).

Notes:

- This command can be used with Lightning 9900 only.
- If you want to delete the WWN of the client that executes the command, make sure the LUN of the command device being used is not registered in the specified LUN group.

Format:

```
hdvnmcliex storage-array [option] DeleteWWNForLunGroup port=port-number {nickname=LUN-group-name|lungroupid=LUN-group-ID} wwn=WWN

storage-array : { -c command-device-file-name | --cmddev command-device-file-name | -a alias-name | --array alias-name }
```

Table 8.23 DeleteWWNForLunGroup Command Parameters

Parameter Name	Specification Level	Description
Port	Required	Port number of the LUN group to which the WWN to be deleted is allocated.
Nickname	Required	Name of the LUN group to which the WWN to be deleted is allocated. When specifying this parameter, do not specify the <code>lungroupid</code> parameter.
Lungroupid	Required	Number of the LUN group to which the WWN to be deleted is allocated. When specifying this parameter, do not specify the <code>nickname</code> parameter.
Wwn	Required	The WWN to be deleted from the LUN group.

Nothing is output as the execution results for this command.

8.2.11 AddWWNForHostStorageDomain

The `AddWWNForHostStorageDomain` command allocates a WWN to the specified host storage domain. A WWN is allocated one at a time. To allocate multiple WWNs, execute the `AddWWNForHostStorageDomain` command for each WWN to be allocated. For details about the parameters, see Table 8.23.

Note: This command can be used with Lightning 9900V and TagmaStore USP.

Format:

```
hdvmdiex storage-array [option] AddWWNForHostStorageDomain port=port-number domain=host-storage-domain-ID wwn=WWN

storage-array : { -c command-device-file-name | --cmddev command-device-file-name | -a alias-name | --array alias-name }
```

Table 8.24 AddWWNForHostStorageDomain Command Parameters

Parameter Name	Specification Level	Description
Port	Required	Port number of the host storage domain.
Domain	Required	Domain ID for the host storage domain.
Wwn	Required	WWN to be allocated to the host storage domain.

When this command is executed, information about the disk controller to which the WWN was added (refer to Table 8.1), port information (refer to Table 8.12), host storage domain information (refer to Table 8.3), and information about the WWN allocated to the host storage domain is output.

8.2.12 DeleteWWNForHostStorageDomain

The `DeleteWWNForHostStorageDomain` command releases a WWN from the specified host storage domain. A WWN can be released one at a time. To release multiple WWNs, execute the `DeleteWWNForHostStorageDomain` command for each WWN to be released. For details about the parameters, see Table 8.25.

Notes:

- This command can be used with Lightning 9900V and TagmaStore USP.
- If you want to delete the WWN of the client that executes the command, make sure the LUN of the command device being used is not registered in the specified host storage domain.

Format:

```
hdvnmcliex storage-array [option] DeleteWWNForHostStorageDomain port=port-number
domain=host-storage-domain-ID wwn=WWN

storage-array : { -c command-device-file-name | --cmddev command-device-file-name | -a
alias-name | --array alias-name }
```

Table 8.25 DeleteWWNForHostStorageDomain Command Parameters

Parameter Name	Specification Level	Description
Port	Required	Port number of the host storage domain.
Domain	Required	Domain ID for the host storage domain.
Wwn	Required	WWN to be released from the host storage domain.

Nothing is output as the execution results for this command.

Chapter 9 Device Manager Properties File (CLIEX)

This chapter explains the configuration of the HiCommand Device Manager CLIEX properties file and log file, and how to create a new properties file.

- Configuration of a Properties File (See section 9.1)
- Creating a Properties File (See section 9.2)
- Setting Log Output (See section 9.3)

9.1 Configuration of a Properties File

In HiCommand Device Manager CLIEX, you must create a properties file in advance, suitable for the client environment in which commands are to be executed. In this properties file, you must define information for the target storage subsystem, the command device, and the log outputs. When a command is executed, the alias name of the storage subsystem specified in the command line is searched from the property file, to obtain information about the command device of the storage subsystem. Also, the log output settings are obtained, and a log corresponding to these settings is output.

An example of the properties file is shown below.

Example properties file:

```
<?xml version="1.0" encoding="UTF-8"?>
<!DOCTYPE HDVMCLIEXProp SYSTEM "HDVMCLIEXProp.dtd">

<HDVMCLIEXProp version="5.7">
  <ARRAY
    aliasName="ARRAY0"
    productName="RAID400"
    serialNumber="15143"
    vendorName="HITACHI ">
    <CMDDEV
      devFile="/dev/rdisk/c3t2d8s2"
      devNum="233"/>
    </ARRAY>
  <ARRAY
    aliasName="ARRAY1"
    productName="RAID450"
    serialNumber="35002"
    vendorName="HITACHI ">
    <CMDDEV
      devFile="/dev/rdisk/c3t1d0s2"
      devNum="395"/>
    </ARRAY>
  <LOG
    level="INFO"
    stdout="false"
    stderr="true"
    syslog="true"/>
</HDVMCLIEXProp>
```

The properties file is an XML-format file consisting of the following elements:

- **ARRAY element:** Information about the storage subsystem connected to the client that uses HiCommand Device Manager CLIEX.
- **CMDDEV element:** Information for the command device created in the storage subsystem. Define this element in the `ARRAY` element.

Command devices and GUIDs:

In Windows, a command device can be identified by using a device file name (`\\.\PhysicalDriveX`) or a GUID (`\\.\?Volume{GUID}`). The *X* part in a device file name might change if the disk configuration of the client machine on which HiCommand Device Manager CLIEX operates is changed. A GUID is an identifier permanently assigned to a partition, and does not change even when the disk configuration of the client machine on which HiCommand Device Manager CLIEX operates is changed. However, if a partition is deleted, the GUID is also deleted. Even if a partition is re-created on the same disk, a different GUID is assigned.

In Solaris, the names of device files located under the `/dev/rdisk` directory (for example, `cXtYdZs2`) are used to identify each command device.

- LOG element: Log output information.

For the attributes of each element, see Table 9.1.

Table 9.1 Properties File Elements and Attributes

Element	Attribute	Description	Modification by User
<ARRAY> </ARRAY>	aliasName	Alternative name of the storage subsystem. You can specify a unique alternative name.	Yes
	productName	Product name of the storage subsystem. You can specify RAID400, RAID450, or RAID500 as the product name.	No
	serialNumber	DKC serial number of the storage subsystem.	No
	vendorName	Vendor name of the storage subsystem. You can specify only HITACHI as the vendor name.	No
<CMDDEV/>	devFile	Command device information. In Solaris, specify a device file name. In Windows, you can specify either a device file name or a GUID, but a GUID is preferable.	No
	devNum	LDEV number of the command device.	No
<LOG/>	level	Log output levels. For details, see Table 9.5.	Yes
	stdout	Setting for whether to output the information log to the standard output. For details, see Table 9.5.	Yes
	stderr	Setting for whether to output the error log to the standard error output. For details, see Table 9.5.	Yes
	syslog	Setting for whether to output the error log to the system log of the client OS. For details, see Table 9.5.	Yes

9.2 Creating a Properties File

The HiCommand Device Manager CLIEX default properties file is `hdvmdiex.properties`. Edit the default properties file so that it is suitable for the environment of the client that uses HiCommand Device Manager CLIEX, or create a new properties file.

Property files can be found in the following locations:

- In Windows
`Device-Manager-CLIEX-installation-folder\config\hdvmdiex.properties`
- In Solaris
`/opt/HDVMCLIEX/config/hdvmdiex.properties`

HiCommand Device Manager CLIEX provides the following commands to support properties file creation. To create a property file, use the `MakeProp` command.

- `MakeProp` command: Creates a sample of the properties file.
- `VerifyProp` command: Verifies the contents of the properties file.

9.2.1 Executing the MakeProp Command

The `MakeProp` command detects the storage subsystem and command device that are connected to the client that uses HiCommand Device Manager CLIEX, and generates a sample of the properties file under the specified file name. Apply the information for the storage subsystem and command device that is defined in the sample properties file to the default properties file, or save the sample properties file under an alternative name. Edit the alternative name of the storage subsystem by using the saved properties file, and then specify the log output settings to complete the properties file.

In Windows, this command detects the device file name of a command device (`\\.\PhysicalDriveX`), and a GUID (`\\?\Volume{GUID}`), and then defines them in the properties file. When a GUID is not assigned or the command device is set as a dynamic disk, a GUID is not to be defined.

In Solaris, this command detects a device file within the `/dev/rdisk` directory. When this command detects a command device, this command defines the device file name (`/dev/rdisk/device-file-name`) in the properties file.

For details about `MakeProp` command parameters, see Table 9.2. If you do not specify the `prop` parameter, this command creates a sample properties file. If the specified properties file already exists, this command updates the existing properties file. In this command, you can specify the `--devnumfmt` option only. You can specify the device number format of the command device defined in the properties file.

Notes:

- This is not a command that requests the storage subsystem to execute processing. Therefore, you do not need to use the dedicated lock when you execute the command.

- The `MakeProp` command does not reference any property file when it is executed. A log is output based on the default settings.

Format:

```
hdvmdiex [option] MakeProp [prop=file-name]
```

Table 9.2 MakeProp Command Parameter

Parameter Name	Specified Level	Description
Prop	Optional	Name of the sample properties file to be created. You can specify a file name only. If you omit this parameter, the default sample properties file (<code>hdvmdiex.properties.sample</code>) is created. The following characters cannot be used for a property file name. \ / : ; , * ? " < >

When the `MakeProp` command is executed normally, a template property file is created based on the information of all the detected storage subsystems and command devices. For details about the output items, see Table 9.3.

Table 9.3 Output Items for MakePropCommand

Output Item	Description
aliasName	Alias name of the storage subsystem. The default value is output.
productName	Product name of the detected storage subsystem. One of RAID400, RAID450, or RAID500 is output.
serialNumber	DKC serial number of the detected storage subsystem.
vendorName	Vendor name of the detected storage subsystem. HITACHI is output
devFile	In Solaris, the device file name of a detected command device is output. In Windows, the device file name and GUID of a detected command device are output.
devNum	LDEV number of the detected command device.

9.2.2 Executing the VerifyProp Command

The `VerifyProp` command verifies whether information defined in the specified properties file is correct.

The command verifies the following information:

- productName
- serialNumber
- vendorName
- devFile
- devNum

If you edit information for the storage subsystem and command device using the properties file, you must execute the `VerifyProp` command to verify the edited contents before executing a HiCommand Device Manager CLIEX command.

The `VerifyProp` command verifies only the information defined in the properties file. This command does not verify storage subsystems and command devices that are not defined in the properties file.

Notes:

- This is not a command that requests the storage subsystem to execute processing. Therefore, you do not need to use the dedicated lock when you execute the command.
- The `VerifyProp` command does not reference any property when it is executed. A log is output based on the default settings.

For the parameters you specify in the `VerifyProp` command, see Table 9.4. If you do not specify the `prop` parameter, the command verifies the default properties file. If no error is found as a result of the verification, the command outputs a message at successful completion. If an error is found, the command outputs an error message.

Format:

```
hdvmdiex VerifyProp [prop=file-name]
```

Table 9.4 VerifyProp Command Parameter

Parameter Name	Specified Level	Description
prop	Optional	Name of the properties file to be verified. If you omit this parameter, the <code>VerifyProp</code> command verifies the default properties file (<code>hdvmdiex.properties</code>). The following characters cannot be used for a property file name. <div style="text-align: center;">\ / : ; , * ? " < > </div>

9.3 Setting Log Output

You can set error log, warning log, and information log output for when a command is executed. The error log is output to the standard error output log and the system log of the client OS, while the warning log and the information log are output to the standard output log. In the properties file, specify the log output level, whether to output the information log to the standard output, whether to output the error log to the standard error output, and whether to output the system log. For details on the attributes to specify see Table 9.5.

The error log, warning log, and information log are also output to the HiCommand Device Manager CLIEX log file (`hdvmdiex.log`).

The log file can be found in the following locations:

- In Windows
`Device-Manager-CLIEX-installation-folder\logs\hdvmdiex.log`
- In Solaris
`/opt/HDVMCLIEX/logs/hdvmdiex.log`

The HiCommand Device Manager CLIEX log file is always output regardless of the settings for the log output, so there are no attributes to be set by the user in the properties file. The log file cannot exceed 10 megabytes. If the log file exceeds 10 megabytes when you execute a command, HiCommand Device Manager CLIEX backs up the existing log file (`hdvmdiex.log.bak`) and outputs the logs to the log file.

Table 9.5 Setting Log Output

Attribute	Description
Level	Log output level. You can specify any of the following values: <ul style="list-style-type: none">▪ ERROR: Outputs error-level logs.▪ WARN: Outputs warning-level logs.▪ INFO: Outputs information-level logs(default setting).
Stdout	Determines whether to output warning-level logs and information-level logs to the standard output. You can specify either of the following values: <ul style="list-style-type: none">▪ true: Outputs warning-level logs and information-level logs to the standard output.▪ false: Does not output warning-level logs and information-level logs to the standard output (default setting).
stderr	Determines whether to output error-level logs to the standard error output. You can specify either of the following values: <ul style="list-style-type: none">▪ true: Outputs error-level logs to the standard error output (default setting).▪ false: Does not output error-level logs to the standard error output.
syslog	Determines whether to output system logs of the client OS. You can specify either of the following values: <ul style="list-style-type: none">▪ true: Outputs system logs (default setting).▪ false: Does not output system logs.

The information log and error log are output to the log file in the following format. For details on the items to be output, see Table 9.6.

Example log output:

2006/01/30 14:20:29:960 hdvmdiex 3206 KAIC42014-E The LUN "0" is already being used.
--

Table 9.6 Log Output Items

Item	Description
Date	Log output date. "2006/01/30" in the above example.
Time	Log output time."14:20:29:960" in the above example.
Service name	Log service name. "hdvmdiex" is constant.
Process ID	Process ID used to execute the command."3206" in the above example.
Message ID	Message ID. "KAIC42014-E" in the above example.
Message	Log message." The LUN "0" is already being used. " in the above example.

Chapter 10 Troubleshooting

This chapter describes appropriate actions to take if there is a problem with HiCommand Device Manager CLI or CLIEX. This chapter covers the following topics:

- Troubleshooting HiCommand Device Manager CLIEX Problems(See section10.1).
- Hitachi Data Systems Support Center (See section 10.2).

If there is a problem with the HiCommand Device Manager CLI:

- Make sure that the problem is not being caused by the PC or LAN hardware or software, and try restarting the PC.
- Make sure that the problem is not occurring at the Device Manager server. Please refer to the *Device Manager server Installation and Configuration Guide* for troubleshooting information for the Device Manager server.
- For troubleshooting information specific to the HiCommand Device Manager CLI see Table 10.1.
- For troubleshooting information common to the HiCommand Device Manager CLI and Web Client, please refer to the *HiCommand Device Manager Web Client User's Guide*.
- If you need to call the Hitachi Data Systems Support Center, please see section 10.2 for instructions.

Important: Make sure to read the HiCommand Device Manager Release Notes. Make sure that the storage subsystems to be managed are done so by a single Device Manager server.

Table 10.1 Troubleshooting Information for Device Manager CLI

Problem	Description and Recommended Action
<p>Device Manager CLI. The error message says:</p> <pre>C:\HiCommand>HiCommandCLI help GetStorageArray</pre> <p>The name specified is not recognized as an internal or external command, operable program or batch file</p>	<p>CAUSE: The most likely problem is that there is no <code>java.exe</code> file in your path.</p> <p>SOLUTION: Either update your path to include the directory holding the <code>java.exe</code> supplied by the Java JDK or JRE software, or edit the <code>HiCommandCLI.bat</code> file or <code>HiCommandCLI.sh</code> to specify the full path to your <code>java.exe</code> file.</p>
<p><code>HiCommandCLI.bat</code> or <code>HiCommandCLI.sh</code> script does not run. The error message says:</p> <pre>C:\HiCommand>HiCommandCLI help GetStorageArray Exception in thread "main" Java.lang.NoClassDefFoundError:</pre>	<p>CAUSE: The <code>HiCommandCLI.jar</code> file may have been moved or renamed.</p> <p>SOLUTION: Make sure that the <code>HiCommandCLI.jar</code> file has not been moved or renamed, and that you are executing from the directory where the <code>HiCommandCLI.bat</code> (or <code>HiCommandCLI.sh</code>, on UNIX systems) and <code>HiCommandCLI.jar</code> files reside.</p>
<p>An attempt to create a copy pair fails. The error message says:</p> <pre>[KAIC07774-E] Failed to create a pair. This HORCM instance could not be started.</pre> <p>The following error message is displayed and the operation of Device Manager CLI is stopped:</p> <pre>An unspecified error was encountered in CLI.</pre> <p>Text is omitted from the displayed error message.</p> <p>An error message that includes the following character is displayed when a command of Device Manager CLI is executed:</p> <pre>user group</pre> <p>The following message is displayed when a Device Manager CLI command is executed:</p> <pre>[KAIC07472-E] Subsystem information is not consistent. Perform a refresh of the subsystem, and then try again.</pre>	<p>CAUSE: The LU is allocated to CL1-A (for TagmaStore USP, Lightning 9900V, and Lightning 9900), CTL0-A (for the TagmaStore AMS/WMS series, Thunder 9500V, and Thunder 9200), or LUN0.</p> <p>SOLUTION: Assign another port to the LU or assign a LUN other than LUN0, and re-create the copy pair.</p>
	<p>CAUSE: The host used for creating the copy pair recognizes CL1-A (for the TagmaStore USP, Lightning 9900V, and Lightning 9900), CTL0-A (for TagmaStore AMS/WMS series, Thunder 9500V, and Thunder 9200), or LUN0.</p> <p>SOLUTION: Assign another port to the LU or assign a LUN other than LUN0, and re-create the copy pair.</p>
	<p>SOLUTION: Collect the following information, and then contact your Hitachi Data Systems representative.</p> <ul style="list-style-type: none"> ▪ CLI log file ▪ CLI property file ▪ Contents entered on the command line ▪ An executed batch file if a batch was executed. ▪ HiCommand Device Manager server log.
	<p>CAUSE: A maximum of 256 characters can be displayed for the main body of an error message.</p> <p>SOLUTION: Check the omitted contents in the CLI log file.</p>
	<p>CAUSE: The settings related to the resource group might not be correct.</p> <p>SOLUTION: Check the settings related to the resource group, and then re-execute the command.</p>
<p>CAUSE: The configuration in the Device Manager database is inconsistent with the configuration of the actual storage subsystem information.</p> <p>SOLUTION: Use the <code>AddStorageArray</code> command to refresh the storage subsystem information. Verify that the value of <code>statusOfDBInconsistency</code> indicated below An instance of <code>StorageArray</code> in the command execution results is 0, and then re-execute the command.</p>	

10.1 Troubleshooting HiCommand Device Manager CLIEX Problems

If a HiCommand Device Manager CLIEX problem occurs, perform the following operations:

- Check that the problem does not result from the PC or LAN hardware or software, and then restart the PC.
- Collect the log files manually and investigate the cause of the problem. For details on the files that you should collect, see Table 10.2.
- For troubleshooting information specific to HiCommand Device Manager CLIEX, see Table 10.3.
- To call our Support Center, see section 10.2.

Table 10.2 Files to be Collected for Troubleshooting

Directory	File	Explanation
Windows: <i>Device-Manager-CLIEX-installation-folder</i> \logs (Note 1) Solaris: /opt/HDMVCLIEX/logs (Note 1)	hdvmcliex.log	Device Manager CLIEX log file
	hdvmcliex.log.bak	Backup of Device Manager CLIEX log file
Windows: <i>Device-Manager-CLIEX-installation-folder</i> \config (Note 1) Solaris: /opt/HDMVCLIEX/config (Note 1)	hdvmcliex.properties	Default properties file
	hdvmcliex.properties.sample	Default template properties file
	myprop	User-made properties file. You can use any name for this file.
Windows: <i>Device-Manager-CLIEX-installation-folder</i> \lib\log (Note 1) Solaris: /opt/HDMVCLIEX/lib/.log (Note 1)	hse.log	CCI/Lib log file
	hse.log.bak	Backup of CCI/Lib log file
Windows: <i>system-folder</i> \System32\config	CLIEXAppEvent.EVT (Application) CLIEXSysEvent.EVT (System)	Event log application and system log file
Solaris: /var/adm (Note 2)	messages	OS system log file
Windows: Directly under the Windows system drive (example: C:\) Solaris: /tmp	dvmcliex_installLog.log	Installation log file for Device Manager CLIEX
	dvmcliex_uninstallLog.log	Uninstallation log file for Device Manager CLIEX
--	my.osversion	File that contains the OS version. Execute the following command to create this file. You can use any name for the file. Windows: ver > my.osversion Solaris: uname -a > my.osversion

Note 1: If the directory contains files other than the specified file, those files will also be collected.

Note 2: The storage location and file name of the OS system log file can be changed by /etc/syslog.conf. The storage location and file name where logs are actually output are those specified in /etc/syslog.conf.

Table 10.3 Troubleshooting Information for Device Manager CLIEX

Problem	Description and Recommended Action
<p>Device Manager CLIEX does not run when the operating system is Solaris. The error message says:</p> <pre>The command device has failed. [EL_ATTICMD] Can't attach to the Command device.</pre>	<p>CAUSE: The <code>/usr/lib/RMLIB</code> directory or a symbolic link to that directory might not have been created, even though RaidManager/Lib has already been installed.</p> <p>SOLUTION: Create a symbolic link to the <code>/usr/lib/RMLIB</code> directory.</p> <hr/> <p>CAUSE: RaidManager/Lib has not been installed.</p> <p>SOLUTION: Install RaidManager/Lib.</p>
<p>The following error message is displayed:</p> <pre>The command device has failed. [EL_CMDRJE] An order of the control command rejected.</pre>	<p>CAUSE: The operation target is a mainframe volume.</p> <p>SOLUTION: Device Manager CLIEX does not support operations for mainframe volumes. To operate mainframe volumes, use SVP or Storage Navigator.</p> <hr/> <p>CAUSE: The operation target is the command device being used or a host storage domain or a port containing the LUN of the command device being used.</p> <p>SOLUTION: Use Web Client or Device Manager CLI.</p>
<p>When the operating system is Windows, the following error message is displayed:</p> <pre>The command device has failed. [EL_CMDIOE] Control command I/O error, or rejected.</pre>	<p>CAUSE: The command device is set as a dynamic disk.</p> <p>SOLUTION: Set the command device as a basic disk and re-create the partition (for details about setting the command device as a basic disk, see the relevant documentation of your OS).</p>
<p>When the operating system is Windows and the <code>MakeProp</code> or <code>VerifyProp</code> command is executed, the following message is output to the log:</p> <pre>KAIC45021 The GUID "\\?\Volume{GUID}" is not available as a command device.</pre>	<p>CAUSE: The drive letter may have not been assigned when a partition was created for the command device.</p> <p>SOLUTION: Assign a drive letter to the partition.</p>

10.2 Hitachi Data Systems Support Center

If you need to call the Hitachi Data Systems Support Center, make sure to provide as much information about the problem as possible, including the circumstances surrounding the error or failure and the exact content of any error messages displayed on the HiCommand Device Manager system and/or host system.

The Hitachi Data Systems customer support staff is available 24 hours a day, seven days a week. If you need technical support, please call:

- United States:
(800) 446 0744
- Outside the United States:
(858) 547 4526

Acronyms and Abbreviations

AL	Arbitrated Loop
AMS	Adaptable Modular Storage
API	Application Program Interface
ASL	Array Support Library
CLI	Command Line Interface
CLIEX	Command Line Interface Extended edition
CLPR	Cache Logical Partition
COW	Copy on write
DAMP, DMP	Disk Array Management Program
DEVN	Device Number
DKC	Disk Controller
DST	Daylight Saving Time
FC	Fibre Channel
GUI	Graphical User Interface
HBA	Host Bus Adapter
HDP	Hitachi Dynamic Provisioning
HIHSM	Hitachi Internal Hierarchical Storage Management
HTML	HyperText Markup Language
HTTP	HyperText Transmission Protocol
HTTPS	HyperText Transmission Protocol Secure
ID	Identification, Identifier
IP	Internet Protocol
Java RMI	Java Remote Method Invocation
JRE	Java Runtime Environment
JWS	Java Web Start
LDEV	Logical DEvice
LU	Logical Unit
LUN	Logical Unit Number
LUSE	Logical Unit Size Expansion
MB	MBs(1024 KB)
MCU	Main Control Unit (for TrueCopy)
OS	Operating System
PDEV	Physical DeVice
P-VOL	Primary Volume
RAID	Redundant Array of Independent Disks
RCU	Remote Control Unit

SCSI	Small Computer System Interface
SIM	Service Information Message
SLPR	Storage Logical Partition
SNMP	Simple Network Management Protocol
SSID	Storage Subsystem IDentifier
S-VOL	Secondary VOLume
SVP	SerVice Processor
URL	Uniform Resource Locator
USP	Universal Storage Platform
VDS	Virtual Disk Service
VOLSER	Volume Serial
V-VOL	virtual volume
VxVM	VERITAS Volume Manager
WMS	Workgroup Modular Storage
WWN	WorldWide Name
XML	Extensible Markup Language

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